Vol. 9 No. 4 ISSN 2220-6140

Published by

International Foundation for Research and Development (IFRD)

Editorial

Journal of Econmics and Behavioral Studies (JEBS) provides distinct avenue for quality research in the ever-changing fields of economics & behavioral studies and related disciplines. Research work submitted for publication consideration should not merely limited to conceptualisation of economics and behavioral devlopments but comprise interdisciplinary and multi-facet approaches to economics and behavioral theories and practices as well as general transformations in the fileds. Scope of the JEBS includes: subjects of managerial economics, financial economics, development economics, finance, economics, financial psychology, strategic management, organizational behavior, human behavior, marketing, human resource management and behavioral finance. Author(s) should declare that work submitted to the journal is original, not under consideration for publication by another journal, and that all listed authors approve its submission to JEBS. Author (s) can submit: Research Paper, Conceptual Paper, Case Studies and Book Review. Journal received research submission related to all aspects of major themes and tracks. All submitted papers were first assessed by the editorial team for relevance and originality of the work and blindly peer reviewed by the external reviewers depending on the subject matter of the paper. After the rigorous peer-review process, the submitted papers were selected based on originality, significance, and clarity of the purpose. The current issue of JEBS comprises of papers of scholars from Australia, USA, Indonesia, South Africa, Nigeria, Zimbabwe and Saudi Arabia. Women entrepreneurs in the tourism and hospitality industry, inflation thresholds-financial development nexus, effect of agency costs on executive compensation, electronic banking services in Nigeria, re-testing Wagner's Law, effects of brain drain on the South African health sector, trade liberalization, consumption, and real exchange rate, determinants of venture capital supply, aspirations for enhanced agricultural development, influence of actual & ideal self-congruity on consumers' purchase intentions, efficiency of foreign exchange markets, informal entrepreneurship as a poverty alleviation mechanism, entrepreneurial inclination, determinants of access to education and ICT, government expenditure and economic growth, does competition cause stability in banks, effects of education on economic growth, time preference of Chinese tend to be less affected by positive emotion, oil price fluctuations, the effectiveness of enterprise risk management & internal audit function and determinants of tax non-compliance were some of the major practices and concepts examined in these studies. Current issue will therefore be a unique offer where scholars will be able to appreciate the latest results in their field of expertise, and to acquire additional knowledge in other relevant fields.

Prof. Sisira R N Colombage, Ph. D.
Editor In Chief

Editorial Board

Table of Contents

PAPERS

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Unlocking the Potential of Women Entrepreneurs in the Tourism and Hospitality Industry in the Eastern Cape Province, South Africa

Vikelwa Judith Nomnga
Walter Sisulu University, South Africa
vnomnga@wsu.ac.za

Abstract: At the height of political turmoil and the so-called economic downgrade to 'junk' status by rating agencies in South Africa, the tourism and hospitality industry, through women entrepreneurship, seems to be an alternative exit the government can use to foster economic growth and curb unemployment. The paper adopts an extensive documentary review analysis to determine the challenges and opportunities for women entrepreneurs in the tourism industry in South Africa. The paper observes that women entrepreneurs in the Eastern Cape Province face a myriad of challenges emanating from low levels of education, lack of financial resources, poor information dissemination, gender inequity, limited support from stakeholders, limited technical skills and reluctance to shift from status quo. The paper concludes that, to unlock the potential of tourism and hospitality industry, women entrepreneurs need to embrace education and get trained on how to use modern technologies-which is fundamental in coping with the trends in the globalized environment. The paper recommends and empowers women to be at the forefront and become active entrepreneurs in tourism opportunities whereby stakeholder funding is the key to achieve economic growth.

Keywords: *Women Entrepreneurs, Tourism, Hospitality Industry, Women Empowerment, Job Creation*

1. Introduction

Throughout Sub-Saharan Africa, South Africa has been widely known as the hub of tourism and hospitality industry due to its vast tourist resort areas which saw the influx of world travelers in areas such as Cape Town's Table Mountain, Drakensberg Mountains in the Eastern Cape as well as other beautiful sites in seaside areas such as Durban, Port Elizabeth just to mention a few. At the epicenter of this huge tourism activity is women entrepreneurship which is fast gaining recognition although few studies in South Africa have documented it. IFAD (2005:5) asserts that, women entrepreneurship in the tourism and hospitality industry ignites economic growth in most developing countries and clearly represents an untapped potential. It is imperative to realize that for many women in rural areas, even in South Africa, women entrepreneurship facilitates a broader livelihood strategy often undertaken on a part-time basis, or usually where there is a difficulty in separating production and reproduction tasks as well as market and non-market work (ILO, 2001). Women entrepreneurs are useful in tapping the potential of tourism and hospitality industry hence their pivotal role in the social and economic well-being for communities in South Africa. Much more important is the fact that, women entrepreneurship (for example through cooperatives or clubs, bed and breakfast accommodations, lodges) activities have gained government recognition and the value of their contribution to their communities by giving them support and promoting a change in their attitudes towards the meaning of work (Women in Africa Doing Business, 2008). A significant number of South African women entrepreneurs contribute much to the rural economy although many still suffer from gender equity and lack of adequate finance to spearhead tourism activities. Despite these obstacles, many women entrepreneurs have forged an exit strategy into informal entrepreneurship in areas such as catering, fashion designing, cooking and being wedding coordinators (White, Jones, Riley & Fernandez, 2009).

Questions maybe posed as to: who are women entrepreneurs? What is their role within the tourism and hospitality industry? A woman entrepreneur, as described by Iyiola and Azuh (2014), is a female who indulges and adjusts herself within the financial, socio-economic, and support spheres in society. The characteristics of women entrepreneurs are that they establish their own business, operate, manage and take risks in their businesses (Thuaiba, Azlah, Rozeyta, Hisyamuddin & Noorizwan, 2007). These types of women entrepreneurs are engaging in the tourism and hospitality industry; although they encounter various challenges, they remain committed towards attaining a livelihood. This paper, therefore, questions the sustainability of women entrepreneurs in the tourism and hospitality industry in South Africa. The paper explores more the challenges and alternative strategies that can assist women to expand their tourism activities for sustainable development and, in the process, reducing poverty and inequalities in communities

(ILO, 2007). More importantly, the paper aims to contribute positively to the body of knowledge and improve the understanding of how women entrepreneurship, as alluded in the previous section, can improve job creation through the tourism and hospitality industry.

2. Literature review

Global context on women entrepreneurship in tourism & hospitality: Rogerson (2005) asserts that, many international scholars have recognized the need to promote small tourism and hospitality firms which form an integral part of the country's economy (Thomas, 2004). Small tourism firms have been widely criticized by scholars although arguments from Burrows and Curran (1989) expose some critical methodological challenges which are often neglected in literature. Thomas (2004) observes significant differences between small and large tourism enterprise; however, he recognizes important small tourism as fundamental to economic growth and job creation. Several tourism scholars internationally began to embrace small tourism in the 1990s, with women entrepreneurship in tourism sector gaining momentum. According to Thabethe (2006), small tourism firms are driving job creation and improve the economies of developing countries although very few cases have been documented by scholars. Studies (Buhalis & Cooper, 1998; Wanhill, 2004; Telisman-Kosuta & Ivandic, 2004) describe small scale tourism as innovative entrepreneurship which is rampant in some rural areas of New Zealand. The contribution of small tourist firms to regional and international development is recognized by international scholars (Pechlaner & Tschurtschenthaler, 2003; Bastakais*et al*, 2004; Erkkila, 2004). Women entrepreneurship, as a form of small tourism in literature, has seen the accommodation sector gaining attention and concern as a viable tourism tool for job creation (Thomas, 2004). Webster (1998) states that, bed and breakfasts in family or holiday cottages on farms or seaside represent an example of small businesses which fall into the category of women entrepreneurship. A distinct comparison of tourism entrepreneurship in developing and developed countries is manifested in studies by Atelejevic and Doorne (2004) and Hall and Rusher (2004). Women entrepreneurship in the tourism sector has encountered stiff challenges as scholars believe it has small profit margins as a small business. This paper, therefore, projects women entrepreneurship as a viable and income generating business given the flourishing tourism and hospitality industry in South Africa.

Policy Context supporting women entrepreneurs in Tourism & Hospitality Industry: The Constitution of South Africa (1996) in Section 9 of the Bill of Rights disregards any form of discrimination or abuse of any persons despite ethnicity, religion, culture or birth. This statement comes at a time when many women entrepreneurs find it difficult to access government buildings in search of either information or financial help to boost their tourism activities. The Universal Accessibility in Tourism was developed as a counter-measure to leverage women entrepreneurs in participating in the tourism and hospitality industry. In essence, the Universal Accessibility Declaration was an official agreement by stakeholders at a Consultative meeting to ensure freedom of people and empower tourism practitioners to have access to infrastructure, products and series, master plans as well as programs and policies. The Universal Accessibility in Tourism also supports Article 2.2 of the United Nations World Tourism Organizations' (UNWTO) Global Code of Ethics for Tourism, that stipulates "Tourism activities should respect the equality of men and women, they should promote human rights and, more particularly, the individual rights of the most vulnerable groups, notably children, the elderly, the handicapped, ethnic minorities and indigenous people". In an effort to promote women entrepreneurship, the South African Tourism (SAT) was established to encourage persons to travel within the Republic on tourisms activities. The policy ensures that services rendered and facilities made available to tourists portray the highest standards in accordance with the Tourist Act, 1993 (Act No. 72 of 1993).Based on the above assertion, women entrepreneurship in South Africa has been given a leeway to venture into the tourism and hospitality industry as a way of self-creating employment and improving living standards.

Challenges facing women entrepreneurs in Tourism & Hospitality Industry: The success of women entrepreneurship in the vast tourism and hospitality industry in South Africa is hinged on the national participation of women and willingness to become entrepreneurs. Studies of Gatewood *et al.* (2003) and Hakala (2008) categorize challenges of women entrepreneurs venturing tourism and hospitality industry. These are:

- human capital;
- strategic choice; and

- Structural obstacles.

These challenges are constraining the participation of women entrepreneurs in the tourism and hospitality industry, which can lead to increased unemployment. Studies by Hunter and Kapp (2008) and ILO (2012) revealed that such challenges vary by gender, sector, and type of entrepreneurs or region. In the South African context, Hakala (2008) observes that, women entrepreneurs lack technical expertise required and knowledge to confidently make sound decisions to direct their entrepreneurial business. The tourism and hospitality industry needs huge cash injections to be viable; however, women entrepreneurs in South Africa are limited by the lack of financial boost, either from government or stakeholders, which makes women entrepreneurship less lucrative (Worrall, Harris, Thomas, Stewart, Jessop & Platten, 2008).

Human Capital Theory: A brainchild of Gary Backer, the Human Capital Theory (HCT) became popular since early 1990s. Mincer (1962) cited in Muda and Rafiki (2014: 4) defines the theory of human capital as "education and schooling that will prepare the workforce" whereas Becker (1993) defined it as "a form of investment by individuals in education up to the point where the returns in extra income are equal to the costs of participating in education. Dreher (2003) affirms that, the HCT assumes corporations to be investing less in women's education and training, which is an impediment to women empowerment in organizations. Women entrepreneurship in tourism and hospitality industry in South Africa is suffering a similar fate. The HCT assumes that firms gain competitive advantage by effectively and creatively using resources (Hoopes, Madsen & Walker, 2003).

Even though, the untapped potential of women entrepreneurship is evident in the tourism and hospitality industry in South Africa, the HCT contends that the learning capacities of individuals are of comparable value to other resources which are involved in the production of goods and services. Schultz (1993) in Nafukho, Hairston and Brooks (2004:546) argues that when a certain resource is utilized effectively, the results will be profitable for the individual, organization and society at large. If women entrepreneurs are trained and given an equal chance to exhibit their entrepreneurial skills, unemployment can be reduced in South Africa. The HCT, therefore, in this paper has been adopted to explain the gains of education and training as a form of investment in human resources, and the main proposition is that people are considered a form of capital for development (Becker, 1993; Nafukho et al., 2004:548). The HCT, as a resource-based theory, is fundamental for this paper because it helps determine how and what resources women can use to become successful in the tourism and hospitality industry. The theory provides significant inspiration on how to become a successful woman entrepreneur in the presence of key aspects such as training. Todaro (2011:365) endorses further that, the HCT provides an analogy of conventional investments in physical capital since people are considered as capital. Broadly explained, the HCT is an investment in individuals 'training and education, which are core factors in advancing women entrepreneurship in the tourism and hospitality industry in South Africa.

Feminist theories: The paper adopts the feminist theory as one of the suitable approaches to supporting women entrepreneurship in tourism and hospitality industry. Kropf et al. (2003) assert that for women strategies to succeed, their feminine strategies which involve collaboration, diversity strategies and work-life need to be present in contrast to masculine strategies for males. To advance the tourism and hospitality industry, women need to be at the helm of power so that they have equal access to resources to explore and make impact in the sector. Beuchamp and Bowie (2004) argue that feminist theory assumes subordination, inequality and oppression of women as unethical hence women deserve equal legal and political rights, which is in contrary to Utilitarian and Kantian theories that neglect the significance of morals and values. The Feminists theories assume inequalities between women and men in terms of advancement and earnings. Such a difference maybe emanating from cultural beliefs where women are more of house minders, with tough work scheduled for men. The paper therefore, seeks to rewrite this ancient belief and empower women to champion women entrepreneurship in the tourism and hospitality industry (Gale, 1994; Orhan & Scott, 2001). Such an action can empower women to earn their own income and give them power, thereby closing the gap in the Feminist perspective. This theory is important for this paper because it provides an analytical framework on how to deal with inequalities between men and women -the latter are often inhibited to join entrepreneurship which is viable in the tourism and hospitality industry as envisioned in this paper. Deprivation of women, in terms of education or industry experience, is what the Human Capital Theory

addresses. Women entrepreneurship training can position women at the forefront of the economic sector in South Africa (Appelbaum, Audet & Miller, 2003).

3. Methodology

This paper set out to unlock the potential of women entrepreneurship in the tourism and hospitality industry in the Eastern Cape Province of South Africa. It interrogates the challenges and opportunities which may exist in advancing women entrepreneurship as a tool for job creation. The paper adopted a qualitative research design based on documentary review approach. The rationale was to obtain in-depth data on how women entrepreneurship has been viable in tapping into the tourism and hospitality industry in South Africa. Leedy and Omrod (2010:94) argue that qualitative research design is essential in answering questions about the complex nature of phenomena, more often with the purpose of describing and understanding the phenomena from the participant point of view. The paper sought to respond to questions such as: What is the role of women entrepreneurship in the tourism and hospitality industry? To what extent has women entrepreneurship contributed to job creation within the tourism and hospitality industry? What are the challenges facing women entrepreneurs in their quest to advance the tourism and hospitality industry? Data collected from documents was analyzed qualitatively using content analysis. Jose and Lee (2007:6) affirm that, content analysis should be used for making inferences by objectively and systematically in identifying specialized characteristics of messages. Hofstee (2006:17) endorses further that, content analysis studies closely examine the content of preserved records which are nearly always written documents even though videos can also be used. In this paper, content analysis was used to discuss the common themes from the thick descriptions of the role of women entrepreneurship in stimulating tourism and hospitality industry.

4. Results

Becoming innovators and risk takers among women entrepreneurs: In South Africa, women entrepreneurship is flourishing at a slower pace within the tourism and hospitality industry due to lack of innovativeness and risk-taking among women. When compared to men, many small businesses for women die at their infancy due to poor performance of poor decision-making. The gender gap seems visible within the tourism industry where men are doing well despite the difficulties they may face. A study by the GEM (2010) shows that, women entrepreneurs tend to establish small businesses with the fear of expanding hence their return remains low. In terms of business revenue, women income remains relatively low, and this is a setback in exploring the benefits of the tourism and hospitality sector. Women entrepreneurs often face challenges related to limited funding, heavy family workloads and discrimination. The paper argues that women entrepreneurs need to be innovative and be risk takers, which are key principles in growing their businesses within the tourism and hospitality sector.

Improving education and training among women entrepreneurs: Educating a woman in traditional South African society was regarded as mere waste of resources; hence some critics attribute low levels of education among women entrepreneurs as a result of cultural beliefs. An extensive review of literature explains the low levels of education among women entrepreneurs in the tourism and hospitality industry as a result of limited training. The evidence has shown that, women entrepreneurs venture into the tourism industry without the necessary expertise to make proper managerial decisions which can sustain the business. The lack of career guidance is evident among women entrepreneurs, which is an obstacle to job creation through women entrepreneurship. These results are supported by a study by Davis (2010) which reflects that women entrepreneurs lack career guidance and business development information to improve their businesses. In another study in Tunisia, Drine and Grach (2010) observe that women entrepreneurs are failing to reap benefits of entrepreneurship as they do not see the benefits of entrepreneurship support. In South Africa, a study by Chinomona and Maziriri (2015) revealed that women entrepreneurship education should be fostered among young women in education so that they drive the initiative in the tourism and hospitality industry. Drawing insights from these results, women entrepreneurship should be offered in areas of finance education and training, coaching and mentoring and networking since these aspects are essential in driving women entrepreneurship in the tourism sector.

Enhancing knowledge on the use of Information Communication Technology: Women entrepreneurs in the South African tourism and hospitality industry face challenges in terms of using ICTs due to lack of technical skills as a result of low education levels. The paper acknowledges that, the vast tourism and hospitality sector requires women entrepreneurs who are able to keep abreast of the trends in the technological and economic environment in order to grow their business. Literature, however, provides quite a different picture when it explains women involvement in the tourism sector as being low due to the above-mentioned barriers. A study conducted by Lebakeng (2008) in Lesotho attests to the above findings when it argues that women entrepreneurs do not have equal access to relevant information on how they can exploit modern technology to improve efficient in their business. Given the South African context, scholars pose serious questions as to who is to blame for such a huge technical gap in women entrepreneurship. Many versions are suggested as some critics believe gender disparities emanating from patriarchy are the root causes which restrict women into the home, thereby denying them the chance to become innovators. The paper observes a negative relationship between women entrepreneurship and technology use among women entrepreneurs in the tourism and hospitality industry in South Africa. Based on this information, women entrepreneurs in the tourism sector can thrive when they are educated on how they can grow their business using ICT.

The need to provide adequate human and financial resources: The South African government acknowledges the tourism and hospitality industry as an important sector for job creation and economic development. Despite its attractive nature, women entrepreneurs are still encountering challenges in their attempt to exploit the tourism sector. The majority of black women lack collateral security, which makes their relationship with financial institutions sour since they cannot borrow money to finance their business activities. A study by Monolova et al. (2007) supports these findings when it reveals that, women entrepreneurs do not have adequate financial resources, coupled by limited entrepreneurial competence to cope with the challenges of starting up a business. Several women entrepreneurs are failing to grow their businesses as they remain small, and exist only for consumption rather than recreating more employment for the benefit of communities. A critical analysis on the lack of finance and skills makes women entrepreneurs less productive although there is great potential to be tapped into from the tourism and hospitality sector. The government needs to provide adequate financial support to assist struggling women entrepreneurs to make their businesses look vibrant and sustainable.

The scourge of gender based violence in women entrepreneurship: In as much as women entrepreneurs in South Africa have embarked on the tourism and hospitality industry as a viable job creation tool, gender-based violence stands as a hindrance. Documentary review has shown that women in the tourism sector are often harassed, raped, killed and abused by male counterparts, with most cases being under-reported. The protection of women entrepreneurs in the hospitality interest is at risk since the law seems to be relaxed towards such atrocities. Studies (Chu et al., 2008; Reeves, 2010) revealed that women entrepreneurs in the tourism sector are living in fear as threats are often present, which makes women fail to choose the location and time to conduct business. These studies revealed further that the scourge of gender-based violence in South Africa is escalating, thus discouraging women from becoming entrepreneurs and creating their own jobs to sustain their livelihoods. Presently, very few studies have been conducted to document gender based violence in the tourism and hospitality industries although media reports seem to substantiate this gap. These findings reflect the reduced numbers of women entrepreneurs who can become employers and tap the rich tourism and hospitality sector. It remains a challenge to the government to formulate policies that protect the rights of women in entrepreneurship and trade.

5. Conclusion and Recommendations

The paper has observes that women entrepreneurship in the tourism and hospitality industry in the Eastern Cape Province in South Africa can be another viable mechanism for accelerating economic growth and curbing unemployment. The extensive documentary review approach has pointed out that skills shortage has affected many sectors of the economy, not only in the Eastern Cape but in South Africa as a whole. Women entrepreneurship (for instance accommodation - bed and breakfast, lodges and small restaurants) can be used to create employment. However, literature had shown that such entrepreneurial ventures need vast amounts of capital, which women lack. The paper opines that many women do not have enough knowledge

on entrepreneurship in the tourism and hospitality industry. Such contradictions area barrier which the government needs to address through relevant departments such as Small and Medium Business Ministry. The lack of technical know-how is another challenge which inhibits women entrepreneurs from unlocking the potential of tourism and hospitality industry. Modern technology ushered in by globalization and the Fourth Industrial Revolution need to be efficiently utilized to realize economic and social benefits of tourism. The paper challenges women in the Eastern Cape Province to become innovators and seek financial help from monetary institutions to stimulate their entrepreneurial businesses. There is need for government to establish vocational schools that cater for women entrepreneurs so that their knowledge concerning tourism and hospitality is broadened. Networking of women with other tourist agencies (local or international) is fundamental for sharing information on the dynamic tourism sector. A shift in mindset is required among women entrepreneurs in South Africa. A clear diversion from patriarchal beliefs that restrict women to work needs to be done away with. Women need to tap the potential of the tourism and hospitality sector to become employers rather than employees. In terms of policy frameworks, the South African government needs to promulgate more laws that promote women entrepreneurship in tourism, which is a step in reducing employment.

References

Appelbaum, S. H., Audet, L. & Miller, J. C. (2003). Gender and leadership? Leadership and gender? A journey through the landscape of theories. *Leadership and Organization Development Journal*, 24(1/2), 43–52.

Atelejevic, I. & Doorne, S. (2004). Cultural circuits of tourism: commodities, place and reconsumption, in A.A. Lew, C.M. Hall and A.M. Williams (Eds), A Companion to Tourism, Blackwell, Oxford, 291-302.

Bastakais, C., Buhalis, D. & Butler, R. (2004). The perception of small and medium-sized tourism accommodation providers on the impacts of the tour operators' power in Eastern Mediterranean. *Tourism Management*, 25, 151-170.

Beauchamp, T. L. & Bowie, N. E. (2004). *Ethical Theory and Business*. 7th Ed. Upper Saddle River, NJ: Pearson/Prentice Hall.

Becker, G. S. (1993). 'Nobel lecture: the economic way of looking at behaviour'. *Journal of Political Economy*, 101(3), 385 – 409.

Buhalis, D. & Cooper, C. (1998). Competition or co-operation? Small and medium-sized tourism enterprises at the destination, in E.Laws, B. Faulkner and G. Moscardo (Eds), Embracing and Managing Change in Tourism: International Case Studies, Routledge, London, 324-346.

Burrows R. & Curran J. (1989). Sociological research on service sector small businesses: some conceptual considerations. *Work, Employment and Society,* 3, 527-539.

Chinomona, E. & Maziriri, E. T. (2015). Women in Action: Challenges Facing Women Entrepreneurs in the Gauteng Province of South Africa. *International Business & Economics Research Journal,* 14(6), 835-846.

Chu, H. M., Kara, O. & Benzing, C. (2008). An Empirical Study of Nigerian Entrepreneurs: Success, Motivations, Problems and Stress. *International Journal of Business Research*, 8(2), 102-116.

Davis, P. J. (2012). The global training deficit: the scarcity of formal and informal professional development opportunities for women entrepreneurs. *Industrial and Commercial Training,* 44(1), 19 – 25.

Dreher, G. F. (2003). Breaking the glass ceiling: The effects of sex ratios and work-life programs on female leadership at the top. *Human Relations*, 56(5), 541.

Drine, I. & Grach, M. (2010). Supporting Women entrepreneurs in Tunisia. September 2010, UN-WIDER working paper. World Institute for Development.

Erkkila, D. (2004). SMEs in regional development, in P. Keller and T. Bieger (eds), The Future of Small and Medium Sized Enterprises in Tourism. *International Association of Scientific Experts in Tourism, Publication*, 46, 23-34.

Gale, A. (1994). Women in non-traditional occupations: The construction industry. *Women in Management Review*, 9(2), 3–15.

Gatewood, E. G., Carter, N. M., Brush, C. G., Greene, P. G. & Hart, M. M. (2003). Women Entrepreneurs, Their Ventures, and the Venture Capital Industry: An Annotated Bibliography. Stockholm: Entrepreneurship and Small Business Research Institute.

Hakala, S. R. (2008). Women entrepreneurs: Challenges and successes in non-traditional industries. PhD Dissertation. University of Phoenix.

Hall, C. M. & Rusher K. (2004). Risky lifestyles?: entrepreneurial characteristics of the New Zealand bed and breakfast sector, in R. Thomas (ed), Small Firms in Tourism: International Perspectives. Elsevier, Amsterdam, 83-98.

Hofstee, E. (2006). Constructing a Good Dissertation: A practical Guide to Finishing a Masters, MBA or PHD on schedule. Sandton: EPE.

Hoopes, D. G., Madsen, T. L. & Walker, G. (2003). Guest editors' introduction to the special issue: Why is there a resource-based view? Toward a theory of competitive heterogeneity. *Strategic Management Journal*, 24(10), 889-902.

Hunter, S. A. & Kapp, J. M. (2008). Women Entrepreneurs across Racial Lines: Issues of Human Capital, Financial Capital and Network Structures. Cheltenham, UK: Edward Elgar Publishing.

International Fund for Agricultural Development (IFAD). (2005). From Micro to Small Business: Meeting the growth challenges faced by rural women by H. Perrett. International Labour Organisation.

International Labour Organisation (ILO). (2001). Mayoux L. Jobs, gender and small enterprises: getting the policy environment right. SEED Working Paper No. 15. Geneva.

International Labour Organisation (ILO). (2012). Women's Entrepreneurship Development. Encouraging women entrepreneurs for jobs and development. http. Accessed 24-04-2017.

Iyiola, O. & Azuh, D. (2014). Women entrepreneurs as small medium enterprise (SME) operators and their roles in socio-economic development in Ota, Nigeria*. International Journal of Economics, Business and Finance,* 2(1), 1-10.

Jose, A. & Lee, S. M. (2007). Environmental Reporting of Global Corporations: A Content Analysis Based on Website Disclosure. *Journal of Business Ethics*, 72, 307-321.

Kropf, M. B., Moore, M., Galinsky, E., Salmond, K., Bond, J. T. & Harrington, B. (2003). Leaders in a Global Economy: Study of Executive Women and Men. Executive summary. Available at: www.catalystwomen.org [Accessed on 20 April 2017].

Lebakeng, M. A. (2008). An Exploration of Women Entrepreneurship in Lesotho. South Africa. North West University (Master Dissertation).

Leedy, P. D. & Ormrod, J. E. (2010). *Practical research: Planning and design.* International and 9th edition. Boston: Pearson.

Nafukho, F. M., Hairston N. R. & Brooks, K. (2004). Human capital theory: implications for human resource development. *Human Resource Development International*, 7(4), 545-551.

Manolova, T. S., Carter, M. N., Maney, I. M. & Cryoshev, B. S. (2007).The differential effect on men and women entrepreneur's human capital and networking on growth expectancies in Bulgaria. *Entrepreneurship: Theory and Practice*, 31(3), 407–426.

Muda, I. & Rafiki, A. (2014). Human Resources Development and Performance of Government Provincial Employees: A Study in North Sumatera, Indonesia. *Journal of Economics and Behavioral Studies,* 6 (2), 152-162.

Pechlaner, H. & Tschurtschenthaler, P. (2003). Tourism policy, tourism organisations, and change management in Alpine regions and destinations*. A European perspective, Current Issues in Tourism,* 6, 508-539.

Reeves, M. (2010). Women in Business: Theory, case studies and legal challenges. Routledge, London and New York, 2010.

Rogerson, C. M. (2005). Tourism SMMEs in South Africa: A Case for Separate Policy Development? Working Paper 2.TIPS.

Schultz, T. W. (1993). The economic importance of human capital in modernization. *Education Economics,* 1(1), 13-19.

South Africa. The Constitution of the Republic of South Africa. (1996). Pretoria: Government Printer.

Thabethe, E. (2006). Gender and women economic empowerment workshop, February. Ministry of Trade and Industry. Orlando-West. South Africa.[Web] http://www.polity.org.za/article.phppa_cd=81530 [date of access:

Telisman-Kosuta, N. & Ivandic, N. (2004). Strategic partnerships as a key competitive factor for SMEs: case study of Croatia's small family hotels, in P. Keller and T. Bieger (eds), The Future of Small and Medium Sized Enterprises in Tourism, International Association of Scientific Experts in Tourism, Publication 46, St Gallen, 219-233.

Todaro, M. (2011). Development economics. England: Pearson Education Ltd.

Thomas R. (2004) International perspectives on small firms in tourism: a synthesis, in R. Thomas (ed), Small Firms in Tourism: International Perspectives, Pergamon, Oxford, 1-12.

Thuaibah, A. B., Azlah, M. A., Rozeyta, O., Hishamuddin, M. S. & Noorizwan, S. (2007). Women's involvement in entrepreneurship in Johor: a study about critical success factors in achievement and failure in handling business, Project report. UniversitiTeknologi Malaysia.

Orhan, M. & Scott, D. (2001). Why women enter into entrepreneurship: An explanatory model. *Women in Management Review*, 16(5), 232.

Wanhill, S. (2004). Government assistance for tourism SMEs: from theory to practice, in R. Thomas (ed), Small Firms in Tourism: International Perspectives. Elsevier, Amsterdam, 53-70.

Webster, M. (1998). Strategies for growth, in Thomas R. (ed), The Management of Small Tourism and Hospitality Firms. Cassell, London, 207-218.

White, M. M., Jones, J. M., Riley, K. & Fernandez, R. (2009). Women, Family and the Rural Economy. England. Fulbright- Hays Group Project Abroad.

Women in Africa Doing Business, (2008). Case studies of women entrepreneurs across Africa who have overcome legal and regulatory obstacles to create new business opportunities.http://www.doingbusiness.org/~/media/FPDKM/Doing%20Business/Documents/Special-Reports/Women-in-Africa.pdf. Accessed 19 April 2017.

Worrall, L., Harris, K., Thomas, A., Stewart, R., Jessop, S. & Platten, A. (2008). Organisational cultures: Retention and progression barriers to women in the UK construction industry. *International Journal of Communities*, 8(3), 31–40.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Inflation Thresholds-Financial Development Nexus in South-Eastern Asian Emerging Markets

Kunofiwa Tsaurai
University of South Africa, Pretoria, South Africa
tsaurk@unisa.ac.za, kunofiwa.tsaurai@gmail.com

Abstract: This paper investigated the maximum inflation threshold levels beyond which financial development declines in the South-Eastern Asian emerging markets using static panel threshold regression framework proposed by Bick (2010) with data ranging from 1994 to 2014. The negative impact of inflation on financial development is a settled matter in both theoretical and empirical literature. However, this study was prompted by recent literature (Boyd et al., 2001; Abbey, 2012; Kim and Lin, 2010) which argued that the relationship between inflation and financial development is not linear and is characterised by inflation thresholds. Moreover, no previous study that the author is aware of used the approach suggested by Bick (2010) to determine inflation threshold levels and financial development. Among previous inflation-finance studies, the current study is the first one according to the author's best knowledge to use banking sector, stock market and bond sector development variables as previous studies were narrow focused in their definition of financial development. The study observed that lower levels of inflation is good for financial development whilst higher levels of inflation slows down the rate at which banking sector, stock and bond markets develop. These results agree with the theory underpinning inflation-financial development nexus. South-Eastern Asian emerging economies are therefore urged to implement macroeconomic policies that ensure inflation rates are kept at lower levels that do not stifle financial development.

Keywords: *Inflation; Financial Development; Threshold; Panel; Emerging Markets*

1. Introduction and background

There is consensus in economics with regard to the negative impact of high inflation on economic growth. Two different schools of thought on this subject matter are available: (1) inflation has a direct negative influence on economic growth and (2) inflation indirectly negatively affects economic growth through retarding the rate of development of the financial sector whose intermediation activities are crucial for economic growth. Majority of the empirical studies done on inflation-financial development nexus assumed a linear relationship between the two variables (BenNaceur and Ghazouani, 2005; Wahid et al., 2011; Tolulope and Oyeyinka, 2014; Aboutorabi, 2012). Although the linear relationship between financial sector development and inflation is a resolved matter in economics and finance, very few studies (Boyd et al., 2001; Abbey, 2012; Kim and Lin, 2010) have studied the non-linear relationship between these two variables. These few similar empirical studies on threshold levels of inflation that influence financial development are characterised by some shortcomings: These include the use of a narrow definition of financial development which ignored the bond market, use of outdated data, shied away from the South-Eastern Asian emerging markets region which deserves its own special attention and the use of simplistic threshold regression models. The current study deviates from these previous similar empirical work in the following ways: (1) used the most up to date data available (1994-2014), (2) took a holistic view of the financial sector by separately estimating inflation thresholds-banking sector/stock/bond market development nexus, (3) focused on the largely ignored South-Eastern Asian emerging markets and used the static panel threshold regression model put forward by Bick (2010).

UNCTAD (2016) showed that a meaningful trend exists between inflation and financial development in the South-Eastern Asian emerging markets (see Figure 1 and 2). Empirical researchers on the Asian financial crisis overlooked the fact that inflation could have been one of the factors that indirectly and in a non-linear manner influenced financial development. It is for this reason that the current study employed the static panel threshold regression model to explore the inflation thresholds-financial development in the South-Eastern Asian emerging markets. The rest of the paper is arranged in the following order: The first is theoretical literature followed by empirical literature, inflation-financial development trend analysis, estimation technique, results discussion and summary of the study.

2. Literature Review

According to Haslag and Koo (1999), high inflation levels leads to repression and low development of the financial sector through reducing the importance of holding on to money assets. They asserted that consumers are discouraged to hold on to narrow money and other financial assets that define the depth of the financial system if inflation is high. Ikhide (1992) noted that higher levels of inflation discourage people to hold the quasi-money because it can easily and quickly lose value under such unstable macroeconomic environment. According to Schreft and Smith (1997), interest rate goes up if inflation rate increases thus leading to inefficient financial markets. In addition, high inflation result in the access to real investment return information becoming difficult, uncertain and less smooth flowing and in response, lenders shift their focus to short term objectives rather than long term lending which is not good for financial sector development (Rousseau and Yilmazkuday, 2009:312). Moreover, Tobin (1965) argued that high inflation increases investment levels as consumers move their portfolios from money assets to capital assets in order to shield themselves against the effects of inflation. On the other hand, households in an inflationary environment tend to replace transaction services for money balances hence improving not only the rate at which financial services are produced but the overall financial development (English, 1999).

Review of related empirical literature: Boyd et al. (2001) studied the influence of inflation on financial sector performance in developing countries using the dynamic panel data analysis (GMM estimation technique) with stock market data from 1970 to 1995 and banking sector data ranging from 1960 to 1995. Overall, inflation was found to have had a significant negative impact on financial sector performance. They found out that inflation rate above a threshold level of 15% led to a negative financial sector performance during the period under study. Abbey (2012) analysed the relationship between financial development and inflation in Ghana using a combination of different types of quantitative data analysis with quarterly time series data ranging from 1990 to 2008.Their findings are fourfold: (1) The use of pair wise correlation observed the existence of a negative relationship between inflation and financial development in Ghana, (2) regression analysis found out that inflation and financial development were positively linked in the short run whereas no relationship between the two variables existed in the long run in Ghana, (3)using private sector credit to GDP ratio and stock market capitalisation proxies, regression analysis showed that inflation positively influenced financial development in Ghana and (4) inflation rates above 16% threshold level were found to have negatively impacted on financial development whilst inflation rate below a threshold level of 11% positively influenced financial development. Inflation rates from 11% to 16% had a stagnant effect on financial development in Ghana. Kim and Lin (2010) also showed that it is only when inflation exceeds a certain minimum threshold level that informational frictions in the credit markets begin to overall reduce financial sector development.

Gillman and Kejak (2007) found results which supported that inflation negatively influence financial sector development, in line with most empirical findings on the subject matter. Mostafa et al. (2012) studied the impact of inflation on financial sector performance in Iran using the Quintile Econometric Approach. The major weakness of their study is that they used banking sector development proxies as proxies of financial sector performance; hence the study was a narrow focus of the financial sector. The findings are twofold: (1) Higher levels of inflation were found to have had slowed the financial sector's efficiency and effectiveness in performing its intermediary function and (2) inflation negatively influenced the growth of the financial sector in Iran. Table 1 on the next page summarises the empirical research work on inflation and financial development.

Table 1: A summary of empirical studies on inflation-financial development nexus

Author	Country/Countries of study	Methodology	Research findings
BenNaceur and Ghazouani (2005) examined the influence of inflation on financial development.	Middle East and Northern African (MENA) countries	Dynamic panel model using Generalized Methods of Moments (GMM) estimation.	Inflation negatively affected the performance of the financial sector in the MENA region. They also observed that inflation began to negatively influence financial sector performance when it exceeds a certain threshold level.
Alimi (2014) examined the impact of inflation on financial sector performance.	Nigeria using banking sector development data from 1970 to 2012.	Time series data analysis	Higher inflation was found to have had a negative impact on financial sector performance. On the other hand, low inflation was found to positively influence economic growth through boosting financial sector's intermediation ability.
Wahid et al. (2011) studied the correlation between the financial sector and inflation.	Bangladesh using data between 1985 and 2005.	Autoregressive Distributive Lag (ARDL) and Error Correction Model (ECM).	High levels of inflation impeded the performance and growth of the financial sector in Bangladesh.
Tolulope and Oyeyinka (2014) examined the link between inflation and financial sector performance.	Sub-Saharan Africa (45 countries) with data from 1980 to 2011. Used stock market and banking sector development variables as proxies of financial development.	Panel data analysis.	Higher inflation negatively affected financial sector performance across all the countries under study.
Khan et al. (2014) analyzed the influence of inflationary pressure on banking sector performance.	Pakistan with data from 2009 to 2013.	Trend analysis and regression analysis.	Inflation and return on assets and inflation and return on equity of the banking sector were positively correlated.
Umar et al. (2014) studied the impact of inflation on banking sector performance.	Developed and developing countries	Conceptual analysis	They noted that inflation leads to high banking sector performance as long as banks increase interest rates in anticipation to high inflation in order to gain more revenue. Their study also found out that inflation reduced the purchasing power, loans policy and equity holding performance of banks.
Manoel (2007) investigated the impact of inflation on financial development.	Brazil with annual data between 1985 and 2002.	Time series and panel time series data analysis.	Inflation had a deleterious impact on financial development. High inflation slowed down the rate at which financial development stimulated economic growth in Brazil.
Almalki and Batayneh (2015) studied the nexus between inflation and financial development.	Saudi Arabia with annual time series data from 1982 to 2013.	ARDL estimation technique was used. Banking sector development proxy was used as a measure of financial development.	The study revealed that there exist a long run relationship between inflation and financial development in Saudi Arabia during the period under study. Inflation negatively affected financial development both in the long and short run in Saudi Arabia. Previous financial sector's policies positively and significantly influenced financial sector development.

Rousseau and Wachtel (2000) explored the link between financial development, inflation and economic growth.	Developing countries	Panel data analysis using banking sector variables as measures of the financial system.	They found out that high levels of inflation inhibit economic growth through negatively affecting the financial sector's ability to mobilize savings and lend them to the productive sectors of the economy.
Ozturk and Karagoz (2012) investigated the link between economic growth, inflation and financial development.	Turkey using time series data ranging from 1971 to 2009.	ARDL estimation technique using banking sector development measures of financial development.	The study noted that inflation negatively affected financial development in Turkey.
Rousseau and Wachtel (2002) studied the relationship between inflation and finance.	84 countries using panel data from 1960 to 1995	Panel data analysis	An inflation range between 13% and 25% was observed beyond which inflation begin to negatively affect financial development's ability to influence economic growth. Inflation was also found to have a negative impact on financial depth in the countries studied.
Aboutorabi (2012) analyzed the link between financial development and inflation.	Iran using time series data from 1973 to 2007.	ARDL approach.	Higher levels of inflation did not only negatively affect banking system financial development but also reduced the effectiveness and efficiency of the banking sector's intermediation functional duties.
Barugahara (2012)	60 countries using panel data from 1980 to 2009.	Generalized Methods of Moments estimation technique.	Higher inflation was found to have had a deleterious influence on the financial sector's ability to reduce income inequality.
Zaman et al. (2010) studied the relationship between inflation and financial development.	Pakistan using time series data (1974 to 2007).	Johansen co-integration, F-Bounds co-integration test and Vector Autoregressive approaches.	The study noted that inflation and financial development were co-integrated. Moreover, inflation was found to have had a positive influence on financial development in the long and short run in Pakistan contrary to majority of empirical studies.
Odhiambo (2009) explored the relationship between inflation and finance-growth nexus.	Kenya using time series data (1969-2006).	Co-integration and error correction model.	Inflation Granger caused financial sector development in both the long and short run in Kenya.

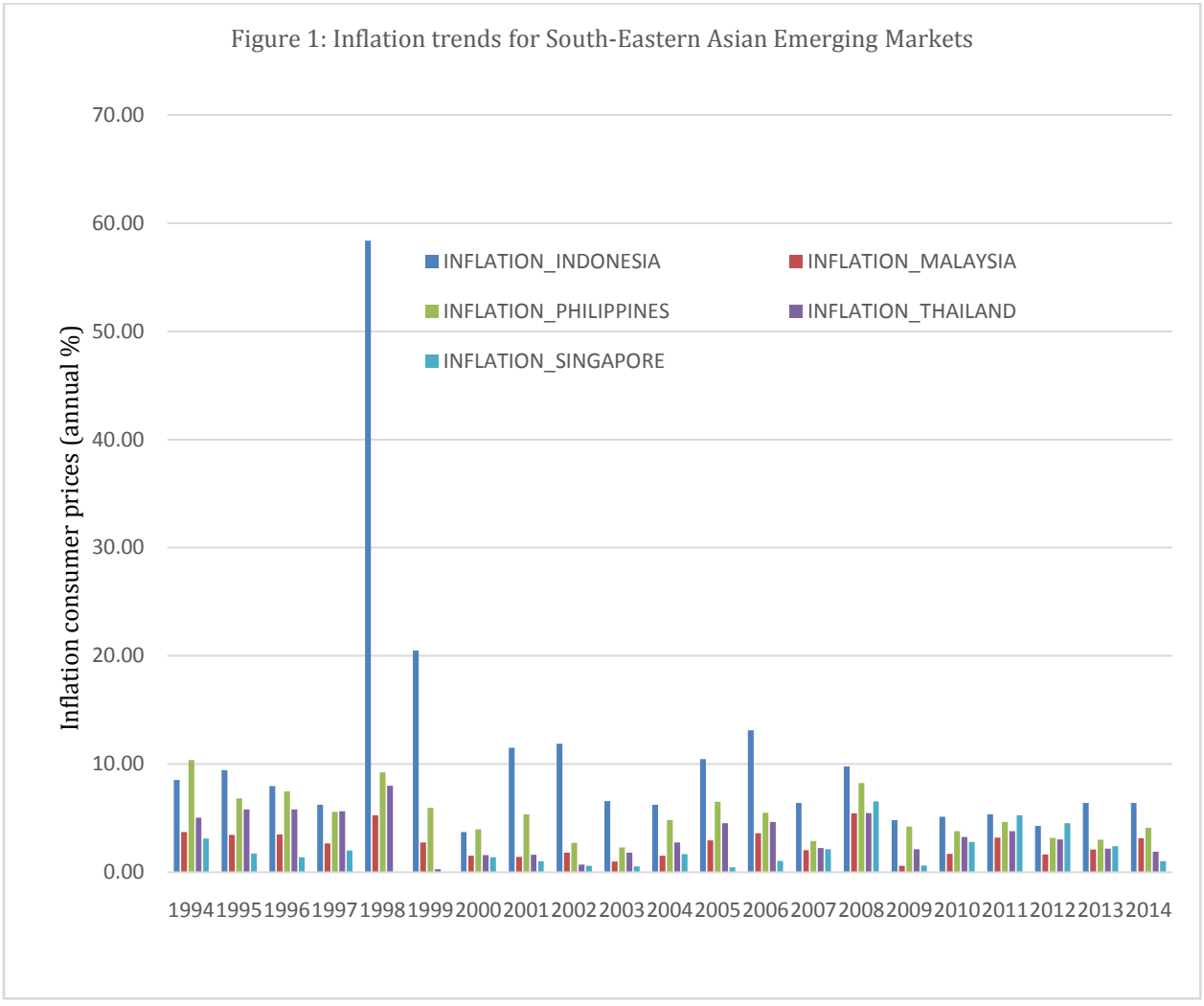
Source: Author compilation

In summary, majority of inflation-financial development studies took a narrow perspective of the financial sector, focused on single countries and avoided emerging markets as a bloc of countries. Moreover, they assumed that there exists a linear relationship between inflation and financial development. Even the few that took into account the non-linearity of the inflation-financial development nexus, they used simplistic threshold regression models.

Inflation and financial development trends in South-Eastern Asian emerging markets: Inflation consumer prices (annual %) went up by 11.97 percentage points, from 87.52% in 1994 to 20.49% in 1999 whilst stock market turnover ratio increased from 29.43% in 1994 to 33.04% in 1999 in Indonesia. The

period between 1999 and 2004 saw inflation consumer prices (annual %) in Indonesia declining by 14.25 percentage points, further decreased by 1.43 percentage points, from 6.24% in 2004 to 4.81% in 2009 before recording a 1.58 percentage points positive growth during the subsequent five year period to close year 2014 at 6.39%. Stock market turnover ratio for Indonesia recorded a 3.17 percentage points negative growth, from 33.04% in 1999 to 29.87% in 2004, went up by 10.18 percentage points during the subsequent five year period (2004 to 2009) before plummeting by 18.55 percentage points, from 40.05% in 2009 to 21.49% in 2014. On the other hand, inflation consumer prices (annual %) for Malaysia marginally went down by 0.98 percentage points, from 3.72% in 1994 to 2.74% in 1999 whereas stock market turnover ratio increased by a massive 23.51 percentage points (from 6.49% in 1994 to 30.06% in 1999) during the same time period. The five year period between 1999 and 2004 saw inflation consumer prices (annual %) and stock market turnover ratio for Malaysia declining by 1.23 and 0.22 percentage points respectively. Inflation consumer prices (annual %) for Malaysia then plummeted by 0.94 percentage points, from 1.52% in 2004 to 0.58% in 2009 before recording a 2.56 percentage points positive growth during the subsequent five year period to end the year 2014 at 3.14%. The same trend applies to the stock market turnover ratio for Malaysia which decreased by 1.89 percentage points, from 29.84% in 2004 to 27.95% in 2009 before positively growing by 3.13 percentage points during the five year subsequent period (from 27.95% in 2009 to 31.08% in 2014).

Figure 1: Inflation trends for South-Eastern Asian Emerging Markets

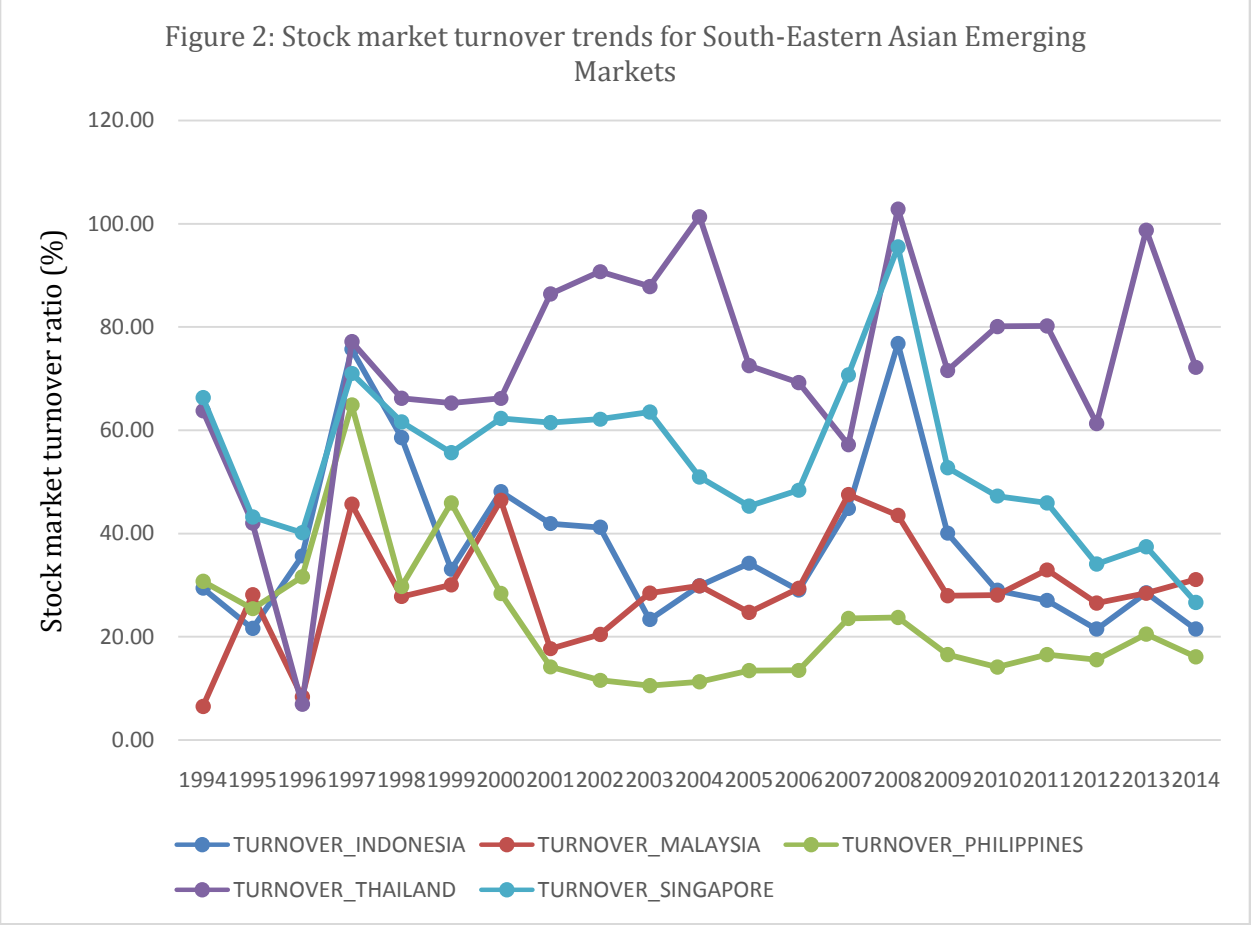


Source: UNCTAD (2016)

In Philippines, inflation consumer prices (annual %) was characterised by a general declining trend during the period from 1994 to 2014 whilst stock market turnover ratios were punctuated by a mixed trend during

the same time period. Inflation consumer prices (annual %) plummeted by 4.45 percentage points, from 10.39% in 1994 to 5.94% in 1999 before further declining by 1.11 percentage points during the subsequent five year period to end the year 2004 at 4.83%. Moreover, inflation in Philippines marginally declined by 0.61 percentage points, from 4.83% in 2004 to 4.22% in 2009 before recording another slight decrease of 0.11 percentage points during the five year subsequent period to end the year 2014 at 4.10%. Stock market turnover ratio went down from 45.95% in 1999 to 11.31% in 2004, increased by 5.28 percentage points during the subsequent five year period (2004 to 2009) and plummeted by 0.46 percentage points, from 16.58% in 2009 to 16.12% in 2014.

Figure 2: Stock market turnover trends for South-Eastern Asian Emerging Markets



Source: UNCTAD (2016)

In Thailand, inflation consumer prices (annual %) declined by 4.76 percentage points, from 5.05% in 1994 to 0.28% in 1999 whilst stock market turnover ratio increased by 1.49% during the same period (from 63.76% in 1994 to 65.25% in 1999). Both inflation and stock market turnover for Thailand went up by 2.47 and 36.09 percentage points respectively during the period from 1999 to 2004. Inflation measured by consumer prices (annual %) marginally decreased by 0.63 percentage points, from 2.76% in 2004 to 2.13% in 2009 whilst stock market turnover ratio massively declined by 29.78 percentage points during the same time frame (from 101.34% in 2004 to 71.56% in 2009). Thailand saw inflation rate further declining by 0.24 percentage points whilst stock market turnover ratio increased by 0.61 percentage points during the subsequent five year period to end the year 2014 at 1.89% and 72.17% respectively. Singapore was characterised by a decline in both inflation and stock market turnover ratio during the five year period from 1994 to 1999. The latter went down from 3.10% in 1994 to 0.02% in 1999 whereas stock market turnover ratio plummeted by a huge margin, from 66.29% in 1994 to 55.66% in 1999. Moreover, inflation for Singapore increased by 1.65 percentage points, from 0.02% in 1999 to 1.66% in 2004, declined by 1.06 percentage points from 2004 to 2009 and then surged by 0.41 percentage points, from 0.60% in 2009 to 1.01% in 2014. On the other hand,

stock market turnover ratio of Singapore decreased by 4.71 percentage points, from 55.66% in 1999 to 50.95% in 2004, marginally increased by 1.80 percentage points during the subsequent five year period (2004 to 2009) before massively declining by 26.10 percentage points, from 52.74% in 2009 to 26.65% in 2014.

3. Estimation technique, results discussion and interpretation

This section covers data, data sources, variables used, the estimation technique employed, results summary, discussion and interpretation.

Data and variables used: This study used financial development as a dependent variable, inflation as an independent variable and control variables (trade openness, economic growth and FDI) ranging from 1994 to 2014 for South-Eastern Asian emerging markets. Inflation consumer prices (annual %) was used as a measure of inflation, stock market turnover ratio as a proxy for stock market development, domestic credit by banks to the private sector (% of GDP) as a proxy for banking sector development whilst outstanding domestic private debt securities as a ratio of GDP was used as a measure of bond market development. Following Nobakht and Madani (2014), this study converted all the data into natural logarithms before any threshold regression analysis could be done in an attempt to do away with data abnormality and auto-correlation bias.

Economic growth, FDI and trade openness were used as control variables, consistent with empirical evidence. For example, Saleryd and Vlachos (2002); Huang and Temple (2005) argued that openness of the economy spur financial development through attracting foreign and domestic investment into the financial system. Shahbaz and Rahman (2010) showed that FDI inflows boost financial markets competition thereby making them more efficient. Levine (1997) revealed that FDI improve both stock market and banking sector liquidity as it brings along huge capital injection into the host country. Proponents of the demand following hypothesis such as Robinson (1952) and Patrick (1966) postulated that economic growth increases the demand of financial services which lead to the introduction of new financial sector firms in order to meet the increased demand for financial services. The secondary data for the dependent, independent and control variables was obtained from UNCTAD (2016) and World Bank (2015), databases which are quite reputable internationally. In line with literature, inflation is expected to negatively influence financial development whilst trade openness, FDI and economic growth are expected to have a positive impact on financial development. The general financial development model for this study is summarised in equation 1.

FD=f(INFLATION, ECONOMIC GROWTH, TRADE OPENNESS, FDI). [1]

Whereas inflation is the chief determinant of financial development in this paper, other factors such growth, openness and FDI have also been identified by literature as significant explanatory variables of financial development.

Econometric estimation framework: Bick (2010) critiqued the original static panel threshold regression model founded by Hansen (1999) by arguing that failure to include the regime intercepts in the model cause variable omitting bias in the estimation of threshold co-efficients and the regression slope. The general model of Bick (2010) is as follows:

$$y_{it}=\mu_i+\beta_1 x_{it}I(x_{it}\leq\gamma)+\delta_i I(x_{it}\leq\gamma)+\beta_2 x_{it}I(x_{it}>\gamma)+\varphi z_{it}+\varepsilon it \quad [2]$$

y_{it} is the ratio of economic growth as a ratio of GDP for country i at time t, μ_i is the specific country fixed effect; β_1 and β_2 are the slope coefficients, γ represents the threshold level, φz_{it} stands for control variables, z_{it} represents a vector of conditional information set of explanatory regressors which include the exogenous variables. X_{it} is threshold variable which is exogenous whilst δ_i stands for the regime intercepts. I stands for the indicator function for non-linearity between inflation and growth whilst (εit) is the error term. The theoretical foundation of Bick (2010) model is that there is a maximum level of inflation beyond which

economic growth is negatively influenced. Similarly, the theoretical bedrock of this study is that there is a maximum threshold level of inflation rate above which financial development begins to be negatively affected. Modified equations describing the relationship between inflation and financial development is as follows, consistent with Bick (2010) approach.

$$STOCK_{it}=\mu_i+\beta_1 Infl_{it}I(Infl_{it}\leq\gamma)+\delta_i I(Infl_{it}\leq\gamma)+\beta_2 Infl_{it}I(Infl_{it}>\gamma)+\varphi z_{it}+\varepsilon it \quad [3]$$

$$BANK_{it}=\mu_i+\beta_1 Infl_{it}I(Infl_{it}\leq\gamma)+\delta_i I(Infl_{it}\leq\gamma)+\beta_2 Infl_{it}I(Infl_{it}>\gamma)+\varphi z_{it}+\varepsilon it \quad [4]$$

$$BOND_{it}=\mu_i+\beta_1 Infl_{it}I(Infl_{it}\leq\gamma)+\delta_i I(Infl_{it}\leq\gamma)+\beta_2 Infl_{it}I(Infl_{it}>\gamma)+\varphi z_{it}+\varepsilon it \quad [5]$$

Where $STOCK_{it}$ is the stock market development for country i at time t, $BANK_{it}$ stands for banking sector development for country i at time t and $BOND_{it}$ is the bond market development for country i at time t. The independent variable $Infl_{it}$ represents inflation for country i at time t.

Following Bick (2010), the author eliminated the specific fixed effects using the standard within transformation method before employing the ordinary least squares (OLS) to estimate the threshold levels which must be reached before inflation begins to retard or negatively affect financial sector development.

4. Results and interpretation

Table 2 shows the results of the static panel threshold estimation technique.

Table 2: Results of the Bick' (2010) panel threshold regression model

	Model 1:STOCK= f(inflation, controls)			**Model 2:BANK= f(inflation, controls)**		
Threshold Estimate	5.95%. C.I.[4.43%-5.99%]			5.91%. C.I.[5.88%-6.17%]		
	Coefficient	Std. error	T statistic	Coefficient	Std. error	T statistic
β_1	0.2668	0.4782	0.5584	0.5003**	0.2401	2.0837
β_2	0.3671	0.8926	0.4113	0.1937	0.2197	0.8817
δ_i	-1.3892	0.9953	-1.3958	-1.0027	0.7027	-1.4269
Growth	0.3346	0.9372	0.3570	0.0031	0.0484	0.0641
Openness	-0.0626	0.9028	-0.0693	-0.2017	0.9022	-0.2236
FDI	0.2448*	0.1286	1.8974	0.4902**	0.2196	2.2322
	Model 3: BOND= f(inflation, controls)					
Threshold Estimate	4.89%. C.I.[4.47%-5.01%]					
	Coefficient	Std. error	T statistic			
β_1	0.6639	0.5823	1.1401			
β_2	0.0327	0.0723	0.4523			
δ_i	-0.9804	0.1710	-5.7333			
Growth	0.2217	0.9871	0.2246			
Openness	0.6739**	0.2902	2.3222			
FDI	0.4218	0.3018	1.3976			

*/**/*** indicate 10%/5%/1% respectively

Inflation rate below or equal to the threshold of 5.95% positively influenced stock market development whilst inflation above the same threshold level more positively boosted stock market development in the South-Eastern Asian emerging markets. In other words, a 1% increase in inflation at levels less or equal to a 5.95% threshold led to a 26.68% increase in stock market development whilst a 1% in inflation at levels above the threshold resulted in stock market development going up by 36.71%. This is contrary to most literature on this subject which says that higher levels of inflation negatively affect financial development.

However, this finding still resonate with Tobin (1965) whose study suggested that that high inflation increases investment levels as consumers move their portfolios from money assets to capital assets to shield themselves against the effects of inflation. The finding is also consistent with English (1999) who argued that households in an inflationary environment replace transaction services for money balances hence improving not only the rate at which financial services are produced but the overall financial development.

Inflation levels below or equal to a threshold of 5.91% positively and significantly impacted on banking sector development whereas inflation levels above the threshold positively but non-significantly influenced banking sector development in South-Eastern Asian emerging markets. The size of the co-efficients shows that the levels of inflation below or equal to the threshold more positively affected banking sector development whereas the levels of inflation above the threshold had a smaller positive and insignificant impact on banking sector development in South-Eastern Asian emerging markets. Moreover, inflation levels below or equal to the threshold of 4.89% had a more positive impact on bond sector development whilst inflation levels above the threshold had a weak positive influence on bond sector development in South-Eastern Asian emerging markets. The results of the relationship between inflation and financial development support literature (Umar et al., 2014) which says that higher levels of inflation do not necessarily negatively affect financial development but reduce the rate of financial development. The findings also resonate with Boyd et al. (2001) whose study revealed that inflation below a certain threshold had a positive influence on financial development whilst inflation above a threshold negatively affected financial development in developing countries. Economic growth and FDI positively influenced banking sector, bond and stock market in line with literature (Saleryd & Vlachos, 2002; Huang & Temple, 2005; Shahbaz & Rahman, 2010; Levine, 1997). Openness contradicted the theory in model 1 and 2 and agreed with literature in model 3. The possible reason for the contradiction could be that high levels of openness could have allowed or facilitated some investors to offload their shares at the local stock exchange.

5. Conclusion

This study investigated the existence of inflation thresholds in the inflation-financial development nexus in the South-Eastern Asian emerging markets using the static panel threshold regression framework proposed by Bick (2010). The negative impact of inflation on financial development is a settled matter in both theoretical and empirical literature. However, this paper was prompted by recent literature (Boyd et al., 2001; Abbey, 2012; Kim and Lin, 2010) which suggested the relationship between inflation and financial development is not linear and is characterised by inflation threshold levels. The study found out that lower levels of inflation is good for financial development whilst higher levels of inflation slows down the rate at which banking sector, stock and bond markets develops in line with Kim and Lin (2010) who found that it is only when inflation exceeds a certain minimum threshold level that informational frictions in the credit markets begin to overall reduce financial sector development. They also concur with Gillman and Kejak (2007) whose study noted that higher levels of inflation slowed the rate of financial sector's efficiency and effectiveness in performing its intermediary function in Iran. The authorities in the South-Eastern Asian emerging economies are therefore urged to implement macroeconomic policies that ensure inflation rates do not exceed the threshold levels estimated by this study in order to guarantee sustainable growth of their financial systems. Economic growth policies and FDI attraction strategies should be implemented by the South-Eastern Asian emerging markets if they intend to develop their financial markets.

References

Abbey, E. N. (2012). Inflation and financial development: Evidence. *American Journal of Economics and Business Administration,* 4(4), 227-236.

Aboutorabi, M. A. (2012). The effect of inflation on financial development: The case of Iran. *Journal of Basic Applied Sciences,* 2(8), 8394-8400.

Alimi, R. S. (2014). Inflation and financial sector performance: The case of Nigeria. *Timisoara Journal of Economics and Business,* 7(1), 55-69.

Almalki, A. & Batayneh, K. (2015). The relationship between inflation and financial development in Saudi Arabia. Proceedings of the Australasian Conference on Business and Social Science 2015, Sydney (in partnership with The Journal of Developing Areas), 421-427.

Barugahara, F. (2012). Financial development and income inequality: Does inflation matter? *Applied Economics Quarterly,* 58(3), 193-212.

BenNaceur, S. & Ghazouani, S. (2005). Does inflation impact on financial sector performance in the MENA region? *Review of Middle East Economics and Finance,* 3(3), 219-229.

Bick, A. (2010). Threshold effects of inflation on economic growth in developing countries. *Economic Letters,* 108(2), 126-129.

Boyd, J. H., Levine, R. & Smith, B. D. (2001). The impact of inflation on financial sector performance. *Journal of Monetary Economics,* 47(2), 221-248.

English, W. B. (1999). Inflation and financial sector size. *Journal of Monetary Economics,* 44(3), 379-400.

Gillman, M. & Kejak, M. (2007). Inflation, financial development and human capital based endogenous growth: An explanation of ten empirical findings. Centre for dynamic macroeconomic analysis, Conference Papers 2007, Number CDMC07/03.

Hansen, B. E. (1999). Threshold effects in non-dynamic panels: Estimation, testing and inference. *Journal of Econometrics,* 93(2), 345-368.

Haslag, J. & Koo, J. (1999). Financial repression, financial development and economic growth, Federal Reserve Bank of Dallas, Working Paper Number 99-02.

Huang, Y. & Temple, J. (2005). Does external trade promote financial development? CEPR Discussion Papers Number 5150.

Ikhide, S. (1992). Financial deepening, credit availability and the efficiency of investment: Evidence of selected African countries. Development Research Paper Series, Research Paper Number 2.

Khan, W. A., Shahid, M., Bari, R., Anam, W., Shehzad, N. & Siddique, S. (2014). Impacts of inflationary trends on banks' performance (Large Banks Segment) in Pakistan. *International Journal of Accounting and Financial Reporting,* 4(1), 296-305.

Kim, D. H. & Lin, S. C. (2010). Dynamic relationship between inflation and financial development. *Macroeconomic Dynamics,* 14(3), 343-364.

Levine, R. (1997). Stock markets, economic development and capital control liberalisation. *Perspectives*, 3(5), 1-7.

Manoel, B. (2007). Inflation and financial development: Evidence from Brazil. Proceedings of the German Development Economics Conference, in cooperation with Research Committee on Development Economics, German Economic Association, No. 1.

Mostafa, S., Saba, M., Malihe, H. & Hoda, Z. S. (2012). The impact of inflation on financial sector performance in Iran. *Quarterly Journal of Applied Economics Studies,* 1(2), 177-215.

Nobakht, M. & Madani, S. (2014). Is FDI spill-over conditioned on financial development and trade liberalisation: Evidence from UMCs. *Journal of Business and Management Sciences*, 2(2), 26-34.

Odhiambo, N. M. (2009). Finance-growth nexus and inflation dynamics in Kenya: An empirical investigation. *Savings and Development,* 33(1), 7-25.

Ozturk & Karagoz, K. (2012). Relationship between inflation and financial development: Evidence from Turkey. *International Journal of Alanya Faculty of Business,* 4(2), 81-87.

Patrick, H. T. (1966). Financial development and economic growth in underdeveloped countries. *Economic Development and Cultural Change,* 14(2), 174-189.

Robinson, J. (1952). The generalisation of the general theory: The rate of interest and other essays, London: MacMillan Publishing Company, 67-142.

Rousseau, P. L. & Wachtel, P. (2000). Inflation, financial development and growth. Economic Theory, Dynamics and Markets: Essays in Honour of Ryuzo.

Rousseau, P. L. & Wachtel, P. (2002). Inflation thresholds and the finance-growth nexus. *Journal of International Money and Finance,* 21(6), 777-793.

Rousseau, P. L. & Yilmazkuday, H. (2009). Inflation, financial development and growth: A trilateral analysis. *Economic Systems,* 33(4), 310-324.

Saleryd, H. & Vlachos, J. (2002). Markets for risk and openness to trade: How are they related? *Journal of International Economics,* 57(2), 369-395.

Schreft, S. L. & Smith, B. D. (1997). Money, banking and capital formation. *Journal of Economic Theory,* 73(1), 157-182.

Shahbaz, M. & Rahman, M. M. (2010). Foreign capital inflows-growth nexus and the role of domestic financial sector: An ARDL co-integration approach for Pakistan. *Journal of Economic Research*, 15(3), 207-231.

Tobin, J. (1965). Money and economic growth. *Econometrica,* 33(4), 71-84.

Tolulope, A. O. & Oyeyinka, O. L. (2014). The impact of inflation on financial sector performance: A case study of Sub-Saharan Africa. *Indian Journal of Finance,* 8(1), 43-50.

UNCTADSTAT (2016) Report.

Umar, M., Maijama, D. & Adamu, M. (2014). Conceptual exposition of the effect of inflation on bank performance. *Journal of World Economic Research,* 3(5), 55-59.

Wahid, A. N. M., Shahbaz, M. & Azim, P. (2011). Inflation and financial sector correlation: The case of Bangladesh. *International Journal of Economics and Financial Issues,* 1(4), 145-152.

World Bank . (2015). World Development Indicators published by the World Bank, Washington D.C.

Zaman, K., Ikram, W. & Ahmad, M. (2010). Impact of financial development on inflation: Evidence from Pakistan. *Pakistan Journal of Social Sciences,* 30(1), 31-44.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Effect of Agency Costs on Executive Compensation in South African Commercial Banks

Odunayo Magret Olarewaju*, Stephen Oseko Migiro, Mabutho Sibanda
University of KwaZulu- Natal, Westville Campus, Durban, South Africa
olarewaju_odunayo@yahoo.com*, migiro@ukzn.ac.za, sibandam@ukzn.ac.za

Abstract: This study examines the roles of agency cost (monitoring and bonding cost) on compensation of managers with a view from the managerial-power approach to agency cost. We modelled managers' compensation and agency cost of banks to emphasise the potential influence of agency cost on managers' compensation. A Panel Generalised Least Square model was estimated on four largely-controlled commercial banks in South Africa over the period 2010-2015. The result shows that shareholders' fund, management share option, monitoring and bonding cost were strongly significant in explaining the managers' compensation in the banks. Therefore, in the South African banking sector, compensation of managers should be based on their managerial power and not only on the principle of optimal-contracting. It is recommended, among others, that monitoring and bonding costs in the South African banks should be re-emphasised and strictly committed to. This should be so because there are direct effects of these costs on managers' compensation which might be the reason for the persistent agency problem in the banks.

Keywords: *Managers' option, Monitoring cost, Bonding cost, Executive compensation, Managerial-Power Approach*

1. Introduction

Financial intermediaries are unique institutions in all economies that are operating a free-market system. For such institutions to be able to act in their full capacity as intermediaries; they need to form agency relationships. The banking sector as a major financial intermediary is not excluded from this type of relationship as all its activities are run in view of the agency relationship in which the parties involved are the owners (shareholders) and the managers (agents). Jensen's theory of firm defined agency relationship as a contract between two people known as principal and agent, in which the principal engages the agent to render some services on its behalf by delegating a fractional decision-making power to the agent. It is expected that the agent should at all costs render a steward account to the principal per time, but due to the fact that both principal and agent are 'utility-maximisers' (Collier & Agyei-Ampomah, 2006), it is rational to believe that the agent will be sub-optimal and will not be acting solely in the principal's interest. Agency problems emanate in the banking sector from the conflicting interests between the shareholders and the agents due to, for example, information asymmetries and uncertainties, failure to allow managers to accept projects that will yield positive net present value, discrepancies in the perquisites either financial or non-financial paid to the managers, responsibility allocation, management and collective production (Kantarelis, 2007). Therefore, agency costs can be seen as the loss in value for shareholders caused by interest divergences between the owners and the managers. In order to limit the divergence in the interests of these parties, owners have accepted the need to incur monitoring costs utilising diverse ways so as to woo the interest of the managers to maximise their wealth by strictly following up their activities. Also the managers admits to expend some resources known as bonding costs in order to show their interest in the betterment of the owners, maximisation of their wealth, and pledge to compensate the owners if they defaults being optimal to the ultimate goal of the firm. Nevertheless, for banks to ensure that managers maximise shareholders' wealth, it is necessary for the shareholders to incur the costs of monitoring and for managers also to incur bonding costs. Generally, when a firm is at zero agency cost, there is doubt that manager' make optimal decisions in the sole interest of the shareholders; hence, agency costs are inevitable (Ang et al., 2000).

According to Masulis and Trueman (1988), severe conflict of interests between managers and owners always exists despite the full right of shareholders to participate in, and exercise voting rights during annual general meetings and in the appointing and dismissing of managers, appointing auditors, and accepting or rejecting annual reports and accounts. These conflicts arise due to the following major reasons and consequently cause agency costs for firms. Firstly, managers prefer less work with higher levels of consumption as they have the assurance that their remuneration with their quota in the value of the company's shares will not decrease; secondly, managers, due to the possibility of bankruptcy and loss of job opportunities, invest the companies'

capital in less risky projects that will yield lower financial leverage, so as to avoid managerial capital and portfolios losses; thirdly, managers prefer quick returns on investment that emanate from short-term investment; and lastly, managers always take actions and decisions that will avoid reductions in the level of employment so that the lines of reporting they maintain will not change. Due to the fact that the banking sector cannot do without the activities of these managers, it is necessary to ascertain for the factors that can reduce compensation and still increase the value of the firm. Murphy (1985) affirms that managers' remuneration is correlated with firm size, and managers always take decisions that will increase firm size even if it is not in the interests of shareholders. All these inclinations cause contradictions in the interests of both the managers and the shareholders, in that most often, managers prefer value expansion and owners desire maximisation of their share value. Several mechanisms have been institutionalised to solve these agency problems (conflict of interests) and the most influential among these is the use of managers' incentives (executive compensation). The aim of this incentive is to maintain goal congruence between the management and the owners by tying the wealth of the executives to the shareholders' wealth.

Executive compensation has for a long time attracted the attention of scholars in the area of financial economies. An in-depth study of the literature is still lacking, as executive compensation is viewed as a solution to agency problems but surprisingly it is one of the main products of agency problems that banks incur in monitoring and bonding costs, so as to ensure that compensation will not hinder the value of the bank (Bebchuk & Fried, 2003). Numerous studies have been done on agency costs and executive compensation in the context of the banking and non-banking sector, to mention a few (see for example, Mohammed, 2013; Brockman & Unlu, 2009; Chetty & Saez, 2007; Shah & Bhutta, 2013; Brau, 2002; Laiho, 2011; Neri, 2004; Manos, 2003; Claus & Kim, 2004). Surprisingly, the attention of these researchers focused on the effect of ownership structure on agency costs, be it agency costs of debt or equity, and they viewed executive compensation as a remedy for agency problems neglecting the causes of agency costs, how they can be minimised in a firm, and the fact that executive compensation compounds the agency problem. For instance, managers may engage themselves via their compensation in empire building (Fama, 1980), and they can also divert the excess cash when the firm does not have profitable investment opportunities to their personal purse (Jensen & Meckling, 1976). Also, managers may entrench themselves in the positions they occupy and owners find difficult to fire them whenever they fail to meet the target of the firm (Bebchuk & Fried, 2003).

The question now is to what effect are the agency monitoring and bonding costs of banks on the compensation of managers since Jensen and Meckling (1976) affirmed that firms whose owners' wealth will be fully maximised must definitely incur monitoring and bonding costs. This is because the marginal benefits are always higher than the marginal costs. In the banking industry, there are some executive directors earning huge compensation despite the fact that the banks are not growing at the pace of their asset base. Managers find it interesting to incur bonding costs on behalf of the bank, because reducing agency costs will increase the bank value and this will cause a net increment in their wealth, which they consider more valuable than the perquisites they would have received. In Jensen's theory of the firm, bonding expenditure is assumed to attract the same rewards as the monitoring expenditure. Generally, it is more beneficial to the managers to incur these costs, even though it will reduce their pecuniary benefits, but in the long run, their gains from the increased value of the bank are always higher. This is because the cost function holding bonding and monitoring costs is such that the consequent benefit is always higher than the cost (Ang et al., 2000). In financial economics, the relationship between the agency problem and executive compensation can be approached in two ways: the optimal-contracting approach and the managerial-power approach. Under the first approach, Core, Guay and Larcker (2003) posit that managers are assumed to set up their compensation incentive in the sole interest of the shareholders and to maximise their wealth fully, hence, executive compensation is deemed as an instrument mitigating the agency problem in firms. But, the second approach, which is the main basis of this study, regards executive compensation not only as an instrument that can reduce the agency problem, but, as a major cause of the agency problem in companies, including in the banking industry.

Therefore, this study is unique and different from other studies by diverting attention from the ownership aspect of agency costs and digging deep into what makes up these costs, their roles in the managers executive compensation, and inquiring if these costs have been able to minimise the agency problem in South African

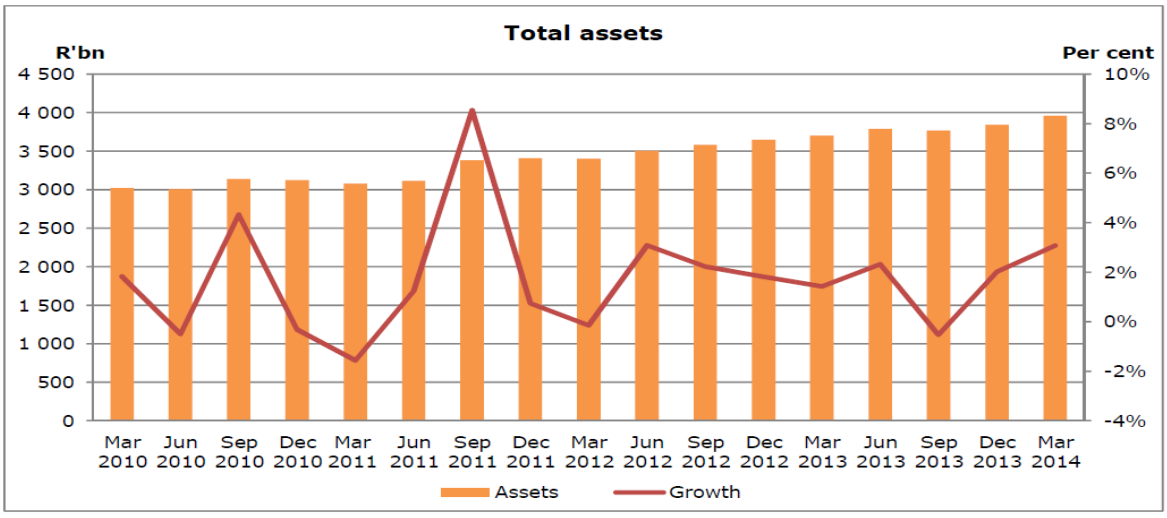
banks having viewed executive compensation as one of the factors compounding the agency problem. In the course of our research, we have not found any such a study that has been done in the context of the banking industry, let alone on South African banks. Therefore, investigating the effect of agency monitoring and bonding costs on executive compensation in the banking context is ground-breaking in so far as the banking literature on the agency problem and costs is concerned.

2. Literature Review

Overview of South African Banking Industry: The financial services sector worldwide comprises banks, stock brokers, insurance companies, and pension funds with the primary assignment of rendering a wide range of services that enable job creation and the building of infrastructure, which leads to economic growth and sustainable development. According to a report on South African Reserve Bank (Ifeacho & Ngalawa, 2014), the banking sector in South Africa represents over 50% of the total assets of the entire financial sector, and the sector represents 20% of gross domestic product (GDP), with an asset base of over R6 trillion. The sector employs approximately 10% of the entire South African working population, and its tax payment contributes over 15 % of GDP per year. The sector can be described as oligopolistic in nature with four largely-controlled banks, which have the largest market share of almost 82% of the total banking sector as at March 2014 (Standard-25%, Almagated Bank of South Africa-20%, First Rand Bank-20%, Nedbank-17% and others 18%). The South African banking industry currently comprises 17 registered banks, 14 local branches of foreign banks, 2 mutual banks, 2 cooperative banks and 43 foreign banks operating under approved local representative offices. The South African banking sector is regulated and licensed under the Banking Act of 1990. It is a well-regulated sector whose operations are effectively overseen to maintain the global rating it has acquired. Due to this achievement, they operate under a range of Legislation that includes: the National Credit Act; the Competition Act; the Banking Act; the Financial Intelligence Centre Act (FICA); the National Payment System Act; the Financial Intermediary and Advisory Services Act (FAIS); the Home Loan and Mortgage Disclosure Act and the Consumer Protection Act, to mention a few. Also, South African banks have been mandated to comply with the Corporate Governance King Code practices, the newly concluded Basel III, and with ombudsmen tasked with instant and effective dispute resolution between institutions and their customers in an impartial, fair and confidential manner so as to ensure that maximisation of owners' wealth, which is their ultimate aim, is achieved.

This industry experienced a tier 2 banking crisis in 2002, due to the collapse of Saambou Bank which led to the closure of BOE bank and other smaller banks, which have not sought a renewal of their licences. Despite the effect of the 2007-2009 global economic crises, South Africa among all the countries in Sub-Saharan Africa (SSA) has a developed, globally competitive and well-regulated banking system in line with the banking sector in the industrialised countries. Even, the Banking Association of South Africa classified the sector as a very healthy sector. Although, over the past decade, the South African banking sector has been witnessing continuous change, it has attracted a lot of interest from overseas countries with respect to establishing foreign banks in the country, while the major banks have shares acquired by foreign shareholders. Recently in the 2013/2014 edition of the World Economic Forum Global Competitiveness Survey, the South African banking sector ranked third out of 148 countries. There have been a number of changes in policies guiding the banks, taking cognisance of the regulatory environment, product offerings, diversification into other financial activities aside from the traditional role, and an increase in financial deepening with the number of participants increasingly resulting in a greater competitive and stability level from smaller banks, which have targeted low-income citizens and reached out to the previously unbanked market. Figure 1 depicts the total assets of South African banks and their growth level, which calls for the attention to reducing agency costs which lead to exorbitant operating costs hindering their growth. Although they are growing, it is not at the same pace as their assets. Figure 1 depicts that the growth level is unstable and not moving at the same pace as the level of their assets. As at 2014, assets are at 8.2% and the growth rate is at 3.8%. The gap between these two performance indicators is accounted for by the operational costs, which are relatively high, among many other factors, if not, they should be moving at the same pace. It is only in September 2011 that the growth level of the banks rose higher than the assets level to the tune of 8.2% to 6.7%, which indicates the high efficiency level of South African banks in 2011.

Figure 1: Schematic Diagram of Asset and Growth of South African Banks (2010-2014)



Source: SA Reserve Bank

Evidence from the annual reports and accounts of banks has shown that the highest proportion of banks' operational costs is the managers' executive compensation and pecuniary benefits, which is expected by the owners to minimise agency conflict that leads to agency problems. The agency monitoring and bonding costs incurred by shareholders and managers, respectively, so as to minimise the managers' benefit and considerably reduce the operating costs that hinders the growth of the banking industry. It was affirmed by the Banking Association of South Africa in 2011 that pressing issues hindering profitability and revenue generation which later have an adverse effect on the entire growth of banks in South Africa, are mainly due to increasing costs and economic conditions. Hence, it is expedient and of great interest to inquire into the effect of these costs on the managers' compensation (post-investment wealth) that comprises the greater proportion of banking operating costs causing disparity in the level of assets and growth due to the higher proportion of the South African banking sector's contribution to the economic growth of the country.

Theoretical Framework of the Study: This study is anchored on the principal- agent theory of firms. This was the first theory to open the black box of the firm as speculated by Adams Smith in 18th century by conceptualising firms as a principal-agent relationship. According to this theory, frictions are bound to occur between owners of firms and the managers due to the asymmetric information between them, responsibility allocation and unending criticism of performances. Firms in an agency relationship whose ultimate aim is to maximise shareholders wealth must definitely have their principal incur monitoring costs and the agent incur bonding costs. It was affirmed by the theory that firms usually bear some costs due to agency problems inform of loss of potential gains and cost incurred to establish measures in order to reduce the loss of potential gains. It is combination of all these costs that this theory termed agency cost. Agency cost is the summation of monitoring costs, bonding costs and the residual loss, but the theory further explains that the residual loss is indirect and has no proxies in the report of firms, but it simply means the decrease in the firms' caused by the fact that they operate agency relationship. The theory of firm further states that firms stand to gain from incurring monitoring and bonding costs as the marginal benefit is always higher than the marginal cost (Jensen & Meckling, 1976). Also, according to the theory, managers prefer shareholders to expend costs on monitoring their activities and they too find it interesting to expend bonding costs in order to increase the value of the firm. Although their fringe benefits may reduce, they prefer the rising value of the firm than the perquisites they get, as in the long run, they both benefit from the rising value of the firm.

3. Methodology

Due to the fact that this study is a quantitative study, it falls under the descriptive research design and positivism paradigm using the deductive approach. The major four commercial banks with almost 82% of South African total banking sector market share, namely, Standard Bank, ABSA, First Rand Bank (FRB) and

Ned bank, are purposively used for this study for the period 2010 to 2015 due to the availability of their annual reports and accounts for the extraction of data. The variables of interest are sensitive data, which some other banks did not disclose in their annual reports and accounts. This study seeks to investigate the effect of agency bonding and monitoring costs in South African banks after the 2007-2009 global financial crisis as the trend of the growth of these banks since year 2010 has not been increasing proportionately with their huge asset base. Conducting the research till 2015 makes it an up-to-date study.

Data Sources: All the data used in this study are purely bank-specific in-depth data in either US dollars (USD) or ratio form. They are panel in nature. Panel data is considered suitable for this study because it gives a large number of data points that increases the degree of freedom and possibly decreases the co linearity problem among the regressors, and, hence, improves the efficiency of the econometrics estimates (Hsiao, 2003). The data were sourced from the annual reports and accounts of the banks accessible using the McGregor database, Bloomberg and the websites of some of the banks. Data in USD are naturally logged to enable the model to in the same base, and the annual data were converted to quarterly data so as to increase the frequency of the data, degree of freedom and enhance suitable regression analysis as posited by Armesto, Engemann and Owyang (2010) that conversion to produce higher frequency data generates no adverse effect but allows the standard regression technique to be explored. Thus, our data were averaged into quarterly data 2010Q01 to 2015Q04.

Model Specification: Following the work of Jensen and Smith (2000) and Ang et al. (2000) Jensen and Meckling Model on the role of monitoring and bonding cost is adopted in this study. This model is used because of its distinct features such as:

- It is one of the most cited models in the finance papers; approximately 60,000 researchers have cited the model (Baiman, 1990; Schulze et al., 2001).
- Jensen and Meckling developed the agency theory of firms and pictured it mathematically in the agency cost model to suit diverse financial institution dimensions such as ownership structure, agency cost of debt and equity (Ang et al., 2000; Fama & Jensen, 1983).
- It provides reasons for some firms not maximising owners' value and it is the model that is developed to set an optimal debt-equity mix which at the later end minimises total agency costs.
- Other theories such as Hill and Jones stakeholder-agency theory and the Barzel theory of firms referred back to Jensen and Meckling's agency theory and agency cost model.

The model:

Let α represents the proportion of owners' holding of shares and $1-\alpha$ be the proportion of owners' shares sold to the outsider where $0<\alpha<1.$

Let the payment made by the outsider for the $(1-\alpha)$ shares sold to them be represented by R_0 and the value of the owners' share of the firm on α proportion of shares is represented by R_1.

$R_1 = \alpha V(F,\alpha)$ ..... (i)

$R_0 = (1-\alpha)V(F,\alpha)$ .....(ii)

Where $V(F,\alpha)$ represents the value of the firm given that the insider value of share is α with managers perquisite market value of F.

The summation of equation i and ii is the owners' total wealth after selling $(1-\alpha)$ of the shares to outsiders, which is the shareholders fund for banks.

$R_0 + R_1 = Z$ .....(iii)

$(1-\alpha)V(F,\alpha)+\alpha V(F,\alpha) = Z$ .....(iv)

Z represents the owners' total wealth after selling $(1-\alpha)$ of the shares to the outsider.

F is the value of the perquisites managers received but it is expected to reduce as the firm incurs monitoring and bonding costs. That is, the highest level of perquisite managers can receive for different levels of monitoring and bonding costs is $F(M,B,\alpha)$.

According to this theory, V^* is the value of the firm when there is no expense on bonding and monitoring costs; and the insiders are the sole shareholders of the firm. It is a function of the value of investment I and the current market value of the managers expenditure given a non-pecuniary benefit F.

$$V^* = V(I, F) \quad \ldots\ldots(v)$$

The total value of the firm for the sale of $(1-\alpha)$ of the total shares to the outsider is V' and the level of investment to outsiders is denoted by I' for instance, investment securities in a banking context.

Since the current value of the expected firm monitoring and bonding expenditures reduces the value of any given claim to the outside investors, the investors will take into consideration the monitoring and bonding costs in determining the maximum price they will pay for any further proportion of the firms' equity.

Therefore, the value of a firm given the fact that it incurs monitoring and bonding costs;

$$V = \bar{V} - F(M, B, \alpha) - M - B \quad \ldots\ldots(vi)$$

Where $\bar{V}$ represents the value of the firm when the manager's expenditure on fringe non monetary benefits is zero (0),

M is the monitoring cost incurred by the shareholders and B is the bonding cost incurred by the managers.

The difference between the value of the shares totally owned by the firm and the value of the shares to the outsider is referred to as the managers' value of the shares, that is, the managers' option ($V^* - V' = V''$).

Also the difference between the firms' total investment and the investment to outsiders is known as the managers' quota of investment $(I^* - I' = I'')$.

Hence, the managers' post investment investment-financing wealth (compensation) is;

$$Z + V'' - I'' - M'' - B'' \quad \ldots\ldots(vii)$$

In the context of the banking sector, the managers' post-investment-financing wealth is the managers' executive compensation or remuneration (EXC), Z is the total shareholders fund (SHF), V'' is the managers' share option (MOP), I'' is investment securities (INS), M'' *and* B'' are the vectors of monitoring costs (MC) and bonding costs (BC) incurred on, and by the managers to ensure the agency cost of the bank is reduced.

Therefore; $EXC'' = Z + V'' - I'' - M'' - B'' \quad \ldots\ldots(viii)$

To write the model in an econometric form and to reflect a panel equation, stochastic error term U_{it}, which is the proportion of variations in the managers' wealth that cannot be explained by the explanatory variables, is introduced:

$$EXC_{it} = \alpha_0 + SHF_{it} + MOP_{it} - INS_{it} - \sum_{i=1}^{n} MC_{it} - \sum_{i=1}^{n} BC_{it} + U_{it} \quad \ldots\ldots(ix)$$

Where, $\sum_{i=1}^{n} MC_{it}$ is the summation of the monitoring cost incurred by shareholders [that is, audit fee (AUD), and leverage ratio of the bank (See Li & Cui, 2003; Ang *et al.,* 2000).

$\sum_{i=1}^{n} BC_{it}$ is the summation of the of bonding cost incurred by the managers on behalf of the bank [i.e. licence and contractual guarantee fee (LGF), and dividend paid (DIV) (see Manos, 2003)

Explicitly;

$$EXC_{it} = \alpha_0 + \beta_1 SHF_{it} + \beta_2 MOP_{it} - \beta_3 INS_{it} - \beta_4 LEV_{it} - \beta_5 AUD_{it} - \beta_6 LGF_{it} - \beta_7 DIV_{it} + U_{it} \ldots(x)$$

Hence,

$$\ln EXC_{it} = \alpha_0 + \beta_1 \ln SHF_{it} + \beta_2 \ln MOP_{it} - \beta_3 \ln INS_{it} - \beta_4 LEV_{it} - \beta_5 \ln AUD_{it} - \beta_6 \ln LGF_{it} - \beta_7 DIV_{it} + U_{it} \quad \ldots\ldots(xi)$$

α_0 is the constant introduced to the model and all variables are in logarithm form except LEV and DIV that are in their natural form.
U_{it} stands for the normal stochastic error term. It represents all other bank regulatory framework and market-related factors that randomly affect managers' compensation not captured by the explanatory variables over t. $U_{it} \approx i.i.dN(0, \sigma_u^2)$.

Variable Description: Where $\ln EXC_{it}$ denotes the natural logarithm of the managers' remuneration. $\ln SHF_{it}$ refers to the natural logarithm of the total shareholders' fund. $\ln MOP_{it}$ is the natural logarithm of the total managements' share option. $\ln INS_{it}$ is the natural logarithm of the outsider share. $\ln AUD_{it}$ refers to the natural logarithm of the auditors' fee and remuneration. $\ln LGF_{it}$ stands for the natural logarithm of licence and contractual guarantee fees. LEV_{it} stands for the leverage ratio, which is expressed as $\frac{Totaldebt}{Totalequity} * 100$. DIV_{it} stands for the dividend payment ratio by the bank. All variables across each bank i over the years t.

***A priori* Expectation:** According to Ang et al. (2000), Manos (2003), Li and Cui (2003), Khan et al. (2012) and Jensen's principal-agent theory of the firm, $\beta_1 \& \beta_2 > 0$, while $\beta_3 - \beta_7 < 0$. All these variables are expected to either increase or reduce managers' executive compensation and, hence, minimise agency problems affecting the value of the bank so that shareholders' wealth will be fully maximised irrespective of the policy adapted to either payout or to retain.

4. Model Estimations and Data Analysis

The model specified above is estimated using panel data estimation techniques. The use of panel data helps in increasing the sample size, increases the degrees of freedom significantly, reduces the presence of co linearity among the regressors, and hence, improves the efficiency of output derived from econometric estimates (Hsiao, 2005). This is of great impact in having a better understanding of the roles agency monitoring and bonding costs play on the managers' executive compensation in South African commercial banks. The pooled regression model, fixed effects model (FEM) and the Generalised Least Square (GLS) with weighted statistics are estimated.

Why Pooled Ordinary Least Square, Fixed Effect Estimations and GLS?

- According to Gujarati (2003), they are simple and preferable for large data sets because of their BLUE characteristic and the fact that they are computationally intractable.
- Fixed effect estimation cannot be biased because it controls for all the 'time-invariant' characteristics of each cross section (Torres-Reyna, 2007).
- GLS allows errors to be correlated and residual variances to differ.

The general framework of the OLS model;

$L_{it} = \beta_i + \beta K_{it}' + \varepsilon_{it}$ ....(xii),

K_{it}' is the vector of the explanatory variables. $i = 1, \ldots, M$. $t = 1, \ldots, N$. d_i is the unobserved bank (cross-sectional) specific variable that is assumed to be constant over time.

Pooled Regression Model; $L_{it} = \beta + \beta K_{it}' + \varepsilon_{it}$ ....$(xiii)$

It is assumed that there is no unobserved individual heterogeneity, that is, $E(K_t, \varepsilon_t) = 0$ for all time t

Fixed Effect Model; $L_{it} = \beta_i + \beta K_{it}^{'} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (xiv)$

FEM treats β_i as a variable that is partially correlated with the observed independent variables and it solves the problems of omitted variable bias.

Generalised Least Square: The GLS model is a generalisation of OLS regression, which relaxes the assumption of ordinary least square that errors are uncorrelated and homoskedastic in nature. That is, OLS assumes that Var(ε) = $\sigma^2 I$, while GLS assumes that Var(ε) = $\sigma^2\Omega$. $\sigma^2\Omega$ is an n × n invertible and symmetric matrix whose off-diagonal elements show that errors are correlated for each pair of cases and whose elements that is diagonal in nature specify the error variances for each case. Privy to this change in underlying assumptions, GLS seems to be an unbiased estimator of β rather than OLS with the minimum sampling variance among the class of linear unbiased estimators (Green & Vavreck, 2008). According to Green and Vavreck (2008), the GLS estimator and its sampling variance are defined as:

$$\underline{\beta}_{GLS} = \left(K^{'}\Omega^{-1}K\right)^{-1} K^{'}\Omega^{-1}\underline{L} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (xv)$$

$$Var\left(\underline{\beta}_{GLS}\right) = \sigma^2 (K^{'}\Omega^{-1}K)^{-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (xvi)$$

Descriptive Analysis: Descriptive statistics describe the basic characteristics of data, the summary statistics of the scale variables and various data measures of a large data set in a summarised table.

Table 1: Summary Statistics of the Series: EXC, SHF, MOP, INS, LEV, AUD, LGF, and DIV

SERIES	EXC	SHF	MOP	INS	LEV	AUD	LGF	DIV
Mean	2.7740	5.0128	4.48534	3.6900	2.0815	2.8586	2.8338	1.5955
Median	2.7225	5.1186	4.50340	3.7676	2.4247	2.9592	2.8857	1.6130
Max	3.2178	5.6024	5.51943	4.3852	4.6454	3.4583	3.3991	2.1021
Mini	2.3163	3.9808	3.51023	2.8978	0.0881	1.9128	2.2799	1.0833
Std-De	0.2719	0.4727	0.43968	0.4927	0.9008	0.5102	0.3347	0.3011
Skewn	0.3492	-0.7694	0.00414	-0.4118	-0.4006	-0.7452	-0.3173	-0.0548
Kurto	1.7379	2.4379	2.93156	2.0505	2.5857	2.1650	1.9379	2.0042
Jarq-B	8.3233	10.735	0.01900	6.3191	3.2543	11.674	6.1227	4.0145
Prob	0.0156	0.0047	0.99054	0.0424	0.1965	0.0029	0.0468	0.1344
Sum	266.31	481.23	430.593	354.24	199.82	274.42	272.04	153.17
Sum Sq.	7.0232	21.226	18.3650	23.062	77.095	24.729	10.640	8.6139
Obs.	96	96	96	96	96	96	96	96

Source: Authors' Computation (2017) using E-Views 9.5 Statistical Package

The descriptive statistics of the variables as summarised in Table 1 show that all variables except executive compensation (EXC) and management share option (MOP) are positively skewed, indicating that they have a long right tail. However, from the statistics of kurtosis, it is depicted that the distribution of all the variables is flat relative to normal as their kurtosis is less than 3. The mean and median of the variables in the series falls within the maximum and minimum values. Moreover, the Jarque Bera statistics of most of the variables is greater than 5.99, except MOP, LEV and DIV, which indicates the acceptance of the null hypothesis of the model at 5% and, hence, there is evidence of normality in the model. Lastly, the probability value of most of the variables is less than 5%, which indicates the model from the series will be of a good fit for the regression analysis.

Panel Ordinary Least Square: The estimation of pooled OLS places restrictions on the heterogeneity/uniqueness of the cross-sectional units with the assumption that both the constant/intercept estimates and the regression coefficient are unique for all cross sections (banks) over time. In other words, all the observations are stacked without giving consideration to the cross-sectional or time-specific features, and

as such, the cross-sectional and time-related effects are ignored in the estimation. From the pooled LS result, investment securities, dividend paid and audit fee are statistically significant at 1% with only audit fee complying with the *a priori* expectation. MOP and LEV align with the *a priori* expectation but are not statistically significant. SHF and LEV are contrary to the a priori expectation but have an insignificant effect on managers' executive compensation in South African banks. The adjusted R^2 of 85% shows that only a 15% variation in managers' executive compensation was not explained by the examined variables and the probability value of 0.000 shows the model has a line of best fit.

Table 2: Pooled and Fixed Effect Estimations of the Series: SHF, MOP, LGF, LEV, INS, DIV, AUD with Dependent Variable: MRE

VARIABLES	POOLED COEFFICIENT	P-VALUE	FEM COEFFICIENT	P-VALUE
C	1.390740	0.0066***	13.42918	0.0000***
SHF	-0.461588	0.2436	-2.848677	0.0000***
MOP	0.062410	0.8299	1.579063	0.0001***
LGF	-0.012814	0.8644	0.025146	0.6841
LEV	0.019591	0.7561	0.440453	0.0000***
INS	1.084996	0.0000***	-1.329703	0.0110***
DIV	0.405433	0.0000***	2.291054	0.0000***
AUD	-0.432996	0.0400***	-1.117547	0.0000***
R^2	86%		92%	
ADJ R^2	85%		91%	
PROB (F-STAT)	0.000000		0.000000	
F-STAT	78.84055		94.43882	
DW	2.130446		2.139754	

Source: Authors' Computation (2017) using E-Views 9.5 Statistical Package. Note that "***", "**" and "*" represent 1%, 5%, and 10% level of significance respectively.

Relative to the pooled regression estimator, the fixed effect estimator seems to be a better estimation in that it recognizes cross-sectional and/or time heterogeneity that may exist but is unobserved in the model. Thus, such a heterogeneity effect is incorporated in the model as an intercept term for each of the corresponding subject units and/or time period. From the FEM estimations, all the examined variables are statistically significant except the legal and guarantee fee (LGF), which is one of the components of agency-bonding costs that was insignificant but has a positive effect on managers' executive compensation contrary to the negative sign that we expect. Shareholders fund (SHF), outsider share (INS) and audit fee (AUD) have a negative effect on the managers' executive compensation, but it is only INS and AUD that aligns with the a priori expectation. The adjusted R^2 of 91% shows only a 9% variation in EXC that is unexplained by the explanatory variables and, hence, catered for by the error term. The probability value of 0.000 shows the model has a line of best fit.

Panel Estimated Generalised Least Square: Table 3 shows the pooled and fixed effect GLS with the effect of cross-sectional weight. Our findings show from the pooled weighted estimations that all the variables examined are statistically significant at 1%, 5% and 10%, respectively, except managers' options of share (insider shares), which is not significant but has a positive effect on managers' executive compensation. From the estimation, only MOP and LGF follow the *a priori* expectation while others variables negates our expectations. The probability value of 0.0000 and adjusted R^2 of 95% and 85% for weighted and un-weighted statistics, respectively, show that the overall regression model is statistically significant and the explanatory variables were able to explain the managers' executive compensation in South Africa banks. From the findings of fixed effect weighted estimation, only licence and guarantee fee (LGF) and outsiders' shares (INS) are insignificant while other variables are statistically significant at 1%. Also, we found that only managers' options (MOP), outsiders' shares (INS) and audit fee (AUD) align with the a priori expectation while others negate the *a priori* expectation. The probability value of 0.0000 shows the overall significance of the model

with an adjusted R^2 of 97% and 91% of weighted and un-weighted estimations of fixed effect, respectively, leaving 3% and 9% unexplainable executive compensation by the chosen variables for the stochastic error term.

Table 3: Cross Sectional Weight GLS of the Series: SHF, MOP, LGF, LEV, INS, DIV, AUD with Dependent Variable: MRE

VARIABLES	POOLED-WEIGHTED COEFFICIENT	P-VALUE	FEM-WEIGHTED COEFFICIENT	P-VALUE
C	1.375250	0.0121**	7.527835	0.0000***
SHF	-0.621727	0.0999*	-2.444891	0.0000***
MOP	0.290966	0.1936	1.543855	0.0000***
LGF	-0.090016	0.0784*	0.023407	0.4435
LEV	0.100111	0.0640*	0.423224	0.0000***
INS	1.003438	0.0000***	-0.202603	0.5025
DIV	0.477016	0.0000***	1.471856	0.0000***
AUD	-0.419512	0.0353**	-0.689395	0.0041***
Weighted Statistics				
R^2	95%		97%	
ADJ R^2	94%		97%	
PROB (F-STAT)	0.000000		0.000000	
F-STAT	218.2298		310.6181	
SUM^2 RESIDUAL	0.836622		0.453721	
DW	2.150703		2.162859	
Unweighted Statistics				
R2	85%		91%	
SUM^2 RESIDUAL	1.043184		0.654737	
DW	2.112577		2.127714	

Source: Authors' Computation (2017) using E-Views 9.5 Statistical Package. Note that "***", "**" and "*" represents 1%, 5%, and 10% level of significance respectively

Redundant Fixed Effect Test: When the fixed effect model is considered, the OLS estimation becomes biased and has inconsistent estimates of the parameters in the regression. This is due to an omission of germane variable bias because of the fact that the pooled OLS expunges the individual dummies albeit that they are relevant in the model. The significance of individual specific effects is tested using the F-statistics. Therefore, this section presents the summary of the test statistics carried out to validate the presence of heterogeneity among cross-sectional units and across the time period. F and chi-square tests are carried out to ascertain whether there is a significant difference between the differential intercept across cross-sections and time period. Also, to confirm if the restriction of the pooled OLS estimation is justified or otherwise using the following:

$$F_{obs} = \frac{\left(R^2_{UR(FEM)} - R^2_{R(POOLED)}\right) \Big/ (N-1)}{\left(1 - R^2_{UR(FEM)}\right) \Big/ (NT - N - K)} \cong F_{N,N(T-1)-K}$$

Table 4: Restricted F-Statistics

Null hypothesis (Ho): Pooled = FEM = 0			
Effect Tests	**Statistics**	**Degree of Freedom**	**Prob**
Cross-section/ Period **F-test**	1.543084	(26,63)	0.0824*
Cross-section/ Period **Chi-square**	47.304990	26	0.0065***

Source: Authors' Computation (2017) using E-Views 9.5 Statistical Package. Note that "***", "**" and "*" represent statistical significance at 1%, 5%, and 10% respectively

Table 4 shows that both the F-test and the chi-square test is significant at 10% and 1%, respectively, which indicates the rejection of the null hypothesis (there is no significant difference between the pooled estimation and the fixed effect estimation) and concludes that there is a significant difference between the pooled and FE estimations. Hence, our conclusion in this study is based on the FEM estimations.

Implication of Findings: From the restricted test of fixed effect, it was concluded that our implication of findings is based on the fixed effect estimation, but due to the fact that the GLS relaxes the assumption of ordinary least square that errors are uncorrelated and homoskedastic in nature, the GLS fixed effect estimations form the basis of our discussion. According to Green and Vavreck (2008), GLS estimations are unbiased estimations rather than the OLS with a relatively small sampling variance compared to other linear unbiased estimators. Hence, this study bases the discussion of the findings on the fixed effect estimated GLS with weighted and un-weighted statistics. The negative and significant effect of the shareholders' fund implies that being a common financial metrics used by analysts to determine the health of a bank, an increase in this fund leads to a decrease in the executive compensation, which means that instead of paying exorbitant fees for the managers the owners will invest the fund in positive and viable Net Present Value (NPV) projects and explore all other opportunities for expanding the scope of the bank as a bank with a higher SHF will be big enough to devise other means of compensating their managers whether in terms of shares, which will keep on increasing the asset base of the bank or other flexible pecuniary rewards that will not compound the agency costs leading to higher operating costs hindering their growth.

Also managers' option of shares (MOP) has a positive effect as expected. The management team also has a percentage of insider shares in the bank as most of them are part of the bank's board of directors. Logically, the higher their shareholdings, the more compensation they allocate to themselves from the banks' earnings. As it has been concluded by Rozeff (1982) that agency costs can be minimised via a dividend payout policy and debt ratio (leverage), managers executive compensation is expect to reduce by an increase in the leverage ratio, dividend payout ratio and audit fees incurred by the managers being the components of monitoring and bonding costs. Our findings on SSA banks show that a percentage increase in leverage and dividend payout ratios leads to 42% and 147% increase in managers' executive compensation. This increase could be traced to the fact that the higher debt commitment a bank commits itself to, the higher the compensation paid to the management team to be able to expedite activities that will not default the terms and conditions of the debt, thus, it compounds the agency problem (costs) in the bank. Also, a 1% increase in audit fees (AUD) which is one of the components of agency bonding costs will lead to a 68% reduction in managers' executive compensation as expected, hence, South African banks should keep on subjecting their annual reports to external examination by an independent auditor as it is a good bonding cost to minimise agency problems emanating from exorbitant executive compensation. Lastly, outsiders shares (INS) and the legal and guarantee fee (LGF) have no significant effect on managers' executive compensation in South African banks with outsiders shares causing a 20% decrease and LGF posing a 2% increase. The findings on the leverage ratio oppose the findings of Nazir and Saita (2013) but conform to the findings of Ang et al. (2000), and the positive and significant dividend ratio conform to the study of Khan et al. (2013). Conclusively, our findings on South African banking sector's managers' executive, and agency costs model is stated as:

$$EXC = -2.44SHF + 1.54MOP + 0.02LGF + 0.42LEV - 0.20INS + 1.47DIV - 0.69AUD.$$

5. Conclusion and Recommendations

Premised on our findings, we conclude that: firstly, the dividend payout policy, which is expected to be a bonding measure on managers, does not mitigate managers' executive compensation which constitutes the larger proportion of the agency cost banks incur; hence, other dividend policies can be explored. Secondly, banks in South Africa should keep on subjecting their annual reports and accounts to external auditing as it is a significant factor mitigating the agency costs by enabling the managers to bond themselves to always protect the owners' interests as all hiding activities will be revealed via the auditing process. Thirdly, the banking sector shareholders should not be carried away by the agency relationship in establishing the relationship between the executive compensation and agency problem. For the banking sector, the managerial-power approach should be embarked upon and not the optimal-contracting approach of agency cost, due to the fact that managers are found to always pursue their interest in all their decisions at the expense of the owners of the bank. Moreover, from our findings, banks' leverage does not reduce managers' executive compensation; therefore, banks should curtail their debt level even though the marginal benefits might be greater than the marginal costs. Lastly the major factors that have a significant effect on managers' executive compensation in South African banks are shareholders' funds, the management shares' option, the leverage ratio, dividend payout ratio and audit fees paid by the banks; thus the need to give considerable attention to these factors so that the agency costs of banks causing disparity in their asset level and growth rate will be minimised.

Suggestions for Further Research: Our study is not without limitation; hence, further research should extend the period of this study and more so, examine other factors such as the board of directors' composition and inquire about their effect on managers' compensation (post-investment-financing wealth). Also, agency costs apply to all the firms operating an agency relationship and not only in the banking sector. Would-be researchers can conduct this same study on these other sectors and expand the literature on agency costs, to compare how these factors respond to executive compensation across various sectors of the economy to enhance adequate comparison.

References

Ang, J. S., Cole, R. A. & Lin, J. W. (2000). Agency costs and ownership structure. *Journal of Finance*, 55(1), 81-106.

Armesto, M. T., Engemann, K. M. & Owyang, M. T. (2010). Forecasting with mixed frequencies. *Review*, 92(1), 1-25.

Baiman, S. (1990). Agency research in managerial accounting: A second look. *Accounting, Organizations and Society*, 15(4), 341-371.

Bebchuk, L. & Fried, J. (2003). Executive compensation as an agency problem. *Journal of Economic Perspectives,* 17(3), 71–92.

Brau, J. C. (2002). Do banks price owner–manager agency costs? An examination of small business borrowing. *Journal of Small Business Management*, 40(4), 273-286.

Brockman, P. & Unlu, E. (2009). Dividend policy, creditor rights, and the agency costs of debt. *Journal of Financial Economics*, 92(2), 276-299.

Chetty, R. & Saez, E. (2007). An agency theory of dividend taxation (No. w13538). National Bureau of Economic Research.

Claus, I. & Kim O. (2004). Agency costs, asymmetric information and financial intermediation in a small open economy. In New Zealand Association of Economists Conference.

Collier, P. M. & Agyei-Ampomah, S. (2006). Management Accounting-Risk and Control Strategy: Paper P3. CIMA Learning Systems Strategic Level 2007. Elsevier Science & Technology.

Core, J. E., Guay, W. R. & Larcker, D. F. (2003). Executive equity compensation and incentives: A survey. *Economic Policy review*, *9*(1).

Fama, E. F. (1980). Agency problems and the theory of the Firm. *The Journal of Political Economy*, 5(1), 288-307.

Fama, E. F. & Jensen, M. C. (1983). Separation of ownership and control. *The journal of law and Economics*, 26(2), 301-325.

Green, D. P. & Vavreck, L. (2008). Analysis of cluster-randomized experiments: A comparison of alternative estimation approaches. *Political Analysis*, 16(2), 138-152.

Gujarati, D. N. (2003). *Basic Econometrics*. 4th ed. New York: McGraw-Hill.

Hsiao, C. (2005). Why panel data? *The Singapore Economic Review*, 50(02), 143-154.

Ifeacho, C. & Ngalawa, H. (2014). Performance of The South African Banking Sector Since 1994. *Journal of Applied Business Research*, 30(4), 1183-1195.

Jensen, M. C. & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.

Jensen, M. C. & Smith, C. W. (2000). Stockholder, manager, and creditor interests: Applications of agency theory. *Theory of the Firm*, 1(1).

Kantarelis, D. (2007). Theories of the firm. Inderscience Genève Switzerland

Khan, A., Kaleem, A. & Nazir, M. S. (2012). Impact of financial leverage on agency cost of free cash flow: Evidence from the manufacturing sector of Pakistan. *Journal of Basic and Applied Scientific Research*, 2(7), 6694-6700.

Laiho, T. (2011). Agency theory and ownership structure-Estimating the effect of ownership structure on firm performance.

Li, H. & Cui, L. (2003). Empirical study of capital structure on agency costs in Chinese listed firms. *Nature and science*, 1(1), 12-20.

Manos, R. (2003). Dividend policy and agency theory: Evidence from Indian firms. *South Asia Economic Journal*, 4(2), 275-300.

Masulis, R. W. & Trueman, B. (1988). Corporate investment and dividend decisions under differential personal taxation. *Journal of Financial and Quantitative Analysis*, 23(04), 369-385.

Mehran, H. (1995). Executive compensation structure, ownership, and firm performance. *Journal of financial economics*, 38(2), 163-184.

Mohammed, D. (2013). A dynamic panel model of capital structure and agency cost in Nigerian listed companies. *Global Journal of Business Research*, 5(2), 33-44.

Murphy, K. J. (1985). Corporate performance and managerial remuneration: An empirical analysis. *Journal of Accounting and Economics*, 7(1), 11-42.

Nazir, S. & Saita, H. K. (2013). Financial Leverage and Agency Cost: An Empirical Evidence of Pakistan. *Int. Journal of Innovative and Applied Finance–IJIAF*, 1(1).

Neri, S. (2004). Agency costs or costly capital adjustment DSGE models? A Bayesian investigation. Manuscript, Bank of Italy.

Rozeff, M. S. (1982). Growth, beta and agency costs as determinants of dividend payout ratios. *Journal of Financial Research*, 5(3), 249-259.

Schulze, W. S., Lubatkin, M. H., Dino, R. N. & Buchholtz, A. K. (2001). Agency relationships in family firms: Theory and evidence. *Organization science*, *12*(2), 99-116.

Shah, S. Z. A. & Bhutta, N. T. (2013). Corporate Entrepreneurship and Agency Cost: A Theoretical Perspective.

Shleifer, A. & Vishny, R. W. (1989). Management entrenchment: The case of manager-specific investments. *Journal of financial economics*, 25(1), 123-139.

Torres-Reyna, O. (2007). Panel data analysis fixed and random affects using Stata (v. 4.2). Data & Statistical Services, Priceton University.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Electronic Banking Services in Nigeria: Some Determinants and Opportunities for Households' Financial Inclusion

Isaac B. Oluwatayo
School of Agricultural and Environmental Sciences, University of Limpopo, South Africa
isaac.oluwatayo@ul.ac.za

Abstract: Economic transactions in many of the countries in Africa are still largely cash-based and many of these transactions are costly, inefficient, time consuming and sometimes risky because of the security situation in most countries in the continent. In fact, finality of payment is not always guaranteed because of potential counterfeits and the lack of financial discipline when cheques or other paper-based means of payment are used. The introduction of electronic banking services into the Nigerian banking sector has brought some respite considering the number of people now using electronic platforms such as the Automated Teller Machines (ATM), mobile phones, internet and bank websites instead of the conventional over the counter method used by most people. The result presented in here is based on secondary data consisting of 6002 respondents collected by The Financial Inclusion Insights Program, InterMedia. A descriptive analysis of data showed that the North-central (35%) and South-west (33%) geopolitical zones of the country had the highest as over one-third of the residents harnessed internet as the platform for their banking services. Meanwhile on the determinants of using electronic banking services, the result of the tobit model employed revealed age, gender, education status, and ownership of mobile phones as positive enablers and poverty status, distance to banking services and marital status as hiccups to using electronic banking services. The study therefore recommends welfare enhancement through provision of infrastructural facilities to ease access banking services, Also capacity building of respondents through education should be intensified since most of the people using these electronic platforms are those with a minimum of secondary education.

Keywords: *Determinants, Mobile banking, ICT, Financial inclusion, Nigeria, Welfare*

1. Introduction

The important role that banks play in the growth of any country cannot be overemphasised and financial inclusion has been described as one of the key pivots of economic development (Cheston et al., 2016). Electronic banking on the other hand is a service that uses electronic communication platform (Keating, 1996) and this can be categorised on the basis of the kind of instruments employed. Examples include the use of telephone connection, mobile phones, internet, personal computers as means of payment (bank cards) and other self-service techniques (Muhammad, 1997). Electronic banking therefore, which is an advancement in the application of Information and Communication Technology (ICT) in banking services uses the internet as the delivery platform to conduct banking activities such as transferring funds, paying bills, viewing and checking savings, account balances, paying mortgages and purchasing financial instruments and certificates of deposits (Mohammed et al., 2009). According to Christopher et al. (2006), electronic banking now provides opportunity for countries with underdeveloped financial systems to leapfrog developmental stages. Customers in most countries can now access services more easily from banks abroad through wireless communication systems, which are developing more rapidly than traditional "wired" communication networks. Also, electronic banking has become an important channel for banks to sell their products and services and is now perceived to be a necessity in order to stay profitable and successful.

Meanwhile it is estimated that more than half the world's adults do not have a bank account, and nearly 3 out of 4 adults in developing and middle income countries don't have bank accounts (Kendall, Mylenko, and Ponce, 2009). According to CGAP (2010), around 50 percent of households do not have access to banking services globally. In Africa, for instance, Efam (2008) reported that majority of the African population has no access to banking services, with only 20% of African families having bank accounts. Moreover, 90 percent of the 2.5 billion people living on less than $2/day in the developing world do not have an account with over 2.7 billion people in developing countries having no access to basic formal financial services, such as savings and checking accounts (IFC, 2011). The limited access to financial services in the continent emanates particularly from poor infrastructure, physico-geographical isolation or inaccessibility, financial illiteracy, all of which

result into excessively high transaction cost of providing banking services. As indicated by Financial Access (2010), sub-Saharan Africa (SSA) has the lowest deposit institution penetration globally standing at an average of 16.6% compared to 63.5% in developed countries amounting to a penetration rate of about 166 banks per 1,000 adults for the SSA region. The scenario depicted above is not different from what obtains in Nigeria, where more than 30 million people are unbanked (Agbaje, 2011) partly because of inadequate and low quality infrastructure (Okpi, 2012; Oluwatayo, 2014). Financial exclusion is widespread in Nigeria especially among those residing in the rural areas. In fact, the bulk of the cash transactions and money in the country are outside the banking system thus making the issue of financial exclusion a grave challenge (Kama and Adigun, 2013).

Although the rising role of financial inclusion as a catalyst for economic growth and development is no more news especially in this age of technology revolution (mobile phones in particular), a sizeable number of Nigerians are still very apprehensive of the challenges and risks inherent in this new way of doing business that has enveloped the banking sector in the country. Added to this debacle is the rising wave of internet scam in the country and that of cyber insecurity worldwide. However, considering the intensity and volume of cash-based transactions occurring in every sector of the Nigerian economy vis-à- vis the cash-related fraud and internet scam in the country, (electronic banking will no doubt have serious implications for inclusiveness, ease of doing business, poverty reduction and employment generation especially among the poor and disadvantaged segment of the society. The Central Bank of Nigeria (CBN) in January 2012 introduced the cashless policy (a form of electronic banking) to reduce the volume of cash used for business transactions and thereby reduce cash handling costs by banks amongst other objectives (Odumeru, 2013). Electronic banking is known to engender competition among banks and made it possible for customers to compare banks' services and products, and allow banks and firms to penetrate new markets and thus expand opportunities for the poor especially in terms of their geographical reach (Schaechter, 2002; Olanipekun et al., 2013). Other benefits of electronic banking according to Olanipekun et al. (2013) are the possibility of reduction in cash-related corruption, cash-related armed robbery and increased attraction of more foreign investment which could enhance job creation.

From this standpoint, it is very clear that a good, efficient and inclusive financial services remains an important tool in the toolkit for poverty reduction (UNDP, 2010). It therefore becomes imperative to examine some of the determinants of using electronic banking services in Nigeria with the aim of providing answers to a number of questions which are highlighted below:

- What are the socioeconomic/demographic characteristics of respondents in Nigeria?
- What are the different banking facilities/platforms available and accessible to these respondents?
- Are there gender, educational and regional differences in the use of different banking platforms/facilities available in Nigeria?
- What are the determinants of using electronic banking services in the study area?
- What are the challenges of using these services?

2. Literature Review

There is no gainsaying the fact that many governments in a number of countries globally have made savings accounts widely available, but to make payments and transfer funds, the poor must often depend on costly and unreliable informal financial services. Meanwhile, low levels of financial inclusion represent an obstacle to economic development. This lack of access is due to various barriers that can be related to physical access, affordability and eligibility (Beck, Demirgüç-Kunt and Martinez Peria, 2008). In terms of physical access, customers may have to visit remote bank headquarters to open the account, instead of local bank branch offices. They could also face affordability problems as the minimum balances and fees may be too high. Again, the demands in terms of documentation to open a bank account or necessity to have a job in the formal sector can be perceived as eligibility barriers. Unfortunately, due to a dearth in the availability of formal financial services, many people in rural area are forced to resort to the informal sector in order to save. According to Aportela (1999) in his study on micro savings programs in Mexico, he showed how financial inclusion of low income households traditionally excluded from the formal markets, were better able to smooth their consumption when credit was relatively scarce. Karlan, Ashraf and Yin (2007) found that the use of financial products had an important effect on the empowerment of female participants, via

an increase in their decision making capacity within the home. This is further attested to by Dupas and Robinson (2010) who also found that bank account had a substantially positive impact on poor women of Kenya. The women surveyed in the study had higher levels of savings and investment, when given a bank account. Thus, new technologies and new business models are opening new methods of retail payments, as well as bill payments and transfers of funds among people and businesses.

Meanwhile, accessing banking services in Nigeria was a big challenge especially before the recent wave of technological revolution that has enveloped the banking industry in the country. In a research conducted in Nigeria by Echekoba and Ezu (2012), it was observed that 68.2% of the respondents complained about long queues in the bank, 28.9% complained of bad attitude of teller officers (cashiers) while 2.90% complained of long distance of bank locations to their home or work places. However, Yaqub et al. (2013) highlighted the challenges of cashless policy (a form of electronic banking services) in the country by asserting that, accompany the numerous benefits are some challenges even in the developed world. One of the setbacks identified is behavioural constraints which was premised on the fact that Nigeria is cash-based; people are accustomed to using cash for most of their transactions. They also observed that some banks in Nigeria are very conservative; they use very few innovative products and marketing techniques. The security issue is another major challenge, the low level of internet penetration and poorly developed telecommunication systems can impede smooth development and improvement in e-payments and e-commerce. It is against this backdrop that the study examines some determinants of using electronic banking services with the overall aim of unravelling its implications on households' financial inclusion in the country.

3. Methodology

Study Area, Data Sources and Types: The study area is Nigeria. Nigeria is one of the countries in sub-Saharan Africa with a population of over 160 million inhabitants (NPC, 2010). The country is made up 36 States and the Federal Capital Territory (FCT), Abuja. Nigeria is divided into six geopolitical regions - North-central (NC), North-west (NW), North-east (NE), South-west (SW), South-east (SE) and South-south (SS) for ease of administration. Secondary data with a sample size of 6002 collected by The Financial Inclusion Insights Program, InterMedia, covering all the 36 states of the federation and FCT were used in this study. Information contained in the dataset include socioeconomic variables, ownership of mobile phones, ownership of sim cards, types of network service providers, types of transaction and the use into which the mobile phone is put, patronage of different mobile network operators, challenges and constraints faced in accessing banking services in Nigeria etc.

Analytical Techniques: A number of analytical tools were employed in analysing the data used in this study. While descriptive statistics such as tables, frequencies, percentages and pie charts were employed to analyse and describe respondents' socioeconomic characteristics, cross-tabulation analysis was performed to ascertain the relationship between some of the socioeconomic variables and respondents' use or patronage of electronic banking services in the study area. Also, a tobit model regression (Amemiya, 1984; Cong, 2000) was employed to examine the determinants of using electronic banking services in the study area. Tobit model was used because the dependent variable is an index (ratio). The form of the tobit model used is specified as:

$$y_i = \begin{cases} y_i^* & \text{if } y_i^* => 0 \\ 0 & y_i^* =\leq 0 \end{cases}$$

Where yi = $\beta Xi + \varepsilon_i$

and X_i= explanatory variables

β= parameters specifying relationship between x and y

ε_i = error term

Y = An index of use of the different electronic banking platforms is generated as follows:

$$Y = \frac{\text{Number of Electronic Banking Services Harnessed or Used by each Respondent}}{\text{Total Number of Banking Services Available in the Study Area}}$$

The banking services considered include; over the counter; ATM; bank website; mobile application; over the counter in retail stores; door-to door and others.

The explanatory variables are;

X_1 = age (years); X_2 = gender; X_3 = marital status (married = 1, others = 0); X_4 = formal education (yes = 1, no = 0); X_5 = ownership of mobile phone (yes = 1, no = 0); X_6 = ownership of active sim card (yes = 1, no = 0); X_7 = distance covered to access banking facilities (km); X_8 = location (rural = 1, urban = 0); X_9 = poverty level (poor = 1, non-poor = 0); X_{10} = primary job (farmer = 1, others = 0).

4. Results and Discussion

Socioeconomic Characteristics of Respondents: Analysis of respondents based on their socioeconomic characteristics shows that more than three-quarter of those who participated in the survey were very young with age below 45 years. Meanwhile, analysis by gender indicates that there were more males than females in the sample. Again, distribution of respondents on the basis of marital status revealed that the single and never married category had the highest percentage representing more than half (53.7%) of the sample and over one quarter (28.9%) were monogamous married. This generally indicated that majority of inhabitants of the country were young and still very active. Also in terms of rural-urban divide, there were more residents in the rural areas than in the cities as reflected in the survey.

Table 1: Distribution of respondents by socioeconomic characteristics

Variable	Frequency	Percent
Age		
15-25	2054	34.2
25-34	2332	38.9
35-44	886	14.8
45-54	412	6.9
55-64	184	3.1
> 65	134	2.2
Gender		
Male	3572	59.5
Female	2430	40.5
Marital status		
Single and never married	3210	53.5
Polygamous married	703	11.7
Monogamous married	1733	28.9
Divorced	72	1.2
Separated	52	0.9
Widowed	109	1.8
Living together/cohabiting	113	1.9
Others	1	0
No response	9	0.1
Location		
Urban	2505	41.7
Rural	3497	58.3
Total	6002	100

Author's computation from data Figures in parenthesis are percentages

Ownership of Mobile Phone and Active Sim Cards by Gender: Respondents' distribution by gender and ownership of mobile phone revealed that there were more male mobile phone owners than female mobile phone owners and this could be attributed to the better financial condition of men than men in Nigeria. In the same vein, ownership of active sim cards indicated that there were more male owners and females with active sim cards. From the result presented in Table 2, it was evident that men were financially better off than women in the study area hence the higher number of men mobile phone owners.

Table 2: Gender distribution of respondents by mobile phone and active sim card ownership

Socioeconomic characteristics	Male		Female		Total
	Yes	No	Yes	No	
Ownership of Mobile Phone	3359 (94.0)	213 (6.0)	2165 (89.1)	265 (10.9)	6002
Ownership of Active sim cards	3364 (94.2)	208 (5.8)	2186 (90,0)	244 (10.0)	6002

Author's computation from data Figures in parenthesis are percentages

Gender Distribution of Respondents by Platforms/Facilities Used to Access Bank Account: The result in Table 2 showed that the most patronised platforms/facilities used by both men and women when accessing their bank account in the study area was the use of over the counter and ATM even though with more of the former (42.1%) in the case of over the counter and (39.9%) in the case of ATM than the latter (33.7%) and (29.9%) respectively. However, the use of over the counter in retail stores were more patronised by men (1.3%) than women (0.7%) in places where it's being used.

Table 2: Gender distribution of respondents by facilities used to access their bank account

Facility	Male		Female	
	Yes	No	Yes	No
Over the Counter	1504	2068 (57.9)	820 (33.7)	1610 (66.3)
ATM	1427	2145 (60.1)	726 (29.9)	1704 (70.1)
Bank Websites	24 (0.7)	3548 (99.3)	8 (0.3)	2422 (99.7)
Mobile Application	14 (0.4)	3558 (99.6)	4 (0.2)	2426 (99.8)
Over the Counter in Retail Store	45 (1.3)	3527 (98.7)	17 (0.7)	2413 (99.3)
Door-to-Door Method	12 (0.3)	3560 (99.7)	13 (0.5)	2417 (99.5)
Others	0 (0.0)	3572 (100.0)	1(0.0)	2429 (100.0)
None of these	16 (0.4)	3556 (99.6)	12 (0.5)	2418 (99.5)

Author's computation from data Figures in parenthesis are percentages

Educational Status of Respondents and Ownership of Mobile Phone and Sim Card: As shown in Table 3, it is very clear that respondents with secondary education had the higher number both in terms of ownership of mobile phone and sim card. This was closely followed by those with some secondary education and university education. However in terms of ownership of mobile phone and sim card by educational level, those with postgraduate university degree (99.4%) and other university education had the highest. This is an indication of the earning potential of respondents since higher education enhance people's income hence the increased number of mobile phone and sim card owners. Again, those with tertiary education can better use the technology because of their educational status as some of them use it to network with colleagues in other places both within and outside the country.

Table 3: Educational distribution of respondents by ownership of mobile phone and sim card

Educational status	Frequency	Mobile Phone Ownership		Sim Card Ownership	
		Yes	No	Yes	No
No formal	294	210 (71.4)	84 (28.6)	209 (71.1)	85 (28.9)
Primary education not	147	118 (80.3)	29 (19.7)	119 (81.0)	28 (19.0)
Primary education complete	483	426 (88.2)	57 (11.8)	432 (89.4)	51 (10.6)
Some secondary	730	614 (84.1)	116 (15.9)	620 (84.9)	110 (15.1)
Secondary education complete	2264	2162 (95.5)	102 (4.5)	2171 (95.9)	92 (4.1)
Some education vocational training	91	86 (95.5)	5 (4.5)	86 (94.5)	5 (5.5)

Secondary vocational training	140	138 (98.6)	2 (1.4)	138 (98.6)	2 (1.4)
Some diploma	315	311 (98.7)	4 (1.3)	312 (99.0)	3 (1.0)
Diploma complete	484	478 (98.8)	6 (1.2)	477 (98.6)	7 (1.4)
Some college university	658	648 (98.5)	10 (1.5)	653 (99.2)	5 (0.8)
Post-graduate university degree	175	174 (99.4)	1 (0.6)	175 (100.0)	0 (0.0)
Koranic school	173	119 (68.8)	54 (31.2)	115 (66.5)	58 (33.5)
Other	21	19 (90.5)	2 (9.5)	20 (95.2)	1 (4.8)
No response	27	21 (77.8)	6 (22.2))	22 (81.5)	5 (18.5)
Total	6002	5524 (92.0)	478 (8.0)	5550 (92.5)	452 (7.5)

Author's computation from data Figures in parenthesis are percentages

Educational Distribution of Respondents by Facilities Harnessed in Accessing Bank Account: Respondents' distribution by facilities harnessed in accessing bank account showed that the use of over the counter was the most patronised because more than one-third of the respondents (38.7%) reported this. Also the use of ATM closely followed over the counter method with about 35.9% patronage. However, in terms of using electronic banking services (ATM, bank websites and mobile application), ATM (82.9%) and bank websites (2.9%) in the case of those with postgraduate university education were the most patronised. This also attests to the prime place of education in technology adoption. In general those with tertiary education were the main users of the few of the electronic banking services harnessed in the study area because more than half (>50%) of them were using these services. In fact, only a few of those with primary education patronised one of the electronic banking services (ATM). The result presented in Table 4 showed the relative importance of tertiary education in the delivery of electronic banking services considering the complexities involved. In other words, the result further attest to the fact that the use of mobile banking services is generally very low since less than one percent of respondents indicated using mobile applications.

Table 4: Educational distribution of respondents by facilities harnessed in accessing bank account

Educational Level	Over the counter	ATM	Bank website	Mobile application	Over the counter	Door door in retail stores	to Others	one of these
No formal education	20 (6.8)	3 (4.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Primary not complete	14 (9.5)	9 (6.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Primary complete	91 (18.8)	57 (11.8)	1 (0.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.0)
Some secondary	120 (16.4)	99 (13.6)	2 (0.3)	0 (0.0)	1 (0.1)	1 (0.1)	0 (0.0)	1 (0.0)
Secondary education	825 (36.4)	730 (32.2)	8 (0.4)	2 (0.1)	18 (0.8)	15 (0.7)	1 (0.0)	16 (0.7)
Some education vocational	38 (41.8)	30 (33.0)	0 (0.0)	0 (0.0)	2 (2.2)	0 (0.0)	0 (0.0)	0 (0.0)
Secondary vocational complete	66 (47.1)	52 (37.1)	0 (0.0)	1 (0.7)	2 (1.4)	1 (0.7)	0 (0.0)	0 (0.0)
Some diploma	188 (59.7)	187 (59.4)	1 (0.3)	0 (0.0)	5 (1.6)	0 (0.0)	0 (0.0)	2 (0.6)
Diploma	318	319	5	5	12	4	0	3

complete	(65.7)	(65.9)	(1,0)	(1.0)	(2.5)	(0.8)	(0.0)	(0.6)
Some college	468	486	10	5	14	2	0	4
university	(71.1)	(73.9)	(1.5)	(0.8)	(2.1)	(0.3)	(0.0)	(0.6)
Post-graduate	143	145	5	5	8	1	0	0
university	(81.7)	(82.9)	(2.9)	(0.0)	(4.6)	(0.6)	(0.0)	(0.0)
Koranic school	12 (6.9)	7 (4.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.6)
Other	14	14	0	0	0	1	0	0
	(66.7)	(66.7)	(0.0)	(0.0)	(0.0)	(4.8)	(0.0)	(0.0)
No response	7	5 (18.5)	0	0	0	0	0	0
	(10.5)		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Total	**2324**	**2153**	**32**	**18**	**62**	**25**	**1**	**28**
	(38.7)	**(35.9)**	**(0.5)**	**(0.3)**	**(1.0)**	**(0.4)**	**(0.0)**	**(0.5)**

Author's computation from data Figures in parenthesis are percentages

Ownership of Mobile Phones Based on Geo-political Region: As revealed in Table 5, the North-west region of Nigeria had the largest number of people with mobile phones and this was closely followed by the South-west region. The region with the lowest number of people with mobile phone was the North-east and this is more or less a reflection of the financial capability (poverty status) and level of education of people in the different region of the country. However, distribution of respondents within a region in terms of those having mobile phones or not showed that the South-east had the highest with about 96.9%. This was closely followed by the North-central and South-west regions with 96.3% and 96.1% respectively. The region whose inhabitants had the lowest number of people with mobile phones was North-west region with about 82.0%.

Table 5: Regional distribution of respondents by ownership of mobile phones

Region	**Yes**	**No**	**Total**
North-central	901 (96.3)	35 (3.7)	**936**
North-west	400 (93.5)	28 (6.5)	**428**
North-east	1351 (82.0)	296 (18.0)	**1647**
South-west	1223 (96.1)	49 (3.9)	**1272**
South-east	730 (96.9)	23 (3.1)	**753**
South-south	919 (95.1)	47 (4.9)	**966**
Total	5524 (92.0)	478 (8.0)	6002 100.0

Author's computation from data Figures in parenthesis are percentages

Table 6: Distribution of respondents by use of mobile phone for internet and financial transactions

Region	Internet		Financial transaction		Total
	Yes	No	Yes	No	
North-central	329 (35.1)	607 (64.9)	28 (3.0)	908 (97.0)	936 100.0
North-west	111 (25.9)	317 (74.1)	20 (4.7)	408 (95.3)	428 100.0
North-east	322 (20.2)	1315 (78.8)	42 (2.6)	1605 (97.4)	1647 100.0
South-west	421 (33.1)	851 (66.9)	51 (4.0)	1221 (96,0)	1272 100.0
South-east	278 (36.9)	475 (63.1)	46 (6.1)	707 (93.9)	753 100.0
South-south	355 (36.7)	611 (63.3)	32 (3.3)	934 (96.7)	966 100.0
Total	1826 (30.4)	4176 (69.6)	219 (3.6)	5783 (96.4)	6002 100.0

Author's computation from data Figures in parenthesis are percentages

Regional Use of Mobile Phone for Internet and Financial Transaction: The result depicted in Table 6 showed that South-west region of Nigeria had the highest use of mobile phone for internet services with about one-third (33.1%) of the respondents accessing internet through mobile phone. This is closed followed by the South- south and the North-central. The least in the category of users was the North-west region with only about one-quarter (25.9%) accessing internet through mobile phone. As indicated earlier, education plays a pivotal role in getting financially included. Meanwhile, in terms of users within a particular region, South-east region had the highest (36.9%) and this was followed by the South-south (36.7%). The region with the lowest category of users accessing internet through their mobile phone was the North-east region. This could also be attributed to the low level of education in the region. However, distribution of respondents based on the use of mobile phones to make financial transactions showed that there was generally low level of use considering the number of respondents in all the regions. However, North-west and South-west had about 4.7% and 4.0% respective users with more than 95% of respondents not performing any financial transaction via their mobile phones.

Platforms/Facilities Used in Accessing a Bank Account: As shown in Table 7, it was very clear that accessing bank account over the counter and use of Automated Teller Machines (ATMs) were the most patronised across the six geo-political regions of Nigeria. Other means of accessing bank account in Nigeria recorded very low usage since all the region had less than one percent patronage. Meanwhile, there seems to be increased use of ATM instead of the usual over the counter platform and this is an indication of improvement in the use of electronic banking facilities and this largely due to the recently introduced cashless policy in the country.

Table 7: Regional distribution of respondents by platforms/facilities used in accessing Bank account

Region	Response	NC	NE	NW	SW	SE	SS
Over the Counter	Yes	439 (53.1)	145 (33.9)	396 (24.0)	607 (47.7)	406 (53.9)	331 (38.7)
	No	497 (46.9)	283 (66.1)	1251 (76.0)	665 (52.3)	347 (46.1)	635 (61.3)
ATM	Yes	434 (46.4)	157 (36.7)	378 (23.0)	522 (41,0)	360 (47.8)	302 (31.3)
	No	502 (53.6)	271 (63.3)	1269 (77.0)	750 (59.0)	393 (52.2)	664 (68.7)
Bank Websites	Yes	2 (0.2)	1 (0.2)	6 (0.4)	14 (1.1)	4 (0.5)	5 (0.5)
	No	934 (99.8)	427 (99.8)	1641 (99.6)	1258 (98.9)	749 (99.5)	961 (99.5)
Mobile Application	Yes	0(0.0)	0 (0.0)	6 (0.4)	7 (0.6)	2 (0.3)	3 (0.3)
	No	936 (100.0)	428 (100.0)	1641 (99.6)	1265 (99.4)	751 (99.7)	963 (99.7)
Over the Counter in Retail Store	Yes	12 (1.3)	0 (0.0)	15 (0.9)	20 (1.6)	12 (1.6)	3 (0.3)
	No	924 (98.7)	428 (100.0)	1632 (99.1)	1252 (98.4)	741 (98.4)	963 (99.7)
Door-to-Door Method	Yes	3 (0.3)	1 (0.2)	2 (0.1)	2 (0.2)	13 (1.7)	4 (0.4)
	No	933 (99.7)	427 (99.8)	1645 (99.9)	1270 (99.8)	740 (98.3)	962 (99.6)
Others	Yes	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)
	No	936 (100.0)	428 (100.0)	1647 (100.0)	1272 (100.0)	752 (99.9)	966 (100.0)
None of these	Yes	6 (0.6)	6 (1.4)	3 (0.2)	6 (0.5)	1 (0.1)	6 (0.6)
	No	930	422	1644	1266	752	960 (99.4)

Author's computation from data Figures in parenthesis are percentages

Determinants of Usage of Electronic Banking Services in Nigeria: The result of the tobit model (Table 8) employed to examine determinants of using electronic banking services in Nigeria revealed age ($p<0.10$), gender ($p<0.01$), marital status ($p<0.05$), educational status ($P<0.00$), ownership of mobile phone ($p<0.05$), distance covered ($p<0.00$), primary occupation ($p<0.10$) and poverty status ($p<0.05$) as very important. While the coefficients of age, gender, educational status were positive, those of marital status, ownership of sim card, distance covered in accessing banking services, primary occupation and poverty status were negative. In other words, as the age of respondents increases, being a man and increase in educational status had the likelihood of enhancing the use of electronic banking services. However, being married, the farther away the distance covered to get to a banking facility, being a farmer and the poorer the respondents had the likelihood of reducing the use electronic banking services in Nigeria. Therefore, having a sim card alone without a mobile phone may not necessarily provide accessibility to electronic banking services.

Table 8: Result of tobit model showing determinants of using electronic banking services

Variable	Coefficient	Marginal effect
Age (X_1)	0.927* (0.492)	0.927* (0.492)
Gender (X_2)	5,149*** (2.101)	5,149*** (2.101)
Marital status (X_3)	-9.571** (1.889)	-9.571** (1.889)
Educational status (X_4)	3.642*** (1.007)	3.643*** (1.007)

Ownership of mobile phone (X5)	1.358** (0.644)	1.358** (0.644)
Ownership of sim card (X6)	-1.378 (1.683)	-1.378 (1.682)
Distance (X7)	-3.103*** (0.967)	-3.103*** (0.967)
Location (X8)	0.153 (0.095)	0.153 (0.095)
Poverty status (X9)	-13.302** (6.291)	-13.302** (6.291)
Primary occupation (X10)	-3.662* (1.920)	-3.662* (1.920)
Constant	0.474 (1.483)	0.475 (1.482)

Number of observation = 6002, Prob > chi2 = 0.0001, Log likelihood = -154,30251
*,**,*** are coefficients significant at 10%, 5% and 1% respectively
Author's computation from data Figures in parenthesis are standard errors

5. Conclusion and Recommendations

This paper examined some determinants of using electronic banking services in Nigeria and its implications on financial inclusion of households in Nigeria. Analysis of results obtained showed that the use of electronic banking services is generally low since most people patronised the over the counter platform instead of the use of ATM, bank website, internet and mobile application. Some of the reasons identified include low level of education, especially among those in the North-east region of the country. Gender analysis of respondents' patronage of available platforms revealed that there were more males than females. However, the result of the tobit model performed to ascertain determinants of using electronic banking services in indicated educational level, ownership of mobile phone, distance to banking facilities and poverty status of respondents as very important. It is therefore concluded that even though there has been a significant improvement in the use of electronic banking devices, a lot still need to be done to bridge the gender, educational and rural- urban gap identified in the country.
Based on the findings of the study, the study recommends the following:

- Welfare enhancement through provision of infrastructural facilities to ease access and use of electronic banking services.
- Investment in capacity building through education so as to enhance the earning potential of people residing in the rural areas because they are the worst hit of this challenge
- Awareness creation and regular training of personnel to assist in educating the people so that the fears and risks entertained can be doused.

Acknowledgments: The author thanks the Financial Inclusion Insights Program, InterMedia for making their data available for this study.

References

Agbaje, S. (2011). Mobile Banking to Transform Nigeria's Economy, says GT Bank Boss. This Day Live, http://www.thisdaylive.com/articles/mobile-banking-to-transform-nigerias-economy-says-gt-bank-boss/105126/, Assessed August 29, 2013.

Amemiya, T. (1984). Tobit models: A Survey. *Journal of Econometrics*, 24, 3–61.

Aportela, F. (1999). Effects of Financial Access on Savings by Low-Income People. Banco de México Research Department, Mexico City, Mexico.

Beck, T., Demirgüç-Kunt, A. & Soledad Martinez Peria, M. (2008). Banking Services for Everyone? Barriers to Bank Access and Use around the World. *World Bank Economic Review,* 22, 397-430.

Cheston, S., Conde, T., Bykere, A. & Rhyne, E. (2016) The Business of Financial Inclusion: Insights from Banks in Emerging Markets. Institute of International Finance (IIF), Centre for Financial Inclusion Final Report, July 2016, Washington DC, USA. 67pp.

Cong, R. (2000). Marginal Effects of the Tobit Model. Stata Technical Bulletin 56: 27–34. *Reprinted in Stata Technical Bulletin Reprints*, 10, 189–197. College Station, TX: Stata Press.

Christopher, G. C., Mike, L. V. & Amy, W. A. (2006). Logit Analysis of Electronic Banking in New Zealand. *International Journal of Bank Marketing*, 24(6), 360-383.

Consultative Group to Assist the Poor (CGAP). (2010). Financial Access 2010. The State of Financial Inclusion Through the Crisis. Washington D.C.: CGAP.

Dupas, P. Y. & Robinson, J. (2010). Savings Constraints and Microenterprise Development: Evidence from a Field Experiment in Kenya. NBER Working Paper No. w14693. http://www.nber.org/papers/w14693.pdf.

Echekoba, F. N. & Ezu, G. K. (2012). Electronic Retail Payment Systems: User Acceptability and Payment Problems in Nigeria. *Arabian Journal of Business and Management Review*, 5, 60 – 63.

Efam. D. (2008). Boosting Domestic Savings in Africa', Vol. 22, No. 3. To invest more, countries must tap assets now outside the banks. www.un.org/ecosocdev/geninfo/afrec.

Financial Access. (2010). Sub-Saharan Africa Factsheet, CGAP-World Bank, www.cgap.org/financialindicators.

Firdous, S. (2017). Impact of Internet Banking Service Quality on Customer Satisfaction. *Journal of Internet Banking and Commerce*, 22(1), 1-17

IFC. (2011). IFC Mobile Money Study, Summary Report. International Finance Corporation in Partnership with the Republic of Korea, IFC, Pennsylvania Avenue, Washington D. C., USA.

Kama, U. & Adigun, M. (2013). Financial Inclusion in Nigeria: Issues and Challenges. Central Bank of Nigeria (CBN), Abuja Nigeria. Occasional Paper No 45, 49pp.

Karlan, D., Ashraf, N. & Yin, W. (2007). Female Empowerment: Impact of a Commitment Savings Product in the Philippines. Centre for Global Development, Working Paper No. 106.

Keating, P. (1996). What Works and What doesn't in the World of Digital Finance. *Money Magazine*, 135-143. July 1996.

Kendall, Mylenko & Ponce. (2009). Measuring Financial Access Around the World, World Bank Policy Research Working Paper 5253, World Bank.

Mohammed, S. K., Siba, S. M. & Sreekumar, M. (2009). Service Quality Evaluation in Internet Banking: An Empirical Study in India. *International Journal of Indian Culture and Business Management*, 2(1), 30-46

Muhammad, T. K. (1997). Electronic Commerce and the Future of Money; Technology and You, Black Enterprise, pp. 255-259. NPC (2010) Census Report, National Population Commission, Abuja, Nigeria.

Odumeru, J. A. (2013). Going Cashless: Adoption of Mobile Banking in Nigeria. Arabian Journal of Business and Management Review (Nigerian Chapter), 1(2), 9-17.

Okpi, A. (2012). Infrastructure not Sufficient for Cashless Economy, The Punch, 8 January, 2012, Pg. 4.

Olanipekun, W. D., Brimah, A. N. & Akanni, L. F. (2013). Integrating Cashless Economic Policy in Nigeria: Challenges and Prospects. *International Journal of Business and Behavioural Sciences*, 3(5), 1-8.

Oluwatayo, I. B. (2014). Techno-driven Financial Inclusion in Rural Nigeria: Challenges and Opportunities for Pro-poor Service Delivery. *Banks and Bank Systems*, 9(2), 72-76.

Schaechter, A. (2002) Challenges of the E-banking Revolution. Finance and Development.

United Nations Development Programme, UNDP. (2010). Human Development Report Nigeria – achieving growth with equity, UNDP.

Yaqub, J. O., Bello, H., Adenuga, I. A. & Ogundeji, M. O. (2013). The Cashless Policy in Nigeria: Prospects and Challenges. *International Journal of Humanities and Social Science,* 3(3), 200-212.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Re-testing Wagner's Law: Structural breaks and disaggregated data for South Africa

Mthokozisi Mlilo, Matamela Netshikulwe
Faculty of Commerce, Law and Management, University of the Witwatersrand, Johannesburg, South Africa
mthokozisi.mlilo@wits.ac.za

Abstract: Direction of causality between government expenditure and output growth is pertinent for a developing country since a sizeable volume of economic resources is in the hands of the public sector. This paper investigates the Wagner's law in South Africa over the post-apartheid era, 1994-2015. This paper is unique to present studies since it uses disaggregated government expenditure and controls for structural breaks. The Granger non-causality test of Toda & Yamamoto, a superior technique compared to conventional Granger causality testing, is employed and this paper finds no support for Wagner's law. However, there is causality running from total government and education expenditures to output. This finding is in line with the Keynesian framework. It is recommended in the paper that the government should take an active role in promoting output growth through increases in education expenditures in particular.

Keywords: *Wagner's law; Granger causality; dis-aggregated government expenditures; Structural breaks; South Africa*

1. Introduction

The government's expenditure in South Africa hogged the limelight recently, with calls for fiscal consolidation amid a looming ratings downgrade. It would seem that by curbing government expenditure growth, the South African economy's economic outlook might improve. However, this would depend on the causal relationship between an economy's output growth and government expenditure. Debates on the relationship between the size of government expenditure(s) and economic growth have been going on for centuries now. These debates stem chiefly from theories proposed by Adolph Wagner (1893) and John Maynard Keynes (1936), and are popularly known as the Wagner's law and the Keynesian hypothesis respectively (Henrekson, 1993). Theories of these scholars differ markedly as the Wagner's law proposes that there is a long-run tendency for government activities to grow relative to economic activity, with government expenditure viewed as an endogenous factor; while the Keynesian hypothesis proposes the reverse of Wagner's law and sees government expenditure as an exogenous factor. The difference is the direction of causation. Various theories, see, Mueller (2003:ch. 21) for a discussion, and empirical studies form part of the existing literature on this debate. Yet a general consensus is lacking. The challenges of poverty alleviation and socio-economic development remain central to the South African government's list of objectives. Government intervention through social-welfare spending programs is seen as a panacea in South Africa. However, these efforts have been viewed as unsustainable and inefficient. The Keynesian school of thought deems fiscal policy as one of the possible drivers of economic growth and poverty alleviation (Keynes, 1936). On the contrary, according to Wagner's law, economic growth drives the need for better social and economic services which increases government expenditure in the process (Wagner, 1893). In public finance literature, government seeks to achieve these objectives through its role of allocating and distributing resources to its citizens (Musgrave and Musgrave, 1988).

There is a concern over the continuous rise in general government expenditures amongst developing countries (Frimpong & Oteng-Abiye, 2009). South Africa has faced a sustained and continuous budget deficit position in the past 20 years, bar years 2005-7, which is attributed to the ever increasing relative size of government and its components (National Treasury, 2016; Rossouw, Joubert & Breytenbach, 2014). This continual hike in government expenditure strikes the hearts of many South Africans whose pockets are deeply dug by the hand of taxes. Increasing government expenditure is not in itself evil in the society as it may be an indication that social services are provided to the citizens. An inquiry over the presence of Wagner's hypothesis or its opposite, the Keynesian hypothesis, is important for policy formulation and review. A number of empirical studies on the direction of causation, concentrating on or including South Africa, have found mixed and/or divergent results. Even for other countries, developed and developing, single and inter-country analysis fails to reach a general consensus. Despite the divergent results, there is also evidence for

bidirectional causality and no causality between output and government expenditure (Abbas & Afzal, 2010). These varying results create a source of contention among economists hence the plethora of studies.

Empirical work testing Wagner's law in South Africa is contradictory. Some studies have found Wagner's law valid over some periods and invalid over other periods using various empirical techniques (for example see, Ziramba, 2008; Menyah & Wolde-Rufael, 2012). Government operations are crucial for a developing country like South Africa, where the public sector absorbs a significant share of a country's economic resources, it is important that causality between public expenditure and economic growth is investigated. The causal relationship between output and government expenditure is contemporary and relevant in the face of accelerated government expenditure growth, stagnated economic growth and the calls for fiscal consolidation. This paper's innovation is on retesting Wagner's law by (1) controlling for the possibility of structural breaks, (2) making use of robust econometric techniques and (3) using disaggregated government expenditure data. It is possible that components of government expenditure affect output in different ways that cannot be detected when using total government expenditure data only (Frimpong & Oteng-Abiye, 2009; Magazzino, 2011), hence the use of disaggregated government expenditure data. Structural breaks are incorporated since not allowing for an existing break leads to a bias that affects inferences (Perron, 1989) and conclusions on causality.

To our knowledge, none of the existing studies done on South Africa has controlled for structural break(s) in the data nor looked at disaggregated government expenditure for South Africa. This leaves a void in the existing literature worth filling as suggested by Frimpong & Oteng-Abiye (2009). According to Frimpong & Oteng-Abiye (2009) there is a possibility that components of government expenditure could better explain GDP while total government expenditure itself does not. Such a study, as this one, is critical particularly in South Africa where the government is geared towards fiscal consolidation. This paper contributes to the extant literature on Wagner's law by adding to the ongoing debate on government expenditures and output nexus. The remainder of the paper is organized as follows: section 2 reviews theoretical and existing empirical literature; section 3 presents the data and methodology; section 4 presents the results and section 5 concludes the paper.

2. Literature Review

Theoretical: Wagner's law has long been central to economic investigations since its discovery towards the end of the 19th century (Gupta, 1967; Peacock & Wiseman, 1961). This law posits that government expenditure is an endogenous factor that is driven by output growth (Wagner, 1893). According to Wagner, an increase in government spending is seen as the product of economic development. Wagner gave three reasons to justify this hypothesis: 1) economic development results in the expansion of cultural and welfare expenditures; 2) government intervention may be needed to manage and finance natural monopolies; 3) private activities would be substituted by public activities (Bird, 1971). There are various versions of the Wagner's law tested in the literature. The predominant ones take the mathematical forms in table 1:

Table 1: Several versions of Wagner's law

No.	Functional form	Source
1	$ln\ G_t = \alpha_1 + \beta_1 \ln GDP_t + \mu_t$	Peacock & Wiseman (1961)
2	$ln\ G_t = \alpha_2 + \beta_2 \ln (GDP/P)_t + \mu_t$	Goffman (1968)
3	$ln\ (G/GDP)_t = \alpha_3 + \beta_3 \ln (GDP/P)_t + \mu_t$	Musgrave (1969)
4	$ln\ (G/P)_t = \alpha_4 + \beta_4 \ln (GDP/P)_t + \mu_t$	Gupta (1967)
5	$ln\ (G/GDP)_t = \alpha_5 + \beta_5 \ln GDP_t + \mu_t$	Mann (1980)

where, *ln* denotes the natural logarithm, G is government spending, GDP is real Gross Domestic Product and P is population, GDP/P denotes real GDP per capita, G/GDP is share of real government expenditure in GDP, G/P is real government expenditure per capita and μ_t is a serial uncorrelated random error term. Wagner's law implies that the real income elasticity coefficient should exceed unity in versions 1, 2, 4, (i.e., β_1, β_2, $\beta_4 > 1$) and should be greater than zero in versions 3, 5 (i.e., β_3, $\beta_5 > 0$). A critical discussion on the versions of the law can be found in Henrekson (1993), Mann (1980) and Tarschys (1975). The inverse of this viewpoint is the Keynesian hypothesis which states that GDP is a function of government spending, where causality runs from

government spending to GDP (Biswal, Dhawan & Hooi-Yean, 2010). The Keynesian hypothesis is a product of John Maynard Keynes (1936)'s seminar book. Keynes postulated that the great depression was caused by low levels of aggregate demand in relation to aggregate supply. According to Keynes, the remedy was to simply increase government spending as a way of boosting output to its potential level.

Empirical Review: Ghorbani & Zarea (2009), show that Wagner's law is confirmed in the Iranian economy for the period of 1960-2000 (using six Wagner's law versions). However, the study shows a lack of a long-run relationship between G and GDP after carrying out an Engle-Granger cointegration test. Furthermore, Ghorbani & Zarea conclude that invisibility of a long-run relationship does not mean it does not exist; they suggest that a lack of a long-run relationship could be the result of structural breaks or the shortness of the sample time period investigated. The Ghorbani & Zarea (2009)'s study failed to control for the possibility of structural breaks and perhaps this distorted their results. It is possible that neither the Wagner's law nor the Keynesian hypothesis holds such that G and GDP are regarded to be independent. A study by Frimpong & Oteng-Abiye (2009) for three West African Monetary Zone (WAZM) countries; Gambia, Ghana and Nigeria finds neither the Wagner's law nor the Keynesian hypothesis valid for the period 1965-2004 in all countries. Also in another study, Ansari, Akuamoah & Gordon (1997) finds no causal relationship between G and GDP in South Africa and Kenya for the period 1957-1990. Furthermore, Frimpong & Oteng-Abiye (2009)'s study asserts that such results are possible if non-economic factors are more important in explaining the growth of government expenditure than economic factors. Their findings also indicate that government expenditure does not play a significant role in promoting economic growth. Frimpong & Oteng-Abiye (2009)'s assertion is validated by Haque & Hussain (2016) who argue that institutional factors do play a more significant role in explaining economic growth.

The time period investigated matters. Some countries show different results depending on the time period studied. For Ghana, as mentioned earlier on Frimpong & Oteng-Abiye (2009), Wagner's law is found invalid for the period 1965-2004. However, in Ansari et al. (1997)'s study of the Wagner's law in Ghana, South Africa and Kenya over the period 1957-1990 it is found that Wagner's law is valid for Ghana. This case of varying results by period has also been found for Turkey in periods 1950-1960 and 1947-1967 (see, Krzyzaniak, 1972; Onder, 1974). Focusing on South Africa, Ziramba (2008) uses an autoregressive distributive lag (ARDL) bounds test approach to cointegration by Pesaran, Shin & Smith (2001) and Granger non-causality procedure by Toda & Yamamoto (1995) to test for Wagner's law for the period 1960-2006. The Toda-Yamamoto procedure has been found to be superior to the ordinary Granger causality test (see, Toda & Yamamoto, 1995). Ziramba (2008) results show bidirectional causality between per capita G and per capita GDP. Ziramba tentatively concludes that there is no support for Wagner's law in South Africa. Menyah & Wolde-Rufael (2012) reassessed the validity of Wagner's law in South Africa by extending Ziramba's period of study from 1950-2007. The extended sample period was meant to mitigate the finite sample bias problem associated with a small sample. In Menyah & Wolde-Rufael (2012) they apply five long-run estimators: the ARDL, Dynamic Ordinary Least Squares, Fully modified Ordinary Least Squares, Maximum likelihood estimators and Ordinary least squares. They find evidence of causality from GDP to government expenditure, supporting Wagner's law. Furthermore, Menyah & Wolde-Rufael (2012)'s study finds that the size of South Africa's public sector is significant and positively related to GDP over the period 1950-2007. This difference in results with Ziramba could be due to the differences in the econometric methodology and the sample period/size. Neither Ziramba (2008) nor Menyah & Wolde-Rufael (2012) studies seem to have explicitly taken structural breaks into account and this could have been one of the reasons why their results are not similar.

Keho (2015) looks at ten African countries for the period 1965-2013 and finds varying Wagner's law results for each. The paper employs Granger causality tests in the frequency domain (phase resampling method) which allows distinguishing between short, medium and long run causality. Wagner's law is found valid for Ghana in the short, medium and long terms; for Cameroon in medium term and only in long-run for Nigeria. The law is not found valid for Gabon, South Africa and Senegal in short and medium terms. Both Wagner's hypothesis and its counterpart, Keynesian hypothesis, are valid for Burkina Faso in short, medium and long terms. Phase resampling is a robust method for making statistical inferences even with short-time series and yields satisfactory type I and type II error rates (Liu & Molenaar, 2016). These results disagree with that of Ziramba (2008) and Menyah & Wolde-Rufael (2012) for South Africa which finds causality for the short-run and Ansari et al. (1997)'s results for Ghana. The variation in results can still be attributed to different

econometric techniques employed or versions of the Wagner's law employed. Looking at the South-East Asian countries over the period 1960-2002, Dogun & Tang (2006) employ simple Granger-causality test and find no support for Wagner's law for all countries in the region. However, they find Keynesian hypothesis for Philippines and no cointegration for all countries, but Indonesia. The period under investigation coincides with the East-Asian financial crisis; an increase in government expenditure is expected in order to stimulate the economy according to the Keynesian hypothesis.

Few studies have studied Wagner's law using disaggregated data for some countries. Biswal et al. (2010) investigates whether growth of total government expenditure and its components have short-run or long-run relationship with GDP in Canada for the period 1950-1995. Bidirectional causality is found between total government expenditure and GDP while short-run causation in the Wagnerian sense is found between GDP and components of government expenditure inclusive of transfer payments to business and persons, government investment and wages of civilian and military personnel. Ighodaro & Oriakhi (2010) studied Wagner's law in Nigeria for the period 1961-2007 using disaggregated government expenditure data and validated Keynesian hypothesis rather than Wagner's law over total and some components of government expenditure. It is noteworthy that components of government expenditure might have individual significant roles in the economic process. Government expenditure and GDP relationship has important policy implications hence it has attracted considerable interest among economists and policy makers. This has led to a superfluity of empirical studies and various findings although there is no general consensus. The divergence in results can be attributed to the evolution of econometric techniques with earlier studies not looking at stationarity of variables, whilst recent studies investigate the presence of a long-run relationship and test for Granger causality between variables of interest (Sideris, 2007). The results also seem to differ depending on whether an economy is a developing or a developed one (Ghorbani & Zarea, 2009).

3. Methodology

Data and justification of variables: This study uses real Gross Domestic Product per capita (Y), total government expenditure (G), government expenditure on education (E), government expenditure on health (H) and Population (P) data obtained from the World Bank for the period 1994-2015, which is the post-apartheid era. Real GDP is chosen as a widely used macro-economic indicator to depict output of an economy. G is chosen as an indicator of the country's government expenditure inclusive of productive and non-productive expenditures. Since this paper seeks to determine the relationship between G and Y, these then stand as core variables of interest. As stated earlier, components of G may affect real GDP per capita in different ways that may not be detected when using G data only. On this reason, this paper makes use of the components of G which are E and H. Further, annual data is used based on Singh & Sahni (1984) argument that G is hardly sensitive to seasonal and even cyclical fluctuations. All level variables are deflated using a GDP deflator with year 2010 as the base year.

Estimation technique: The causal relationship between GDP and G (total and disaggregated government expenditure) is determined through a three-step procedure; unit-root testing, cointegration and causality testing. The following Wagner's law version of functional form by Gupta (1967) is used:

$$\ln(G/P)_t = \alpha_1 + \beta_1 \ln(GDP/P)_t + \mu_t \quad (1)$$

Where μ_t is a serial uncorrelated random error term and β_1 is the elasticity of G with respect to GDP. Interpretation of equation 1 is that G should increase by a higher rate than GDP, i.e., $\beta_1 > 1$ if Wagner's law is present.

Unit root test: Most of the macroeconomic time series data exhibit non-stationary processes (Perron, 1989). The mean, variance and covariance of time series data are time-dependent and varying which can deliver unreliable estimated results (Gujarati & Porter, 2009). Failure to test for stationarity in time series analysis can lead to the problem of spurious regressions. A non-stationary time series can be made stationary through differencing such that the series becomes integrated of order *s*, where *s* is the number of times it is differenced to become stationary. If a time series is stationary at levels then it is integrated of order zero, *I(0)*, and integrated of order *d*, *I(d)*, if differenced *d*-times. In general, various tests are employed to study stationarity properties of time series data such as the Dickey-Fuller (DF) (1979) test, Augmented Dickey-Fuller (ADF) (1979) test and the Phillips-Perron (PP) (1988) test. This paper employs ADF and PP tests to

determine the existence of unit roots in the data. The ADF is superior to the DF as it incorporates autocorrelation by assuming that the series follows an auto-regressive process of order *p*. It is chosen over the DF for its consistency and accuracy. The general form of the ADF equation including intercept and trend is:

$$\Delta Y_t = \alpha + \beta t + \delta Y_{t-1} + \sum_{k=1}^{n} \phi_k \Delta Y_{t-k} + \epsilon_t \quad (2)$$

Where *n* is the number of lags, *t* indicates time and ΔY_t represents first difference of series Y_t. Appropriate lag length is chosen using the information criterion, i.e., the Akaike Information Criterion (AIC), Schwartz Bayesian Criterion (SBC) and the Final Prediction Error (FPE). The null hypothesis is:

$$H_0: \delta = 0$$

against

$$H_1: \delta \neq 0$$

Rejecting H_0 proves the series under consideration is stationary.

The PP test is used for robustness and reliability test in this paper. The PP test differs with ADF test on how it corrects serial correlation and heteroscedasticity. The PP test corrects non-parametrically by modifying the DF test statistics while the ADF test corrects by adding lag terms in the series. The PP test general form of equation including the trend and intercept is:

$$\Delta Y_t = \alpha + \beta_t + \rho Y_{t-1} + \mu_t \quad (3)$$

where μ_t is integrated of order one and may be heteroskedastic. The null hypothesis is:

$$H_0: \rho = 0$$

against,

$$H_1: \rho \neq 0$$

rejecting H_0 proves series under consideration is stationary.

From the background analysis, structural break(s) is(are) suspected in some variables under consideration. Failure to allow for an existing break leads to a bias that reduces the ability to reject a false unit-root (Perron, 1989). The above mentioned tests potentially confuse structural breaks in the series as evidence of non-stationarity (García, Gitau & Ndirangu, 2014) hence a number of studies have developed unit root tests that incorporate structural breaks (see, Andrews & Zivot, 1992; Bai & Perron, 2003; Clemente, Montañés & Reyes, 1998; Lumsdaine & Papell,1997; Perron, 1989; Perron & Vogelsand, 1998). These tests determine the break points in a time series and reduce bias in the unit root tests. This paper employs the Andrews & Zivot (1992) and Clemente et al. (1998) unit root tests. These tests have the ability to determine the break point endogenously from the data which provides valuable information for analysing whether a structural break on a time series is associated with a particular government policy, economic crises, war, regime shift or other factors (Glynn, Perera & Verma, 2007). The stationarity test by Andrews & Zivot (1992) allows for one structural break within the observed history of a time-series. This test extends the unit root test of Perron (1989). They differ in that Andrews & Zivot (1992) test determines the breakpoint endogenously and uses the innovational outlier (IO) model, while Perron (1989)'s test determines the breakpoint exogenously and uses the two-step additive outlier (AO) model. AO model allows for gradual shift in the mean of the series while the IO model captures sudden change in the series. The Andrews & Zivot test performs one of the following regressions to test for a unit root depending on the nature of a time series:

$$y_t = \mu + \theta DU_t(\lambda) + \beta t + \alpha y_{t-1} + \sum_{j=1}^{k} c_j \Delta y_{t-j} + e_t \quad (4)$$

$$y_t = \mu + \gamma DT_t^*(\lambda) + \beta t + \alpha y_{t-1} + \sum_{j=1}^{k} c_j \Delta y_{t-j} + e_t \quad (5)$$

$$y_t = \mu + \theta DU_t(\lambda) + \gamma DT_t^*(\lambda) + \beta t + \alpha y_{t-1} + \sum_{j=1}^{k} c_j \Delta y_{t-j} + e_t \quad (6)$$

where $\lambda = T_B/T$ is the breakpoint, T_B is the break date; dummy representing change in levels $DU_t(\lambda)$=1 if $t > T\lambda$, 0 otherwise; dummy representing change in slope $DT_t^*(\lambda) = t - T\lambda$ if $t > T\lambda$, 0 otherwise. Equation4 allows

change in the level of the series, equation 5 allows change in the rate of growth and equation 6 allows both changes (Andrews & Zivot, 1992). The null hypothesis for the three models is based on the model below:

$$y_t = \mu + \alpha y_{t-1} + e_t \quad (7)$$

The series y_t is integrated without an endogenous structural break (equivalent to testing that α=1 in the models), while the alternative hypothesis is that y_t can be represented by a trend-stationary process with a one-time break in the trend. The test aims to estimate the breakpoint that gives the most weight to the trend-stationary alternative (Andrews & Zivot, 1992). Some macro-economic time series may exhibit multiple breaks and would require models that allow a large number of breaks. The Clemente et al. (1998) test extends the unit root test of Perron & Vogelsang (1992) to the case where the time series exhibits a double change in the mean. If the shifts are better represented by additive outliers (AO), the following two-step procedure is performed (Clemente et al., 1998):

$$y_t = \mu + d_1 DU_{1t} + d_2 DU_{2t} + \tilde{y}_t \quad (8)$$

where equation 8 is estimated so as to remove the deterministic part of the variable. This is then followed by estimating equation 9:

$$\tilde{y}_t = \sum_{i=0}^{k} \omega_{1i} (DTB)_{1t-i} + \sum_{i=0}^{k} \omega_{2i} (DTB)_{2t-i} + \rho \tilde{y}_{t-1} + \sum_{i=1}^{k} c_i \tilde{y}_{t-i} + e_t \quad (9)$$

and testing whether the autoregressive parameter ρ is equal to 1 for all possible break times.
If the shifts are better represented by the innovational outlier (IO), the following model in equation 10 is estimated and then a test of whether the autoregressive parameter ρ is equal to 1 for all possible break points (Clemente et al., 1998):

$$y_t = \mu + \rho y_{t-1} + \delta_1 (DTB)_{1t} + \delta_2 (DTB)_{2t} + d_1 DU_{1t} + d_2 DU_{2t} + \sum_{i=1}^{k} c_i \Delta y_{t-i} + e_t \quad (10)$$

where the pulse variable $(DTB)_{it}$ =1 if $t = TB_i + 1$ for (i =1,2) and 0 otherwise; dummy representing change in levels $DU_{it} = 1$if $t > TB_i$ for (i =1,2) and 0 otherwise;$TB_1$and $TB_2$are the break points/dates when the mean is shifting.

Cointegration: Economic variables are said to be cointegrated if there is a long-run relationship between them to which the system converges to. Although series may be non-stationary at levels with integration order of *r*, their linear combination can be stationary with integration order of *r-1*. Johansen & Juselius (1990) approach is employed to test for cointegration between variables of interest. This test is a widely used technique for testing for cointegration (Frimpong & Oteng-Abiye, 2009) due to its observed superiority over other procedures (Magazzino& Forte, 2010). Amongst major advantages of Johansen's cointegration procedure is that there is little need to pre-test the variables in the system to establish their order of integration (Johansen, 1995). The Johansen procedure works well in large samples because of its asymptotic properties and likely to have small sample bias; and it assumes that the cointegrating vector is constant during the period of study (Ssekuma, 2011). However, due to technological progress, policy changes, economic crisis and other reasons; cointegration between variables under consideration changes in time. Empirical studies show that the tests for cointegrating ranks in Johansen procedure are sensitive to the values of the nuisance parameters in finite samples (Reimers, 1992; Toda & Yamamoto, 1995) and possibly sensitive to structural breaks. Although, the Johansen procedure is deemed powerful throughout literature, this paper employs a cointegration test with structural breaks by Gregory & Hansen (1996) as a check for the robustness and reliability of the results. Gregory & Hansen (1996)'s test, thereafter Ghansen test, is a residual based test which is an extension of the traditional ADF, Phillips' Zα and Z_t type of tests designed to test the null of no cointegration against the alternative of cointegration in the presence of a possible structural break(s) at an unknown time. Gregory & Hansen indicate that the motive of these tests is derived from the conventional notion of regime change in a time series relationship. The Ghansen test is used as a robustness check on Johansen's test in the presence of structural breaks.

Direction of causation: In the presence of structural breaks, the linearity assumption in the regression equations of a vector auto-regression (VAR) system can lead to a misspecified model which can affect the outcome of Granger causality testing, leading to erroneous conclusions (Bianchi, 1995; Lütkepohl, 1989). Instead, this paper employs the Granger non-causality test using a modified Wald (MWald) test proposed by

Toda & Yamamoto (1995). The Toda and Yamamoto procedure provides a simple way to deal with challenges encountered in hypothesis testing when VAR processes are likely to have unit roots. Toda and Yamamoto method is applicable whether the VAR is stationary, integrated of an arbitrary order, or cointegrated of an arbitrary order. Most pertinently with this procedure, "less attention is paid to the integration and cointegration properties of the time series data at hand when estimating this averts the possibility of pre-test bias" (Toda & Yamamoto, 1995). The procedure requires the determination of a maximal order of integration *c* and the true lag order *m* in the system which clears any serial correlation, where *c* is not greater than *m*. Lag order is selected using the information criterion. The Lagrange Multiplier test is performed to test for serial correlation at the optimal lag. If serial autocorrelation is found then the optimal lag order is increased to the lag order that clears serial correlation. The VAR is overfitted with order $p=m+c$ to get the Granger causality test statistics with standard asymptotic distributions. The MWald statistic is derived when p^{th} order VAR in equations 11 and 12 is estimated which follows an asymptotic χ^2distribution with *m* degrees of freedom (see, Theorem 1 of Toda & Yamamoto (1995)):

$$\ln Y_t = \alpha_0 + \sum_{i=1}^{m} \alpha_{1i} \ln Y_{t-i} + \sum_{j=m+1}^{c} \alpha_{2j} \ln Y_{t-j} + \sum_{i=1}^{m} \delta_{1i} \ln X_{t-i} + \sum_{j=m+1}^{c} \delta_{2j} \ln X_{t-j} + \varepsilon_{1t} \quad (11)$$

$$\ln X_t = \beta_0 + \sum_{i=1}^{m} \beta_{1i} \ln X_{t-i} + \sum_{j=m+1}^{c} \beta_{2j} \ln X_{t-j} + \sum_{i=1}^{m} \phi_{1i} \ln Y_{t-i} + \sum_{j=m+1}^{c} \phi_{2j} \ln Y_{t-j} + \varepsilon_{2t} \quad (12)$$

A null hypothesis of Granger non-causality is set and its rejection proves the presence of Granger causality. Toda & Yamamoto (1995) do not suggest that their method should totally replace the conventional hypothesis testing techniques that are conditional on the estimation of unit roots and cointegrating ranks. Toda and Yamamoto advise that their technique should be regarded as complementing the pretesting methods that may suffer serious biases in some cases. This paper thus maintains the three-step procedure for causality testing.

4. Results and Discussion

Variables Y, G, E and Hare per capita variables and estimations are based on the Gupta (1967) version of Wagner's law.

Unit root testing

Structural break(s): The presence of structural breaks is determined before we test for unit roots. Results of the Chow (1960) test for structural breaks indicate that a structural break exists in the Y, G and H time series for the period under investigation and not in E. Table 2 shows the Chow test results at the 1% level of significance.

Table 2: Chow test

Variable	Chow test stat
Y	14.01***
G	6.15***
E	1.15
H	11.27***

Source: Author's calculations; *** indicates 1% significance level.

The Chow test only affirms the presence of a structural break while in the following subsections, Clemente et al. (1998) and Andrews & Zivot (1992) tests provide the break points.

Unit root testing without structural break(s): ADF and PP unit root tests are performed for E without structural breaks. The E series is found to be integrated of order one, *I(1)*, shown in Table 3.

Table 3: Unit root tests

Variables	Test	Levels	1st difference
E	ADF	1.158	-1.914*
	PP	1.370	-2.889***

Source: Author's calculations; ***, * indicates 1% and 10% significance levels respectively.

Unit root testing under structural break(s): G and H are found to have two structural breaks using the Clemente et al. (1998) test while Y is found to have one structural break using the Andrews & Zivot (1992) test. The Clemente's innovational outlier model (Clemio) is employed instead of the additive outlier model (Clemao) for Y and G because the time series are better explained by a gradual shift and not a sudden change in the mean. However, the additive outlier is employed for H since it exhibits a sudden change in the mean. Table 4 exhibits unit root results, GDP and H are found to be integrated of order 2, *I(2)*, and G is found to be integrated of order 1, *I(1)*.

Table 4: Unit root tests

Variables	Test	Levels	1st difference	2nd difference	Break(s)
Y	ZAndrews	-3.475		-4.842	2008
G	Clemio	-5.247	-5.704**		2000 & 2009
H	Clemao	-4.096		-15.07**	1998 & 2009

Source: Author's calculations; ** indicates 5% significance level

The identified structural breaks are significant and can be linked to the 1997/8 East Asian financial crisis and the 2008/9 global financial crisis. With integrating orders of time series and structural break points known, robust elasticities can be estimated with more confidence against spurious results; this is demonstrated in the next section.

Elasticity estimates: Table 5 shows the elasticity estimates based on data in its levels and differenced form. Estimates based on data in levels indicate elasticity estimates above one indicating greater possibility of the Wagner's law hypothesis (Sideris, 2007). However, the results based on levels are not to be taken without caution as the time series could be non-stationary which renders the results spurious (Henrekson, 1993).

Table 5: Elasticity estimates

Functional form	Direction	Levels	Differenced
Gupta	ln Y→ ln G	1.29	0.02
	ln Y→ ln E	1.17	0.47
	ln Y→ ln H	1.04	-0.34
Functional form	Direction	Levels	Differenced
Gupta	ln G → ln Y	0.74	0.014
	ln E → ln Y	0.57	0.094
	ln H → ln Y	0.78	-0.129

Source: Author's calculations. Estimated at the 5% level of significance

The differenced results are based on regressions performed with respect to the order of integration determined subject to structural breaks. Using level data, elasticity estimates are less than one implying a unit percentage change in Y yields a less than unit percentage change in G, E and H (refer to the upper block in table 5). The size of the elasticity between G and Y (i.e. 1.29) is comparable with other studies for South Africa using post-apartheid era level data. However, once we difference the data the elasticities become less than one highlighting a case of a possible spurious relationship in level data estimates.

Cointegration: Table 6 shows the results of the Johansen procedure to cointegration. There is no evidence of cointegration in all relationships at the 5% level of significance.

Table 6: Johansen cointegration rank test

Variables	Hypothesized No. of CE(s)	Max-eigenvalue stat	critical value	Trace stat	critical value
Y & G	zero	9.74	14.07**	10.31	15.41**
	At most 1	0.57	3.76**	0 .57	3.76**
Y & H	zero	10.58	14.07**	13.5	15.41**
	At most 1	2.92	3.76**	2.92	3.76**
Y & E	zero	11.79	14.07**	12.77	15.41**
	At most 1	0 .98	3.76**	0.98	3.76**

Source: Author's calculations. **, indicates 5% significance levels; CE - Cointegration Equations

For robustness, the Ghansen test is performed for GDP, G and H relationships (those with structural breaks) and the results are shown in table 7. Since the Ghansen test is sensitive to the lag order used, the information criterion is employed for each relationship. The regime shift model is employed by allowing for the slope and intercept vectors to shift. The paper fails to reject the null hypothesis of no cointegration in all relationships with structural breaks.

Table 7: Gregory-Hansen test for cointegration with regime shifts

Relationship	ADF	Z_t	Z_α
G & Y	-4.32***	-3.29***	-3.01***
H & Y	-4.93***	-5.05***	-23.60***

Source: Author's calculations; *** indicates 1% significance level

It is with confidence that there is no cointegration amongst the time series under consideration. It is common in studies testing Wagner's law to find a no cointegrating relationship (see, Ansari et al., 1997; Ghorbani & Zarea, 2009; Frimpong & Oteng-Abiye, 2009; Massan, 2015), however our result is at odds with Ziramba (1998). These studies suggest various possible reasons such as the time-period analysed not being sufficiently long to fully capture the long-run relationship and structural breaks which are incorporated in this paper. Some of these studies indicate that the existence of no cointegration implies that none of the variables in the system can be targeted as a policy variable in the long term. Nevertheless, this paper proceeds to causality testing since the aim is to determine if there is a causal link between the variables in the study. It is noteworthy that cointegration is a necessary but not sufficient condition for Wagner's law.

Causality: Due to varying integration orders of the time series in the system, this paper uses the Toda & Yamamoto Granger non-causality test to determine whether there is a causal relationship between G and Y for the period under investigation. Table 8, shows the MWald test results and *p*-values for each relationship where the null hypothesis of no Granger causality is tested. The highest order of integration is 2. The optimal lag orders are: 2 for Y relationships with G and E, and 4 for the relationship with H based on the AIC, SBC and FPE. In table 8, the upper block shows results for the Wagner's law causality test whilst the bottom block looks at the possibility of the Keynesian hypothesis.

Table 8: Toda-Yamamoto Granger non-causality results

Cause	Effect	F test statistic	Decision
ln Y	ln G	2.33	Fail to reject
ln Y	ln E	2.17	Fail to reject
ln Y	ln H	10.80	Fail to reject
ln G	ln Y	19.32**	Reject
ln E	ln Y	5.28**	Reject
ln H	ln Y	4.22	Fail to reject

Source: Author's calculations; ** indicates 5% significance level

No evidence of serial correlation is found at the selected optimal lag orders. The results suggest a failure to reject the null hypothesis for all relationships in the upper block of table 8. There is no support for Wagner's law in South Africa for the total and disaggregated government expenditures. Using this technique, without considering structural breaks and using total government expenditure, Ziramba (2008) tentatively provides evidence in support of these results for South Africa by also concluding that there is no evidence of Wagner's law. Other studies using other techniques have also found similar results for various countries, some including South Africa (see, Ansari et al., 1997; Li, Li, Wang & Zheng, 2010). On the bottom block of table 8, E and G are found to be causing Y since the null of no Granger causality is rejected at the 5% of significance. These results show evidence of a unidirectional causal relationship running from G to Y and E to Y thus supporting the Keynesian hypothesis in these two relationships. Keho(2015)'s study found the Keynesian hypothesis valid for South Africa only in the short and medium run by using a Granger causality test in the frequency domain. Neither the Wagner's law nor Keynesian hypothesis holds in relationships between health and GDP. This implies independence between GDP and health expenditures. It is worth noting that these results are, to some degree, corresponding to the elasticity estimates of differenced results in table 5 and cointegration results in table 6 and 7.

These findings are, only in parts, consistent with the other published studies done in this field as none have used disaggregated government expenditure data or incorporated structural breaks for South Africa; hence this study is not just a replication. According to Frimpong & Oteng-Abiye (2009), non-causality is possible if non-economic factors are more important in explaining the growth of government expenditure than economic factors. In South Africa, there is a high and increasing government social assistance program through social grant services. SASSA (2016) indicates that about 31% of the South African population is receiving social grants from the government. This government expenditure is not driven by economic factors; restitution, political and moral factors seem to be dominant. This is expected in South Africa, to some degree, as the democratic government aims to redress the social and economic injustices of the apartheid-era by increasing social services expenditure. On the other hand, a causal link from total government expenditure and education expenditure to Y indicates that economic growth can be explained by these expenditures. A causal relationship is expected if an increase in education expenditure is used effectively such that it increases skills and the knowledge pool which in turn accelerates economic development. With the foregoing, South Africa's annual GDP growth declined from 3.2% in 2011 to 1.3% in 2015. One can argue that South Africa's GDP growth needs stimulation. Thus fiscal policy currently stands as a possible remedy to the South African economy considering that the Keynesian hypothesis holds.

5. Conclusion and Recommendations

This paper presents evidence, on the direction of causation between South Africa's GDP and disaggregated government expenditure, which is more robust and reliable when compared to previous studies since this paper controls for structural breaks. This paper tests Wagner's law and its reverse for South Africa between education expenditure, health expenditure, total government expenditure and GDP. The Gregory & Hansen and Johansen cointegration tests are used for reliability and robustness and it is established that there is no cointegration in all relationships tested for South Africa in the period of 1994-2015. The results from the Toda - Yamamoto's Granger non-causality test indicates that Wagner's law is not valid in South Africa. This implies that there is no causal link from GDP to either total government expenditure or any of government expenditure variants studied. Furthermore, the Keynesian hypothesis is found valid for total government expenditure and education expenditure. This implies that growth of total government expenditure and education expenditure can be used as policy variables to stimulate economic growth.

The use of disaggregated government expenditure data is crucial in policy modelling as it determines the specific causal links. The findings of this paper suggest that in South Africa, tightening fiscal policy may not be good for economic growth based on the Keynesian hypothesis. From the Keynesian hypothesis, this paper suggests that government expenditure, in particular government expenditure on education, could be used to stimulate economic growth. Furthermore, the government should increase funding for education and post school training so as to reduce South Africa's skills gap which has been identified as a hindrance to economic growth. In particular, funding for the National Student Financial Aid Scheme (NSFAS) can be increased and help enrol more students into post school education. This paper suggests that future research should look at

more components of total government expenditure to determine those that are relevant in stimulating the South African economic growth.

References

Abbas, Q. & Afzal, M. (2010). Wagner's law in Pakistan: Another look. *Journal of Economics and International Finance*, 2(1), 12-19. http://www.academicjournals.org/JEIF

Andrews, D. K. W. & Zivot, E. (1992). Further Evidence on the Great Crash, the Oil-Price Shock, and the Unit-Root Hypothesis. *Journal of Business & Economic Statistics*, 20(1), 25-44.

Ansari, M. I., Akuamoah, C. & Gordon, D. V. (1997). Keynes versus Wagner: Public expenditure and national income for three African countries. *Applied Economics*, 29(4), 543-550. http://dx.doi.org/10.1080/000368497327038

Bai, J. & Perron, P. (2003). Computation and analysis of multiple structural change models. *Journal of Applied Econometrics*, 18, 1-22. http://onlinelibrary.wiley.com/doi/10.1002/jae.659/pdf

Bianchi, M. (1995). Time series modeling in the presence of structural change. Manuscript, Universite Catholique de Louvain.

Bird, R. M. (1971). Wagner's law of expanding state activity. *Public Finance*, 26, 1-26.

Biswal, B., Dhawan, U. & Hooi-Yean, L. (2010). Testing Wagner versus Keynesian using disaggregated public expenditure data for Canada. *Applied Economics*, 31(10), 1283-1291. http://dx.doi.org/10.1080/000368499323490

Chow, G. C. (1960). Tests of Equality between Sets of Coefficients in Two Linear Regressions. *Econometrica*, 28, 591-605.

Clemente, J., Montañés, A. & Reyes, M. (1998). Testing for a unit root in variables with a double change in the mean. *Economics Letters*, 59(2), 175-182. http://dx.doi.org/10.1016/S0165-1765(98)00052-4

Dickey, D. A. & Fuller, W. A. (1979). Distribution of the estimators for autoregressive series with a unit root. *Journal of American Statistical Association*, 74, 427-431.

Dogun, E. & Tang, T. (2006). Government expenditure and national income: causality tests for five South-East Asian countries. *International Business & Economics Research Journal*, 5(10), 49-58. http://www.cluteinstituteonlinejournals.com/PDFs/2006286.pdf

Frimpong, J. & Oteng-Abiye, F. (2009). Does the Wagner's hypothesis matter in developing economies? Evidence from three West African monetary zone (WAZM) countries. *American Journal of Economics and Business Administration*, 1(2), 141-147.

García, C., Gitau, C. & Ndirangu, L. (2014). Evidence of Structural Breaks in Kenya Macroeconomic Variables. Paper presented at CSAE 2014 conference, England, United Kingdom, 23-25 March 2014.

Ghorbani, M. & Zarea, A. (2009). Investigating Wagner's law in Iran's economy. *Journal of Economics and International Finance*, 1(5), 115-121. http://www.academicjournals.orgJEIF

Glynn, G., Perera, N. & Verma, R. (2007). Unit Root Tests and Structural Breaks: A Survey with Applications. *Revista de m'etodos cuantitativos para la econom´ia y la empresa*, 3, 63-79. http://www.upo.es/RevMetCuant/art11.pdf

Goffman, I. J. (1968). On the empirical testing of Wagner's law: A technical note. *Public Finance*, 23, 359-366.

Granger, C. W. J. (1988). Some recent developments in a concept of causality. *Journal of Economics*, 39, 199-211.

Gregory, W. A. & Hansen, B. E. (1996). Residual-based tests for cointegration in models with regime shifts. *Journal of Econometrics*, 70, 99-126.

Gujarati, D. N. & Porter, C. D. (2009). *Basic Econometrics* (5th ed). New York: McGraw-Hill/Irwin.

Gupta, S. P. (1967). Public expenditure and economic growth: A time series analysis. *Public Finance*, 22, 423-471.

Haque, M. & Hussain, E. M. (2016). Impact of Economic Freedom on the Growth Rate: A Panel Data Analysis. *Economies*, 4(2), 5. http://www.mdpi.com/2227-7099/4/2/5

Henrekson, M. (1993). Wagner's law: A spurious relationship? *Public Finance*, 48, 406-415.

Ighodaro, A. U. & Oriakhi, D. E. (2010). Does the relationship between government expenditure and economic growth follow Wagner's law in Nigeria? Annals of the University of Petrosani. *Economics*, 10(2), 185-198.

Johansen, S. (1995). Likelihood-Based Inference in Cointegrated Vector Autoregressive Models. Oxford: Oxford University Press.

Johansen, S. & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration: with applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, 52(2), 169-210.

Keho, Y. (2015). Revisiting Wagner's Law for Selected African Countries: A Frequency Domain Causality Analysis. *Journal of Statistical and Econometric Methods*, 4(4), 55-69.

Keynes, J. M. (1936). The general theory of employment, interest and money. London: Macmillan and Co. limited.

Krzyzaniak, M. (1972). The Case of Turkey: Government Expenditures, the Revenue Constraint and Wagner's Law. Program of Development Studies, Paper No. 19. Houston: Rice University.

Li, C., Li, J., Wang, X. & Zheng, Y. (2010). An Empirical Analysis of the Validity of Wagner's Law in China: A Case Study Based on Gibbs Sampler. *International Journal of Business and Management*, 5(6). http://dx.doi.org/10.5539/ijbm.v5n6p161.

Liu, S. & Molenaar, P. (2016). Testing for Granger Causality in the Frequency Domain: A Phase Resampling Method. *Multivariate Behavioural Research*, 51(1), 53-66. http://dx.doi.org/10.1080/00273171.2015.1100528.

Lumsdaine, R. & Papell, D. (1997). Multiple Trend Breaks and the Unit-Root Hypothesis. *The Review of Economics and Statistics*, 79(2), 212-218. http://www.jstor.org/stable/2951453

Lütkepohl, H. (1989). The stability assumption in tests of causality between money and income. *Empirical Economics*, 14(2), 139-150. http://link.springer.com/article/10.1007/BF01980593

Magazzino, C. (2011). Disaggregated public spending, GDP and Money Supply: Evidence for Italy. *European Journal of Economics, Finance and Administrative Sciences*, 41, 118-131. http://ssrn.com/abstract=2333411.

Magazzino, C. & Forte, F. (2010). Optimal size of government and economic growth in EU-27. CREI Working paper 04/2010. [http://mpra.ub.uni-muenchen.de/26669

Mann, A. J. (1980). Wagner's law: An econometric test for Mexico. *National Tax Journal*, 33, 189-201.

Massan, S. S. (2015). Testing Keynesian versus Wagner Hypothesis on the linkage between Government Spending and Economic Growth in Oman. Paper presented at AP15Malaysia Conference, Kuala Lumpur, Malaysia, 7-9 August 2015. http:// globalbizresearch.org/Malaysia_Conference/pdf/KL553.pdf

Menyah, K. & Wolde-Rufael, Y. (2012). Wagner's law revisited: A note from South Africa. *South African Journal of Economics*, 80(2), 200-208. http://www.africabib.org/htp.php?RID=345918576

Mueller, D. C. (2003). Public Choice III. New York: Cambridge University Press.

Musgrave, R. A. (1969). Fiscal systems. New Haven and London: Yale University Press.

Musgrave, R. A. & Musgrave, B. (1988). *Public Finance in Theory and Practice*. New York: McGraw-Hill Book Company.

Onder, I. (1974). Turkiye'de kamu Harcamalarinin Syri: 1927-1967. Istanbul: Fakulteler Matbaasi.

Peacock, A. T. & Wiseman, J. (1961). The growth of public expenditure in the United Kingdom. Princeton, NJ: Princeton University Press.

Perron, P. (1989). The great crash, the oil price shock and the unit root hypothesis. Econometric Research Program, Research Memorandum 338. https://www.jstor.org/stable/1913712

Perron, P. & Vogelsang, T. J. (1998). Additional tests for a unit root allowing for a break in the trend function at an unknown time. *International Economic Review*, 39(4), 1073-1100. http://www.jstor.org/stable/2527353

Pesaran, M. H., Shin, Y. & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3), 289-326.

Reimers, E. H. (1992). Comparisons of tests for multivariate cointegration. *Statistical papers*, 33(1), 335-359. http://link.springer.com/article/10.1007/BF02925336#Bib1

Rossouw, J., Joubert, F. & Breytenbach, A. (2014). South Africa's Fiscal Cliff: A Reflection on the Appropriation of Government Resources. *Tydskrif vir Geesteswetenskappe*, 54(1), 144–162.

National Treasury, South Africa. (2016). Budget Review 2016. http://www.treasury.gov.za/documents/national%20budget/2016/review/FullReview.pdf

SASSA. (2016). A statistical summary of social grants in South Africa. Retrieved from http://www.sassa.gov.za/index.php/knowledge-centre/statistical-reports?download=518:statistical-report-no-2-of-2016

Sideris, D. (2007). Wagner's Law in 19th Century Greece: A Cointegration and Causality Analysis. Bank of Greece, Working Papers, 64.

Singh, B. & Sahni, B. S. (1984). Causality between public expenditure and economic growth in Malaysia. *Journal of Economic Development*, 23, 71-80.

Ssekuma, R. (2011). A study of cointegration models with applications. Manuscript, University of South Africa.http://uir.unisa.ac.za/bitstream/handle/10500/4821/thesis_ssekuma_r.pdf?sequence=1

Tarschys, D. (1975). The growth of public expenditures - Nine modes of explanation. *Scandinavian Political Studies*, 10(1), 9-32.

Toda, H. Y. & Yamamoto, T. (1995). Statistical inference in vector autoregressions with possibly integrated processes. *Journal of Econometrics*, 66, 225-260.

Wagner, A. (1893). *Grundlegung der politischen Ökonomie*. 3rd edition, Leipzig: Winter.

Ziramba, E. (2008). Wagner's Law: An Econometric Test for South Africa. *South African Journal of Economics*, 76 4), 596-606. http://dx.doi.org/10.1111/j.1813-6982.2008.00218.x.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Effects of Brain Drain on the South African Health Sector; Analysis of the Dynamics of its Push Factors

Victor H. Mlambo, *Toyin Cotties Adetiba
University of Zululand, KwaDlangezwa, South Africa
halavico@yahoo.com, *toluwacotties_333@hotmail.co.za

Abstract: While there has been a plethora of studies that addresses migration in Africa, many have yet to successfully unpack the effects of brain drain on the South African health sector. Using textual analysis of the available literature relevant to the topic under consideration; this work seeks to identify the major structural and socio-economic push factors that drive the migration of health professionals in South Africa, relying on Revestain's laws of migration and Lee's push/pull theory of migration. The study also looks at explaining other factors that contribute to the migration of health professionals in South Africa. We argue that for South Africa to retain health professionals, the government needs to increase the training of health workers, improve their working conditions and security, upgrade infrastructure and ensure availability of resources as well as develop a more open immigration policy prioritizing skilled immigration.

Keywords: *Immigration, Brain drain, South Africa, Socio-economic Development*

1. Introduction

The effective functioning of any health sector around the world, particularly in South Africa, is highly dependent on the availability of skilled health professionals (World Health Organization, 2014). South Africa is currently at the verge of losing its best health professionals; hence, its efforts at reducing the outflow of its skilled health professionals which may have a debilitating effect on its socio-economic development. Finding ways to reduce the outflow health professionals would greatly help South Africa achieve its present and future developmental objectives. For years, the South African health sector has fallen victim to the brain drain phenomena. Thousands of highly skilled health professionals (nurses, doctors and other paramedical professionals) have left the country in search of better opportunities abroad, which has negatively impacted the efficient functioning of the heath sector, thus reducing the overall quality of medical care offered by South African health institutions (Makoni, 2009; Brandsouthafrica, 2002). Whilst one may claim that globalization has somewhat led to the increase in the migration of health workers in South Africa, it has however made it easier for skills mobility (Czaika & de Haas, 2014). Globalization has undoubtedly offered freedom for health workers to offer their services beyond South African borders. For Scheffler et al. (2008), the global shortage of nurses, midwives and doctors has reached a staggering 4.3 million due to opportunities for health workers to work abroad resulting to a complex migration pattern characterised by the outflow of health workers from developing countries to developed countries. South Africa has undoubtedly experienced a net outflow of health workers.

Makoni (2009) asserts that as a result of globalization, the borders and immigration control centres of developed countries have been relaxed to attract highly skilled professionals such as nurses, doctors, engineers, teachers etc. hence, the increase in the migration of health workers. It is on record that Canada has the most liberal immigration system in the world thus enabling inflow of skilled professionals to the country. In South Africa, many health professionals have left for better opportunities abroad which is further fuelled by globalization (Makhubu, 2016).Globalization has resulted in the increased demand for health workers. Unless developing countries invest in their health sector, they will continue to feel the impact of migration of their health workers. For South Africa, it is absolutely clear that this calls for direct intervention from both government and the civil society to ensure that health workers stay in the country, otherwise the South African health sector is at risk of total collapse (Aluttis et al., 2014). One may also reason that as much as globalization has resulted in the easy movement of labour, in the case of South Africa, most of the push factors driving brain drain are a combination of structural and socio-economic dynamics (Chimanikire, 2005, Mahadea & Simson, 2010). Apart from globalization, most of the push factors responsible for brain drain of health professionals from South Africa are located internally.

It seems that the South African Government has not adequately or urgently addressed these push factors thus undermining the country's health sector. With slow economic growth and uncertainty in the country's

political system, the likelihood that more skilled health professionals will consider emigrating is increased, which may cripple South African economic development (Booysen & Tawanya, 2015). Although the government has over the years developed polices aimed at addressing the development and training of more health professionals; for example, training of medical doctors in Cuba and the construction of new medical colleges, it has not yet dealt with the push factors (Bateman, 2013;Grootes, 2014), hence, the possibility of a continued migration of health workers. Every year, South Africa loses 17 percent of its qualified doctors (Moodie, 2010) and within a period of 4 years since 2005, more than 1000 newly trained medical doctors have not registered to work in the country; a sign that the South African health sector is in total disarray (Makoni, 2009; Mortensen, 2008). For example, Xaga Dlamini, a newly graduated medical student admitted that "The only thing that is keeping me in this country is because of my commitment to serving the government for two years after which I am ready to leave for a better working environment". Despite the resolution stating that no country should actively recruit doctors from a developing country (Motsoaledi, 2017) which is meant to prohibit the plundering of medical practitioners from struggling African countries, the continent continues to lose much of its needed medical doctors. Within the Southern Africa Development Community (SADC), there is an agreement that bars the poaching of medical staff between the countries in the region. Notwithstanding, the health professionals have continued to emigrate. There is also a SADC protocol that says South Africa must not actively recruit doctors from (fellow) SADC countries (Motsoaledi, 2017). The reason perhaps is because South Africa is the strongest economy within SADC and doctors would in all fairness be willing to move to that strong economy.

South Africa, according to Watson et al. (2011), has a ratio of 0.8 doctors per 1000 people. In a country of 54 million, such a low ratio of medical doctors per 1000 people further complicates the effectiveness of providing quality and effective medical care to an ever growing population. UNICEF (2007) mentions that in 2002 alone, more than 300 specialists who left South Africa never returned. Simpson (2010) reiterates that in 2002 alone, more than 5,000 doctors were working in countries such as Canada, USA, New-Zealand and Australia. According to Pieterse (2016), the Democratic Nurses Organization of South Africa (DNOSA) was concerned with the shortage of nurses in South Africa and the working conditions of "loyal" nurses who choose to stay to rescue the health sector. The public health sector is feeling the true effects of brain drain. The-Citizen (2016) reported that 70 percent of South African nurses admitted to moonlighting (supplementing their income sometimes illegally) to make ends meet. Nurses also admitted that they had to shoulder extra work because of the shortage of skilled professionals.

The above statement unequivocally paints a gloomy picture for the South African health sector and unless urgent interventions are implemented to reduce the outflow of skilled health professionals many would leave. Poor salaries and poor working conditions and lack of security have been identified as the major factors behind the migration of health professionals in South Africa (Manyisaa & van Aswegenb, 2017). Therefore, it is very clear that going forward, the government and civil society need to urgently act to deal with the push factors; otherwise, South Africa risks losing all to brain drain. This paper intends to identify the major push factors driving the migration of health workers, determine the implications for South African health sector, and suggest ways to reduce the outflow of health professionals in South Africa while trying to answer the following questions: what are the driving forces behind the migration of health professionals in South Africa? What are the implications for the South African health sector and what can be done to reduce the outflow of skilled health professional from South Africa? The migration of health workers from South Africa no doubt is motivated by a combination of socio-economic forces of globalization.

2. Methodology

The study relied on secondary data as a means of collecting relevant information. It employed strict textual analysis of the available literature relevant to the topic under consideration. Qualitative research method was used in the course of this study. The purpose of this approach was to put into context brain drain in South Africa and engage in the interpretation of the major structural and socio-economic push factors that drive the migration of health professionals in South Africa. Berkwits & Inui (2007) assert that qualitative research uses methods such as participant observation or case studies which result in a narrative descriptive account of a setting or practice. Various scholars have tried to understand the root causes of migration, therefore there are rich sources of information. Though these sources may not speak directly to the causes and implications of

brain drain within African states and South Africa in particular, they nonetheless offer views on the subject matter which will be utilized to further enrich the study.

3. Theoretical explanation

People move from place to place for different reasons. The difference in the migration pattern tends to affect the overall process of migration. Although there is one applicable theory that captures and holistically explains the real reason behind migration, it is nonetheless imperative for sociologists and geographers to study the migration phenomena and try to uncover why people migrate. This paper sheds light on some of the theories that have been developed and how their assumptions aim to explain causes of migration.

Neoclassical theory: The neo-classical theory of migration explains that people migrate mainly because of the difference in terms of wages between two locations. According to this theory, labour usually flows from low wage regions to regions characterized by high wages (Kurekova, 2011). By implication, health workers in South Africa are likely to respond to labour market forces characterised by high wages.

Dual market theory: The dual labour theory assumes that migration is in most cases caused by pull factors in developed countries. The labour market in developed countries is made up of the primary and the secondary market (Cohen, 1996). The primary market requires highly skilled labour, whilst the secondary market is characterised by labour intensity, thus requiring low skilled labour (Kurekova, 2011). This theory therefore assumes that migration from developing nations is a consequence of the demand for low skilled workers in the secondary market within developed countries (Taylor, 2006), and because low skilled labour is less attractive to the natives of developed countries this automatically creates the need for migration.

World system theory: This theory assumes that the continuous interaction between different societies is an important factor as to why people migrate. This theory places emphasis on economy decline of one state as a result of its trade with a particular (developed) country; hence the migration of people from a county with declining economy to the one characterised by economic growth (Jennissen, 2004). In agreement, Motsoaledi (2017) asserts that if a country goes to another (developing) country and actively recruits their doctors, the country where doctors are recruited will be defeated and cannot compete economically. Migration has long been a human phenomenon; hence the various theories trying to explain it. Of importance to this work are the Revestain's laws of migration and Lee's push/pull theory of migration. According to Battistella (2014), Lee's push/pull theory of migration was a reformulation of Ravenstein's laws of migration, but the difference was that Lee's revised theory further placed emphasis on the internal (push) factors that drive people to consider migration.

Revenstein's assumption on the laws of migration is that migration is influenced by unfavourable circumstances at the place of origin. The pull factors for example include high taxes, unemployment and crime. Therefore, the primary cause of migration is to seek better economic opportunities. Migration usually happens in stages and tends to have more females than males if the distance to be travelled is short. More often, it flows from rural areas towards urban places. Everett Lee went further to reformulate Ravenstein's laws of migration. In his analysis, Lee divided the factors that are responsible for migration and categorised them as push and pull factors. He argued that push factors are those things that are unfavourable in one's current living environment, which pushes the individual to migrate whilst pull factors are things that are favourable in another destination (Lee, 1966). Furthermore, there are intervening factors or barriers that are in-between the place of origin and destination that might influence the decision to migrate.

Table 1: showing the intervening factors that might influence the decision to migrate

Push factors	Intervening factors	Pull factors
Crime	Mountains	Better wages
Lawless society	Rivers	Better educational facilities
Famine	Seas	Better political environment
Poor working conditions	Bad terrain	Existence of civil liberties
Corruption	Distance	Better security

Source: Lee (1966).

Undeniably, the assumptions of the above theories have in some way manifested themselves in South Africa. The assumption of the neo-classical theory which assumes that wages are the major reason for people to migrate is applicable to South African health professionals. Krost (2000) explains that more than 3,300 health professionals that left South Africa cited better salaries that were offered in other destinations, for example, in the UK. Mokoka, Oosthuizen and Ehlers (2010) contend that nurses in South Africa are dreadfully paid despite the fact that they are highly skilled and trained. Migrating to other countries with better pay is therefore a huge possibility. Although the assumption of the dual market theory explains that the existence of secondary market in developed countries fuels low skilled migration among developing countries, within the health domain in South Africa, it has been observed that the highly trained and skilled health professionals are always ready to migrate. However, the migration of low skilled labour to developed countries from South Africa has been very rare. Perhaps the developed countries are very specific as to what kind of skilled professionals they require. This is not to say that there has been no low skilled migration to developed countries. With globalization and interconnectedness of the world, interaction with people from different parts of the globe has become a norm. Some South African health professionals have migrated solely on the advice of family members living abroad (Castro et al., 2017), and thus the assumption of world systems theory is applicable in this context. Apart from better wages and poor working conditions, poor security, and better educational-facilities for their children, crime, racism and discrimination have been the major drivers of migration in South Africa; hence the importance of Lee's push/pull theory of migration in explaining the migration of health professionals in South Africa.

The brain drain of Health professionals from South Africa: Unpacking the major push factors: Globalization has resulted in the interconnectedness of the world thereby making it a global village. It has made the free flow of information, trade and labour across borders much easier (Czaika & de Haas, 2014). One may be tempted to say that the continuous increase in trade and the opening up of economies to allow more investment has benefited the global economy immensely. In fact, the financial benefits of globalization have been noticed where the increase of foreign direct investment has benefited numerous countries around the world. It is therefore clear that developed countries are major beneficiaries of globalization. While it is evident that globalization has played a major role in the creation of one global economy, it has also created a huge demand for skilled workers, with the demand coming especially from developed countries (Duncan, 2012). Globalization has resulted in a situation where developed countries have significantly outpaced their developing counterparts in terms of economic growth and development (The Economist, 2006). Developed countries have continued to demand for more skilled manpower to aid their economic growth, thus increasing the demand for health professionals. This situation unfortunately results in brain drain in developing countries. The South African health sector has been the victim of skills poaching by developed countries. The demand for skilled workers globally, coupled with better salaries, has made South African medical professionals to be more active in seizing such opportunities. This is a part from local socio-economic factors that make it easier for skilled health workers to consider emigrating. Health professionals, according to Dr Margaret Chan (Director-General of WHO), are global citizens in a world that has changed dramatically owing to varying international co-operations where national affairs are intertwined with the forces of international systems that govern economies, financial markets, business relations, and trade (2015). There are numerous push factors that have contributed to the increase in the migration of health professionals from South Africa.

Poor salaries: The remuneration of health workers in South Africa for years has been an issue amongst policy makers. As a matter of fact, health professional in state health institutions are not entirely satisfied with their salaries. The Mail & Guardian (2009) mentioned that to be a doctor in South Africa, one needs to train for 6 years, forgoes almost half a decade of potential earnings, only to find that when they finally graduate, a junior doctor who sacrificed six years of her/his life to study will start with a salary of R8000 ($615), while some bus drivers earn a salary of R8800 ($653.8). Cloete (2015)explains that a nurse in South Africa with more than 10 years of working experience is likely to earn more than R25,000 ($1,923) a month, with water, electricity and a housing allowance all provided. Their medical aid is also mostly covered by the hospital. However, Cloete asserts that countries in the Middle East have started attracting South African health professionals, using the motivation of giving a tax free salary. While being interviewed on Radio702 (2016), Simon Hlungwani, President of the Democratic Nursing Council of South Africa said: the country has witnessed an increase in health professionals, especially nurses, emigrating to countries such as Saudi Arabia

and UAE to mention a few because South African nurses are well trained and their skills are internationally sought after; therefore, prospects of migrating remains high at any given moment.

With a population of 54 million, the migration of health professionals is no doubt the biggest threat to the South African economic development. According to the World Health Organization (2015), India has a ratio of 114 nurses per 100, 000, while Indonesia has a ratio of 115 per 100, 000. This highlights that developing countries are in a constant struggle to deal with the migration of health professionals. The poor working conditions and poor salaries is the biggest problem in the South African health sector. Broomberg (2011) contends that being a nurse in South Africa means being faced with a deluge of patients, as high as 500 per day in hospitals which have inadequate infrastructure and are understaffed. Salaries for health professionals in South Africa have been identified as one of the major push factors driving their migration. The quest for better financial reward in another country has always been at the forefront of migration of professionals, not only in the health sector but also in other sectors across the country. It is clear that the salaries of health professionals in South Africa are a major push factor. Therefore, to ensure development of the health sector, it is imperative that the salaries of health professionals are improved. Although salaries alone will not stop health professionals from migrating, it will nonetheless help motivate them. Structural changes also need to be prioritised to ensure that the conditions in hospitals are conducive enough for health professionals to carry out their duties. Failing to do such, with the South African economy already pushed to junk status, the migration of health professionals is less likely to cease.

Poor working conditions: Conducive working environment contributes immensely to employee productivity and morale. Unfortunately, poor working conditions in the South African health sector have been identified as another major push factor driving migration (Health24, 2011; Pillay, 2017). Nurses and doctors are frequently overwhelmed by patients; the infrastructure is not up to the required accepted standards; paramedics are encumbered with patients to attend to; skilled staff shortage has meant that health professionals have had to work extra hours with an increased number of patients (Sparke, 2012). The migration of health professionals no doubt poses a serious threat to the health sectors of developing nations, and South Africa is certainly no exemption. To highlight the negative impact of the migration of health professionals, the first democratically elected black South African president, Nelson Mandela, in 1997, reprimanded the UK for playing a role in the poaching of skilled South African nurses. According to official statistics, more than 1, 480 nurses left South Africa for UK in 2002 alone, and by late 2003, the number had increased to a staggering 6,739 (Smetherahm & Laurance, 2003). The former Member of the Executive (MEC) for Health in Gauteng Province, Brian Hlongwa, acknowledged that health professionals in the province, especially nurses, were overburdened with work. The MEC further noted that there were many challenges affecting state-run health institutions, with poor working conditions being at the forefront (Mail & Guardian, 2009). Flinkman et al (2013) reports that close 34percent of qualified health professionals are always willing to leave their place of work while almost half of the nurses are burnout.

Owing to limited opportunities for career advancement, work overload and inadequate investment in infrastructure, health professionals are often dissatisfied (Pillay, 2008). The ratio of 39.3 nurses per 10,000 patients, according to the International Council of Nurses, suggests that working conditions are a contributing factor in the migration of skilled South African health professionals. Makhubu (2016) argues that inadequate training facilities, lack of enough qualified staff, poor working conditions and poorly trained health workers produced by poorly equipped medical schools are other reasons why nurses in particular leave South Africa for better environment. It seems that South Africa is struggling to come up with effective policies that would reduce the outflow of skilled health professionals from the country. According to Oosthuizen& Ehlers (2007), besides poor salaries and poor working conditions that facilitate the movement of health professionals, there are a number and combination of other socio-economic factors responsible for the migration of health professionals in South Africa.

Lack of security: South Africa appears to be one of the countries with high levels of crime and insecurity for its workers. Lack of effective security at hospitals has been identified as another factor that encourages health professionals to seek other places of work. Insecurity in the South African health sector has resulted in deaths of medical professionals. A reference was made to a case in 2011 where a patient at Mpumalanga hospital stabbed a doctor to death inside the parameters of the hospital. In another incident, a nurse in Gauteng's

Helene Joseph Hospital was raped, beaten and stabbed in 2014, an incident that took place within the hospital premises (News24, 2014). These isolated security related issues at South African hospitals clearly show that the security of health workers need to be improved.

Infrastructure challenges, resources and skills shortages: There is no denying that the South African health sector is characterised by infrastructure problems. The government has not adequately invested in the upgrading of existing infrastructure, thus contributing to poor working conditions. South African hospitals are characterised by a chronic shortage of vital resources that ensure their effective functionality. Cowen (2017) makes an example of Ngwelezane hospital, in northern KwaZulu-Natal, where the mammogram machine has been out of order since July 2016; as a result, more than 600 women have been denied the opportunity to access lifesaving breast cancer screening. Apart from the issue of broken machinery across South Africa, hospitals are often in short of vital medical supplies. Shortages of skilled health professionals no doubt have negatively affected the functioning of the health sector to such an extent that some hospitals, have had to cancel or postpone certain procedures solely because there are no skilled professionals to undertake them (Section 27, 2010).

Political uncertainty: Unpatriotic and insensitivity to the plight of the masses in the decision making process on the part of political leaders has led to rating agencies (Sygnia Group and Fitch) downgrading the country to junk status, thus scaring off current investors and potential investors (Bisseker, 2017). According to Sygnia Group (SG), the credit rating downgrade basically means the debt of the bonds issued by the government is rated as riskier than they were. It means that both foreign and local investors will require more in terms of interest. It also means the government will have less money to spend on the provision of basic services. The Treasury's ability to withstand departmental demands for increased spending may also weaken (Green, 2017). Political uncertainty has therefore sent shockwaves to concerned skilled professionals in the country who fear not only for the country's future, but also for the future of their children (Fin24, 2014). Bezuidenhout et al. (2009) state that political uncertainty in South Africa has caused feelings of insecurity and anxiety among the country's health professionals, considering the fact that their skills are in demand internationally and are highly mobile. Labonté et al. (2015) comment that political uncertainty has long been identified as cause of migration among health workers in South Africa, yet the government has done little to change this sentiment. Whilst immediately after 1994, political uncertainty lead to mass exodus of mostly white skilled professionals (Aardt, 2006), economic uncertainty has since overtaken political instability among the main causes of migration in South Africa. The argument therefore is that if the current political atmosphere does not change, arguably, South Africa should expect the migration of more health workers.

4. Findings

The migration of skilled health professionals undeniably poses a significant challenge for South Africa. The mass exodus of health workers has greatly jeopardized South African ability to cope with an ever increasing demand for medical care. It has also hindered the effectiveness and efficient functioning of the health sector. This has negatively affected South Africa's global competiveness. Within the premise of this article, there are four major findings:

Economy: York (2011) opines that Canada has saved roughly $400 million by poaching qualified health professionals from Africa. More than 22 percent of medical doctors in Canada are foreign trained. South Africa has contributed some of these medical doctors. Also, more than half of the doctors practising in Saskatchewan are foreign trained including hundreds from South Africa. Mwiti (2015) argues that to train a medical doctor in South Africa costs roughly $58,700. According to Martins in Organization for Economic Cooperation and Development, training a nurse costs R340, 000 ($26,154) (OECD, 2003). Therefore, the emigration of health professionals from South Africa to Canada has been devastating. In New-Zealand alone, there are 600 South African practicing medical doctors, resulting in South Africa incurring a loss of R481 million ($37 million).In 2001, the South African government demanded that Canada halts the recruitment of South African medical doctors, owing to the fact that South Africa had incurred a loss of $1.41 billion on returns from its investments on its medical doctors that had emigrated (Pang, 2002; Ehman & Sullivan, 2001). Experienced health professionals command a better income; thus the government gains extensively in the form of collecting taxes and when they migrate, the tax collectable by government decreases significantly,

thus impacting the government's overall budget (Penuel et al, 2013). While the number of emigrating professionals has decreased, especially nurses, it is nonetheless imperative that the push factors that drive brain drain in South Africa are identified and dealt with to prevent further loss of skilled health professionals.

A crumbling health sector: For any health sector to function at optimal levels, it is very important that it has an effective and qualified workforce in place. The health sector is the backbone of any country, and its decay presents numerous challenges not only for the people but the government as well (Smith & Jury, 2017, Kabene et al., 2006). The emigration of South African health professionals meant that the remaining health workers have had to work extra hours, handle more work load which contributes to burn out. The continued migration of health workers may cripple the South African health sector should there be nothing done to try and limit the outflow of skills from the country.

Global competitiveness: The continuous exodus of health professionals negatively impacts on South African global competiveness. The global competitiveness of a country is characterised by economic growth, level of literacy, GDP levels as well as the provision of quality health care for its citizens. As such, globalization has made it impossible to limit the movement of people, and it is clear that developing nations cannot compete with their developed counterparts in terms of financial incentives for health professionals (Shattuck et al., 2008). It is with this notion that the government needs to ensure that health professionals remain in the country and contribute to the country's economic development; thus guaranteeing the global competitiveness of the country.

Work moral: More than 70% of nurses in South Africa have admitted to moonlighting (The-Citizen, 2016). The migration of health professionals has undoubtedly had an adverse impact on the remaining staff. Govender and Appel (2006) assert that work overload and the skills shortages have contributed to poor morale and dedication among remaining health professionals. According to Dovlo (2005), this poses significant problems in terms of service delivery because low employee moral will result to poor quality service. Answering questions on nurses moonlighting on the 16th of May 2017, Miss Samkelisiwe (not original name for security reason) admitted that she and her colleagues often moonlight to supplement their meagre salary not minding the high number of patients they have to attend to.

The brain drain of health workers: Implications for South Africa

Health Implications: The performance of any health sector in the world is dependent on the availability of skilled medical professionals. In South Africa, the health sector is characterised by substantial amounts of skills shortages (Department of Labour, 2008). According to Money Marketing (2016), 70 percent of nurses in South Africa admitted to working overtime and during holidays because of the shortages of medical personnel in the country. According to the Medical-Chronicle (2016), in 2010 alone, there were approximately 81, 925 vacancies in the South African health sector, most of these vacancies were for nurses. Various causes have been blamed for the shortage of medical experts in South Africa; these include lack of investment in the public health sector, brain drain, inadequate equipment and brain drain. South African nurses and doctors are in demand around the world, owing to the fact they are well-trained in all medical disciplines, thus allowing them to be portable around the world. The loss of South African medical professionals has been devastating for the country's health sector, and will even be more catastrophic for South African economic development if appropriate immigration policy is not put in place. The continuous mass exodus of skills from the South African health sector will have disastrous consequences for the sector as a whole. The brain drain of South African medical professionals has led to substantial decline in the domestic health care delivery capacity, loss of training investment on immigration health professionals, loss of morale and dedication on the part of the remaining staff, increased shortage of skills, increased pressure and workloads on the remaining professionals and reduced efficiency in the functioning of the health sector (Fin24, 2011; Sue, 2005; Mortensen, 2008).

Economic implications: It is usually said that an educated population is a productive population. Therefore, if the population of a country is educated, it is likely going to contribute towards the economic development of that country by applying their skills in different sectors of the economy (Buchannan, 2012). Countries like South Korea, New-Zealand and Switzerland have invested immensely on educating their citizens knowing

well that educated citizens are usually productive. These countries have also suffered from brain drain, but the effects of brain drain have been rarely felt because of the high number of educated individuals who make for lost skills (Mugimu, 2010; McCarthy, 2015). South Africa has one of the highest investment rates in education; contrariwise, a large percentage of the population, particularly the black population, is illiterate and therefore every skilled professional that leaves the country is considered a loss to the country's economy (Vrbicek, 2015). A report by LeMay (2004) found that the migration of South African skilled workers has made it difficult for the country to rise above the 3 percent economic growth that it has been achieving over the years. He further reports that brain drain cost the South African economy over 2.5 billion rand ($192.31 million) between 2002 and 2003. Brain drain is likely to negatively affect the economic situation of South Africa. Nevertheless, even though, South Africa may be losing some of its skilled professional in the health sector to other developed countries, this shortfall is arguably cushioned by skilled immigrants from other African states. These immigrants contribute to the South African economy. According to the Centre for Development and Enterprise (2000), South Africa is in need of skilled immigrants to drive the economy, as most of these immigrants have skills and immense knowledge in sectors such as IT, entrepreneurship, finance and academics. It is said that more skilled immigrants in South Africa will help enhance the economy, enabling it to grow and become more competitive (Kuznetsov, 2006).

5. Conclusion and Suggestions

With a growing population each year, the health sector cannot afford to lose skilled professionals who render vital services to the public. What this suggests is that the health sector needs to urgently redesign its retention strategy that will ensure that South African skills remain. According to Mokoka, Oosthizen& Ehlers (2010), the following initiatives can be implemented at both general and organizational level to retain medical practitioners in the country. The government must invest in employee professional development and encourage better working relationships and tolerance among professional health workers. Furthermore, retaining skills at organizational level would involve improving safety in the work place, investing in organizational development, ensuring effective resource utilization as well as improving the organizational culture. The South African health sector needs to prioritise retention policies. This will assist in curbing brain drain of health professionals. It is clear that the exodus of health professionals has had a negative effect on South African health sector. Push factors like poor salaries, poor working conditions and lack of security have been identified as the major drivers of migration among health professionals. While the government has acknowledged the horrible conditions under which health professionals work, addressing these challenges has been very slow. With the growth of population in South Africa, it is clear that the demand for medical care will increase over the years. The government together with the civil society must work together to develop and implement policies that would ensure that skilled professionals remain in the country.

Over the years, South Africa has lost thousands of highly skilled health professionals to developed countries. Globalization and the free movement of labourers have contributed to the brain drain of health professionals. Unfortunately, the government has not done enough to deal with the push factors that drive the migration of health workers. Although the educational system in South Africa has been slow in replenishing the skills that have been lost, the immigration of foreign skilled medical professionals (especially from Africa) has aided South Africa. While it is clear that South Africa cannot compete financially with developed nations, it can develop effective policies that will ensure that health workers are satisfied. There are policies which can be implemented to reduce the outflow of health professionals from South Africa. These include increasing the training of health workers, improving working conditions and security, upgrading infrastructure and ensuring availability of resources, and developing a more open immigration policy. It therefore means sustainable socio-economic development cannot be achieved while the country is losing its highly skilled work force; therefore the government needs urgent interventions to reduce brain drain.

References

Aardt, P. (2006). Million whites leave SA. Fin24, http://www.fin24.com Accessed 16 April 2017.

Aluttis, C., Bishaw, T. & Frank, M. (2014).The workforce for health in a global shortages and international migration. World Health Organization Publication. http://www.who.intAccessed 12 April 2017.

Bateman, C. (2013). Doctor shortages: Unpacking the 'Cuban solution. *South African Medical Journal,* 103(9), 603-605.

Battistella, G. (2014). Global and Asian Perspectives on International Migration Switzerland: Springer International Publishing

Berkwits, M. & Inui, T. (1998).Making use of qualitative research techniques. *Journal of general internal medicine*, 13(3), 195-199.

Bisseker, C. (2017). The future is now. Business Live. 13th April 2017. https://www.businesslive.co.za. Accessed 25 April 2017.

Booysen, J., & Tswanya, Y. (2015). Brain drain looms for struggling SA. IOL, 12th December. http://www.iol.co.za Accessed 02 June 2017.

Brandsouthafrica. (2002). Health care in South Africa. https://www.brandsouthafrica.com. Accessed 27 April 2017.

Broomberg, J. (2011). Solving healthcare challenges in South Africa. http://www.leader.co.za. Accessed 11 October 2016.

Buchannan, N. (2012). An Educated Population Is Essential to a Nation's Prosperity, yet Some Politicians Are Demonizing Our Educational System for Political Advantage. https://verdict.justia.comAccessed 5 June 2016.

Castro, E., Spitzer, D., Kabamalan, M., Sanchez, M., Caricativo, R., Runnels, V., Labonté, R. M. & Bourgeault, I. (2017). An examination of the causes, consequences, and policy responses to the migration of highly trained health personnel from the Philippines: the high cost of living/leaving-a mixed method study. *Human Resources for Health*, 15(1)DOI: 10.1186/s12960-017-0198-z

Centre for Development and Enterprise. (2000). Why is South Africa afraid of skilled immigrants when they are essential for enhancing economic growth? http://www.cde.org.za/Accessed 6 June 2016.

Chan, M. (2015).Global nursing: reshaping nursing for the future needs of citizens. Keynote address at the International Council of Nurses Conference Global citizen, Seoul, Republic of Korea 20 June 2015.

Chimanikire, D. (2005). Brain Drain: Causes and Economic Consequences for Africa. Paper presented at the 27th AAPAM Annual Roundtable Conference, 5-9 December Livingstone, Zambia.

Cloete, M. (2015). Why nurses and teachers leave our shores: Emigration or relocation is no longer merely a white phenomenon. https://www.hst.org.za Accessed 8 May 2017.

Cohen, R. (1996). Introduction, in Cohen, R. (ed.) Theories of Migration. Cheltenham: Edward Elgar, xi-xvii.

Cowen, K. (2017). Ngwelezana Hospital becoming a 'pit of hell'. http://zululandobserver.co.za Accessed 20 April 2017.

Czaika, M. & de Haas, J. (2014). The Globalization of Migration: Has the World Become More Migratory. *Journal of International Migration Review*, 48(2), 283–323

Department of labour. (2008). The shortage of medical doctors in South Africa. http://www.labour.gov.za. Accessed 01 June 2016.

Dovlo, D. (2005). Wastage in the health workforce: some perspectives from African countries. *Human Resources for Health,* 3(6), 1-9.

Duncan, N. (2012). Immigration policymaking in the global era: In pursuit of global talent. New York: Palgrave Macmillan.

Ehman, A. & Sullivan, P. (2001). South Africa appeals to Canada to stop recruiting its MDs. *Canadian Medical Association Journal*, 164(3), 387–388

Fin24. (2014). SA among worst hit by brain drain. http://www.fin24.com/ Accessed 14 April 2017.

Flinkman, M., Bouret, U. & Salanterä, S. (2013). Young Registered Nurses' Intention to Leave the Profession and Professional Turnover in Early Career: A Qualitative Case Study. Hindawi Publishing Corporation ISRN Nursing.

Govender, S. & Appel, M. (2006). Nursing profession faces numerous challenges. IOL, 12 May. http://www.iol.co.za. Accessed 11 April 2017.

Green, J. (2017). Fitch downgrades SA to junk status, https://www.dailymaverick.co.za/article/2017-04-07-breaking-fitch-downgrades-sa-to-junk-status/#.WTUR8k0krIU Accessed 10 April 2017.

Grootes, S. (2014). Minister Motsoaledi, we need more medical doctors. Mail & Guardian, 2 October. 2014https://www.dailymaverick.co.za. Accessed 01 May 2017.

Health24. (2011). SA hospital shocker. Health24, 6th July 2011.http://www.health24.com Accessed 11 April 2017.

Jennissen, R. (2004). Macro-economic determinants of international migration in Europe. Dutch University Press.

Krost, P. (2000). Top nurses leave SA stranded. IOL.http://www.sowetanlive.co.za/news/ Accessed 11 April 2017.

Kurekova, L. (2011). Theories of migration: Conceptual review and empirical testing in the context of the EU East-West flows. Paper presented at the Interdisciplinary conference on migration, Economic change, social change, April 6-9, 2011 University College London.

Kuznetsov, Y. (2006). Diaspora networks and the international migration of skills: how countries can draw on their talent abroad. Washington: The World Bank.

Labonté, R., Sanders, D., Mathole, T., Crush, J., Chikanda, A., Dambisya, Y., Runnels, V., Packer, C., MacKenzie, A., Murphy, G. & Bourgeault, I. L. (2015). Health worker migration from South Africa: causes, consequences and policy responses. *Human resources for health,* 13(1).DOI: 10.1186/s12960-015-0093-4

Lee, E. (1966). A theory of migration. Demography, Springer, 3(1), 47-57.

LeMay, M. (2004). US immigration: A reference handbook. ABC-CLIO. https://books.google.co.za/books Accessed 30 May 2016.

Mahadea, D. & Simson, R. (2010).The challenge of low employment economic growth in South Africa: 1994 - 2008.http://www.scielo.org.za. Accessed 02 June 2016.

Mail & Guardian. (2009). SA state hospitals in crisis. https://mg.co.za. Accessed 11 April 2016.

Mail & Guardian. (2009). Vavi: Doctors' salaries awful. https://mg.co.za. Accessed 11 April 2016.

Makhubu, N. (2016) Nurses leaving SA in droves. IOL, 2 February 2016. http://www.iol.co.za/ Accessed 11 April 2017.

Makoni, M. (2009). South Africa: Doctor brain drain continues. (Online)http://www.universityworldnews.com/ Accessed 12 April 2016.

Manyisaa, Z. & van Aswegenb, E. (2017). Factors affecting working conditions in public hospitals: A literature review. *International Journal of Africa Nursing Sciences,* 6, 28-38.

McCarthy, N. (2015). Which Countries Invest The Most In Education? https://www.statista.com Accessed on 2 June 2016.

Medical-Chronicle (2016). Nursing skills shortage in SA. https://www.medicalchronicle.co.za/Accessed 01 May 2017.

Moodie, A. (2010). South Africa: Fewer doctors graduate. http://www.universityworldnews.com Accessed on 20 April 2017.

Mokoka, E., Oosthuizen, M. & Ehlers, V. (2010). Retaining professional nurses in South Africa: nurse managers' perspectives: original research. *Journal of Interdisciplinary Health Sciences,* 15(1), 484-492.

MoneyMarketing. (2016). The real cost of the skills shortage in the SA health sector. http://www.moneymarketing.co.za/Accessed 30 May 2016.

Mortensen, J. (2008). Poverty and poverty reduction in sub-Saharan Africa: An overview of the issues. Danish institute for international studies: working paper No 2008/18. Copenhagen.

Motsoaledi, A. (2017) Brain drain continues despite conventions on medical poaching, Medical Brief, Africa's Media Medical Digest. 10 May. From http://www.medicalbrief.co.za/archives/brain-drain-continues-despite-conventions-medical-poaching/ Accessed 23 May 2017.

Mugimu, C. (2010). Brain drain to brain gain: What are the implications for higher education in Africa? *Comparative & International Higher Education*, 2(2), 37-42

Mwiti, L. (2015). Africa's doctors, feeling extremely unloved, are leaving in droves. It could get worse. Mail & Guardian, https://mg.co.zaAccessed 11 April 2017.

News24. (2012). Healthcare dilemma in South Africa. http://www.news24.com/ Accessed 11 April 2017.

News24. (2014). Nurse raped, stabbed at Helen Joseph hospital. http://www.news24.com/ Accessed 11 March 2017.

OECD. (2003). Trends in International Migration 2003.https://books.google.co.za/books_Accessed 01 May 2017

Oosthuizen, M. & Ehlers, V. (2007).Factors that may influence South African nurses' decisions to emigrate. *Health SA Gesondheid*, 12(2), 14-25.

Pang, T., Lansang, M. & Haines, A. (2002). Brain drain and health professionals. *British Medical Journal,* 2, 324-499

Penuel, B., Statler, M. & Hagen, R. (2013). *Encyclopedia of Crisis Management,* Vol. 1.Sage Publications.

Pieterse, C. (2016). Too few specialised nurses. News24, 31 May. http://www.news24.com/Accessed 11 March 2017.

Pillay, R. (2008). Work satisfaction of professional nurses in South Africa: a comparative analysis of the public and private sectors. *Human Resources for Health,* 7(15). DOI: 10.1186/1478-4491-7-15

Pillay, T. (2017). Poor hospital conditions could cost Durban man his arm. *Timeslive*, http://www.health24.comAccessed 11 April 2017.

Radio702. (2016). Salaries of nurses in South Africa were and are appalling. http://www.702.co.zaAccessed 01 May 2017.

Rasool, F. & Botha, C. (2011). The nature, extent and effect of skills shortages on skills migration in South Africa: original research. *SA Journal of Human Resource Management*, 9(1), 287-298.

Scheffler, R., Liu, J., Kinfu, Y. & Dal Poz, M. (2008).Forecasting the global shortage of physicians: an economic- and needs-based approach. *Bulletin of the World Health Organization,* 86(7).

Section27. (2013). The Gauteng health system in crisis - SECTION27. http://www.politicsweb.co.za Accessed 7 May 2017.

Shattuck, M., Bidwell, P., Thomas, S., Wyness, L., Blaauw, D. & Ditlopo, P. (2008). Motivation and retention of health workers in developing countries: a systematic review. *BMC health services research*, 8(1). doi: 10.1186/1472-6963-8-247.

Shinn, D. (2004). African migration and brain drain, Slovenia. Institute for African Studies and Slovenia Global Action. Working paper series no. 12. Ljubljana: https://sites.google.com Accessed 21 March 2016.

Simpson, T. (2010). South Africa's brave new world: the beloved country since the end of apartheid. Random House South Africa, Penguin

Smetherahm, J. & Laurance, J. (2003). UK still poaching SA nurses, despite ban. IOL, 13 May. http://www.iol.co.zaAccessed 11 April 2017.

Smith, M. & Jury, A. (2017). Workforce Development Theory and Practice in the Mental Health Sector. IGI Global.

Sparke, M. (2012). Introducing globalization: Ties, tensions, and uneven integration. USA. John Blackwell Publishing Ltd.

Sue. (2005). Factsheet 5: Skills migration and the brain drain in South Africa. http://www.hsrc.ac.za/Accessed 13 October 2016.

Taylor, J. (2006). International migration and economic development. Paper presented at International symposium on international migration and development, Turin, Italy, 28-30 June 2006.

The Economist. (2006). The rich, the poor and the growing gap between them. http://www.economist.comAccessed 20 April 2017

The-Citizen. (2016). 70% of SA nurses have a secondary job. *The-citizen*, http://citizen.co.zaAccessed 11 April 2016.

UNICEF. (2007). The state of the world's children 2008: Child survival. UNICEF.

Vrbicek, N. (2015). Education in South Africa: One Learner at a Time. http://www.simanye.co.za[Accessed 25 May 2016.

Watson, D., Hollister, R., Stroud, E. & Babcock, E. (2011). The engaged university: International Perspectives on civic engagements. Taylor & Francis.

World Health Organization. (2014). A universal truth: no health without a workforce. http://www.who.int/Accessed 13 April 2017.

World Health Organization.(2015). World Health Statistics 2015.http://www.who.int/Accessed 13 April 2016.

York, G. (2011). Brain drain of African doctors has saved Canada $400-million. Global-Mail https://www.theglobeandmail.com Accessed 11 April 2017.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Trade Liberalization, Consumption, and Real Exchange Rate in Seven ASEAN+6 Countries

Sigit Setiawan
Fiscal Policy Agency, Ministry of Finance Republic of Indonesia
ssetiawan@fiskal.depkeu.go.id, sigitstiawan@gmail.com

Abstract: Trade liberalization has been mushrooming in the globalization era. The trade liberalization policy adoption by one country will be followed shortly by another. Although trade liberalization policy is strongly advocated by international organizations, a few prominent economists argue there is no 'one fits for all' policy. Thus, the policy effect altogether with other relevant aspects still needs to be explored in case by case basis, including ASEAN+6 regions. This paper is intended to analyze the relationship of trade liberalization and consumption on the real exchange rate in seven ASEAN+6 countries – the most dynamic region during period 2000 – 2011, a period covering subprime mortgage crisis. With data panel approach, the paper investigates the relationship of trade liberalization and consumption on real exchange rate while taking into account level of country's income and crisis effect. The resulted model finds significant relationship in the overall and individual effect of tariff and terms of trade change as proxies of trade liberalization, consumption, level of country's income, and subprime mortgage crisis on real exchange rate.

Keywords: *ASEAN+6, Consumption, Exchange Rate, Trade Liberalization, Free Trade Area*

1. Introduction

In a globalized world nowadays, only countries with autarky system - if any – are not affected by the economic condition of other countries. ASEAN countries and their trading partners as part of globalized world are no exception, they are also affected by economic condition in other countries. In 1998 the economic crisis mainly affected main ASEAN countries, while in 2008 the crisis left the small open economy like Singapore to also suffer (Kohler, 2010). In comparison with the period before globalization, the upcoming crisis in globalization era could happen in a shorter period of time (Roubini and Mihm, 2010; Stiglitz, 2010). The interconnectedness created from globalization helps make the global economy more susceptible to economic shocks and crises (OECD, 2011). Globalization opens restrictions for many aspects, including trade. In line with globalization, many industrialized countries supported by international institutions promoted trade liberalization policy as a policy recommendation for all countries, both developed and developing ones. However, not everyone agrees that trade liberalization is a good policy option for every country (Stiglitz and Charlton, 2005; Reinert, 2007, Siddiqui, 2015). Many non-governmental organization have opposed it as seen in the people rallies held outside many international forum. Studies related with trade liberalization and its relevant aspects especially in cases including developing countries should be encouraged. With good and deep comprehension on trade liberalization policy adopted and its relevant aspects, every country - including developing countries - can manage its development goals to be more sustainable.

This study is developed by a theoritical and empirical framework from previous research and textbook that trade liberalization policy adopted and the consumption trend of change reflected in increasing export import potentially affect regional or national currency value, due to their effects on demand and supply of the currency. The argument why it is important to analyze is the stability of currency value in the long run proves to be crucial for sustainable economic growth, and its correlation with public policy decisions adopted including trade liberalization should not be taken for granted. Other relevant characteristics and situations which might have influence (i.e. country's level of income and crisis period) are then also considered in formulating the best variable relationship. This paper is intended to analyze the effect of trade liberalization and consumption on the real exchange rate in seven ASEAN+6 countries during period 2000 – 2011, a period incorporating subprime mortgage crisis 2008. With data panel approach, the paper seeks the relationship of trade liberalization and consumption on real exchange rate while taking into consideration country's level of income differences and crisis effect during the economic crisis period. This paper will be divided into three sections. First section will discuss the paper background and underlying literature review in determining both the endogenous and exogenous variables elaborated in the model. Second section will provide the methodology employed. The third section will cover analysis of the model outcome, its policy implications, and concluding remark.

2. Literature Review

Currently, more and more trade liberalization agreement have been concluded in bilateral or regional forum. The uncertainty in the conclusion of current WTO Doha round has shifted the focus of many countries liberalization efforts through the establishment of free trade area scheme in respective regions. This phenomenon has also happened in Asia, especially in the group of countries located in the most dynamic regions in Southeast Asia, East Asia, South Asia, and Oceania, known as ASEAN +6. A large number of FTAs involving the countries have been established and new rounds of negotiations have been initiated to improve the level of liberalization in the region. During 2002 until Januari 2013, the number of FTAs involving ASEAN+6 countries have increased more than six times from 27 to 179, with 130 of them are bilateral FTAs. The total FTA amount involving ASEAN+6 accounts for 70% of the total FTA involving Asia (ADB, 2013). Several papers have elaborated the linkages of those variables in a separate manner both theoretically and empirically. In addition, none of them have also investigated the relationship in ASEAN+6 regions - the most dynamic region even in the world. Moreover, the resulting conclusions and evidence from those papers are mixed and challenge further studies.

There are two principal aspects of liberalization policy: change in import tariff and change in terms of trade. Traditional policy literature indicates that in trade liberalization a tariff reduction will lead to real depreciation, and increased terms of trade will induce real exchange rate appreciation (Edwards, 1987a). Several following studies support this proposition. Reduction of import tariff liberalization can lead to depreciation was the evidence found in Tokarick (1995), Head & Ries (1999), Jimoh (2006), Insaidoo & Obeng (2008), while the simulation outcome of increased terms of trade leading to an appreciation of real exchange rate is found in Mendoza (1995). The relationship of trade liberalization and real exchange rate may be found in Edwards (1987a; 1987b; 1987c), Tokarick (1995), Mendoza (1995), Head and Ries (1999), Jimoh (2006), Insaidoo and Screwdriver (2008), Zakaria and Ghauri (2011), and Ju-Ai Ng (2013). Furthermore, the answer to the relationship of macroeconomic variables and real exchange rate has been discussed in several studies such as Devereux and Hnatkovska (2011), Edwards (1987b), Lin (1996), Mussa (1984), Obstfeld (1984), Ravn, Schmitt-Grohe, Uribe (2007), and Ravn, Schmitt-Grohe, Uribe (2012).

As mentioned in the theoretical study of Tokarick (1995) and the empirical study of Head & Ries (1999) in Canada, the relaxation of import barriers by reducing import tariff induces real exchange rate to depreciate. Insaidoo & Obeng (2008) empirically finds that since the opening of market access for import products and import tariff reduction during liberalized import regime in Ghana in 1967, Ghana real exchange rate depreciated by 43%. While the work of Jimoh (2006) in Nigeria finds depreciating domestic currency by 13% as a result of liberalization policies in 1986/1987 through import tariff reduction. Results of impulse response analysis in the three-sector model of intertemporal equilibrium in Mendoza (1995) conclude that the increased terms of trade induce exchange rate appreciation. In the simulation, 50% of the variability in real exchange rate is contributed by terms-of-trade disturbances. All the papers mentioned above have put trade liberalization as exogenous while real exchange rate as endogenous. In relation with macroeconomic variables as other exogenous variables in the relationship of trade liberalization and real exchange rate, the need to include macroeconomic variables to complete the relationship is mentioned in Edwards (1987c). It does not specify those macroeconomic variables yet describes them as “relative capital intensities among importables, exportables and non-tradables, sign and magnitudes of the elasticity of demand and supply and the relative importance of the income effect". Edwards’s argument to add other variables is in line with Mussa (1984) who argues to accommodate variables related with "the divergence between the actual level of net foreign assets held by domestic residents and the long-run desired level of such holdings" and "demands for goods and desired level of domestic spending". Thus, both arguments support the possibility of incorporating macroeconomic variables such as level of consumption, a close proxy for demand for goods.

Macroeconomic theory of open economies provides some explanatory models relating financial market, net capital outflow, and foreign currency market as seen in Mankiw (2012). Several cases (e.g. government deficit, capital flight and import quota) employing the models have been illustrated. The theory in Mankiw (2012) which is IS-LM model or its expanded model may be explored to explain the relationship of consumption and real exchange rate. Other relevant yet contrary with the theory is sourced from Ravn, Schmitt-Grohe, Uribe (2012). Increasing consumption is correlated with depreciating real exchange rate

(Devereux & Hnatkovska, 2011). Their argument is in contrary with basic prediction of efficient risk-sharing – relative consumption growth rates across countries or regions should be positively related to real exchange rate growth rates across the same areas. While Lin (1996) found that although household consumption is a significant element in explaining the long run movement of real exchange rate in South Korea and Taiwan, this variable is likely not a reliable fundamental affecting real exchange rate and thus should be combined with other variables on the supply side.

3. Methodology

Although the region – it is marked with level of income disparities, some are high income countries the others are middle and low income countries - has been having dynamic economic growth and has been generating trade surplus for a reasonably long time period, yet several economic crisis happening in the past has severely hit their trade balance and growth. Period 2000-2011 is selected as period of investigation taking several aspects for consideration. First, during the period ASEAN countries with their trading partners agreed to involve intensively in FTAs [i.e. ASEAN-China FTA (2002), ASEAN-Japan FTA (2003), ASEAN-India FTA (2003), ASEAN-Korea FTA (2005), ASEAN-Australia-New Zealand FTA (2009)][1]. Consumption level as indicated by import volume increased quickly and surpassed US$ 1 trillion in 2015, the value is more than triple the import volume in year 2000[2]. Second, the author intends to analyze if the correlation of real exchange rate with trade liberalization and consumption is different in normal times and crisis time. Period 2000-2011 can provide complete picture of period in normal times and crisis time. After 1998 crisis, ASEAN economy recovered back to normal. The economy then experienced the boom and afterwards it slowly declined to reach the bust in 2008. The data availability is another matter. This study covers seven ASEAN+6 countries (Australia, China, Japan, Malaysia, New Zealand, Philippines, and Singapore). Observation period is year 2000 - 2011 and relevant data is collected from World Bank publication data.

The maximum effort has been conducted to cover every ASEAN+6 member country and the longest data period in the study coverage. Nonetheless, not every country member of ASEAN + 6 has a complete set of database for all exogenous variables examined: trade liberalization in terms of trade and tariff reduction, consumption, and endogenous variable : real exchange rate (RER); thus, only the data of seven member countries could be incorporated. Those countries are Australia, China, Japan, Malaysia, New Zealand, Philippines, and Singapore. I have tried to cover observation data as extensive as possible. Yet, I am subsequently aware that several variables in several countries such as terms of trade and real exchange rate have a data series starting from year 2000 only. In that regard the best effort to provide necessary data has been limited to 2000 - 2011 period only, which covers high income and middle and low income countries and also crisis period 2008-2010. Several hypotheses based on theoretical and empirical findings are proposed in this study as follows:

- Trade liberalization in terms of tariff reduction, terms of trade, consumption, country's level of income and crisis period together or individually affect the real exchange rate (see Edwards, 1987c; Mussa, 1984).
- There are range of possible hypothesis from both theoretical and empirical perspectives which show complexity and contrasts one another to describe the relationship of trade liberalization to exchange rate.

Theoritically, there are three mainstreams describing the relationship of trade liberalization to exchange rate. The first is trade liberalization - through tariff and non-tariff restrictions reduction – will lead to depreciating RER, referring to traditional policy literature as mentioned by Edwards (1987c). Tokarick (1995) concluded similar conclusion with this mainstream. The second one is that trade liberalization – through terms of trade improvement – will induce appreciating RER, as concluded by Gregorio & Wolf (1994) and Mendoza (1995). The third one is there is no general or universal conclusion that can be drawn from the relationship of trade liberalization (through the change of tariff and terms of trade) and RER; thus the relationship should be drawn from case by case basis. Edwards (1987b) concluded "It is shown that in the more general case ..... it is not possible to know how changes in tariffs or the terms of trade will affect the equilibrium path

[1] www.asean.org
[2] www.aseanstats.org

of the RER." The scepticism of the relationship of trade liberalization via tariff reduction was also expressed by Edwards (1987a) : "in the case of tariffs reduction it is not possible to know a priori whether the equilibrium RER will appreciate or depreciate."

Empirically, the effect of liberalization via tariff reduction may lead to depreciation of real exchange rate as in Head & Ries (1999), Jimoh (2006), and Insaidoo & Obeng (2008). On the other hand, there is no empirical evidence showing the effect via the change of terms of trade on RER. The hypothesis regarding with the latter effect thus may be only be based on the above theoretical finding by Edwards (1987b), Gregorio & Wolf (1994) and Mendoza (1995).

- Theoritically, consumption may lead to appreciating RER (Mankiw, 2012) or depreciating RER (Ravn, 2012).

Empirically, increased consumption will lead to depreciating real exchange rate and vice versa (see Devereux and Hnatkovska, 2011), although according to Lin (1996) consumption is not a fundamental exogenous variable.

- There are large differences in terms of country's level of income with Japan having the highest GDP per capita US$ 46,720 (current, 2012) and GNI per capita 36,300 (current, 2012); while Cambodia having the lowest GDP per capita US$ 944 (current, 2012) and GNI per capita 2,330 (current, 2012). It is expected that the RER movement of seven ASEAN+6 countries would be different between the two groups – high income and middle-low income countries. The groupings refer to World Bank classification (July 2012) with high income countries have GNI per capita $12,476 or more, while middle and low income countries have GNI per capita less than $12,476.
- The observed period 2000 – 2011 covers a period when subprime mortgage crisis 2008 took place. The crisis effect influenced global and regional trade up to at least 2010. Despite the fact, as having much learned the lesson from Asian economic crisis 1997/98, prudential macroeconomic policy has been adopted by ASEAN+6 countries (including those seven countries) and this has made the scale of crisis in ASEAN+6 region was much less severe compared with US and Europe.

Subsequently, 2008-2010 period was considered crisis period since in the period the economic growth slowed down; even there were some of those seven ASEAN+6 countries (e.g. Singapore and Japan) experienced a recession during the time period. The crisis period was also marked by the slump in ASEAN+6 countries exports. The countries dependent on exports in promoting economic growth such as Singapore and Japan have suffered much. Therefore it is expected that the RER movement of the seven ASEAN+6 countries would be different between crisis period and normal period. The main model employed to examine the relationship between a set of exogenous variables and one endogenous variable are panel data regression model. The formulated equations are in a log-linear model.

$$LRER_{it} = \propto +\beta_1 Tariff_{it} + \beta_2 LToT_{it} + \beta_3 LCon_{it} + \beta_4 D1_{it} + \beta_5 D2_{it} + e_{it} \quad \text{.....(1)}$$

For the purpose of comparison, another econometric panel data model excluding crisis period 2008-2010 will also be computed. Thus, dummy crisis period variable will not be employed in the model. The model is formulated as follows :

$$LRER_{it} = \propto +\beta_1 Tariff_{it} + \beta_2 LToT_{it} + \beta_3 LCon_{it} + \beta_4 D1_{it} + e_{it} \quad \text{.....(2)}$$

Another model for comparison is an econometric panel data model without dummy variables at all as follows :

$$LRER_{it} = \propto +\beta_1 Tariff_{it} + \beta_2 LToT_{it} + \beta_3 LCon_{it} + e_{it} \quad \text{.....(3)}$$

where (for all models)

$LRER_{it}$ = Log Real Exchange Rate Country *i* Year *t*
$Tariff_{it}$ = Tariff Rate Country *i* Year *t*
$LToT_{it}$ = Log Terms of Trade Country *i* Year *t*
$LCon_{it}$ = Log Consumption Country *i* Year *t*
$D1_{it}$ = Dummy Country's Level of Income (1 for high income country, 0 for low and middle income country)
$D2_{it}$ = Dummy Crisis Period (1 for crisis period, 0 for normal period)

The models demonstrate the existence of trade, fiscal, and monetary sector policy which may affect exchange rate. Trade liberalization via tariff and terms of trade is a measure involving policy discretion in trade sector

which is in the domain of trade sector and fiscal sector policymakers. Consumption is an important economic indicator closely related with tax, excise, export and import duties collection discretion which are in fiscal sector policymakers' domain. While RER is a crucial indicator for monetary stability, a discretion area for monetary sector policymakers. All the above mentioned variables which act as a policy mix play an important role in shaping each country's economy condition.

4. Results and Discussion

Prior to investigating the relationship of a set of endogenous variables on exchange change rate of the seven ASEAN+6 countries using panel data model approach, let us have a look at the trend of each variable in the graphs. The trend of model variables during 2000 – 2011 period indicated in average RER of the seven ASEAN+6 countries tended to appreciate, tariff rate was inclined to decline, terms of trade tended to improve, while consumption was inclined to increase (see figures 3, 4, 5, and 6 in Appendix). In terms of real exchange rate, all seven sample countries but Japan have had currency appreciation during observation period 2000-2011, with the highest was China (54%) and the lowest was Malaysia (4%). Regarding with tariff rate, all seven sample countries have lowering tariff rate, except Singapore which has applied zero tariff rate since 2000. The highest decrease happened in China. In the case of terms of trade index, four of the seven countries have faced lowering index; nonetheless, the level of decrease was much less than the level of index increase. Australia has double increase in the index. This region has recorded impressive consumption growth during observation period. In the sample countries, Malaysia recorded the highest (94%) followed by China (92%), and Japan recorded the lowest (12%). In the population, Vietnam ranked the highest (114%) followed by India (108%), and Korea became the lowest (48%).

Among the three models displayed in the first, second, and third equation, the first model under 10% confidence level (see table 1) and the second model under 5% confidence level (see table 5) have shown the best estimators. The second model has lower adjusted R2 and F-test than the first model; however the second one has better t-test than the first one. Since in the first model the t-test of D2 is just slight above 5% and the model has better F-test while covers more variables, the first model is still better than the second one. While the third model (see table 6) should be ignored since the relationship shown in *TARIF* variable (minus sign) is contrary with the data relationship displayed in fig. 3 and fig. 4. From Hausman test to select among the three options of the first model: pooled ordinary least square (OLS), fixed effect model (FEM), or random effect model (REM), I found out that REM gave the best estimators (see table 1, table 2, table 3, and table 4 for comparison). Since the estimated chi-square value is highly statistically insignificant, the hypothesis that there is significant difference in the estimated coefficients of the FEM and REM is accepted. It seems there is no correlation between the error term and one or more regressors. Hence, the random effects model as shown in table 1 can be accepted instead of fixed effect model shown in table 3 (see Gujarati & Porter, 2009).

Table 1: Panel Data Model Output - Random Effect

Dependent Variable: LRER
Method: Panel EGLS (Cross-section random effects)
Date: 07/08/13 Time: 17:33
Sample: 2000 2011
Periods included: 12
Cross-sections included: 7
Total panel (balanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.325246	0.198105	6.689627	0.0000
TARIF	-0.006420	0.002468	-2.601472	0.0111
LTOT	0.196383	0.055799	3.519446	0.0007
LCON	0.033162	0.013331	2.487581	0.0150
D1	-0.092121	0.022140	-4.160912	0.0001
D2	0.017253	0.008965	1.924477	0.0579

Effects Specification	S.D.	Rho
Cross-section random	0.020969	0.2778
Idiosyncratic random	0.033809	0.7222

Weighted Statistics			
R-squared	0.251131	Mean dependent var	0.848737
Adjusted R-squared	0.203126	S.D. dependent var	0.042383
S.E. of regression	0.037834	Sum squared resid	0.111650
F-statistic	5.231403	Durbin-Watson stat	0.504172
Prob(F-statistic)	0.000341		

Unweighted Statistics			
R-squared	0.309896	Mean dependent var	2.011350
Sum squared resid	0.152427	Durbin-Watson stat	0.369299

The result examining the overall model indicates significantly the effect of endogenous variables on exogenous variable (see Table 1). The model can explain 20.3% of the variability between the response data around its mean. However, since the purpose of this study is to find and interpret the relationship between the endogenous variable and exogenous variables, it is irrelevant to use the lower goodness of fit measure to see whether it is a good model or not. In that regard, F-test and t-test are the relevant measures. The F-test indicates the model is collectively robust, and the t-test shows that individual exogenous variables have significant effect on the endogenous variable. It shows that altogether and invidually, trade liberalization (via tariff and terms of trade), consumption, country's level of income, and crisis period affect real exchange rate significantly under 5% level of confidence, except crisis period which is slightly above 5% level of confidence, thus far under 10% level of confidence. Thus, it supports hypothesis 1.

Trade Liberalization and RER: This section discusses hypothesis 2. Trade liberalization can be measured by the change in tariff and terms of trade. The model results in negative relationship between trade liberalization via tariff on RER and positive relationship between trade liberalization via terms of trade on RER. In other words, the empirical finding shows that tariff reduction leads to appreciating RER, but tariff increase leads to depreciating RER. The increased terms of trade induces appreciating RER, while the decreased terms of trade induces depreciating RER. The t-test indicates significant relationship of tariff and terms of trade on RER under 5% level of confidence. β_1 coefficient suggests that RER appreciates at the rate 0.642 percent of tariff reduction. Subsequently, β_2 coefficient shows that 1% increase in terms of trade will lead to 0.196 percent of RER appreciation. The empirical finding on the negative relationship between trade liberalization via tariff on RER in seven ASEAN+6 countries in my study is in contrast with the empirical positive relationship of those two variables above in Head & Ries (1999) for Canada case, Insaidoo & Obeng (2008) for Ghana case, and Jimoh (2006) for Nigeria case. In comparison with the theoritical reference, the result of my study resists the theory in the first mainstream (traditional policy literature and Tokarick (1995)). Yet, it supports the third mainstream theory proposed by Edwards (1987a; 1987b) which concluded the scepticism of a universal relationship of trade liberalization via tariff reduction on exchange rate and relied more in case by case basis.

Subsequently, the result of positive relationship of trade liberalization through terms of trade in my study is in line with theoretical finding in Gregorio & Wolf (1994) and Mendoza (1995) from the second mainstream theory which concluded trade liberalization through terms of trade improvement will induce appreciating RER. The empirical finding of my study may also be interpreted to support the proposed theory in Edwards (1987a; 1987b) from the third mainstream theory; which concluded case by case basis relationship. Both tariff reduction and terms of trade increase have been the trade policy adopted by the relevant policymakers in the seven ASEAN+6 countries. Trade liberalization policy through tariff reduction in the seven ASEAN+6 countries has appreciated their currency, while through terms of trade improvement has appreciated their currency as well. We may not forget that characteristics of the ASEAN+6 region including those seven countries– which was among others facing trade surplus situation in the observation period – may provide the background to the two-variable relationship. Trade liberalization policy adopted in ASEAN countries together with their partner developed countries in Asian and Australian regions have been commonly mixed with foreign direct investment promotion, because ASEAN have long pursued outward-oriented trade and FDI policies since the 1980s in cooperation with their neighboring and more developed partners. The policies have been one of the main engines of rapid economic growth and development in the countries. Internally through ASEAN Trade in Goods Agreement (ATIGA), main ASEAN countries have eliminated intra-ASEAN import duties on 99.65 percent of their tariff lines, while LDCs in ASEAN have reduced their import duties to 0-5 percent on 98.86 percent of their tariff lines.[3] In 2014, the average ATIGA rate stood at just 0.04% for the ASEAN-6 (declining from 4.44% in 2007), and 0.54% average for all AMS (declining from 2.58% in 2007).[4] At the same time, ASEAN has also made steady progress on its external integration with their partners in the rest of Asia and the world.[5] By liberalizing their trade and FDI regimes, ASEAN countries have successfully joined the region's supply chains led by their developed partner countries in ASEAN+6 regional forum.

[3] See ASEAN Secretariat http://investasean.asean.org
[4] See ASEAN Integration Report 2015.
[5] Kawai and Naknoi (2015).

Consumption and RER: *Empirical finding on the relationship of consumption and RER indicates positive relationship, which supports theoretical finding in hypothesis 3*. The t-test under 5% level of confidence shows significantly that increasing consumption induces appreciating RER. β_3 coefficient indicates that 1% increase of consumption impacts on 0.033% RER appreciation. This relationship finding is in contrast with Devereux & Hnatkovska (2011). The significant relationship result is also contrary with Lin (1996) which shows that consumption is not a fundamental exogenous variable. Theoritically, the finding of my study is in line with the literature theory in Mankiw (2012) and contrary with Ravn (2012). Macroeconomics theory in open economies (e.g. in Mankiw (2012)) can be utilized to develop solid arguments of the empirical finding on the third hypothesis test of relationship between consumption and exchange rate, as explained in interconnecting model in financial market, capital outflow, and foreign currency market (see figure 2). In trade surplus situation commonly found in ASEAN+6 countries (see figure 1), net exports NX is above zero; thus $Y = C + I + G + NX$ will be higher than domestic spending $C + I + G$ and saving $S = Y - C - G$ is higher than investment I. Significant increase in consumption C in $S = Y - C - G$ will decrease saving S (assuming other factors constant), and decrease loanable funds availabe in financial market; thus supply curve of loanable funds shifts from S1 to S2. The decreased loanable funds will raise real interest rate from r1 to r2, which result in decreased net capital outflow NCO from n1 to n2. The lowering NCO will result in less supply of relevant local currency to exchange with foreign currency, thus cause appreciating RER.

The evidence of positive relationship of consumption and RER in my study may indicate the existence of Backus-Smith anomaly as described in Devereux & Hnatkovska (2011) and Corsetti, Dedola, & Leduc (2008). Devereux & Hnatkovska (2011) argued that the evidence may show the existence of the joint role of incomplete markets and shocks which generate strong income effects as proposed in resolutions of the Backus-Smith anomaly. "The intuition is that a country which has a faster growing consumption experiences an appreciating real exchange rate". China and India are good examples of those seven ASEAN+6 countries with faster growing consumption and surely there are a few more. With their remarkable growth and the advantage of their enormous population - as those three nations ranked the first (1.34 billion), the second (1.24 billion), and the fourth (242 million) of the most populous nations in the world - their fast growing consumption may create significant magnitude for increased consumption in ASEAN+6 region. Especially, crisis period 2008-2010 has made Asia and ASEAN+6 a new global engine of growth with faster growing consumption compared with previous few decades. In addition, Corsetti, Dedola, & Leduc (2008) explained further "strong wealth effects in response to shocks raise the demand for domestic goods above supply, crowding out external demand and appreciating the terms of trade and the real exchange rate."

Level of Country's Income and Crisis Period: *The model output in level of country's income dummy shows that the country's level of income negatively affects RER, which supports hypothesis 4.* From t-test under 5% level of confidence, the level of income disparities among the seven ASEAN+6 countries influences RER significantly. It is noted that several countries such as Japan, Australia, New Zealand, South Korea, and Singapore are grouped into higher income countries, while other countries are classified into the middle and low income countries group. The rate of relative change of RER for high income countries in average is 0.092 % (β_3 value=-0.092) lower than middle and low income countries. This figure suggests that middle and low income countries experience appreciation or depreciation more quickly than high income countries (amounting 0.092 unit RER more per RER value). In other words, currency value of high income countries is relatively more stable in comparison with middle and low income countries. More stable economic structure and financial sector in high income countries which are notably developed or new industrial countries play important role in this matter.

Crisis period dummy shows the opposite positive sign, dissimilar to level of country's income dummy. The t-statistic = 0.0579 is slightly above 5% level of confidence, and as a consequence statistically this figure can still be accepted under 10% level of confidence. The resulted t-statistic indicates significant relationship that crisis period 2008-2010 affected the RER of the seven ASEAN+6 countries, which supports hypothesis 5. The β_4 value output indicates that the rate of relative change of RER during crisis period 2008-2010 in average is 0.017 percent higher than normal period. It suggests that during the crisis period, the seven ASEAN+6 countries experienced appreciation or depreciation more quickly than in normal times. Implicitly, the currency value of the seven ASEAN+6 countries is relatively more volatile in the crisis period compared with normal times. The result does make sense since during turbulence period, global economy commonly poses

much more uncertainties and information asymetries which subsequently increase risk perception among businesses players. It is reflected to some degree by the abrupt capital inflows and outflows - mainly from portfolio investment - in this region during turbulence period.

Policy Implications: This study covers seven ASEAN+6 countries (Australia, China, Japan, Malaysia, New Zealand, Philippines, and Singapore), which during observation period together with the rest of ASEAN+6 countries have enjoyed trade surplus. The region has successfully improved the regional value chain and increased the productivity with Japan, China, Korea, and Singapore serve as final product exporters. The models employed in this study portray fiscal, monetary, and trade policy linkages. Basically, coordination and policy mix among fiscal, monetary, and trade regulators should be maintained appropriately. Therefore, it is necessary to understand the impact of a particular domestic policy to local currency. A policy with direct or indirect impact to lowering tariff, increased terms of trade index, and increased consumption will induce local currency appreciation in the seven ASEAN+6 countries. And the opposite applies; a policy issued with direct or indirect impact to increasing tariff, decreased terms of trade index, and decreased consumption will induce local currency depreciation in the seven ASEAN+6 countries. The policy mix should be maintained and coordinated appropriately to prevent from drastic local currency appreciation or depreciation; a situation which will impede export import activities, business plan, and economy as a whole in the end. The adverse impact of drastic local currency appreciation or depreciation will be worse especially for the ASEAN+6 developing countries every time and for all seven ASEAN+6 countries during economic turbulence.

From macroeconomics perspective, a country's currency appreciating too much without adequate economic fundamentals support will create unbalanced macroeconomic situation in the long run, marked with over demand of import commodity in domestic market and oversupply of export commodity in international market. At particular point of time during the appreciation, if the shock is managed appropriately the appreciation will stop and the currency will reach a new equilibrium level. However, if managed inappropriately the balance of payment will suffer. Adverse impact will take place as well in drastic depreciation. From policymakers' perspective - to 'tame' the shock and to maintain steady and sustainable economic growth - fiscal sector policymakers may adjust relevant policy instruments e.g., imposing or releasing tax, tariff, export and import duties adjustment. On the other hand, in the short-term monetary sector policymakers may adjust the policy instruments e.g., by tightening or relaxing monetary policy mainly through interest rate instrument to ensure steady and stable economic growth. Trade sector policymakers may contribute to economic growth and stabilization e.g., by tightening or relaxing export import barriers in cooperation with fiscal sector policymakers. The less currency stability characteristic which the ASEAN+6 developing countries have in comparison with developed ones should prompt the respective government to be more prudent in adopting macroeconomic policy; which is beneficial to hinder any economic turbulence. It applies not only during crisis but also during normal times. Therefore, learning the lessons from Asian economic crisis 1997/1998, many Asian countries including ASEAN+6 countries (both developed and developing ones) have a tendency to accumulate high level of reserve currency as buffer to protect their economy from adverse external shocks.

5. Conclusion

Trade liberalization has been mushrooming in the globalization era. The trade liberalization policy adoption by one country will be followed shortly by another. Although trade liberalization policy is strongly advocated by international organizations, a few prominent economists argue there is no 'one fits for all' policy, including in this regard, trade liberalization. Thus, the policy effect altogether with other relevant aspects still needs to be explored in case by case basis, including ASEAN+6 region. The empirical evidence resulted from the log-linear model with data panel approach employed in this study shows significant effect of trade liberalization via tariff and terms of trade, consumption, level of country's income, and crisis period altogether and individually on real exchange rate. Trade liberalization policy in the seven ASEAN+6 countries through both tariff reduction and terms of trade improvement has appreciated their currency. The trade surplus characteristic of ASEAN+6 countries, including those seven countries in the observation period may provide the background for the two-variable relationship. The empirical evidence related with tariff supports the theory proposed by Edwards (1987a; 1987b) which concluded the scepticism of a universal relationship of trade liberalization via tariff reduction on exchange rate and relied more in case by case basis. In relation with

terms of trade, the empirical evidence may agree not only with the 'skepticism' theory proposed by Edwards (1987a; 1987b), but also with the theory proposed by Gregorio & Wolf (1994) and Mendoza (1995) which concluded trade liberalization through terms of trade improvement will induce appreciating RER. This study contributes empirical evidence to the latter theory.

Empirical finding on the relationship of consumption and RER indicates significantly that increasing consumption induces appreciating RER, which is in contrast with Devereux & Hnatkovska (2011). Different with Lin (1996), this study shows consumption is a significant variable affecting real exchange rate. The finding of this study is in line with the literature theory in Mankiw (2012) and contrary with Ravn (2012). The log-linear model output shows that the country's level of income affects RER. Middle and low income countries significantly experience appreciation or depreciation more quickly than high income countries, which suggests the higher currency stability of high income countries have in comparison with middle and low income countries. Crisis also affects RER as this study finds that during crisis period 2008-2010, the seven ASEAN+6 countries significantly experience appreciation or depreciation more quickly than in normal times. It reflects more volatile RER during crisis period in comparison with normal times. This study is expected to result a better and more comprehensive conclusion if the terms of trade and real exchange rate data could be disclosed before year 2000 and all ASEAN+6 countries relevant data could be provided. Other factors impact suitable with Edwards (1987c) and Mussa (1984) e.g. government spending, capital inflow and outflow, surplus and deficit trade balance on real exchange rate have not been investigated yet and and may trigger a challenge for further studies.

References

ADB (2013). Multilateralizing Asian Regionalism: Approaches to Unraveling the Asian Noodle Bowl. March 2013.

ASEAN Secretariat (2015). ASEAN Integration Report 2015

Corsetti, G., Dedola, L. & Leduc, S. (2008). International Risk Sharing and the Transmission of Productivity Shocks. *Review of Economic Studies*, 75, 443–473.

Devereux, M. B. & Hnatkovska, V. (2011). Consumption Risk-Sharing and the Real Exchange Rate : Why does the Nominal Exchange Rate Make Such a Difference. NBER Working Paper Series 17288. National Bureau Of Economic Research. Cambridge

Edwards, S. (1987a). The Liberalization of the Current Capital Accounts and the Real Exchange Rate. NBER Working Paper Series 2162. National Bureau Of Economic Research. Cambridge

Edwards, S. (1987b). Tariffs, Terms of Trade, and the Real Exchange Rate in and Intertemporal Optimizing Model of the Current Account. NBER Working Paper Series 2175. National Bureau Of Economic Research. Cambridge

Edwards, S. (1987c). Economic Liberalization and the Equilibrium Real Exchange Rate in Developing Countries. NBER Working Paper Series 2179. National Bureau Of Economic Research. Cambridge

Gregorio, J. D. & Wolf, H. (1994). Terms of Trade, Productivity, and the Real Exchange Rate. NBER Working Paper Series 4807. National Bureau Of Economic Research. Cambridge

Gujarati, D. N. & Porter, D. C. (2009). *Basic Econometrics.* 5Ed. McGraw-Hill International Edition, 2009.

Head, K. & Ries, J. (1999). Rationalization Effects of Tariff Reductions. *Journal of International Economics*, 47, 295–320. Elsevier

Insaidoo, W. G. B. & Obeng, C. K. (2008). Effect of Import Liberalization on Tariff Revenue in Ghana. AERC Research Paper 180. Naerobi

Jimoh, A. (2006). The Effects of Trade Liberalization on Real Exchange rate: Evidence from Nigeria. *Journal of Economic Cooperation*, 27(4), 46-52.

Ju-Ai, N. (2013). A Dynamic General Equilibrium Model for Malaysia: Macroeconomic Effects of A Reduction in Motor Vehicle Tariff. *International Journal of Humanities and Management Sciences (IJHMS)*, 1(1). International Scientific Academy of Engineering & Technology

Kawai, M. & Naknoi, K. (2015). ASEAN Economic Integration through Trade and Foreign Direct Investment: Long-Term Challenges. ADBI Working Paper Series No. 545 October 2015. Asian Development Bank Institute.

Kohler, M. (2010). Exchange rates during financial crises. BIS Quarterly Review, March 2010.

Lin, K. S. (1996). Private Consumption, Non-Traded Goods and Real Exchange Rate : A Cointegration-Euler Equation Approach. NBER Working Paper Series 5731. National Bureau Of Economic Research. Cambridge

Mankiw, N. G. (2012). *Principles of Economics*, 6E. South-Western, Cengage Learning

Mendoza, E. G. (1995). The Terms of Trade, the Real Exchange rate, and Economic Fluctuations. *International Economic Review*, 36(1), 101-137. JSTOR

Mussa, M. L. (1984). The Theory of Exchange Rate Determination in Exchange Rate Theory and Practice, Bilson and Marston (Ed.). National Bureau Of Economic Research and University of Chicago Press.

Obstfeld, M. (1984). Capital Flows, the Current Account, and the Real Exchange rate: Consequences of Liberalization and Stabilization. NBER Working Paper Series 1526. National Bureau Of Economic Research. Cambridge

OECD (2011). Reviews of Risk Management Policies Future Global Shocks: Improving Risk Governance.

Ravn, M., Schmitt-Grohe, S. & Uribe, M. (2007). Explaining the Effects of Government Spending Shocks on Consumption and the Real Exchange Rate. NBER Working Paper Series 13328. National Bureau Of Economic Research. Cambridge.

Ravn, M., Schmitt-Grohe, S. & Uribe, M. (2012). Consumption, Government Spending, and the Real Exchange Rate. *Journal of Monetary Economics*, 59, 215-234. Elsevier.

Reinert, E. S. (2007). How Rich Countries Got Rich... and Why Poor Countries Stay Poor. Constable & Robinson Ltd. London

Roubini, N. & Mihm, S. (2010). Crisis Economics: A Crash Course in the Future of Finance. Penguin Press.

Siddiqui, K. (2015). Trade Liberalization and Economic Development: A Critical Review. *International Journal of Political Economy*, 44(3), 228-247

Stiglitz, J. & Charlton, A. (2005). Fair Trade for All: How Trade can Promote Development. Oxford University Press.

Stiglitz, J. (2010). Freefall: America, Free Markets, and the Sinking of the World Economy. W. W Norton & Company Ltd.

Tokarick, S. (1995). External Shocks, the Real Exchange rate, and Tax Policy. *IMF Staff Papers*, 42(1).

Zakaria, M. & Ghauri, A. B. (2011). Trade Openness and Real Exchange Rate: Some Evidence from Pakistan. *Romanian Economic Journal,* XIV(39), March 2011.

APPENDICES

Table 2: Pooled OLS Model

Dependent Variable: LRER
Method: Panel Least Squares
Date: 02/25/14 Time: 10:15
Sample: 2000 2011
Periods included: 12
Cross-sections included: 7
Total panel (balanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.579346	0.159109	9.926196	0.0000
TARIF	-0.010093	0.002430	-4.154089	0.0001
LTOT	0.097952	0.054992	1.781202	0.0788
LCON	0.030286	0.008271	3.661843	0.0005
D1	-0.103821	0.016770	-6.191041	0.0000
D2	0.012254	0.010772	1.137606	0.2588

R-squared	0.388816	Mean dependent var	2.011350
Adjusted R-squared	0.349637	S.D. dependent var	0.051586
S.E. of regression	0.041602	Akaike info criterion	-3.452599
Sum squared resid	0.134995	Schwarz criterion	-3.278969
Log likelihood	151.0091	Hannan-Quinn criter.	-3.382801
F-statistic	9.924210	Durbin-Watson stat	0.417835
Prob(F-statistic)	0.000000		

Table 3: Fixed Effect Model

Dependent Variable: LRER
Method: Panel Least Squares
Date: 02/25/14 Time: 10:53
Sample: 2000 2011
Periods included: 12
Cross-sections included: 7
Total panel (balanced) observations: 84
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.491979	0.958431	-2.600060	0.0113
TARIF	0.004211	0.003395	1.240340	0.2188
LTOT	0.289307	0.061579	4.698161	0.0000
LCON	0.344346	0.081505	4.224826	0.0001
D1	NA	NA	NA	NA
D2	0.004041	0.010074	0.401094	0.6895

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.622222	Mean dependent var	2.011350
Adjusted R-squared	0.570472	S.D. dependent var	0.051586
S.E. of regression	0.033809	Akaike info criterion	-3.814644
Sum squared resid	0.083442	Schwarz criterion	-3.496323
Log likelihood	171.2151	Hannan-Quinn criter.	-3.686682
F-statistic	12.02354	Durbin-Watson stat	0.587437
Prob(F-statistic)	0.000000		

Table 4: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	4	1.0000

* Cross-section test variance is invalid. Hausman statistic set to zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
TARIF	0.004211	-0.006420	0.000005	0.0000
LTOT	0.289307	0.196383	0.000678	0.0004
LCON	0.344346	0.033162	0.006465	0.0001
D2	0.004041	0.017253	0.000021	0.0040

Table 5: Random Effect Model (Crisis Period excluded)

Dependent Variable: LRER
Method: Panel EGLS (Cross-section random effects)
Date: 02/26/14 Time: 09:00
Sample: 2000 2011
Periods included: 9
Cross-sections included: 7
Total panel (balanced) observations: 63
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.256254	0.209438	5.998212	0.0000
TARIF	-0.007199	0.002544	-2.829785	0.0064
LTOT	0.230339	0.070672	3.259256	0.0019
LCON	0.033638	0.012121	2.775095	0.0074
D1	-0.091952	0.021287	-4.319714	0.0001

Effects Specification	S.D.	Rho
Cross-section random	0.016709	0.1863
Idiosyncratic random	0.034926	0.8137

Weighted Statistics

R-squared	0.231517	Mean dependent var	1.146541
Adjusted R-squared	0.178518	S.D. dependent var	0.045705
S.E. of regression	0.041425	Sum squared resid	0.099530
F-statistic	4.368332	Durbin-Watson stat	0.592754
Prob(F-statistic)	0.003721		

Unweighted Statistics

R-squared	0.293174	Mean dependent var	2.005644
Sum squared resid	0.121590	Durbin-Watson stat	0.515515

Table 6: Fixed Effect Model (no dummy variables)

Dependent Variable: LRER
Method: Panel Least Squares
Date: 02/26/14 Time: 09:40
Sample: 2000 2011
Periods included: 9
Cross-sections included: 7
Total panel (balanced) observations: 63

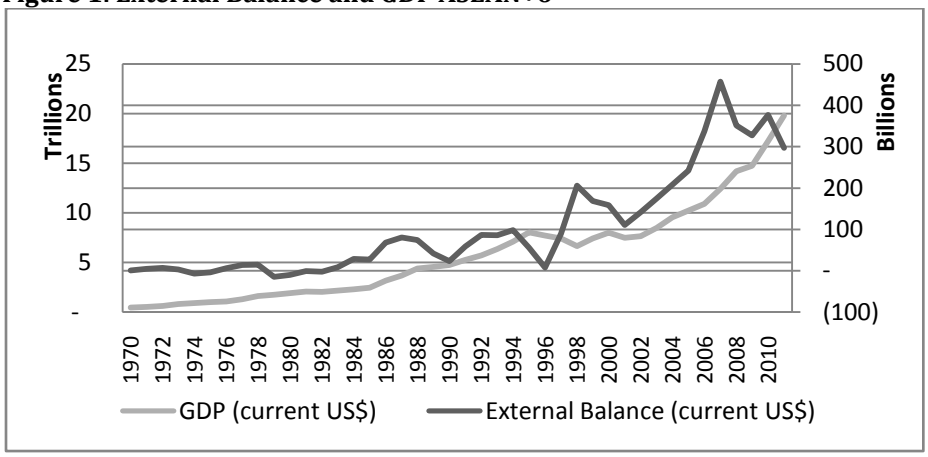
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.314891	1.094019	-3.030013	0.0038
TARIF	0.006493	0.003846	1.688167	0.0973
LTOT	0.374342	0.078492	4.769157	0.0000
LCON	0.401020	0.092281	4.345641	0.0001

Effects Specification

Cross-section fixed (dummy variables)

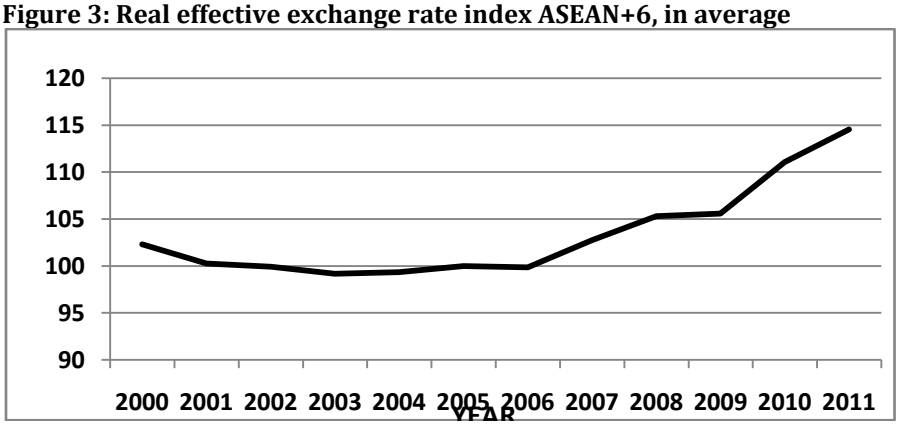
R-squared	0.624182	Mean dependent var	2.005644
Adjusted R-squared	0.560364	S.D. dependent var	0.052674
S.E. of regression	0.034926	Akaike info criterion	-3.726576
Sum squared resid	0.064649	Schwarz criterion	-3.386396
Log likelihood	127.3871	Hannan-Quinn criter.	-3.592782
F-statistic	9.780626	Durbin-Watson stat	0.718575
Prob(F-statistic)	0.000000		

Figure 1: External Balance and GDP ASEAN+6



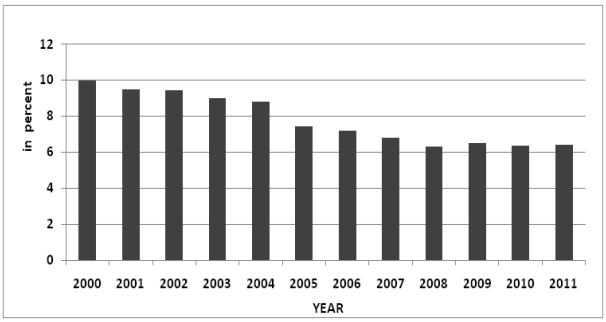
Source: World Bank (2013)

Figure 3: Real effective exchange rate index ASEAN+6, in average



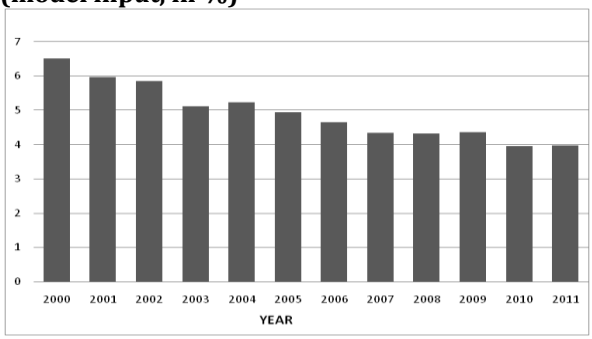
Source: World Bank (2013)

Fig. 4(a).Tariff rate ASEAN+6, in average



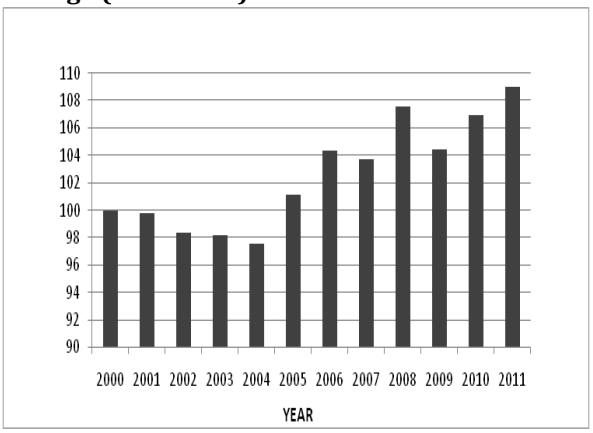
Source : World Bank (2013)

Fig. 4(b).Average tariff rate (model input, in %)



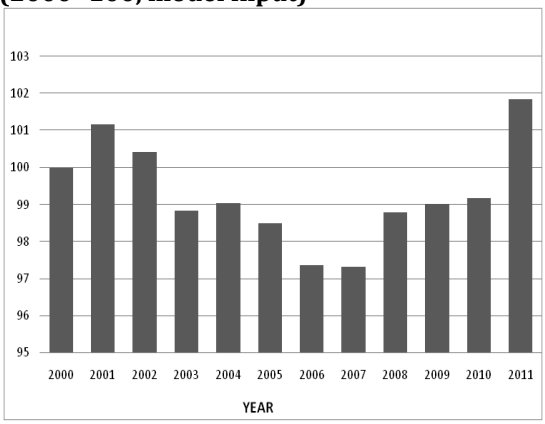
Source : World Bank (2013)

Fig. 5(a). Terms of trade index ASEAN+6, in average (2000=100)



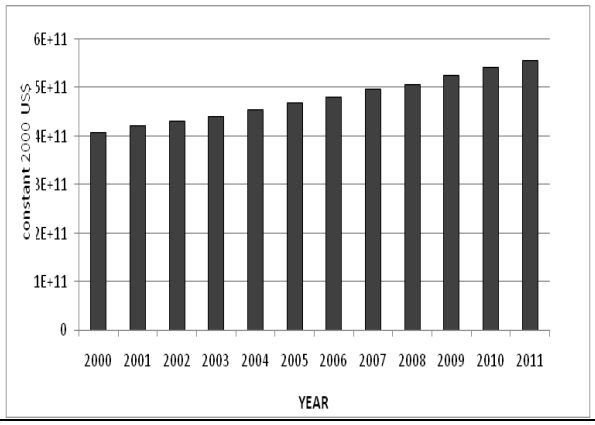
Source : World Bank (2013)

Fig. 5(b). Terms of Trade Index, in average (2000=100, model input)



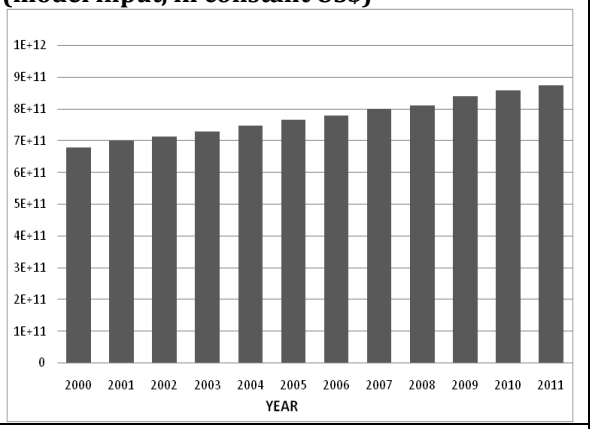
Source : World Bank (2013)

Fig. 6(a). Average Consumption (ASEAN +6)



Source : World Bank (2013)

Fig. 6(b). Average consumption (model input, in constant US$)



Source : World Bank (2013)

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Determinants of Venture Capital Supply in Sub-Saharan Africa

Olabanji Oni
University of Fort Hare, South Africa
ooni@ufh.ac.za

Abstract: The purpose of this paper is to determine the variables that influence venture capital supply in Sub-Sahara Africa. The study developed econometric models and examined a 10-year period (2006 to 2015) pertaining to eight (8) Sub-Sahara African countries namely: Botswana, Ivory Coast, Ghana, Kenya, Mauritius, Nigeria, South Africa and Uganda. The empirical model includes six determinants (initial public offering, market capitalisation, unemployment rate, foreign direct investment inflow, inflation rate and trade openness). Secondary data was utilised for the study. The primary sources of data were the World Bank Development indicators and Preqin data base. All the statistical analyses in the study were performed using E-views version 8. Panel data models of pooled, fixed and random effects were employed. The results suggest that there is a significant positive relationship between initial public offering, market capitalisation and venture capital supply. Second, there is no significant relationship between unemployment rate, foreign direct investment inflows, trade openness and venture capital supply. Based on the empirical findings, this study recommends that Sub-Sahara African governments should attempt to develop their economies by improving infrastructure and corporate governance. There is also a need for African countries to develop the equity market.

Key words: *Venture Capital Supply, Determinants of Venture Capital, Venture Capital, Sub-Sahara Africa, Africa*

1. Introduction

Venture capital investments are investments made at various phases of the business life cycle including the start-up and expansion phase right up to preparation for exit from the investment via buyout or initial public offering (Solnik & McLeavey, 2009). Venture capital and private equity are identical and used similarly in various studies. There is a difference between formal from informal venture capitalist. Formal venture investment is a company that functions as an asset group and an informal venture capital are angel shareholders who are affluent people considering to finance novel projects that has high probability of growing (Kuratko & Hodgetts, 2007; Nieman, 2006; Chemmanur & Chen, 2006). Over the past ten years, while much of the mature markets have witnessed recession, Africa has received a lot of interest from venture capitalist (AVCA, 2013). Emerging Markets Private Equity Association (2013) reported that Sub-Sahara Africa is for the first time the most attractive emerging market for investors. Johnson (2010) found that despite the financial crisis experienced in 2008, the venture capital industry experienced an increase in market yield in Africa. Africa venture capital posted 11.2% annualised return over the past 10 years (Ventures Africa, 2013). There is an increase in investors' confidence because of the performance of emerging market venture capitalists in Sub-Sahara Africa (Lebus, 2013).

Studies on the determinants of venture capital supply have investigated many variables with conflicting conclusions. In South Africa, Msweli and Oni (2014) found three factors that influence venture capital supply namely; (1) micro small and medium enterprise size, (2) the degree of industrial development and (3) portion of natural resource addition to the gross domestic product. Additionally, Van Deventer and Mlambo (2009) establish that the three main measures for venture investors in South Africa are; (1) the capitalist's trustworthiness and truthfulness, (2) an excellent anticipated market condition and (3) a good discount rate. Adongo (2011) emphasised the importance of the institutional environment underlying initial public offerings, efficacy of equity market, bond market, currency market, commodity market and derivatives as well as the uncertainty level in the market place. In Ghana, Agyeman (2010) found that venture capital is affected by a number of factors including: (1) limited fund raising opportunities and absence of exit opportunities because of dormant initial public offering setting; (2) deficiency of sector rules and controlling framework; (3) non-existence of research provision for the sector and (4) bad record management system of small and medium enterprises (SMEs), which leads to information asymmetry. This study focuses on six variables that can affect venture capital supply. These are initial public offering, market capitalisation, unemployment rate, foreign direct investment inflows, inflation rate and trade openness. An understanding of the determinants of

venture capital supply will assist governments and policymakers to formulate and implement policies for attracting venture capitalists.

2. Literature Review

The theoretical foundation of venture capital supply can be approached through the capital structure theory.

Capital structure theory: Harris and Raviv (2012) explained that the theoretical philosophies fundamental for capital structure consist of Modigliani and Miller (1958) trade-off theory, Jensen and Meckling (1976) agency theory and Myers (1984) pecking order theory. The trade-off theory points out that companies can be financed using equity finance and debt finance. There are two main types of trade-off theories: (1) tax/bankruptcy trade off theory and (2) agency theory. This study argues that debt attracts interests and leads to a financial obligation to pay principal and interests. It will be very difficult for a company to pay off debts when liabilities are greater than assets. This makes debt finance unattractive and firms will have to look for an alternative source of finance, for example equity finance. One major source of equity capital is venture capital. The agency theory by Jensen and Meckling (1976) argues that an ideal capital structure can be achieved from a sacrifice between debt and equity or hybrid finance. The pecking order theory, as explained by Myers (1984) suggests that there is no well-defined optimal capital structure. The pecking order theory points out that there are three sources of finance: (1) internal sources of funding; (2) debt financing; and (3) equity financing. This study argues that the external equity finance (venture capital finance) is collateral and interest free and can be used to finance growth. This argument is buttressed by the fact that debt finance needs collateral and attracts interest and internal equity finance is limited in financing growth (Iqbal et al., 2012).

Initial public offering and venture capital supply: Literature on the association between IPO and venture capital supply is inconclusive. The seminal work of Black and Gilson (1998) debated that a well-built share market that allows venture investors to withdraw via IPO is critical to the survival of an exciting venture capital marketplace. Their study emphasised that the core risk encountered by venture investors is the risk of no return on investment. Additionally, the study found that an exit tool is significant for venture capitalist for two (2) motives; (1) it offers a monetary benefit for share rewarded directors to increase effort and (2) it provides the directors a call option on control of the company, because venture capital investors surrender control at the time of IPO. Building on Black and Gilson (1998), Jeng and Wells (2000) which extended the work of Black and Gilson (1998) found that IPO remain the most important determinant of venture capital supply. In addition, their study argued that the coefficient of IPOs is positive at the later stage because venture capital investments often end up as IPOs. This means increased size of IPOs should have a direct effect on the venture capital supply at the later stage. On the other hand, Chang (2004) study found a significant positive relationship between IPO and venture capital supply at the early stage of investment.

Contrary to the above, IPOs have no impact on early stage venture capital investment across countries, but are a significant determinant for the later stage venture capital investment. Gompers and Lerner (1998) as well as Jeng and Wells (2000) found that there is no statistically significant relationship between IPO and venture capital supply at the early stage. These findings are in conflict with Da Rin, Niconda and Sembenelli (2006) that found a positive relationship between the size of IPOs market and the amount of funds available for venture capital. Furthermore, Banerjee (2008) in India found that there is a positive association between IPO and venture capital supply. A recent study by Félix et al. (2013) found that, there is a statistically significant positive relationship between IPO and venture capital supply and concluded that among all the authors indicated above the only previous study that obtained a statistically positive relationship between IPO and venture capital supply at the later stage was Jeng and Wells (2000). Ecer and Khalid (2013) discovered that there is a significant negative relationship between IPO and venture capital supply for High technology firms and a significant positive relationship between IPO and venture capital supply for Low technology firms. Henderson and Newell (2011) in a study conducted in USA found that a reduction in IPO has a negative effect on venture capital supply. However, the contradictory and inconclusive opinions identified above by the literature necessitate an investigation into the relationship between IPO and venture capital supply in the context of Sub-Sahara Africa. This study argues that there is a positive relationship between higher levels of IPO and venture capital supply.

Market capitalisation and venture capital supply: Literature on the link between market capitalisation and venture capital supply is inconclusive. The seminal work of Gompers and Lerner (1999); Romain and de la Potterie (2004) as well as Félix et al. (2013) found that there is a significant positive association between market capitalisation and venture capital supply. Furthermore, Bonini and Alkan (2009) argued that there is a positive association between market capitalisation and venture capital supply. Literature has found that an increase in market capitalisation is expected to create a more favourable environment for investors to fund venture capital. Clarysse, Knockaent and Wright (2009) explained that the amount of early stage venture capital supply is determined by stock market capitalisation. Kelly (2012) identified the positive impact of market capitalisation on venture capital investments and points out that an increase in market capitalisation results in an increase of available funds for venture capital. Furthermore, Cherif and Gazder (2011) found that there is a positive association between market capitalisation and venture capital supply. However, Jeng and Wells (2000) found that there is no connection between market capitalisation and venture capital supply. A study by Diaconu (2012) in Romania that used an econometric model of macro-economic variables found that there is no significant relationship between market capitalisation and venture capital supply. Based on the foregoing discussion, this study argues that higher market capitalisation creates a favourable environment for investors and increases investors' confidence (Muneer et al., 2013). It is expected that higher market capitalisation will lead to more commitment of funds by investors into the venture capital market. It is on this basis that this study argues that there is a significant positive relationship between market capitalisation and venture capital supply. This study argues that there is a positive relationship between higher levels of market capitalisation and venture capital supply.

Unemployment and venture capital supply: Unemployment is a major economic problem in Sub-Sahara Africa. Mohr and Fourie (2014) explained that the costs of unemployment are significant and includes: (1) loss of income; (2) shock and frustration; and (3) hunger, cold, ill health and even death. World Bank (2012) reported that the unemployment rate in Sub-Sahara Africa is higher than that of developed countries. Few studies investigated the link between unemployment and venture capital supply. A study by Diaconu (2012) found no relationship between unemployment and venture capital supply. The author argued that the annual long-term unemployment rate does not impact on venture capital. Félix et al. (2013) found that there is an inverse relationship between unemployment and venture capital supply. Similarly, Mishkin (2010) as well as Marti and Balboa (2001) also supported a negative association between unemployment and venture capital supply. Literature on unemployment and venture capital supply is inconclusive. This necessitates an investigation into the relationship between unemployment and venture capital supply. This study argues that during a period of high unemployment in an economy, the country becomes less attractive to the supply of venture capital fund because of high labour market rigidities, idle workers and idle resources; these set of circumstances are likely to lead to a lower output in the economy. It is on this basis that this study argues that there is a negative relationship between high unemployment and venture capital supply.

Foreign direct investment (FDI) and venture capital supply: A report by the World Bank (2011) amplified that FDI boosts economic growth of the home country by stimulating output and export. World Bank (2012) found that the FDI inflows to Sub-Sahara Africa focused more on natural resources. There is scarcity of literature on foreign direct investment as a determinant of venture capital supply. Notwithstanding, Agmon and Messica (2008) in a study carried out in Israel found that venture capitalist act as a financial and risk intermediaries and provide sector specific funds for financial foreign direct investment (FFDI). This study argues that countries with high foreign direct investment inflows are expected to be more attractive to the supply of venture capital fund. This study expects a positive relationship between FDI inflows and venture capital supply.

Inflation and venture capital supply: Bonini and Alkan (2009) revealed that higher level of inflation limits venture capital investments. Diaconu (2012) found that there is no significant connection between inflation and venture capital supply. It is expected that countries with high inflation are expected to discourage venture capital supply. During a period of high inflation, a country becomes less attractive to supply of venture capital fund because of the general increase in the price level. Inflation benefits debtors (borrowers) at the expense of the creditors (lenders). Inflation can also result in higher unemployment, lower economic growth and the balance of payments problems (Mohr & Fourie, 2014; Muneer et al., 2017). Literature on the relationship between inflation rate and venture capital supply is inconclusive. However, most literature seem

to support that there is an inverse relationship between high level of inflation in the economy and venture capital investment. It is on this basis that this study argues that there is a negative relationship between inflation and venture capital supply.

Trade openness and venture capital supply: There is scarcity of literature on trade openness as a determinant of venture capital supply. Countries with open economy are involved in international trade and finance (Mohr & Fourie, 2014). This is measured by expressing the value of exports as a percentage of GDP. The authors further explain that globalisation can expand opportunities for people in an open economy through opening of new markets, greater production of traded goods, sharing of knowledge, increasing the efficiency of resources and an increase in economic welfare. This study argues that countries with high export are expected to be more attractive to venture capital supply because of the open economy and opportunities for opening new markets.

3. Methodology

Panel data techniques of pooled, fixed and random econometric procedures were employed. The model includes six determinants (IPO, market capitalisation, unemployment rate, foreign direct investment inflow, inflation rate and trade openness). In order to assess whether the six determinants have significant explanatory influence on venture capital supply in the eight Sub-Sahara African countries over the period 2006 to 2015 the panel data methodology was employed. Secondary data was utilised for the study. The primary sources of data were the World Bank Development indicators and Preqin data base. Eight countries (Botswana, Ivory Coast, Ghana, Kenya, Mauritius, Nigeria, South Africa and Uganda) and the period 2006 to 2015 were selected based on the availability of data on venture capital supply in Sub Saharan Africa. Panel data analysis is a form of longitudinal data analysis that determines the relationship between the variables of interest that have changed dynamically overtime. As explained by Bonini and Alkan (2006) the major advantage of panel data is that it permits to control for the individual heterogeneity, while increasing the number of freedom by linking cross sectional and time series data. In this study, the panel is a cross section of eight countries from Sub-Saharan Africa and the time dimensions include the period from 2006 to 2015. The panel data analysis supports regression analysis with both cross sectional and temporal measurement. The cross sectional measurement involves the eight (8) countries in Sub-Sahara Africa and the temporal dimension are the annual observations of a set of variables from 2006 to 2015 which is for ten (10) years. Therefore, the time series cross sectional data will contain a total of 8*10=80 observations.

Panel data estimation: The research objective and hypotheses make it compulsory to establish a model on the determinants of venture capital supply. The choice of an appropriate model for this study creates some challenges because there are few studies on the determinants of venture capital supply. Due to this, this study will examine some of the models that have been used previously and then make a decision on the most appropriate model to be adopted. However, most of the studies have looked at both the demand and the supply side of venture capital activity. For example, Gompers and Lerner (1999) using a panel data from 1972 to 1994 in the U.S.A on venture capital fund raising identified the following factors on venture capital activity; IPO, GDP growth, research and development, capital gains tax rates, image in the form of firm's age and size and pension funds. Also, Romain and de la Potterie (2004) identified the factors of venture capital in sixteen (16) major Organisation for Economic Co-operation and Development (OECD) countries as GDP growth, interest rates, research and development, stock of knowledge, patents, corporate income tax rate and labour market rigidities. Gompers and Lerner (1999) model as well as Romain and de la Potterie (2004) model concentrated on the demand and supply side of venture capital activity. This makes the application of both models to be inappropriate for this study because the focus of this study is purely on venture capital supply.

Notwithstanding, Jeng and Wells (2000) using a panel data on twenty-one (21) OECD countries from the period 1986 to 1995 identified six factors on venture capital activity in U.S.A and Europe: (1) IPOs; (2) GDP and market capitalisation growth; (3) labour market rigidities; (4) accounting standards; (5) private pension funds and (6) government programme. Félix et al. (2013) using a panel data on twenty-three (23) European countries over a ten-year period identified the factors of European venture capital activity by extending the factors to include; the size of the merger and acquisition market, the market to book ratio and unemployment rate. Jeng and Wells (2000) model as well as Félix et al. (2013) model focused more on the venture capital

supply. Both studies used the fixed effect and the random effect models. However, this study will extend the model to include pooled, fixed and random effect panel data models. The use of pooled, fixed and random effect panel data models allows the researcher to control endogeneity and to provide robust evidence on the model. The model for this study is depicted as follows:

Pooled model: The researcher will pool all the eighty (80) observations together and run the pooled panel data. The pooled panel assumes that all the eight countries are the same by using one intercept for all the countries but in reality the eight countries are not the same, although all the countries are in Sub-Sahara Africa. The main challenge with this model is that it does not differentiate between the eight countries. By pooling the eight countries it denies the heterogeneity that may exist among eight countries. The equation for the pooled panel data is depicted as follows:

$Yit = \alpha + \beta xit + Uit$; equation (1)

This model assumes that all the usual ordinary least square assumptions are not violated. The assumptions are; (1) α is not correlated with xit : E (xit α) = 0 and (2) xit is not correlated with Uit: E (xit Uit) = 0. The constant (α) is a constant across all countries and the effect of any of the factors IPO, market capitalisation, unemployment rate, FDI, inflation as well as trade openness is constant across all observations.

Fixed effect model: The Fixed effect model permits heterogeneity among the eight countries. Fixed effect model allows for the eight sampled counties to have their own intercept value. The intercept may vary across countries however the intercept may not differ over time. The intercept value for the fixed effect model is time invariant. The equation is shown below.

$Yit = \alpha i + \beta 1xit + Uit$; equation (2)

Where

Yit : is the dependent variable : venture capital supply, where i=country and t= 10 years from 2006 to 2015

αi: is the time invariant factor that affect Yit, often called fixed effect and the unknown intercept

β1: is the coefficient of the independent variable

xit : represents one independent variable, for example in this study it can represent any of the following factors: IPO, market capitalisation, unemployment rate, FDI, inflation rate and trade openness

Uit: is the error term also called idiosyncratic error because it comprises of unobserved factors that vary over time and affect Yit,

Alternatively, the fixed effects model can be used with binary variables. So the equation for the fixed effects model becomes: the fixed effect one way with the country effect: The equation for the fixed effect one way is shown below

$Yit = \beta 0 + \beta 1X1it + \ldots + \beta kXkit + Y2E2 + \ldots + YnEn + Uit$ equation (3)

Where

Yit : is the dependent variable : venture capital supply, where i=country and t= 10 years from 2006 to 2015

βk : is the coefficient for the independent variables, in this study it is the coefficient of any of the following factors: IPO, market capitalisation, unemployment rate, FDI, inflation rate and trade openness

Xkit: represents one independent variable, for example in this study it can represent any of the following factors: IPO, market capitalisation, unemployment rate, FDI, inflation rate and trade openness

Y2: Is the coefficient for the binary repressors, in this study it is the coefficient for any of the eight sampled countries: Botswana, Ivory Coast, Ghana, Kenya, Mauritius, Nigeria, South Africa, and Uganda.

En: is the entity n, in this study the countries. Since they are binary (dummies) entities is included in the model.

Uit: is the error term also known as idiosyncratic error because it comprises of unobserved factors that vary over time and affect Yit

The one way fixed effect panel allows for heterogeneity among the eight selected countries by allowing each country to have its own intercept value. The researcher added time effects to the country effects model to have a time and country fixed effects regression model: this is known as the fixed effect two-way model. The equation for the fixed effect two way is depicted below.

$Yit = \beta 0 + \beta 1X1it + \ldots + \beta kXkit + Y2E2 + \ldots + YnEn + d2T2 + \ldots + dtTt + Uit$ equation (4)

Where
Yit : is the dependent variable : venture capital supply, where i=country and t= 10 years from 2006 to 2015
βk : is the coefficient for the independent variables, in this study it is the coefficient of any of the following factors: IPO, market capitalisation, unemployment rate, FDI, inflation rate and trade openness
Xkit: represents one independent variable, for example in this study it can represent any of the following factors: IPO, market capitalisation, unemployment rate, FDI, inflation rate and trade openness
Y2: Is the coefficient for the binary repressors, in this study it is the coefficient for any of the eight sampled countries: Botswana, Ivory Coast, Ghana, Kenya, Mauritius, Nigeria, South Africa, and Uganda.
En: is the entity n. in this study the countries. Since they are binary (dummies) entities is included in the model.
ɗt : countries
Tt: is time as binary variable (dummy) included in the model.
Uit: is the error term also known as idiosyncratic error because it comprises of unobserved factors that vary over time and affect Yit

The two way fixed effect panel permits heterogeneity among the eight selected countries by allowing each country to have its own intercept value and also allows for effects on time.

Random panel data: The random effect allows the eight countries have a joint mean value for the intercept. The equation is shown as follows:
$Yit = \beta xit + \alpha + Uit + \varepsilon it$; equation (5)
Where
Yit : is the dependent variable : venture capital supply, where i=country and t= 10 years from 2006 to 2015
β: is the coefficient for the independent variables, in this study it is the coefficient of any of the following factors: IPO, market capitalisation, unemployment rate, FDI, inflation rate and trade openness
Xit: represents one independent variable, for example in this study it can represent any of the following factors: IPO, market capitalisation, unemployment rate, FDI, inflation rate and trade openness
α: is the unknown intercept
Uit: represents the between entity (country) error
εit: is the within entity error
The random effect assumes that the country's error term is not connected with the predictors which allows for time invariant variables to play a role as explanatory variable.
$Yit = \beta 0 + \beta 1x1it + \beta 2X2it + \ldots \beta kXkit + Uit + \varepsilon it$; equation (6)
Lastly, the following equation is the complete random effects model, which will describe the intensity of venture capital funds in an economy i in period t and it can be written in the log form capturing all the variables in this study:
$Log(VCS)it = \beta 0 + \beta 1log(IPO)it + \beta 2log(market\ capitalisation)it + \beta 3log(Unemployment)it + \beta 4log\ (FDI) + \beta 5log\ (inflation\ rate) + \beta 6log\ (tradeopen) + Uit + \varepsilon it$ equation (7)

In equation (7), the parameters that are to be estimated are identified as follows:
VCS = Dependent variable (Venture capital supply)
β 1= Independent variable (The impact of IPO)
β2= Independent Variable (The Impact of market capitalisation)
β3= Independent Variable (The Impact of Unemployment) and
β4= Independent Variable (The impact of FDI)
β5= Independent Variable (The impact of inflation rate)
β6= Independent Variable (The impact of trade openness)

This equation satisfies the 6 hypotheses.

Choosing between Fixed or Random effect model: For this study to choose between the fixed or the random effect model the Hausman test will be performed. The random effect model will be selected if the regressors are (insignificant P-value, Probability > Chi2
> 0.05). The formula for the Hausman test is shown below:
$W = (\beta RE - \beta FE)' \Sigma^{-1} (\beta RE - \beta FE) \sim chi2\ (k)$

If W is insignificant (p-value > 5%) the random effect model will be selected.
The result of Hausman test is presented in Table 1 below.

Table 1: Hausman test: the determinants of venture capital supply

Summary of Hausman test	Chi-Square. Statistic	Chi-Square. Degree of freedom	Probability value
Cross-section random	6.817932	6	.3380

Table 1 shows that the random effect model was selected because the regressors are insignificant. The p-value is 33.80%. This is greater than 5%; therefore the random effect model is the most appropriate. The results based on the random test will be presented in this paper and in Table 2.

4. Results and Discussion

Table 2 shows the result of the panel data using random effect two way for the determinants of venture capital.

Table 2: Panel data (Using random effect model two way)

Factors	Coefficient	Std. Error	t-Statistic	probability
C	9.878627	56.20967	0.175746	0.8610
IPO	0.003288	0.001672	1.966442	0.0531*
MKTCAP	0.011712	0.003792	3.088669	0.0028***
UNEMP	0.014923	0.018719	0.797209	0.4279
FDI	0.960326	5.368799	0.178872	0.8585
INFLATION	-0.624533	2.706329	-0.230768	0.8181
TRADEOPEN	-0.012457	0.010109	-1.232312	0.2218
Random Effects (Countries)				
GHA	0			
KEN	0			
MUS	0			
NGA	0			
RSA	0			
UGA	0			
BWA	0			
CIV	0			
Random Effects (Period)				
2006	0			
2007	0			
2008	0			
2009	0			
2010	0			
2011	0			
2012	0			
2013	0			
2014	0			
2015	0			

***Significant at 1% and *significant at 10%

The results from Table 2 indicate that there is a significant positive relationship between IPO and venture capital supply at 10%. Furthermore, there is also a significant positive relationship between market capitalisation and venture capital supply at 1%. These results are consistent with Félix et al. (2013). Table 3 presents a comparison of venture capital results with previous studies in literature.

Table 3 depicts the six determinants of venture capital investigated in this study and their comparison with previous studies. This study found a significant positive relationship between IPO, market capitalisation and venture capital supply, this result is consistent with Félix et al. (2013). Furthermore, this paper found no relationship between unemployment, inflation and venture capital supply, this result is consistent with Diaconu (2012). There is paucity of literature to provide evidence on the relationship between FDI, trade openness and venture capital supply, notwithstanding this study found no relationship between FDI, trade openness and venture capital supply.

Table 3: Comparison of venture capital results with previous studies in literature

Variables	Jeng and Wells (2000), panel data of 21 OECD countries	Romain & de la Potterie, (2004) 16 OECD countries panel data	Diaconu (2012), Romania	Félix, Pires, & Gulamhussen, (2013) 23 European countries panel data	This study, 8 countries in Sub-Saharan Africa panel data
IPO	No relationship at early stage and positive relationship at later stage	N/A	N/A	Positive relationship	Positive relationship
Market capitalisation	No relationship	Positive	No relationship	Positive relationship	Positive relationship
Unemployment	N/A	N/A	No relationship	Negative relationship	No relationship
FDI	N/A	N/A	N/A	N/A	No relationship
Inflation	N/A	N/A	No relationship	N/A	No relationship
Trade openness	N/A	N/A	N/A	N/A	No relationship

N/A= Not Applicable

5. Conclusion

This section concludes a study that was undertaken to investigate the determinants of venture capital supply in Sub-Sahara Africa. This paper argues that the determinants of venture capital supply in developing countries are not only under explored, there is also conflicting evidence and in some instances inconclusive evidence on the relationship between the determinants of venture capital and venture capital supply. In accordance with this knowledge gap, this paper examined the determinants of venture capital supply in Sub-Sahara Africa by means of pooled, fixed and random effects models on a data set of 8 countries for the period 2006 to 2015. The six variables (initial public offering, market capitalization, unemployment rate, FDI, inflation rate and trade openness) were tested on selected countries in Sub-Sahara Africa. The novelties of this paper are the inclusion of FDI and trade openness as determinants of venture capital supply. This paper found a significant positive relationship between IPO, market capitalization and venture capital supply. However, there is no significant relationship between unemployment rate, FDI inflows, inflation rate, trade openness and venture capital supply.

Recommendations: Based on the empirical findings of this study the following recommendations are proposed:

Infrastructure development and infrastructure policy: There is a need for Sub-Sahara African governments to develop their economies by improving infrastructure such as roads, rails, electricity and water supply. Venture capital investment in infrastructure is expected to generate job opportunities and inclusive growth in strategic sectors such as manufacturing, energy, technology, mining and agro-production. Sub-Sahara African countries should develop infrastructure policy and implement prioritised projects on time

to prevent infrastructure backlog. It is high time for African leaders to collaborate and ensure intra-Africa development through regional economic integration. Regional economic integration is expected to make a significant contribution to Sub-Sahara Africa economy.

Business friendly policies and taxes: Additionally, the Sub-Sahara African governments should introduce business friendly policies; relax regulatory and other bureaucratic procedures to stimulate venture capital investments. For example, the pension funds can be utilised by encouraging pensioners to invest part of their pension funds in venture capital. This approach can be borrowed from United States and implemented in Sub-Sahara African countries. Private pension funds are important source of venture capital funds. The study of Black and Gilson (1998) found that private pension funds provided 46% of venture capital money in the United States. In addition, a business friendly tax system will also encourage venture capital investment in Sub-Sahara Africa.

Equity market: Finally, the private sector should focus on the determinants of venture capital supply identified by this study to increase venture capital supply in Sub-Sahara African countries. Private sector should also create and use innovative ways of financing businesses bearing in mind the high rejection rates of banks for businesses because of collateral and interest. The following innovative finance methods are suggested by the study to facilitate venture capital finance (1) crowd pooling; (2) Islamic finance and (3) financial bootstrapping. Ramsey (2012) pointed out that crowd pooling is an innovative way of connecting investees with potential supporters using fundraising. Crowd pooling allows for raising capital for small businesses and to also test the marketability of the business. In addition, Lynn (2012) referred to crowd pooling as a new outgrowth of social media for providing finance for different ventures. According to The CityUK (2011) Islamic financial institutions recorded annual growth rates of 20% over the last decade because of innovative Islamic finance such as taxation structure that accommodates Islamic finance activities. Efforts were made to develop Islamic financial infrastructure directed towards guaranteeing better risk management and corporate governance. What can be concluded from the above is that crowd pooling, Islamic finance and financial bootstrapping are all innovative ways of adding value to venture capital finance in Sub-Sahara Africa bearing in mind the high failure rate of private companies in Sub-Sahara Africa because of lack of collateral and high interest rates.

References

Adongo, J. (2011). Determinants of Venture Capital in Africa: Cross Section Evidence. AERC Research Paper, No. 237. African Economic Research Consortium, Nairobi.

African Private Equity and Venture Capital Association. (2013). Yearly archives: 2013, [Online]. Available:www.avca-africa.org/2013/page/2. [Retrieved on 31 December 2013].

Agmon, T. & Messica, A. (2008). Venture capital funds, financial foreign direct investment and the generation of local comparative advantage in the technology sector in Israel. *Contributions to Political Economy*, 27(1), 57-72.

Agyeman, S. K. (2010). Challenges facing venture capitalists in developing economies: An empirical study about venture capital industry in Ghana.

Banerjee, A. (2008). Private equity in developing nations. *Journal of Asset Management*, 9(2), 158-170.

Black, B. S. & Gilson, R. J. (1998). Venture capital and the structure of capital markets: banks versus stock markets. *Journal of financial economics*, 47(3), 243-277.

Bonini, S. & Alkan, S. (2009). The macro and political determinants of venture capital investments around the world. Available at SSRN 945312.

Chang, S. J. (2004). Venture capital financing, strategic alliances, and the initial public offerings of Internet startups. *Journal of Business Venturing*, 19(5), 721-741.

Chemmanur, T. J. & Chen, Z. (2006). Venture capitalists versus angels: the dynamics of private firm financing contracts.

Cherif, M. & Gazdar, K. (2011). What drives venture capital investments in Europe? New results from a panel data analysis. *Journal of Applied Business and Economics*, 12(3), 122-139.

Clarysse, B., Knockaert, M. & Wright, M. (2009). Benchmarking UK venture capital to the US and Israel: what lessons can be learned. Report for British Private Equity and Venture Capital Association.

Da Rin, M., Nicodano, G. & Sembenelli, A. (2006). Public policy and the creation of active venture capital markets. *Journal of Public Economics*, 90(8), 1699-1723.

Diaconu, M. (2012). Characteristics and drivers of venture capital investment activity in Romania. *Theoretical & Applied Economics*, 19(7).

Ecer, S. & Khalid, S. (2013). Stage-specific effects of the Sarbanes-Oxley Act. *Journal of Entrepreneurship and Public Policy*, 2(2), 110-129.

Emerging Markets Private Equity Association. (2013). How to Win Big Returns in Africanprivateequity.[Online].Available:http://www.africancapitalmarketsnews.com/tag/emerging-markets-private-equity-association/. [Retrieved on 26 March 2015].

Johnson, S. (2010). Emerging Markets Take Record Share of Private Equity. [Online]. Available: htttp://www.ftcom/cms/s/0/8c6ca37e-9681-11df-9caa-00144feab49a.html. [Retrieved on 5 August 2013].

Félix, E. G. S., Pires, C. P. & Gulamhussen, M. A. (2013). The determinants of venture capital in Europe—Evidence across countries. *Journal of Financial Services Research*, 44(3), 259-279.

Gompers, P. A., & Lerner, J. (1999). What drives venture capital fundraising? (No. w6906). National bureau of economic research.

Gompers, P. & Lerner, J. (1998). Venture capital distributions: Short-run and long-run reactions. *The Journal of Finance*, 53(6), 2161-2183.

Harris, M. & Raviv, A. (1991). The theory of capital structure. *The Journal of Finance*, 46(1), 297-355.

Henderson, R. M. & Newell, R. (2011). Introduction and Summary. Accelerating Energy Innovation: Insights from Multiple Sectors.

Iqbal, S. M. J., Muneer, S., Jahanzeb, A. & Rehman, S. U. (2012). A Critical Review of Capital Structure Theories. *Information Management and Business Review*, 4(11), 553-557

Jeng, L. A. & Wells, P. C. (2000). The determinants of venture capital funding: evidence across countries. *Journal of corporate Finance*, 6(3), 241-289.

Jensen, M. C. & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of financial economics*, 3(4), 305-360.

Kelly, R. (2012). Drivers of private equity investment activity: are buyout and venture investors really so different? *Venture Capital*, 14(4), 309-330.

Kuratko, D. F. & Hodgetts, R. M. (2007). *Entrepreneurship: A Contemporary Approach*, (7th ed), London: Thomson/South-Western.

Lebus, M. (2013). Africa under the venture capital spotlight. The next woman.

Lynn, D. M. (2012). The crowdfunding provisions of the JOBS Act. *Financial Executive*, 28(4), 42-44.

Marti, J. & Balboa, M. (2001). Determinants of private equity fundraising in Western Europe. In Social Science Research Network Working Paper, presented at the EFMA 2001 Lugano Meetings.

Mishkin, F. S. (2010). The Economics of Money, Banking, and Financial Markets (9th ed), Pearson Prentice Hall: Upper Saddle River, New Jersey.

Modigliani, F. & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American economic review*, 48(3), 261-297.

Mohr, P. & Fourie, L. (2014). *Economics for South African Students* (5th ed), Van Schaik publishers. Hatfield, Pretoria.

Muneer, S., Bajuri, N. H. & Rehman, S. U. (2013). Moderating Effect of Agency Cost on the Relationship between Capital Structure, Dividend Policy and Organization Performance: A Brief Literature Review. *Actual Problems of Economics*, 11(149), 434-442

Muneer, S., Tufail, M. S., Jamil, K. & Zubair, A. (2017). Impact of Capital Market Expansion on Company's Capital Structure. *NFC-IEFR Journal of Engineering and Scientific Research*, 5, 1-7

Myers, S. C. (1984). The capital structure puzzle. *The journal of finance*, 39(3), 574-592.

Msweli, P. & Oni, O. (2014). The Link between Venture Capital Supply Factors and Economic Development in South Africa. *Mediterranean Journal of Social Sciences*, 5(9), 18.

Nieman, G. (2006). *Small Business Management* (1st ed), Hatfield, Pretoria: Van Schaik.

Ramsey, Y. A. (2012). What the heck is crowd funding. *Business people*, 25(11), 54-57.

Romain, A. & de la Potterie, B. V. P. (2004). The determinants of venture capital: a panel data analysis of 16 OECD countries≫, Centre Emile Bernheim, Research Institute in Management Science. Working Paper, (04/015), April.

Solnik, B. & McLeavey, D. (2009). *Global Investments* (6thed), New York: Pearson Prentice Hall. The City UK,(2011). Islamic Finance. The CityUK Financial Market series. London: UK.

Van Deventer, B. & Mlambo, C. (2009). Factors influencing venture capitalists' project financing decisions in South Africa. *South African Journal of Business Management*, 40(1), 33-41.

Ventures Africa. (2013). African PE Funds Outperformed US Venture Capital. Cambridge. [Online]. Available: http://www.ventures-africa.com/2013/04/african-pe-funds-outperformed-us-venture-capital-cambridge/. [Retrieved on 30 March 2015].

World Bank. (2011). World Bank Annual Report. [Online]. Available: https://openknowledge.worldbank.org/handle/10986/4389. [Retrieved on 30 March 2015].

World Bank. (2012). FDI from Developing and Transition Economies: Implications for Development, World Investment Report. [Online]. Available: unctad .org /en / Publications Library / wir2012overview_en.pdf. [Retrieved on 26 March 2015].

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Profiling Smallholder Farmers Goals and Aspirations for Enhanced Agricultural Development: a Case of Smallholder Maize Farmers

Fakunle Olufemi Oyedokun*, Zhou Leocadia
Risks and Vulnerability Assessment Center, University of Fort Hare, Alice, South Africa
ofakunle@ufh.ac.za*, LZhou@ufh.ac.za

Abstract: The intervention of government in the development of smallholder agriculture is still grappling and has not yielded the desired results, despite the huge investment from government. This has been a source of concern to government and policy makers. This paper sought to analyze the socio-demographic features of the smallholder maize farmers; profile the goals and aspirations of these farmers; and lastly, to analyze the technical efficiency of maize farmers. Qamata and Tyefu in the Transkei and Ciskei homelands, respectively were purposively chosen for the study. Descriptive statistics; Principal component analysis (PCA) and stochastic frontier analysis (SFA) were used in the analysis. The result shows, that majority (66%) of the farmers were males with an average range of 61 years old. On the other hand, the PCA indicated that there is a variation between predicted goals and aspiration among maize farmers. The SFA result showed that farmers were efficient. The mean technical efficiency estimates up to 100%, an indication that farmers are more efficient in the usage of factors of production at their disposal in the study area. This implies that smallholder maize farming is lucrative due to its profit-making potentials. Moreover, this is a clear indication that more income and wealth is generated thereby implying that it is strategic and pivotal in improving farmers' livelihoods

Keywords: *Aspirations, goals, smallholder, socio-demographic, technical efficiency*

1. Introduction

Some of the notable theorists that have taken up the Adler's notion of goal and given it more concreteness include McClelland and Atkinson. Some of the most important contributions of these theorists that are relevant to the discussion of farm problems and economic participation deal with the motivational process. To these theorists, goal attainment is a central element of human behavior. How the human being goes about trying to attain the goals constitutes the motivational process and helps to clarify how goals influence the choices that individuals make. This insight has been provided by the theory put forward by McClelland (1987) in which they illustrated the sequence of activities associated with goal attainment. The main element of the process is that the individual responds to impulses both within himself or herself and defined by the unique personality and a set of environmental influences that come from experience of either a transient or permanent nature (Diecidue and De Ven, 2008). The first thing a successful person needs to have in life is a goal. Goals have been defined in various ways. Commonly, goals and objectives are considered to be an individual wishes to achieve or a state in which an individual wishes to be in (Locke, 2010). On the other hand, (Harper, 2010) explains that goals are ends of objectives or a state at a farmer wishes to achieve or gaining a more desired need. Thus, an aspiration is a goal or objective that a human being strongly desires to achieve. Goals sustain, empower, and give purpose to human's directions in life towards ultimate fulfillment and happiness. The assessment of farmers goals serve as a number of useful purposes. Firstly, understanding farmers' goals can be useful in forecasting his economic behavior, secondly; multiple goals of farmers can be integrated into farm simulation models to assist producers in decision-making and finally, knowledge of farmers' goals is desirable for the formulation of agricultural policy and extension programs. These are necessary steps towards devising alternative ways of goals. Therefore, it is important smallholder farmers are able to identify their goals. Kodua-Agyekum (2009) further concede that the outcomes of previous research indicate that the management behavior style of every farmer is rooted in their goals, values and attitudes

However, attempts to equate the relationship between attitude and behavior show that it is not the same as specified, (Beedell and Rehman, 2000). This complexity is reflected in the farmers' behavior which is rarely a result of a single category of influences. Schoon and Grotenhuis (2000) explain some of these complexities are more or less generally established values that influence farmers in a more or less direct way. There is a complex relationship when working on objectives and behaviors because they are subject to controlled from resource constraints (Errington and Gasson, 1994). Previous researches support the idea that landholder

values lead to landholder behavior (Maybery, Crase and Gullifer, 2005). In line with the roles that values play in shaping the farm managers' goals, sometimes farm manager needs to act more in a complex situation, so that no behavior is judged as being necessarily right or wrong. In other words, their behavior is appraised by whether it is in agreement with the managers' values (Maybery, Crase, and Gullifer 2005). Although a set of values can change goals and objectives, as well as the real expression of these values can equally change, this can be in response to changes in the external environment or to the farmers' changing their internal environment (Errington and Gasson, 1994). However, research indicates that the goals and aspirations of smallholder farmers in South Africa continues to be hampered and efforts are being made towards addressing those structural constraints that inhibit the growth of a vibrant commercial smallholder sector. Such problems include lack of market, poor storage and poor packaging of the produce and product for market sales, and could lead to high economic losses which could invariably affect the profitability, as well as the livelihood status of the farmers. In this paper, we first of all tried to analyze the socio-economic features of the smallholder maize farmers; and secondly analyzed the technical efficiency of smallholder maize enterprise in line with their factor inputs and outputs implication, as well as comparing them in line with their smallholder irrigators and homestead maize gardeners in Eastern Cape Province of South Africa.

2. Methodology

The study was conducted in Eastern Cape Province (ECP) of South Africa. The province is one of the nine provinces of South Africa, sharing borders with the provinces of the Western Cape, the Free State, KwaZulu-Natal and Lesotho in the north (Eastern Cape Provincial Legislature, 2003). Thirty nine (39) municipalities are in the area of which thirty seven (37) and two (2) are categorized as local and metropolitan municipalities, respectively. The province is also known as the traditional home of the Xhosa tribal group of South Africa. The vast interior of the ECP ranges from the dry Karoo in the west to the rolling hills and cascading rivers of the Transkei in the East. It is made up of two regions: the Western and the Eastern regions. The area lies within latitudes and longitudes 32000 /S and 26000/E (Map of the World, 2014). The province has a land area covering approximately 169, 580 sq. km, which is about13.9% of the South African total area (Eastern Cape Department of Rural Development and Agrarian Reform (ECDRAR), 2011). Out of the 51, 770, 560 persons which make up South Africa's total population, the area is estimated to have 6,562,053 persons (Statistics South Africa, 2012). In order words, the population of people living in the rural area accounted for 60% of the total population.

The demographic features of ECP is characterized by high level of illiteracy, high level of poverty, high unemployment rate, poor infrastructural facilities and lack of other basic amenities. According to ECDRAR (2011) and ECSECC (2011), the contribution of agriculture to the GDP of the area has been on the decline. Purposive and random sampling techniques were used in the study. Through stakeholder meetings with the officials of the Department of Rural Development and Agrarian Reform (DRDAR), and officials at the Municipal offices, as well as the community members Information regarding the operational status of the irrigation schemes in the province was adequately accessed. The outcome of the meeting lead to the identification of the two smallholder irrigation schemes in the surrounding communities. Out of the thirty seven (37) municipalities that make up the ECP of South Africa, two (2) municipalities namely: Qamata and Tyefu irrigation schemes were purposively chosen because they are considered the largest small-scale irrigation schemes in the Transkei and Ciskei homelands, respectively. A research team was involved in data collection and sought support from extension officers and community authorities. In selecting seventy (70) smallholder maize farmers in Qamata area, and thirty nine (39) smallholder maize farmers in Tyefu area, a random selection technique was adopted. A total of 70 farmers' were interviewed in Qamata and 39 farmers in Tyefu, respectively. In all, 109 smallholder maize farmers was interviewed in the study areas

Descriptive statistics: Descriptive statistics, frequency tables and percentages were adopted in describing the socio-economic features of the smallholder maize farmers in the study area.

Principal component analysis: The principal component (PC) of a given dataset of P numeric variables can be presented mathematically as:

$$PC_n = f\{a_{ni} X_i, \ldots\ldots\ldots\ldots\ldots\ldots a_{1j} X_j\}$$

Where *PC* is the principal component, n represents a number greater than one. The *PC* can take different forms of measurement and these include continuous variables, quantity of related products of values that make up a component, and weighted values or generated values from the component loading. $a_{1j}$is the regression coefficient for the j^{th}variable and it is known as the eigenvector of the covariance matrix between variables. X_j is the value of the j^{th}variable. Explicitly the equation can be written as:

$$PC_1 = a_{11}X_1 + a_{12}X_2 + \cdots\cdots\cdots a_{ij}X_j$$

Where PC_1 = first principal component.
The first and second independent variables of PC_1, are X_1 and X_2 in the linear additive model needed to derive the principal component, and the a_{11} and $a_{12}$are coefficient (component loadings) associated with the X_1 and X_2 variables.

Stochastic frontier analysis: The Stochastic Frontier Analysis was engaged to calculate approximately the technical Efficiency of smallholder farmers. The outcomes of this analysis were used to establish resource use efficiency of farmers. This will be used to advice the farmers and suggest the best enterprises to invest for a more efficient, profitable and sustainable farming business among the small holder irrigation schemes in the Eastern Cape Province. According to Battese and Coelli (1992) Technical efficiency of a given enterprise was estimated using a stochastic Production Frontier, which can be specified as

$$\ell = V - U$$

Technical efficiency levels are estimated from the stochastic frontier analysis. Following Ojo (2003), this research determined the stochastic frontier production function using the flexible log linear Cobb- Douglas production function.

$$Y = f(X_i;\beta) + \ell$$

3. Results and Discussion

Socio-Economic Features of Smallholder Maize Farmers: Gender, age, marital status, household size, occupation and number of years spent in smallholder maize enterprise were some of the demographic characteristics of the respondents that were studied.

Gender Distribution of the Household Head: Gender is said to determine to a great extent farmers' involvement in farming practices which they engage in. This is because such agribusiness practices are gender specific. This is the reason why data was collected on gender of the units interviewed and presented in Table 1.

Table 1: Distribution of the sample according to the Gender of the Household Head

Sex	Frequency	Percentage
Male	72	66.1
Female	37	33.9
Total	109	100.0

Source: Field Survey Data, 2014.

Table 1 shows the relationships between both genders. From the table, it could be deduced that there are more males as compared to females with the 72% out of the totality of the sample being men, and 37% representing the total number of females who were interviewed. This agrees with a study by Kodua-Agyekum (2009) that more dry agricultural lands were allocated to males as a result of their bias of their African rules and norms.

Age Distribution of the Household Heads: Age is an important factor in diverse agricultural enterprises, and most socio-economic studies have shown that age is inversely related to performance (Agbugba, Nweze, Achike and Obi, 2013). In due course, data was collected on the age distribution of the farmers interviewed. The results were presented in Table 2.

Table 2: Distribution of the Household heads according to their Ages

Age	Frequency	Percentage
35-40	18	16.51
41-45	9	8.26
46-50	14	12.85
51-55	22	20.18
56-60	9	8.26
61-65	35	32.11
66-70	2	1.83
Total	109	100.0

Source: Field Survey Data, 2014

Results from Table 2.0 shows that the average age of the household head among smallholder farmer is about 61 years; this implies that both the Qamata and Tyefu might be operating under less productive status due to their age which is considered to be weak compared to youthful age which seems to be more productive (Ogundele and Okoruwa, 2006). Most of the youth in the area may not be interested in farming work thus, left the area in search of more paying employment (Obi and Pote, 2012) and for a white collared job, thereby creating a gap in age distribution.

Marital Status Distribution of the Household Heads: Marital status is also a crucial factor in the farming profession. A high proportion of married respondents suggest an additional supply of labor from the family (Ezihe, Agbugba and Iornum, 2014). In view of this study, data was collected on the marital status of smallholder maize farmers, and Table 3 presented the results.

Table 3: Distribution of the Household heads according to their Marital Status

Marital Status	Frequency	Percent
Married	75	68.81
Single	5	4.58
Divorced	14	6.42
Widow	19	17.44
Widower	3	2.75
Total	109	100.0

Source: Field Survey Data, 2014

From Table 3, the marital status of farmers is an important element in farming enterprise. Therefore, its importance is prominent as farming households use it as an advantage in providing family labor. The results indicated that majority (69%) of the respondents are married, 6% divorced, 5% are single while the rest (20%) of the respondents are widowed.

Household Size Distribution of the Farmers: Household size has a very important bearing with business and income (Enete and Agbugba, 2008). This was the reason why data was collected on household size. The results of the distribution of the farmers according to their household sizes are presented in Table 4.

Table 4: Distribution of the Farmers according to their Household size

Household Size	Frequency	Percentage
1-4	60	55.05
5-6	36	33.03
7-9	11	10.09
10-Above	2	1.83
Total	109	100

Source: Field Survey Data, 2014

Similarly, Table 4 indicated that the household sizes of the respondents engaged family members in farming. However, in this case, a family with 4 members has the highest frequency distribution (55%). Households with 5-6 persons have 33% of the total respondents, while 2% of the population has a family size greater than

10 persons. In essence, the use of family labor helped reduce the cost that would have been spent on hired labor. The implication of this is that more cost will be incurred due to more hired labor employed to supplement the family labor (Ezihe et al., 2014).

Table 5: Distribution of the household heads according to the number of years spent in Maize farming

Number of years	Frequency	Percentage
1-2	17	18.5
3-5	11	13.5
6-8	19	21
9-11	46	33
11-Above	16	14.0
Total	109	100

Source: Field Survey Data, 2014

Table 5 indicated that the number of years spent in maize farming is an important factor as it relates to the farmers' experience, and will in turn reflect the effectiveness of an agro- enterprise in order to yield a reasonable output. The results further revealed that, a majority (33%) of maize farmers spent between 9 and 11 years in the farming, thereby implying that most of the maize farmers are homestead food gardeners and smallholders.

Distribution of Household heads based on their Primary Occupation: Primary occupation is the occupation in which households spends 75% and above of their time, and from which they earn a greater proportion of their income (Echebiri, 2001). This was the reason why data were collected on the primary occupation of maize farmers and the results of the distribution is presented in Table 6.

Table 6: Distribution of household heads according to their primary occupation

Occupation	Frequency	Percent
Farming	97	89.00
Trading	1	0.92
Casual Worker	5	4.58
Civil Servant	4	3.67
Student	2	1.83
Total	109	100.0

Source: Field Survey Data, 2014

Table 6 shows that about 89% of smallholder farmers considered maize farming as their primary occupation in Qamata and Tyefu, respectively. This gave a negative signal as it indicated a high level of unemployment in the area. In estimating farmers' goals and attitudes as presented in Table 7, principal component analysis was used.

This method was used because of its ability to condense the twenty one (21) goal and attitudinal related statements into fewer ones. In the course of the analysis, some statements were dropped to achieve fair results that correspond with the minimum Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy value of 0.60 and to get the Bartlett's Test of Sphericity. It was observed that the KMO value for this particular analysis was 0.64 and passed the Bartlett's Test of Sphere and there is no autocorrelation among variables. The Eigen value proportions of the variance for the selecting optimal number of principal components were above the suggested value of 1. The two mandatory tests were passed by eleven out of twenty one goal and attitudinal related statements and were further subjected into factor loading statistical measurement stage. Four principal components were yielded from these eleven goal and attitudinal statements that explained 68.52% of the variation in the explanatory variables. Farm status/expressive (PC1), business (PC2), social (PC3), and independence oriented goals (PC4) are the four principal components that were yielded. Farm status was the first principal component displayed with a variation of about 25.16 % in the famers' rankings of their goals. These components are best described as a farm status, expressive or self-esteem oriented goals. Goal related statements by farmers that have estimated coefficients above 0.30 and defined this principal component were six in number. Most of these farmers had an interest of being attached to the successes on

their farms. All the four expressive or self-esteem related goals are part of the farmers' goals that explain the first principal component. In this case, the self-esteem or confidence may be of great importance to farmers for better performance as they strive to achieve these goals. Although the principal component was mainly described by the farm status/self-esteem goals, it has some elements of business oriented goals such as, an increase in maximum incomes and building up wealth in greater dimension.

Table 7: Profiling smallholder farmers goals and aspiration

	Farm Status	**Business Oriented**	**Social oriented**	**Independence**
Proportion of Variation (%)	25.16	19.70	14.07	9.60
Eigen Value	2.767	2.167	1.548	1.056
	Factor Loadings			
Farmers' Goal and aspiration	**PC1**	**PC2**	**PC3**	**PC4**
Self-employed and independent	-0.036	0.516	0.135	**0.478**
Have more leisure time	-0.070	-0.143	**0.552**	**0.697**
Be recognized as top producer	**0.768**	**-0.352**	0.208	0.044
Be recognized as a leader in the technology adoption	**0.754**	**-0.428**	-0.083	0.085
Be recognized as a specialist in growing these crop	**0.853**	-0.136	0.008	0.053
Be recognized as owner of the land	**0.405**	**-0.323**	**-0.546**	0.185
Contacts with people, and transfers of information	0.077	0.015	**0.792**	-0.278
Social participation: meetings and rituals	0.257	**0.589**	-0.284	**0.345**
Increase standards of living	0.193	**0.776**	-0.191	-0.030
Increase maximum farm income	**0.555**	**0.546**	0.024	**-0.300**
Accumulate wealth	**0.541**	**0.450**	**0.362**	-0.089
Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy = 0.643				
Bartlett's Test of Sphericity Approx. Chi-Square = 342.739				
df = 55				
Model significance level = 1%				

Source: Result from SPSS (version 11) generated from field survey, 2014. Where ***. ** and* are significant levels at 1%, 5%, 10% respectively.

The second principal component which primarily consists of business and developmental farmer's related goals accounted for 19.70% of variation in the variables. The goals are improved standards of living, maximization of farm incomes and increase in wealth buildup. With the low output and less marketable surplus produced by these smallholder farmers, they still view farming as one of the major sources of livelihood. Vegetables and maize are the major plants grown by the smallholder farmers in Qamata and Tyefu irrigation scheme area and they are being sold within local markets around them to earn a living. Other important vegetables grown for sale included potatoes, cabbages, carrot and spinach, among others. Farmers' business oriented goals can be of great importance in increasing production and resulting in marketable surplus. Business goals of these smallholder farmers can therefore, be incorporated in rural development programs for improved smallholder incomes and general livelihood of the rural poor farmers.

Determination of Technical Efficiency of Smallholder Maize Farmers: The parameters and related statistical results obtained from the stochastic production function are presented in Table 8. The coefficient (β's) presented in this table represent the elasticities of the various inputs used in maize production due to the assumption of half-normal distribution of the data use in the model (Greene, 2002). In Table 10, seed, fertilizer, herbicides and HCI were positive and significant factors which indicate that the use of these factors was profitable and as such that a unit increase in these inputs will eventually result in an increase in maize output of the farmers. This result conform to the findings of Essilfie, Asiamah and Nimoh (2011) that seed is positive and significant factors and as such, a unit increase in this input will eventually result in an increase in maize output of the farmers. Furthermore, the result also agrees with the findings of Geta, Bogale, Kassa and Elias (2013) where they established a positive and significant relationship that farmers who apply higher

fertilizer rates receive higher rates of yield. Therefore, this implies that increasing the rate of seed, fertilizer and herbicide usage would significantly increase maize productivity. Pesticide showed a positive relationship, but insignificant with respect to yield. This could imply that farmers are under-utilizing this variable, and therefore, there is need to increase its usage as it responds more to output. However, the emerging results disagrees with the findings of Lamini, Masuku and Rugambisa (2012) that indicated a positive and significant effect of pesticide usage on maize production. In the study area, the predicted technical efficiencies varied substantially among the maize farmers in the area with mean technical efficiency estimate to be 100%. This is an indication that farmers in this area are more efficient in the usage of factors of production at their disposal. On the other hand, in addition to the goals and aspiration, socio-demographic factors of Sex, Marital status, Age and Goals which belonged to the inefficiency model were all positive factors but insignificant to the yield of maize.

Table 8: Technical Efficiency Results of Half-Normal Distributions (with Goal)

Variable	Parameters	Coefficient	Std. Error	Z	P-Value
Stochastic Frontier					
Intercept_	B_0	127.55	4362.11	0.03	0.98
Seeds	B_1	29.89	3.96	7.55	0.00**
Fertilizer	B_2	5.73	1.31	4.37	0.00**
Pesticides	B_3	-34.10	80.19	-0.43	0.67
Herbicides	B_4	81.77	37.15	2.20	0.03**
HCI	B_5	1106.06	200.83	5.51	0.00**
Inefficiency Model					
Sex_hhh		175.09	163.03	1.07	0.28
Marital Status		51.62	161.60	0.32	0.75
Age		-10.93	6.71	-1.63	0.10
Year_School		23.42	19.43	1.21	0.23
Goalorient		-1.86	3.79	-0.49	0.62
Variance Parameter					
Sigma_v		637.0.1	43.34		
Sigma_u		0.08	5410.25		
Sigma2		405784.9	55222.77		
Lambda		0.00	5410.66		
Log likelihood			-850.58		
Wald chi2			532.46		
Mean technical efficiency			100.00%		

Source: Model results (2015) (** is 1% or 5% levels of significance)

From the results in Table 8, goals and aspirations is a positive relationship, but insignificant to the yield of maize. Therefore, we can state that goals and aspirations are not significant to technical efficiency. This may imply that the goals and aspirations of maize farmers are in line with the productive factors.

4. Conclusion

Goals and aspirations were found to have a significant impact on farming among smallholder maize farmers living in Qamata and Tyefu. It is imperative for the government and other stake holders to start on providing appropriate policy statements that will enhance the goals and aspirations of smallholder farmers through intervention programs given by the government. When government intervention is in agreement with the goals and aspirations of farmers then, the results will be worth the investment and the outcome will be of value to the communities. In addition, adoption of technologies which have a low cost of production, time and labor effective strategies should be designed; this will have social and psychological benefits to all the smallholder farmers and the communities at large. Furthermore, with the provision of more suitable technologies, the government and other development partners should set up an enabling environment to develop farmers' business growth. These may include creating a standard market access, organization of agro-based small scale industries that are fed with primary agricultural outputs for value addition. In

addition, business management trainings for improved technical efficiency should be included in the curriculum of these farmers during various training programs. An enabling environment also is essential for improved positive goals and aspirations since it instills hope and confidence among smallholder farmers. In all, an efficient farmer will tend to value independence goal in maize production and success of the farm (self-esteem) goals to positively and significantly influence maize technical efficiency. In view of this, a grounded policies that will enhance and promote farming as self-employment opportunity with less direct intervention of the external agencies should be formulated, for increased job creation and improved rural livelihood which is one of the goals and aspirations of the farmers identified in this study.

Acknowledgement: The authors wish to express appreciation to Govan Mbeki Research Development Centre (GMRDC).

References

Agbugba, I. K., Nweze, N. J., Achike, A. I. & Ajuruchukwu, O. (2013). Market Structure, Conduct, Channel and Margin of Dry Season *Okra* Vegetable in South-Eastern Nigeria. From: http://www.ipcbee.com/vol55/014-ICFAS2013-G2023.pdf). (Retrieved on 20 February, 2015).

Battese, G. E. & Coelli, T. J. (1992). Frontier production function, technical efficiency and panel data: with application to paddy farmers in India. Kluwer academic publisher.

Beedell, J. & Rehman, Y. (2000). Using social-psychology models to understand farmer's conservation behaviors. *Journal of Rural Studies,* 16(1) 117-127.

Diecidue, L. & Van De Ven, J. (2008). Aspiration level, probability of success and failure and expected utility. *International Economic Review*, 49(2) 685-700.

Eastern Cape Department of Rural Development and Agrarian Reform (ECDRAR). (2011). Strategic Plan 2010/11-2014/15 (updated 2011/12); Towards Vibrant, Equitable & Sustainable Rural Communities & Food Security.

Eastern Cape Provincial Legislature. (2003). Strategic Plan 2003-2006. From: http://www.treasury.gov.za/documents/provincial%20budget/2003/Strategic%20Plans/Eastern%20Cape/EC%20-%20Vote%2002%20-%20Legislature.pdf (Retrieved on 20 February, 2015).

Eastern Cape Socio-Economic Consultative Council (ECSECC). (2011). Quarterly Economic Update, Fourth Quarter, ECSECC, March 2011.

Echebiri, R. N. (2001). An Analysis of the Influence of Socio-Economic Variables on Household Income, Consumption Expenditure and Savings in Rural Southeastern Nigeria. PhD. Thesis, Unpublished. Nsukka: University of Nigeria Nsukka.

Enete, A. A. & Agbugba, I. K. (2008). Charcoal Marketing in Abia State of Nigeria. Proceedings of the 22nd Annual National Conference of the Farm Management Association of Nigeria, Abia State: Nigeria pp 338-346.

Errington, A. & Gasson, R. (1994). Labor use in the farm family business. *Sociologia ruralis*, 34(4), 293-307.

Essilfie, F. L., Asiamah, M. T. & Nimo, H. (2011). Estimation of farm level technical efficiency in small scale maize production in the Mfantseman municipality in the central region of Ghana. Accademicjournal.org

Ezihe, J. A. C., Agbugba, I. K. & Iornum, W. (2014). Economic Assessment of Rural Women Participation in Processing and Marketing of Soybean in Tarka LGA of Benue State Nigeria. *African Journal of Agriculture Research,* 2(1), 99-107.

Fan, S. (2009). Setting Priorities for Public Spending for Agricultural and Rural Development in Africa Policy Brief 12, IFPRI.

Fakunle, O. O. (2015). Motivational characteristics and trends in commercialization of smallholder farming in Eastern Cape Province of South Africa. PhD. Thesis, Unpublished. Alice: University of Fort Hare.

Greenberg, S. (2013). Smallholders and agro-food value chains in South Africa. Emerging practices and emerging challenges, Institute for Poverty Lands and Agrarian Studies, School of Government, FEEMS, UWC. From: http://www.plaas.org.za/1A22E026-0703-4760-9A66-A5EE60570290/FinalDownload/DownloadId9775CF1A8E71E6AC3A1256EEBDFEF509/1A22E026-0703-4760-9A66-A5EE60570290/sites/default/files/publications pdf/value%20chains%20web.pdf (Retrieved on 20 February 2015).

Greene, W. H. (2002). Econometric Analysis. New Jersey: Prentice Hall

Geta, E., Bogale, A., Kassa, B. & Elias, E. (2013). Productivity and efficiency analysis of smallholder maize producers in Southern Ethiopia. *Journal of Human Ecology,* 41(1) 67-75

Harper, S. (2010). Implicit value judgments in the measurement of health inequalities. Online library.willey.com

Kodua-Agyekum, C. (2009). The transfer of technology to the rural poor: The case of Qamata Irrigation Scheme in the Eastern Cape Province of South Africa, PhD Thesis, Unpublished. Kwazulu-Natal: University of Kwazulu-Natal, South Africa.

Lamini, D., Masuka, M. B. & Rugambusa, K. (2012). Technical efficiency of maize production in Swaziland. A stochastic frontier approach. Africa Journal of academic. Org

Locke, J. (2010). Loneliness, friendship quality and the social networks of adolescents. Onlinelibrary.willey.com

Maybery, D., Lin, C. & Gullifer, C. (2005). Categorizing farming values as economic, conservation and lifestyle. *Journal of Economic Psychology*, 26(1) 59-63

McClelland, D. C. (1987). Human Motivation pg 214.https//books.google.co.za books. Isbn=0521369517.

Obi, A. & Pote, P. (2012). Technical constraints to market access for crop and livestock farmers in Nkonkobe Municipality, the Eastern Cape Province, In: A. Obi, H. D. Van Schalkwyk, J. A. Groenewald, G.C.G. Fraser, and Aad Van Tilburg (eds), Unlocking markets to smallholders: Lessons from South Africa. Mansholt publication series-volume 10 Wageningen.

Ogundele, O. O. & Okoruwa, V. (2006). Technical efficiency differentials in rice production technologies in Nigeria. Nairobi: African Economic Research Consortium.

Schoon, B. & Grotenhuis, T. (2000). Values of farmers, sustainability and agricultural policy.

Willock, J., Deary, I. J. & Edward-jones, G. (1999). The role of attitudes and objectives in farmer's decision making: business and environmentally-oriented behavior in Scotland.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

The Influence of Actual and Ideal Self-Congruity on Consumers' Purchase Intentions

Jenasha Tooray, Devina Oodith
University of KwaZulu-Natal (Westville Campus), Durban, South Africa
oodithd@ukzn.ac.za

Abstract: During the course of consumer behaviour research an augmented focus pertaining to consumer brand selection and the reason/s why consumers purchase a particular brand became evident. Research postulates that consumers tend to purchase brands that have personality attributes that closely correspond to their actual self-concept and enhance their self-image, thereby bringing them closer to their ideal self-concept. Self-congruity is of paramount importance to marketing for the reason that most of the products consumers purchase are influenced by the images consumers have about themselves. According to Sirgy in 1982, self-congruity defines the procedure in which consumers match their own self-concept with the imageries of a particular brand (as cited in Sohn & Yuan, 2011). In this era of hyper competition in the marketplace, it is imperative that marketers establish and preserve an enduring, mutually beneficial relationship between their brands and their target markets in order for their companies' growth and survival. This article aims to assess the influence that actual and ideal self-congruity have on consumers' purchase intentions with reference to the clothing and mobile phone brands that are purchased by consumers. This study was undertaken in EThekwini (Durban), South Africa and was conducted within a Public Tertiary Institution comprising of postgraduate and undergraduate students from three colleges. The institution comprised of thirteen Schools which participated in this study. A sample of 385 respondents was drawn using simple random sampling with a 100% response rate from respondents. Since students represent a lucrative market segment for marketing managers to penetrate, a survey was undertaken in order to unearth whether there exists a congruous relationship between the self-concept of students and the personality attributes of the brands they purchase; and to determine the impact that this relationship has regarding students' brand preference, customer-brand satisfaction and brand loyalty on students' purchase intentions. Data for the sample was collected using a self-developed, precoded questionnaire whose psychometric properties were statistically determined. Data was analyzed using descriptive and inferential statistics. The results indicate that actual and ideal self-congruity does influence purchase intentions significantly and there exists a positive relationship among students' actual and ideal self-congruity, brand preference, customer-brand satisfaction and brand loyalty. Consumers tend to base brand choices for clothing and mobile phones very closely to their perceptions of their actual and ideal self-concepts thus this becomes important for marketers to monitor and target in order to better influence future purchase intentions of these consumers. Based on the results of the study recommendations have been made to better understand consumers and their actual and ideal selves more critically with a view to servicing them more efficiently. The results, thus enable marketing managers to improve brand loyalty, brand preference and customer-brand satisfaction among consumers; and gain insight into consumers' actual and ideal self-congruity.

Keywords: *Self-congruity, actual-self congruity, ideal-self congruity, self-concept, customer brand satisfaction, brand preference and brand loyalty*

1. Introduction

A plethora of research advocates that consumers elect to purchase brands that are analogous to their own self-concepts in order to express themselves, for example, an individual can express that he/she is strong and tough by driving a strong and tough vehicle, like a *Hummer* or a *Jeep*. Aaker (1997) asserts that products' non-functional attributes could influence the consumers' decision to purchase. Today consumers have a basal requirement to obtain social approval and consequently attempt to attain positive impressions of themselves in the minds of others (Zinkhan, Haytko & Ward, 1996). The focal point of this study is to reconnoitre the relationship between consumers' actual and ideal self-concepts together with their congruent relationship with brand personality. In addition, the study seeks to unearth the actual and ideal self-congruity of consumers and the impact that these elements have on customer-brand satisfaction, brand preference and brand loyalty. Self-concept is of paramount importance to marketing for the reason that most of the products consumers purchase are influenced by the images consumers have about themselves. Not much is known about whether the actual/real self has greater influence on brand preferences compared to the ideal self. On

similar parameters, it is therefore imperative for marketing managers to understand the impact that the actual self and ideal selves have on consumers' purchase decisions, brand preference, brand loyalty and customer-brand satisfaction. One of the most lucrative market segments in South Africa is university or tertiary institution students. Although there is a vast number of college students who are unemployed and their income comes mainly from tertiary institution loans and parental contribution, students represent an extremely substantial and significant market segment for a myriad of products like mobile phones, clothing, shoes and even automobiles (Eder, 2013; Mokhlis & Salleh, 2009). Today's youth are virtually change agents whereby they influence the general public and social conventions (Leslie, Sparling & Owen, 2001).

During this current epoch of globalization, youth represent an important and lucrative market segment for brands, therefore, for the purpose of this study; the population of relevance will be the university youth. Most of the young adult population in South Africa is highly brand conscious as reiterated in a study conducted by the University of Cape Town, Unilever Institute of Strategic Marketing, in conjunction with *Youthdynamix* (Yutar, 2005). From a marketing standpoint, tertiary institution students have been recognized as a unique target market that constitutes a dominant consumer spending group (Grant & Waite, 2003). Clothing, mobile phones and entertainment are large expenses for this group. The young adult population more specifically the females, execute a significant role in the market place. This is due to the fact that young female consumers exercise great influence over the distribution of purchasing power through a cumulative number of product groups namely clothing, handbags and shoes (Hogg, Bruce & Hill, 1998). It's imperative to note that young female consumers have become increasingly affianced in the process of fashion consumption as compared to their male counterparts and the older consumer market. Today there has been an emerging trend of students becoming more and more brand conscious, with most students having a desire to show off to others. A survey conducted by on college students recently, and based on that survey brand names play a significant role when consumers decide what to purchase. In addition, when it came to making decisions about their purchases, price and "getting a good deal" were the topmost explanations. From the plethora of research which indicates that University students are a lucrative market for marketers to tap into, the cardinal point of the research is to ascertain whether students purchase clothing and mobile phones with images or brand personality attributes that correlate to their self-concept. Moreover, the challenge will be to determine the extent to which the congruence between self-concept and brand personality attributes lead to consumer-brand satisfaction, brand loyalty and brand preference.

Consumers evaluate brands based on their self-concept and what they aspire to be. Research posits that consumers purchase brands that have imageries or personality attributes that match their own self-concept. Brand personality, which signifies human characteristics associated with a brand (Aaker, 1997), is an imperative component of the image for brands such as *Samsung* (innovative), *Estee Lauder* and *Chanel* (classy), and *Marlboro* (rugged). Consumers view brand personality as a way to express their actual or ideal self (Keller & Richey, 2006). Furthermore, research postulates that the image of the consumer affects the brand's image evaluation ergo consumers choose brands that are congruent with their own self-concept and enhance their self-concept. Although there is a plethora of studies that hypothesize the connection between self-concept and brand personality which influences brand preferences, very few have explored the actual and ideal-self and their relationship in influencing consumers' purchase intentions and brand choices.

2. Self-congruity

A myriad of researchers have illustrated the significance of self-concept in consumer behaviour and the congruence with a consumer's self-concept and the image or personality of a particular brand. This relationship plays a vital role in brand loyalty, customer-brand satisfaction, brand preference and choice. Therefore, researchers posit that self-congruity signifies consumers purchasing brands that they associate with a set of personality attributes that match their own (Abel & Buff, 2010). According to Graeff (1996: 6) "the greater the similarity between a consumer's self-image and the brand's image, the more favorable their evaluations will be for that brand". The self-congruity theory developed by Sirgy in 1982 is a conceptual framework which explains the myriad of processes associated with the self, namely the evaluation and perception of the self, self-concept change, differentiation and generalization, decision-making, information search and self-monitoring. Furthermore, self-congruity influences brand preference, purchase intentions, brand choice and brand loyalty (Ericksen, 1996). Moreover, in 1982, Sirgy (as cited in Boksberger, Dolnicar,

Laesser & Randle, 2011) postulated that self-congruity signifies the degree of similarity between a consumer's perception of themselves and the perception of a brand. Ekinci & Riley (2003) indicate that the self-congruity notion suggests that when the congruence between consumers' self-concept and the personality or image of a brand is strong, the greater the probability of intention to purchase.
Pioneer studies of consumer behaviour research conducted over the decades portray that self-congruity affects customer-brand satisfaction, brand preference, purchase intentions, and brand choice (Parker, 2005). Sirgy & Su (2000) suggest that consumers prefer brands with an image that is congruent with their own self-concept, meaning that individuals prefer certain brands because they see themselves as being similar to the types of people that are typically believed to use this brand. In 1982, Sirgy established four types of self-congruity where each of the self-concepts relates to the consumer's perception of brands (as cited in Boksberger et al., 2011). They are actual self-congruity (the actual or real image of an individual), ideal self-congruity (the desired image of an individual or how an individual would like to be), social self-congruity (the image of how one is seen by others), and ideal social self-congruity (the image of how one would like to be seen by others). Out of these four congruent relationships, actual self-congruity and ideal self-congruity have the greatest effect on consumption behaviour.

Moreover, self-congruity is defined as the match between a brand's image or personality and an individual's self-concept, namely their actual self, ideal self, social self or ideal social self (Sirgy & Su, 2000). Self-congruity epitomizes the degree of similarity between a consumer's self-image and the brand's image. In addition, consumers purchase brands that possess personality traits which are similar to their own (Randle & Dolnicar, 2009). Researchers have indicated that consumers select brands that are believed to be congruent with their self-concept and in addition, according to Malhotra, in 1981, this similarity influences brand preference (as cited in van de Rijdt, 2008). Consequently, a deduction can be made that consumers' purchase preferences are influenced by the images that consumers have of themselves. Self-congruity is viewed as a psychological process in which the consumer focuses on the brand user image and compares this image to his/her self-concept (Sirgy & Johar, 1999). Sirgy, in 1982, stated that consumers will hold a more positive attitude towards the brand when there is a strong congruence between the brand's image and consumer's self-concept (as cited in Sirgy & Johar, 1999). Preceding research indicates that consumers' product preferences and their purchase intentions can be influenced by self-congruity (Ericksen, 1996). Research suggests that self-image congruity has a strong influence on consumers' brand preferences and their purchase intentions (Ericksen, 1996; Mehta, 1999). Moreover, in her study, Ericksen (1996) discovered an association between self-congruity and consumers' intention to purchase certain motor vehicle brands. Self-congruity therefore enables positive behaviour and attitudes toward brands (Ericksen, 1996; Sirgy & Johar, 1999).

Actual Self-congruity: Sirgy & Johar (1999) describe self-congruity as the correlation between the brand's image or personality and consumers' self-image or how they perceive themselves. Actual self-congruence signifies the degree of match between a customer's actual self-image and a brand's image or personality (Sirgy & Su, 2000). Actual self-congruity means that consumers purchase brands with images or personalities that are consistent with how they see themselves.

Ideal self-congruity: An ideal self-image incorporates attributes one aspires to have (Sirgy & Johar, 1999). Sirgy & Su (2000) indicate that ideal self-congruence is the degree of similarity between customers' ideal self-image and a brand's image or personality. Researchers have proposed that the acquisition and consumption of products that are consumed publicly are influenced more by consumers' ideal self-congruence rather than their actual self-congruence. Additionally, the acquisition and consumption of products that are consumed privately by consumers are more affected by consumers' actual self-congruence rather than their ideal self-congruence (Abel & Buff, 2010; Hong & Zinkhan, 1995). On the same token, a study conducted by Graeff (1996), who examined the connection between the image of a brand with consumers' actual self-image and ideal self-image and the evaluation of the brands consumed publicly and privately, revealed that consumers' evaluations of the brands consumed publicly were influenced more by the similarity between the brand's image and the consumer's ideal self-image as compared to actual self-image. This study will predominately focus on the actual and ideal self-concepts and will examine the actual and ideal self-congruity of consumers and the impact that they have on consumers' purchase intentions.

Self-congruity's impact on brand loyalty, customer-brand satisfaction, brand preference and choice: Schiffman & Kanuk (2000) advocate that consumers purchase and consume brands with personality attributes that closely match their own self-images. In addition Aaker (1999) states that consumers express their identity by electing brands with personalities that match their own personalities. Today, brand personality is an attractive and appealing concept in the field of marketing, which has warranted such an overwhelming focus over recent years. Brand personality symbolically has been considered as an instrument that facilitates consumer self-expression (Aaker, 1997; Escalas & Bettman, 2005; Johar, Sengupta & Aaker, 2005). Jamal & Goode (2001) revealed that self-congruity is a strong predictor of satisfaction and Park & Lee (2005) posit that there exists a positive influence of congruence between the brand's personality attributes and consumers' self-concept, pertaining to a consumer's satisfaction towards the selected brand, their brand preference and brand loyalty. A myriad of research has established the fact that, when congruency is high between brand personality and consumers' self-concept, this tends to have a more favourable effect on brand preferences, brand loyalty, brand attitudes, evaluation of brands, purchase intentions and customer-brand satisfaction. Ergo, the more consumers' purchase brands with personalities that are congruent with themselves the more satisfied and loyal they will be to that particular brand, since it expresses who they are and how they would like to see themselves in the future. According to Kim, Han & Park (2001), the more consumers can express their self-concepts through identifying with a brand, the more likely they are to consistently use the brand and become loyal to that particular brand. Consumer researchers state that the stronger the congruence between consumers' self-concept and a brand's image the greater the influence on consumers' brand preference, purchase intention and brand loyalty (Sirgy, Lee, Johar & Tidwell, 2008).

In his research, Mehta, explored that brand preference can be influenced by consumers' self-image or self-expression, which in turn affects consumers' purchase intentions (Mehta, 1999). It can be deduced that there exists a positive relationship between consumers' self-congruity and brand preference and when there is a strong correlation between consumers' actual and ideal self-congruity, the greater the degree of brand preference. In addition, according to Han (2006), when consumers' actual and ideal self-concepts are congruent with the attributes of a brand, the greater the degree of brand preference as consumers view the brand as a tool to express or enhance their self-concept. Research postulates that when consumers perceive brand personalities to be parallel to their own self-concept, their satisfaction level increases and in addition, consumers are fond of using brands as vehicles to express who they are to society (Kim, Lee & Ulgado, 2005). Kotler (2000) states that when consumers are satisfied with a brand, this tends to have a positive effect on brand loyalty. Ergo, when consumers perceive that the brand's personality is congruent with their own self-concept, their satisfaction level towards that particular brand increases, which has a positive effect on the quality of the consumer-brand relationship that develops. The impetus of the study is to unearth whether there exists a congruous relationship between the self-concept of students and the brands of clothing and mobile phones they purchase. Furthermore, the underlying motivation is to determine the impact that this relationship has on students customer-brand satisfaction, brand preference and brand loyalty regarding students' purchase intentions. Therefore, this study will examine the actual and ideal self-congruity of consumers and the impact that these elements have on consumers' purchase intentions.

Aim of the Study: For the purpose of this study, the descriptive research design was employed, in order to reconnoitre the existing information about the phenomena under investigation and describe the congruous relationship that exists between them. This research design was utilized in order to determine whether consumers purchase brands of clothing and mobile phones with personalities that correspond with their actual and ideal self-concepts.

3. Methodology

Respondents: The population consisted of all the undergraduate and postgraduate students from a Public tertiary institution in EThekwini (Durban), South Africa. The simple random sampling technique was applied in order to make generalizations of the population as a whole. Using Sekaran's (2003) population-to-sample size table, a corresponding minimum sample of 372 respondents was required however 385 responses were received (over a 100 percent response rate). The adequacy of the sample was determined using the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.901) and the Bartlet's Test of Spherecity (8683.752, $p = 0.000$) which respectively indicated suitability and significance. The results indicate that the normality and

homoscedasticity preconditions are satisfied. In terms of the composition of the sample according to the findings, the 18-23 year age group comprised of 70.9%, followed by 24-29 years (20.5%), the over 36 year olds constituted (4.4%) and finally the 30-35 years (4.2%). The majority of respondents were in the 4th year / Honours year of study (29.6%), followed by the 3rd year students (26.2%), 1st year students comprised (15.8%) of the sample, 2nd year students (14.0%), Masters Students (9.6%) and PhD candidates (4.7%). The female respondents (64.9%) constituted a larger percentage in comparison to the male respondents (35.1%). The majority of respondents comprised of Africans (50.6%), followed by Indians (37.1%), followed by Whites (7.8%), Coloureds (3.4%) and 1.0 percent was from another unspecified race group. In terms of Employment status it was reported that Full-time students comprised of 76.4 percent of the population, followed by the unemployed (11.2%), the employed were reported at (9.1%) and part-time students made up the remaining part of the sample (3.4%). In terms of Living arrangements the Majority of the respondents live with parents (55.6%), followed by those that live in student accommodation (26.8%), those living with 1+ individuals comprised of (10.6%) and those living alone (7.0%). Finally on terms of Income most of the respondents (37.4%) earned <R1 000, 15.3% earned between R1 001-R3 000, 8.6% earned >R9 000, 7.5% earned between R3 001-R6 000, 3.1% earned between R6 001-R9 000 and 28.1% of the respondents did not wish to disclose their income.

Measuring Instrument: Data was collected using a self-developed, pre-coded, electronic questionnaire consisting of three sections. Section A dealt purely with the biographical data (age, year of study, gender, race, employment, living arrangements & income). Section B tapped into Student's perceptions of Actual Self-Congruity. Whilst Section C tapped Student's perceptions of Ideal Self-Congruity. Section A was nominally scaled with precoded option categories, Sections B & C required respondents to rate each item using the Likert Scale ranging from strongly disagree (1) to strongly agree (5). The questionnaire was framed on the basis of identifying recurring themes that surfaced while conducting the literature review. These confirmed face and content validity. Furthermore, in-house pretesting was implemented to evaluate the suitability of the instrument. Pilot testing was also carried out on twenty students to test the appropriateness of questions and their understanding thereof. No inadequacies were identified and the final questionnaire was considered appropriate in terms of relevance and construction.

Research Procedure: The research was only conducted after a gatekeeper's permission letter was received; ethical clearance was granted and after the pilot test was conducted.

Measures/Statistical Analysis of the Questionnaire: The validity of the questionnaire was assessed using Factor Analysis. A principal component analysis was used to extract initial factors using SPSS with a Rotated component matrix. In terms of validity 6 items load significantly on Factor 2 and account for 10.89% of the total variance. Of the 6 items, three items relate to *actual self-congruity* and three items pertain to *ideal self-congruity*. Since *ideal self-congruity* has the highest item loading – 0.751, Factor 2 can be labelled likewise. Furthermore it was noted that 7 items loaded significantly on Factor 3 and accounted for 9.42% of the total variance. Of the 7 items, three items pertained to *actual self-congruity*; three items pertained to *ideal self-congruity* and 1 item related to *customer-brand satisfaction.* Since *actual self-congruity* had the highest loading – 0.628, Factor 3 was labelled as *actual self-congruity*. The items were also reflected as having a very high level of internal consistency and reliability with Cronbach's Coefficient Alpha being 0.834 with item reliabilities ranging from 0.799 to 0.856.

Administration of the Measuring Instrument: This study was undertaken in EThekwini (Durban), South Africa and was conducted within a Public Tertiary Institution comprising of postgraduate and undergraduate students from three colleges. The institution comprised of thirteen Schools which participated in this study. The online questionnaire method was utilized, which was created by employing *Google Forms.* A personalized message was e-mailed to respondents inviting/asking them to respond to the online survey by clicking on the link included at the end of the e-mail. Informed consent was captured by prompting respondents to click on a radio box once they had understood the terms and conditions highlighted in an attached informed consent document. Those who agreed continued with participation. Those who did not wish to participate in the survey, were prompted to withdraw from the survey and terminate their participation, without any negative consequence. Section A dealt purely with the biographical data (age, year of study, gender, race, employment, living arrangements & income). Section B tapped into Student's

perceptions of Actual Self-Congruity. Whilst Section C tapped Student's perceptions of Ideal Self-Congruity. Respondents had to answer all sections in the questionnaire.

Statistical Analysis of the Data: Descriptive statistics (mean, variance, standard deviation) and inferential statistics (correlation, t-test, ANOVA and multiple regression) were used to evaluate the objectives and hypotheses for the questionnaire.

4. Results

The Influence of Actual and Ideal Self-congruity on Consumers' Purchase Intentions: Consumers' perceptions of actual and ideal self-congruity were evaluated using the five-point Likert scale and the higher the mean score value the more satisfied the respondents were in terms of purchase intentions.

Table 1: Descriptive Statistics: The Influence of Actual and Ideal Self-congruity on Consumers' Purchase Intentions

		Statistic					
Dimension	**N**	**Mean**	**Median**	**Std. Dev.**	**Minimum**	**Maximum**	**Range**
Actual Self-congruity	385	2.74	2.82	0.669	1	5	4
Ideal Self-congruity	385	2.81	2.90	0.739	1.00	4.70	3.70

Table 1 depicts the dimensions of actual and ideal self-congruity that impact on consumers' purchase intentions in varying degrees. In descending level of impact the mean scores are as follows:

- Ideal self-congruity (Mean = 2.81)
- Actual self-congruity (Mean = 2.74)

It is evident that the mean scores were low. There is room for improvement. In order to assess the areas for improvement for both dimensions, the following can be noted. With reference to the respondents' perceptions of the dimension of actual self-congruity pertaining to mobile phones, the results indicated that 45.2% of the respondents strongly disagree/disagree that they do not care about the type of mobile phone brand that is purchased as it does not reflect who they are and 39.4% of the respondents agreed/strongly agreed. Pertaining to the clothing brands purchased, 46.5% of the respondents strongly disagree/disagree that they do not care about the clothing brands they purchase as it does not reflect who they are, whereas 35.6% agreed/strongly agreed. In terms of the respondents' perceptions of the dimension of ideal self-congruity, pertaining to mobile phones, it was revealed that 42.1% of respondents strongly disagree/disagree that they do not care about the type of mobile phone brand that is purchased as it does not reflect how they would like to be, while 34.6% of respondents agreed/strongly agreed. With reference to the clothing brand/s purchased, the results indicate that 42.6% of respondents strongly disagree/disagree that they do not care about the type of clothing brand/s that is purchased as it does not reflect how they would like to be, whereas 37.2% of respondents indicated that they agreed/strongly agreed. Hence, it can be deduced that the majority of the respondents care about the types of clothing and mobile phone brands that are purchased as these brands reflect both their actual and ideal self-concepts. However, the minor variation in responses indicate that respondents prefer to purchase mobile phones and clothing that express who they are (actual self-concept) rather than how they would like to be (ideal self-concept). Upon close reflection of the findings, it was deduced that the respondents' purchase intentions are influenced more by their actual rather than their ideal self-concept.

Actual and Ideal Self-congruity: Most/Least Important Brand Personality Attributes: This section will present the findings that pertain to the most and least important brand personality attribute relating to the respondents' actual and ideal self-concepts with reference to the clothing and mobile phone brands they purchase. The first segment will elucidate the most and least important brand personality attribute pertaining to the respondents' actual self-concept with reference to the clothing and mobile phones they purchase and the subsequent segment will feature the most and least important brand personality attribute pertaining to the respondents' ideal self-concept regarding the clothing and mobile phone brands they purchase.

Actual self-congruity: mobile phones - most/least important brand personality attributes: The results indicate that 40.5% of the respondents believe that the innovative and up-to-date attributes are important for mobile phones to possess as this is congruent with their actual self-concept. Additionally, 39.6% of respondents believe that it is not important for mobile phones to be innovative and up-to-date. From the findings, 20.8% of respondents believe that the inexpensive and thrifty attributes are important vis-à-vis mobile phones as this is congruent with their actual self-concept. However, 50.9% of respondents believe that it is not important for mobile phones to be inexpensive and it is immaterial for them to be frugal or thrifty consumers as this attribute is incongruent with their actual self-concept. Hence, it can be deduced that the brand personality attribute that is of importance pertaining to mobile phones is innovative and up-to-date, as this is congruent with the respondents' actual self-concept. On the contrary, the brand personality attribute that is of the least importance to the respondents is inexpensive and thrifty, as this is incongruent with respondents' actual self-concept.

Actual self-congruity: clothing - most/least important brand personality attributes: As depicted in the results, 57.4% of respondents indicated that the adventurous and outdoorsy attributes are unimportant for clothing brands to possess as it does not reflect who they are, whereas 17.7% of the respondents believe that clothing brands should reflect the adventurous and outdoorsy personality attributes as this is congruent with their actual self-concept. From the results, 43.1% of respondents believe that the feminine/delicate and masculine/strong attributes are important for clothing brands to possess as this reflects who they are, whereas 31.2% of the respondents believe that it is unimportant for clothing brands to portray neither feminine nor masculine personality attributes, as this is not congruent with their actual self-concept. Hence, it can be inferred that the brand personality attribute which is of importance to clothing brand/s is feminine/delicate (female respondents) and masculine/strong (male respondents), as this is congruent with the respondents' actual self-concept. On the contrary, the least important brand personality attribute among the respondents is adventurous and outdoorsy personality, as this is incongruent with respondents' actual self-concept.

Ideal self-congruity: mobile phones - most/least important brand personality attributes: The results show that 37.7% of respondents believe that it is important for mobile phones to be innovative and up-to-date, whereas 36.9% of respondents do not believe that it is important for mobile phones to possess this attribute. It can be assumed that the brand personality attribute that is of paramount importance among respondents is innovative and up-to-date. According to the results, 53.0% of respondents believe that it is not important for their mobile phone brand to be inexpensive as they would like to be extravagant or spendthrift consumers – this reflects their ideal self-concept. On the contrary, 16.9% of respondents believe that this attribute is important for mobile phones to possess as they would like to be thriftier and more financially cautious consumers. From the findings, it can be deduced that the brand personality attribute that is of importance to respondents is innovative and up-to-date, as this is congruent with how the respondents would like to be. On the contrary, the brand personality attribute that is of the least importance to respondents is inexpensive and thrifty, as this is incongruent with how the respondents would like to be.

Ideal self-congruity: clothing - most/least important brand personality attributes: The results indicate that 56.9% of respondents believe that the adventurous and outdoorsy attributes are not important for clothing brands to possess, while 16.1% of respondents believe that it is important for clothing brands to possess this attribute. This confirms that the majority of respondents do not perceive this attribute to be important when they elect to purchase clothing brands. From the research findings, 42.1% of respondents indicate the feminine and masculine brand personality attributes are important when they purchase clothing brands as this reflects how they would like to be, while 32.5% of respondents believe that it is unimportant for clothing brands to possess this attribute as this does not reflect how they would like to be. Ergo, the brand personality attribute that is of paramount importance to respondents is feminine (female respondents) and masculine (male respondents). On the contrary, the attribute that is of the least importance to respondents is adventurous and outdoorsy, as this is incongruent with how the respondents would like to be. From the results highlighted above, it can be assumed actual and ideal self-concepts are similar in nature as the brand personality traits which are of the most and least importance pertaining to the clothing and mobile brands that respondents purchase are the same. This notion is supported by the study conducted by Kleijnen, Ruyter & Andreassen (2005), which revealed that actual and ideal self-concept are similar in nature and measuring

the two concepts with brand personality attributes will be insignificant, as the measurement of the these variables is almost negligible.

The Impact of Actual and Ideal Self-congruity on Respondents' Biographical Variables: The biographical variables (age group, current year of study, gender, race, employment, living arrangements and income) on actual and ideal self-congruity and its impact on the respondents' purchase intentions were evaluated using tests of differences (Mann-Whitney U test and the Kruskal-Wallis ANOVA test. Table 2 depicts the results.

***Hypothesis One**:* Respondents varying in (age group, current year of study, gender, race, employment, living arrangements and income) significantly differ in their perceptions of actual self-congruity and ideal self-congruity and its influence on their purchase intentions.

Table 2: Kruskal-Wallis ANOVA Test: The Biographical Profiles of Respondents and the Influence of Actual and Ideal Self-congruity on Consumers' Purchase Intentions

Dimensions	**Biographical Variables**							
The Influence of Actual and Ideal Self-congruity on Consumers' Purchase Intentions	Age Group		Current Year Of Study		Gender		Race	
	F	P	F	P	F	P	F	P
Actual Self-congruity	1.640	0.650	3.217	0.667	-2.845	0.004*	20.711	0.000*
Ideal Self-congruity	2.689	0.442	3.371	0.643	-1.766	0.077	27.215	0.000*

Dimension	Biographical Variables					
The Influence of Actual and Ideal Self-congruity on Consumers' Purchase Intentions	Employment		Living Arrangements		Income	
	F	P	F	P	F	P
Actual Self-congruity	1.601	0.659	2.995	0.392	9.434	0.093
Ideal Self-congruity	2.726	0.436	1.662	0.645	2.100	0.835

As evident in Table 2 the results depict that there is a significant difference in the perceptions of actual self-congruity on gender ($Z = -2{,}845$, $p < 0{,}05$), however, there is no significant difference in the perceptions of ideal self-congruity ($Z = -1{,}766$, $p < 0.05$). Hence, hypothesis one may only be accepted in terms of actual self-congruity. According to Table 2 the results show there is a significant difference in the actual self-congruity (Chi-Square = 20.711, df = 4, $p < 0.01$) and ideal self-congruity for race (Chi-Square = 27.215, df = 4, $p < 0.01$) of the respondents. Hence, hypothesis one can be accepted in terms of the respondents' race group for both actual and ideal self-congruity. Table 2 indicates that customers varying in biographical profiles (age, current year of study, employment, living arrangements and income) do not significantly differ in their perceptions of actual self-congruity and ideal self-congruity and its influence on their purchase intentions. Hence hypothesis 1 may be rejected.

Impact of Biographical Profiles of Respondents and its influence on purchase intentions: The biographical variables (age group, current year of study, gender, race, employment, living arrangements and

income) on self-congruity and its impact on the respondents' purchase intentions were evaluated using tests of differences (Mann-Whitney U test and the Kruskal-Wallis ANOVA test) respectively.

Hypothesis Two: There is a significant difference in the perceptions of actual self-congruity and ideal self-congruity between males and females on their purchase intentions.

Table 3: Mann-Whitney U Test: Sub-dimensions of Consumers' Purchase Intentions by Gender

Sub-dimensions of Consumers' Purchase Intentions	Mann-Whitney U	Z	P
Actual self-congruity	13914.000	-2.845	0.004*
Ideal Self-congruity	15037.000	-1.766	0.077

**p < 0.05

As evident in Table 3 the results show there is a significant difference in the perceptions of actual self-congruity (Z = -2,845, p < 0,05), between males and females. Hence hypothesis 2 can be accepted.

Hypothesis Three: Respondents varying in (age group, current year of study, race, employment, living arrangements and income) significantly differ in their perceptions of actual self-congruity and ideal self-congruity and its influence on their purchase intentions.

Table 4: Kruskal-Wallis ANOVA Test: Impact of Biographical Profiles of Respondents and its influence on purchase intentions

Dimensions	Biographical Variables								
The Influence of Actual and Ideal Self-congruity on Consumers' Purchase Intentions	Age group			Current year of study			Race		
	Chi-Square	df	P	Chi-Square	df	P	Chi-Square	df	P
Actual Self-congruity	1.640	3	0.650	3.217	5	0.667	20.711	4	0.000*
Ideal Self-congruity	2.689	3	0.442	3.371	5	0.643	27.215	4	0.000*
Dimensions	Biographical Variables								
The Influence of Actual and Ideal Self-congruity on Consumers' Purchase Intentions	Employment			Living arrangements			Income		
	Chi-Square	df	P	Chi-Square	df	P	Chi-Square	df	P
Actual Self-congruity	1.601	3	0.659	2.995	3	0.392	9.434	5	0.093
Ideal Self-congruity	2.726	3	0.436	1.662	3	0.645	2.100	5	0.835

*p > 0.05

Table 4 indicates that there is a significant difference in the actual self-congruity (Chi-Square = 20.711, df = 4, p < 0.01) and ideal self-congruity for race (Chi-Square = 27.215, df = 4, p < 0.01) of the respondents. Hence,

hypothesis three can be accepted in terms of the respondents' race group for both actual and ideal self-congruity. In addition, table 4 indicates that respondents varying in (age group, current year of study, employment, living arrangements and income) do not significantly differ in their perceptions of actual self-congruity and ideal self-congruity and its influence on their purchase intentions. Therefore hypothesis three is rejected in terms of these dimensions.

Discussion of Results: In terms of respondents' perceptions of the dimension of actual self-congruity pertaining to purchase intentions, the empirical findings demonstrate that respondents purchase clothing and mobile phone brands with attributes that are congruent with their actual self-concept. In addition, the results show that the majority of respondents care about the types of clothing and mobile phone brands that are purchased as it reflects who they are. Conversely, a small segment of respondents indicate that they do not care about the types of clothing and mobile phone brands that are purchased as it does not reflect who they are. It can be assumed that these respondents do not have a firm sense of self identity nor were they able to distinguish between actual and ideal self-concept. As evident in the results, the majority of respondents purchase brands which are influenced more by their actual rather than their ideal self-concept. This finding is inconsistent with the studies conducted by Ekinci, Dawes & Massey (2008); Graeff (1996) and Hong & Zinkhan (1995), where they declare that consumers' purchase intentions are driven more by their ideal self-concept rather than their actual self-concept. The plethora of studies indicate that consumers purchase brands that match their actual self-concept as brands are vehicles for expressing who they are – this is portrayed in the results. Pioneer studies conducted by Sirgy in 1982 and Belk in 1988, support the findings of the research as well, where they stated that the self-congruity theory involves consumers evaluating brands on the basis of the various dimensions by which consumers describe themselves (as cited in Parker, 2005).

In terms of respondents' perceptions of dimension of ideal self-congruity pertaining to purchase intentions, the results indicate that respondents purchase clothing and mobile phone brands with attributes that are congruent with their ideal self-concept as well. Sirgy and Su (2000) support this notion as they postulate that consumers purchase brands that possess images that are congruent with both their actual and ideal self-concept. The results also illustrate that a considerable percentage of respondents care about the type of clothing and mobile phone brands that are purchased as it reflects how they would like to be. A study conducted by Hong & Zinkhan (1995) revealed that consumers are influenced more by their ideal self-concept rather their actual self-concept when it comes to purchasing other conspicuous products, namely cars and shampoos. The findings thus indicate that respondents purchase clothing and mobile phone brands that are congruent with both their actual and ideal self-concepts. Ericksen (1997) and Choi & Rifon (2012) declare that self-congruity positively affects consumers' purchase intentions; this reveals that when there is a positive relationship or a match between consumer's self-concept and brand image, this influences consumers' purchase intentions positively.

However, there is a slight variation in the responses, which indicate that respondents purchase clothing and mobile phones that express who they are rather than how they would like to be. The results also depict that there is no significant difference between the respondents' actual and ideal self-congruity on purchase intentions. Kleijnen et al. (2005) support this finding and postulate that actual and ideal self-concept are similar in nature, ergo, measuring actual and ideal self-congruence with brand personality attributes is insignificant as the measurement of the these variables is almost negligible. Additionally, Webb & Gountas (2006) posit that there is no clear evidence of whether actual and ideal self-image is related to actual and ideal product image. In consumer behaviour research, the congruity of self-concept and brand personality attributes illuminates and enhances the understanding of consumer decision-making, ergo, the crux of this study was to unearth whether consumers purchase clothing and mobile phone brands with attributes that are congruent with their actual and ideal self-concepts. From the results, it can be deduced that respondents purchase brands that are congruent with both their actual and ideal self-concepts, however, upon closer reflection, it can be professed that respondents' purchase intentions are influenced slightly more by their actual rather than their ideal self-congruity.

The following segment will illuminate the brand personality attributes that are of the most and least importance to the respondents, with reference to their actual and ideal self-concepts, when purchasing clothing and mobile phones. The researcher utilized a specific set of brand personality attributes that are of

great relevance to the student community which were selected by taking into consideration the several Brand Personality scales by Aaker (1997), Grohmann (2009), Malhotra (1981) and Geuens et al. (2009). According to Belk, (1988); Sirgy, (1982) and Solomon, (1983), consumers prefer brands and stores that project images that are congruent with or similar to how they perceive themselves (as cited in Parker, 2005). Graeff (1996) also supports this notion. Park & Lee (2005); Sirgy & Johar (1999); Sirgy & Su (2000) and Sung, Park & Han (2005) have explored the effects of the congruence between brand personality attributes and the self-concept of consumers and according to Belk, 1988 and Sirgy, 1982 (as cited in Achouri & Bouslama, 2010), an individual seeks certain congruence between the attributes of a brand and the way his/her personality is presented.

Ericksen (1997) postulates that there is a significant relationship between consumers' self-congruity and purchase intention and as indicated in the results, the respondents elect to purchase brands with personality attributes that are in fact congruent with their actual and ideal self-concepts. Furthermore, Ericksen (1997); Jamal & Goode (2001) and Zinkhan & Hong (1991) have pointed out that consumers prefer brands with images or attributes that are compatible with their own self-perceptions or self-concepts. Ergo, from the results, it can be extrapolated that, with reference to the respondents' actual self-concept, pertinent to mobile phones, the brand personality attribute that is of paramount importance among respondents is the innovative and up-to-date attribute. The results dictate that respondents will elect to purchase a mobile phone that is innovative and up-to-date as this is congruent with their actual self-concept or how they currently view themselves. Furthermore, the brand personality attribute that is of the least importance to the respondents vis-à-vis mobile phones is the inexpensive and thrifty characteristic. This confirms that the respondents of this study do not perceive themselves as frugal consumers. However, a study conducted by Student Village in 2013 confirmed that 70% of students are saving between R0-R250 in order to save for 'emergencies' (Student Village, 2013). In addition, the South African Student Spend Report 2015 revealed that 58% of students are now saving between R1-R540 for 'rainy days' (Student Village, 2015). As indicated by the statistics in the two studies conducted by Student Village above, it is evident that student saving has declined in the last two years (Student Village, 2013; 2015). This is reflected in the results of the current study at hand, whereby respondents do not perceive themselves as thrifty consumers. Consequently, it can be declared that inexpensive and thrifty reflect attributes that are inconsistent with how the respondents perceive themselves when they purchase brands of mobile phones.

With reference to the respondents' ideal self-concept, vis-à-vis mobile phones, the brand personality attribute that is of importance to the respondents is the innovative and up-to-date attribute, which confirms that respondents consider this attribute important when they elect to purchase a mobile phone as it is congruent with their ideal self-concept. Furthermore, the brand personality attribute that is of the least importance to respondents is the inexpensive and thrifty characteristic as this attribute does not reflect how the respondents would like to be. The findings thus indicate that the majority of respondents are concerned about purchasing expensive mobile phone brands and being thrifty is unimportant and as shown in the studies conducted by Student Village in 2013 and 2015, student saving has now declined in the last two years (Student Village, 2013; 2015). This is reflected in the results of the current study, where respondents do not perceive themselves as thrifty consumers. Furthermore, the results depict that there is a significant difference in the perceptions of actual and ideal self-congruity among the race groups of the respondents. This finding is evident in the study conducted by Student Village in 2013, where it was revealed that students from diverse ethnic backgrounds spend and consume differently. The study indicated that White students spend their money on food, groceries, holiday travel, entertainment and alcohol, African students spend their money on toiletries, cosmetics, take-away meals, gadgets, extra tuition and music and Coloured students spend their money on smoking, bling, magazines, clothing and footwear (Student Village, 2013). It can be deduced that students from different ethnicities prefer, are loyal towards and satisfied with a variety of different brands and their consumption behaviour varies. The study, however, did not reveal findings pertaining to the Indian student community.

The findings depict that the majority of the respondents earned a minimal income of less than R1 000. This correlates with the findings from the study conducted by Kornberger et al. (2010), where it was revealed that students living with their parents have less disposable income compared to those who are renting or living on their own. Ergo, it can be assumed that the discretionary income of the respondents in this study is meagre

which does not give them the financial freedom to purchase highly expensive brands. However, according to the South African Student Spend Report 2015, where 3 030 respondents from various tertiary institutions across South Africa were surveyed, it was revealed that the average student spending across South Africa in 2015 is R2 702 per month, which has increased by 7.95% since 2014. It is important to note that this average student spend is much higher than the disposable income of the respondents in this study, as most respondents from this study have a discretionary income of less than R1 000. According to a study conducted in 2013, by Student Village, on South African student spending, it was revealed that females are spending more of their income than their male counterparts (Student Village, 2013). However, in 2015, the South African Student Spend Report 2015, conducted by Student Village revealed that males spend more than females (Student Village, 2015).

Moreover, there is no significant difference in the perceptions of actual and ideal self-congruity among the income levels of the respondents. According to the South African Student Spending Report 2013 and 2015, students' main source of income comes from their parents or other family members, and the other sources of income include part-time work and bursaries or sponsors (Student Village, 2013; 2015). It was also revealed by Student Village, that students are still spending more than the average South African citizen per annum in spite of the fact that students are stereotyped as being broke or virtually penniless (Student Village, 2013; 2015). However, this is not true for the respondents in this study as most of them can be perceived to be financially disadvantaged.

5. Conclusion and Recommendations

This research is of particular relevance to marketing managers, as they need to be aware of their target consumers' actual and ideal self-congruity and how these elements impact on consumers' purchase intentions. These elements, as evident in the empirical findings, in turn, influence consumers' brand loyalty, brand preference and customer-brand satisfaction, which ultimately affect product sales. A surfeit of studies has hypothesized self-concept and brand personality and has revealed that these elements significantly influence consumers' brand preference, brand loyalty and customer-brand satisfaction as indicated in the results of this study. Although the empirical findings indicate that both actual and ideal self-congruity influence purchase intentions, it was discovered that students purchase brands that are influenced slightly more by their actual rather than their ideal self-concept. Ergo, it is imperative that marketing managers determine students' ideal self-concept by engaging in continuous marketing research in order to determine what motivates students to purchase a particular brand and what brand personality attributes will enhance students' self-concept. By conducting continuous market research, firms will be able to customize their offerings according to students' predilections. Firms are also required to utilize more aggressive advertising appeals and strategies in order to illustrate and communicate to students how their brands can bring students closer to their ideal self-concept. Furthermore, it is recommended that firms continuously communicate with the student market segment via personalized, interactive forms of communication in order to operate successfully in today's constantly evolving digital marketing landscape.

Since the findings indicate that students regard the innovative and up-to-date attributes as the most important attribute pertaining to mobile phones and the feminine and masculine attributes as the most important regarding clothing brands as these attributes reflect their actual self-concept, marketing managers are required to take these brand personality attributes into consideration when they are devising their marketing strategies. Ergo, in order to effectively penetrate and target this market segment, marketing managers need to customize their offerings and marketing communications in accordance with students being innovative and up-to-date and feminine and masculine. The feminine and masculine brand personality attributes can also be streamlined or customized for various product categories other than for clothing, namely health and fitness products, toiletries, hotels, insurance services and even jewelry. The innovative and up-to-date brand personality attributes can be utilized for product categories other than for mobile phones, namely watches, motor vehicles and major household durables. The findings also indicate that most students are not frugal consumers as this attribute does not reflect their actual self-concept, ergo marketing managers can capitalize on this attribute, as it is evident that students are not price sensitive consumers. The adventurous and outdoorsy attributes are off little or no relevance to students pertaining to clothing brands,

as this is not incongruent with students' actual self-concept; therefore, marketing managers need to refrain from using these attributes in their marketing activities when targeting students' actual self-concept.

The most important attributes pertaining to mobile phones and clothing that are congruent with reference to students' ideal self-concept are the same as the attributes that are congruent with students' actual self-concept. Ergo, marketing managers are required to take these attributes into consideration when they are devising their marketing strategies for such products that will appeal to students' ideal self-concept. The attributes that are the least important pertaining to mobile phones and clothing with respect to students' ideal self-concept are the same as those attributes that are congruent with students' actual self-concept. The highest value of students' purchase is premium clothing, followed by mobile phones (Student Village, 2015). Ergo, this study focused on students' actual and ideal self-congruity pertaining to the clothing and mobile phone brands they purchase. Hence, from the findings, it is recommended that firms incorporate both the actual and ideal self-concepts into their marketing and advertising activities for mobile phone and clothing in order to effectively compete in today's dynamic market landscape and successfully target the student market segment. The cardinal point of this study was to ascertain whether consumers purchase (clothing and mobile phones) brands with personality attributes that are congruent with their actual and ideal self-concepts. The empirical findings thus indicate that actual and ideal self-congruity does in fact influence the purchase intentions of consumers. The research also indicates that there exists an influential and significant relationship among the dimensions that were under investigation. Moreover, it can be inferred that consumers' actual self-congruity has a greater influence over ideal self-congruity on consumers' purchase intentions. Hence, taking the aforementioned into consideration, the purpose of this research has been fulfilled.

Recommendations for Future Research: This research has been confined to within a Public Tertiary Institution in EThekwini (Durban), South Africa and was conducted comprising of postgraduate and undergraduate students from three colleges only. The institution comprised of thirteen Schools. Further research on this subject should be expanded to other tertiary institutions and could employ larger sample sizes and a more diverse sample unit comprising of respondents from campuses located nation-wide. Furthermore, an extensive assortment of other product consortiums should be employed in order to obtain further insight into consumers' actual and ideal self-congruity and their influence on purchase decisions. Future research should incorporate the usage of brand names as this was not utilized in the study and consequently the study was more generalized in nature. Moreover, apart from the actual and ideal self-concepts, the social and ideal social selves should also be taken into consideration in order to yield a more panoptic study.

References

Aaker, J. L. (1997). Dimensions of Brand Personality. *Journal of Marketing Research,* 34(3)**,** 347-356.

Aaker, J. L. (1999). The Malleable Self: The Role of Self-expression in Persuasion. Journal of Marketing Research Available at: https://www.gsb.stanford.edu/sites/gsb/files/publication-pdf/The-Malleable-Self.pdf.

Abel, J. I. & Buff, C. L. (2010). Exploring Gender Differences under the Image Congruence Hypothesis among Consumers in the Health Club Industry. *Journal of the Academy of Business and Economics,* 10(3).

Achouri, M. L. & Bouslama, N. (2010). The Effect of the Congruence between Brand Personality and Self-Image on Consumer's Satisfaction and Loyalty: A Conceptual Framework. IBIMA Business Review Available at: www.ibimapublishing.com/journals/IBIMABR/2010/627203/627203.pdf.

Belk, R.W. (1988). Possessions and the Extended Self. *Journal of Consumer Research*, 15(2), 139-168.

Boksberger, P., Dolnicar, S., Laesser, C. & Randle, M. (2011). Self-Congruity Theory: To What Extent Does it Hold in Tourism? *Journal of Travel Research,* 50(4), 454-456. Available at: http://ro.uow.edu.au/cgi /viewcontent.cgi? article=2011&context=commpapers.

Choi, S. M. & Rifon, N. J. (2012). It is a Match: The Impact of Congruence Between Celebrity Image and Consumer Ideal Self on Endorsement Effectiveness. *Psychology & Marketing,* 29(9)**,** 639-650.

Conger, D. & Long, M. C. (2013). Women Students Dominating in Many Countries. Available at: http://www.universityworldnews.com/article.php?story= 2013022612105131.

Eder, J. (2013). Are Students Becoming More Brand Loyal? Available at: http://www.theguardian.com/media-network/media-network-blog/2013/aug/16/ students-youth-brand-entertainment-loyalty.

Eder, J. (2013). How Brands Can Build and Sustain Relationships With 18-to-24-year-olds. Available at: http://www.marketingmagazine.co.uk/article/1207773/bra nds-build-sustain-relationships-18-24-year-olds.

Ekinci, Y. & Riley, M. (2003). An Investigation of Self-concept: Actual and Ideal Self-congruence Compared in the Context of Service Evaluation. *Journal of Retailing and Customer Service,* 10(4)**,** 201-214.

Ekinci, Y., Dawes, P. L. & Massey, G. R. (2008). An Extended Model of the Antecedents and Consequences of Consumer Satisfaction for Hospitality Services. *Journal of Euro-Marketing,* 42(1/2)**,** 35-68.

Ericksen, M. K. (1996). Using Self-Congruity and Ideal Congruity to Predict Purchase Intention: A European Perspective. *Journal of Euro-Marketing*, 6(1), 41-56.

Ericksen, M. K. (1997). Using Self-congruity and Ideal Congruity to Predict Purchase Intention: A European Perspective. *Journal of Euro-Marketing,* 6(1)**,** 41-56.

Escalas, J. E. & Bettman, J. R. (2005). Self-construal, Reference Groups and Brand Meaning. *Journal of Consumer Research,* 32(3)**,** 378-389.

Grant, I. C. & Waite, K. (2003). Following the Yellow Brick Road - Young Adults' Experiences of the Information Super-Highway. *Qualitative Market Research: An International Journal,* 6(1)**,** 48-57.

Geuens, M., Weijters, B. & De Wulf, K. (2009). A New Measure of Brand Personality. *International Journal of Research in Marketing,* 26(2)**,** 97-107.

Graeff, T. R. (1996). Image Congruence Effects on Product Evaluations: The Role of Self-monitoring and Public/Private Consumption. *Journal of Psychology & Marketing,* 13(5)**,** 481-499.

Grohmann, B. (2009). Gender Dimensions of Brand Personality. *Journal of Marketing Research,* 46(1)**,** 105-119.

Han, J. W. (2006). The Impact of Self-Concept/Product-Image Congruity and Functional Congruity on Brand Preference: Three Product Categories. Available at: http://diginole.lib.fsu.edu/cgi/viewcontent.cgi?article=1682&context =etd.

Hong, J. W. & Zinkhan, G. M. (1995). Self-concept and Advertising Effectiveness: The Influence of Congruency, Conspicuousness, and Response Mode. *Psychology & Marketing,* 12(1)**,** 53-77.

Hogg, M. K., Bruce, M. & Hill, A. J. (1998). Fashion Brand Preference among Young Consumers. *International Journal of Retail and Distribution Management,* 26(8)**,** 293-300.

Jamal, A. & Goode, M. H. (2001). Consumer and Brands: A Study of the Impact of Self-image Congruence on Brand Preference and Satisfaction. *Marketing Intelligence & Planning,* 19(7)**,** 482-492.

Johar, G. V., Sengupta, J. & Aaker, J. L. (2005). Two Roads to Updating Brand Personality Impressions: Trait versus Evaluative Inferencing. *Journal of Marketing Research,* 42(4)**,** 458-469.

Keller, K. L. & Richey, K. (2006). The Importance of Corporate Brand Personality Traits to a Successful 21st Century Business. *Journal of Brand Management,* 14(1/2)**,** 74-81.

Kim, C. K., Han, D. & Park, S. (2001). The Effect of Brand Personality and Brand Identification on Brand Loyalty: Applying the Theory of Social Identification. *Japanese Psychological Research,* 43(4)**,** 195-206.

Kim, H. R., Lee, M. & Ulgado, F. M. (2005). Brand Personality, Self-congruity and the Consumer-brand Relationship. *AP - Asia Pacific Advances in Consumer Research* 6, 111-117. Available at: http://acrwebsite.org/volumes/11876 /volumes/ ap06/AP-06.

Kleijnen, M., Ruyter, K. & Andreassen, T. (2005). Image Congruence and the Adoption of Service Innovations. *Journal of Service Research,* 7(4)**,** 343-359.

Kornberger, M., Aires, R., Cant, M. & Bothma, N. (2010). 15 Things You Didn't Know About Student Spending Behaviour. Available at: http://www. slideshare.net/jniemand/student-marketing-student-spending-behavior-south-africa-2010.

Kotler, P. (2000). *Marketing Management: Millennium Edition (Tenth Edition)*, Prentice-Hall.

Leslie, E., Sparling, P. B. & Owen, N. (2001). University Campus Setting and the Promotion of Physical Activity in Young Adults: Lessons from Research in Australia and the USA. *Health and Education,* 101(3), 116-125.

Malhotra, N. K. (1981). A Scale to Measure Self-concepts, Person Concepts, and Product Concepts. *Journal of Marketing Research* 18(4), 456-464. Available at: https://archive.ama.org/archive/ResourceLibrary/JournalofMarketing Research (JMR)/documents/5018947.pdf.

Mehta, A. (1999). Using Self-concept to Assess Advertising Effectiveness. *Journal of Advertising Research,* 39(1)**,** 81-89.

Mokhlis, S. & Salleh, H. (2009). Consumer Decision-making Styles in Malaysia: An Exploratory Study of Gender Differences. *European Journal of Social Sciences,* 10(4)**,** 574.

Parker, B. T. (2005). This Brand's For Me: Brand Personality and User Imagery Based Self-congruity. PhD Thesis. University of Florida. Available at: http://etd.fcla .edu/UF/UFE0012900/parker_b.pdf.

Park, S. Y. & Lee, E. M. (2005). Congruence between Brand Personality and Self-image and the Mediating Roles of Satisfaction and Consumer-brand Relationship on Brand Loyalty. *AP-Asia Pacific Advances in Consumer Research* 6, 39-45. Available at: http://acrwebsite.org/volumes/11859/ vol/ap06/ AP-06.

Randle, M. J. & Dolnicar, S. (2009). Self-congruity Theory in Volunteering. 38th EMAC Conference, France, 26-29 May 2009, France: Audencia Group, 1-8. Available at: http://ro.uow.edu.au/cgi/viewcontent.cgi?article =1651&cont ext=commpapers.

Schiffman, L. G. & Kanuk, L. L. (2000). *Consumer Behaviour (Seventh Edition),* Englewood Cliffs, N.J.: Prentice-Hall.

Sekaran, U. (2003). *Research Methods for Business: A Skill-building Approach (Fourth Edition),* London: John Wiley & Sons.

Sirgy, M. J. (1982). Self-Concept in Consumer Behavior: A Critical Review. *Journal of Consumer Research*, 9(2), 287-300.

Sirgy, M. J. & Johar, J. S. (1999). Toward an Integrated Model of Self-congruity and Functional Congruity. *E - European Advances in Consumer Research* 4, 252-256. Available at: http://acrwebsite.org/volumes/11391/ volumes/e04/E-04.

Sirgy, M. J. & Su, C. (2000). Destination Image, Self-congruity, and Travel Behavior: Toward an Integrative Model. *Journal of Travel Research,* 38(4)**,** 340-352.

Sirgy, M. J., Lee, D. J., Johar, J. S. & Tidwell, J. (2008). Effect of Self-congruity with Sponsorship on Brand Loyalty. *Journal of Business Research,* 61(10)**,** 1091-1097.

Smith, S. (2013). Determining Sample Size: How to Ensure You Get the Correct Sample Size. Available at: http://www.qualtrics.com/blog/determining-sample-size.

Sohn, E. M. & Juan, J. (2011). Tourist Self-concept, Self-congruity, and Travel Behavior Based on Cultural Event. Available at: http://scholarworks .umass.edu/cgi/viewcontent.cgi?article=1136&context=gradconf_hospitality.

Statistics South Africa. (2014). Mid-year Population Estimates 2014. Available at: http://www.statssa.gov.za/publications/P0302/P03022014.pdf.

Student Village. (2013). SA Student Spending Report 2013 Findings. Available at: http://www.studentmarketing.co.za/sa-student-spending-report-2013-findings.

Student Village. (2015). Student Spend Report 2015. Available at: http://www.stu dentmarketing.co.za/portfolio/student-spend-report-2015.

Sung, Y. S., Park, E. & Han, M. K. (2005). The Influences of the Brand Personality on Brand Attachment and Brand Loyalty: Centred on the Differences Between the Brand Community Members and Non-members. *AP - Asia Pacific Advances in Consumer Research* 6, 156. Available at: http:// acrwebsite.org/volumes/11888/volumes/ap06/AP-06.

Van De Rijdt, T. (2008). Measuring Self-congruity Using Human Personality and Brand Personality: The Effect of Personality Congruence on Brand Preference. Available at: http://essay.utwente.nl/57756/1/scriptie_van_de_Rijdt.pdf.

Webb, B. & Gountas, J. (2006). An Integrative Model of Brand Personality, Self-concept and Consumer Personality Orientations. ANZMAC 2006 Advancing Theory, Maintaining Relevance, Brisbane, 4-6 December 2006, Brisbane, Qld: Queensland University of Technology, School of Advertising, Marketing and Public Relations, 1-7. Available at: http://anzmac.org/conference_ archive/2006/documents/Webb_Ben.pdf.

Yutar, D. (2005). South African Youth Are Big Spenders. Available at: http://www.iol .co.za/news/south-africa/south-african-youth-are-big-spenders-1.244459#.Veg _Ly Wqqko.

Zinkhan, G. M., Haytko, D. L. & Ward, A. (1996). Self-concept Theory: Applications in Advertising *Journal of Marketing Communications,* 2(1)**,** 1-19.

Zinkhan, G. M. & Hong, J. W. (1991). Self-concept and Advertising Effectiveness: A Conceptual Model of Congruency, Conspicuousness, and Response Mode. *Advances in Consumer Research* 18, 348-354. Available at: http://www.a crwebsite.org/search/view-conference-proceedings.aspx ?Id=7184.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Efficiency of Foreign Exchange Markets in Sub-Saharan Africa in the Presence of Structural Break: A Linear and Non-Linear Testing Approach

Adeyeye Patrick Olufemi[1*], Aluko Olufemi Adewale[2], Migiro Stephen Oseko[1]
[1]University of KwaZulu-Natal, Westville, Durban, South Africa
[2]University of Ilorin, Ilorin, Kwara State, Nigeria
adeyeyepo@gmail.com*, olufemiadewale6@gmail.com, stephen410@gmail.com

Abstract: This study examines the efficiency of foreign exchange (forex) market of 10 selected countries in sub-Saharan Africa in the presence of structural break. It uses data on the average official exchange rate of currencies of the selected countries to the US dollar from November 1995 to October 2015. This study employs Perron unit root test with structural break to endogenously determine the break period in the forex markets. It also employs the Kim wild bootstrap variance ratio test and BDS independence test to detect linear and nonlinear dependence in forex market returns respectively. In the full sample period, the Kim wild bootstrap joint variance ratio test shows that only two forex markets are efficient while the BDS independence test reports that all the forex markets are not efficient. The subsample period analysis indicates that the efficiency of the majority of the forex markets is sensitive to structural break, thus providing evidence in support of the adaptive market hypothesis. This study suggests that ignoring structural break and nonlinearity of returns may lead to misleading results when testing for market efficiency.

Keywords: *Efficiency, foreign exchange market, structural break, sub-Saharan Africa*

1. Introduction

Investors in the foreign exchange (forex) market are concerned about the efficiency of the market in order to determine whether there is a possibility to outperform the market based on past market information. Meese and Rogoff (1983) pioneered research into the predictability of forex rate based on a random walk model. The ability to predict forex rate behaviour supports the assertion of the long-run purchasing power parity model. In empirical literature, the quest to determine the predictability of the forex market is underpinned to the efficient market hypothesis (EMH) propounded by Fama (1970) which suggests that a market is efficient when future returns in the market cannot be predicted using past market information or events. Currency traders in an efficient forex market cannot use technical analysis to earn returns above the average market returns because forex rates follow a random walk (non-predictable patterns). Baffes (1994) argues that an efficient forex market does not mean forex are not predictable, but it implies that arbitrage opportunities cannot be exploited. Based on the dependence structure of increment series, Campbell, Lo and Mackinlay (1997) distinguish the random walk model into three variant models namely: Random Walk 1 (RW1), Random Walk 2 (RW2) and Random Walk 3 (RW3). RW1 model assumes that price increments are independently and identically distributed with a zero mean and constant variance. RW2 model assumes that price increments are independently but not identically distributed with zero mean and constant variance. RW3 model assumes that price increments are not correlated.

The efficiency of the forex market can be determined by testing the martingale hypothesis and the martingale difference hypothesis (MDH) which are lower versions of the random walk hypothesis. The martingale hypothesis states that the best forecast of tomorrow's price is the price of today while MDH posits that the best prediction of tomorrow's return is today's return. The forex market is said to be efficient when either the martingale hypothesis or MDH holds. An efficient market does not allow investors to predict future gains in the market due to the randomness of returns. Escancianio and Labato (2009) argue that a financial time series is a martingale if it corresponds to RW2. The RW2 model is appropriate when financial time series exhibits volatility. Numerous studies such as Wright (2000), Belarie-Franch and Opong (2005), Yang, Su and Kolari (2008), Escanciano and Lobato (2009), Lazăr, Todea and Filip (2012), Charles, Darné and Kim (2012), Azar (2014), Salisu, Oloko and Oyewole (2016) tested for MDH rather than martingale hypothesis. Escanciano and Labato (2009) argue that it is easier to deal with returns because price tends to be non-stationary, thus making it common to test for MDH when testing the efficiency of the forex market. Also, the test for MDH has gained much attention because forex markets tend to be volatile in nature. Ignoring structural break when testing for MDH may render the results misleading (Salisu et al., 2016; Salisu & Ayinde, 2016). Not much

attention has been given to the efficiency of forex markets in African countries. Therefore, this study tests the forex market efficiency of 10 selected sub-Saharan African countries taking into account the presence of structural break in the markets. It is worthy of note that failure to consider the nonlinearity of returns can lead to misleading conclusion on the efficiency of the forex markets. This study provides answers to these empirical questions: (i) Does Lo (2004)'s adaptive market hypothesis holds in the selected forex markets? (ii) Is the nonlinearity of forex rate returns a consideration for the test of the efficiency of the selected forex markets? Therefore, this study would validate whether testing for structural break and nonlinearity are important for testing efficiency of forex market. The rest of this study is outlined as follows: Section 2 deals with the literature review, Section 3 provides the data and preliminary analyses, and Section 4 and Section 5 present the empirical results and conclusion respectively.

2. Literature Review

Myriad of studies have provided evidence on the efficiency of the forex market by examining whether forex rate is a martingale or random walk. Yang et al. (2008) noted that martingale and random walk have been used interchangeably despite not being absolutely synonymous. A series is martingale if innovations or error terms are independent but not identically distributed while it is a random walk if error terms are independent and identically distributed. The pioneering work of Meese and Rogoff (1983) showed that the behaviour of forex rate conforms to the random walk hypothesis (RWH). Liu and He (1991) employed the variance ratio (VR) test and observed that there are autocorrelations of weekly increments in the nominal forex rate series between August 7, 1974 and March 29, 1989, thus the study rejects the MDH. Ogiogio (1994) found evidence to negate RWH using monthly data of the Nigerian forex market from 1989 to 1993. Aron (1997) used co-integration methodology to examine whether forex returns are predictable in South Africa. Utilising monthly parallel market and official forex rates, the study found that forex returns are predictable, thus affirming that the forex market of South Africa is not weak-form efficient. Hong and Lee (2003) applied the generalized spectral test on five major currencies and found that forex returns are frequently not serially correlated.

Wickremasinghe (2004) tested the weak-form and semi-strong efficiency of the forex market of Sri Lanka against the Japanese yen, British pound, US dollar, French franc, Indian rupee and German mark for the period January 1986-November 2000. With the aid of unit root and cointegration tests, the study found evidence in support of the weak-form efficiency and against the semi-strong efficiency. Belaire-Franch and Opong (2005) used the VR test based on ranks and signs on Euro exchange rates and offered evidence in support of MDH. Yang et al. (2008) accepted MDH for the Euro relative to the 3 major currencies (Japanese yen, British pound and US dollar) and also observed nonlinear predictability in the Euro against several smaller currencies. Sifunjo, Ngugi, Ganesh and Gituro (2008) employed a battery of tests consisting of run, unit root and Ljung-Box Q-statistic tests to examine whether returns on Kenyan shillings to US dollar are predictable and the findings rejected the MDH. Al-Khazali and Pyun (2009) examined RWH and MDH for the Australian dollar and currencies of 7 Asian currencies against the Euro, US dollar and Japanese yen. The results rejected both hypotheses for all the currencies over the period January 4, 1993 to December 31, 2008. Charles and Darné (2009) tested the random walk behaviour of daily and weekly data of Euro against currencies of 11 countries from January 4, 1999 to May 30, 2008. Using VR tests, the RWH was accepted for 8 countries (Australia, Canada, Japan, United Kingdom, US, New Zealand, Korea and Switzerland). However, RWH was rejected for daily data for Singapore and Norway and accepted for their weekly data while it was rejected for Sweden for both data frequencies. Azad (2009) utilised daily and weekly frequency post-Asian crisis spot exchange rate data of 12 Asia-Pacific forex markets from January 1998 to July 2007. The VR provided mixed results. For the daily data, majority of the forex rates exhibited martingale behaviour while the test on weekly data showed that majority of the forex rates are not martingale. This study shows that the randomness of forex rates may be dependent on data frequency.

Gradojević, Djaković and Andjelić (2010) invalidated RWH for the Euro/Serbian dinar between January 2005 and December 2008 using VR tests. Chiang, Lee, Su and Tzou (2010) employed series of VR tests to examine the efficiency of the forex markets of Japan, South Korea, Taiwan and Philippines. The results provided evidence in support of RWH in the all the forex markets except for Taiwan. Kumar (2011) applied VR tests on the Indian rupee against the IMF's Special Drawing Rights in indexed form between April 1993 and June 2010

and found that the Indian forex market is weak-form inefficient, thus rejecting RWH. Charles et al. (2012) used daily and weekly data to examine the returns predictability of the Australian dollar, Canadian dollar, Japanese yen and Swiss franc against the US dollar from January 2, 1974 to July 17, 2009. Employing the wild bootstrap automatic VR test, generalized spectral test and consistent tests, the findings suggested that forex returns are predictable from time to time depending on the changing market conditions. The study offered support to the adaptive market hypothesis put forward by Lo (2004). Lazăr, Todea and Filip (2012) evaluated the impact of the 2008 global financial crisis on the forex market efficiency of 6 Central and Eastern European (CEE) countries from January 2004 to February 2011. Adopting the generalized spectral test in a rolling window approach, the study showed that the global financial crisis negatively affected the efficiency of most of the CEE forex markets. Using Escanciano and Lobato automatic Box-Pierce Q_p, Nankervis and Savin generalized Andrews-Ploberger and Deo robust Durlauf tests, Cheung, Su and Choo (2012) found that majority of the Euro forex markets are weak-form efficient.

Czech and Waskowski (2012) utilised uncovered interest rate parity regression and orthogonality test of the forward rate forecast error to test the efficiency of US dollar/euro market between January 1999 to December 2010 and found that the market is not efficient. Phillips and Jin (2013) applied the Kolmogorov-Smirnov and Cramér-von Mises tests on major forex rates data and found strong evidence in support of the martingale hypothesis. Tweneboah, Amanfo and Kumah (2013) examined the behaviour of Ghanaian cedi/US dollar between January1963 and May 2013 using the conventional VR test and the VR test based on ranks and signs and invalidate the RWH. Shalari and Stringa (2013) tested the efficiency of the Albanian forex market by using data on the Albanian Lekë/Euro between January 1, 2002 and December 31, 2012. Employing the Kolmogorov-Smirnov-Lilliefors and Shapiro-Wilk tests for normality, the study found that the forex rate is not consistent with the martingale process, thus suggesting that the market is not weak-form efficient. Mbululu, Auret and Chiliba (2013) showed that RWH is rejected for daily returns on US dollars/Zambian kwacha between August 1, 2003 to December 31, 2005 using the conventional VR and the ranks and signs VR tests. Mabakeng and Sheefeni (2014) provided evidence based on unit root tests that the Nambian forex market was weak-form efficient between January 1993 and December 2011.

Azar (2014) assessed the martingale behaviour of the Lebanese pound against the Australian dollar, Canadian dollar, Swiss franc, Euro, British pound and Japanese yen from January 4, 2010 to January 31, 2014 using the VR test. The study provided support for MDH. Almudhaf (2014) investigated the randomness of currencies of CIVETS (Colombia, Indonesia, Vietnam, Egypt, Turkey and South Africa) relative to the US dollar using weekly data from February 2, 2007 to April 13, 2012. The results of the VR tests indicated the forex rates of all the countries follow a random walk except Vietnam and Egypt. Rasekhi and Shahrazi (2014) tested for the weak-form efficiency of the Iranian forex market under fixed and managed float exchange rate regimes. The results showed that the market is more efficient in the managed float exchange regime. Katusiime, Shamsuddin and Agbola (2015) investigated the efficiency of the Ugandan forex market from January 1994 to June 2012 using a battery of variance ratio tests. It found that the market is not weak-form efficient. Salisu et al. (2015) examined the MDH in currencies of 9 countries in the Asia-Pacific region against the Euro on weekly basis from April 1, 2005 to September 12, 2014. Utilising the wild bootstrap automatic VR test and wild bootstrap generalized spectral test, the results showed that all the currencies aligned to MDH over the whole period. However, after accounting for structural break, the results revealed that the South Korean won rejected MDH prior to its break date while the Chinese yuan did not support the MDH after its break date. Salisu and Ayinde (2016) tested for MDH in South Africa and Nigeria using the weekly data of their currencies relative to euro, dollar and pound sterling between December 14, 2001 and September 26, 2014. The study found that the forex market of South Africa is more efficient than the Nigerian forex market.

3. Data and Preliminary Analyses

This study constructs a sample consisting of forex markets of 10 sub-Saharan African countries. Data on the average official exchange rates of the currencies of these countries relative to the US dollar from November 1995 to October 2015 (i.e. 1995M11 – 2015M10) were obtained from the World Bank Global Economic Monitor. Table 1 presents the description of the currencies.

Table 1: Currency Description

Currency	ISO 4217 Code	Country
Burundian franc	BIF	Burundi
Ghana cedi	GHS	Ghana
Dalasi	GMD	The Gambia
Malagasy ariary	MGA	Madagascar
Ouguiya	MRO	Mauritania
Mauritian rupee	MUR	Mauritius
Mozambican metical	MZN	Mozambique
Leone	SLL	Sierra Leone
Ugandan shilling	UGX	Uganda
Zambian kwacha	ZMW	Zambia

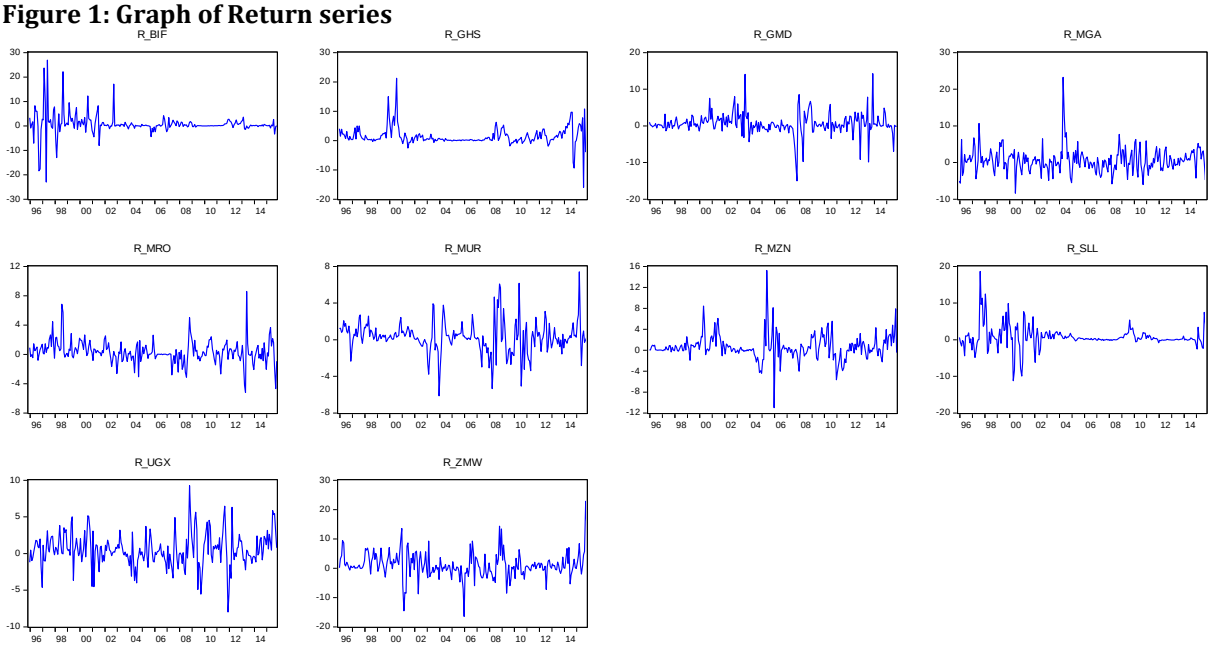
Source: Compiled by authors

The return series is obtained from the forex rates and is calculated as:

$R_t = 100 \times \Delta \ln(E_t)$ ... (1)

Where R_t is forex return at month t, Δ is the first difference operator, ln is natural logarithm and E_t is the exchange rate at month t.

Figure 1: Graph of Return series



Source: Computed by authors

Table 2: Descriptive Statistics

Series	Mean	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
R_BIF	0.738672	26.91585	-23.00850	4.412176	0.895865	18.79233	2515.553*
R_GHS	1.381807	21.23800	-16.03053	3.089346	1.129946	15.98617	1730.238*
R_GMD	0.586438	14.26651	-15.01448	2.964887	-0.206821	10.96015	632.7043*
R_MGA	0.566421	23.22857	-8.395489	3.273893	1.664295	12.57926	1024.132*
R_MRO	0.342758	8.600377	-5.175366	1.525883	0.785706	8.986141	381.4362*
R_MUR	0.283042	7.393133	-6.139624	1.712627	0.208919	6.327144	111.9762*
R_MZN	0.575632	15.22991	-10.98918	2.392248	0.939289	11.24251	711.7025*
R_SLL	0.632990	18.61851	-11.22481	2.990893	0.981953	11.91884	830.5516*
R_UGX	0.535913	9.258722	-7.980215	2.251793	0.139417	4.776655	32.20776*
R_ZMW	1.067860	22.80642	-16.44690	4.283228	0.500054	7.660162	226.2266*

Note: * implies rejection of null hypothesis of normal distribution at 1% significance level.
Source: Computed by authors

From Table 2, the mean values of return series for all the currencies are positive, thus implying that forex rates return of the currencies under consideration depreciated on the average over the period under review. GHS and MUR have the highest and lowest mean values respectively in terms of returns. BIF records the highest maximum and lowest minimum values of returns among the currencies, thus indicating that it has the largest variance. The standard deviation indicates that R_BIF and R_MRO have the highest and lowest statistic respectively, thus implying that returns on BIF is the most volatile while returns on MRO is the least volatile. This further implies that the Burundian forex market is the most risky market while the Mauritanian forex market has the lowest risk. The skewness statistic shows that all the return series are positively skewed except R_GMD. The Kurtosis coefficient indicates that all return series have a leptokurtic (high-peaked and fat-tailed) distribution. The Jarque-Bera statistic shows that all return series are not normally distributed.

Table 3: ARCH LM Test Results

Series	ARCH LM(5)	ARCH LM(10)
R_BIF	7.660413*	5.891018*
R_GHS	6.994783*	4.967068*
R_GMD	3.886439*	2.248240*
R_MGA	3.180009*	1.640611***
R_MRO	6.882392*	3.629929*
R_MUR	5.853200*	3.196870*
R_MZN	2.369036**	6.504206*
R_SLL	12.51853*	6.519923*
R_UGX	6.106988*	3.392364*
R_ZMW	6.576927*	3.372881*

Note: *, ** and *** implies rejection of null hypothesis of homoscedasticity at 1%, 5% and 10% significance level respectively and F-statistic is reported for the ARCH LM test.
Source: Computed by authors

The ARCH LM test rejects the null hypothesis of homoscedasticity in all return series at lags 5 and 10, thus confirming the presence of conditional heteroscedascity in all return series. This implies that the return series exhibit volatility clustering and confirms that all the forex markets are volatile. This study accounts for the break period/point in each return series so as to determine when structural change occurred in the forex market. It employs the Perron (2006) unit root test which endogenously determines the most significant break period in the return series in an Innovative Outlier (IO) model. The unit root test is performed using the *t*-statistic for testing the null hypothesis that δ =1 in the regression model below.

$$y_t = \mu + \theta DU_t + \beta t + \lambda DT_t^* + \gamma D(T_b)_t + \delta y_{t-1} + \sum_{i=1}^{k} c_i \Delta y_{t-1} + \varepsilon_t, \varepsilon_t \sim IID(0, \sigma^2) \quad \ldots (2)$$

Where $DU_t = 1$, $DT_t^* = t - T_b$ if $t > T_b$ and 0 otherwise, $D(T_b)_t = 1$ if $t = T_b + 1$ and 0 otherwise.

Table 4: Unit Root Test with Structural Break

Series	Break Period	Coefficient	*t*-statistic
R_BIF	1998M07	-0.970580	-15.463718*
R_GHS	2000M06	-0.755491	-13.049654*
R_GMD	2007M09	-0.934440	-14.861336*
R_MGA	2004M03	-0.688797	-12.578222*
R_MRO	2008M09	-0.770496	-12.256203*
R_MUR	2010M04	-0.585005	-10.170324*
R_MZN	2005M04	-0.663189	-11.815286*
R_SLL	1997M12	-0.672087	-10.985025*
R_UGX	2008M09	-0.637910	-10.783004*
R_ZMW	2000M11	-0.641189	-10.413725*

Note: * denotes t-statistic exceeds 1% critical value. Also, the critical value is obtained from Table 1(e) model 2 in Perron (1997).
Source: Computed by authors

Table 4 shows that all the forex rates return series are stationary series. Based on the identified structural break period by the Perron (2006) unit root test with structural break, this study divides the full sample period into pre-break and post-break periods. The pre-break period spans from November 1995 to the month before structural break period while the post-break period extends from the month after the structural break occurred to October 2015. Table 3 reports the time span for the pre and post-break periods for each return series.

Table 5: Subsample Periods for Return Series

Series	Pre-break Period	Post-break Period
R_BIF	1995M11 – 1998M06	1998M08 – 2015M10
R_GHS	1995M11 – 2000M05	2000M07 – 2015M10
R_GMD	1995M11 – 2007M08	2007M10 – 2015M10
R_MGA	1995M11 – 2004M02	2004M04 – 2015M10
R_MRO	1995M11 – 2008M08	2008M10 – 2015M10
R_MUR	1995M11 – 2010M03	2010M05 – 2015M10
R_MZN	1995M11 – 2005M03	2005M05 – 2015M10
R_SLL	1995M11 – 1997M11	1998M01 – 2015M10
R_UGX	1995M11 – 2008M08	2008M10 – 2015M10
R_ZMW	1995M11 – 2000M10	2000M12 – 2015M10

Source: Compiled by authors

4. Empirical Results

When forex rate returns are non-predictable, it can be said that the forex market follows a martingale difference sequence (MDS) process. Returns follow a MDS process when the best prediction of tomorrow's return is the return of today and it is impracticable to use linear and non-linear combinations of past returns to forecast future returns. The MDS process has implication for the efficiency of the forex market. The martingale stochastic model is suitable for determining whether returns are predictable (Lazăr, Todea & Filip, 2012). The model can be stated as:

$E(R_{t+1}|R_t, R_{t-1}, \ldots\ldots\ldots R_{t-n}) = 0$ ……(3)

Where $R_{t+1}$is future return, $R_t$is current return, $R_{t-1}$is immediate past return, $R_{t-n}$is return lagged by n periods, n is the lag operator.

The Kim (2006) wild bootstrap joint variance ratio (VR) test and BDS Independence test with bootstrapping are used to test whether return follows the MDS process.

Kim (2006) Wild Bootstrap Joint VR Test: The Kim (2006) wild bootstrap joint VR test was performed to confirm whether there is linear dependence in the return series. This test determines whether a set of VR's over a number of holding periods are jointly equivalent to one. When VR is equal to 1 or not statistically different from 1, it implies that the return series has martingale behaviour and the forex market is weak form efficient. The Kim (2006) wild bootstrap joint VR test follows three steps:

a. Construct a bootstrap sample of T observations $x_t^* = \eta_t x_t (t = 1, \ldots\ldots, T)$where $\eta_t$is a random sequence with zero mean and unit variance.
b. Calculate the maximum absolute value (MV*) with x_t^*.
c. Repeat a and b sufficiently m times to form a bootstrap distribution of $\{MV^{*j}\}_{j=1}^{m}$.

The holding periods for the subsample and full sample periods was set at 2, 4, 8 and 16. The test hypothesis is that the series is martingale and this hypothesis can only be rejected when the p-value of MV* is not greater than 0.1. Table 6 reports the results of the Kim (2006) wild bootstrap joint VR test.

From Table 6, R_BIF and R_GHS follow the MDS process in the sub-sample and full sample periods. Conversely, R_GMD and R_MGA do not follow the MDS process in the sub-sample and full sample periods. The hypothesis that R_MRO is a martingale is rejected in the pre-break period but is accepted after the break. However, R_MRO is not a martingale in the full sample period. R_MUR and R_MZN fail to invalidate MDH in the sub-sample periods but rejects MDH in the full sample period. R_SLL and R_ZMW are martingale prior to

structural break; however, they do not exhibit martingale behaviour subsequent to structural break. In the full sample period, R_SLL and R_ZMW reject MDH. R_UGX is non-martingale in the pre-break and full sample periods but a martingale in the post-break period. The results confirm that the linearity of returns in most forex markets is sensitive to structural market. This implies that the linear dependence of returns in most of the forex markets changes with time.

Table 6: Kim (2006) Wild Bootstrap Joint VR Test Results

Series	Pre-break Period	Post-break Period	Full Period
R_BIF	[1.156574]	[2.272798]	[1.693409]
	(0.4910)	(0.1410)	(0.1730)
R_GHS	[1.328302]	[1.507687]	[1.623171]
	(0.3460)	(0.2840)	(0.1790)
R_GMD	[2.660273]	[2.609951]	[3.379695]
	(0.0400)**	(0.0330)**	(0.0110)**
R_MGA	[3.055487]	[2.595752]	[3.789037]
	(0.0230)**	(0.0430)**	(0.0000)*
R_MRO	[3.259055]	[1.639891]	[2.764543]
	(0.0060)*	(0.2070)	(0.0160)**
R_MUR	[1.977614]	[1.894660]	[2.740733]
	(0.1200)	(0.1190)	(0.0290)**
R_MZN	[2.097665]	[2.299809]	[2.534291]
	(0.2800)	(0.1160)	(0.0340)**
R_SLL	[1.381913]	[2.950385]	[3.032697]
	(0.4820)	(0.0770)***	(0.0250)**
R_UGX	[3.054371]	[1.977919]	[3.424977]
	(0.0270)**	(0.1470)	(0.0040)*
R_ZMW	[1.942606]	[3.634135]	[3.768713]
	(0.1490)	(0.0020)*	(0.0020)*

Note: *, ** and *** indicate the rejection of null hypothesis at 1%, 5% and 10% significance level respectively, MV* in [ ] and p-value in ( ).
Source: Computed by authors

BDS Independence Test: The BDS Independence test developed by Brock, Dechert, Scheinkman and LeBaron (1996) was performed to test for nonlinear dependence in the return series. The null hypothesis is that the series are independent and identically distributed (*i.i.d*). The rejection of the null hypothesis is an indication of nonlinear dynamics in the return series. Structural changes in the data series can lead to the false rejection of the null hypothesis (Pandey, Kohers & Kohers, 1998; Hsieh, 1991). In other words, failure to account for presence of structural break in data series when applying the BDS Independence test may produce biased results. Therefore, accounting for structural break in the return series in this study makes the results of the BDS independence test reliable. Brock, Hsieh and LeBaron (1991) point out that the BDS independence test may not be reliable when applied to observations less than 500. Belaire-Franch and Contreras (2002) suggest that the problem of unreliability in small samples can be solved by bootstrapping. The observations for each selected forex market is less than 500. Therefore, the BDS independence test was performed with bootstrapping using correlation dimension (m*)* from 2 to 6 on residuals extracted from an AR(2) model[6] estimated with the least squares method. The epsilon (ε)[7] for the test was specified using standard deviations method. Table 7 presents the results of the BDS independence test with bootstrapping. From Table 7, it can be deduced that the return series for all the forex markets provide evidence of nonlinearity in the full period and this indicates that the return generating process of returns in all the forex markets is chaotic. In the pre-break period, all the forex market returns show evidence of nonlinearity. In the post-break period, R_BIF confirms absence of nonlinearity and R_UGX shows weak evidence of nonlinearity. The forex market returns for the remaining markets give strong evidence of nonlinearity. It can be seen that

[6] An AR(p) is adequate to remove the linearity of the data structure. Hsieh (1991) and Gilmore (1996) found that the standardized residuals filtered from a GARCH (p, q) model failed to fully capture the linearity of the data structure.
[7] Hsieh and LeBaron (1988) suggest that ε should be between 0.5 and 1.5 standard deviations of the data.

the nonlinearity of returns in majority of the forex markets is not sensitive to structural break. This suggests that the efficiency of most of the forex markets based on nonlinear dependence does not vary with time.

5. Conclusion

This study assessed the efficiency of the forex markets of 10 countries in sub-Saharan Africa in the presence of structural break. Using the Kim wild bootstrap joint variance ratio test, it can be observed that only the forex markets of Burundi and Ghana were efficient before and after the structural break and the forex markets of Gambia and Madagascar were not efficient prior to and after structural break. The remaining forex markets produce mixed results taking the presence of structural break into consideration. Without accounting for structural break, the Kim wild bootstrap joint variance ratio test showed that only the Burundian and Ghanaian forex markets were efficient. Employing the BDS independence test, the study showed that all the forex markets were not efficient before structural break but only the Burundian forex market was efficient after the structural break. Ignoring the presence of structural break, the BDS independence test confirmed that all the forex markets are not efficient. The evidence from the forex markets of Burundi, The Gambia, Mauritania, Sierra Leone, Uganda and Zambia supports the Lo's (2004) adaptive market hypothesis which suggests that market efficiency tends to vary with time. These findings offer support for Salisu et al. (2016) and Salisu and Ayinde (2016). The conflicting evidence produced by the linear and nonlinear tests confirms that nonlinearity of returns is a consideration when testing for the efficiency of the selected forex markets. The findings from this study suggest that ignoring structural break and nonlinearity of returns may lead to misleading results when testing for market efficiency.

Table 7: BDS Independence Test with Bootstrapping Results

m	ε/σ	R_BIF	R_GHS	R_GMD	R_MGA	R_MRO	R_MUR	R_MZN	R_SLL	R_UGX	R_ZMW
		Pre-break Period									
2	0.5	0.0000*	0.0000*	0.0032*	0.0192**	0.1768	0.0000*	0.0000*	0.1392	0.0000*	0.0016*
3	0.5	0.0000*	0.0000*	0.0044*	0.0340**	0.2832	0.0000*	0.0000*	0.0912***	0.0008*	0.0000*
4	0.5	0.0000*	0.0000*	0.0084*	0.0510***	0.0924***	0.0000*	0.0000*	0.1554	0.0036*	0.0000*
5	0.5	0.0000*	0.0000*	0.0168**	0.0650***	0.0244**	0.0000*	0.0000*	0.0976***	0.0092*	0.0000*
6	0.5	0.0000*	0.0000*	0.0304**	0.0794***	0.0096*	0.0000*	0.0000*	0.2798	0.0116**	0.0000*
		Post-break Period									
2	0.5	0.1998	0.0000*	0.0008*	0.0072*	0.0032*	0.0314**	0.0068*	0.0000*	0.0584***	0.0004*
3	0.5	0.9280	0.0000*	0.0010*	0.0088*	0.0136**	0.0278**	0.0052*	0.0000*	0.2052	0.0000*
4	0.5	0.7876	0.0000*	0.0020*	0.0028*	0.0584***	0.0516***	0.0012*	0.0000*	0.3388	0.0004*
5	0.5	0.9432	0.0000*	0.0030*	0.0016*	0.1408	0.0822***	0.0020*	0.0000*	0.7892	0.0008*
6	0.5	0.9742	0.0000*	0.0040*	0.0024*	0.2000	0.0940***	0.0048*	0.0000*	0.7098	0.0004*
		Full Period									
2	0.5	0.0000*	0.0000*	0.0000*	0.0008*	0.0088*	0.0000*	0.0000*	0.0000*	0.0000*	0.0000*
3	0.5	0.0000*	0.0000*	0.0000*	0.0008*	0.0392**	0.0000*	0.0000*	0.0000*	0.0000*	0.0000*
4	0.5	0.0000*	0.0000*	0.0000*	0.0000*	0.0288**	0.0000*	0.0000*	0.0000*	0.0000*	0.0000*
5	0.5	0.0000*	0.0000*	0.0000*	0.0000*	0.0200**	0.0000*	0.0000*	0.0000*	0.0008*	0.0000*
6	0.5	0.0000*	0.0000*	0.0008*	0.0000*	0.0104**	0.0000*	0.0000*	0.0000*	0.0008*	0.0000*

Note: *, ** and *** indicate the rejection of null hypothesis at 1%, 5% and 10% significance level and bootstrap p-value for BDS statistic is reported.
Source: Computed by authors

References

Al-Khazali, O. M. & Pyun, C. S. (2009). Random walk and martingale difference hypotheses for Pacific Basin foreign exchange markets. 한국재무학회 학술대회, 1698-1727.

Almudhaf, F. (2014). Testing for random walk behaviour in CIVETS exchange rates. *Applied Economics Letter,* 21(1), 60-63.

Aron, J. (1997). Foreign exchange market efficient tests in South Africa. Oxford: Centre for the Study of African Economies, Department of Economics, University of Oxford.

Azad, A. S. M. S. (2009). Random walk and efficiency tests in the Asia-Pacific foreign exchange markets: Evidence from the post-Asian currency crisis data. *Research in International Business and Finance,* 23(3), 322-338.

Azar, S. A. (2014). Martingales in daily foreign exchange rates: Evidence from six currencies against the Lebanese pound. *Applied Economics and Finance,* 1(1), 55-64.

Baffes, J. (1994). Does co-movement among exchange rates imply market inefficiency? *Economic Letters,* 44(3), 273-280.

Belaire-Franch, J. & Contreras, D. (2002). How to compute the BDS test: A software comparison. *Journal of Applied Econometrics,* 17(6), 691-699.

Belaire-Franch, J. & Opong, K. (2005). Some evidence of random walk behaviour of Euro exchange rates using ranks and signs. *Journal of Banking and Finance,* 29(7), 1631-1643.

Brock, W. A., Dechert, W. D., Scheinkman, J. A. & LeBaron, B. (1996). A test for independence based on the correlation dimension. *Econometric Reviews,* 15(3), 197-255.

Brock, W. A., Hsieh, D. A. & LeBaron, B. D. (1991). Nonlinear Dynamics, Chaos, and Instability: Statistical Theory and Economic Evidence. Cambridge: MIT Press

Campbell, J. Y., Lo., A. W. & Mackinlay, A. C. (1997). The econometrics of financial markets. New Jersey: Princeton University Press.

Charles, A. & Darné, O. (2009). Testing for random walk behaviour in Euro exchange rates. *Économie Internationale,* 119, 25-45.

Charles, A., Darné, O. & Kim, J. H. (2012). Exchange-rate return predictability and the adaptive market hypothesis: Evidence from major foreign exchange rates. *Journal of International Money and Finance,* 31(6), 1607-1626.

Cheung, A. W., Su, J. & Choo, A. K. (2012). Are exchange rates serially correlated? New evidence from the Euro FX markets. *Review of Financial Economics,* 21(1), 14-20.

Chiang, S. M., Lee, Y. H., Su, H. M. & Tzou, Y. P. (2010). Efficiency tests of foreign exchange markets for four Asian countries. *Research in International Business and Finance,* 24(3), 284-294.

Czech, K. A. & Waszkowski, A. (2012). Foreign exchange market efficiency. Empirical results for the USD/EUR market. *Finance Internet Quarterly e-Finanse,* 8(3), 1-9.

Escanciano, J. C. & Lobato, I. N. (2009). Testing the martingale hypothesis. In Patterson, K. & Mills, T. C. (Eds.). Palgrave Handbook of Econometrics (pp.972-1003). Basingstoke: Palgrave Macmillan.

Fama, E. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance,* 25(2), 383-417.

Gilmore, C. G. (1996). Detecting linear and nonlinear dependence in stock returns: New methods derived from chaos theory. *Journal of Business and Finance Accounting,* 23(9-10), 1357-1377.

Gradojević, N., Djaković, V. & Andjelić, G. (2010). Random walk theory and exchange rate dynamics in transition economies. *Panoeconomicus,* 57(3), 303-320.

Hong, Y. & Lee, T. (2003). Inference on predictability of foreign exchange rates via generalized spectrum and nonlinear time series models. *The Review of Economics and Statistics,* 85(4), 1048-1062.

Hsieh, D. A. (1991). Chaos and nonlinear dynamics: Application to financial markets. *The Journal of Finance,* 46(5), 1839-1877.

Hsieh, D. A. & LeBaron, B. (1988). Small sample properties of the BDS statistic. In W. A. Brock, D. Hsieh, & B. LeBaron (Eds.), Nonlinear dynamics, chaos, and instability. Cambridge: MIT Press.

Katusiime, L., Shamsuddin, A. & Agbola, F. W. (2015). Foreign exchange market efficiency and profitability of trading rules: Evidence from a developing country. *International Review of Economics & Finance,* 35(C), 315-332.

Kim, J. H. (2006). Wild bootstrapping variance ratio tests. *Economics Letters,* 92(1), 38-43.

Kumar, A. S. (2011). Testing the weak form market efficiency in Indian foreign exchange market (MPRA Paper No. 37071). Munich: University Library of Munich.

Lazăr, D., Todea, A. & Filip, D. (2012). Martingale difference hypothesis and financial crisis: Empirical evidence from European emerging foreign exchange markets. *Economic Systems,* 36(3), 338-350.

Liu, C. Y. & He, J. (1991). A variance-ratio test of random walks in foreign exchange rates. *The Journal of Finance,* 46(2), 773-785.

Lo, A. W. (2004). The adaptive market hypothesis: Market efficiency from an evolutionary perspective. *Journal of Portfolio Management,* 30(5), 15-29.

Mabakeng, M. E. P. & Sheefeni, J. P. S. (2014). Examining the weak form efficiency in foreign exchange market in Namibia. *International Review of Research in Emerging Markets and the Global Economy,* 1(4), 174-187.

Mbululu, D., Auret, C. J. & Chiliba, L. (2013). Do exchange rates follow random walks? A variance ratio test of the Zambian foreign exchange market. *Southern African Business Review,* 17(2), 45-66.

Meese, R. A. & Rogoff, K. (1983). Empirical exchange models of seventies: Do they fit out of sample? *Journal of International Economics,* 14(1-2), 3-24.

Ogiogio, G. (1994). A statistical analysis of foreign exchange rate behaviour in Nigeria's auction. (AERC Research Paper No. 49). Nairobi: African Economic Research Consortium.

Pandey, V., Kohers, T. & Kohers, G. (1998). Deterministic nonlinearity in the stock returns of major European equity markets and the Unites States. *Financial Review,* 33(1), 45-64.

Perron, P. (1997). Further evidence on breaking trend functions in macroeconomic variables. *Journal of Econometrics,* 80(2), 335-385.

Perron, P. (2006). Dealing with structural breaks. In Palgrave Handbook of Econometrics, 1(2), 278-352.

Phillips, P. C. B. & Jin, S. (2013). Testing the martingale hypothesis (Cowles Foundation Discussion Paper No. 1912). Connecticut: Cowles Foundation for Research in Economics, Yale University.

Rasekhi, S. & Shahrazi, M. (2014). Modified R/s and DFA analyses of foreign exchange market efficiency under two exchange rate regimes: A case study of Iran. *Iranian Journal of Economic Research,* 18(57), 1-26.

Salisu, A. A. & Ayinde, T. O. (2016). Testing the martingale difference hypothesis (MDH) with structural breaks: Evidence from foreign exchanges of Nigeria and South Africa. *Journal of African Business,* 17(3), 342-359.

Salisu, A. A., Oloko, T. F. & Oyewole, O. J. (2016). Testing the martingale difference hypothesis with structural breaks: Evidence from Asia-Pacific foreign exchange markets. *Borsa Istanbul Review,* 16(4), 210-218.

Shalari, O. & Stringa, A. (2013). Testing the foreign exchange market efficiency for Euro/Albanian lekë during the period 01 January 2002 – 31 December 2012. *Journal of Knowledge Management, Economics and Information Technology,* 111(4), 1-15.

Sifunjo, E. K., Ngugi, W. R., Ganesh, P. & Gituro, W. (2008). An analysis of the efficiency of the foreign exchange market in Kenya. *Economics Bulletin,* 14(2), 1-13.

Tweneboah, G., Amanfo, A. & Kumah, S. P. (2013). Evidence of market inefficiency and exchange rate predictability in Ghana. *Ghanaian Journal of Economics,* 1(1), 52-66.

Wickremasinghe, G. B. (2004). Efficiency of foreign exchange markets: A developing country perspective (ABERU Discussion Paper 3). Caulfield: Monash University.

Wright, J. H. (2000). Alternative variance-ratio tests using ranks and signs. *Journal of Business and Economic Statistics,* 18(1), 1-9.

Yang, J., Su, X. & Kolari, J. W. (2008). Do Euro exchange rates follow a martingale? Some out-of-sample evidence. *Journal of Banking & Finance,* 32(5), 729-740.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Informal Entrepreneurship as a Poverty Alleviation Mechanism in Zimbabwe: Challenges and Prospects

Constance Gunhidzirai*, Pius T. Tanga
Department of Social Work/Social Development, University of Fort Hare, South Africa
*constancegunns@gmail.com, ptanga@ufh.ac.za

Abstract: Informal entrepreneurship is a source of livelihood which provides employment and income to poor households in Chitungwiza Municipality in Zimbabwe. The dominant entrepreneurial activities are street vending, foreign currency exchange, urban farming, and home industries and cross border trading. The research approach that underpins this study is a triangulation of qualitative and quantitative. A semi-structured questionnaire and an interview guide were the instruments used in collecting data. The study sample was made up of 156 respondents that comprised informal entrepreneurs, social workers, municipal officials and community development practitioners from Chitungwiza Municipality. The findings revealed that few informal entrepreneurs are benefitting whereas the majority are failing to improve household income due to stiff competition, limited funding, poor infrastructure and harsh municipal policies. The paper recommends that the government of Zimbabwe should build infrastructure (shelters) for the informal entrepreneurs in their designated area of work.

Keywords: *Vulnerable, Poverty, Basic needs, Informal traders, Entrepreneurship*

1. Introduction

This paper focuses on assessing informal entrepreneurship as a poverty alleviation mechanism among poor households in Chitungwiza municipality in Zimbabwe. Informal entrepreneurship is an old phenomenon that is currently evolving in different ways world-wide. In many developing countries, the economies are based on both the formal and informal sector. Sinha and Kanbur (2012), as cited by Njaya (2014:94a), observe that the terms formal and informal have been misused through being used interchangeably in policy circles. The failure of the formal economy to create employment for the masses has led to the growth and expansion of the informal sector in Zimbabwe. In previous years, many governments used to thwart the informal sector because it was regarded as the "cash in market", "black" market and "shadow" economy "where counterfeit goods were manufactured; bribery was widespread, selling of illegal goods and corruption rampant" (Sandada, 2014). However, individuals conduct legitimate businesses and provide standardized goods and service to the consumer. Therefore, this led to the modification of the term informal sector to informal entrepreneurship.

Informal entrepreneurship is expanding rapidly in developing countries as a source of livelihood for generating income (Rukmann, 2007). This sector represents a movement of poor individuals who are working out means of breaking the chain of poverty in both rural and urban areas (De Soto, 2000). These individuals are embarking on different activities in which they provide goods and services directly to consumers. There are a lot of entrepreneurial activities done by individuals in urban cities. The Southern African Migration Program (2014:2) observes that informal activities have become the "the big stories in African cities". The reason is that the cost of living is high, and all goods and services are monetarized in order to survive, which leads to scrambling and hustling for survival. In Zimbabwe, informal entrepreneurship is now the most dominant form of economy that many households are relying on to earn income. Studies conducted by Chirisa (2009) and Dube and Chirisa (2012) in Zimbabwe revealed that many entrepreneurial activities being conducted in urban areas targeted income generation for households. These include activities by street vendors, cobblers, hawkers, foreign currency exchange dealers, cross-border traders, and various home industries such as salons, renting out rooms to tenants, part-time jobs, urban farming, carpentry, sculpting, brick molding and street car washing (ZEPARU, 2014:12). However, these informal activities often face a myriad of challenges rising from government regulations, insufficient capital and lack of proper infrastructure among others. This paper therefore interrogates the effectiveness of informal entrepreneurship in generating employment and improving household income among the urban poor in Chitungwiza municipality. The paper begins with the problem statement, followed by an overview of the literature on informal entrepreneurship before the theoretical framework and methodology adopted are

presented. The findings are presented and these are followed by a discussion of findings, a conclusion as well as recommendations of the study.

Statement of the problem: The major socio-economic problems facing Zimbabwe are poverty and failure to reengineer various economic strategies to alleviate poverty among urban households. The decline in the economy of the country exacerbates poverty and high unemployment, which have led to the growth of informal entrepreneurship in Chitungwiza Municipality. Residents of Chitungwiza have since embarked on various informal activities such as street trading, foreign currency dealers, backyard industries, and urban farming as poverty alleviation strategies. These informal activities are meant to generate employment and increase household income among the vulnerable urban households. Nonetheless, due to 'harsh' municipal regulation policies, underfunding, stiff competition, poor infrastructure, informal entrepreneurship has failed to entirely mitigate poverty in Chitungwiza Municipality. Although informal entrepreneurs have faced many difficulties in Chitungwiza, there are opportunities (prospects) for reducing poverty and unemployment if stakeholders (government, NGOs Multi-National Corporations) intervene and provide funding and infrastructure to the many struggling entrepreneurs. The paper is, therefore, aimed at achieving the following objectives: to determine the extent to which informal activities or entrepreneurship served as poverty alleviation strategies and to explore the challenges encountered in informal entrepreneurship as well as the prospects of informal activities in Chitungwiza Municipality.

Theoretical framework: This paper is underpinned by the Sustainable livelihoods approach (SLA). The term 'sustainable livelihoods' seeks to explain the relationship between poverty and the environment (Scoones, 1998). The concept of "livelihood" was developed by Robert Chambers in the mid-1980s to enhance the efficiency of development cooperation (Kollmair and Gamper, 2002). The concept of livelihoods led to the development of the sustainable livelihood framework, which was further modified by the British Department for International Development (DFID). Krantz (2001) states the following as the principles of SLA: people centered approach, responsive and participatory, built on people's strength, holistic in nature, it links micro-macro levels and it calls for all stake holders to be involved in poverty alleviation. The theory of SLA is applicable to this paper because it draws a number of assets that people use in constructing their livelihoods. These assets include physical, natural, social and human capital resources. Furthermore, it provides a framework for assessing the direct and indirect effects on people's living conditions rather than applying one dimensional productivity or income criteria. By using the SLA, NGOs in Zimbabwe can be able to find out ways to sustain available livelihoods in a given place (Solesbury, 2003).

2. Literature Review

There are a lot of entrepreneurial activities done by individuals in urban cities. According to Labor Force Survey (2012), female entrepreneurs accounted for 50,3 percent of those who were employed in the informal sector engaging in livelihood activities at homes and on the streets, whereas 40.7 percent were males who embarked on entrepreneurial activities such as carpentry, welding and transport industry. However, the informal entrepreneurs encounter a number of challenges in their endeavor's to make ends meet in the entrepreneurial world. These challenges affect their livelihoods and households because they solemnly rely on those economic activities to derive income for home use. Therefore, the lack of income hinders the households in accessing basic needs such as food and clothing, this perpetuate poverty.

Challenges facing informal entrepreneurs: Munyanyi (2013:5) submits that the private sector (NGOs, Community Based Organizations, Multinational Corporations, Pressure groups) are failing to support informal entrepreneurs in Zimbabwe. They do not assist them either with loans or business knowledge because they lack collateral security. The private sector does not even help entrepreneurs with workshops on how to start up economic generating projects that are sustainable. Lack of private sector intervention in informal entrepreneurship has contributed to the inability of informal entrepreneurs to alleviate poverty. Ndiweni and Verhoeven (2013) observe that information delinquency is a barrier to successful informal entrepreneurship in Zimbabwe. Remarkable is the improvement in access to Information Communication Technology (ICTs) in most parts of the country and in the African continent as a whole. Despite the abundance of cell phones and social networks that can be used to preach the entrepreneurial gospel, most informal entrepreneurs are still encountering the obstacle of access to detail and reliable entrepreneurial

information. Munyanyi (2013) believes that many informal entrepreneurs in Zimbabwe have the capacity to expand; the only challenge is that their efforts are incapacitated by their failure to obtain the right information which is a recipe for successful entrepreneurship and poverty eradication in vulnerable households.

Ndiweni and Verhoeven (2013:3) argue that the failed or unrealistic government economic policies fueled the informal sector in Zimbabwe. Despite acknowledging the significance of informal entrepreneurship through establishing the Ministry of Small and Medium Enterprises, the government is still grappling with funding challenges (Ndiweni and Verhoeven, 2013). Maseko et al. (2012:58) observe that informal entrepreneurs require extensive and consistent financial support from the government to spearhead their activities. Maseko et al. (2012:58) reiterate further that informal entrepreneurs need support in research, marketing, financial management, information technology and quality assurance. These factors are vital in enhancing informal entrepreneurship in the country. Structural transformational and emergence of productive entrepreneurship, in the words of (Brixiova, 2010), are vehicles which can be used to regenerate employment and uplift the standards of citizens in Zimbabwe. The Chitungwiza Municipality Bulletin (2012:4) points out that Chitungwiza municipality have persistently failed to address health and environmental challenges emanating from raw sewage as a result of pipe leakages and bursts. These challenges have compromised the health of many residents and various informal entrepreneurs in the suburb as they are leading to diarrhoea and typhoid.

The Chitungwiza municipality has shown signs of weaknesses through its administrative structures, such as engineering to control sewer and reticulation services which have been barriers to achieving sound informal entrepreneurship. Most informal entrepreneurs are failing to find suitable places to trade or those with designated trading places are fast losing the client base due to poor sanitation on their marketing stalls (Chitungwiza Municipality Bulletin, 2012). For example, toilets at Town Centre shopping area, Chikwanha market and Makoni shopping area last had running water over 5 years ago. Mabeza and Mawere (2012:47) reiterate that the effects of climate change in Zimbabwe have impacted negatively on urban farming as an entrepreneurial activity in Seke. Mawere (2011) posits that recent research expresses serious concerns on the rate at which the world is undergoing what he terms “serious climate change” due to the rise in global temperatures. The IPCC (2001) reveals that the Third Assessment Report of the Intergovernmental Panel on Climate Change established that the global average temperatures will increase by 1.4 degrees to 5.8 degrees Celsius between 1990 and 2001 unless the level of gas emissions is reduced in Zimbabwe. For instance, the effects of climate change manifest themselves in Chinyanga and Fumisi villages in Seke communal lands where agricultural production has been relegated to ashes due to poor production.

Government response to informal entrepreneurship: The Government of Zimbabwe in 2005 unleashed a reign of terror popularly known as Operation *Murambatsvina* (Clean out trash) to get rid of all informal activities in major towns and cities (Harare, Bulawayo), which dealt a major blow to informal entrepreneurs. Crush et al. (2015:40) laments the destruction of all urban informalities such as squatter camps, illegal markets spazza shops, illegal cottages, back yard saloons and home industries. People’s properties and livelihoods were destroyed by municipal police, exacerbating urban poverty in Seke, Makoni and Town Centre shopping centres in Chitungwiza (ZEPARU, 2014). The repressive approach taken by the Zimbabwean government towards informal entrepreneurship is contrary to other governments in Sub-Saharan Africa. Mozambique and Malawian governments embraced Informal Entrepreneurship as an integral part of the mainstream economy (Crush et al., 2015:40). Informal entrepreneurship in these states contributed to employment creation and improvements in household income.

3. Methodology

This study was conducted in Chitungwiza Municipality, which is located south-east of Harare, the capital city of Zimbabwe. Using a mixed methods approach which triangulated quantitative and qualitative approaches, systematic and purposive sampling techniques were used to draw respondents from 156 informal entrepreneurs in Seke. This approach sits well with this study since it allows the researchers to tackle the research problem holistically as postulated by Leedy and Ormrod (2013:259) and Creswell (2007). In-depth semi structured interviews and a semi-structured questionnaire were used to solicit data from informal

entrepreneurs and key informants in Seke. Interviews were essential in building rapport with participants as they participated freely in the study (Leedy and Ormrod, 2010) and supplemented the quantitative findings. Questionnaire surveys allowed the researchers to conceptualize Informal Entrepreneurship holistically from different perspectives. The qualitative data was analyzed using thematic analysis and quantitative data was analyzed using the Statistic Package for the Social Sciences (SPSS) software and results are presented using percentages with the help of diagrams. The collected qualitative and quantitative data are presented in such a way that they respond to the objectives of the study. The ethical issues that were observed are confidentiality, informed consent, voluntary participation and non-judgment.

4. Findings

We begin by presenting the biographic information regarding the respondents. The major findings include the dominant forms of informal activities, entrepreneurship and poverty reduction and the challenges faced by informal entrepreneurs. These are presented immediately after the demographic characteristics of the respondents.

Demographics: The demographic characteristics of the respondents are presented in figure 1 below.

Figure 1: Age group distributions across gender of respondents

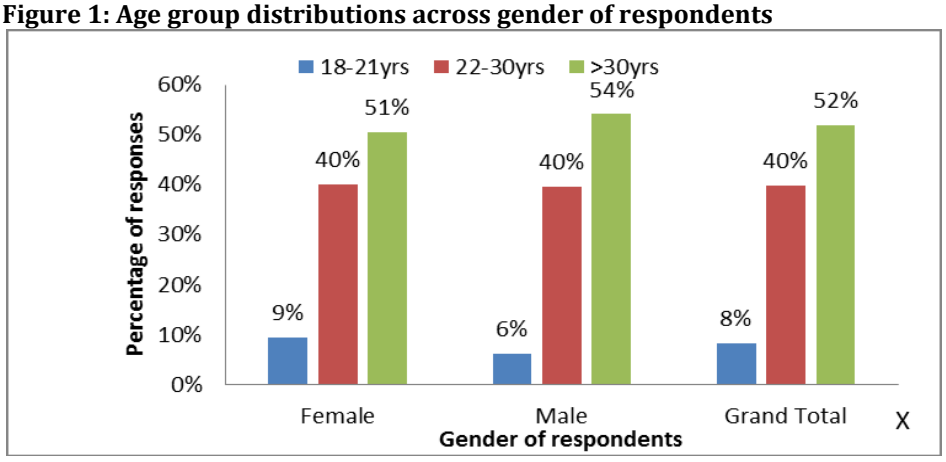
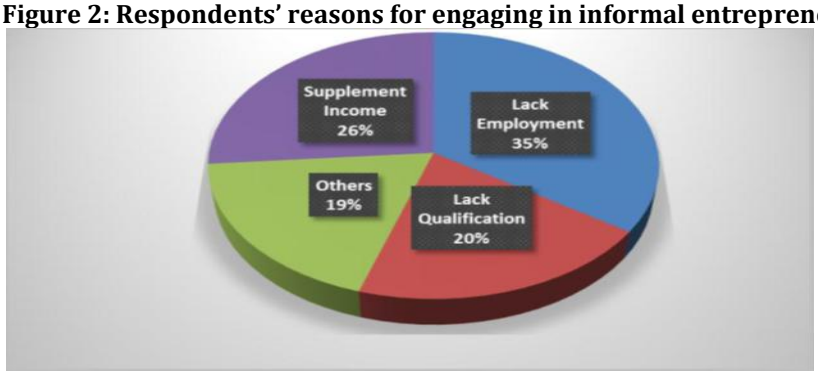


Figure 1 shows that there are various age groups, categorized by gender of the respondents, who took part in this study. The bar graph indicates that 52% of 150 respondents who took part in this study were above 30 years of age, 40% were aged between 22 and 30 years and 8 % were aged between 18 and 21years. It also shows that both males and females took part in this study. Also, individuals between the age group of 22-30, 40% were females and 40% were males and remaining 20% were ages above 30 years. Lastly, the age group of individuals 30 years and above indicated that 51% were females while 49% were males. The statistics above show that more females are involved in entrepreneurial activities and the age group of 30 years and above are tirelessly working for the betterment of their families. Figure 2 shows the reasons for engaging in informal entrepreneurship by the study respondents.

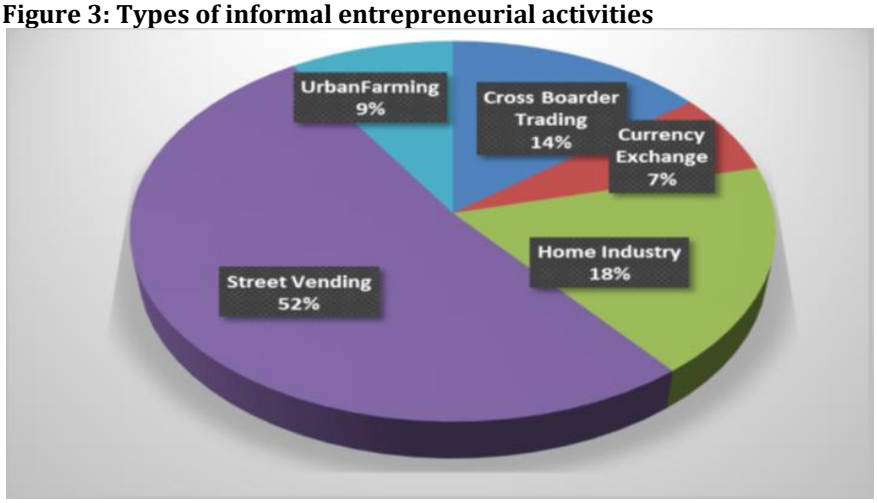
Figure 2: Respondents' reasons for engaging in informal entrepreneurship



The respondents provided various reasons that drove them into informal entrepreneurship. The pie chart shows that 35% of the study population elaborated that lack of employment led them to informal entrepreneurship whereas 26% stated that they wanted to supplement their income, 20% mentioned that lack of qualifications caused them to engage in these activities, and 19 % did not disclose their reasons.

The dominant forms of informal activities: We also sought to establish the dominant type of informal activities carried out by the respondents. The results are presented in figure 3 below and include street vending, home industry, cross-border trade, urban farming and currency exchange.

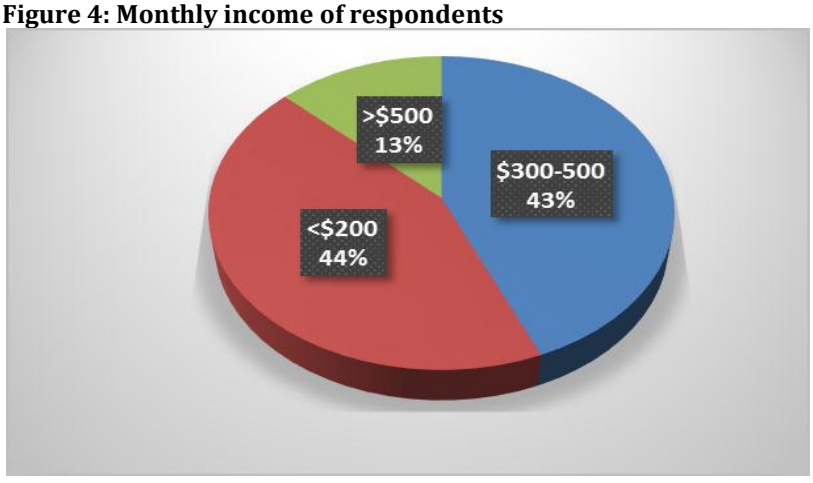
Figure 3: Types of informal entrepreneurial activities



The pie chart above indicates that 52% of the respondents are street vending, 18% respondents were into home industries, 14% were into cross-border trading, 9% were into urban farming, and 7% were into foreign currency exchange. Several were into more than one entrepreneurial activity, for example street vending and urban farming

Capitalization and income: In Chitungwiza Municipality, it is not easy to start up an entrepreneurial activity because of lack of funding. This is further aggravated by the fact that financial institutions regard informal entrepreneurs as risk borrowers because they lack collateral security. Furthermore, loan sharks provide high interest rates, which make it difficult for entrepreneurs to take loans because should they fail to pay they risk their goods being confiscated. The dominant form of obtaining a starting capital is from credit schemes, personal funds, remittances, friends and relatives. Moreover the profits they obtain per month differ based on the entrepreneurial activity one is embarking on; some get a lot of profits while others get very little. The monthly income of the informal entrepreneurs is displayed in figure 4.

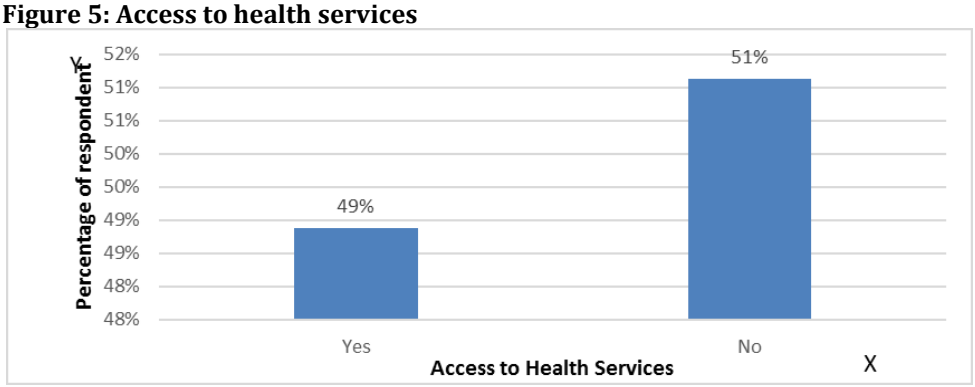
Figure 4: Monthly income of respondents



Legends: <$200-Monthly Income less than US$200, <$300-500-Monthly between $300-500, >$500-Monthly Income greater than US$500. As a source of employment, informal entrepreneurship is providing income to many households. The income generated depends on the livelihood activity one is doing. The pie chart above shows the profits entrepreneurs are making at the end of the month from their day-to-day operations. The figures above indicate that 44% of informal entrepreneurs in Seke, Chitungwiza Municipality are gaining profit of less than $200 per month. Furthermore, 43% of informal entrepreneurs are gaining moderate profits that range between $300-500 per month while 13% of informal entrepreneurs are gaining a profit of $500 and above per month.

Informal entrepreneurship and poverty reduction: The perceptions of the respondents, based on their entrepreneurship as a poverty reduction mechanism, are presented in the figures written below: households' changes in food consumption, access to health facilities and perceptions on poverty reduction. Figure 5 shows the responses of individuals on how entrepreneurial activities are assisting them in alleviating poverty.

Figure 5: Access to health services



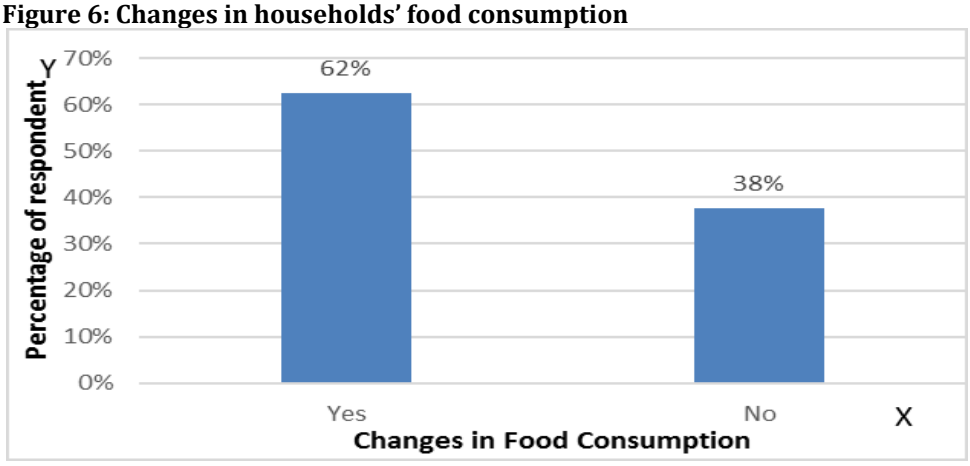
The researcher intended to get information on whether informal entrepreneurs and their households could afford health services. These services include medical treatment and dental check-ups. The findings show that 49% of the respondents could afford health services while 51% could not afford health services. Regarding access to health services, the participants revealed their frustration as portrayed by the following two excerpts:

When my children fall ill I take them to the prophets for spiritual healing because hospitals are too expensive. Imagine a child below 5 years is now paying for treatment; surely the priorities of our government are misplaced.

I travel over 2000km by road to Cape Town every week so that I earn an income for my family. Their well-being is of paramount importance to me. When it comes to their education, food and health I do not compromise, my children deserve better.

Changes in household food consumption as a result of informal entrepreneurship are presented in figure 6

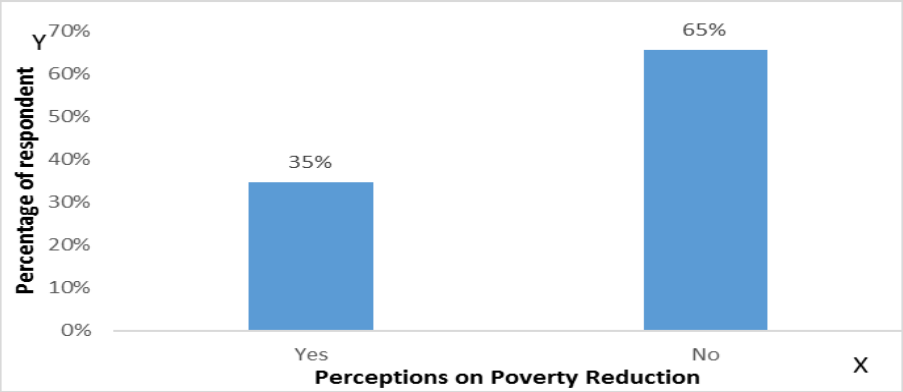
Figure 6: Changes in households' food consumption



The researchers wanted to know whether there are diet changes in the households of informal entrepreneurs. The findings indicated that 62% agreed to have experienced a change in food consumption such as eating a balanced diet while 38% agreed that there was no change in their diet. On the changes in household food consumption, some informal entrepreneurs noted as follows:

My family is guaranteed never go to bed on an empty stomach. Every day l go to Chikwanha green market, I always bring tomatoes, fruits and meat for my family. If the customers do not buy from me, I do not lose anything because I will cook those produces for my family (Street vendor)
My children know that they do not have freedom to choose what to eat. If they do not like what is cooked they will go to bed hungry. I earn less than $200 per month and if combined with my wife's part time income, it's not enough to cover rentals, amenities, school fees and to eat luxurious food. We only eat to have energy for work (Urban farmer).
We also sought to know from the respondents their perceptions regarding how informal activities had helped in poverty reduction. The findings are shown in figure 7.

Figure 7: Perceptions on poverty reduction



A general question was asked to the respondents on whether informal activities in Chitungwiza Municipality were reducing poverty or not. The informal activities referred to are street vending cross-border trading, home industries and foreign currency exchange. The findings indicate that 35% of the 150 respondents interviewed argued that informal activities were reducing poverty while 65% indicated that informal activities were not reducing poverty. The qualitative findings show something similar to the quantitative findings. The following excerpts are from some of the participants**:**
As for us green vendors we are in absolute poverty. Most of us earn not more than $5 per day. We have families and relatives who depend on us for food, shelter, education and other necessities. We are not working to reduce poverty but to survive only (Street vendor).
If you go around locations such as Unit D, L, E and L you will see that people are living in dilapidated houses, children are going to school on empty stomachs but the parents are doing different informal activities. This shows that poverty is still there and is affecting the well- being of families (Poultry keeper).

The problems faced by informal entrepreneurs, as indicated by the participants above, included inappropriate shelter, rising educational demands and extended family commitments. A Social Worker elaborated that:
Many children are not going to school, those who are sick are being nursed at home and the physical well-being of elderly people is deteriorating. This shows that poverty is still persisting in this Municipality because households are lacking access and means to basic needs.

As a result of the many challenges, many children were out of school and many cannot afford medical bills. A Community development practitioner who participated in this study pointed out that entrepreneurial activities were no longer profitable as more and more people were engaging in these activities. This was due

to the wave of retrenchments that swept through Zimbabwe since the year 2015 (Mucheche, 2017) and increasing unemployment levels. The participant said:
Alleviating poverty in Chitungwiza is still a long way to go, because almost everyone is engaged in entrepreneurial activities and it's no longer profitable. Adults frequently visit our offices asking for food, school bursaries and clothes for their children.

The above responses commonly concur that informal entrepreneurship is fast losing its momentum or popularity as a poverty alleviation strategy due to increased competition from other entrepreneurs. The informal sector is no longer lucrative due to retrenchments in the public and private sector. Many people soon entered the informal industry which is already infested, thereby increasing competition of the same range of products thus losing the clientele of customer base to those already in the industry.

Challenges faced by informal entrepreneurs: At the peak of high unemployment and poverty, informal entrepreneurship has been widely embraced by several struggling households; however, several challenges are being met in an effort to generate household income. Some of the participants reported as follows:
The Zimbabwe Revenue Authority (ZIMRA) is making our lives very difficult and unbearable. Everything that we import they want u to pay duty, even if it is basic commodities. I have resorted to paying the bus conductors extra money so that they can bribe the ZIMRA Officials at Mussina Border Post (Cross border trader).
I was once out of business for some months when a female cross-border trader defrauded me of R22000 when she gave me $2000 USD fake notes. I have recently resorted to the use of a torch scanner which detects fake money (Foreign currency trader).
It should be pointed out that some of the environments where these informal activities take place are very unhygienic. A case in point is that shown in figure 8 below.

A vendor elaborated on the issue of unhygienic working environments by stating;

There is no proper sanitation in this area, toilets are blocked, no tap water, garbage bins are not collected and the sewage pipes are bursting. Flies are all over our green products and this makes our customers vulnerable to diarrhea and typhoid (Street vendor).

Figure 8: Shows lack of hygiene in informal entrepreneurship

Cases of typhoid and cholera have been recorded in Harare and Chitungwiza almost on a yearly basis (Masunda, Chonzi and Mukeredzi, 2017). Further, infrastructure challenges were also cited by participants and an instance is depicted in figure 9 below:

Figure 9: lack of proper infrastructure to conduct informal entrepreneurship

Some of the challenges reported by the informal entrepreneurs alongside infrastructural problems were; stiff competition, which reduced profit margins; harassment by law enforcement officials; high cost of trading licenses and inability to secure start-up capital. The following excerpts summarize these challenges:
I do not have proper shelter in which l can protect myself and my goods from extreme weather conditions. Most of the times l have flu throughout the year and my products are affected by extreme sun and rain. I can't put a permanent structure because we are prohibited by the municipality, which is why we put these temporary shacks (Street vendor).
Competition is now stiff in this business and it has negatively affected my profit margins. l used to sell a crate of eggs for $4,00 USD but l reduced to $3,00, a full chicken used to be $8,00 USD but now its $6,00 USD (Street vendor)

A Community development Practitioner told the researchers that most informal traders reported negatively about their contact with council officials. The participant said;
Informal traders who visit our organization complain about harassments and bribery from the Municipal Police. The reasons being they do not have trading licenses and are operating in an undesignated areas.

Apparently, council officials took advantage of the fact that informal traders did not have trading licenses to cash in on them through demanding bribes and, in cases where traders failed to bribe officials the officials raided the vending stalls. This has also been documented by recent literature, for example Njaya (2014b).

The situation described above is compounded by the license application fees charged by the municipality. One municipal official reported that;
Informal traders complain about high levies being charged for trading license. Also they elaborate that the whole process is complicated and it takes 8-10 months to finally get the trading license

The period between the initial application for a license and finally getting the license is too long as the trader continues to face harassment from the municipal police. At the same time traders will be facing challenges establishing their businesses and, as reported by one social worker, most traders *"who visit our Department will be seeking loans to start up or boost their projects".* Together, these issues compound the situation of informal entrepreneurs.

Discussion: The findings depicted that more females aged above 30 years were engaged in informal entrepreneurial activities as compared to men. A closer scrutiny makes one argue that gender bias is still prevalent in the current labor market as more females are involved in informal activities than males. The results from Ndiweni (2014:3) also show that women dominate in informal entrepreneurship probably due to misconceptions by men that street vending, among other informal entrepreneurial activities, are female jobs. Furthermore, entrepreneurial activities remain the only sustainable livelihood strategy to improve their household income. Deducing from the findings, it appears that most people joined informal entrepreneurship because of unemployment. This finding is not peculiar to the Zimbabwean situation since in other countries

lack of employment is the dominant factor that drives people into informal entrepreneurship. This is supported by a study done by Tanga (2009) in Lesotho where a large number of people in street trading have been driven because of lack of employment. This shows that there is a common trend or pattern in terms of unemployment since it is the root cause that triggers informal entrepreneurship, especially in third world countries.

The findings of this paper revealed that urban farming, cross boarder trading, street trading, foreign currency exchange and home industries are the dominant entrepreneurial activities being done in Chitungwiza Municipality. These findings collate with a study done by Njaya (2014a), which revealed that economic activities done in urban metropolitans are of small scale and they require little or no skills with low starting up capital. A study done by Khosla (2010) revealed that street vending in Latin America constitutes 79% in Hanoi and 65% in Ho Chi Minh City. Johnson (2014) expanded more on urban farming as a source of livelihood, which means that not all livelihood activities are done in all countries, but individuals embark on livelihood activities that provide goods and services on demand by their customers. In Chitungwiza, respondents indicated that stiffer competition, municipal raids, high levies and tedious process of applying for a hawker's license, lack of shelter, poor sanitation and theft, just to mention a few, hindered informal entrepreneurship. A study by Pzhekova and Williams (2014) in Bulgaria noted that informal traders were faced with lack of capital, a lot of challenges in getting permits and licenses and high levies, and these prohibited them to transform into the formal sector. Ndiweni (2014:6) corroborates the findings when he ascertains that informal traders in Bulawayo Metropolitan in Zimbabwe encountered the above mentioned challenges and "stiffer competition" was the most dominant challenge in this sector. Njaya (2014a) attests to the findings when he indicates that informal traders in Harare Metropolitan municipality trade their goods and services in streets, pavements and on any available open space that they see as lucrative to attract customers, hence they are always in conflict with the municipal police.

At the height of economic downturn in Zimbabwe, this study observes that informal entrepreneurship is perceived as an income generating activity by poor households. The findings point out that 44% are earning $200 and below 43% are earning $300-500 while 13% are earning above $500 per month. These results show that informal entrepreneurs are working hard in spite of the hindrances they are encountering. The Zimbabwe Statistics (2016) asserts that the total Consumption Poverty line (TCPL) that a household with an average of 5 people should spend is at least $552, 00 per month. Nonetheless, considering the income obtained by informal entrepreneurs per month, the researcher deduced that more households that were relying on informal activities to support their households often lacked other basic necessities due to inadequate funds. The findings of this study have shown that informal entrepreneurship has a long way to go in alleviating poverty in Chitungwiza Municipality. This is supported by the results of this study which revealed that 65% of 150 respondents in this study agreed that informal activities are not alleviating poverty. The reasons respondents gave in support of their argument have weight because the informal sector needs to be complimented by the formal sector in order for poverty to be alleviated, and for economic growth and development to be achieved. Ndhlovu (2011:20) affirms that informal activities are merely survival strategies by individuals who failed to get employment in formal sector. This shows that their efforts will be focused on just meeting the immediate needs for survival.

5. Conclusion

Based on the findings of the paper, it has been observed that informal entrepreneurship does not entirely alleviate poverty in Chitungwiza Municipality. This is supported by the findings which showed that the participants' efforts and sacrifices in their informal activities were not tallying with the profits they were earning on a monthly basis. The low profits being earned have a negative impact on the standard of living for households. This means that not all households have adequate means and access to basic necessities such as food, shelter, clothing, education, health services and investment. Therefore, it can be deduced that the majority of households in informal entrepreneurship are still living in poverty. The paper discovered that to a lesser extent, informal entrepreneurship was alleviating household poverty as supported by few participants who expressed improvements in their standards of living. The paper also noted that some of the informal activities that are lucrative, require a lot of capital injection and skills, hence those individuals who manage to

break through enjoy the advantage of low competition and high profit margins. This allowed them to have means and access to all basic necessities for their households.

Recommendations: The following recommendations were derived from the main findings of the paper. In the formulation of informal entrepreneurship policies and frameworks, there should be a consultative process whereby all stakeholders are involved. The stakeholders include entrepreneurs, Local government and the Department of Social Welfare. The inclusion of relevant parties instills a sense of "ownership" of that policy or framework on the minds of entrepreneurs. The local government should develop infrastructure that supports informal entrepreneurship. This includes building market stalls that will protect traders and their commodities from bad weather and theft. Furthermore, the local authority should provide proper sanitation, which includes inter alia building and renovating public toilets, collection of garbage and construction of boreholes and providing tap water. This will reduce health problems such as diarrhoea and typhoid and increase hygiene standards. The relevant stakeholders should train informal entrepreneurs in current business management skills so that they can be able to cope, adjust and adapt to the prevailing economic crisis. Furthermore, Informal entrepreneurs should work with stakeholders such as the Environment and Management Agency and the Municipal Police in establishing a clean and safe environment for business activities. The government of Zimbabwe should include informal entrepreneurship in their national budget. This allows the informal entrepreneurs to have access to loan facilities with low interest rates as compared to those offered in the private sector that actually perpetuate poverty instead of assisting them to alleviate poverty.

References

Brixiova, Z. (2010). Unlocking Productive Entrepreneurship in Africa's Least Developed Countries. Working paper Number 220, June United Kingdom. The William Davidson Institute.

Chirisa, I. & Dube, D. (2012). The Informal City: Assessing its Scope, Variants and Direction in Harare, Zimbabwe. Global Advanced Research. *Journal of Geography and Regional Planning,* 1(1), 016-025.

Chirisa, I. (2009). Informality, Deceit and the Conscience: A Survey on Ethical Dilemmas in Harare. *Journal of Sustainable Development in Africa*, 11(2), 257-280.

Chitungwiza Community Bulletin. (2012). The Kubatana Archive Site. Available at http://www.archive.kubatana.net. Accessed on 20/11/2016.

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd Edition). London: Sage Publications.

Crush, T., Skinner, C. & Chikanda, A. (2015). Informal migration entrepreneurship and inclusive growth in South Africa, Zimbabwe and Mozambique. Migration policy series No: 68.Southern Africa Migration Program (SAMP) and International Migration Research Centre (IMRC).

De Sotho, H. (2000). The mystery of capital: Why capitalism triumph in the West and fails elsewhere. New York: Basic books.

Johnson, R. B., Onwuegbuzie, A. J. & Turner, L. A. (2014). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2), 112–133.

Kollmair, M. & St. Gamper, K. (2002).The Sustainable Livelihood Approach. Development Study Groups. University of Zurich (IP6).

Krantz, L. (2001). The Sustainable Livelihood Approach to Poverty Reduction. An Introduction. Swedish International Development Cooperate Agency. Division for Policy and Socio-Economic Analysis. Available at http://www.sida.se/.../the-sustainable-livelihood-approach-to-poverty-reduction. Accessed on 14/03/2017.

Leedy, D. P. & Ormrod, E. J. (2013). *Practical Research: Planning and Design* 10th Edition. Boston. Pearson Education.

Mabeza, C. M. & Mawere, M. D. (2012). Cultivation in Zimbabwe: challenges faced by Small-Scale Dambo farming communities in Seke-Chitungwiza Communal Area. (2012). Clarion University of Pennsylvania, Clarion, Pennsylvania. *Journal of Sustainable Development in Africa,* 14(5), 105-130.

Maseko, N., Manyanin, O., Chiriseri, L., Tsekea, Mugogo, P. C., Chazuza, T. & Mutengezanwa, M. (2012). An analysis of the impact of targeted government support on the SMEs growth and development in Zimbabwe: a survey of Mashonaland Central Province. *Journal of Research in International Business Management*, 2(2), 51–59.

Masunda, K. P. E., Chonzi, P. & Mukeredzi, I. (2017). Controlling the Mbare Typhoid Outbreak, Harare (2016-2017). http//:www.coalitionagainsttyphoid.org/wp-content/uploads/2016/07/Masunda.Controling-Mbare-Typhoid-Fever-Outbreak-Harare-2016-2017.pdf. Accessed 13/07/2017.

Mawere, M. (2011). A paper entitled: Ethical quandaries in spiritual healing and herbal medicine: A critical analysis of the morality of traditional medicine advertising in southern African urban societies, *Journal of Pan African Medical*, 2(10), 6-15.

Mucheche, C. (2017). A legal analysis of retrenchment and termination of employment and termination of employment under the Labor Laws of Zimbabwe ushered in by the Labor Amendment Act, 2015: simplified, seamless and synchronized termination and retrenchment of employees by employers. Commentary on Contemporary Legal Issues: The Zimbabwe Electronic Law Journal Part 1.

Munyanyi, W. (2013). Agriculture infrastructure development imperative for sustainable food production: A Zimbabwe perspective. *Russian Journal of Agricultural and Socio-Economic Sciences*, 24(12).

Ndlovu, B. (2011). Drought copying strategies at Mutasa District in Zimbabwe. Bloemfotein: University of Free State. (Unpublished Master's Thesis).

Ndiweni, E. & Verhoeven, H. A. L. (2013). The rise of informal entrepreneurs in Zimbabwe: evidence of economic growth or failure of economic policies? Heriot-Watt University. African. *Journal of Accounting, Auditing and Finance,* 2(3), 260-276.

Njaya, T. (2014a). Employment Creation or Sheer Survival: Case of Street Vendors of Harare Metropolitan in Zimbabwe. *Global Journal of advanced research*, 1(2), 264-274.

Njaya, T. (2014b). Nature, Operations and Socio-Economic Features of Street Food Entrepreneurs of Harare, Zimbabwe. IOSR *Journal of Humanities and Social Science,* 19(4), 49-58.

Pzhekava, J. & Williams, C. (2014). Facilitating the Formalization of Entrepreneurs in the Informal Economy: Towards a Variegated Policy Approach. *Journal of Entrepreneurship and Public Policy,* 3(1), 33-48.

Rukmann, D. (2007). Urban planning and informal sector in developing countries. Available at htpp: // www.indonesiaurbanstudies.blog. Accessed on 30/04/2017.

Sandada, M. (2014). Transition from informality to formality perceptions of informal traders in the Harare Metropolitan Area. International Journal of Economics, Commerce and Management.

Scoones, I. (1998). Sustainable rural livelihoods, a framework for analysis. Institute of Development Studies, Working Paper 72. University of Sussex, Brighton, UK, pp. 1-22.

Solesbury, W. (2003). Sustainable Livelihoods: Case Study of the Evolution of DFID Policy. Working Paper 217. Overseas Development Institute. London.

Southern African Migration Program. (SAMP) (2014). Urban informality and migrant entrepreneurship in southern African cities: Conference report. Cape Town: African Centre for Cities, University of Cape Town.

Tanga, P. T. (2009). Informal sector poverty: The case of street vendors in Lesotho. Organization for Social Science Research in Eastern and Southern Africa. (OSSREA).

Zimbabwe Economic Policy Analysis and Research Unit (ZEPARU) and Bankers Association of Zimbabwe (BAZ). (2014). Harnessing resources from the informal sector for economic development. Available at http:// www baz.org.zw/.../Harnessing%20. Accessed on 07/04/2017.

Zimbabwe National Statistic Agency. (ZIMSTATS). (2016). Poverty datumn lines. Available at http://www.zimstat.co.zw/. Accessed on 05/04/2017.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Entrepreneurial Inclination: South African Youth's Mental Attitude towards starting Tourism Business

Ikechukwu O. Ezeuduji*, Sibusiso D. Ntshangase
University of Zululand, South Africa
EzeudujiI@unizulu.ac.za*, sdbiyela@gmail.com

Abstract: This study assessed the tourism entrepreneurial intention of South African youth, and the mental attitude of those who have this intention. It used questionnaire survey to gather data from 207 youth resident in Mtubatuba Local Municipality, KwaZulu-Natal Province of South Africa, to address the study objectives. Data analyses reveal that a significant percentage of the youth have tourism entrepreneurial intention. Those who perceive themselves as entrepreneurial individuals and willing to start tourism businesses in the future exhibit some distinct mindset. This mental attitude depicts these individuals to be innovative, transformational, risk takers, persistence, strong-minded, visionary, optimistic, and goal-getters. The South African Government, through its Department of Labour, need to optimize its strategic and operational plans to support these entrepreneurial youth in acquiring business education and entrepreneurial skills, to empower them realise their dreams of starting and managing their own businesses. This will help curb the high rate of unemployment in South Africa, especially among the youth.

Keywords: *Entrepreneurial inclination, entrepreneurial intention, tourism entrepreneurship, youth entrepreneurship, sub-Saharan Africa*

1. Introduction

The South African unemployment rate was 27.7% in the first quarter of 2017. It was 26.5% in the previous quarter. This first quarter of 2017 was described as having the highest jobless rate since the first quarter of 2004. The youth unemployment rate in South Africa was 54.2% in the third quarter of 2016 and 50.9% in the fourth quarter of 2016. The youth unemployment rate averaged 51.54% from 2013 to 2016 in South Africa (Trading Economics, 2017 a,b).Youth entrepreneurship therefore, will alleviate this jobless rate in South Africa, as new businesses can help create new jobs for the entrepreneurs and their future employees. South Africa, just like any other developing country, aims to build a strong economy that will become globally competitive. Previous studies posit that entrepreneurship is a vehicle that can drive any nation's economy (Chell, Spence, Perrini, & Harris, 2016; Gree & Thurnik, 2003; Iwu, Ezeuduji, Eresia-Eke & Tengeh, 2016; Maziriri & Madinga, 2016; Maziriri, Madinga & Lose, 2017). As every nation in the world tries to decrease the unemployment levels of its youth, the youth also need to help themselves by making a practical identification of business opportunities around them and turning these into business venture. Mtubatuba Local Municipality in the KwaZulu-Natal Province of South Africa boasts Agriculture as its largest employment sector, nonetheless, there is a huge potential for expanding its tourism industry (especially the eco-tourism niche), as its natural resources include both private and public game and nature reserves, accommodation establishments, restaurants and various sporting facilities. One of this municipality's Local Economic Development objectives is "to ensure poverty alleviation, shared wealth creation, community stability and raised standards of living through formal job creation, entrepreneurial activity, and Small, Medium and Micro Enterprises (SMME) development" (Mtubatuba Municipality, 2017).

Previous researchers in sub-Saharan Africa have reported that entrepreneurship is a significant part of the solution to Africa's economic development problems (Maziriri & Madinga, 2016; Nchu, Tengeh & Hassan 2015; Olomi & Sinyamule, 2009). This study argues that in as much as many African youth may desire to own their own businesses due to the benefits this may present, it is imperative for aspiring entrepreneurs to have the right motivation, the drive and the mindset to start, grow and manage businesses on the long-term. Aspiring entrepreneurs also do not necessarily need to have the financial capital to start their own businesses, but should know how to acquire the capital. As earlier mentioned, there exist tourism business opportunities for the youth of Mtubatuba Local Municipality in the KwaZulu-Natal. This study will therefore assess the tourism entrepreneurial intention of the South African youth living in this area, and the mental attitude of those youth who perceive themselves as entrepreneurial individuals. This study will further evaluate if their mindset is appropriate towards starting and sustaining these businesses. This study regards

individuals less than 36 years as youth members. The next section explores recent and relevant literature related to this study.

2. Literature Review

Entrepreneurship is a driving force behind the socio-economic success of any nation (Ahmad, 2015), as it creates more jobs and reduces poverty (Chenube, Saidu, Omumu & Omomoyesan, 2011; Olomi & Sinyamule, 2009; Singh & Singh, 2016). Authors such as Chenube et al. (2011) suggest that unemployment can be reduced through encouraging the development of the informal sector, where people are empowered towards becoming independent or self-employed. Minto-Coy and McNaughton (2016) allude to the fact that innovation and entrepreneurship are considered essential pillars of growth and country's ability to narrow the gap between themselves and others. Lekoko, Rankhumise and Ras (2012) posit that higher education institutions can help create a more entrepreneurial disposition among young people by instilling a clear understanding of risks, taking opportunity, as well as creating and building enterprises. Premand, Brodmann, Almeida, Grun and Barouni (2016) state that entrepreneurship education has the potential to enable youth to gain skills and create their own jobs, hence policymakers should pay attention to it. Bakare (2015) posits that youth empowerment programs should include entrepreneurial training. Hence Lekoko et al. (2012) examined the effectiveness of entrepreneurship education to empower youth's awareness of self-employment as a career option and creating business culture amongst them. They argue that entrepreneurship education program should integrate both the theoretical transfer of entrepreneurship knowledge and the practical learning experience. This study however argues that entrepreneurship education may not really spur someone with no entrepreneurship inclination to entrepreneurship action. Chenube et al. (2011) report that entrepreneurial inclination can be stimulated by a healthy education background, relevant work history, having good entrepreneurs as role models, morale-network support and professional support network. These are variables that the authors argue will result in the success of the entrepreneurial process. Therefore, entrepreneurial inclination and entrepreneurial education are two factors that support youth's entrepreneurship development (Chenube et al., 2011).

Few studies have been conducted on entrepreneurial inclination in the developing countries like South Africa (such as Ali, Topping & Tariq, 2009; Mahmoud, Muharam & Mas'ud, 2015; Olomi & Sinyamule, 2009; Omerzel, 2015; Singh & Singh, 2016). Omerzel (2015) proposes the five dimensions of entrepreneurial inclination to be risk taking, proactiveness, competitive aggressiveness, autonomy, and customer orientation. Mahmoud et al. (2015) argue that the entrepreneurial inclination is the best predictor of business venture, as it can predict the process of business creation (Krueger, Reilly & Carsrud, 2000). Venture creation is not likely to take place without motivation (Owoseni & Akambi, 2010). In this study, entrepreneurial inclination is viewed in terms of motivation and attitude towards starting a new business. The attitude or motivation and perceived behavioral control are described as the qualifications of entrepreneurial inclination (Singh & Singh, 2016). Gwija, Eresia-Eke and Iwu (2014) and Iwu et al. (2016) posit that the level of entrepreneurial engagement in South Africa is very low due to a general lack of infrastructural support, lack of capital, and poor business management ability. Singh and Singh (2016) report that the entrepreneurial inclination of youth plays critical role in deciding their future entrepreneurial behaviour. Hence, entrepreneurship is receiving more attention in the area of business research (Sandhu, Sidique & Riaz, 2011; Singh & Singh, 2016). Singh and Singh (2016) allude that seminars, workshops and conferences are being organized often in universities and similar organizations to inform the youth about entrepreneurial programs. They (Singh & Singh) suggest that entrepreneurial intent is a primary predictor of future entrepreneurial behavior, and Sandhu et al. (2011) report that young people who are more mature and have greater job experience will be more likely to be inclined towards entrepreneurship. Sandhu et al. (2011) outline the barriers of entrepreneurship to be aversion to stress and hard work, aversion to risk, fear of failure, lack of social networking, lack of resources, and demographic and personal factors.

The barriers faced by the youth who want to start their own businesses will be different when compared with barriers faced by existing entrepreneurs. Hence, understanding these barriers and relationships between entrepreneurial inclinations and the practicality of starting new business ventures will support policymakers in formulating new support strategies. Lengyel (2015) reports that there is a remarkable distinction between those who would like to be entrepreneurs and those who actually intend to be. The author (Lengyel) posits

that the entrepreneurial potential means an inclination, a kind of openness, readiness to grasp a business opportunity, and not necessarily a deliberate intention to become an entrepreneur. This information is relevant as this research is concerned with entrepreneurial inclination. Previous authors (such as Burger, Mahadea & Neil, 2004; Maziriri & Madinga, 2016; Maziriri, Madinga & Lose, 2017; Steenekamp, Van der Merwe & Athayde, 2011) have reported that South African population (the youth inclusive) does not suffer from a lack of creative spirit, but from a lack of business education and entrepreneurial skills that can empower them in an enabling environment. Iwu et al. (2016) put forward that among other factors, the socio-economic conditions and education system are the most critical factors influencing the development of entrepreneurship in the global economy. The study by Iwu et al. (2016) in South Africa, reported that there is a growing entrepreneurial inclination among the educated youth (university students), however this study will assess the tourism entrepreneurial intention of South African youth, not focusing on their level of Western education. It will also compare the youth's perceived level of their own entrepreneurial inclination and the mental attitude of those youth. The youth's mental attitude may reveal the probability of their starting and sustaining these businesses. In the next section, we will outline how we designed, generated and analysed collected data to reach study conclusions.

3. Methodology and Design

When the nature of research objectives requires individual and quantified responses, questionnaire survey is usually ideal to obtain information to address these research objectives Veal (2011). We used a combination of respondent-completed and interviewer-completed structured questionnaire to collect information from 207 youth of Mtubatuba Local Municipality in the KwaZulu-Natal Province of South Africa. We used interviewer-completed questionnaire method when respondents cannot complete the questionnaire in English language. When this was the case, one of the researchers who is resident in the study area translated the questionnaire in the local language, and completed the respondents' answers. We did both household survey and street survey, using simple random sampling technique, to select our respondents. The questionnaire we used has two sections: profile data and perception variables. The profile data were set as categorical variables, and the perception variables were set as ordinal variables. The perception variables include entrepreneurship 'meanings', perceptions of entrepreneurial inclinations, and enablers and barriers of starting tourism businesses (set on a 5-point Likert scale: 1 – strongly agree, to 5 – strongly disagree). These ordinal variables originate from the literature review for this paper.

We used IBM's SPSS version 24 software for statistical analyses (IBM Corporation, 2016) of the data collected. We conducted descriptive (percentage frequencies and mean scores of responses), bivariate (Mann-Whitney U tests) and multivariate analyses (Reliability tests). All statistical tests were done at 95% confidence interval. Due to non-normal population distributions of the ordinal variables used in measuring entrepreneurship statements (perceptions); we conducted Mann-Whitney U tests of comparing means of responses from two independent groups to verify if these are different from each other. Responses to entrepreneurship statements were compared with some respondents' profile (self-declaration as entrepreneurial individual, willingness to start own tourism business, prior entrepreneurship education, and respondents' gender). Mann-Whitney U tests were conducted based on the criteria that the dependent variables have ordinal scale; the independent variables have only two groups; and normality of distribution and homogeneity of variance did not prove true in a t-test (George & Mallary, 2003; Veal, 2011). We conducted reliability tests (multivariate analysis) to check for the level of internal consistencies of the variables we used to explain different factors (perceptions of entrepreneurship 'meanings', perceptions of entrepreneurial inclinations, and enablers and barriers of starting tourism businesses). Based on literature (George & Mallery, 2003), the use of Cronbach's Alpha coefficient of between 0.5 and 0.7 is acceptable in social science research, to explain adequate consistency of variables. Nonetheless, Tavakol and Dennick (2011) posit that low Cronbach's Alpha score may occur if there is a weak interrelationship among questionnaire variables that are used in the analysis, or when few variables are being used to explain a particular dimension. The reliability test results in this study show that we used variables that are internally consistent to measure study factors. We present results of the data analyses and discuss findings in the next section.

4. Results and Discussion

The results presented in Table 1 show that there is a balanced distribution between male and female respondents in this survey. The study show that about 64% of the respondents are relatively young, between the ages of 18 and 25.

Table 1: Youth profile (N=207)

Variable	Category	Frequency (%)
1.1 Gender	Male	50.5
	Female	49.5
1.2 Age group	18-25	64.0
	26-30	23.3
	31-35	12.7
1.3 Highest level of education attained	No western education	3.4
	Primary education	4.9
	Secondary education	54.4
	Tertiary education	37.3
1.4 Are you South African?	Yes	96.1
	No	3.9
1.5 Did you study any Business Management or Entrepreneurship course/programme?	Yes	54.8
	No	45.2
1.6 Would you want to start your own tourism business in the future?	Yes	77.1
	No	22.9
1.7 Do you think you are an entrepreneurial individual?	Yes	65.3
	No	34.7
1.8 Starting tourism business can change young people's life	Yes	86.5
	No	13.5

The results showing that about 92% of the respondents have secondary or tertiary education, reveal that the general educational level of the South African youth population living in the study area is not a significant barrier for them to venture into entrepreneurship, especially as about 55% of them indicated that they have had some business management or entrepreneurship education. This study has some good news as about 77% of the surveyed sample declared their intention to start their own businesses in the future, and about 65% of these respondents perceive themselves as entrepreneurial individuals. Much of the youth surveyed (about 87%) agree that entrepreneurship can make a positive impact in their lives. These results support Iwu et al. (2016) earlier finding that there is an increasing level of entrepreneurial intention among South African youth. This study however argues that the declared entrepreneurial intention of these youth may not turn into actually starting and managing their businesses. Some of them may start businesses and eventually become unsuccessful due to personal factors or external factors found in their environment. However, we posit that for a developing economy like South Africa, these results can be viewed as promising, as much entrepreneurship interest exists among the youth surveyed.

The next stage of data analysis compared relevant respondents' entrepreneurial profile (gender, perception of self as entrepreneurial, prior entrepreneurship education, and willingness to start own tourism business in the future) with entrepreneurship statements. Bivariate analysis (Table 2) reveal that much of the youth members who declare themselves to be entrepreneurial individuals(and mostly want to start tourism businesses) perceive entrepreneurship 'meanings' to be those of invention, taking risk, organising and managing own business, and increasing capital and wealth. Based on their level of agreements to the entrepreneurial inclination's statements, they mostly 'are constantly on the lookout for new ways to improve their lives', 'feel driven to make a difference in their community, and maybe in the world', 'feel they are powerful forces for constructive change', 'make something happen, against all odds, if they believe in it', 'are always looking for better ways to do things', 'tackle their problems head-on', and 'can spot a good opportunity long before others can'; more than those who think they are not entrepreneurial individuals. Those who want to start their own tourism businesses in the future see themselves as 'fixers of problems', 'those who can make things happen', and 'able to help out people in trouble'. More male than female respondents also made similar reports on themselves, however based on the overall results (responses to only few variables show

statistical difference based on gender), it cannot be generalized that male respondents have more statistically significant entrepreneurial inclination than females. Male respondents however, show more persistent and supportive personalities.

Table 2: Entrepreneurship statements compared with 'entrepreneurial profile' (N=207)

Perceptions of entrepreneurship 'meanings' [b]	**Mean**	**Compared with 'entrepreneurial profile' [a]**
2.1 Being an entrepreneur means creating an own business	1.77	N.S
2.2 Being an entrepreneur means organising and managing own business	1.93	**Those who think they are entrepreneurial individuals agree more; ***Those with prior entrepreneurship education agree more; **Those want to start own tourism business in the future agree more.
2.3 Being an entrepreneur means taking risks	2.44	***Those who think they are entrepreneurial individuals agree more; **Those with prior entrepreneurship education agree more.
2.4 Money is the only thing that an entrepreneur needs	2.68	N.S
2.5 An entrepreneur is an inventor	2.34	**Those who think they are entrepreneurial individuals agree more; **Those with prior entrepreneurship education agree more; *Those want to start own tourism business in the future agree more.
2.6 Being an entrepreneur means developing a new product or service	2.26	*Those want to start own tourism business in the future agree more.
2.7 Being an entrepreneur means increasing capital and wealth	2.22	**Those who think they are entrepreneurial individuals agree more.
Reliability Statistics (entrepreneurship 'meanings'), Cronbach's Alpha =.552, N of Items = 7, *Valid cases = 183 (88.4%), Excluded cases = 24(11.6%), Total = 207*		
Perceptions of entrepreneurial inclinations		
2.8 I am constantly on the lookout for new ways to improve my life	1.88	***Those who think they are entrepreneurial individuals agree more.
2.9 I feel driven to make a difference in my community, and maybe in the world	1.96	**Those who think they are entrepreneurial individuals agree more.
2.10 Wherever I have been, I have been a powerful force for constructive change	2.30	***Those who think they are entrepreneurial individuals agree more.
2.11 I enjoy facing and overcoming obstacles to my ideas	2.05	N.S
2.12 Nothing is more exciting than seeing my ideas turn into reality	1.83	N.S
2.13 If I see something that I do not like, I fix it	1.89	***Those want to start own tourism business in the future agree more.
2.14 No matter what the odds, if I believe in something, I will make it happen	1.93	***Those who think they are entrepreneurial individuals agree more; **Those want to start own tourism business in the future agree more; *Male respondents agree more.
2.15 I am always looking for better ways to do things	1.80	***Those who think they are entrepreneurial individuals agree more.
2.16 If I believe in an idea, no obstacle will	2.03	**Those who think they are entrepreneurial

prevent me from making it happen		individuals agree more.
2.17 When I have a problem, I tackle it head-on	2.22	**Those who think they are entrepreneurial individuals agree more.
2.18 I am great at turning problems into opportunities	2.18	N.S
2.19 I can spot a good opportunity long before others can	2.16	*Those who think they are entrepreneurial individuals agree more.
2.20 If I see someone in trouble, I help out in any way I can	2.00	**Those want to start own tourism business in the future agree more; **Male respondents agree more.
Reliability Statistics (entrepreneurial inclinations), Cronbach's Alpha =.845, N of Items = 13, *Valid cases = 167 (80.7%), Excluded cases = 40(19.3%), Total = 207*		
Enablers and barriers of starting tourism businesses		
2.21 Belief systems within our society can hinder youth to start tourism businesses	2.29	**Those who think they are entrepreneurial individuals agree more.
2.22 Home background can hinder youth to start tourism businesses	2.38	*Those who think they are entrepreneurial individuals agree more.
2.23 Lack of equipment and machinery can stop youth to start tourism businesses	2.54	*Those who think they are entrepreneurial individuals agree more.
2.24 Lack of knowledge of support centres for entrepreneurs can stop youth to start tourism businesses	2.41	N.S
2.25 Lack of education and training can hinder youth to start tourism businesses	2.35	**Male respondents agree more.
2.26 Not having business networks can hinder youth to start tourism businesses	2.38	N.S
2.27 Hardships in obtaining start-up capital can hinder youth to start tourism businesses	2.48	N.S
2.28 One's gender (male or female) influences the likelihood of starting tourism businesses	2.82	**Those who think they are entrepreneurial individuals agree more.
2.29 I will have money to start a tourism business	2.64	**Those who think they are entrepreneurial individuals agree more; **Those with prior entrepreneurship education agree more; **Those want to start own tourism business in the future agree more.
2.30 I know how to get money to start a small tourism business	2.54	*Those who think they are entrepreneurial individuals agree more; **Those want to start own tourism business in the future agree more.
2.31 I will have training support to start a small tourism business	2.53	**Those who think they are entrepreneurial individuals agree more; **Those want to start own tourism business in the future agree more.
2.32 The hard work involved in managing one's business can hinder youth to start tourism businesses	2.54	***Those who think they are entrepreneurial individuals agree more.
Reliability Statistics (enablers and barriers), Cronbach's Alpha =.762, N of Items = 12, *Valid cases = 172 (83.1%), Excluded cases = 35(16.9%), Total = 207*		

[a]Mann-Whitney U test significance. N.S, no significant results.*, $p < 0.05$; **, $p < 0.01$; ***, $p < 0.000$.
[b]Questionnaire were itemised along a 5-point Likert-type scale ranging from 1, Strongly agree; 2, Agree; 3, Neutral; 4, Disagree; 5, Strongly disagree.

These results support much of the findings in the previous studies that have been conducted on entrepreneurial inclination in the developing countries. Omerzel (2015), in line with this study's findings, posits the dimensions of entrepreneurial inclination to include risk taking, proactiveness, competitive aggressiveness, autonomy, and customer orientation. Owoseni and Akambi (2010) put forward that venture creation is not likely to take place without motivation.Singh and Singh (2016) report that positive attitude, motivation and perceived behavioral control are the qualifications of entrepreneurial inclination. Previous studies conducted globally, recognised entrepreneurship as a tool for driving a nation's economy (Chell et al., 2016; Gree & Thurnik, 2003; Iwu et al., 2016; Maziriri & Madinga, 2016; Maziriri et al., 2017).

Sandhu et al. (2011) outlined the barriers of entrepreneurship to be aversion to stress and hard work, aversion to risk, fear of failure, lack of social networking, lack of resources, and demographic and personal factors. In terms of enablers and barriers of starting tourism businesses, youth members who perceive themselves as entrepreneurial individuals (and mostly want to start their own tourism businesses) agree more to these statements, than those who do not think they are entrepreneurial: 'belief systems within our society can hinder youth to start tourism businesses','home background and lack of capital can hinder youth to start tourism businesses', 'one's gender influences the likelihood of starting tourism businesses', 'I will have money or know how to get money to start a tourism business', 'I will have training support to start a small tourism business', and 'the hard work involved in managing one's business can hinder youth to start tourism businesses'. While these youth members who see themselves as entrepreneurial perceive the significant barriers to entrepreneurial processes in their local community to be in existence, they are still not deterred from thinking they can start their own businesses. They are optimistic that they will have the financial capital and the training support to start their small businesses. As reported earlier, Premand et al. (2016) also agree that entrepreneurship education has the potential to enable youth to gain skills and create their own jobs, and advised policymakers to pay attention to it. Bakare (2015) also call for youth empowerment programs to include entrepreneurial training. In the last section, we conclude our findings and make practical policy recommendations based on our study results.

5. Conclusion and Recommendations

The findings from this study show that a significant number of South African youth surveyed recognise the benefits of entrepreneurship towards their nation's socio-economic development and declared their willingness to engage in entrepreneurship. This research however went deeper to compare the youth's perceived level of their own entrepreneurial inclination and their mental attitude towards entrepreneurial dimensions. The youth (those who declare themselves entrepreneurial individuals) tend to have the right mental attitude and motivation to start and sustain businesses. They show the characteristics of being risk takers, goal-getters, innovative, transformational, persistence, strong-minded, visionary, and optimistic. This study therefore recommends that the South African Government, through its national Department of Labour optimise its strategic and operational plans to support these youth members who believe they are entrepreneurial, in terms of providing them with theoretical and practical business education and entrepreneurial skills, especially at the grassroots level. This can be done in collaboration with schools, private sector, and non-governmental organisations to empower youth to realise their dreams of starting and managing their own businesses, and at the same time help to curb the high rate of youth unemployment in South Africa.

References

Ahmad, S. Z. (2015). Entrepreneurship Education in Tourism and Hospitality Programs. *Journal of Hospitality & Tourism Education*, 27(1), 20–29.

Ali, A., Topping, K. J. & Tariq, R. H. (2009). Entrepreneurial inclinations of prospective teachers. *New Horizons in Education*, 57(2), 1-16.

Bakare, O. K. (2015). Career prospects of youths and tourism participation in selected host communities in Ekiti State, Nigeria. *IFE Psychologia*, 23(1), 201-212.

Burger, L., Mahadea, D. & Neil, C. O. (2004). Perceptions of entrepreneurship as a career option in South Africa: An exploratory study among grade 12 learners. *South African Journal of Economic and Management Sciences*, 7(1), 187-205.

Chell, E., Spence, L. J., Perrini, F. & Harris, J. D. (2016). Social Entrepreneurship and business ethics: Does social equal ethical? *Journal of Business Ethics*, 133, 619-625.

Chenube, O. O., Saidu, R. F., Omumu, F. C. & Omomoyesan, M. B. (2011). Assessing the entrepreneurial inclination of university students in Delta State, Nigeria. *IFE Psychologia*, 19(2), 426-436.

George, D. & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference, 11.0 update* (4th Ed.). Boston: Allyn & Bacon.

Gree, A. &Thurnik, C. (2003). Firm selection and industry evolution: the post country performance of new firm. *Journal of Evolutionary Economics*, 4 (4), 243-264.

Gwija, S. A., Eresia-Eke, C. & Iwu, C. G. (2014). The link between entrepreneurship education and business success: evidence from youth entrepreneurs in South Africa. *Journal of Economics*, 5(2), 165-174.

IBM Corporation. (2016). *IBM SPSS Statistics for Windows, Version 24.0.* Armonk, NY: IBM Corp.

Iwu, C. G., Ezeuduji, I. O., Eresia-Eke, C. &Tengeh, R. (2016). The Entrepreneurial Intention of University Students: The Case of a University of Technology in South Africa. *Acta Universitatis Danubius Oeconomica*, 12(1), 164-181.

Krueger, N., Reilly, M. D. & Carsrud, A. L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing,* 15, 411-432.

Lekoko, M., Rankhumise, E. M. & Ras, P. (2012). The effectiveness of entrepreneurship education: What matters most? *African Journal of Business Management*, 6(51), 12023-12033.

Lengyel, G. (2015). Entrepreneurial Inclination and Entrepreneurship in Hungary and in Europe. *International Journal of Sociology,* 27(4), 3-35.

Mahmoud, M. A., Muharam, F. M. & Mas'ud, A. (2015). Factors That Influence the Entrepreneurial Intention of Nigerian Postgraduates: Preliminary Analysis and Data Screening. *Asian Social Science*, 11(4), 180-189.

Maziriri, E. T. & Madinga, N. W. (2016). A qualitative study on the challenges faced by entrepreneurs living with physical disabilities within the Sebokeng Township of South Africa. *International Journal of Research in Business Studies and Management*, 3(5), 1–13.

Maziriri, E. T., Madinga, W. & Lose, T. (2017). Entrepreneurial Barriers that are confronted by Entrepreneurs living with Physical Disabilities: A Thematic Analysis. *Journal of Economics and Behavioral Studies,* 9(1), 27-45.

Minto-Coy, I. & McNaughton, M. (2016). Barriers to Entrepreneurship and Innovation: An Institutional Analysis of Mobile Banking in Jamaica and Kenya. *Social and Economic Studies*, 65(2), 107-139.

Mtubatuba Municipality. (2017). Local Economic Development. Retrieved 14 June 2017, from http://mtubatuba.org.za/technical-services/business/

Nchu, R. M., Tengeh, R. K. & Hassan, S. (2015). High School learner's perception of the efficacy of Entrepreneurship education: The case of selected High schools in the Western Cape, South Africa. *The scientific Journal of Theory and Practice of socio-economic Development*, 4(8), 507-526.

Olomi, D. R. & Sinyamule, R. S. (2009). Entrepreneurial Inclinations of Vocational Education Students: A Comparative Study of Male and Female Trainees in Iringa Region, Tanzania. *Journal of Enterprising Culture*, 17(1), 103-125.

Omerzel, D. G. (2015). The Impact of Entrepreneurial Characteristics and Organisational Culture on Innovativeness in Tourism Firms. *Managing Global Transitions,* 14(1), 93-110.

Owoseni, O. O. & Akambi, P. A. (2010). Entrepreneurial Intentions: A Theoretical Framework. *Journal of Management and Corporate Governance,* 2(4), 132-148.

Premand, P., Brodmann, S., Almeida, R., Grun, R. & Barouni, M. (2016). Entrepreneurship Education and Entry into Self-Employment among University Graduates. *World Development*, 77, 311-327.

Sandhu, M. S., Sidique, S. F. & Riaz, S. (2011). Entrepreneurship barriers and entrepreneurial inclination among Malaysian postgraduate students. *International Journal of Entrepreneurial Behavior& Research,* 17(4), 428-449.

Singh, P. S. & Singh, H. R. (2016). Entrepreneurial Inclination: a Critical Review. *Indian Journal of Research*, 5(2), 69-73.

Steenekamp, A. G., Van der Merwe, S. P. & Athayde, R. (2011). An investigation into youth entrepreneurship in selected South African secondary schools: An exploratory study. *Southern African Business Review*, 15(3), 46-75.

Tavakol, T. & Dennick, R. (2011). Making sense of Cronbach's Alpha. *International Journal of Medical Education,* 2(1), 53-55.

Trading Economics. (2017a). South Africa Unemployment Rate. Retrieved 22 June 2017, from https://tradingeconomics.com/south-africa/unemployment-rate

Trading Economics. (2017b). South Africa Youth Unemployment Rate. Retrieved 22 June 2017, from https://tradingeconomics.com/south-africa/youth-unemployment-rate

Veal, A. J. (2011). *Research methods for leisure and tourism: a practical guide.* 4th ed. Pearson: Essex.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Determinants of Access to Education and ICT in Nigeria

Isaac B. Oluwatayo[1*], Ayodeji O. Ojo[2]
[1]University of Limpopo, South Africa
[2]University of Ibadan, Nigeria
isaacoluwatayo@yahoo.com*, ayodejiojo7591@gmail.com

Abstract: The world where development is driven by advancement in education and Information and Communication Technology (ICT) is fast emerging. This study therefore examined the determinants of access to education and ICT in Nigeria. The study used information from 4,508 households from the National Bureau of Statistics (NBS) General Household Survey (GHS) Data. Probit regression model and descriptive statistical tools were used to analyze relevant data. Analysis of the data showed that average household size was fairly large consisting of 7 members with majority (85.1percent) of the households headed by men. Average age of the household heads was 52 years while average years of education was 4 years. Also, 82.0percent and 61.2percent of the households in urban and rural Nigeria respectively had access to education. Therefore, inequality in access to education exists based on location. The factors influencing access to education in Nigeria were found to include age, gender, marital status and household size. The results also revealed age, years of education, marital status, gender and household size as determinants of access to ICT. Analysis of different ICT devices used in Nigeria showed that Radio (88.1percent), Mobile Phones (86.4percent) and Television (55.1percent) were the most widely used. Meanwhile, a significant difference exist in the factors influencing access to education and ICT in rural and urban Nigeria. The study therefore recommended increased investment in education and infrastructure. Government and private organizations should encourage gender equality in access to ICT through gender sensitive interventions.

Keywords: *Access, Determinants, Education, ICTs, Households, Nigeria*

1. Introduction

Background to the Study: Education is a veritable tool for the development of the capacity of citizens of any nation. Therefore, this underscores the reason human capital development occupies a central position in global policy discourse especially in the past one or two decades. Education is critical to the achievement of Sustainable Development Goals (SDGs) in Nigeria. This is because of the positive externalities of education on the society. Education provides the platform for households to gain employment and raise income towards reducing poverty and inequality. Again, educated households have been found to be more resilient to adverse shocks (UNDP, 2014). Specifically, the need to raise human capital stock of developing nations is underscored by the fourth SDG (SDG4). SDG 4 is to ensure inclusive and equitable quality education and promote life-long opportunities (UNESCO, 2014).The world is a global village where development is driven by advancement in education and Information and Communication Technology (ICT). Economic activities are now carried out on ICT platforms and competitiveness has heightened between countries. In the 21st century, education and ICT are interrelated and interdependent ingredients of economic development. The ICT tools that are particularly useful in education include radio, television, mobile phones and computers (Aralu and Adetinmirin, 2014). Education is the process of transferring skills and information to an individual in order to increase his/her competencies. Meanwhile, ICT is the application of electronic devices for storing, processing and interpreting data into useful information. The application of ICT cuts across various sectors including education, security, tourism, agriculture, medicine and entertainment among others (Mokaya, 2012). The use of ICT is helping countries break barriers in development with regards to education and the economy. Therefore, we live in a world where many aspects of human life are driven by ICT (Idowu et al., 2008). ICT has presented opportunities to countries to expand production of goods and services as distance is no longer a barrier to trade. In the educational sector, books, videos and audio lecture materials that were hitherto herculean to access are just a click away.

Problem Statement: Nigeria is the most populous black nation in the world with a population of 174.5 million people (Odufuwa, 2012; Ademola et al., 2014). The youths of Nigeria account for the bulk of the Nigerian population. Therefore, the issue of education and ICT is critical to the achievement of meaningful national development. Nigeria has a large army of out-of-school children and young adults with limited

literacy and numeracy skills. Again, less than 33 percent of basic school children usually proceed to senior secondary schools (US Embassy, 2012). There are reported cases of inequality in access to education along gender, geopolitical zones and even economic classes in Nigeria (Aja-Okorie, 2013; Andrew and Orodho, 2014; Humphreys and Crawford, 2014). The inequality in access to education based on geopolitical zones as reflected in non-school attendance among states in the North East and North West Zones of Nigeria is chronic rather than being episodic. For instance, 72 percent of primary school age children never attended school in Borno State (North East, Nigeria) compared to 3 percent in Southern Nigeria (US Embassy, 2012).

The indices of education and ICT in Nigeria are disturbing. An estimated 10 million out of the 30 million Nigerian children are not enrolled in school (US Embassy, 2012). Nigeria lags behind in the fight against illiteracy when compared with countries such as Brazil, Indonesia, Cuba, Poland and China. The literacy rate of Nigeria is low at 56.9 percent compared to 92 percent literacy rate in China, 90 percent in Indonesia and 89 percent in Brazil (Ishaq and Ali, 2014). Therefore, the reason Nigeria's performance in the achievement of Millennium Development Goals (MDGs) is not encouraging is not far-fetched. The level of utilization of ICT in Nigeria leaves more to be desired. This implies Nigeria has not fully harnessed ICT for broad-based growth. The low adoption of ICT in Nigeria can be linked to severe infrastructure deficits, widespread poverty, low awareness, exorbitant cost of accessing ICT and policy inconsistency regimes (Achimugu et al., 2009). Given the importance and problems of ICT and education, there are some questions begging for answers. Therefore, this study tried to provide answers to the following research questions:

- What are the drivers of access to ICT and education in Nigeria?
- Which region of the country has more access to ICT and education and why?
- What are the prominent ICT devices used in Nigeria?

Objectives of the Study: The broad objective of this study was to analyze the determinants of access to education and ICT among households in Nigeria. Specifically, this study tried to:

- Profile the socioeconomic characteristics of the households in the study area
- Analyze factors affecting access to education and ICT in the study area
- Identify and rank the type of ICT devices used among households in Nigeria
- Investigate the differences in the factors affecting access to education and ICT in rural and urban Nigeria.

Rationale for the Study: To the best of our knowledge, there has not been any published study that established the link between education and access to ICT in Nigeria based on empirical data. Therefore, this is a pioneer study that will identify the link between education and access to ICT. This study hopes to fill the gap in knowledge. The improvement in access to education and ICT is a very important developmental issue. While there are few studies on factors influencing access to education in Nigeria (Onwuameze, 2013; Ademola et al., 2014), several studies on the determinants of access to ICT in Nigeria exist (Obayelu and Ogunlade, 2006; Olatokun, 2009; Adomi and Kpangban, 2010) and these past attempts were not based on a nationally representative data. However, an exception is Onwuameze (2013) who used a nationally representative 2010 Nigeria Education Data Survey (NEDS).Therefore, this study used the NBS General Household Survey (GHS) data that was collected nationwide to investigate the factors influencing access to ICT and education in Nigeria as this study will serve as a building block for future studies while it contributes meaningfully to existing literature. There are many government interventions in the area of ICT and education in Nigeria with insignificant impact on the people. A recent example is that of the Osun State government that distributed 150, 000 free electronic tablets (opon-imo) in 2013 to secondary school students in order to promote e-learning (ICT based education) (Channelstv, 2013; OSSG, 2015). However, the performance of Osun State secondary school students in West African Senior School Certificate Examination (WASSCE) nosedived from 14th position in 2009 to 24th position in 2013 and staggered to 23rd position in 2014 out of 36 states (Daily Post, 2014; Daily Independent, 2014). Therefore, the findings of this study will help policy makers make informed decisions on ICT and education in Nigeria. This study will provide information to policy makers on the factors influencing access to ICT and education in urban and rural Nigeria. These and many more underscores the importance of this study.

2. Literature Review

Obayelu and Ogunlade (2006) studied the use of Information and Communication Technology for Gender Empowerment and Sustainable Poverty Alleviation in Nigeria. They used both secondary and primary data collected from 150 respondents in Kwara State, Nigeria. Obayelu and Ogunlade (2006) reported significant differences in access to ICT based on gender. They also found that ICT development in Kwara State, Nigeria is constrained by infrastructure deficits. Again, Olatokun (2009) investigated socio-demographic differences in access and use of ICTs in Nigeria. He collected primary data from 500 respondents in one urban (Bodija) and one rural (Erunmu) area in Ibadan, Oyo State, Nigeria. Olatokun (2009) used Chi-square statistics to determine the significant factors influencing people's access to ICT. He found gender, location (rural/ urban), income, age and education as factors influencing access to ICT in Nigeria. Also, Gillwald et al. (2010) carried out gender assessment of ICT access and usage in Africa. The study was carried out in 17 African countries. They found gender differences in access to ICT in Africa. They also reported employment status, education and income as factors influencing access to ICT. Gillwald et al. (2010) found that radio was the most commonly used ICT in Africa. Smits and Huisman (2012) investigated the determinants of educational participation and gender differences in education in six Arab countries-Algeria, Egypt, Morocco, Syria, Tunisia and Yemen. They used four-level multilevel logistic regression analysis to analyze the secondary data used for the study. They found that age, gender (girl), father's occupation, mother's employment status and living in rural areas were the determinants of access to education. Onwuameze (2013) carried out a study on the effects of social background, gender and regional factors on educational opportunity and inequality in Nigeria. She used secondary data from the 2010 Nigeria Education Data Survey (NEDS) for her study. Onwuameze (2013) found 53.6 percent and 42.1 percent of the respondents lack literacy and numeracy skills. She also reported household wealth, geographical region, religion and gender were correlates of literacy and numeracy in Nigeria. In their study on the socioeconomic factors influencing pupils' access to education in Informal settlements in Kibera, Nairobi County, Kenya, using primary data collected from 114 respondents, Andrew and Orodho (2014) found parents' education level, income and cost of education as factors influencing access to education in the study area.

3. Methodology

Scope of the Study: The study used secondary data from General Household Survey (GHS) collected by the National Bureau of Statistics in 2012/2013. The survey was carried out in the 36 states of Nigeria and the Federal Capital Territory (FCT). Data were collected at both urban and rural enumeration areas. The data provides information on education, ICT (including mobile phone, internet, television, radio and personal computer) and households' socioeconomic characteristics etc.

Analytical Techniques: In addressing the objectives of this study, descriptive statistics and the probit regression model were employed as analytical tools. While objectives 1 and 3 were analyzed using descriptive statistics such as frequency distribution tables, charts etc, objectives 2 and 4 were analyzed using probit regression model.

Model Specification: Probit model is a probabilistic model used to explain the behavior of a dichotomous variable (a variable that assumes the value of 0 or 1) with respect to a set of independent variables (Gujarati et al., 2012). Therefore, probit model was used to analyze the factors influencing access to education and access to ICT in Nigeria. The explicit form of the model is expressed as:

$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \ldots\ldots \beta_n X_{n+} \mu_i$

Where: Y_i = Access to ICT (Personal Computer, Internet, Mobile Phone, Radio and Television) 1 for Yes, 0 for no access and access to education, 1 for Yes, 0 for no access

X_1-X_n are the independent variables

4. Results and Discussion

Socioeconomic Characteristics of Households in Nigeria: The result presented in tables 1 shows majority of the households are headed by males who are monogamously married. The average household size in Nigeria is large at 6. The large household size could undermine households' access to ICT and education.

Again, the average number of years of education is 4. This shows that the households had considerably low level of education. The average age of the household heads in the pooled data is 52 years. This implies the household heads are still in the economically active periods of their lives. This corroborates the findings of Olatokun (2009); Gillwald et al. (2010) and Oluwatayo, (2014). Disaggregating by location, it was found that average household size in urban areas was lower at 6 compared to 7 in the rural areas. Meanwhile, the large household size constrains the access of rural households to ICT and education. Majority of the respondents in both urban and rural Nigeria were married with 4 years of education. This implies that the level of education is low and there is the need to improve on the existing level. The average age of household heads in urban Nigeria was 51years while the average in rural Nigeria was 52 years. This showed that the household heads were within the economically active periods of their lives.

Table 1: Socioeconomic Characteristics of the Respondents

Variable	Pooled	Rural	Urban
Household Size (mean)	6	7	6
	(3.21)	(3.23)	(3.06)
Age (mean)	52	52	51
	(14.83)	(15.06)	(3.71)
Years of Education (mean)	4	4.08	4.20
	(2.91)	(2.46)	(3.71)
Gender	Male 85.1%	Male 86.6%	Male 81.9%
	Female 14.9%	Female 13.3%	Female 18.1%
Marital Status	Married 81.5%	Married 83.3%	Married 77.4%
	Non-Married 14.9%	Non-Married 16.7%	Non-Married 14.9%

Determinants of Access to Education in Nigeria: The factors influencing household access to education are shown in Tables 2a. The log likelihood (-2639.21) of the fitted probit model shows the model is better than a model with no independent variables. This implies all the models are fit for the analysis.

Gender: There exists a negative and statistically significant relationship between gender and access to education in Nigeria (see Table 2). This implies that there is a difference in households' access to education based on gender. A further analysis, revealed a negative and statistically significant relationship between access to education and gender in rural and urban Nigeria. This is because of the differences in access to education based on gender considerations in Nigeria. This finding is consistent with the findings of Onwuameze (2013).

Age: The results presented in Table 2showed a negative and statistically significant relationship between age and access to education in pooled, rural and urban data. This implies that as an individual grows old the likelihood of having access to education decreases. In fact, a 1year increase in age of the household head will result in a decrease in the likelihood of the household to access education by 8 percent. Also, a 1 year increase in age will result in 7.3 percent and 8 percent decrease in the likelihood of households having access to education in rural and urban Nigeria respectively. This could be as a result of the time allocated to the various economic activities that the household heads are engaged in so as to cater for their households. This is consistent with the findings of Suryadarma and Suyahadi (2010) and Marcelo and Maria (2012).

Household Size: The result presented in Table 2 showed a negative and statistically significant relationship exists between household size and access to education. This implies a unit increase in household size will result in 0.5 percent decrease in the likelihood of the household having access to education. This is because as household size increases, the per capita expenditure increases and this could undermine household access to education. This corroborates the findings of Sackey (2007) and Donkoh and Amikuzumo (2011).

Marital Status: There exists a negative and statistically significant relationship between marital status and access to education (see Table 2) in urban areas of Nigeria. This could be because majority of the household heads are married and household size of married household heads is larger than that of the single household heads. This will have a negative impact on the per capita expenditure on the basket of goods and services consumed and available funds for education.

Table 2: Factors Influencing Access to Education among Households in Nigeria

Variable	Pooled	dy/dx	Rural	dy/dx	Urban	dy/dx
Gender	-0.410***	-0.146	-0.496	-0.189	-0.478***	-0.107
	(0.000)		(0.000)		(0.000)	
Age	-0.022***	-0.008	-0.192***	-0.107	-0.035***	-0.008
	(0.000)		(0.000)		(0.000)	
Marital Status	-0.0140	-0.005	0.020	-0.008	-0.061**	-0.015
	(0.359)		(0.346)		(0.013)	
Household Size	-0.0139**	-0.005	-0.006	-0.002	0.006	0.001
	(0.033)		(0.400)		(0.699)	
Diagnostics						
Log Likelihood	-2639.21		-1962.71		-537.80	
No of Observations	4508		3099		1409	
LR Chi2(4)	394.99		215.32		250.92	
Prob>Chi2	0.0000***		0.0000***		0.000***	
Pseudo R^2	0.0696		0.0520		0.1892	

Where, *** coefficients significant at 1 percent
** Coefficients significant at 5 percent
* Coefficients significant at 10 percent

Determinants of Access to Information and Communication Technologies (ICTs) in Nigeria: The determinants of household access to ICT are shown in Tables 3a, 3b and 3c. The log likelihood of the fitted probit models shows the models are better than models with no independent variables.

Years of Education: The results presented in Tables 3a reveals that there is a positive and statistically significant relationship between years of education and access to radio, television, personal computer and internet among households in Nigeria. This implies that a 1 year increase in the years of education will increase the likelihood of households to access television, radio, personal computer and internet by 4 percent, 4 percent, 1.2 percent and 1.0 percent respectively. This is not farfetched from the fact that educated people are able to operate computers and access internet and they use ICT (radio, television, computers and internet) more than their uneducated counterparts. This is consistent with the findings of Olatokun (2009) and Oluwatayo (2014).

Gender: A negative and statistically significant relationship exists between gender and access to radio; personal computer and internet in Nigeria (see Tables 3a). This implies gender differences in the access to personal computer, internet, radio and television among households in Nigeria. This corroborates the findings of Olatokun (2009) and Gillwald et al. (2010).

Age: There is a negative and statistically significant relationship between age and access to radio; television, personal computer and internet in Nigeria (see Table 3a). A unit increase in age will reduce the likelihood of households having access to radio, television, personal computer and internet. This is because young people are most active on ICT platforms and it reduces with age. This is in line with the findings of Olatokun (2009).

Household Size: There is a positive and statistically significant relationship between household size and access to radio and mobile phones in Nigeria (see Tables 3a). This could be because as household size increases, the number of working member of the household may increase thereby enhancing household per capita income and consequently access to mobile phones. Again, mobile phones and radio are cheaper to access compared to other ICT devices. However, a negative relationship exists between household size and access to internet among households in the pooled data. This could be because access to internet is low among households in Nigeria (see Table 4a). There is also a negative and statistically significant relationship between household size and access to personal computers in Nigeria. Similarly, there exists a negative relationship between access to Television and household size in Nigeria. This is substantiated by the findings of Oluwatayo (2014).

Table 3a: Factors Influencing Access to ICT among Households in Nigeria (pooled data)

Variable	Radio	dy/dx	Television	dy/dx	Mobile Phone	dy/dx	Personal Computer	dy/dx	Internet	dy/dx
Yrs of Edu	**0.019 (0.040)****	0.004	**0.024 (0.000)*****	0.004	0.011 (0.212)	0.002	**0.096 (0.000)*****	0.012	**0.110 (0.000)*****	0.010
Gender	**-0.507 (0.000)*****	-0.096	0.071 (0.353)	-0.096	0.009 (0.924)	0.002	**-0.356 (0.004)*****	-0.046	**-0.417 (0.002)*****	-0.036
Age	**-0.006 (0.001)*****	-0.001	**-0.057 (0.000)*****	-0.001	**-0.015 (0.000)*****	-0.003	**-0.012 (0.000)*****	-0.002	**-0.020 (0.000)*****	-0.002
Marital Status	-0.009 (0.613)	-0.002	-0.009 (0.525)	-0.0017	0.007 (0.684)	0.002	0.007 (0.719)	0.001	0.030 (0.169)	0.003
Household Size	**0.0185 (0.028)****	0.004	**-0.016 (0.012)****	0.0035	**0.029 (0.000)*****	0.002	**-0.018 (0.069)***	-0.002	**-0.038 (0.001)*****	-0.003
Diagnostics										
Log Likelihood	-1578.40		-3082.35		-1737.98		-1138.62		-853.09	
No of Observations	4508		4508		4508		4508		4508	
LR Chi2	131.58		37.28		108.79		193.72		248.39	
Prob>Chi2	**0.0000*****		**0.0000*****		**0.0000*****		**0.0000*****		**0.0000*****	
Pseudo R^2	0.0400		0.0060		0.0303		0.0784		0.1271	

Where, *** coefficient significant at 1 percent
** coefficients significant at 5 percent
*coefficients significant at 10 percent

Years of Education: The results presented in Table 3b show a positive and statistically significant relationship between years of education and access to television, personal computer and internet. A one year increase in the years of education will result in 0.9 percent, 0.6 percent and 0.3 percent increase in the likelihood of the household having access to television, personal computer and internet respectively. This is because educated people can operate and use ICT more than the uneducated ones. This finding corroborates the findings of Oluwatayo (2014).

Gender: There exists a negative and statistically significant relationship between gender and access to radio, personal computer and internet (see Table 3b). This is indicative of the gender differences in access to ICT in Nigeria. The society favors more men to have access to resources including ICT. This finding is consistent with the report of Olatokun (2009).

Age: There is a negative and statistically significant relationship between age of household head and access to radio; mobile phone, personal computer and internet in rural Nigeria (see Table 3b). This implies that a unit increase in the age of the household head will lead to a decrease in the likelihood of the households having access to radio, mobile phone, personal computer and internet by 0.1percent, 1.3percent, 0.9percent and 1.6 percent respectively in rural Nigeria. This is because youths are more active on ICT platforms than older people.

Household Size: The results presented in Table 3b show a positive and statistically significant relationship between household size and access to radio and mobile phone. In fact, a unit increase in household size will result in 0.8 percent and 0.01 percent increase in the likelihood of households having access to radio and mobile phones respectively. This is because majority of households have access to radio and mobile phones since they are the cheapest and the most common of the available ICT devices. However, a negative and statistically significant relationship exists between household size and access to personal computer and internet in rural Nigeria (see Table 3b). This is because access to personal computers is low among households in rural Nigeria. The low access could be due to high cost, low availability and high poverty level in rural Nigeria. This is consistent with the findings of Oluwatayo (2014).

Table 3b: Factors Influencing Access to ICT among Rural Households in Nigeria

Variable	Radio	dy/dx	Television	dy/dx	Mobile Phone	dy/dx	Personal Computer	dy/dx	Internet	dy/dx
Yrs of Edu	0.0202 (0.108)	0.004	**0.022** (0.015)**	0.009	0.008 (0.495)	0.002	**0.069** (0.000)***	0.006	**0.074** (0.000)***	0.003
Gender	**-0.532** (0.000)***	-0.113	0.144 (0.165)	0.056	-0.002 (0.986)	-0.003	**-0.491** (0.014)**	-0.045	**-0.705** (0.008)***	-0.030
Age	**-0.004** (0.045)**	-0.001	-0.002 (0.174)	-0.001	**-0.013** (0.000)***	-0.006	**-0.009** (0.001)***	-0.001	**-0.016** (0.000)***	-0.001
Marital Status	-0.005 (0.826)	-0.001	0.152 (0.434)	0.006	0.022 (0.346)	0.006	0.007 (0.719)	0.001	0.039 (0.270)	0.002
Household Size	**0.036** (0.000)***	0.008	0.002 (0.984)	0.0001	**0.043** (0.000)***	0.011	**-0.026** (0.052)*	-0.002	**-0.049** (0.008)***	-0.002
Diagnostics										
Log Likelihood	-1195.71		-2101.14		-1414.68		-574.87		-337.41	
No of Observations	3099		3099		3099		3099		3099	
LR Chi2	108.14		15.72		89.84		51.34		60.91	
Prob>Chi2	**0.0000****		**0.0077****		**0.0000****		**0.0000****		**0.0000****	
Pseudo R^2	0.0433		0.0037		0.0308		0.0427		0.0828	

Where, *** coefficients significant at 1 percent
** coefficients significant at 5 percent
* coefficients significant at 10 percent

Table 3c: Factors Influencing Access to ICT among Urban Households in Nigeria

Variable	Radio	dy/dx	Television	dy/dx	Mobile Phone	dy/dx	Personal Computer	dy/dx	Internet	dy/dx
Yrs of Edu	0.208 (0.202)	0.003	**0.027** (0.037)**	0.006	0.022 (0.321)	0.001	**0.103** (0.000)***	0.002	**0.114** (0.000)***	0.019
Gender	**-0.550** (0.000)***	-0.070	**-0.265** (0.036)***	-0.061	-0.195 (0.305)	-0.013	**-0.305** (0.059)*	-0.061	**-0.326** (0.056)*	-0.054
Age	**-0.010** (0.007)***	-0.001	**-0.018** (0.000)***	-0.004	**-0.021** (0.000)***	-0.001	**-0.017** (0.000)***	-0.003	**-0.025** (0.000)***	-0.004
Marital Status	-0.017 (0.590)	-0.002	**0.594** (0.017)**	-0.014	-0.033 (0.391)	-0.002	0.008 (0.768)	0.002	0.022 (0.433)	0.004
Household Size	-0.009 (0.587)	-0.001	0.022 (0.136)	0.005	**0.046** (0.075)*	0.003	0.019 (0.201)	0.021	**-0.001** (0.948)***	-.0002
Diagnostics										
Log Likelihood	-351`.27		-574.02		-210.49		-511.66		-445.33	
No of Observations	1409		1409		1409		1409		1409	
LR Chi2	44.74		99.41		50.00		134.94		166.68	
Prob>Chi2	**0.0000****		**0.0000****		**0.0000****		**0.0000****		**0.0000****	
Pseudo R^2	0.0599		0.0797		0.1062		0.1165		0.1576	

Where, *** coefficients significant at 1 percent
** coefficients significant at 5 percent
* coefficients significant at 10 percent

Years of Education: There is a positive relationship between years of education and access to Television, personal computer and internet in urban Nigeria (see Table 3c). In fact, a 1 year increase in the years of education of the household heads will result in 0.6 percent, 0.2 percent and 1.9 percent increase in the likelihood of the household having access to television, personal computer and internet respectively in urban Nigeria. This is because the use of personal computer, internet and some televisions require basic literacy skills. This is consistent with the findings of Olatokun (2009).

Gender: The results presented in Table 3c depict a negative and statistically significant relationship between gender and access to radio, television, personal computer and internet. This implies that there are gender differences in access to ICT in urban Nigeria.

Marital Status: The results presented in Table 3c show that a positive and statistically significant relationship exists between marital status and access to television in urban areas of Nigeria. This is because most of the respondents are married and more people have access to television in urban Nigeria (see Table 4b).

Household Size: There is a positive and statistically significant relationship between household size and access to mobile phones in urban Nigeria (see Table 3c). This is because mobile phones are affordable and accessible compared to other ICT sources. However, a negative relationship exists between access to internet and household size in urban Nigeria.

The results presented in table 4 showed that the prominent ICT tools used in Nigeria were radio, mobile phones and television. However, majority of the households in Nigeria do not have access to internet and personal computer. Again, 67.7 percent of the household heads had access to education. This implies there is the need to increase access to education in Nigeria. Disaggregating the results by location we found access to education was higher in urban Nigeria (82.04 percent) than in rural Nigeria (61.15 percent). In terms of ICT, majority of the households in rural and urban Nigeria have access to radio and mobile phones. However, only 12.42 percent of the households in urban Nigeria had access to internet compared to 2.55 percent in rural Nigeria. In the same vein, access to personal computers was higher at 14.34 percent in urban Nigeria compared to 4.84 percent in rural Nigeria. This implies access to personal computer and internet is still very low in both urban and rural Nigeria. Again, a significant number of the households in urban Nigeria had access to television compared to their counterparts in rural Nigeria. In fact, 96.03 percent of the households in urban Nigeria had access to television while 57.92 percent of the households in rural Nigeria do not have access to television. This could be as a result of inadequate provision of social amenities like electricity and government neglect that characterize the rural areas of Nigeria. Inadequate access to schools and ICTs especially in rural Nigeria requires urgent attention because of the serious consequences on development.

Table 4: Distribution of Respondents by Access to Education and ICT

Variable	Pooled (%)	Rural (%)	Urban (%)
Access to Radio			
Yes	88.10	86.09	92.55
No	11.90	13.91	7.45
Access to Television			
Yes	55.10	42.08	96.03
No	44.90	57.92	3.97
Access to Internet			
Yes	5.60	2.55	12.42
No	94.40	97.45	97.58
Access to Mobile Phones			
Yes	86.40	82.03	96.03
No	13.60	13.97	3.97
Access to Personal Computer			
Yes	7.80	4.84	14.34
No	92.20	95.16	85.66
Access to Education (Have you ever attended school)			
Yes	67.70	61.15	82.04
No	32.20	38.85	17.96

Results presented in table 5 revealed radio, television and mobile phones are the most accessed ICT tools in rural and urban Nigeria.

Table 5: Ranking of ICT accessed by Households in Urban and Rural Nigeria

ICT Type	Urban Percentage	Rank	Rural Percentage	Rank
Radio	92.55	2nd	86.09	1st
Television	83.82	3rd	42.08	3rd
Mobile Phone	96.03	1st	82.03	2nd
Personal Computer	14.34	4th	4.84	4th
Internet	12.42	5th	2.55	5th

5. Conclusion and Recommendations

The study examined the determinants of access to education and ICT among households in Nigeria. The average age of household heads was 52years with majority being monogamously married with average years of education being 4years. The study found radio, mobile phones and televisions to be the most commonly used ICT in Nigeria. The results of the probit model revealed age, gender, years of education, household size and marital status as the factors influencing access to ICT. The factors influencing access to education include age, gender, household size and marital status. There are differences in the effects of the factors influencing access to ICT and education based on location (rural and urban).In fact, while 82percent had access to education in urban Nigeriaa, only 61percent had access in rural Nigeria. Similarly, 96percent of the households in urban Nigeria had access to television compared to 42percent in rural Nigeria. These results allude to the fact that there are political considerations in the distribution of infrastructure facilities as they are highly skewed towards the urban areas in Nigeria. Meanwhile ICT and education are interrelated and interdependent hence the development of these sectors are critical to building the human capital stock of Nigeria. This is because the development of a country is inherent in the human capital stock of the nation.

Based on the findings of this study, the following are recommended:

- The government should increase and monitor investments in the educational sector especially in the rural areas to enhance ICT skills. The ICT skills will expose households to more economic opportunities and information. This will reduce the huge gap that exists between access to ICT and education among households based on location.
- Government and organized private sector should encourage gender equality in access to ICT through gender sensitive interventions. This will help remove gender inequality in access to ICT while Nigeria makes considerable progress in the achievement of SDGs.
- Government and multilateral organizations should intensify campaigns on family planning in Nigeria because the large household size obtainable in Nigeria undermines household access to education and ICT. This way, households will have children they can adequately train. Therefore, having moderate household size will help improve access to ICT and education among Nigerian households particularly in the rural areas
- Girl child education should be promoted by the society and government. Educating the girl child will improve the literacy level of Nigeria significantly because of the ripple effect. Also, the positive externality of training a girl child cannot be overemphasized especially in the area of household nutrition, health and education.

References

Achimugu, P., Oluwagbemi, O., Oluwaranti, A. & Afolabi, B. (2009). Adoption of Information and Communication Technologies in Developing Countries: An Impact Analysis. *Journal of Information Technology Impact*, 9(1), 37-46.

Ademola, E. O., Ogundipe, A. T. & Babatunde, W. T. (2014). Students' Enrolment into Tertiary Institutions in Nigeria: The influence of the Founders Reputation-A Case Study. *Computing, Information Systems, Development, Informatics and Allied Research Journal*, 5(3), 1-28.

Adomi, E. E. & Kpangban, E. (2010). Application of ICTs in Nigerian Secondary Schools. Library Philosophy and Practice (e-journal), pp1-8. http://digitalcommons.unl.edu/libphilprac/345.

Aja-Okorie, U. (2013). Women Education in Nigeria: Problems and Implications for Family Role and Stability. *European Scientific Journal*, 9(28), 1-11.

Andrew, S. L. & Orodho, J. A. (2014). Socioeconomic Factors Influencing Pupils' Access to Education in Informal Settlements: A case of Kibera, Nairobi County, Kenya. *International Journal of Education and Research*, 2(3), 1-16.

Aralu, U. & Adetimirin, A. (2014). Influence of Information Support System on ICT use by Distance Learners in University of Lagos, Nigeria. *Journal of Information Engineering and Applications*, 4(9), 1-7.

Channels Tv. (2013). Secondary School Students Get Free Computer Tablets in Osun retrieved from www.channelstv.com/2013/03/19/secondary-school-students-get-free-computer-tablets-in-osun/ on the 10th of October, 2015.

Daily Independent. (2014). WAEC: Osun's Rating, a dent on Aregbesola's education policy retrieved from http://dailyindependentnig.com/2014/04/waec-osuns-rating-dent-aregbesolas-education-policy-omisore/ on the 10th of October, 2015.

Daily Post. (2014). 2014 WASSCE: Statistics show states with highest percentage pass, possible cause of mass failure retrieved from http://dailypost.ng/2014/08/29/2014-wassce-statistics-show-stateshighestpercentage-pass-possible-cause-mass-failure/ on the 10th October, 2015.

Donkoh, S. A. & Amikuzumo, J. A. (2011). The Determinants of Household Education Expenditure in Ghana. *Educational Research and Reviews*, 6(8), 570-579.

Gillwald, A., Milek, A. & Stork, C. (2010). Gender Assessment of ICT Access and Usage in Africa, Vol.1, Policy Paper No. 5, available at http://www.researchictafrica.net/publications/Towards_Evidence-based_ICT_Policy_and_Regulation_-_Volume_1/RIA%20Policy%20Paper%20Vol%201%20Paper%205%20-%20Gender%20Assessment%20of%20ICT%20Access%20and%20Usage%20in%20Africa%202010.pdf (accessed 9 September 2013)

Gujarati, D. N., Porter, D. C. & Gunasekar, S. (2012). *Basic Econometrics. Mc Grawhill Companies*, 5th Edition, pp594-599.

Humphreys, S. & Crawford, L. (2014). Review of Literature on Basic Education in Nigeria: Issues of Access, Quality, Equity and Impact, pp1-20.

Idowu P., Cornford, D. & Bastin, L. (2008). Health Informatics Deployment in Nigeria. *Journal of Health Informatics in Developing Countries*, 2(1), 15-24.

Ishaq, A. & Ali, M. (2014). Non-Formal Education and the Girl-Child in Northern Nigeria: Issues and Strategies. *Journal of Education and Practice*, 5(37), 1-7.

Marcelo T. L. & Maria, A. L. M. (2012). Determinants of Education Attainment and of the Millennium Development Goals in Honduras, pp1-25.

Mokaya, S. O. (2012). The Adoption of Information and Communication Technology by Small Enterprises in Thika Municipality, Kenya. *International Journal of Business and Social Science,* 3(13), 172-177.

Obayelu, A. E. & Ogunlade, I. (2006). Analysis of the Uses of Information and Communication Technology for Gender Empowerment and Sustainable Empowerment and Sustainable Poverty Alleviation in Nigeria. *International Journal of Education and Development Using Information and Communication Technology*, 2(3), 45-69.

Odufuwa, F. (2012). What is happening in ICT in Nigeria? A Supply- and Demand-Side Analysis of the ICT sector. Research ICT Africa Policy Paper 6, pp1-54.

Olatokun, W. M. (2009). Analyzing Socio-Demographic Differences in Access and Use of ICTs in Nigeria using the Capability Approach. *Journal of Issues in Informing Science and Information Technology*, 6(1), 1-18.

Oluwatayo, I. B. (2014). Information and Communication Technologies as Drivers of Growth: Experience from Selected Small-scale Businesses in Rural Southwest Nigeria. *Spanish Journal of Rural Development*, 5(2), 65-77. DOI: 10.5261/2014.GEN2.06.

Onwuameze, N. C. (2013). Educational Opportunity and Inequality in Nigeria: Assessing Social Background, Gender and Regional Effects. A PhD thesis of the University of Iowa, pp1-190.

(OSSG) Osun State Government. (2015). 150, 000 e-learning tablets (opon-imo, tablet of knowledge) for Senior Secondary Schools retrieved from hhttp://osun.gov.ng/achievements/150, 000 e-learning-tablets-opon-imo-tablet-of-knowledge-provided-for-senior-secondary-schools/ on 10th October, 2015.

Sackey, H. A. (2007). The Determinants of School Attendance and Attainment in Ghana: A Gender Perspective. *African Economic Research Consortium Paper*, 173, 1-40.

Smits, J. & Huisman, J. (2012). Determinants of Educational Participation and Gender Differences in Education in Six Arab Countries. *Nijmegen Center for Economics (NiCE) Working Paper*, 12-102, 1-26.

Suryadarma, D. & Suryahadi, A. (2010). Determinants of Education Attainment in Developing Countries: Can Higher Skills Compensate for Poverty? Pp1-19.

(UNDP) United Nations Development Program. (2014). Human Development Report: Sustaining Human Progress: Reducing Vulnerabilities and Building Resilience, UNDP, New York.

(UNESCO) United Nations Educational, Scientific and Cultural Organization. (2014). Sustainable Development Begins with Education: How education can contribute to post-2015 goals, pp1-24.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Government Expenditure and Economic Growth in South Africa: A Vector Error Correction Modelling and Granger Causality Test

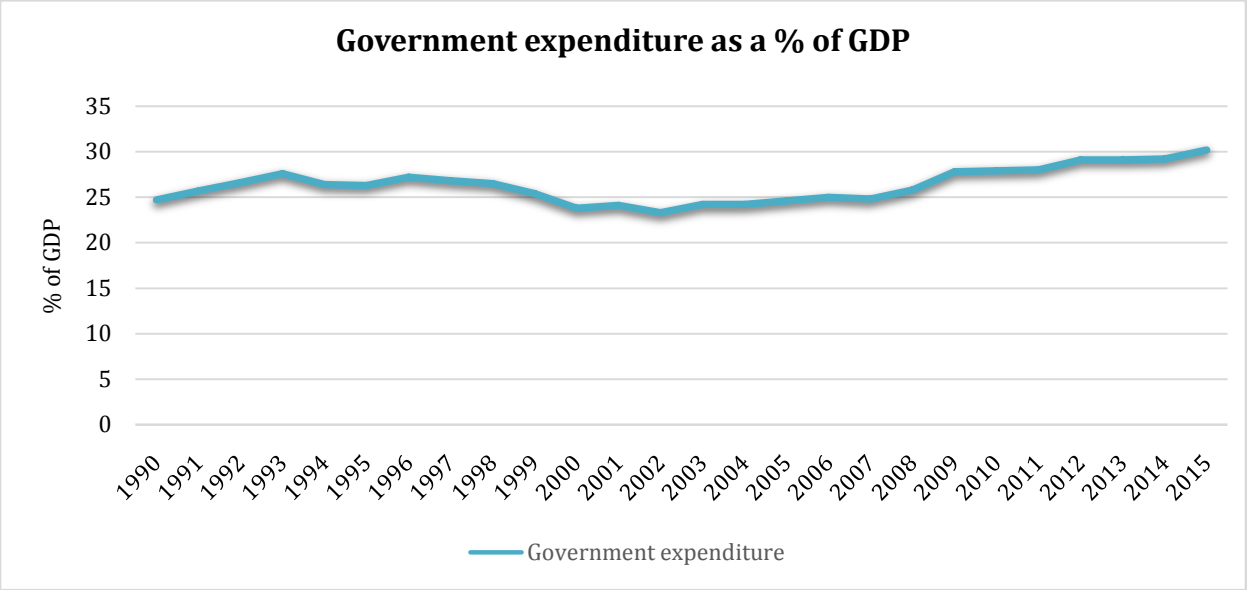
Kagiso Molefe, Ireen Choga
School of Economic Sciences, North West University, South Africa
Edwardmolefe22@gmail.com, Ireen.Choga@nwu.ac.za

Abstract: Previous studies generally find mixed empirical evidence on the relationship between government spending and economic growth. This study re-examine the relationship between government expenditure and economic growth in South Africa for the period of 1990 to 2015 using the Vector Error Correction Model and Granger Causality techniques. The time series data included in the model were gross domestic Product (GDP), government expenditure, national savings, government debt and consumer price index or inflation. Results obtained from the analysis showed a negative long-run relationship between government expenditure and economic growth in South Africa. Furthermore, the estimate of the speed of adjustment coefficient found in this study has revealed that 49 per cent of the variation in GDP from its equilibrium level is corrected within of a year. Furthermore, the study discovered that the causality relationship run from economic growth to government expenditure. This implied that the Wagner's law is applicable to South Africa since government expenditure is an effect rather than a cause of economic growth. The results presented in this study are similar to those in the literature and are also sustained by preceding studies.
Keywords: Government Expenditure, Economic Growth, National Savings, VECM, South Africa

1. Introduction

Expenditure by government is still regarded as one of the major elements of economic growth in both advanced and emerging countries. Its significance towards economic growth continues to be a leading discussion between economists and policy makers not only in South Africa but all over the globe. Most countries still rely on spending by the government as their source of social security and expanded physical infrastructure. According to Wagner (1877), government expenditure will remain a source of economic growth and a tool to improve the welfare of most societies in emerging economies. He further emphasized that sustained government expenditure will result in jobs creation, improved physical infrastructure, increased educational investment as well as sustained economic growth. However, empirically the nature of the relationship between government expenditure and economic growth remains an extensive debate between researchers. According to Olulu, Erhieyovwe and Andrew (2014) cumulative government expenditure is detrimental to economic growth mainly due to that expenditure by government is associated with tax burden particularly on personal income. As a result, a large part of labor force is discouraged from working extended hours or even job hunting. According to the authors, this will have a direct effect on household consumption and savings which are regarded as the most essential components of growth. Opposing that, Brender and Drazen (2008) affirmed that government expenditure can yield good economic results if it is utilized for productive purposes such as investing in physical infrastructure as well as building human capital. According to Brender and Drazen, most economies fail predominantly due to that government expenditure is used for political significances. For instance, during the elections period, politician are confident to allocate a deficit budget in order to cater for voters through reducing tax base without reducing the spending. In South Africa, government expenditure was reduced from 27.6 per cent to 26.4 per cent of GDP following the inauguration of the democratic governance in 1994. This was a good indication that the government in power was taking the correct path in addressing the errors of the past regime. South African government continued being fiscal enthusiast and dedicated to cautious fiscal reforms up until 2009 where it recorded the highest of 27.8 per cent (see figure 1).The increase in government expenditure was conveyed by increase in social and economic programs to alleviate unemployment, poverty and to improve the quality of education and health care access to support underprivileged societies. Furthermore, the government was addressing economic challenges which were bought by the 2008/2009 global economic meltdown.

Figure 1: Government expenditure in South Africa



Source: author's own computation using data from World Bank

However, despite the increasing government expenditure in South Africa, the economy is still volatile with challenges such as high unemployment, poor infrastructure, above target inflation as well as partial access to education and health facilities. This challenges facing South Africa will definitely affect the magnitude of government's contribution towards the National Development Plan 2030. Therefore, the rationale of this study is to examine the effects of government expenditure on economic growth in South Africa. This undertaking is aimed at adding to the body of literature regarding the measurement and behaviour of government expenditure and economic growth. Moreover, the results obtained from the analysis will assist policymakers in finding an appropriate ways to stimulating economic growth in South Africa.The remaining part of this study are organized as follows: section 2 outlines both theoretical and empirical literature review, section 3 is the methodology employed, section 4 present the results followed by section 5 which is the conclusion and policy recommendation.

2. Literature Review

The theoretical literature regarding the relationship between government expenditure and economic growth is grounded on two well-known school of thoughts namely, the demand-side and the supply-side theory. According to the demand-side economic theory, there exist a positive relationship between government expenditure and economic growth. The theory supports vigorous government intervention in the economy to encourage the demand for goods and services and ensure economic growth and steadiness. However, the supply-side theory had a contradictory view regarding government intervention in the economy. According to the theory, government expenditure consists of bureaucratic waste and considered as a misrepresentation to economic growth. Wagner's law was one the most cited demand-side theory which is considered in this study. According to Wagner (1877), government expenditure is an endogenous variable that can used to drive the economy to the desired level. Therefore, government expenditure is an effect of economic growth rather than a cause. Wagner's argument was that as per capita income of a country increases, the significance of government expenditure grows relatively. This implies that the demand for goods and services supplied by government will increase due to technological requirements of industrialization and urbanisation that goes together with the income growth. According to the author, government expenditure will remain significant to promoting economic growth base on three principles. Firstly, development and transformation should result in public goods being replaced by private goods. Secondly, the growth in income elastic spending should be facilitated by the growth in real income. Lastly, government should take over the monopolies authorities and changes in technology.

To assist in enhancing the theoretical understanding of the relationship between government expenditure and economic growth, the study included other school of thoughts. One of the other theories which laid a concrete foundation regarding the relationship between government expenditure and economic growth was the Keynes. Keynes (1936) treated government expenditure as an exogenous variable that can be utilised to enhance economic growth. According to Keynes, the economy without government intervention will fail as it was evident during the 1939 US Great Depression. Therefore, government expenditure causes economic growth and the casual relationship should run from government expenditure to economic growth not the other way round. However, according to other theories such as the endogenous growth model, the influence of government expenditure on economic growth depends largely on the size of the intervention. According to Pieroni (2007), the endogenous growth model affirmed that different kind of government expenditures have heterogeneous effects on economic growth, for instance, research and development, education and physical infrastructure are often categorised as public goods that have effects on economic growth. Contrary to this view, Barro (1990, 1991) articulated that government expenditure is associated with higher tax burden both on households and firms and as a result it distorts economic incentives (incentive to save and invest, incentive for modernization and enterprises) and delay economic development. During the commencement of the neo-classical growth models through the works of Solow (1956) it was argued that government expenditure does not have any effect on the growth of national output. However, it has been argued that government intervention assist in improving failure that might arise from the inefficiencies of the market.

The debate regarding the relationship between government expenditure and economic growth has led to division between policymakers and scholars as to whether government expenditure promotes or hinders growth. As a result, extensive range of empirical studies by different researchers and various results were obtained. Some researchers found that government expenditure promotes economic growth by providing valued public goods such as education and infrastructure whilst others argued that government expenditure weakens economic growth by transferring surplus resources from productive sector of the economy to government which utilise them less efficiently. Landau (1983) conducted a study in 104 advanced and emerging countries using the cross-country methodology, the author discovered that government expenditure delays economic growth. The result obtained confirmed the statement made by Barro (1990, 1991) that government expenditure has a negative impact on economic growth. In support, Komain and Brahmasrene (2007) employed the Granger causality test to examine the relationship between government expenditure and economic growth in Thailand. The authors found that government expenditure and economic growth are not related. The results also suggested a unidirectional relationship as causality runs from government expenditure to growth. Mo (2007) discovered contradictory results subsequent to conducting a study in 138 countries. According to Mo (2007), government expenditure affects economic growth positively through three channel namely, total factor productivity, gross fixed capital formation (investment) and aggregate demand. The results by the author confirmed the existence of the Keynesian theory in all 138 countries. Kesavarajah (2012) discovered that government expenditure is short-termed related to economic growth instead of long-termed subsequent to conducting a study in Sri Lanka. Furthermore, the author discovered that the Wagner's hypothesis holds in Sri-Lankan economy. Verna and Arora (2010) and Mulamba (2009) also discover that the Wagner's law is applicable in most countries than the Keynesian theory. However the Keynesian theories significant only to countries at the earliest stage of development.

3. Data and Methodology

This paper employs annual time series data spanning the period 1990 to 2015 derived from secondary sources. Five variables (gross domestic product, government expenditure, national savings, government debt and consumer price index) are employed. Furthermore, the paper adopt the Vector Error Correction Model (VECM) which requires that data should be tested for order of integration, variables should be tested for cointegration and the estimation of the long-run relationship as well as the speed of adjustment in which the dependent variable is corrected within a period of a year. To ensure the goodness of the model estimated, the paper will conduct the diagnostic tests (langrage multiplier test, Jarque-Bera and white test for heteroskedasticity). To assess how the dependent variable responds to shocks coming from selected independent variables, the paper will employ the variance decomposition and the general impulse response analysis.

Empirical model specification: The model adopted in this paper to test for the relationship between government expenditure and economic growth was used by Chipaumire, Ngirande, Method and Ruswa (2014). The model can be expressed in linear form as follows:

$$GDP_t = \beta_0 + \beta_1 GOVE_t + \beta_2 NSAV_t + \beta_3 GDEBT_t + \beta_3 CPI_t + \mu_t \quad \text{……………………………………………} (1)$$

GDP = Gross domestic product in annual percentages,
GOVE = Government expenditure as percentage of GDP,
NSAV = National savings as percentage of GDP,
GDEBT = Government debt as percentage of GDP,
CPI = Consumer price index in annual percentages, and
μ_t = Error term.

Data analysis: As already indicated, the VECM methodology requires the paper to test the data employed for stationarity or order of integration. The data is tested for stationarity or order of integration to avoid producing spurious results. The paper employed the Augmented Dickey-Fuller (ADF) and Phillip Perron (PP) techniques and the results are presented in Table 1 and 2.

Table 1: Augmented Dickey-Fuller test results

Variable(s)	Model	ADF tests	Lag	5% critical Value	Order of integration
RGDP	Trend & intercept	-5.402***	0	-3.612	I(1)
GOVE	Trend & intercept	-5.026***	0	-3.612	I(1)
NSAV	Trend & intercept	-4.302***	0	-3.645	I(1)
GDEBT	Trend & intercept	-5.026***	0	-3.612	I(1)
INF	Trend & intercept	-5.307***	3	-3.645	I(1)

**/ [**]/ (***) denotes significance at 10%, / [5%]/ (1%), level of significance respectively*

Table 3: Phillip-Perron test results

Variable(s)	Model	PP tests	Bandwidth	5% critical value	Order of integration
RGDP	Trend & intercept	-9.232***	14	-3.612	I(1)
GOVE	Trend & intercept	-7.035***	14	-3.612	I(1)
NSAV	Trend & intercept	-4.536***	0	-3.612	I(1)
GDEBT	Trend & intercept	-5.026***	0	-3.612	I(1)
INF	Trend & intercept	-6.006***	11	-3.612	I(1)

**/ [**]/ (***) denotes significance at 10%, / [5%]/ (1%), level of significance respectively*

It is evident from Tables 1 and 2 that the variables are all stationary at 1%, 5% and 10% level of significance. Therefore the paper rejects the null hypothesis of unit root in each case of the series and concludes that variables are integrated of the same order I (1) at first difference.

4. Results

Table 3: selection of lag order criteria

Lag	LogL	LR	FPE	AIC	SIC	HIQ
0	-194.5181	NA	11.44287	16.62651	16.87194	16.69162
1	-150.5544	65.945*	2.486669	15.04620	16.51877*	15.43687
2	-118.5248	34.6984	1.895867*	14.46040*	17.16011	15.17663*

** indicates lag order selection of criterion, LR: Sequential modified LR test Statistics (each test at 5% level). FPE: Final Prediction Error. AIC: Akaike Information Criterion. SC: Schwarz Information Criterion. HQ: Hannan Quinn Information Criterion*

Since the ADF and PP techniques confirmed that variables are integrated of same order I (1), the paper can then proceed to conduct a lag length selection test to establish the number of lag to employ in the analysis. According to Table 3, all criterions except for the Likelihood ratio (LR) and Schwarz Information Criterion (SIC) select a lag of 2. Based on the optimum lag length of 2, the Johansen technique is then performed using the Trace and Maximum Eigen-value. The results presented in Table 4 (Trace) suggest 1 cointegrating equation whilst Table 5(Maximum Eigen-value) suggest 0 cointegrating equation. As a result, the paper accepted the Trace results based on affirmation made by Lutkepohl, Saikkonen and Trenkler (2001) that the Trace statistic is more advantageous and accurate than the maximum eigenvalue statistics.

Table 4: Cointegration rank test (Trace test)

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value	Prob.**
None *	72.27439	69.81889	0.0314
At most 1	42.30250	47.85613	0.1504
At most 2	24.43692	29.79707	0.1826
At most 3	9.782787	15.49471	0.2978
At most 4	1.330190	3.841466	0.2488
Trace test indicates 1 cointegrating equation(s) at the 0.05 level			
**denotes rejection of the hypothesis at the 0.05 level*			

Table 5: Cointegration rank test (Maximum-Eigen test)

Hypothesized No. of CE(s)	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	29.97189	33.87687	0.1364
At most 1	17.86557	27.58434	0.5063
At most 2	14.65414	21.13162	0.3139
At most 3	8.452597	14.26460	0.3346
At most 4	1.330190	3.841466	0.2488
Max-eigenvalue test indicates 0 cointegrating equation(s) at the 0.05 level			
**denotes rejection of the hypothesis at the 0.05 level*			

The long-run estimation of the selected variables on economic growth in South Africa is tested using the VECM. Using the equation 1, the results are presented in Table 6 as follow:

Table 6: Long-run results: GDP

Variable(s)	Coefficient	Standard Errors	t-statistics
GOVE (-1)	-4.036	0.439	-9.203
NSAV(-1)	-0.508	0.183	-2.774
GDEBT (-1)	1.342	0.123	10.954
INF (-1)	-0.213	0.051	-4.171

The long-run estimation results obtained in this study suggest that the long-run relationship between the variables understudy exist though it's negative. These results are consistent with studies conducted by Landau (1983) and Komain & Brahmasrene (2007) also confirm the statement made by made by Barro (1990, 1991). Therefore, the study concludes that government expenditure is detrimental to economic growth. This might be due to the enormous size of government intervention among other reason as affirmed by Gallaway and Vedder (1998). Buiter (1975) also argued that large government intervention results in "crowding out" effect which was referred to Keynes as "diversion", where public spending crowd out private spending and investment. However, it is important to note that some of the relationships suggested by the long-run equation are not harmonious with theory, because the equation has wrong signs for some of the variables. Furthermore, the VECM results confirm the existence of error correction as shown in Table 7 below. The coefficient of the error term is -0.49 and statistically significant with t-value of -2.82. This suggests that about 49% of the variation in GDP from its equilibrium level is corrected with a period of a year.

Table 7: Error correction results: RGDP

Variable(s)	Coefficient	Standard Errors	t-statistics
CointEq1	-0.486	0.172	-2.819
D(GDP(-1))	-0.157	0.248	-0.634
D(GDP(-2))	-0.121	0.193	-0.628
D(GOVE(-1))	-2.189	0.802	-2.730
D(GOVE(-2))	-0.852	0.749	-1.145
D(NSAV(-1))	-0.052	0.378	-0.139
D(NSAV(-2))	0.107	0.343	0.311
D(GDEBT(-1))	0.134	0.402	0.334
D(GDEBT(-2))	-0.145	0.330	-0.439
D(INF (-1))	-0.472	0.145	-3.235
D(INF(-2))	-0.107	0.194	-0.553

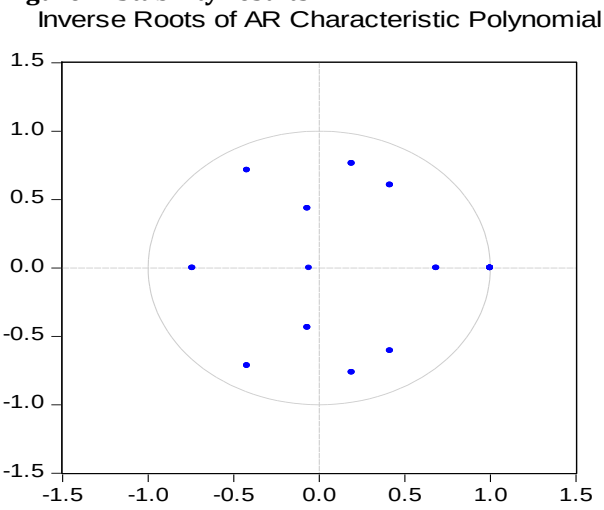
The diagnostic checks were performed to confirm the goodness of fit of the model. The paper used technique such as langrage multiplier (LM) test for serial correlation, Jarque-Bera for normality test and the white test for heteroskedasticity. The results presented in Table 8 suggest that the model estimated is of good fit.

Table 8: Diagnostics tests results

Test for:	Test	P-value	conclusion
Breuch-Godfrey Serial correlation	LM	0.803	Accept H0
Heteroskedasticity	White	0.452	Accept H0
Normality	Jarque-Bera	0.528	Accept H0

The model was furthermore tested for stability by means of the Inverse Roots of AR Characteristic Polynomial technique. The results presented in figure 2 suggest that all the inverse roots are contained within the unit cycle and are less than 1. This is a good indication that VAR fulfils the stability condition of the model estimated.

Figure 2: Stability results



The results obtained in the Vector Error Correction Model specify the exogeneity or endogeneity of the variables in the system and the direction of Granger-causality within the sample period. However, they do not make available the dynamic properties of the system. The analysis of the dynamic interactions among the variables can be conducted through variance decompositions and general impulse response functions. Based on Table 9, the paper allow the variance decomposition of GDP over the period of 10 in order to establish the effects of the explanatory variables when they are allowed to affect the explained variable for a relatively longer time.In the first period, 100% of GDP variances can be explained by its own inventions. Its contribution kept of dropping with time until it reached 34.9% in the last year. This led to a conclusion that

over 5 years ahead, GDP discrepancies can be described by its own shocks. Following GDP itself, the 2nd up to the 8th period reveals the significance of GOVE, NSAV, GDEBT and INF in explaining the variation of GDP. From the second year of the analysis it is evident that GOVE accounts for 0.1% of the variation in GDP whilst NSAV accounts for 1.4%, GDEBT accounts for 10.1% and INF accounts 18.8%.

Table 9: Variance Decomposition results: GDP

Period	S.E.	GDP	GOVE	NSAV	GDEBT	INF
1	1.181837	100.0000	0.000000	0.000000	0.000000	0.000000
2	1.574715	69.50273	0.148330	1.444077	10.10970	18.79516
3	2.085066	46.69727	25.78382	0.833004	15.08283	11.60308
4	2.507698	32.88422	45.40148	0.682082	12.71231	8.319909
5	2.697407	29.37973	49.46705	1.037020	12.55517	7.561029
6	3.081391	34.20823	46.52235	0.842922	11.96964	6.456853
7	3.378212	37.68731	42.67893	0.943798	12.87400	5.815963
8	3.567021	36.49665	40.63000	1.712676	14.62980	6.530887
9	3.784632	35.44572	41.68410	2.006162	15.06251	5.801498
10	3.994492	34.96345	42.69957	2.107789	14.99754	5.231655

Cholesky ordering: GDP, GOVE, NSAV, GDEBT, INF

The paper further applied the General Impulsive Response Function to trace the consequence of one-time shock to one of the innovations on the present and forthcoming values of the endogenous variables. The GIRF over the 10 years for the VECM estimation is shown in Appendix 1. Based on the analysis, the response of GDP to a shock in itself is positive over the period of the study. Moreover, Appendix 1 suggests that the response of GDP to shocks from GOVE is negative over the period of the study. This result permits the study to justify the decrease in the economic growth of South Africa due government expenditure among other reasons. The study further conducted the Granger causality test to analyse the cause and the effect relationship between government expenditure and economic growth. The causality results are presented in table 10.

Table 10: Pairwise Causality results

Null Hypothesis:	Obs	F-stats	P-value	conclusion
GOVEXP does not Granger cause GDP	23	0.842	0.447	No causality
GDP does not Granger cause GOVEXP	23	4.769	0.017	Causality

The results in table 10 clearly show that the causal relationship runs from economic growth to government expenditure. Therefore, the study concludes that the Wagner's law is applicable to South Africa since government expenditure is an effect rather than a cause of economic growth. Government expenditure in South Africa does not Granger because economic growth mainly due to that a large share of government expenditure goes towards non-productive sectors such as spending on defense, subsidies and political motivated recruitment in the public sector.

5. Conclusion and Recommendations

The main objective of this paper was to examine the nature of the relationship between government expenditure and economic growth in South Africa using annual data covering the period 1990 to 2015. The paper ensured that this objective is achieved by applying time series techniques such as the stationarity test (ADF) and (PP), cointegration test (Johansen procedure), Vector Error Correction Model (VECM), diagnostic tests as well as the Granger causality test. The unit root test confirmed that the variables employed in the study are integrated at the same order of I (1). The Johansen cointegration test proved a long-run relationship between the variables whilst the VECM provided parameter estimates for both long-run and the error correction. In determining the effects of government expenditure on economic growth in South Africa, the result obtained revealed a long-run negative relationship between government expenditure and economic growth in South Africa. The error correction results further revealed that there is a convergence towards

steadiness in the long-run with the adjustment of 49% per annum. The Variance Decomposition and General Impulsive Response Function were also employed to measure the sensitivity of GDP towards shocks coming from the selected variables. The Granger causality test showed that the causal relationship runs from economic growth to government expenditure and confirmed the legitimacy of Wagner's law in South Africa. The policy implication of this negative relationship between government expenditure and economic growth in South Africa is that an increase of government expenditure will lead to a decrease in economic growth. This call for government in South Africa to strengthen polices such as fiscal consolidation and cost containment measures without curtailing its priorities. Furthermore, the government of South Africa should ensure its significance through partnering with private sectors, laborers and other stakeholder to promote economic growth.

References

Barro, R. J. (1990). Government spending in a simple model of endogenous growth. *Journal of Political Economy*, 98(1), 103-125.

Barro, R. J. (1991). Economic growth in a cross-section of countries. *The Quarterly Journal of Economics*, 106(2), 104-443

Buiter, W. H. (1975). Crowding out and the effectiveness of fiscal policy. Econometric Research Program, Research memorandum, 191.

Brender, A. & Drazen, A. (2008). How Do Budget Deficits and Economic Growth Affect Reelection Prospects? Evidence from a Large Panel of Countries. *American Economic Review*, 98(5), 2203-2220.

Chipaumire, G., Ngirande, H., Method, M. & Ruswa, Y. (2014). The impact of government spending on economic growth: case South Africa. *Mediterranean Journal of Social Sciences*, 5(1), 109 – 118

Gallaway, L. & Vedder, R. (1998). Government and unemployment: Reply to De Long. *Critical Review*, 12(3), 253-264.

Kesavarajah, M. (2012). Wagner's Law in Sri Lanka: An Econometric Analysis. International Scholarly Research Network, Article ID 573826, 9 pages.

Keynes, J. M. (1936). The General Theory of Interest, Employment and Money, London: Macmillan.

Komain, J. & Brahmasrene, T. (2007). The Relationship between Government Expenditures and Economic Growth in Thailand. *Journal of Economics and Economic Education Research*, 8(1), 93-102

Landau, D. L. (1983). Government expenditure and economic growth: a cross-country Study. *Southern Economic Journal*, 49(1), 783-792

Lutkepohl, H., Saikkonen, P. & Trenkler, C. (2001). Maximum eigenvalue versus trace tests for the cointegration rank of a VAR process, 4(2), 257-310.

Mulamba, K. C. (2009). Long-run Relationship between Government Expenditure and Economic Growth: Evidence from SADC Countries: (unpublished PhD Thesis, University of Johannesburg, 2009).

Mo, P. H. (2007). Government expenditure and economic growth: the supply and demand sides. *Fiscal Studies*, 28(4), 497-522

National Treasury. (2015). National Budget Review. [Online] available from http://www.treasury.gov.za/documents/nationalbudgetreview [25 February 2015]

Olulu, R. M., Erhieyovwe, E. & Andrew, U. (2014). Government Expenditure and Economic growth: The Nigerian Experience. *Mediterranean Journal of Social Science*, 10(1), 89-94

Pieroni, L. (2009). Military expenditure and economic growth. *Routledge, Defence and Peace Economics*, 20(4), 327-339

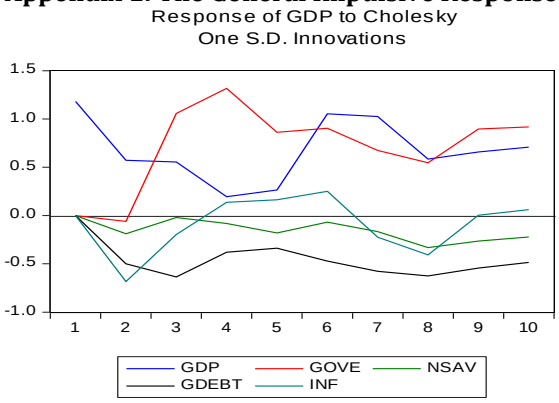
Solow, R. (1956). A Contribution to the Theory of Economic Growth. *Quarterly Journal of Economics*, 70(1), 65-94.

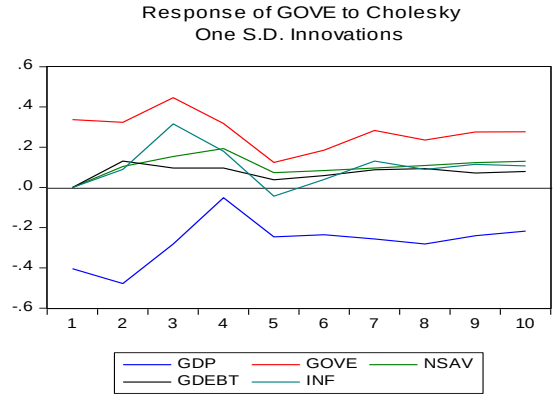
Verna, S. & Arora, R. (2010). Does the India Economy support Wagner's Law? An Econometric Analysis. *Eurasian Journal of Business and Economics*, 5(2), 77 – 91.

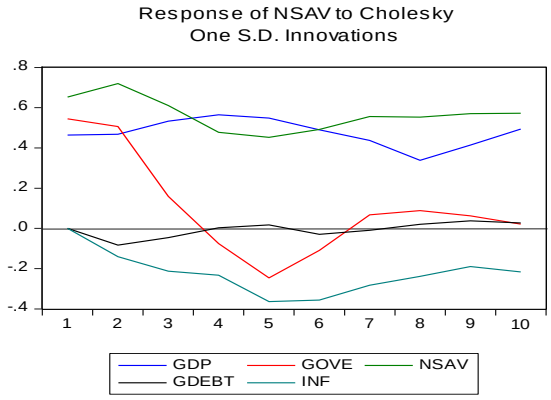
Wagner, A. (1877). Three Extracts on Public Finance, translated and reprinted in R.A. Musgrave and A.T. Peacock (Ed), Classics in the Theory of Public Finance, London: MacMillan.

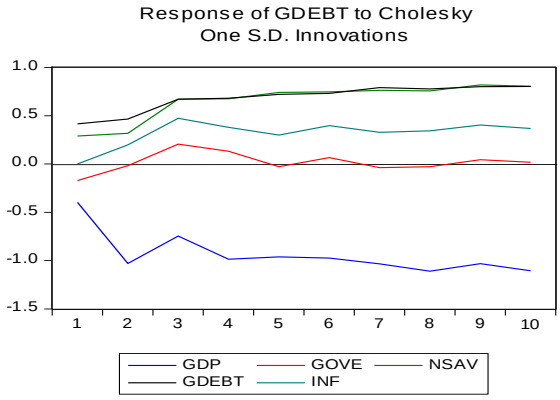
Appendixes

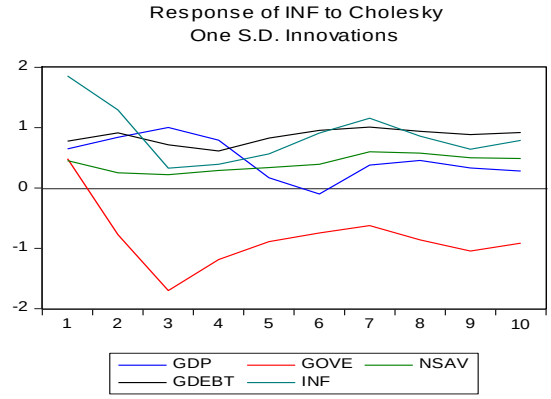
Appendix 1: The General Impulsive Response Function











Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Does Competition Cause Stability in Banks? SFA and GMM Application to Sub-Saharan Africa Commercial Banks

Joseph Olorunfemi Akande, Farai Kwenda
University of KwaZulu-Natal, Durban, South Africa
akandeo.joseph@gmail.com, kwendaf@ukzn.ac.za

Abstract: Investigating the competition-stability view in relation to the banking sector, the intention behind this study was to find out how far efficiency is associated with a competitive banking environment and if it warrants the continued agitation towards fostering increased competition in banking markets around the world. This view has significant support in spite of the potential instability that could possibly result from risk appetite, which the competition-fragility view holds to be associated with competition. We employed a stochastic frontier analysis (SFA) to model an instrumental variable of competition resulting from increased efficiency or inefficiency due to bank-level competition, which we used in the regression of competition against stability using the generalized method of moments (GMM). We found that competition increased the efficiency of the banking sector over the study period. The regression results of our instrument against stability in the Sub-Saharan Africa region was found to be positive and strongly significant with stability providing evidence of transmission from competition to efficiency to stability, and, hence consistent with competition-stability views. Our conclusion is that while competition is desirable, it must be optimized to enhance efficiency without which the effects become detrimental. Therefore, there must be ongoing regulation to check excessive competition.

Keywords: *Competition, Stability, Efficiency, Stochastic Frontier Analysis, Commercial Banks*

1. Introduction

Competition and stability in banks are important issues to bankers and regulators alike especially in the wake of the 2007/2009 financial crisis. Bank competition has become even more of concern as policy makers in the Sub-Saharan Africa (SSA) region rethink their strategies to break the yoke of poverty and transform their economies to those of their developed counterparts. Policy expectation is that a competitive banking environment will promote efficiency, increase overall competitiveness in other sectors of an economy, and thus promote economic growth. However, the competition-stability trade-off means that caution must be applied in order not to sacrifice financial system stability in the bid to engender competition to stimulate economic growth. In this study, the role of competition in the financial stability of the SSA region is examined by evaluating a panel data analysis of 37 SSA countries' commercial banks' data. Over the years, the findings of both theoretical and empirical papers on the relationship between competition and stability have been mixed, indefinite and inconclusive. Yet, a new look at the role of bank competition in bringing about the dynamic efficiency of the banking system and other sectors without compromising financial stability is now essential if the SSA region is to harness the gains of competition without compromising financial system stability.

There is an ongoing debate on the effect of competition on stability. Two strands of literature exist, one for and one against the competition-stability view (Agoraki, Delis & Pasiouras, 2011; Schaeck & Cihák, 2014). Specifically in Africa, there have been two conflicting views. Moyo, Nandwa, Council, Oduor, and Simpasa (2014) found evidence to support competition-stability views while Kouki and Al-Nasser (2014) posit otherwise. According to Casu, Girardone, and Molyneux (2012), these inconsistent results regarding the relationship between competition and stability make interpretation and policy measures very difficult given the economic implications of banking system failure. These authors failed to account for the role of efficiency in the competition and stability relationship, which was identified by Léon (2015) as a gap in the literature especially in Africa. Hence, there is the need for further research to substantiate these views by including the possible transmission channels of competition through efficiency to stability. Therefore, the compelling question is, "does competition cause the stability of banks in the SSA region commercial banks?" This question becomes germane because the SSA region seeks a competitive banking sector in order to stimulate economic growth in the region(Watkins, 2014).

This paper aligns with a long history of literature dealing with banking competition and, specifically, the concerns as to through what channel of transmission competition impacts on the stability of the system. Our contribution involves the use of a unique method, using stochastic frontier analysis (SFA), to exogenously model an instrumental variable for competition in a regression with stability, and hence fill the gap relating to the transmission mechanism between competition and stability as well as the measurement of how much efficiency is associated with competition. Furthermore, our study provides an extension of the study by Moyo et al. (2014)[8]to include quite a sizeable number of SSA countries for possible generalization. Our results indicate that the Lerner index is negatively related to stability. However, our instrument of competition provides evidence to support the competition-stability view as held by (Moyo et al., 2014)given that the results of the SFA reveal an increase in efficiency in the competition-efficiency relationship. Therefore, we establish a possible transmission from competition to stability through efficiency in the banking sector of the SSA region, implying that banking competition is not bad after all, but has to be optimized. The rest of the paper is organized as follows. Section 2 reviews the literature that deals with competition, efficiency and stability relationships. Section 3 presents our methodology, and in section 4 we present the empirical results. Section 5 concludes.

2. Literature Review

The place of competition in banking has been a subject of intense controversy among practitioners and academics alike. According to Casu (2015), a healthy degree of rivalry is considered necessary for the efficiency of the banking industry and for the stability of the system as a whole. The contestable market theory posits that with free entry and costless exit, market structure will not matter as potential competition guarantees efficient production and pricing regardless of existing players in the market. This, according to Dietsch (1993), brings the market to stability and equilibrium irrespective of the existing market structure. Works that have investigated the nexus between competition and stability have alluded to the presence of efficiency as imperative in any study of the competition and stability relationship (Bolt & Humphrey, 2010; Castellanos, Del Ángel & Garza-García, 2016; Genetay, Lin, Molyneux, & Fu, 2015; Hussain & Hassan, 2012; Schaeck & Cihák, 2014). Whether competition results in efficiency, however, is the major preoccupation of the structure conduct performance (SCP) hypothesis? Proponents of this model argue that collusion is anti-competition and causes abnormal profit. Existing literature on this model in Africa tends to find consistency with it (see(Chirwa, 2003; Mugume, 2007), but suffers from the setback of using concentration as a measure of competition. Attempts to overcome the setback of the structural model gave rise to the Lerner index and the Panzar-RosseH-statistics among other non-structural models of measuring competition. In spite of their own various shortcomings, such models offer better competition measures (Muneer et al., 2011; Liu, Molyneux, & Wilson, 2013).

A simple measure of a firm's efficiency is defined by Farrell (1957)who argues that technical efficiency reflects a firm's ability to obtain maximal output from a given set of inputs. Farrell explains his idea by assuming that firms use two inputs (X_1 *and* X_2) to produce one output (y), and production is under the assumption of constant returns to scale. In other words, an increase (decrease) in the inputs leads to the same proportional increase (decrease) of the output. Overtime, the parametric stochastic frontier analysis (SFA) introduced by Farrell (1957) has been used to test this theory empirically. It is important to note that most studies that have considered output-related technical efficiency measures have mainly used pretax income (PTI), return on assets (ROA), and return on equity (ROE), and have concluded that a statistically significant positive relationship exists between competition and efficiency. Banking stability is often measured by systemic banking stress, which is defined as periods when the banking system is unable to fulfill its obligations as they fall due, which the works of Demirguc-Kunt and Detragiache (1997)and Valencia and Laeven (2012) describe as an occurrence of banking crisis. Rather than focusing on systematic banking stress, lots of banking research articles employ bank-level data to compute banking distress. The most popular among these is the Z-score, which sums up the capital-asset ratio and return on assets, weighted by the standard deviation on return on assets (Roy, 1952). Other researchers have also captured the risk of defaults related to the banking loan portfolio using the non-performing loan (NPLs) ratio (Amidu, 2013).

[8]They considered 16 SSA countries.

Subsisting empirical models in banking literature, specifically relating to competition-stability and competition-fragility views, reveal that competition could be good or bad for the banking industry as it may result in either stability or fragility. According to the stability view, efficiency comes with competition, which results in systemic stability (Boyd, De Nicoló, & Jalal, 2009; Schaeck & Cihák, 2014; Uhde & Heimeshoff, 2009). The rationale is that competition can have a stabilizing effect on a banking system as efficiency is improved and loan interest rates are lowered, thereby reducing the likelihood of borrower defaults. However, the fragility view holds that competition is associated with moral hazard, adverse selection and agency problems as managers strive to cope with a competitive environment resulting in instability (Agoraki et al., 2011; Ariss, 2010; Beck, De Jonghe, & Schepens, 2013; Fu, Lin, & Molyneux, 2014; Yeyati & Micco, 2007). In line with this view, the explanation is that banks under high competitive pressure choose more excessive risk, thus increasing fragility, which may result in individual bank failure. This means that moral hazard and adverse selection problems are associated with excessive competition in banks where the wrong client is attracted, which in turn pushes up loan rates to the detriment of low-risk customers. Meanwhile, Berger, Klapper, and Turk-Ariss (2009) and Tabak, Fazio, and Cajueiro (2012) found a rather non-linear relationship between competition and stability. As a matter of fact, only one paper has investigated the competition-stability nexus in Africa, thereby providing support for the competition-stability view (Khan et al., 2013; Moyo et al., 2014). In their study of the banking sectors in 16 SSA countries, they found that countries with a higher level of H-statistics, that is, more competitive banking systems, have banks that are more stable. It is imperative that further research is done to revalidate this result and perhaps explore the channels through which competition affects stability in the SSA region and elsewhere. These aspects are among the focus of this study.

Theoretically, banking competition should result in efficiency, hence, the stability of the banking system. However, empirical models and evidence reveal that competition results in both stability and instability. But these models and evidence fail to consider the mediating role of efficiency in the study of the relationship between competition and stability, which probably is the flash point of the endogeneity between them. This study, therefore, fills the gap in the literature on this subject matter by applying stochastic frontier analysis (SFA) to investigate the role of efficiency in the competition-stability relationship. The study also sheds light on how much efficiency is orchestrated that warrants the need for competition, which the competition fragility view argues increases the risk appetite of banks. Hence, the endogeneity issues between competition and stability can also be addressed with the exogenous instrument of competition, which is created to be used in a regression of competition on stability (Suwandi et al., 2016).

3. Methodology

The main objective of this work is to investigate the effects of competition on stability among SSA commercial banks. The stochastic frontier analysis (SFA) approach is employed to generate an instrumental variable of competition to be regressed on bank stability for the period 2006 to 2015. Previous studies on the competition and stability view found competition-stability, competition-fragility and a U-shaped relationship (Fu et al., 2014; Schaeck & Cihák, 2014; Tabak et al., 2012). It has also been established that efficiency is pivotal in the competition and stability relationship (Ariss, 2010; Chirwa, 2003; Mugume, 2007). Yet, as far as we know, no existing studies have explicitly attempted to explore factoring in efficiency in studying the relationship between competition and stability. How is competition related to banks' overall stability? Does competition help to improve or lower banks' efficiency? Answers to these questions will help to establish the role of competition in stability management in banks. Extant literature, however, confronts an inherent problem in regressing competition against stability in order to measure the effects of competition on stability because of the obvious endogeneity problem. Hence, this study follows Chiou and Porter (2015) to develop an exogenous instrument of competition in a regression with stability using the unique SFA.

Concerning the techniques, two methods are used in the literature, these being: the parametric-like SFA (Hughes, Mester, & Moon, 2001; Hughes, 2013; Hughes, Lang, Mester, Moon, & Pagano, 2003; Nguyen, 2010)and non-parametric methods such as data envelopment analysis (DEA) (Bauer, Berger, Ferrier, & Humphrey, 1998; Berger & Hannan, 1998; Kouki & Al-Nasser, 2014) among others. SFA is an economic modeling method that was introduced by Jondrow, Lovell, Materov, and Schmidt (1982) following the stochastic production frontier previously introduced by Aigner, Lovell, and Schmidt (1977), Meeusen and Van

den Broeck (1977) and Farrell (1957). This study adopts the SFA approach because among the modern and most popular frontier analysis techniques, SFA allows the construction of a unique instrumental variable of competition that is exogenous to banks' stability. This approach helps to deal with the endogeneity between competition and stability by using SFA to estimate the inefficiency in our sample of SSA banking sectors. Furthermore, the SFA fits best in analyzing firms' efficiency as it accounts for statistical noise (Coelli, Rao, O'Donnell, & Battese, 2005; Kao & Liu, 2009). The argument is that empirical efficiencies calculated from anon-parametric technique such as DEA provide low consistent estimators of the true inefficiencies.

Model Specification: We follow Kouki and Al-Nasser (2014) to estimate bank-level competition of the SSA region commercial banks based on the Lerner index, while the instrument of competition is a developed competition-efficiency hypothesis following Chiou and Porter (2015). The models are discussed going forward.

Lerner Index: Given that the optimal output, QTY_i, of banks i, where $i = 1$; $N\ at\ time\ t$, is at the point where marginal cost, MC_i, equals its marginal revenue, MR_i, the proportion of the difference between the price, P_i, and the marginal cost, MC_i, on price is the Lerner index denoted as LI_i and expressed algebraically as shown in $equation\ (A.1)$, see (Flamini, Schumacher, & McDonald, 2009).

$$LI_i = \frac{P_i - MC_i}{P_i} \quad (1)$$

Where P_i is the estimate of average price of bank production in country i, which is proxied by the ratio of bank total revenue to total assets (Berg & Kim, 1994; Berger et al., 2009; Carbó, Humphrey, Maudos, & Molyneux, 2009; Fernandez de Guevara, Maudos, & Perez, 2005; Shaffer, 2004). To estimateMC_i, the first derivative of translog cost function[9] with respect to QTY_i is computed. We modelled the translog cost function from the generalised translog production function[10]through the second-order Taylor series expansion of banks cost in natural logarithm. Relying on the intermediation approach for measuring bank output (Ajisafe & Akinlo, 2013; Sealey & Lindley, 1977),the total cost of banks consists of one output,QTY, and three inputs,W_1,W_2, and W_3, representing price of labour (ratio of personnel expense to total assets), price of physical capital (non-interest expense to fixed assets), and price of fund (interest expense to total deposits), respectively. Hence, we arrived at the reduced translog cost function in panel form in $equation$ (2) below;

$$\ln(C_{it}) = \beta_0 + \beta_1 \ln(QTY_{it}) + \frac{1}{2}\beta_2 \ln(QTY_{it}^2) + \sum_{k=1}^{3} \theta_k \ln(W_{kit}) + \sum_{k=1}^{3} \phi_k \ln(QTY_{it}) \ln(W_{kit}) + 12k{=}13j{=}13\emptyset kj \ln(Wkit) \ln(Wjit) + \mu it \quad (2)$$

where QTY_{it} is bank output measured as the natural log of total assets of bank i in time t(de Guevara & Maudos, 2011),W_{kit} is the vector of the three input prices andμ_{it} is the error term.Taking the first derivative of the translog cost function with respect to output the marginal cost is given as:

$$MC_{it} = \frac{\delta C_{it}}{\delta QTY_{it}} = \frac{1}{QTY_{it}} \left(\beta_1 + \beta_2 \ln(QTY_{it}) + \sum_{k=1}^{3} \phi_k \ln(W_{kit})\right) \quad (3)$$

Substituting $equation$ (3) for marginal cost in $equation$ (1), the degree of competition will be computed using:

$$LI = \frac{P_{it} - \frac{1}{QTY_{it}} (\beta_1 + \beta_2 \ln(QTY_{it}) + \sum_{k=1}^{3} \phi_k \ln(W_{kit}))}{P_{it}} \quad (4)$$

Instrumental Variable of Competition: To construct the instrumental variable of competition, this study follows Chiou and Porter (2015). The inefficiency of the banks is defined by the distance between the specific

[9]Another way to estimate cost function is the average variable cost expressed as the ratio of total variable cost to total asset or total income. Although this seems a simpler and straightforward approach, it has been argued to be inaccurate.

[10]Some other common production functional forms include linear, Cobb-Douglas, quadratic, normalised quadratic, constant elasticity of substitution and generalised Leontief functions.

bank's pretax income and the frontier. Expressing the frontier according to a specific production model, in this case, it is assumed that a bank's profitability can be specified as the Cobb-Douglas production function:

$$In(PBT_{it}) = \alpha + \sum_{h=1}^{H} b_h \, In(X_{it,h}) + v_{it} - u_{it} \quad (5)$$

Where,v_{it} represents the noise component, considered as a two-sided normally distributed variable and u_i equals the non-negative technical inefficiency component. Because v_i and u_i constitute a compound error term with a specific distribution to be determined, SFA is therefore often referred to as the composed error model.

The SFA in *equation* (5) is employed to create a unique instrumental variable of bank competition to be used in the regression of competition and stability in the SSA region commercial banks. This should provide answers to the question of, how efficient is a bank in converting the resources with which it has to work into profit in the face of competition? Hence, we develop an unrestricted frontier that determines the highest possible profitability based solely on the employed banks' assets book value. This is specified as:

$$PBT_{it}(ABV) = \alpha + b_1 ABV_{it} + b_2 (ABV_{it})^2 + e_{it} \quad (6)$$

Where PBT_{it} equals pre-tax income, ABV_{it} is assets book value, $e_{it} = \phi_{it} - \lambda_{it}$, the composite error, $\phi \sim iidN\ (0, \delta_{\phi}^2)$, is the stochastic noise, which is a two sided error term, $\lambda \sim iidN\ (0, \delta_{\lambda}^2)$, the systematic fall (technical inefficiency) a one-sided error and $\lambda..0$. The quadratic equation allows for a non-linear relation between the pre-tax income and the book value of asset. The essence is to allow technical efficiency to vary through time, and across the cross-section of banks (Kumbhakar & Lovell, 2003).

The efficiency scores are estimated using Frontier version 4.1 (Coelli, 1996), a computer programme based on stochastic production functions (Battese & Coelli, 1992; Battese & Coelli, 1995)written to provide maximum likelihood estimates of different types of stochastic frontier production as independently introduced by Aigner et al. (1977) and Meeusen and Van den Broeck (1977). It accounts for a truncated normal assumption including panel data with time varying efficiencies, and is hence applicable to our unbalanced panel model, with firm effects having truncated normal random variables distribution assumptions that are allowed to vary systematically with time (Battese & Coelli, 1992). Next, we develop the second frontier based on the level of banking sector competition. The essence of the unrestricted model is to measure the unconditional inefficiencies of the banks. By restricting the model now, will enable us to develop a measure of incremental efficiency or inefficiency of a banking organisation due to the level of competition within the banking industry. It is this incremental efficiency/inefficiency arising from bank-level competition that the study proposes to use as an instrument for competition in the regression of bank stability on competition.
The restricted model again, in a quadratic form, is as follows:

$$PBT_{it}(ABV, BCL) = \alpha + b_1 ABV_{it} + b_2 (ABV_{it})^2 + b_3 BCL_{it} + \varepsilon_{it} \quad (7)$$

Where BLC is bank level competition, $\varepsilon_{it} = v_{it} - u_{it}$ is the composite error, such that,$v \sim iidN\ (0, \delta_v^2)$, is stochastic noise and $u\ (\geqslant 0) \sim iidN\ (0, \delta_u^2)$ is the inefficiency orchestrated by the level of competition that the banking sector has to cope with. The estimation of u is the same as in *eqn* (7) above. Based on the two inefficiencies assessments, the profitability due to the influence of competition can then be measured by subtracting the inefficiency of the unrestricted model from the restricted model thus:

$$\vartheta_{it} = u_{it} - \lambda_{it} \quad (8)$$

This, therefore, constitutes the instrumental variable for competition.

From the forgoing, the relationship between the variable specifying banks' stability and competition is analyzed by the regression equation specified as follows:

$$Y_{kit} = C_{kit} + b_{kit} \vartheta_{kit} + \varphi_{kit} In(ABV_{kit}) + \eta_{kit} \quad (9)$$

Where Y_{kit} measures the stability for bank i in country k at year t. C_{kit} is a constant; b_{kit} is the coefficient of instrumental variable of competition, ϑ_{kit}, for $k's$ regression in year t;φ_{kit} is the coefficient of the natural logarithm of bank asset book value; andη_{kit} is the error term. The book value of asset helps to control for the impact of size on banks' risk-taking behavior (Gatev, Schuermann, & Strahan, 2009)

The SSA banking sector's stability is, for the purpose of this study, defined as the Z-score. The Z-score, according to Roy (1952), is used to measure the overall stability of a bank and has been used in the bank literature (see (Čihák, 2012; Kouki & Al-Nasser, 2014; Laeven & Levine, 2009; Lepetit & Strobel, 2013). It is an indicator of banks' probability of insolvency as it estimates the number of standard deviations that a bank's profit has to fall below its expected value before its equity becomes negative. We implement the regression using the generalized method of moments (GMM) regression. The ordinary least squares (OLS) method could not be used because of the departure from normality of the variable ϑ due to the combined error terms. Unlike other estimators, GMM is robust and does not require information on the exact distribution of the disturbances. The GMM estimator is known to be consistent, asymptotically normal and efficient in the class of all estimators that do not use any extra information apart from that contained in the moment conditions (Abdelkader & Mansouri, 2013; Arellano & Bond, 1991; Athanasoglou, Brissimis, & Delis, 2008; Campbell, Lo, & MacKinlay, 1997; Gatev et al., 2009; Hamilton, 1994; Roodman, 2006). It is also efficient for a large number of observations over the relatively short term. In addition, GMM deals with endogeneity in a better way than other methods.

Data: We obtained our data on banks for this study from the Bankscope database by Fitch/IBCA Bureau van Dijk for37 SSA countries' commercial banks' financial profiles for the years 2006 to 2015. A total of 440 banks' data ranging from 190 banks in 2006 to 440 banks in 2015 were consulted. The selection is based on the availability of data from the database. SSA countries' selections exclude those we considered as outliers[11]. Bankscope is considered as the most comprehensive database for banking research. Specific data collected relate to total revenue, total assets, interest and non-interest expense, personnel expense, total asset, and total deposits required for the estimation of bank-level competition as contained in the literature (see (Berger et al., 2009; Kouki & Al-Nasser, 2014) among others). This study considered Roy (1952) proposition of the Z-score as a proxy for the overall stability of the banking sector. It provides a measure of the distance from insolvency of a given bank by combining a bank's profitability, capitalization and volatility of returns. It also estimates the number of standard deviations that a bank's profits have to fall below before its expected equity becomes negative and, hence, is a holistic measure of the end results of whatever risk a bank may undertake. The Z-score has been used in measuring banking sector stability in the literature (see (Čihák, 2012; Kouki & Al-Nasser, 2014; Laeven & Levine, 2009; Lepetit & Strobel, 2013). Both return on asset and equity capital ratio, which are required for the computation of the Z-score, are collected as part of the annualized data obtained from Bankscope. Other specific data collected include annual data on pre-tax income (Chiou & Porter, 2015) and asset book value (Barro & Barro, 1990) employed for the input and output variables for the output-oriented stochastic frontier analysis.

4. Results

This section sets out the results of our estimations. Based on the questions we posed to actualize the objective of this study, we tested for these three hypotheses related to our expectation of the relationship between competition and stability in the SSA region: 1. There is no significant relationship between competition and efficiency; 2. There is no significant relationship between competition and stability; 3. There is no link between competition and stability that results from efficiency. Our assertions are borne out by the level of development of the commercial banks in the SSA region.

Summary of Statistics: The numbers for banks and statistics for the competition measure, and the Lerner index, over the sample years are reported in Table 1. The means of other descriptive statistics are listed: Z-score, the stability measure; ABV, asset book value; ROA, return on asset; ROE, return on equity and PBT, profit before tax. The Lerner index produced a range of competition measures with varying degrees of market power.

[11] South Africa, having a highly developed and sophisticated banking system, while others, such as Sudan ravaged by wars, were excluded for data availability and consistency.

Table 1: Summary Statistics

		Lerner Index								
year	**N**	**mean**	**SD**	**min**	**max**	**zscore**	**abv**	**roa**	**roe**	**pbt**
2006	190	0.256	0.166	0.001	0.837	3.543	371505	0.020	0.191	10402
2007	215	0.269	0.156	0.013	0.784	3.205	529336	0.018	0.196	12804
2008	250	0.288	0.177	0.011	0.967	3.380	582588	0.020	0.180	18339
2009	275	0.294	0.188	0.010	0.921	3.295	691492	0.014	0.148	14049
2010	296	0.296	0.183	0.000	0.979	3.274	695667	0.010	0.132	18975
2011	320	0.282	0.173	0.003	0.977	2.989	970764	0.012	0.123	20293
2012	357	0.324	0.194	0.005	0.998	3.235	1060910	0.013	0.116	26529
2013	392	0.352	0.314	0.000	0.988	3.404	1153087	0.012	0.087	27427
2014	430	0.332	0.185	0.000	0.996	3.624	1159650	0.011	0.076	27435
2015	440	0.324	0.196	0.001	0.996	3.484	1111977	0.011	0.069	23320

Authors' computation, 2017

As seen in the table, while some banks have indices that are near zero, other indices are close to 1, given the minimum and the maximum columns. This distribution is expected based on the pockets of concentrations that were reported in some banking literature for the SSA region. However, the closeness of the mean of the Lerner index to the minimum values implies a relatively competitive banking market, which could be described as being monopolistic competition in nature. The mean of the Z-score shows indices that are greater than 1. The higher the Z-score, the better, as a higher Z-score depicts a stable banking system. While the return on assets seems to be quite low in contrast to those of the return on equity, overall, the mean values provide evidence of a banking system that is performing over the periods under investigation, which corroborates the stability reflected by the z-score. This sketchy behavior shown by the summary statistics tends to point to a model of competition, efficiency and stability, which this study hopes to reveal in subsequent sections of the paper.

Instrumental Variable: Instrumental variable for competition descriptive statistics over the years sampled are displayed. The instrumental variable $\vartheta_{it} = u_{it} - \lambda_{it}$ is a measure of incremental bank inefficiency/efficiency due to bank level competition and/or degree of market power, where the stochastic frontiers are $PBT_{it}(ABV) = \alpha + b_1 ABV_{it} + b_2 (ABV_{it})^2 + e_{it}$ and $PBT_{it}(ABV, BCL) = \alpha + b_1 ABV_{it} + b_2 (ABV_{it})^2 + b_3 BCL_{it} + \varepsilon_{it}$.The first frontier measured the level of banks' inefficiencies in converting their resources to output (profit). This determines the maximum possible income achievable from a given level of asset, which is exogenous to a specific bank because it is determined from the data of all banks in the sample. The distance from this frontier to any specific bank's actual income is a measure of a bank's inefficiency. With the second frontier, the instrument of competition is created conditioned to bank-level competition given its production capacity. The incremental inefficiency/efficiency from the second frontier is a function of bank competition; in other words, the difference between the second and the first frontier's efficiency scores is used as the instrument for competition (see Table 2 for the description of our instrumental variable).

Table 2: Instrumental Variable Distribution

year	mean	SD	kurtosis	skewness	min	max
2006	-4.08368E-06	7.04307E-05	66.46838888	7.558965536	-6.73E-05	0.00067622
2007	5.52651E-07	0.000163903	167.7121601	12.41309188	-0.00015733	0.00224774
2008	-1.35568E-05	4.3518E-05	31.93930828	4.276213275	-0.00011717	0.00036802
2009	-4.68567E-06	0.000117389	127.1648157	10.31878458	-0.0001322	0.00157034
2010	2.18235E-05	0.000305294	119.5363149	10.46394279	-0.00013972	0.00395189

2011	-1.00525E-06	0.000216933	272.8637947	15.94867855	-0.00015109	0.0037175
2012	2.69355E-05	0.000644388	343.9703535	18.38833656	-0.00014222	0.01205672
2013	-9.40666E-06	9.1474E-05	56.41178163	5.86973908	-0.00035134	0.0010471
2014	-3.38535E-06	0.000123564	62.19802236	7.017162991	-0.00015697	0.00133269
2015	-1.14878E-05	8.35993E-05	46.01088163	5.639606657	-0.0001813	0.0008062

Authors' estimation, 2017

Based on pairwise correlation, the instrument is strongly negatively correlated with the Lerner index and the variable it replaces at 0.7732 with 0.0000 p-value, and uncorrelated with the residual at -0.0000 with 1.0000 p-value, affirming that it is a good instrument. We found a marginal efficiency from the results of the SFA, that is, the efficiency scores are closer to the frontier with bank-level competition as against the absence of competition. This provides evidence to support a positive relationship between competition and efficiency. We also found consistency with Castellanos et al. (2016), Çelik, Kaplan, and Şahin (2015) and Casu and Girardone (2009)who argued that banks in a competitive system become more efficient, substantiating the quiet life hypothesis. However, a recent account by Apriadi, Sembel, Santosa, and Firdaus (2016) posits that competition negatively Granger causes efficiency. For our sample, the distribution of ϑ in the same year tends to be skewed to the right-hand side and has positive excess kurtosis. On this note, we consider a nonparametric and use a normality-free regression model for our analysis to avoid the possible errors of estimation.

GMM Results: The results of our generalized method of moments (GMM) estimations from models 1 - 5 are shown in Table 4. To enhance robustness, we present in Table 3 both pairwise correlation coefficients between the tested variables, the instrumental variable for competition, ϑ, and the Lerner index. We did not test for the presence of cross-sectional dependence in our panel estimation, as according to Chudik, Pesaran, and Tosetti (2011) and Chudik and Pesaran (2013), it is ideal to relax the cross-sectional dependence assumption in large cross-sections like ours. They argue that even where it exists, controlling for it is difficult and the result would not necessary be biased.

Table 3: Correlation Results

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
ϑ & z-score	0.1644	0.2468	-0.027	0.0341	0.2341	0.2791	0.2583	-0.0572	0.1089	0.0296
p-value	0.0234	0.0003	0.6712	0.5737	0.0000	0.0000	0.0000	0.2584	0.0239	0.5363
Lerner index & z-score	-0.1346	-0.2072	-0.0259	-0.0098	-0.3066	-0.3131	-0.2533	0.0038	-0.0681	-0.0174
p-value	0.064	0.0023	0.6834	0.8715	0.0000	0.0000	0.0000	0.9409	0.1586	0.7166
Lerner index &	0.0198	0.2863	0.0183	0.2339	0.0131	-0.0737	0.1276	-0.0045	-0.0204	-0.0387
p-value	0.7859	0.0000	0.7737	0.0001	0.8225	0.1886	0.0159	0.9297	0.6735	0.4184
Lerner index &roa	0.0338	0.2649	0.0771	0.3189	0.039	-0.0596	0.1213	0.0559	0.0715	0.0062
p-value	0.6433	0.0001	0.2244	0.0000	0.5041	0.288	0.0219	0.2699	0.1389	0.8966
Lerner index & roe	-0.0005	0.0496	0.0788	0.1581	0.0224	0.0099	0.0358	0.0302	0.0072	-0.0118
p-value	0.9943	0.4716	0.2184	0.0092	0.7027	0.8609	0.5002	0.5521	0.882	0.8057

Author's
Estimation 2017

For efficient and robust estimates, this study uses the dynamic panel data estimation technique, and opted for the two-step system GMM with robust and orthogonal deviation to account for the unbalanced nature of the panel. To control for the size of the banks, the coefficient of ϑ and those of the Lerner index are generated by GMM regression with a constant and the natural logarithm of the book value of assets. The coefficients of the control variable and the constant term are reported in Table 4.

A cursory look at the results in Table 4 and the stability measure in the models 1 and 2 exhibit a statistically significant and positive relationship with their lagged values, which implies that previous financial systems' stability in the banking sector largely determine the current stability of the system as well as persistence in the relationship. Our variable of interest, ϑ, the instrument of competition, is shown in model 1. ϑ is the instrument of competition[12], derived from the relationship between competition and efficiency using SFA. The essence of this instrument is, firstly, to create a variable that is exogenously related to stability in the regression of stability on competition and, secondly, a variable that can capture efficiency in competition. By this means we found a new way to capture the competition and stability relationship whose results have been inconsistent in the literature largely due to the endogeneity between the duo. We found the instrument to be statistically significant and positively related to the Z-score, the stability measure. This offers far-reaching implications for the literature on competition and stability. We found consistency with Petersen and Rajan (1995), Berger and Mester (1997) and Williams (2004), who argued that efficiency enhances the administration and management of banks' assets portfolios that reduces nonperforming loans hence improving the stability of banks. It is, therefore, logical for a competitively efficient banking sector to be financially stable. This finding aligns with the studies of Schaeck and Cihák (2014)where it is argued that efficiency is the conduit pipe through which the effects of competition in the banking system influence stability. Thus, our results establish a transmission mechanism from competition to efficiency to stability in the banking sectors of the SSA region. We therefore infer a direct positive relationship between competition and stability in the SSA region in line with the competition-stability views of(Akins, Li, Ng, & Rusticus, 2016; Moyo et al., 2014; Schaeck, Cihak, & Simon, 2009; Soedarmono, Machrouh, & Tarazi, 2013) among others, and argue against the competition-fragility views of (Agoraki et al., 2011; Kouki & Al-Nasser, 2014; Maghyereh & Awartani, 2016), among others.

Table 4: GMM Regression

Variable	Model (1) z-score	Model (2) z-score	Model (3) pbtaratio	Model (4) roa	Model (5) roe
L.zscore	0.785***	0.580***			
	(0.0582)	(0.0875)			
ϑ	287.4***				
	(-108.5)				
Lnabv	0.322*	0.195**	0.00168**	-0.00316**	3.052***
	(0.187)	(0.0803)	(0.000751)	(0.00139)	(0.497)
lerner index		-0.0345***	0.000221***	-5.85e-05**	0.0806**
		(0.0084)	(0.0000647)	(-0.0000254)	(0.0386)
L.pbtaratio			0.432***		
			(0.0337)		
L.roa				0.562***	
				(0.132)	
L.roe					0.146**
					(0.0596)
Constant	-3.399	-1.326	-0.00838	0.0478***	-25.98***
	(2.455)	(1.044)	(0.01)	(0.017)	(6.331)
AR (2)	0.080	0.100	0.771	0.685	0.295
Hansen J stats	0.451	0.176	0.496	0.655	0.732
Wald (chi2)	942.24	87.72	185.35	32.35	61.06

[12]A proxy for competition

Prob >chi2	0.000	0.000	0.000	0.000	0.000
Observations	2,725	2,725	2,725	2,725	2,696
Number of id	430	430	430	430	429

Standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1. Where ϑ represents the instrument and Lerner index in the competition measure, while pbtaratio, roa and roe depict profit before tax to asset book value ratio, return on assets and return on equity, respectively, these being surrogate efficiency measures.

For robustness, the original variable, the Lerner index that is the competition measure is also found to be statistically significant but negatively related to the stability measure. It suggests an inverse relation between competition and stability where competition is not associated with efficiency. This may be the reasons why some models have found competition to be fragile for banking sectors in the literature in some parts of the world, and it provides evidence that if competition is not well managed so as to cause efficiency it may be detrimental to the system, as is argued in the competition-fragility view. We further tested the results of the SFA by using a range of efficiency measures as contained in models 3, 4 and 5 for consistencies and comparison. Model 3 measures the relationship between the Lerner index and pretax income to assets ratio (pbtaratio). Pretax income measures the intrinsic profitability of the sampled banks to enable comparability across borders because of differences in corporate taxes. Hence, pbtaratio is an indicator of how profitable a bank is relative to its total assets. It gives an idea as to how efficient management is at using its assets to generate earnings. The study found that the Lerner index is statistically significant and positively related with pbtaratio. That is, a 1% increase in the competition index will mean a 0.0221% increase in profitability. This finding confirms the SFA results and existing theories that posit a positive relationship between competition and efficiency. We have thought that the level of development of the SSA region banks will take its toll on the results, as existing models relate largely to developed countries.

The results of the Lerner index and return on assets, however, give a statistically significant but inverse relationship. While roa and pbtaratio measure the same thing, we assume that the difference in the results of roa from those of pbtaratio, is largely due to the impact of tax that banks face, which differ across countries. The SSA region may have to consider tax harmonization, as every sacrifice to achieve sustainable economic growth will be worthwhile. Finally, Model 5 results show a statistically significant and positive relationship between the Lerner index and return on equity (roe). ROE measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. These results are a further affirmation of a positive relationship between competition and efficiency in the SSA region commercial banks. In general, this study found the result of Model 1 to be consistent with the competition-stability views model in the literature (Moyo et al., 2014; Schaeck & Cihák, 2014),where it is argued that competition brings about efficiency, which then leads to stability of the banking sector. Our results confirm this transmission as shown from the result of SFA that reported a marginal efficiency being associated with competition in the SSA region. The implication will mean that provided competition can be managed to such a level that it produces efficiency, it will continue to enhance stability. It is not surprising, however, that competition on its own is inversely related to the stability measure, which substantiates the fact that competition on its own will more likely be inimical to the banking system, unless it improves efficiency without which it adds no value to the system, but rather causes instability.

The marginal efficiency found in the SFA result is also confirmed in the results of models 3 and 5, which are seen to be consistent with the literature on competition and efficiency (Chirwa, 2003; Kouki & Al-Nasser, 2014; Mugume, 2007). Notwithstanding that, there seems to exist an inverse relationship between competition and return on asset, and on the average, we tend to find evidence to support the aforementioned assertion that competition does cause efficiency. The results of these models are further supported by the tests of overall significance through the Wald test (see Table 4). This test shows that the estimated results for the five models are statistically significant. Therefore, all the variables used as determinants are all desirable and would influence both stability and efficiencies of the banking sectors significantly. We also did not find any violation of serial correlation and over-identification of instruments as the results of the test show the respective thresholds were satisfied(see (Mileva, 2007; Roodman, 2006).

5. Conclusion

In the course of this paper, we have set out to investigate the relationship between competition and stability especially as it relates to the SSA banking sector. To achieve this, we leveraged the relationship between competition and efficiency as contained in the literature to craft a new way of rethinking this relationship by developing an instrument for competition using SFA. We then used this instrument in a regression of competition against stability. We used the Z-score as a surrogate for stability. The Z-score measures the overall stability of the banking system. Our competition measure is the Lerner index, which enables us to estimate the market power of the 440 banks in our sample over the study period. The result of our bank-level competition with the Lerner index suggests a monopolistically competitive SSA banking system. The efficiency scores generated from the SFA reveal an actual sense that efficiency increases with competition in the SSA banking system over the period under consideration. This provides consistency with literatures that argue that efficiency is inherent in competition; hence, we conclude that competition is good for the banking system as it engenders the dynamic efficiency of the system.

Using GMM, we found the coefficient of our instrument to be strictly positive and statistically significant with our stability measure. This affirms a possible transmission from competition to efficiency and then to stability. Hence, this is consistent with the competition-stability view, which argues that competition brings about efficiency, which then causes stability. We, therefore, conclude that competition causes stability in the SSA region banking sector. However, as a rider, efforts must be made to manage competition such that efficiency is ensured, because regressing the Lerner index against stability shows a negative and statistically significant relationship. Again, this is not surprising in that competition fragility has already been reported in the literature, thus, the key is managing competition for efficiency. Our contribution lies in accounting for the role of efficiency in the competition-stability relationship without which competition may be undesirable for the banking system. We also substantiated the subsisting competition-stability view study in Africa to safe the cost to policy making of conflicting views in crafting policies on competition and stability relationship. This result presupposes that driving and maintaining sustainable banking competition in the SSA region is fundamental and a welcome development. The challenge, however, lies in optimizing competition to achieve the desirable goal of ensuring the dynamic efficiency of the banking sector so that it engenders stability and, consequently, economic growth. Of utmost importance, will be the need to strengthen the various antitrust agencies and ensuring strict adherence to various banking regulations that address issues of competition and including monitoring and developing new ones where necessary. Efforts must also be made to come up with complementary monetary and fiscal policies to sustain and improve on current gains. Regulators and watchdogs must also be alive to their responsibilities.

Reference

Abdelkader, I. B. & Mansouri, F. (2013). Competitive Conditions of the Tunisian Banking Industry: An Application of the Panzar- Rosse Model. *African development review,* 25(4), 526-536. doi:10.1111/1467-8268.12047

Agoraki, M. E. K., Delis, M. D. & Pasiouras, F. (2011). Regulations, competition and bank risk-taking in transition countries. *Journal of Financial Stability,* 7(1), 38-48. doi:http://dx.doi.org/10.1016/j.jfs.2009.08.002

Aigner, D., Lovell, C. K. & Schmidt, P. (1977). Formulation and estimation of stochastic frontier production function models. *Journal of Econometrics,* 6(1), 21-37.

Ajisafe, R. A. & Akinlo, A. E. (2013). Testing for Competition in the Nigerian Commercial Banking Sector. *Modern Economy,* 04(07), 501-511. doi:10.4236/me.2013.47054

Akins, B., Li, L., Ng, J. & Rusticus, T. O. (2016). Bank competition and financial stability: evidence from the financial crisis. *Journal of Financial and Quantitative Analysis,* 51(01), 1-28.

Amidu, M. (2013). The effects of the structure of banking market and funding strategy on risk and return. *International Review of Financial Analysis,* 28, 143-155. doi:http://dx.doi.org/10.1016/j.irfa.2013.03.001

Apriadi, I., Sembel, R., Santosa, P. W. & Firdaus, M. (2016). Banking Fragility in Indonesia: a Panel Vector Autoregression Approach. *I J A B E R,* 14(14), 10493-10524.

Arellano, M. & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies,* 58(2), 277-297.

Ariss, R. T. (2010). On the implications of market power in banking: Evidence from developing countries. *Journal of Banking & Finance,* 34(4), 765-775.

Athanasoglou, P. P., Brissimis, S. N. & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money,* 18(2), 121-136.

Barro, J. R. & Barro, R. J. (1990). Pay, performance, and turnover of bank CEOs. National Bureau of Economic Research. Retrieved from doi:10.3386/w3262

Battese, G. E. & Coelli, T. J. (1992). Frontier production functions, technical efficiency and panel data: with application to paddy farmers in India International Applications of Productivity and Efficiency Analysis (pp. 149-165): Springer.

Battese, G. E. & Coelli, T. J. (1995). A model for technical inefficiency effects in a stochastic frontier production function for panel data. *Empirical economics,* 20(2), 325-332.

Bauer, P. W., Berger, A. N., Ferrier, G. D. & Humphrey, D. B. (1998). Consistency conditions for regulatory analysis of financial institutions: a comparison of frontier efficiency methods. *Journal of Economics and Business,* 50(2), 85-114.

Beck, T., De Jonghe, O. & Schepens, G. (2013). Bank competition and stability: Cross-country heterogeneity. *Journal of Financial Intermediation,* 22(2), 218-244. doi:http://dx.doi.org/10.1016/j.jfi.2012.07.001

Berg, S. A. & Kim, M. (1994). Oligopolistic interdependence and the structure of production in banking: an empirical evaluation. *Journal of Money, Credit and Banking*, 4, 309-322.

Berger, A. & Hannan, T., H. (1998). The efficiency cost of market power in the banking industry: A test of the `quiet life' and. *Review of Economics & Statistics,* 80(3), 454. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=939292&site=ehost-live

Berger, A. N., Klapper, L. F. & Turk-Ariss, R. (2009). Bank competition and financial stability. *Journal of Financial Services Research,* 35(2), 99-118.

Berger, A. N. & Mester, L. J. (1997). Inside the black box: What explains differences in the efficiencies of financial institutions? *Journal of Banking & Finance,* 21(7), 895-947.

Bolt, W. & Humphrey, D. (2010). Bank competition efficiency in Europe: A frontier approach. *Journal of Banking & Finance,* 34(8), 1808-1817.

Boyd, J. H., De Nicoló, M. G. & Jalal, A. M. (2009). Bank competition, risk and asset allocations. *IMF Working Papers,* 9(143). doi:10.5089/9781451872903.001

Campbell, J. Y., Lo, A. W. C. & MacKinlay, A. C. (1997). *The econometrics of financial markets* (Vol. 2): princeton University press Princeton, NJ.

Carbó, S., Humphrey, D., Maudos, J. & Molyneux, P. (2009). Cross-country comparisons of competition and pricing power in European banking. *Journal of International Money and Finance,* 28(1), 115-134.

Castellanos, S. G., Del Ángel, G. A. & Garza-García, J. G. (2016). Competition and Efficiency in the Mexican Banking Industry: Theory and Empirical Evidence: Springer.

Casu, B. & Girardone, C. (2009). Does competition lead to efficiency? The case of EU commercial banks: The Case of EU Commercial Banks SSRN Electronic Journal. doi:10.2139/ssrn.1200362

Casu, B., Girardone, C. & Molyneux, P. (2012). 3 Is there a conflict between competition and financial stability? Research Handbook on International Banking and Governance, 72. Retrieved from https://books.google.co.za/books?id=Y8O4tK-iOnoC&lpg=PA72&ots=vYxWMejj5a&dq=is%20there%20a%20conflict%20between%20competition%20and%20financial%20stability%3F&lr&pg=PA72#v=onepage&q=is%20there%20a%20conflict%20between%20competition%20and%20financial%20stability?&f=false

Casu, B., Girardone, C. & Molyneux. (2015). *Introduction to banking* (second ed.). United Kingdom: Pearson Education Limited.

Çelik, T., Kaplan, M. & Şahin, F. (2015). Efficiency, Concentration and Competition in the Turkish Banking Sector. *Iktisat Isletme ve Finans,* 30(346), 81-104.

Chiou, W. J. P. & Porter, R. L. (2015). Does bank capital reduce risk? An application of Stochastic Frontier Analysis and GMM approach. c.-F. Lee, J. Lee (eds), Handbook of Financial Econometrics and Statistics, 246-381.

Chirwa, E. W. (2003). Determinants of commercial banks' profitability in Malawi: a cointegration approach. *Applied Financial Economics,* 13(8), 565-571.

Chudik, A. & Pesaran, M. H. (2013). Large panel data models with cross-sectional dependence: a survey. CAFE Research Paper. SSRN Electronic Journal. doi:10.2139/ssrn.2316333

Chudik, A., Pesaran, M. H. & Tosetti, E. (2011). Weak and strong cross-section dependence and estimation of large panels. *The Econometrics Journal,* 14(1), C45-C90.

Čihák, M., Demirgüç-Kunt, A., Pería, M. S. M. & Mohseni-Cheraghlou, A. (2012). Bank Regulation and Supervision Around the World: A Crisis Update. World Bank Policy Research Working Paper, No. 6286. Retrieved from http://ssrn.com/abstract=2185819

Coelli, T. J. (1996). A guide to FRONTIER version 4.1: a computer program for stochastic frontier production and cost function estimation. Retrieved from ucema.edu.ar

Coelli, T. J., Rao, D. S. P., O'Donnell, C. J. & Battese, G. E. (2005). An introduction to efficiency and productivity analysis: Springer Science & Business Media.

de Guevara, J. F. & Maudos, J. (2011). Banking competition and economic growth: Cross-country evidence. *The European Journal of Finance,* 17(8), 739-764.

Demirguc-Kunt, A. & Detragiache, E. (1997). The determinants of banking crises: evidence from industrial and developing countries. Retrieved from https://doi.org/10.1596%2F1813-9450-1828

Dietsch, M. (1993). Localisation et concurrence dans la banque. *Revue economique*, 3, 779-790.

Farrell, M. J. (1957). The measurement of productive efficiency. *Journal of the Royal Statistical Society. Series A (General),* 120(3), 253-290.

Fernandez de Guevara, J., Maudos, J. & Perez, F. (2005). Market power in European banking sectors. *Journal of Financial Services Research,* 27(2), 109-137.

Flamini, V., Schumacher, M. L. & McDonald, M. C. A. (2009). The determinants of commercial bank profitability in Sub-Saharan Africa. *IMF Working Papers,* 9(15). doi:10.5089/9781451871623.001

Fu, X. M., Lin, Y. R. & Molyneux, P. (2014). Bank competition and financial stability in Asia Pacific. *Journal of Banking & Finance,* 38, 64-77.

Gatev, E., Schuermann, T. & Strahan, P. E. (2009). Managing bank liquidity risk: How deposit-loan synergies vary with market conditions. *Review of Financial Studies,* 22(3), 995-1020.

Genetay, N., Lin, Y., Molyneux, P. & Fu, X. M. (2015). Bank Competition, Efficiency and Liquidity Creation in Asia Pacific: Springer. Retrieved from https://doi.org/10.1057/9781137533845_2

Hamilton, J. D. (1994). *Time series analysis* (Vol. 2): Princeton university press Princeton.

Hughes, J., Mester, L. & Moon, C. (2001). Are scale economics in banking elusive or illusive? Evidence obtained by incorporating capital structure and risk into models of bank production. *Journal of Banking and Finance,* 25. doi:10.2139/ssrn.237812

Hughes, J. P. & Mester, L. J. (2013). Measuring Performance of Banks: Theory, Practice, Evidence and Some Policy Implications Retrieved from http://ssrn.com/abstract=2306003. Retrieved 3rd September, 2014 http://ssrn.com/abstract=2306003

Hughes, J. P., Lang, W. W., Mester, L. J., Moon, C. G. & Pagano, M. S. (2003). Do bankers sacrifice value to build empires? Managerial incentives, industry consolidation, and financial performance. *Journal of Banking & Finance,* 27(3), 417-447.

Hussain, M. E. & Hassan, M. K. (2012). Competition, Risk Taking and Efficiency in the US Commercial Banks Prior to 2008 Financial Crisis. Available at SSRN 2003066.

Jondrow, J., Lovell, C. K., Materov, I. S. & Schmidt, P. (1982). On the estimation of technical inefficiency in the stochastic frontier production function model. *Journal of Econometrics,* 19(2), 233-238.

Kao, C. & Liu, S. T. (2009). Stochastic data envelopment analysis in measuring the efficiency of Taiwan commercial banks. *European Journal of Operational Research,* 196(1), 312-322.

Khan, F., Muneer, S. & Anuar, M. A. (2013). Relationship between stock prices and economic variables: Sectoral analysis. *Actual Problems of Economics*, 143, 544–553

Kouki, I. & Al-Nasser, A. (2014). The implication of banking competition: Evidence from African countries. *Research in International Business and Finance*. doi:http://dx.doi.org/10.1016/j.ribaf.2014.09.009

Kumbhakar, S. C. & Lovell, C. K. (2003). Stochastic frontier analysis: Cambridge University Press.

Laeven, L. & Levine, R. (2009). Bank governance, regulation and risk taking. *Journal of Financial Economics,* 93(2), 259-275. doi:http://dx.doi.org/10.1016/j.jfineco.2008.09.003

Léon, F. (2015). What do we know about the role of bank competition in Africa Retrieved from http://cerdi.org/production/show/id/1695/type_production_id/1. Retrieved 27 August 2015 http://cerdi.org/production/show/id/1695/type_production_id/1

Lepetit, L. & Strobel, F. (2013). Bank insolvency risk and time-varying Z-score measures. *Journal of International Financial Markets, Institutions and Money,* 25, 73-87.

Liu, H., Molyneux, P. & Wilson, J. (2013). Competition in banking: measurement and interpretation. Handbook of Research Methods and Applications in Empirical Finance, 197-215. doi:10.4337/9780857936097.00016

Maghyereh, A. I. & Awartani, B. (2016). The Influence of Competition on the Financial Stability of Banks in the Gulf Cooperation Council Countries. SSRN Electronic Journal. doi:10.2139/ssrn.2748982

Meeusen, W. & Van den Broeck, J. (1977). Technical efficiency and dimension of the firm: Some results on the use of frontier production functions. *Empirical economics,* 2(2), 109-122.

Mileva, E. (2007). Using Arellano-Bond dynamic panel GMM estimators in Stata. Economics Department, Fordham University, 1-10.

Moyo, J., Nandwa, B., Council, D. E., Oduor, J. & Simpasa, A. (2014). Financial sector reforms, competition and banking system stability in Sub-Saharan Africa. New Perspectives. Retrieved from academia.edu

Mugume, A. (2007). Market structure and performance in Uganda's banking industry. African Econometrics Society. Retrieved from pdfs.semanticscholar.org

Muneer, S., Butt, B. Z. & Rehman, S. U. (2011). A Multifactor Model of Banking Industry Stock Returns: An Emerging Market Perspective. *Information Management and Business Review*, 2(6), 267-275

Nguyen, N. B. (2010). Estimation of Technical Efficiency in Stochastic Frontier Analysis. (PhD), Graduate College of Bowling Green State University.

Petersen, M. A. & Rajan, R. G. (1995). The effect of credit market competition on lending relationships. *The Quarterly Journal of Economics,* 110(2), 407-443.

Roodman, D. (2006). How to do xtabond2: An introduction to difference and system GMM in Stata. Center for Global Development working paper(103).

Roy, A. D. (1952). Safety First and the Holding of Assets. *Econometrica,* 20(3), 431-449. doi:10.2307/1907413

Schaeck, K. & Cihák, M. (2014). Competition, efficiency, and stability in banking. *Financial Management,* 43(1), 215-241.

Schaeck, K., Cihak, M. & Simon, W. (2009). Are Competitive Banking Systems More Stable? *Journal of Money, Credit and Banking,* 41(4), 711-734. doi:10.2307/25483515

Sealey, C. W. & Lindley, J. T. (1977). Inputs, outputs, and a theory of production and cost at depository financial institutions. *The Journal of finance,* 32(4), 1251-1266.

Shaffer, S. (2004). Comment on What drives bank competition? Some international evidence by Stijn Claessens and Luc Laeven. *Journal of Money, Credit and Banking*, 5, 585-592.

Soedarmono, W., Machrouh, F. & Tarazi, A. (2013). Bank competition, crisis and risk taking: Evidence from emerging markets in Asia. *Journal of International Financial Markets, Institutions and Money,* 23, 196-221.

Suwandi., Kaluge, D. & Muneer, S. (2016). Crisis Transfer Analysis among Fifteen Major World Stock Markets. *Indian Journal of Science and Technology*, 9(48), 1-7

Tabak, B. M., Fazio, D. M. & Cajueiro, D. O. (2012). The relationship between banking market competition and risk-taking: Do size and capitalization matter? *Journal of Banking & Finance,* 36(12), 3366-3381.

Uhde, A. & Heimeshoff, U. (2009). Consolidation in banking and financial stability in Europe: Empirical evidence. *Journal of Banking & Finance,* 33(7), 1299-1311.

Valencia, F. & Laeven, L. (2012). Systemic banking crises database: An update. *SSRN Electronic Journal* (12-163). doi:10.2139/ssrn.2096234

Watkins, K. (2014). Grain, fish money: financing Africa's green and blue revolutions: Africa Progress Report 2014. Retrieved from africabib.org

Williams, J. (2004). Determining management behaviour in European banking. *Journal of Banking & Finance,* 28(10), 2427-2460.

Yeyati, E. L. & Micco, A. (2007). Concentration and foreign penetration in Latin American banking sectors: Impact on competition and risk. *Journal of Banking & Finance,* 31(6), 1633-1647.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

A Comparative Analysis of Effects of Education on Sub-Saharan Africa's Economic Growth

Akinola Gbenga Wilfred, Gerry Koye Bokana
College of Law and Management Studies, University of KwaZulu-Natal, Westville, Durban, South Africa
214585066@stu.ukzn.ac.za, bokanakg@ukzn.ac.za

Abstract: This study aims to analyze and to compare the effects of various levels of education on the economic growth of some selected countries in Sub-Saharan Africa (SSA) between 1980 and 2015.It is hypothesized in the study that various levels of education have significant positive impacts on the economic growth of some selected sub-Saharan Africa countries over the stated period. Fixed effect Least Square Dummy Variable (LSDV) and a robust version of System Generalized Methods of Moment (SYSGMM) are adopted as model estimating techniques. Results from the LSDV model indicate increasing positive impacts of various levels of education on the economic growth of the thirty selected SSA countries. This trend of significance is corrected in the dynamic model, but with negative effects on the lower levels of education on growth while higher education output which negatively impacted on growth is reversed. The study systematically compares the effects of education on growth when higher education is included and when it is excluded both at the enrolment and output level in the regression model. We found different results at each instance for the various levels. Therefore, the major conclusion of this study is that higher education human capital at the output level appears to be the most significant of all the levels of education. However, this advantage enjoyed by higher education could have been as a result of cumulative effects from other levels of education over time. We, therefore, conclude that higher education should be supported with strong education policy implementation, as this could have a positive impact on SSA economic growth.

Keywords: *Education, Higher Education, Economic Growth, System GMM*

1. Introduction

Between 1980 and 2000, Sub Saharan African (SSA) countries witnessed low economic growth and low higher education enrolment (Glewwe, Maiga, & Zhend, 2014). Sub-Saharan Africa (22 million sq. Km) is a large region in term of land coverage in the African continent. Comparatively, it is relatively wider than that of China 9.3 (million sq. Km), India (2.97 sq. Km) and the United States (9.1 sq. Km) altogether. Also, it is five times bigger than the twenty-eight nations in the European Union. It is well above 930 million in its population figure, and also by this population estimates; it is two times as large as the European Union. There are 46 countries in the region (World Fact book, 2017). Logically, this SSA profile potentially should place SSA region at a competitive edge with the world's advanced economies, unfortunately, evidence from the extant literature has constantly shown a reverse falling trend which calls for an urgent higher education policy intervention among others to boost higher education enrolment. This is with the expectations that it will improve economic growth in the region which in turn will reverse the falling trend in the general economic performance. These SSA countries made little progress in raising their levels of education in general and higher education in particular. This low level of education or higher education is evident in explaining the poor performance of human capital formation (Glewwe, Maiga & Zheng, 2014). World Bank data estimated that between that same period, 1980 and 2000, the region's average growth rate in GDP per capita the world over was about 3.6% for South Asia, 0.5% for Latin America, 4.9% for East Asia, 1.2% for Middle East, but a mere -0.6% for SSA countries. Low higher education enrolment is hypothesized to be amongst the reasons why SSA countries are experiencing such an abnormally low economic growth. A country's level of education in term of population in general and higher education achievement in particular steadily reveal and reflect the knowledge, skills, and the level of economic growth and freedom enjoyed by the people (Bloom et al., 2014).

Further, the SSA economy has experienced the worst economic performance on record since the last two decades in 2016. Preliminary estimate indicates that the SSA real GDP aggregate increased by 1.1% in the first quarter of 2016; this immediately followed a correspondingly decline of 1.0% expansion in the third quarter. Growth is expected as a result of this to drop in 2016 to 1.2% from the 2015, 3.2% GDP growth rate. This sharp decline in the GDP growth rate is the SSA's worst economic performance since 1993 (Olamosu & Wynne, 2015). The reasons for the decline in the SSA GDP growth has to do with the nature of primary

products and activities such as agrarian agriculture and mining that engage the majority of the citizens in the region which make SSA countries susceptible to external shocks. Low higher education enrolment is hypothesized to be amongst the reasons why SSA countries are experiencing such a low economic growth. Premised upon the above, any attempt to examine and quantify the poor economic performance and low productivity for the purpose of reversing them through a higher educated workforce in SSA economy is a relevant and much needed initiative because these issues are of policy concerns in the region. Hence, to properly address the concerns in this study, the highlights of the study's hypothesis is that there are no significant positive impacts between each level of education and economic growth in the selected SSA countries. To test this hypothesis, Fixed effects least square dummy variables (LSDV) and system GMM are employed as the study's estimating techniques. While the main objective of this paper is to analyse and to compare the effects of various levels of education in the selected Sub-Saharan Africa countries. The sub objectives of this research work are to:

- determine the effects of primary education enrolment and primary education output on the economic growth.
- examine the effects of secondary education enrolment and secondary education output on economic growth.
- investigate the effects of higher education enrolment and higher education output on economic growth.
- compare the effects of the composite model with and without higher education on economic growth.

2. Literature Review

Education and Growth: Theoretical Framework: Empirical analyses of education and its comparative impacts on SSA economic growth make sense and they are relevant based on the premise that they adequately relate to human capital-growth theories. Theories that summarize the relevance of education to growth are hereby reviewed. There is a large literature attesting to the impact of education on human capital in the long run growth determination (Lucas, 1988; Shaihani et al., 2011). Solow (1956) developed the neoclassical growth model in which: $Y=Af(K,L)$, where Y= GDP output, A=Total factor productivity (technological change), K= Physical capital, L=Labour. Labour productivity in this theory=Y/L, the theory finally concluded that the output of an economy can be determined by the increase in any of the inputs, which leads to equilibrium state. To adequately organise the factor input, Mankiw, Romer & Weil (1992) were credited for the integration of human capital into the growth model. It has been argued in the theory of economic growth that education-centered human capital impacts on the economic growth as it enters as an input into the production process (Lucas 1988) and by acting as an agent of diffusion, innovation technology, and catch-up processes (Romer, 1990; Nelson & Phelps, 1966). In the attempt to authenticate the validity of these theories, many empirical works on human capital and growth nexus have been conducted across the regions of the world, and the outcome of their findings appear mixed. The results of some of the researchers are giving below:

Education and Growth: Empirical Analysis: Literatures that established the significance of human capital education on growth is large in both developed and the developing economies. However, only a few empirical works focus on the effects of various levels of education on growth. Presented below are the main works that have investigated the effects of different individual levels of education on economic growth:
Apart from the research conducted by Pegkas (2014) in Greece, much empirical study on these concepts are summarized to establish a link between economic growth and educational levels. Pagkas studies the effects of various levels of educational on Greece GDP's growth for a period of 1960 to 2009. The outcome indicates the presence of a long-run relationship between gross domestic product and various educational levels. The overall findings indicate that higher and secondary education have statistically significant positive effects on the GDP growth, but primary education has no significant impacts on economic growth. Gemmell (1996) conducts an empirical work for the OECD countries, and his findings indicate that while higher and secondary education impact on growth in the developed economies, primary education mostly impact on the less developed nations. For the research carried out by Tallman & Wang (1994), higher education appears to have higher positive effects on the economic growth of Taiwan compared with secondary and primary education. For a sample of Asian countries, Mc Mahon (1998) investigation of the impacts of three educational levels on economic growth and outcome indicates that while

higher education negatively impacts on growth, secondary and primary levels have statistically significant positive impacts on economic growth.

The study conducted by Abbas (2001) in Sri Lanka and Pakistan clearly indicates that the economic growth of these countries are negatively impacted by primary education, while higher and secondary education exhibit a statistically significant positive effects on the two countries' economic growth. Petrakis & Stamatakis (2002) notes that the effects of education on growth depends on the developmental level of the economies; developing nations' economic growth appear to benefit from secondary and primary education whereas highly developed countries gain from higher education. Villa (2005) examines the various impact of each of the three levels of education on Italy's economic growth and the result indicates that education at secondary and higher levels impacts positively on the GDP growth, whereas, result from primary education indicates that it has no significant impacts on growth in Italy. Gyimah, Paddison & Mitiku (2006) study Africa economies and conclude that the three education levels are statistically significant with a positive effect flowing from education variables to growth in the African countries per-capita income. Regression result on Taiwan according to Lin (2006) indicates that all the three: higher, secondary and primary education, exhibit positive effects on growth in the economy. However, Chi (2008) indicates that higher education has larger and positive effects in China than secondary and primary education has on GDP growth. The outcome of these findings have shown that there are mixed results on the impacts of different levels of education on economic growth in different regions of the world. However, from the review of the extant literatures, it is clear that works on SSA region on this subject matter appear to be very scanty and the debates on the contribution of each level of education on growth is still ongoing. This study, will in this wise, contribute to the growing literature on the impacts of education stock on growth in the SSA region. The section that follows introduces us to the appropriate methodology that will be used to achieve the study's objectives.

3. Methodology

Model Specification: The study augments Cobb Douglas' production function for labour input effectiveness given by Bloom et al. (2014) and Holland (2013) where labour force combines with level of human capital

$$Y_{it}= A_{it} K^{\alpha}_{it} (L_{it}V_{it})^{\beta} \quad (1)$$

Where:

Y_{it} =Total output in country *i* at time *t.*

A_{it} =*TFP* in country *i* at time *t.*(In this model, A_{it} is assumed constant as parametric efficiency)

K_{it}= Physical capital in country *i* at time *t.*

L_{it} = Labour force in country *i* at time *t.*

V_{it} =Level of human capital per worker in country *i* at time *t.*

$(L_{it}V_{it})$ = Labour input effectiveness (2)

α and β = partial elasticity coefficient of output with respect to physical and human capital in country *i* at time *t. Where*$\alpha+\beta \leq 1$ *(Bloom et. al,2014)*

To disaggregating V_{it} into:

$$V_{it}= (Per_{it,} Pot_{it,} See_{it}Sot_{it}Ter_{it} \ Tou_{it}) \quad (4)$$

Where

Per_{it} = Primary school enrolment in country *i* at time *t.*

Pot_{it} =*Primary school output* in country *i* at time *t.*

See_{it} = Secondary school enrolment in country *i* at time *t.*

Sot_{it} =Secondary school output in country *i* at time *t.*

Ter_{it} = Higher education school enrolment in country *i* at time *t.*

Tou_{it} =Higher education school output in country *i* at time *t.*

$$Y_{it}= A_{it} K^{\alpha}_{it}(L_{it} Per_{it,} Pot_{it,} See_{it,} Sot_{it,} Ter_{it,} Tou_{it})^{\beta} \quad (5)$$

To take the log of Equation (5)

$$\log Y_{it}= \log A_{it} +\alpha \log K_{it}+\beta(\log L_{it}+\log Per_{it}+ \log Pot_{it}\log See_{it}+ \log Sot_{it}+ \log Ter_{it}+ \log Tou_{it}) \quad (6)$$

In summary, the production function aggregate when linearised can be expressed thus:

$$\log Y_{it}= \log A_{it} +\alpha \log K_{it}+\beta\log L_{it}+\beta\log Per_{it}+ \beta\log Pot_{it}+\beta\log See_{it}+ \beta\log Sot_{it} +\beta\log Ter_{it}+ \beta\log Tou_{it} \quad (7)$$

The study introduces μ_{it}, to capture the unexplained phenomenon(random shock) which was not captured in the adjustment process and this is a composite error which consists of a country's specific component η_i, and time component ε_t and idiosyncratic component δ_{it}. The summary expression of this composite error $\mu_{it} = \eta_i + \varepsilon_t + \delta_{it}$

$$Y_{it} = logA_{it} + \alpha logK_{it} + (\beta logL_{it} + \beta logPer_{it} + \beta logPot_{it} + \beta logSee_{it} + \beta log\ Sot_{it} + \beta logTer_{it} + \beta logTou_{it}) + \mu_{it}. \quad (8)$$

In order to build a dynamic model into the system, as earlier done for other levels of education, we introduce the lag of dependent variable to the right hand side (Roodman,2009; Bloom et al., 2014).

$$y_{it} = a_{it} + y_{it-1} + \alpha k_{it} + \beta l_{it} + \beta logPer_{it} + \beta logpot_{it} + \beta logSee_{it} + \beta logSot_{it} + \beta logTer_{it} + \beta logTou_{it} + \mu_{it}. \quad (9)$$

The y_{it}, k_{it}, l_{it}, per_{it}, pot_{it},see_{it}, sot_{it},ter_{it}, tou_{it} are the logs of Y_{it}, K_{it}, L_{it}, Per_{it}, Pot_{it},See_{it}, $Sot_{it}Ter_{it}$, Tou_{it} respective (10)

Justification of estimating technique: Basically, this paper shall adopt two models in the Panel estimation: The first is the static panel model and the other is the dynamics panel model (Bai, 2009).

The summary fixed effect equation is given as:

$$Y_{it} = X_{it}\beta + \pi_i + \mu_{it} \quad \ldots\ldots (11)$$

Here, intercept is missing, y_{it} is the vector of log difference of GDP across the SSA countries. The unobserved country-specific effect is π_i, β is a vector of estimating parameter for each of the explanatory variables while constant x_{it}, is K-dimensional row vector of explanatory variables $logA_{it} + logK_{it} + (logL_{it} + logPer_{it} + logPot_{it} + logSee_{it} + log\ Sot_{it} + logTer_{it} + logTou_{it})$ over the observable time period of the variables under investigation, while μ_{it} is the stochastic error term.

For the LSDV equation, we have the following:

$$y_{it} = \sum_{j=2}^{4} D_j + X_{it}\beta + \pi_i + \mu_{it} \quad \ldots\ldots (12)$$

In equation (12), D_j represents the dummy variables for N-1 cross section of countries.

The equation which addresses random effect model condition is hereby submitted as follows:

$$y_{it} = \alpha + X_{it}\beta + \pi_i + \mu_{it} \quad \ldots\ldots (13)$$

Where y_{it} is a vector of log difference of GDP across the SSA countries, α is the constant, β is a vector of parameter estimates for each of the explanatory variables, x_{it} is a K-dimensional row vector of explanatory variables $logA_{it} + logK_{it} + (logL_{it} + logPer_{it} + logPot_{it} + logSee_{it} + log\ Sot_{it} + logTer_{it} + logTou_{it})$ over the observable time period of the variables under investigation, while μ_{it} is the between-entity error. π_i is within-entity error. In the estimation of random effects π_i is assumed to be random which will be uncorrelated with the model explanatory variables.

The preferences for fixed effects or random effects model cannot be taken at random: thus, Hausman (1978) test is introduced in this study.

Again, dynamic panel data approach (Arellano &Bond, 1991) popularly known as generalized method of moments (GMM) is also adopted in this study. This type of estimating technique generates a model that improves the efficiency of the estimator.

The equation of the GMM is thus:

$$y_{it} = X_{it}\beta_1 + W_{it}\beta_2 + \varepsilon_{it} \quad \ldots\ldots (14)$$

Where y_{it} is the vector of log difference of GDP across the SSA countries, W_{it} is the vector of pre-determined regressors including lag(s) of y, intercept, β_i for *i=1,2* are parameter estimates for each of the explanatory variables, x_{it} is a K-dimensional row vector of strictly exogenous explanatory variables over the time period that are observed, and $\varepsilon_{it} = \pi_i + \mu_{it}$ is the error term.

This equation is just a modification of the fixed effect equation with the inclusion of instrumental variables.

4. Data and Empirical Analysis

Data Sources: The study adopts data for 30 SSA countries over 1980–2015 period and follows the usual practice in the empirical growth literature by taking interpolation of the five years variable (Tang et al., 2008). Data set for variables on enrolment rates for primary, secondary and higher education, completion rates on primary, secondary and higher education are available in Baro and Lee (2013) data sets to cover the period 1980-2010 while the data to cover the period 2015 are available in the new version of Baro and Lee (2015-2040) data sets.Data on GDP per capita are sourced from the online version of World Bank database.

Employment rates and capital stock are taken from the Penn World Table 9.0 (Feenstra Robert & Marcel, 2015).

Data Analysis and Interpretation: This section addresses the analysis of data and the results of our findings are reported accordingly.

Result of Summary Statistics: The result from summary statistics clusters around its mean which indicates how education variables and economic growth interacts in the model. It is obvious from the summary statistics that the growth rates of GDP, capital stock and employment rates are all nearer the minimum value than its maximum, it simply indicates that these three variables are relatively low during the sample period; whereas primary school enrolment and output have their values closer to the maximum than the minimum indicating that enrolment and its output rate are fairly higher during the sampled time. Also, the result from summary statistics establishes the claims from the observation of Atardi and Sala-i-Martin (2003), that Africa's growth has been nothing but tragic. On the other hand, the result supports the argument from the United Nation (2012) that enrolment in the region for primary education is high but the dropout rate is also high and this is reflected in the result obtained from primary output.

Table 1: Summary statistic Result

VARIABLES	Obs	Mean	Std. Dev	Min	Max
Rgdpna	1020	9.431441	1.189602	5.817422	13.3938
Ck	1020	9.999421	1.34196	6.99979	14.61521
Emp	1020	3.83313	4.098003	.1198697	24.2509
Per	1020	.1026893	1.175333	-17.97	17.5
Pot	1020	.2319433	.5861138	-4.087428	4.41
See	1020	.6526353	1.259034	-25.47	7.25
Sot	1020	.3092945	.7612114	-5.534075	6.79
Ter	1080	0.56218	0,1983102	-1.57	2.6
Tou	1080	.295786	.9836313	-.98	1.33

Source: Authors' Computation, 2017

Table 2: Correlation Matrix

	Rgdpna	Ck	Emp	Ter	Tou	See	Sot	Per	Pot
Rgdpna	1.0000								
Ck	0.8978	1.0000							
Emp	0,7038	0.6656	1.0000						
Per	-0.0967	-0.1048	-0.0012	1.0000					
Pot	-0.1253	-0.1143	-0.0408	0.2590	1.0000				
See	0.1439	0.1366	0.0250	-0.5433	-0.1447	1.0000			
Sot	0.2478	0.2341	0.1627	-0.3010	0.0191	0.2350	1.0000		
Ter	0.0402	0.0359	-0.0224	0.4098	0.0663	-0.2433	0.0355	1.0000	
Tou	0.0214	0.0232	-0.0218	0.4715	0.0051	-0.2115	0.0506	0.9469	1.0000

Source: Authors' Computation, 2017

Again, for secondary school enrolment, it is evident from the result of the summary statistics that there is a relatively high enrolment in this level of education, but not as high as that of primary enrolment. This now corroborates the initial result obtained that there is a higher dropout rate in the primary education and this could account for why enrolment is low in this level of education. This again supports the statistics that while SSA region is recording 72% in the primary education, secondary school has an average enrolment of 40% (United Nation, 2012). Again, secondary school output appears more favorable as the result from summary statistics shows that output is nearer the maximum than the minimum. Finally, the summary statistics result on higher education indicates that both the enrolment and output are fairly high in the SSA countries under

investigation. This is clearly seen as both values obtained are nearer the maximum than the minimum very slightly.

This section reports the result of the correlation matrix on the relationship between the behavioral and outcome variables without indicating the direction, size or nature of relationship. The study discovers a strong relationship between real Gdpna and capital stock, as well as real Gdpna and employment rate at the value of 0.8969, 0.7063 respectively. Again, a similar strong value of 0.6723 is obtained for the relationship between capital and employment rate. This result indicates a strong association-ship among the variables. Table 3.2 further offers explanation on the relationship between primary enrolments with its output on real Gdp growth which are the variables of interest; all signs are not expected as both variables are inversely related to growth. However, progression to education variable shows that the relationship between primary school enrolment, primary school output, employment, and capital stock are both weak and negative, except for primary school enrolment and primary school output which are positive but weak. The negative and weak results among these variables reflect the SSA situations. The next rung of education ladder is the secondary education which indicates an improvement in relationship. For instance, a positive but weak relationship exists between real Gdp growth with both secondary school enrolment and output. Similar relationship is obtainable from secondary school enrolment and its output to capital stock and employment rate. Finally, the study further observes a weak relationship between secondary enrolment and its output. The highest in the rung of education ladder is the higher education and the summary result again shows a positive but weak relationship between real Gdp growth with higher education enrolment and its output whereas Capital stock exhibits positive but weak relationship with higher education enrolment and its output. Finally, it is clear from the outcome of this result that there is a very strong relationship between higher education enrolment and its output. Having conducted the summary statistics and the correlation matrix to determine the nature of relationship among the study's variables, the study proceeds to test the appropriate relationship by adopting fixed effects LSDV and dynamic analysis.

Table 3: Fixed effects (Within) Regression Result

Ho: Random effects model is appropriate
Ha: Fixed effects model is preferred

R-sq: within = 0.7214			F(8,1042) = 337.19	
between = 0.8595			Prob > F = 0.0000	
overall = 0.8204			Number of obs = 1080	
Rgdpna	**Coefficient**	**Standard error**	**t**	**P>|t|**
Ck	.4033695	.0106346	37.93	0.000
Emp	.0609004	.0048363	12.59	0.000
Per	.0437874	.0094491	4.63	0.000
Pot	-.0091575	.0142508	-0.64	0.521
See	.0245043	.0070012	3.50	0.000
Sot	.0245987	.0109119	2.25	0.024
Ter	.5089796	.1285789	3.96	0.000
Tou	-1.106622	.2740701	-4.04	0.000
Cons	5.142788	.0991435	51.87	0.000

This section, as indicated in Tables 4.3 and 4.4, contains the result in the panel model. The study reports the result from both fixed and random effects. It further investigates through the Hausman test the most appropriate model to be selected and the result from Hausman test shows that there is no significant difference between the two models, even though from the result of the Hausman test, null hypothesis (Ho) is accepted which indicates that random effects model is the appropriate model to be adopted, and since there is no significant difference, we accept the fixed effects model as being an appropriate model too. The adoption of fixed and random model is premised upon justification that they can handle heterogeneity effect that may influence the outcome of our findings. All the same, all the significant variables found in the random effects model are also found to be significant in the fixed effects model; the signs and sizes of coefficients from both models are relatively the same. In both models, the following variables, namely: capital stock, employment rates, primary school output, secondary school enrolment and output, higher education enrolment and output evidently seem to be significant. The primary school enrolment that is not significant in the fixed

effects is also not significant in random effects model. Again, capital stock, employment rates, primary school enrolment, secondary school enrolment and its output, and higher education enrolment are all positively signed in both models, while primary school output and higher education output are also found to be inversely related to growth in both models. The outcome of these results suggests the nature of the relationship (that is, direct or inverse) between each of the significant variables and GDP growth. There is a clear indication that these macro-economic variables are likely to be important determinants of economic growth among the SSA countries under investigation. However, to establish their individual effect in this study, the dynamic panel model is significantly important.

Table 4: Random-effects GLS Regression Result

Ho: Random effects model is appropriate
Ha: Fixed effects model is preferred

R-sq: within = 0.7213			F(8,1042) = 337.19	
between = 0.8590			Prob > F = 0.0000	
overall = 0.8203		Wald chi2(8)	Number of obs = 1080	
= 2792.75				
Rgdpna	**Coefficient**	**Standard error**	**t**	**P>|t|**
Ck	.4089648	.0107012	38.22	0.000
Emp	.0625239	.0048045	13.01	0.000
Per	.0439565	.0095602	4.60	0.000
Pot	-.0117276	.0144075	-0.81	0.416
See	.024586	.0070849	3.47	0.001
Sot	.0255826	.0110373	2.32	0.020
Ter	.5360257	.1298782	4.13	0.000
Tou	-1.161027	.276829	-4.19	0.000
Cons	5.080851	.1254958	40.49	0.000

Source: Authors' Computation, 2017

The R-square is good in the two models. This is because at least, all the explanatory variables account for above 70% variation in the GDP growth among the SSA countries under investigation. The two models are tested for overall significance to corroborate the R-square results through the chi square test for the random effects and F-test for fixed effects. The outcome of our results indicates that both models pass the overall significance test. There is a clear indication from our results so far that the choice of variables adopted in this study appears to be appropriate. In addition, empirical literature indicates the possible tendencies of cross-sectional dependence in panel results, and this compels us in this study to conduct the test of significant differences in intercepts among the SSA countries by adopting fixed effects LSDV as indicated.

Table (5) reports the comparative outcome of result from the three levels of education for the 30 countries under investigation. The aim of this section of the study is to show the significant comparative effects of each level of education enrolment and output on the GDP growth rate equation in SSA countries. The analysis attempts to estimate the GDP growth equation first without higher education and secondary education; second, without higher education and primary education and lastly without primary and secondary education and compared the outcome of the equations. The coefficients on primary, secondary and higher education in this equation may offer explanatory indication of how much each level of education may lead to an underestimation of the growth effects of higher, secondary and primary education. The estimate coefficients of these growth equations are appropriately submitted in the columns. Indication from dynamic regression statistics (being a corrective measure of static model) establishes that the estimates are robust and satisfactory. The fixed effects (LSDV) results of higher education are found in columns 2 and 3. Columns 4 and5 are the outcome results of secondary school education (both enrolment and outcome). The final columns 6 and 7 are the results from primary education (both enrolment and output). The table statistics has been done for the purpose of statistical comparison. The study reports the results from both the fixed effects within regression and the dynamic SYSTEM GMM because the results complement each other. The reference point of how significantly higher is in the GDP growth rate equation in the SSA countries which emerges when we compare the estimates in the growth equation with higher education with the estimates without it in the growth equation.

Table 5: LSDV fixed effects: A Comparative Statistics Analysis of each Level of Education

	Ter Tou		See Sot		Per Pot	
	Adj R-squared = 0.9647		Adj R-squared = 0.9645		Adj R-squared = 0.9647	
	R-squared = 0.9658		R-squared = 0.9656		R-squared = 0.9658	
Rgdpna	Prob > F = 0.0000		Prob > F = 0.0000		Prob > F = 0.0000	
	F(33, 1046) = 895.01		F(33, 1046) = 889.73		F(33,1046) = 883.06	
	Number of obs = 1080		Number of obs = 1080		Number of obs = 1080	
	Coeff	P-value	Coeff	P-value	Coeff	P-value
Ck	.4057603	0.000	.4058242	0.000	.4060184	0.000
Emp	.061321	0.000	.0581587	0.000	.0589927	0.000
Edu enroll	.3052101	0.009	.0048836	0.415	.0152686	0.019
Edu outp	-.5259543	0.025	.0032991	.0074664	.0157944	0.232
Id						
Benin	.6583169	0.000	.6942236	0.000	.6699498	0.000
Botswana	1.052044	0.000	1.111735	0.000	1.089469	0.000
Central Afri.Rep	.0011574	0.983	.0255795	0.897	.0044629	0.934
Côte d'Ivoire	1.515505	0.000	1.518112	0.000	1.514859	0.000
Cameroon	1.390734	0.000	1.398415	0.000	1.405197	0.000
D.R. of Congo	.6313368	0.000	.6645333	0.000	.6716845	0.000
Congo	1.343472	0.000	1.333574	0.000	1.355245	0.000
Gabon	1.529456	0.000	1.514365	0.000	1.540091	0.000
Ghana	1.027043	0.000	1.036499	0.000	1.053368	0.000
Gambia	-.0461223	0.399	-.0597478	0.278	1.454962	0.520
Kenya	1.433923	0.000	1.450831	0.000	1.454962	0.000
Liberia	-.3939913	0.000	-.3795488	0.000	-.3751505	0.000
Lesotho	-.0643687	0.236	-.0765877	0.160	-.0577833	0.288
Mali	1.061541	0.000	1.061063	0.000	1.077241	0.000
Mozambique	.4919524	0.000	.5044323	0.000	.5128815	0.000
Mauritania	.5721158	0.000	.5615729	0.000	.563289	0.000
Mauritius	.8259284	0.000	.8112172	0.000	.8512543	0.000
Malawi	.5664619	0.000	.5678109	0.000	.5768292	0.000
Namibia	.918353	0.000	.906779	0.000	.9230854	0.000
Niger	.2041593	0.000	.2067452	0.000	.2109744	0.000
Rwanda	.784058	0.000	.7907675	0.000	.7914429	0.000
Senegal	.9210941	0.000	.9197351	0.000	.9369216	0.000
Sierra Leone	.8095293	0.000	.8022017	0.000	.8143314	0.000
Swaziland	.4254672	0.000	.4156221	0.000	.4358417	0.000
Togo	.3754853	0.000	.3656833	0.000	.380869	0.000
Uganda	.989362	0.000	1.002813	0.000	1.00897	0.000
South Africa	2.2687	0.000	2.312876	0.000	2.351438	0.000
Zambia	1.075163	0.000	1.067617	0.000	1.095353	0.000
Zimbabwe	.9486805	0.000	1.067617	0.000	.9709314	0.000
Constant	4.360268	0.000	4.367683	0.000	4.343223	0.000

Source: Authors' Computation, 2017

From the exclusive regression of the first level of education in the statistical growth model, the outcome of the study's result shows evidently that capital stock, employment rates and primary education are all statistically significant at 1% level of significance, however, primary school output is not found to be statistically significant. Positive relationship exists between capital stock and GDP growth. A 1% increase in the capital stock will cause 38% increase in the GDP in the SSA countries under investigation. Employment rates have a positive relationship with the growth of the economy in that about 6.3% increase is expected in the economy as a result of 1 unit increase in the employment rates. Our results also reveal that there is a positive and significant impact of primary school enrolment on the growth of the economy in the region because a 1.52% increase in the economy is expected as a result of a unit increase in primary education enrolment. However, the primary school output is found not to be statistically significant. As the regression enters a higher rung of

secondary school ladder, the result reveals that secondary enrolment is not statistically significant while secondary school output is statistically significant to growth. It shows that the student graduates in the second rung of education ladder are not doing enough to influence growth in the economy of the SSA countries being investigated. Higher education is the apex in the rung of education and the findings from this study reveal that when only higher education enrolment and output enter into the regression with capital and labor, higher education enrolment and output are found to be statistically significant along with employment rates and capital stock. While the enrolment coefficient is positive, the coefficient of higher education output is negative. While an increase in enrolment will bring about growth in the SSA region under investigation, output from higher education so far has been seen to inversely impact on growth.

The study further regresses all various levels of education and the result takes a new look. All levels of education including higher education enrolment and higher education output are found to be statistically significant except primary enrolment and apart from the fact that their coefficients show positive relationship with economic growth, the value of their contribution significantly increases. For instance, the percentage of increase is as follows: Primary enrolment (67%), secondary enrolment (87.5%), and Secondary output (123%), and employment rates (6.4%) however, the value of capital stock remains relatively unchanged. The study takes further steps to consider the impacts of education level on economic growth with special emphasis on higher education. The result is hereby submitted in Table 6

Table 6: Dynamic panel-data estimation, two step system GMM

Number of instrument			27	
Number of obs			1950	
Wald chi2(9)			16092.89	
Time variable			Yearly	
Number of group			30	
Prob> chi2			0.0000	
Variables	**Coefficient**	**Stand. Err.**	**Z-Stat**	**P-Value**
Rgdpna (L1)	1.029873	.0170934	60.25	0.000
Tou	2.610751	1.105494	2.36	0.018
Ter	-1.288569	.5169781	-2.49	0.013
Sot	-.1133662	.0476968	-2.38	0.017
Per	-.0390657	.0254622	-1.53	0.125
Pot	-.0369265	.0282777	-1.31	0.192
Emp	.007077	.008333	0.85	0.396
Ck	-.0127923	.010278	-1.24	0.213
Cons	-.0992949	.1508003	-0.66	0.510

Source: Authors' Computation, 2017

The result of the SYS GMM in Table 4.6 incorporates all the levels of education into the dynamic model and from the findings, higher education enrolment and its output maintain consistency in its statistical significance, magnitude and the direction of coefficient. The lag value of the Gdpna maintains a consistent positive relationship with the Gdpna. Again, higher education enrolment, higher education output and secondary school output are all statistically significant. The result of this model reverses signs of the coefficients for higher education. Here, higher education enrolment and secondary school output are inversely related to Gdpna, whereas higher education output has positive relationship with Gdpna. Primary school output, secondary school enrolment together with employment rate and capital stock are not statistically significant to impact growth on the economies of SSA countries under investigation.

In this dynamic model, only few of the variables that are found to be statistically significant in the static panel model are significant in the SYS GMM. All the levels of education are cumulated into the model to study how the model behaves. The SYS GMM result indicates that higher education enrolment and its output, the lag value of GDP growth rate and secondary school output may constitute major determinants of economic growth in the SSA countries. A growing reversed relationship of Ter and Sot stunts and inhibits growth as this section of the economy appears to absorb expenditure rather than contributing to the economy. There is a high tendency for allocated resources to be trapped with unproductive economic agents. When those

secondary school output enter into higher education for enrolment at this level, enrolment remains unproductive until they turn out to become higher education output. With likely associated income rise as higher education joins real sector, financial capacity which reduces economic burden is enhanced and this in turn is expected to reduce the level of growth rate of the economy in the previous year but since this lag period is found to be positively significant, it indicates that a consistent growth rate is required flowing from the past in determining the current GDP growth level in SSA countries under review. In conclusion, Ter and its output, Sot and the current GDP levels are major variables that could have individual significant effects on the magnitude of the SSA countries. However, we need to conduct some tests on these results in order to ascertain their validity. Dynamic panel-data estimation, two step system GMM (Robust) is employed to control for standard covariance matrix robustness in heteroskedasticity and autocorrolation ,that is, panel-specific, and to avoid standard errors that are downward biased, two step robust is adopted to get the finite sampled corrected for two-step covariance matrix.

Table 7: Sargan test of over-identifying restrictions

H0: over-identifying restrictions are valid	
chi2(18)	1.53
Prob > chi2	1.000

Source: Authors' Computation, 2017

Table 8: Hansen test of over-identifying restrictions

H0: over-identifying restrictions are valid	
chi2(18)	14.40
Prob > chi2	0.703

Source: Authors' Computation, 2017

Sargan /Hansen Test of Over-Identifying Restrictions Result: This study applies robust estimation where both Hansen and Sargan statistics are reported, and the normal rule of thumb is that Sargan test has a null hypothesis of "the instruments as a group are exogenous". Therefore, the higher the p-value of the Sargan or Hansen statistics, the better. Therefore, Null hypothesis is rejected as the instruments as a group is strictly not exogenous. This shows that over-identifying restrictions are invalid and the implication is that the number of instruments used in the SYSGMM estimation does not have any negative effect on the estimators of the SYSGMM.

Table 9: showing test for serial correlation

H_0= no autocorrelation		
Arellano-Bond test for AR(1)	z = -2.41	Pr > z = 0.016
Arellano-Bond test for AR(2)	z = -0.42	Pr > z = 0.932

Source: Authors' Computation, 2017

Again, Arellano-Bond test for autocorrelation has a null hypothesis of no autocorrelation. The rule of thumb here is that AR2 must not be significant. The significant value of AR1 indicates that there is the presence of autocorrelation which, however, is being corrected at AR2. Null hypothesis is rejected at 5% level of significance.

This section further investigates the pattern of behavior in the growth equation when higher education variables are not included in the dynamic model. In this section, all the levels of education are cumulated into the model to study how the model behaves. However, higher education is missing in this model. The SYS GMM result indicates that primary education enrolment and its output, the lag value of GDP growth rate and employment rates may constitute major determinants of economic growth in the SSA countries. Our findings further confirm the initial postulations that primary education is enough without higher education to promote growth. This wrong notion keeps the sub- Sahara countries as primary producer of Agricultural products at the expense of knowledge based technological innovations. There is a puzzling challenge in the magnitude and the direction of the coefficients. As noted in the Table, while enrolment impacts positively, primary output and employment rates do not. It is evident from the foregoing that an increase from the graduating students of primary school would not impact on growth as an average primary school output would not seek any economic benefit other than seeking the next level of education.

Table 10: Dynamic panel-data estimation, two step system GMM

Number of instruments			13	
Number of obs			1950	
Wald chi2(9)			14532.26	
Time variable			Year	
Number of group			30	
Prob> chi2			0.0000	
Variable	**Coefficient**	**Stand. Err**	**Z.Stat**	**P-Value**
Rgdpna L1	1.179709	.1189392	9.92	0.000
See	.032181	.1108731	0.29	0.772
Sot	.0358628	.0991891	0.36	0.718
Per	.3801952	.1509535	2.52	0.012
Pot	-.4217374	.1633182	-2.58	0.010
Emp	-.008596	.0047573	-1.81	0.071
Ck	-.1370651	.1185192	-1.16	0.247
Cons	-.2220765	.1586485	-1.40	0.162

Source: Authors' Computation, 2017

Table 11: Sargan test of over-identifying restrictions

H0: over-identifying restrictions are valid	
chi2(5)	= 0.39
Prob > chi2	0.996

Table 12: Hansen test of over-identifying restrictions

H0: over-identifying restrictions are valid	
chi2(5)	1.96
Prob > chi2	0.854

Table 13: Result of Serial Correlation

H_0= no autocorrelation		
Arellano-Bond test for AR(1)	z = -1.8	Pr > z = 0.073
Arellano-Bond test for AR(2)	z = 0.89	Pr > z = 0.371

Finally, the result shows that the null hypothesis is rejected; therefore, over-identifying restrictions are invalid. The implication is that the number of instruments used in the SYSGMM estimation does not have any negative effect on the estimators of the SYSGMM. The closer the P- value to one, the better, thus, the result is adequate to establish no over identifying restriction. Again, the number of instruments does not exceed the number of countries. Based on the model diagnostics, the Arellano-Bond SYSGMM estimator produces the best estimates at AR (2); at the level of AR (1) estimation, a level of serial correlation could be expected which is being corrected at AR (2), therefore, the level of significance may be allowed at AR(1) but not at AR(2). Again, the number of instruments is less than the number of groups and finally, the overall p-value is strongly significant.

Inferences, Comparisons with Previous Empirical Studies and Discussion of Findings: In this study, the significant statistical impacts of higher education (both higher education enrolment and output) on SSA countries under investigation when compared with other levels of education appear obvious and the result remains consistent all through the analysis with some adjustments in the dynamic results. The cumulative impacts of each level of education increase as they combine to impact on economic growth. For instance, Ter increases Gdpna by 31% and Tou decreases Gdpna by 53% when regressed alone against Gdpna. The Tervalue impacts, on the other hand, increases to 51% on Gdpna and Tou impact decreases to 11.1% when it combines with other levels of education. A comparable figure is the See and Sot whose impact value in growth regression model alone increases Gdpna by 5% and 3% respectively. This impact value increases to 25% for See and 25% for Sot when combined together with other education variables in the regression. The increasing impact value of Per is 6% and Potis 1.5% on Gdpna when regressed against Gdpna. When this first level of education combines with other levels, a new impact of 4.3% is experienced with inverse impact of 0.9% decrease in Gdpna as a result of 1% increase in Pot.

However, the more robust system GMM offers contrasting result as only higher education output has positive relationship with economic growth when all the education variables enter the regression growth model. A superficial look at this result appears to negate a priori expectations as we would expect positive relationship to flow from lower levels of education to Gdpna; although authors such as Shaihani et al. (2011); Voon (2001) and Agiomirgianaskis, Asteriou & Monasitiriotis (2002) note that the higher the education level (higher, secondary and primary), the more the impact of education on growth. Bloom et al. (2014) and Appiah and McMahon (2002) also obtain similar result, however, authors such as Petrakis & Stamatakis (2002) and Anyanwu et al. (2007) found a contradicting result. However, theories on the relationship between human capital educations appear to have mixed explanations on the outcome of this finding. Examples of such theories are Nelson & Phelp (1966) who argue on education and externality theory that the only way by which education can impact on growth is through technology (which primary and secondary lacks in the SSA countries). Krueger & Lindahl (2000) postulate the possibility under which social return to education will be lower than individual return. From their own point of view, education is all about certification which does not result in productivity growth effects. Parallel to this theory is human capital-growth theory which argues that a highly education-centered human capital impacts on economic growth by functioning as an input in the production process (Lucas, 1988; Mankiw, Romer & Weil, 1992). It appears that the dynamic result is a true reflection of SSA countries under investigation based on the following facts: the structure of primary and secondary education among SSA countries was not tailored towards having immediate impacts on the growth of the region's economy; however, as higher education produces her output, the transmission mechanism effects lead to economic growth. Again, due to advancement in statistical methods, it appears that statistical relationship between human capital and growth reduces with the signs parameter changing over time. Another observed possible cause is the extent of significance of human capital. Human capital marginal return appears to be large in the economies where there is scarcity of it. The study obtains further possible reasons from Jones (1996) who postulates that it is not changes in the percentage of attainment in education that matters, or the means by which education is allowed to enter the regression model, but rather the level changes. Again, Petrakis & Stamatakis (2002) argue that the growth effect of higher education is a function of development level in the economy and that while we expect higher education to negatively contribute to growth in the developing economy, the reverse holds for developed economies. The result of this study refutes this claim.

5. Conclusion

The result from the SYSTEM GMM analysis shows that higher education could be more important for growth in the SSA countries than investment in physical capital and other levels of education. The result from higher education showing positive relationship with economic growth is supported both theoretically and empirically from studies conducted by other researchers in countries across other regions of the world. Perhaps, the relatively high growth effects of higher education human capital could be as a result of the fact that SSA has a comparatively very low higher education stocks, thereby, causing the marginal contribution to GDP growth to be relatively high. Given the diagnostic check conducted in this study, the robustness of our findings has been established. The hypothesis of this study indicating that there are no significant positive impacts between each level of education and economic growth in the selected SSA countries has been proved. The growth effects of each level of education are areas that have been extensively explored in the literature. Our study, however, contributes to the literature on SSA in three ways. First, the study integrates primary enrolment and its output; secondary enrolment and its output; higher education enrolment and its output growth effects model which before now have been used individually. This has enabled us to highlight drop-out rate as the possible reasons for the divergent results in the literature on the relationship between each level of education and its corresponding output which no author has accounted for. To the best of our knowledge, this is the first study that integrates these two concepts. Second, we provide evidence to support negative relationship between lower rungs of education and economic growth, as well as positive relationship between higher education and economic growth.

Lastly, this study provides evidence that increasing contribution of each level of education on growth when they all combine together is more evidenced than when each level is regressed against growth individually. Thus, this study, contributes to the economic science by filling the gap in the extant empirical literature accordingly. The major constraints in the study is the limited availability of education data which is available

for only thirty countries of the SSA region and to use the result of thirty out of the forty-six countries available in the World Bank development indicator to generalize the situations in SSA as a region is contestable and opens the study to critical debates. This is an unavoidable limitation to the study. There is also the tendency to overestimate the impacts of higher education while those of primary and secondary education on economic growth are underestimated since the primary and secondary education are not significant in the growth equation. Any individual that has obtained higher education must have obtained certain years of secondary and primary education. From conventional definition, the estimation of higher education cumulatively must have added lower rung of education, hence, overstatement of the growth impacts of higher education could have resulted from the coefficient of higher education. By necessary implication, elements of primary and secondary education must be contained in higher education. The extent to which overstatement of the higher education coefficient affects growth cannot be known precisely. The growth equation has been explored and compared between when higher education was included and when only primary and secondary regressors are estimated. This result has been compared with SYSGMM result. The significant variation in the higher education coefficient in the study's regression analysis could offer information on the size and direction of this possible bias. In column 2, the estimated results are presented.

Based on the result obtained from the SYSGMM analysis, only higher education enrolment, higher education output and secondary school enrolment are statistically significant at 5% level of significance while capital stock is not statistically significant. While the coefficient of higher education output is positive, showing the positive impact of higher education on growth, the coefficients of higher education enrolment and secondary school output are negative. From the foregoing results of contribution of higher education on SSA growth, it is evidenced that higher education through her transmission mechanism impacts more on SSA economic growth in comparison to other levels of education. This could not be unconnected to its productivity, innovation, technology and special skill acquisition role which cannot be acquired in the lower level of education. This study suggests a strong policy support for higher education in SSA countries; if higher education is adequately supported through programs enhancing innovation, technology and special skill acquisition it would improve the SSA economic growth.

References

Abbas, Q. (2001). Endogenous Growth and Human Capital: A Comparative Study of Pakistan and Sri Lanka. *The Pakistan Development Review,* 40(4), 987-1007.

Agiomirgianaskis, G., Asterious, D. & Monastiriotis, V. (2002). Human Capital and Economic Growth Revisited: a Dynamic Panel data study. *Journal of International Advances in Economic Research*, 8(3), 177–187,doi: https ://doi. org/10. 1007/ bf02 29 7955

Anyanwu, J. & Erhijakpor, A. E. (2007). Working Paper 92-Education Expenditures and School Enrolment in Africa: Illustrations from Nigeria and Other SANE Countries (No. 227). https://ideas.repec.org/p/adb/adbwps/227.html

Appiah, E. N. & McMahon, W. (2002). The Social Outcomes of Education and Feedbacks on Growth in Africa. *Journal of Development Studies*, 38(4), 27–68, doi: https://doi.org/10.1080/00220380412331322411

Arellano, M. & Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies,* 58(2), 277-297, doi: https://doi.org/10.2307/2297968

Artadi, E. V. & Sala-i-Martin, X. (2003). The economic tragedy of the XXth century: growth in Africa (No. w9865). National Bureau of Economic Research. www.nber.org/papers/w9865

Bai, J. (2009). Panel Data Models with Interactive Fixed Effects. *Econometrica*, 77(4), 1229-1279.

Barro, R. & Jong-Wha L. (2013). A New Data Set of Educational Attainment in the World, 1950-2010. *Journal of Development Economics*, 104, 184–198, doi: 10.1016/j.jdeveco.2012.10.001.

Bloom, D. E., Canning, D., Chan, K. J. & Luca, D. L. (2014). Higher Education and Economic Growth in Africa. *International Journal of African Higher Education,* 1(1), 22-57, doi: https://doi.org/10.6017/ijahe.v1i1.5643.

Chi, W. (2008). The Role of Human Capital in China's Economic Development: Review and New Evidence. *China Economic Review*, 19(3), 421–436.

Feenstra, R. C., Robert, I. & Marcel, P. T. (2015). The Next Generation of the Penn World Table. *American Economic Review*, 105(10), 3150–3182, doi: 10.1257/aer.20130954.

Gemmell, N. (1996). Evaluating the Impacts of Human Capital Stock and Accumulation on Economic Growth: Some New Evidence. *Oxford Bulletin of Economics and Statistics*, 58, 9-28.

Glewwe, P., Maiga, E. & Zheng, H. (2014). The Contribution of Education to Economic Growth: A Review of the Evidence, with Special Attention and an Application to Sub-Saharan Africa. *World Development*, 59, 379-393,doi: https://doi.org/10.1016/j.worlddev.2014.01.021

Gyimah-Brempong, K., Paddison, O. & Mitiku, W. (2006). Higher Education and Economic Growth in Africa. *The Journal of Development Studies,* 42(3), 509-529.https://doi.org/10.1080/00220380600576490

Hausman, J. A. (1978). Specification Tests in Econometrics. *Econometrica: Journal of the Econometric Society*, 3, 1251-1271.

Holland, D., Liadze, I., Rienzo, C. & Wilkinson, D. (2013). The relationship between graduates and economic growth across countries. BIS Research Paper, 110.

Jones, C. I. (1996). Human Capital, Ideas, and Economic Growth, Mimeo, Stanford: Stanford University.

Krueger, A. B. & Lindahl, M. (2000). Education for growth: Why and for Whom? National Bureau of Economic Research.

Lucas, R. E. (1988). On the Mechanics of Economic Development. *Journal of Monetary Economics*, 22(1), 3-42, https://doi.org/10.1016/0304-3932(88)90168-7

Lin, T. (2006). Alternative Measure for Education Variable in an Empirical Economic Growth Model: is Primary Education Less Important? *Economics Bulletin,* 15, 1-6.

Mankiw, G., Romer D. & Weil. D. (1992). A Contribution to the Empirics of Economic Growth. *Quarterly Journal of Economics*, 107, 407-437.

McMahon, W. (1998). Education and Growth in East Asia. *Economics of Education Review*, 17(2), 159-172.

Nation United. (2012). Millennium Development Goal Report. We Can End Poverty in 2050. https://doi.org/10.18356/20fbb5a4-en

Nelson, R. R. & Phelps, E. S. (1966). Investment in Humans, Technological Diffusion, and Economic Growth. *The American economic review*, 56(1/2), 69-75. http://www.jstor.org/stable/1821269

Olamosu, B. & Andy, W. (2015). Africa rising? The Economic History of Sub-Saharan Africa, from http://isj.org.uk/africa-rising/

Pegkas, P. (2014). The Link between Educational Levels and Economic Growth: A Neoclassical Approach for the Case of Greece. *International Journal of Applied Economics*, 11(2), 38-54.

Petrakis, P. E. & Stamatakis, D. (2002). Growth and Educational Levels: a Comparative Analysis. *Economics of Education Review,* 21(5), 513–521.

Romer, P. (1990). Endogenous Technological Change. *Journal of Political Economy*, 98, 71-102.

Roodman, D. (2009). A Note on the Theme of Too Many Instruments. *Oxford Bulletin of Economics and Statistics,* 71(1), 135-158.

Shaihani, M., Harisb, A., Ismaila, N. & Saida, R. (2011).Long Run and Short Run Effects on Education Levels: Case in Malaysia. *International Journal of Economic Research*, 2(6) 77-87.

Solow, R. M. (1956). A contribution to the theory of economic growth. *The quarterly journal of economics*, 70(1), 65-94. faculty.smu.edu/tosang/pdf/Solow_1956.pdf

Tallman, E. & Wang. P. (1994). Human Capital and Endogenous Growth: Evidence from Taiwan. *Journal of Monetary Economics*, 34, 101-124.

Tang, Q., Nasiopoulos, P. & Ward, R. K. (2008). Compensation of Requantization and Interpolation Errors in MPEG-2 to H. 264 Transcoding. *IEEE Transactions on Circuits and Systems for Video Technology,* 18(3). 314-325, 10.1109/TCSVT.2008.918443.

Villa, S. (2005). Determinants of Growth in Italy. A Time Series Analysis, Working Paper, University of Foggia, Italy.

Voon, J. P. (2001). Measuring Social Returns to Higher Education Investment in Hong Kong: Production Function Approach. *Economics of Education Review*, 20(5), 503–10, https://doi.org/10.1016/s0272-7757(00)00021-2.

World Fact Book. (2017). American Central Intelligent Agency.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

The Time Preference of Chinese Tend to be Less Affected by Positive Emotions: As Proved by an Experimental Study

Shi Yingnan[1], Xinghao Li[2]
[1]College of Business and Economics, the Australian National University, Canberra, Australia
[2]University of Michigan, Ann Arbor, MI, United States of America
u5755653@anu.edu.au, Xinghli@umich.edu

Abstract: This paper aims at testing whether positive emotions have a different impact on Chinese participants' time preference choices from American respondents on average, considering that the Chinese people own a different culture background and more inward-oriented national characteristic. The researcher conducted a controlled experiment based on random assignments, and the experiment is specifically adapted for Chinese participants. Further, in order to approach to a more accurate result, the research also determines such effect is influenced, if any, by personality factors such as risk preference. The BDM (Becker-DeGroot-Marschak) and an MPL（Multiple Price List） methods were utilized to gather sufficient data and to ensure accurate measures. This paper indicates that, on average, for a Chinese participant, positive emotion will still reduce their time preference over intertemporal decision regarding to cash payment, but in a smaller amount on average, compared to an American respondent. Also, the result shows that, risk preference does play a role and tend to risk neutral persons have a weaker time-preference, compared to risk-takers and risk-avoiders. Moreover, several other factors, such as the health state, family income, and gender may also have correlation with time preferences. Alternative explanations are proposed at the end. This research may contribute to explain the differences of credit card usages preferences between the Chinese and American consumers and to explicate the reasoning of the Chinese economic miracles in the recent decades.

Keywords: *Emotions; Time Preference; Risk Preference; Behavioral Economics; Decision Makings*

1. Introduction

The majority of the people succumb to their emotions when they are making economic decisions, at least for some times. Time preference decisions, as one of the economic decisions, are certainly not an exception. Time Preference (TP),or time discounting, refers to a relative valuation based on a "present" date compared with the valuation at a "future" date. It is quantitatively measured by a Discounting Factor (DF), denoted D. Notably, DF is different from the discounting rate utilized in the financial fields. In this paper, if the discounting factor is large, the time preference is high, which is the convention of the economic study, and this economic research will follow such convention. In this experiment, the respondents who have a high time preference are to be satisfied with a smaller amount of cash (being paid at present)against a larger amount of income to be reimbursed in a future. On the other hand, if the discounting factor is low, the person's time preference is, therefore, weak. The participant hence needs a larger amount of "immediate" money to reimburse the payment to be paid in the future.

Early in the 19th century, Senior (1836), Jevons (1888), and Jevons (1905), observed that a typical individual's TP is affected by factors including personalities (e.g. "benevolent affections") and moods (e.g. "risk preference", "self-restrains", and "abstinences") Their qualitative research stated that people tend to chase long term investment when they are happier and more comfortable and to pursue short-term enjoyment when they are in unhealthy and hazardous situations. Later experiments, as in Loewenstein (1996, 2000)'s research, provide us further quantitative proofs which prove that the "visceral" influences, such as physical pains or positive emotions, would significantly affect people's intertemporal choices. Based on American respondents, Ifcher and Zarghamee (2011), conducted an experiment and verified that American people tend to concentrate more on future value rather than present value when they are in relatively positive moods. Also, in former researches, it has been found that on average Chinese people have different risk preference patterns from typical Americans (Hsee and Weber, 1999; Zhou et al., 2012) and a greater degree of emotional moderation than other cohorts. (Leung and Lind, 1986; Chiu and Kosinski, 1994; Russell and Yik, 1996) Therefore, it is reasonable to deduce that the effect of emotional changes will exert less changes in TP among Chinese participants.

This research conducted a customized experiment at and collected data from a Chinese college located in Zhuhai, Guangdong, P. R. China. Section 4 introduces the detailed customization made for Chinese context. The significances of this experiment are:

- The result of the experiment shows that the emotion's effect on Chinese respondents is evidently smaller:
- Endurance is a merit, and low time preference (high endurance) has been long deemed be beneficial for a person's and even a nation's (i.e. a large group or collective of people with common characteristics) long term development. It is often linked to future success. (Mischel et al., 1989) The conclusion of this paper may contribute to explain the reasoning of Chinese economic miracles in recent three decades.
- Time preference factors can be utilized to predict issues such as repayment of credit cards, marketing strategies and sales of prepaid coupons, and unhealthy eating (DeSteno et al., 2014). Result of this research may also contribute to those industries high relying on credit card transactions and coupons selling. Also, differences in time preference may help to explain why Chinese and American people have different consuming patterns.
- By taking risk preferences into consideration, the study shows that, Chinese risk-neutral respondents have a lower time preference, compared to both risk taking and risk aversion groups. Moreover, changes enlarge when imposing a positive emotion inducement.

There are six sections in this paper, including an introduction contained in Section 1, and literature review in Section 2, an introduction of hypothesis, framework, and a model illustration in Section 3, a data collection and description part in Section 4. The alternative analysis is in Section 5. Section 6 offer conclusions and further discussions.

2. Literature Review

Time Discounting and Preference: Samuelson (1937) first utilized Discounted Utility and condensed "time preference" into a generalized model for "intertemporal choices" with only one single parameter – discount rate. Notably, the DU model is based on several very strong assumptions which are challenged by many economists for many years. For example, one of the assumptions is the discount effect should be linearly consistent, regardless of the length of the time period. However, there exist anomalies, such as the "hyperbolic discounting anomaly" effect and the "magnitude effect anomaly" effect, which should be considered by this research. Firstly, the "hyperbolic discounting anomaly" effect indicated that a smaller time horizon offers a higher sensitivity in regard to time discounting. Thaler (1981) observed the fact that rewards that have a longer time horizon are discounted less than short time horizons. A hyperbolic model is a better fit the data than an exponential one (Kirby, 1997). The anomaly can be clearly illustrated by graphs provided by Frederick, Loewenstein, and O'donoghue (2002) as seen in the following chart. Secondly, the "magnitude effect anomaly" effect indicated that outcomes of the smaller amount should as well be more sensitive. Ainslie and Haendel (1983), Benzion, Rapoport, and Yagil (1989), Holcomb and Nelson (1992), Kirby and Marakovic (1995), and Kirby (1997) mentioned that the changes in outcomes of the small amount will be discounted more than that in a large amount.

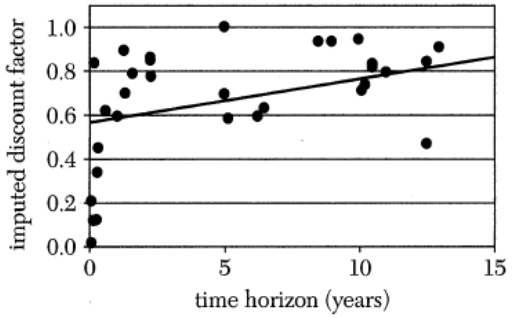


Figure 1a. Discount Factor as a Function of Time Horizon (all studies)

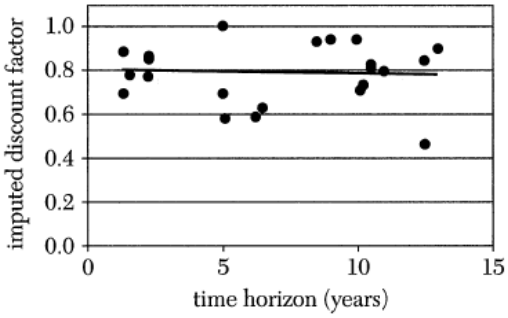


Figure 1b. Discount Factor as a Function of Time Horizon (studies with avg. horizons > 1 year)

As shown in Figure 1a and 1b, since the experiment in this paper is a "small outcome with-in a short time horizon" one, which enabled the respondents participating our research to provide answers of a greater degree of sensitiveness. Therefore, the distortion effects of the anomalies shall be minimized.

Positive Emotion and Time Preferences: Emotions influence people's behavior in a way that may have a significant impact on people's decision making process. Kahneman and Tversky (1979) and Loewenstein and Prelec (1992) initiated and applied the prospect theory and proved that, intuitively, people are responsive to their emotional reactions rather than rational activities. Therefore, they will adjust their prospected satisfactions according to the changes in moods. In recent years, many economic behaviors have been affected by emotions, and there are an increasing number of experiments which prove that idea. For example, positive emotions enhance productivity (Ifcher and Zarghamee, 2011), loss aversion (Isen, Nygren and Ashby, l988), and cognitive flexibility (Isen, 2008). Moreover, Hermalin and Isen (2001) illustrated the effect of emotion on economic decisions and strategic choices. Isen (2001) and Isen (2007) also pointed out that positive emotions will improve people's ability of self-control and their forward-looking capacity. Time preference, as a particular kind of economic decision, is influenced by individuals' moods change. For instance, in earlier empirical observations (both from the observation of General Social Survey and from economist's observation). Ifcher and Zarghamee (2011) qualitatively concluded the existence of such causal relationships and quantitatively examined that the happier people have a higher discount rate than people in neutral moods or bad moods.

However, Keltner, Haidt, and Shiota (2006) indicate there are too many "specific but different" feelings in the name of "positive or negative emotion" category, and, therefore, the concept that all negative/ positive emotions leading to the same tendency of impatience/ patience is questionable. For instance, Desteno et al. (2014) tested and concluded that, both happiness and gratefulness, undoubtedly positive emotions, would lead to different discount rates. Therefore, it is essential to explicit and to distinguish what particular positive emotions the experiment would inspire. Highly accurate and specific emotion inducing method is therefore needed. The paper mainly referenced to the study of Riedl and Wölbert (2013) and Fishburn and Rubinstein (1982) about how to measure time preference. As a matter of fact, time preference, as an abstract economic term, was once hard to measure. Fortunately, many efforts have been devoted to finding ways of estimating and of measuring time preference. To reliably test that variable, we therefore also read works from Benhabib and Bisin, (2005); Laibson, (1997); Coller and Williams, (1999); Fisher, (1930); Gul and Pesendorfer, (2001); Harrison, Lau, and Williams (2002); Hausman, (1979); Loewenstein and Prelec, (1992); Rubinstein, (2000); Thaler and Shefrin, (1981); O'Donoghue and Rabin, (1999); Warner and Pleeter, (2001) for references. Moreover, the determination of and measurement of time preference was discussed by Thaler (1981), and Kriby and Marakovic (1996).

Happiness Inducement Approaches: At least eight moods-inducement methods have been proved effective in inducing people's emotions in an experimental environment (Jiang, Chen, and Chen 2011). The researcher reviewed all of them in our pilot testing and found the most effective one is short film clips This method was first introduced by Gross and Levenson (1995) and is now being commonly used both in the psychology and in the economics field. The formal experiment used Chinese movie clip because Jin (2009) and Peng (2012) indicated that people from different countries react to the inducement methods differently. Hence, it is essential for us to choose befitting film clips in order to adapt to our subjects, the Chinese people.

Personality (Risk Preference/Aversion) and Preferences: Individuals' personalities, such as risk aversion and risk taking, may influence the time preference. Zhou et al. (2012) stated that Chinese people have different risk preference patterns from foreigners. Borghans et al. (2008) generalized the relevance between economics and people's personality traits. Andersen et al. (2008) conducted verified the effect of risk averseness on time preference. On top of that, Rabin and Thaler (2001) alerted researchers conducting experimental economics that they should be concerned with its impact or the result could be "misleading". Zaleskiewicz (2001) stated that investment preferences will be influenced by people's personalities. Personalities, moreover, will have an impact on the individual's rational thinking capability, impulsiveness, and sensation seeking behaviors. Hence, in this research, we put people's tendency towards riskiness into consideration, which is tested by MPL method in the study. The method is created by Holt and Laury (2002)

and was proved effective in China by Zhou et al. (2012). For the purpose of this paper, national characteristics refer to a sociological concept and are utilized to make comparisons between the Chinese and American participants' results. Personality, on the other hand, is a psychological term, and it is used as a manipulated variable.

Hypothesis& Model

H1: Watching a funny short video would evidently raise the degree of happiness.
Short funny videos can induce positive emotions. Jiang, Chen and Chen (2011) introduced that one of the most effective of inducing moods is utilizing film clips.

H2: People who have a personality of risk neutrality tend to have a higher TP.
Andersen et al. (2008) argued that risk-averseness will influence people's time preference. Driven by insecurity about the future, people who have a higher tendency towards risk averseness may discount more when they are comparing present incomes and future incomes, which indicates that they tend to have a higher time preference (Caplin & Leahy, 2001). Also, risk-taking people may write a larger number in the present value column so as to obtain a higher return, though with a higher risk.

H3: Males tends to have lower time preference than females.
Croson and Gneezy (2009) stated that preferences between females and males tend to be very different. Although Ifcher and Zarghamee (2011) argued that males tend to have higher time preference than females (in a tiny amount), Tanaka, Camerer, and Nguyen (2010) argue that in Vietnam, a much similar-to-China state, males tend to behave more patient and thus to have lower time preference.

H4: Family income has a negative relationship with time preference.
Family wealth status affects people's time preferences. Frederick, Loewenstein & O'donoghue (2002) mentioned that people from richer families tend to focus more on future payment.

H5: The healthier the people, the lower the mean time reference.
The heath condition may also affect people's time preference. It is logical to argue that a dying person, in an extreme case, tends to have higher time preference than a healthy person. Fuchs (1980) also stated that health condition may affect people's time preference.

H6: For an average Chinese person, positive emotions, such as happiness, has smaller mean impact on time preference changes.
Chinese people's emotions have less influence power on their time preference decisions, which may be caused by a difference in national characteristics from American and by different risk preferences.

Model: First, as Ifcher and Zarghamee (2011) demonstrated, positive mood significantly increases the present value (p) of a fixed future payment (m), that is, there is a relationship between the positive affect and time preference. Second, the present value (p) is also influenced by the given amount of the future payment (m), the expiration to get the payment (t), and their joint effects, that is, the present value is considered to be a function of *m, t,* and *m*t.* Besides, the effects of some demographic factors, such as subjects' personalities and their knowledge toward Economics, on the present value they determined could not be neglected. Based on the above explanation, the regression can be demonstrated like this:

$$\mathrm{p} = \beta_0 H + \sum_r \gamma_r I_R(r) + \sum_g \eta_g I_G(g) + \sum_i \pi_i I_I(i) + \sum_h \rho_h I_H(h) + \varepsilon$$

*H*is a dummy for the positive-affect-inducing treatment, all future payment amounts *m*are included in the set of *M*, all time delays *t* (in days) are included in the set of *T*, and *p* is the subjective present value of $m in *t* days. For a given *m* and *t,* the functions $I_M(m)$ and $I_T(t)$ take the value of one, respectively, and zero otherwise; this specification allows for all possible linear and joint effects of *t* and *m* on discounting. The model also includes demographic factors, risk preference, gender, family income, and health state. For

example, I_G = gender, where $g \in \{male, female\}$, and $I_G(g)$ equals one if the participant is male, and zero otherwise. Besides, β_0 is constant.

$I_R(r)$ is a dummy variable for participants' risk preference (risk-taking, risk-averse and risk-neutral), using risk aversion as a base group.

$I_G(g)$ is a dummy variable for participants' gender (male and female), using female as a base group.

$I_I(i)$ is a dummy variable for participants' family income (below ¥100,000, between ¥100,000 and ¥200,000, and beyond ¥200,000), using participants whose family income is higher than ¥200,000 as a base group.

$I_H(h)$ is a dummy variable for participants' health state (excellent, very good, good, fair, and poor), using participants whose health state is good as a base group.

3. Methodology

Before the experiment: Researchers attempted to make the experiment as official as they can. For example, a social media account was utilized to summon participants. Every participant would receive a message which stated the experiment date, seat number, and session number, etc. All of the information was provided in an official and formal tone.

Chinese customization: Four major adoptions are made for Chinese context: (1) Chinese movies are selected to replace the American ones. A pretest was run before the formal experiment to ascertain the effectiveness of moods inducement movie flips. (2) All the experiment instruments, such as the questionnaires, the explanatory notes, and the illustration videos, are translated into Chinese. The translation's quality was assured by certificated professional interpreters. This procedure is of great importance because in the pretest, researchers found that the participants cannot understand the question sets because their English are not sufficient (3) RMB, in lieu of USD, is used in this experiment. The amount to money is referenced to local salary level. (4) All the communication channels, such as summoning respondents and reimbursing the participants, are in Chinese, and at the end of the experiment, we provide Chinese version of feedback to the participants.

During the experiment: First, before testing participants' evaluation of present value, *p*, under different conditions, researchers tested risk preference, which was believed to have a strong relationship with time preference. An MPL method was utilized and the specific procedures of the examining of risk preference will be illustrated in Term B. Second, when the risk preference test was done, we use the mood-inducement approaches, specifically discussed in Term C, to guide participants into different predetermined moods. Participants in the treatment group were expected to be in positive moods, and others in the control group were expected to be in neutral moods. Third, right after the mood-inducement procedure, subjects' choices of values of *p* were concerned, and 15 time-preference questions were designed to get the values of *p* in terms of different *m* paid in *t* days. The reason why the time-preference questions are tightly followed by the mood-inducement treatment is that participants can, therefore, make decisions under the most effective period. Fourth, when the time-preference questions were finished, subjects would answer questions about their subjective well-being after the mood-inducing treatment, including eight questions concerning about basic psychological characteristics information. Ultimately, based on their responses to the 15 time-preference questions, payments would be determined by a Becker- DeGroot-Marschak (BDM) mechanism, which will be further explained in Term E, and participants would receive their certificates of guarantee with a corresponding amount of money and due day on it. They would go to the same office to collect their repayment. Therefore, the transaction cost for every individual participant will be the same.

Participants: 60 undergraduate students from the college were randomly selected, half of whom were randomly arranged into the treatment group, and they are required to accept the positive mood inducement by watching a funny video clip, and the rest of whom would look at a neutral-mood-inducing video clip. To

eliminate bias, researchers purposely and disorderly arranged participants' seats number to make sure no familiar persons will sit together. Before the start, an information sheet is assigned to each participant explaining the following details. First, the experimenter emphasized that all of the final payments would exactly depend on their answers to the 15 time-preference questions so as to encourage themselves to offer the best answer. The 15 questions are: "how much money, ¥*p*, if you could receive today, would bring you the same utility if $*m* compensated to you in another *t* days, as a result, both payments make you feel indifferent?" To avoid inducing any logic inferences, researchers used abstruse values of *m*(such 1.82 rather than 2, and 4.02 rather than 4)so that participants could not provide a value based on calculating an exactly accurate number but they were to provide a present value based on their real feelings. Moreover, in order to remove the ordering effect, we disarrange the question number of the questionnaire and make it hard to find a pattern of the matches between *m* and *t.* Besides, with the avoidance of school holidays and weekends, the due days of *t* were set within one academic term, thus dispelling the doubt that subjects might not receive their payments. Therefore, the combinations were determined as all matches of three values of *m*, {¥15.2, ¥24.7, ¥30.8}, and four values of *t*, {24 hours, 168hours, 576 hours, 840 hours, 984 hours}. Second, the participants were given guarantees of payment which record each participant's final payment amounts, *p,* and the corresponding due days, *t*, which were redeemable for the corresponding cash on that day off-site. Moreover, subjects, who were determined to redeem their payments on the same day of conducting the experiment, were paid within one hour after the accomplishment of the experiment.

Risk Preference Test-The method we utilized is illustrated as followed: There are two types of lotteries, Lottery A and Lottery B. Lottery A, also named secured item, owns two kinds of returns, and the spread of its higher level of return with the lower level of return is not very distant. On the other hand, Lottery B owns a larger risk spread, is designed for people who have a higher tendency of seeking risks. The probability of obtaining Lottery A and Lottery B is set in advance, which is shown in Table 4.3, a guide of the lottery game. As it can be seen in Table 4.3, in scenario 1, the person has 10% probability of gaining 2 yuan, and 90% of 1.6 yuan when he or she choose lottery A, and there are 10% chances of getting 3.85 but 90 percent of gaining only 0.10 when choosing lottery B. The rest of the table can be explained in the same manner. A person with high risk-seeking personality would choose B in his or her first chance of choice. Meanwhile, people who occupied a neutral personality in risks will choose B after the 4th term.

Table 1: A Guide of the Lottery Game

No.	Lottery A (2, 1.6)	Lottery B (3.85, 0.10)
1	1/10 Get 2 | 9/10 Get 1.6	1/10 Get 3.85| 9/10 Get 0.10
2	2/10 Get 2 | 8/10 Get 1.6	2/10 Get 3.85| 8/10 Get 0.10
3	3/10 Get 2 | 7/10 Get 1.6	3/10 Get 3.85| 7/10 Get 0.10
4	4/10 Get 2 | 6/10 Get 1.6	4/10 Get 3.85| 6/10 Get 0.10
5	5/10 Get 2 | 5/10 Get 1.6	5/10 Get 3.85| 5/10 Get 0.10
6	6/10 Get 2 | 4/10 Get 1.6	6/10 Get 3.85| 4/10 Get 0.10
7	7/10 Get 2 | 3/10 Get 1.6	7/10 Get 3.85 | 3/10 Get 0.10
8	8/10 Get 2 | 2/10 Get 1.6	8/10 Get 3.85| 2/10 Get 0.10
9	9/10 Get 2 | 1/10 Get 1.6	9/10 Get 3.85| 1/10 Get 0.10
10	10/10 Get 2 | 0/10 1.6	10/10 Get 3.85| 0/10 Get 0.10

Mood-Inducement Procedure: Moods of subjects in the experimental group were trying to be manipulated by some conducts. Initially, according to Jiang, Chen and Chen (2011), there are seven approaches to induce positive and negative moods, memories, imagine, pictures, film clips, music mood-inducing method and the combination of emotional induction methods. After taking a pilot testing of a small group of observers, other than the experimental participants, we found film clips were the most useful method to induce positive mood, which complied with the conclusion drawn by Westermann, Stahl and Hesseet (1996) that the use of story or film was an effective method to induce positive affect. 30 of 60 participants, as the experimental group, were randomly selected to watch a clip extracted from a funny film to stimulate their positive emotion. The other 30 respondents are assigned to the control group with watching neutral-mood-inducing film clips.

The successfulness of the mood-inducing conducts could be identified through a customized Positive and Negative Affect Schedule (PNAS) (1988). PANS originally tests ten emotions but we only select seven important items: including four positive ones (interested, excited, enthusiastic and activated) and three negative ones (distressed, nervous, upset). By comparing the results of two groups (the experimental and the control group), we could confirm that where the film clip made them happier, or whether the film clip pushed them in better moods. The PNAS test was conducted right after the time-preference questions were asked. During the test, the participants are asked to rate a Likert scale, ranging from 1 (Have the opposite feelings as described) to 5 (Have the same feeling as described), to describe the degree to which they had felt this way. By comparing the results of two groups, we can confirm that the film clips made the experimental group happier, and they are also not pushed in other moods.

Time-Preference Questions and Completing the Session: The participants were asked to answer the 15 time-preference questions, closely after the mood-inducement procedures, and then, subjects responded to queries about their moods. Subsequently, subjects filled up a form regarding their demographic characteristics. Then, the payments were determined by implementing the BDM mechanism, which would be introduced later. Finally, participants would receive cash or guarantee of reimbursements.

BDM Mechanism: After participants had accomplished the 15 time-preference questions, to determine each subject's final payments, a Becker-DeGroot-Marschak (BDM) Mechanism (Gordon et al., 1964) was utilized. The procedures were conducted as follows: *m* balls, numbered 1through *m,* were placed in an opaque box. Each time, one ball was picked from the box.

(i) If the number *R* on the drawn ball was less than or equal to *p*(R ≤ *p*), then the subject was paid $*m* in *t* days;

(ii) Otherwise, the subject will receive $*R* on the day of the experiment.

For instance, for the match of *m*=¥13.8 and *t*=4 days, a subject determines *p*=9. Now, putting 14balls, numbered 1through 14, are placed in an opaque box, the subject randomly (i) selects a ball with *R*=7, since *R is* less than *p*, the subject would be paid ¥13.8 in 4 days; (ii) selects a ball with *R*=11, since *R is* greater than *p*, the subject would receive ¥11on the day of the experimental session. That is the final payment of the match m=¥13.8 and t=4 days for the subject. Since the procedures were complicated, the participants will receive a brief training session, ensuring the processes were completely comprehended.

4. Results

Table 2: Participants Exhibit Time Preference

***Table1* --D(*m,t*) - Pooled group**

	t days					
¥*m*	1	7	24	35	41	Mean
15.20	0.867	0.867	0.629	0.62	0.557	0.708
24.70	0.855	0.736	0.615	0.593	0.552	0.670
30.80	0.86	0.743	0.632	0.589	0.568	0.678
Mean	0.861	0.782	0.625	0.601	0.559	0.686

***Table2* --D(*m,t*) - Control group**

	t days					
¥*m*	1	7	24	35	41	Mean
15.20	0.831	0.695	0.593	0.617	0.522	0.652
24.70	0.865	0.691	0.623	0.564	0.537	0.656
30.80	0.852	0.722	0.615	0.585	0.533	0.661
Mean	0.849	0.703	0.610	0.589	0.531	0.656

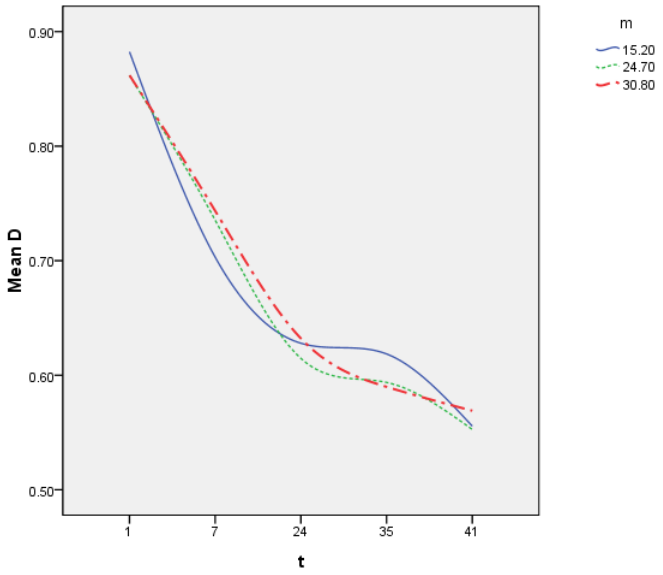
***Table3* --D(*m,t*) - Treatment group**

	t days					
¥*m*	1	7	24	35	41	Mean
15.20	0.907	0.714	0.662	0.623	0.59	0.699

24.70	0.845	0.781	0.607	0.621	0.565	0.684
30.80	0.868	0.764	0.648	0.593	0.601	0.695
Mean	0.873	0.753	0.639	0.612	0.585	0.693

Given a future payment, *m*, in *t* days, subjects feel indifferent to receive the amount *p* today, yielding a discounting rate, D = *p* / *m.* Since discounting depends on the levels of *m* and *t,* D is a function of *m* and *t,* which could be presented as D = D(*m,t*). It's meaningless to purely compare the values of *p*, since the domain of *p* is defined by the level of *m*, comparing D makes sense. Table 1 provides all values of D for all subjects both in the control group and the experiment group; Table 2 and 3 present D for the control group and the experiment group, respectively. Keeping *m* constant, the value of D in three tables tends to decrease as *t* becomes larger and larger, and there are few exceptions in Table 2 and 3, where only one violation of the relationship between D and *t* exists in each table. Except fora few violations, the factor could still be inferred: Participants discount more heavily in the distant future than they do in the near future. To be visualized, Figure 1 demonstrates the pattern of D and *t,* given each level of *m.*

Figure 1: demonstrates the pattern of D and *t,* given each level of *m*



Keeping *t* constant, there is no clear relationship between *D* and *m*, which means there is no monotonic pattern in D with respect to *m*. For example, in Table 2, for t = 1, there is a U-shape; for t = 35, there is a downward tendency.

Table 4: Net positive affect

Mean		Treatment=1	Treatment=0
PA (positive affects)	Interest	4	2.393
	Excitement	3.034	2.112
	Enthusiasm	2.690	2.107
	Activism	3.276	2.531
NA (negative affects)	Distress	1.759	2.495
	Nervousness	2.172	1.933
	Upset	2	2.143
net positive affect		7.069	2.571

From Table 4, the net positive effect— the sum of the positive effects minus the sum of the negative effects from the PANAS— of participants in the treatment group (7.069) is evidently higher than that of participants in the control group（2.571）, and the 95% confidence interval of the difference for net positive affect in treatment group is (4.2957, 5.3292). To further identify the impact of affect-inducing treatment on D, Table 5 presents the differences of D in treatment group and control group under each combination of *m* and *t*, the vast majority of which are positive.

Table 5: Dtreament(m,t) - Dcontrol(m,t)

¥*m*	*t* days					
M	1	7	24	35	41	Mean
15.20	0.076	0.019	0.069	0.006	0.068	0.0476
24.70	-0.02	0.09	-0.016	0.057	0.028	0.0278
30.80	0.016	0.042	0.033	0.008	0.068	0.0334
Mean	0.024	0.050	0.029	0.024	0.055	0.036

Figure 2: (m = 15.2)

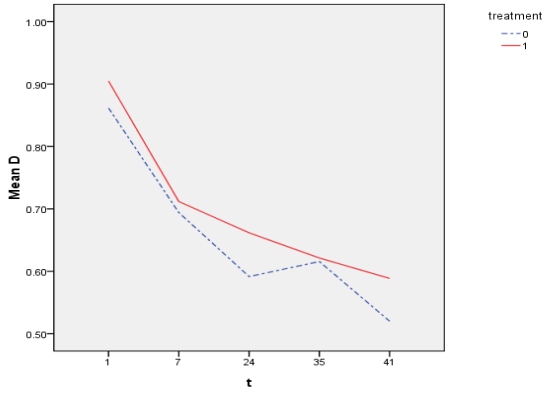


Figure 3: (m = 24.7)

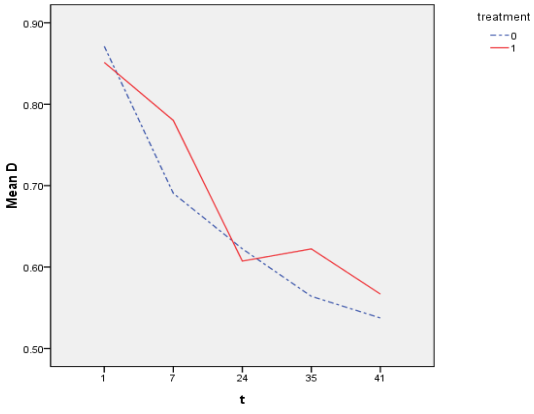


Figure 4: (m = 30.8)

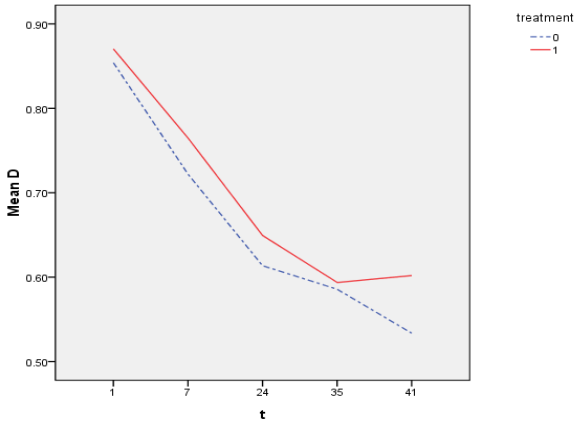


Figure 2, 3 and 4 is visualized to exhibit the relationship revealed in Table 5, and the two violations of differences in D are showed on Figure 3. Tables and figures above reveal that watching funny video clips made subjects significantly happier than those watching neutral-affect-inducing video clips, which supports the first hypothesis (H1); And most subjects in positive moods tend to discount more heavily than those in neutral moods, it means that positive-affect inducement reduces time preference, which supports the fifth hypothesis (H5).

Results of Estimating Equation: In column 1 of Table 6, demographic characters (gender, risk preference, family income and health state) are controlled, and dummy variables for treatment are excluded from the equation. Given *m* and *t,* keeping other characters the same, averagely, (1) male would like to receive¥1.87 higher than female today; (2) people whose risk-neutral prefer ¥2.57 higher than those whose risk-averse today; (3) subjects whose family income are less than ¥100,000 are willing to accept ¥2.5 lower than those whose family income are huger than ¥20,000 today; And health state shows an inverted U-shape. In column 2, treatment is included into the equation based on column 1, which significantly increases present value by 1.44 on average. Factors could be inferred from the results: (1) Comparing to people who are risk-aversion, people who are risk-neutral value higher present payment and present lower time preference, which supports the second hypothesis(H2);(2) Male would like to receive¥2.02 higher of present payment than female do, having a larger discount and lowering the time preference, which supports the third hypothesis (H3); (3) Comparing to people whose family income is larger than ¥200,000, people, whose family income is less than 100,000 value lower present payment and present higher time preference, which support the fourth hypothesis (H4); (4) In terms of health state, from excellent to good state, there is a upward tendency, valuing higher present payments and lowering time preference, which support the fifth hypothesis (H5); From good to poor state, there is a downward tendency, valuing lower present payments and increasing time preference, which rejects the fifth hypothesis (H5).

Table 6: Summary (Dependent variable is present value, p)

		(1)	(2)
Treatment		--	1.44***
			(0.49)
Gender		1.87***	2.02***
		(0.55)	(0.55)
Risk preference	Risk-averse	0	0
	Risk-neutral	2.57***	2.91***
		(0.70)	(0.71)
	Risk-taking	-0.50	0.24
		(0.54)	(0.59)

Family Income	<=100,000	-2.5***	-2.61***
		(0.59)	(0.59)
	Between 100,000 and 200,000	0.65	0.78
		(0.50)	(0.50)
	>=200,000	0	0
Health state	Excellence	-4.4***	-4.13***
		(1.57)	(1.57)
	Very good	-1.7***	-1.72***
		(0.46)	(0.46)
	Good	0	0
	Fair	-3.1***	-3.70***
		(0.82)	(0.83)
	Poor	-4.2***	-4.46***
		(1.18)	(1.18)
Net positive affect		0.08*	0.04
			(0.04)
		(0.04)	
R Square		0.508	0.514
Observation		787	787

Note: Standard errors reported in parentheses.
* significant at the 10 percent level. ** significant at the 5 percent level. *** significant at the 1 percent level.

5. Discussion and Conclusion

As aforementioned, the experiment is well designed. However, it has to be pointed out that typicality of the sample of this paper, which based on college student, may be questionable, because it cannot well-represent the Chinese people. College students mostly are from middle class family, and the middle class may have a different risk preference and emotional reaction pattern from the financial limited groups. Besides that, the paper demonstrated that positive emotion can also negatively affect Chinese respondents' time preference, though in a smaller amount, which implies that, compared to American counterparts, the Chinese respondents in this research shows less TP changes due to positive emotional changes. The mood inducement method that customized for this experiment is proved effective for Chinese respondents. Moreover, risk preference also plays a role in affecting Chinese people's time preference. Specifically, the result suggests that risk neutral people, compared to risk-averse people, has a lower time preference. Also, a positive emotion seemingly enlarges this tendency, indicating that, when happier, Chinese respondents who are risk neutral will behave relatively more patient. Fourthly, male participants tend to show a lowered time reference than females. This is also in accordance with the literature. That is to say, Chinese males are more "patient" than females.

Fifthly, differences in family income do show a negative relationship with time preference. That is to say, students from lower income tend to have higher time preference than average level. This is in accordance with the literature review which indicates that wealthiness and patience (low time preference) have a reciprocal causation. i.e. Patience promotes success, and richness nurtures forbearance. Finally, the effect of the health status is a tricky one. From the unhealthiest state people to the neutral state respondents, the healthier a person reported, the lower the time reference. The significance of this self-report variable is high, and this result is also in accordance with the reviews of the literature, which indicates that people who are really unhealthy tend to more focus on the present, rather than the future. However, from the neutral- to the

healthiest state people, the tendency is reversed. This phenomenon needs a further explanation. In the future, negative emotions should also be put into considerations. Due to the limitation of time, the researchers did not accomplish the experiment concerning about negative emotions. If time permitted, experiments concerning about different but more specific kinds of emotions should also be conducted. (For example, both "interested" and "satisfied" are seen as positive emotions, but they may induce different time preference choices.)

Additionally, there are two alternative possible explanations. Firstly, risk preference and emotion inducement may have a joint effect. Although the paper wrote by Ifcher and Zarghamee (2011) did not emphasize on people's personality factors, but it is logical to argue that individuals with a higher tendency of risk seeking will behave differently from people who adverse risks. Therefore, the researchers of this paper added a professional risk-taking test to measure participants' risk preference and to examine the relationship between the personalities and the time preference. However, it should also argue that those risk-seeking people may be easier to be induced or inflamed by inducement of positive emotions. They tend to obtain a higher degree of positive moods during the experiment than those risk aversion people so as to cause a higher discounting rate. i.e. a joint effect factor may exist here. Secondly, the smaller-than-American discounting rate may be alternatively caused by a lower purchasing power of the currency. Compared to payment dominated by US dollar in the experiment conducted in the US, the payment in this paper is dominated in RMB. Although we pay the same face value as the US experiment, the real purchasing of the payment is weaker. People may behave more indifferent, therefore, about the changes.

Reference

Ainslie, G. & Haendel, V. (1983). The motives of the will. *Etiologic aspects of alcohol and drug abuse*, 3, 119-140.

Andersen, S. & Harrison, G. W. & Lau, M. I. & Rutström, E. E. (2008). Eliciting risk and time preferences. *Econometrica*, 76(3),583-618.

Becker, G. M., Degroot, M. H. & Marschak, J. (1964). Measuring Utility by a Single-Response Sequential Method. *Behavioral Science*, 9(3), 226–32.

Benhabib, J. & Bisin, A. (2005). Modeling internal commitment mechanisms and self-control: A neuroeconomics approach to consumption–saving decisions. *Games and Economic Behavior,* 52(2), 460-492.

Benzion, U., Rapoport, A. & Yagil, J. (1989). Discount rates inferred from decisions: An experimental study. *Management science,* 35(3), 270-284.

Borghans, L., Duckworth, A. L., Heckman, J. J. & Ter Weel, B. (2008). The economics and psychology of personality traits. *Journal of Human Resources*, 43(4), 972-1059.

Caplin, A. & Leahy, J. (2001). Psychological expected utility theory and anticipatory feelings. *Quarterly Journal of economics*, 116(1), 55-79.

Chiu, R. K. & Kosinski, F. A. (1994). Is Chinese conflict-handling behavior influenced by Chinese values? *Social Behavior and Personality: an international journal,* 22(1), 81-90.

Coller, M. & Williams, M. B. (1999). Eliciting individual discount rates. *Experimental Economics*, 2(2), 107-127.

Croson, R. & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic literature*, 47(2), 448-474.

DeSteno, D., Li, Y., Dickens, L. & Lerner, J. S. (2014). Gratitude A Tool for Reducing Economic Impatience. Psychological science, 0956797614529979.

Fishburn, P. C. & Rubinstein, A. (1982). Time preference. *International Economic Review,* 23(2), 677-694.

Fisher, I. (1930). The theory of interest. New York, Macmillan.

Frederick, S., Loewenstein, G. & O'donoghue, T. (2002). Time discounting and time preference: A critical review. *Journal of economic literature*, 40(2), 351-401.

Fuchs, V. R. (1980). Time preference and health: an exploratory study. Victor R. Fuchs. (Eds) Economic Aspects of Health, (pp. 93-120). Chicago: University of Chicago Press.

Gross, J. J. & Levenson, R. W. (1995). Emotion elicitation using films. *Cognition & Emotion*, 9(1), 87-108.

Gul, F. & Pesendorfer, W. (2001). Temptation and self-control. *Econometrica*, 69(6), 1403-1435.

Harrison, G. W., Lau, M. I. & Williams, M. B. (2002). Estimating individual discount rates in Denmark: A field experiment. *American economic review*, 92(5), 1606-1617.

Hausman, J. A. (1979). Individual discount rates and the purchase and utilization of energy-using durables. *The Bell Journal of Economics*, 10(1) 33-54.

Hermalin, B. E. & Isen, A. M. (2001). The effect of affect on economic and strategic decision making. USC CLEO Research Paper, (C01-5).

Holcomb, J. H. & Nelson, P. S. (1992). Another experimental look at individual time preference. *Rationality and Society*, 4(2), 199-220.

Holt, C. A. & Laury, S. K. (2002). Risk aversion and incentive effects. *American economic review*, 92(5), 1644-1655.

Hsee, C. K. & Weber, E. U. (1999). Cross-national differences in risk preference and lay predictions.

Ifcher, J. & Zarghamee, H. (2011). Happiness and time preference: The effect of positive affect in a random-assignment experiment. *The American Economic Review*, 101(7), 3109-3129.

Isen, A. M. (2001). An influence of positive effect on decision making in complex situations: Theoretical issues with practical implications. *Journal of consumer psychology*, 11(2), 75-85.

Isen, A. M. (2007). Positive affect, cognitive flexibility, and self-control. *Persons in context: Building a science of the individual*, 48(3) 130-147.

Isen, A. M. (2008). Some ways in which positive affect influences decision making and problem solving. *Handbook of emotions*, 3, 548-573

Isen, A. M., Nygren, T. E. & Ashby, F. G. (1988). Influence of positive affect on the subjective utility of gains and losses: it is just not worth the risk. *Journal of personality and Social Psychology*, 55(5), 710.

Jevons, H. S. (1905). Essays on economics. London, Macmilan.

Jevons, W. S. (1888). The theory of political economy. London, Macmillan.

Jiang, J. Chen, X. F. & Chen, A. T. (2011). Approaches and New Progress of the Emotional Inducement. *Journal of Xinan Normal University*, 36(1), 209-214.

Jin, X. (2009). Research on the measurement of video emotion inducement approaches (Master's thesis, The Second Military Medical University).

Kahneman, D. & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society*, 47(2) 263-291.

Keltner, D., Haidt, J. & Shiota, M. N. (2006). Social functionalism and the evolution of emotions. *Evolution and social psychology*, 4, 115-142. London: Routledge Press.

Kirby, K. N. (1997). Bidding on the future: evidence against normative discounting of delayed rewards. *Journal of Experimental Psychology*: *General*, 126(1), 54.

Kirby, K. N. & Maraković, N. N. (1995). Modeling myopic decisions: Evidence for hyperbolic delay-discounting within subjects and amounts. *Organizational Behavior and Human Decision Processes*, 64(1), 22-30.

Laibson, D. (1997). Golden eggs and hyperbolic discounting. *The Quarterly Journal of Economics*, 112(2), 443-477.

Lerner, J. S., Li, Y. & Weber, E. U. (2012). The financial costs of sadness. Psychological science, 0956797612450302.

Leung, K. & Lind, E. A. (1986). Procedural justice and culture: Effects of culture, gender, and investigator status on procedural preferences. *Journal of Personality and Social Psychology,* 50(6), 1134.

Loewenstein, G. & Prelec, D. (1992). Anomalies in intertemporal choice: Evidence and an interpretation. *The Quarterly Journal of Economics*, 81, 573-597

Loewenstein, G. (1996). Out of control: Visceral influences on behavior. *Organizational behavior and human decision processes*, 65(3), 272-292.

Loewenstein, G. (2000). Emotions in economic theory and economic behavior. *American economic review*, 10, 426-432).

Mischel, W., Shoda, Y. & Rodriguez, M. I. (1989). Delay of gratification in children. *Science*, 244(4907), 933-938.

O'Donoghue, T. & Rabin, M. (1999). Addiction and self-control. *Addiction: Entries and exits*, 24(2) 169-206.

Peng, Y. S. (2012). Study on dynamic parameters of emotional response time] (Master's thesis, Capital Normal University).

Rabin, M. & Thaler, R. H. (2001). Anomalies: Risk aversion. *The Journal of Economic Perspectives*, 15(1), 219-232. Retrieved at 2015-4-18 12:49:24. From http://search.proquest.com/docview/212075586?accountid=38789

Riedl, A. M. & Wölbert, E. M. (2013). Measuring time and risk preferences: reliability, stability, Domain Specificity (No. 041). Center for Economic Studies and Ifo Institute, Netherlands. From: http://ssrn.com/abstract=2302494

Rubinstein, A. (2000). Is It Economics and Psychology The Case of Hyperbolic Discounting. Tel Aviv University, the EitanBerglas School of Economics. *International economic review,* 104(4), 1207 – 1216.

Russell, J. A. & Yik, M. S. (1996). Emotion among the Chinese.

Samuelson, P. A. (1937). A note on measurement of utility. *The Review of Economic Studies*, 4(2), 155-161.

Senior, N. W. (1836). An outline of the science of political economy. W. Clowes and Sons, Stamford Street.

Tanaka, T., Camerer, C. & Nguyen, Q. (2010). Risk and time preferences: Experimental and household survey data from Vietnam. *American Economic Review*, 100(1), 557 - 571

Thaler, R. (1981). Some empirical evidence on dynamic inconsistency. Economics Letters, 8(3), 201-207.

Thaler, R. H. & Shefrin, H. M. (1981). An economic theory of self-control. *The Journal of Political Economy*, 89(2), 392-406.

Warner, J. T. & Pleeter, S. (2001). The personal discount rate: Evidence from military downsizing programs. *American Economic Review*, 91(1), 33-53.

Westermann, R., Stahl, G. U. N. T. E. R. & Hesse, F. (1996). Relative effectiveness and validity of mood induction procedures: analysis. *European Journal of social psychology,* 26, 557-580.

Zaleskiewicz, T. (2001). Beyond risk seeking and risk aversion: personality and the dual nature of economic risk taking. *European Journal of Personality*, 15(S1), pp. S105 - S122. doi:10.1002/per.426

Zhou Y. A., Zuo, C. Y., Chen Y. F., Lian H. Q. & Ye, H. (2012). Experimental study with social preferences of individual risk aversion. *Management World*, 6, 86-95.

Appendix 1 Experiment Questions

Term A

No.	Lottery A (2, 1.6)	choice	Lottery B (3.85, 0.10)	choice
1	11/10 Get 2 vs 9/10 Get 1.6		1/10 Get 3.85 vs 9/10 Get 0.10	
2	2/10 Get 2 vs 8/10 Get 1.6		2/10 Get 3.85 vs 8/10 Get 0.10	
3	3/10 Get 2 vs 7/10 Get 1.6		3/10 Get 3.85 vs 7/10 Get 0.10	
4	4/10 Get 2 vs 6/10 Get 1.6		4/10 Get 3.85 vs 6/10 Get 0.10	
5	5/10 Get 2 vs 5/10 Get 1.6		5/10 Get 3.85 vs 5/10 Get 0.10	
6	6/10 Get 2 vs 4/10 Get 1.6		6/10 Get 3.85 vs 4/10 Get 0.10	
7	7/10 Get 2 vs 3/10 Get 1.6		7/10 Get 3.85 vs 3/10 Get 0.10	
8	8/10 Get 2 vs 2/10 Get 1.6		8/10 Get 3.85 vs 2/10 Get 0.10	
9	9/10 Get 2 vs 1/10 Get 1.6		9/10 Get 3.85 vs 1/10 Get 0.10	
10	10/10 Get 2 vs 0/10 1.6		10/10 Get 3.85 vs 0/10 Get 0.10	

Term B

What amount of money, ¥*p*, if you could receive today would bring you the same utility if $*m* paid to you in *t* days?

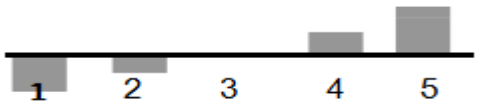
1. **m = ¥ 24.7**
t = 7 *P =* _____
2. ***m* = ¥ 30.8**
t = 24 *P =* _____
3. ***m = ¥ 15.2***
t = 24 *P =* _____
4. **m = ¥ 24.7**
t = 24 *P =* _____

5. ***m* = ¥ 30.8**
t = 1 P = _____
6. **m = ¥ 24.7**
t = 1 P = _____
7. **m = ¥ 24.7**
t = 41 P = _____
8. ***m = ¥ 15.2***
t = 1 P = _____
9. **m = ¥ 15.2**
t = 41 P = _____
10. **m = ¥ 24.7**
t = 35 P = _____
11. ***m* = ¥ 30.8**
t = 7 P = _____
12. **m = ¥ 15.2**
t = 7 P = _____
13. ***m = ¥ 15.2***
t = 35 P = _____
14. ***m* = ¥ 30.8**
t = 35 P = _____
15. **m = ¥ 30.8**
t = 41 P = _____

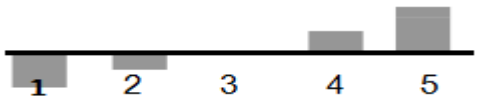
Term C

Please rate from 1 (Have the opposite feelings as the described) to 5 (Have the same feeling as the described) to describe the degree to which you are feeling.

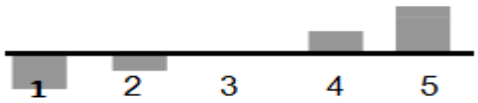
Please describe your degree of feeling of being interested(有意思). (please circle only one number)



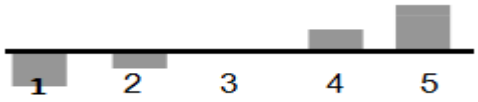
Please describe your degree of being excited(兴奋).(please circle only one number)



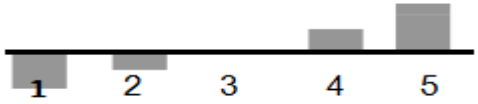
Please describe your degree of being enthusiasm（有热情）.(please circle only one number)



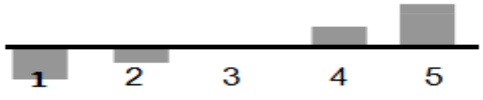
Please describe your degree of being activated（被激活）.(please circle only one number)



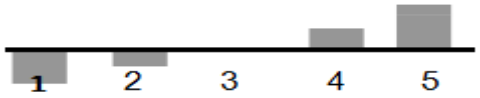
Please describe your degree of being distressed（沮丧）.(please circle only one number)



Please describe your degree of being nervous（神经紧张）.(please circle only one number)



Please describe your degree of being upset（不安）.(please circle only one number)



Item D

1. Watched short funny video or not

□ Yes □ No

2. Gender (check √ only one)

□ Female □ Male

3. Family income (check √ only one)

□<¥100,000□between ¥100,000 and ¥200,000□>¥200,000

4. Health

□ Excellent □ Very good □ Good □ Fair □ Poor

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Oil Price Fluctuations and the Future of Saudi Arabian Non-Oil Traded Sector: An Empirical Investigation

Abdulaziz Hamad Algaeed
College of Business Administration, Dar Al Uloom University, Riyadh, Saudi Arabia
ibngaeed@outlook.com

Abstract: The major focus of this paper is to investigate theoretically and empirically the effects of non-linear oil price changes on Saudi manufacturing (traded) sector covering the period of 1970 till 2015, utilizing structural vector autoregressive (SVAR) approach. The Dutch disease syndrome will be clarified, and the impacts of oil price variations (increase and decrease) are investigated. Johansen's testing procedure result asserts the existence of stable long-run relationship between real traded sector (MANUFACTURING), oil price increase and decrease, real government expenditure (GOEX), real exchange rate (REX), and the mining sector (MINING). The findings confirm that $OIL^{shock(+),}$ and REX influence MANU negatively, while the spending effect, GOEX affects MANU positively. However, this could be attributed to the government efforts to nullify the Dutch disease symptoms. Given, the obtained tests' results, the exchange rate REX appreciation confirms the existence of the Dutch disease, and consistent with the Dutch disease literature and findings. The Manufacturing sector harmed enough to the degree that government has to subsidize.

Keywords: *Dutch Disease, Saudi Arabia, A non-linear oil price shocks, and SVAR*

1. Introduction

During the last five decades, the kingdom of Saudi Arabia has gone through significant structural changes in response to the oil windfalls generated by the rise in oil prices in 1973/74, 1981/82, 2001/02, and 2009. Hagen (1968) described the typical oil economy as consisting of five parts: the font, the farm, the market, the bank, and the rest of the world. The productivity is high in the font. Government takes its foreign exchange earnings to the bank to convert it to local currency. The money will be spent in the low productive sector, the market. The spending can be either by the people or the government. The farm is the lowe productive part of the economy. In the market, the productive factors will earn income, which will be exchanged at the bank in order to get foreign exchange to finance their purchases from abroad. This description can be applied to all dependent economies. Nevertheless, the trouble comes from single commodity dependent economy such as oil, coffee, remittances, etc.

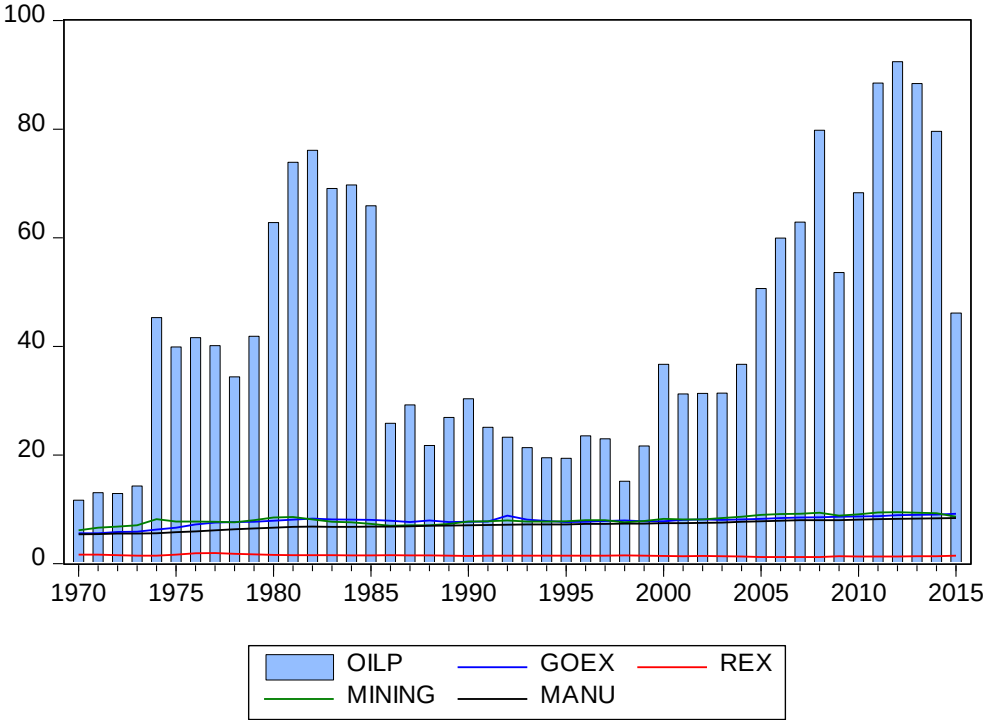
The oil boom had great effects on domestic expenditure. The predicted consequences are as follows: first, relative prices go up causing the exchange rate to appreciate since the small open economy is a price taker in the world market. The domestic price level is determined according to the supply and demand conditions. The oil boom has resulted in an increase in the price of non-traded goods relative to the traded goods. Among the factors that contributed to this change are the growth of money supply, government expenditure, and the change in the price of international goods. Second, the high exchange rate leads to a lowering of the country's competitiveness in the world market. The domestic price of the traded goods is the world's price of traded goods adjusted for the exchange rate. The variations in the exchange rate will have an effect on price of non-traded goods (P^N) and the price of traded goods (P^T) and hence, on the resource movements between traded and non-traded sectors. However, after the collapse of fixed exchange rate regime in 1971, Saudi Arabia pegged its currency (Riyal) to the US dollar. One of the main reasons for this policy is that, oil revenues are denominated in dollars, and the government hope for stable imports' prices. Thirdly, the production structure is shifted in favor of non-traded goods which affect the source of the foreign exchange. On the other hand, looking at the components of the Saudi GDP, one finds it difficult to separate the traded from non-traded sectors. Agriculture and manufacturing are labeled as traded sectors and services as non-traded sector. If we have an increase in relative price (P^N/P^T), this means a fall in real wage causing an increase in the demand for labor in the non-traded sector. A rise in the relative price is equivalent to the rise in the price of non-traded goods. Decomposing the non-oil GDP into four major sectors yields a clear picture of the consequences of the Dutch disease.

Moreover, recent studies concentrated on different causes of the Dutch disease. The rise in coffee prices in the late 1970s in Colombia brought a boom in the coffee sector at the expense of manufacturing and resources were reallocated to the agricultural sector. Other causes are studied extensively, Taguchi and Lama (2016); Eromenko (2016), and Acosta et al. (2007) on immigrant's remittances and their relation with Dutch disease, Fielding and Gibson (2012); Lar, Taguchi and Sakurai (2016); Magud and Sosa (2010) on foreign aid, and Javaid (2011) on the foreign currency inflows and their impacts on sectors of the economy. Paldam (2013), asserts that in the neo-classical model of Dutch disease, resources are considered a booming sector. However, resource sector is small enclave that produces resource rent. The rent is considered as a tax paid by the rest of the world and hence, resource sector generates inflow of foreign exchange. The influx of resource decreases labor supply. Moreover, resources rent force government to spend it all over the country. Since the booming sector is enclave, most of the value added is not produced but a resource rent (Paldam, 2013). As a matter of fact, economists looked at financial aspects of the Dutch disease where foreign direct investment flows towards the booming sector (Botta, 2014). This process causes exchange rate to appreciate. In addition, short term capital worsen exchange rate adding more pressure on exchange rate. As can be seen, in the long-run macroeconomic instability and the reliance on mineral exports suppress the traditional tradable good sectors and restrain productivity.

Equally important, it should be indicated that the benefits from oil abundance and oil price increase has shaped and structured the Saudi economy. In fact, the benefits of oil revenues flourished through major sectors of the economy and participated in the building the economy from a somewhat primitive to a well stand economy, and considered among other emerging economies. The changes in relative prices (P^N/P^T) induce a reallocation of production factors from traded sectors in favor of non-traded sectors (resource movement effects). The increase in non-traded goods (spending effects) causes an appreciation of the exchange rate. The relative price and the spending effects (proxied by real government spending) have benefited the service sector in Saudi Arabia. Although there is no consensus among economists on a definite empirical evidence of a resource curse, the evidence is somewhat mixed. The association between resource abundance and economic growth are not conclusive. Some economists found a positive relationship; while others found it negative (Trevino, 2011). Hence, the existing evidence of the Dutch disease is a matter of empirical investigation case-by-case, to reach final and definite conclusions.

The main focus of this paper is to explore the impacts of recent fluctuations in oil prices on the non-traded, specifically the manufacturing sector in an emerging oil-based economy. Since the agricultural sector is small and weak, the reliance of the Saudi government is on the manufacturing sector in order to achieve the 2030 vision that is, diversification of the production base. It is clear that any oil price shocks (from the point of view of an oil-exporting country), will influence the earnings of oil and thereby spending and resource movement effects. This study differs from other studies in the following. First, SVAR methodology is applied. Secondly, this analysis is directed towards the real manufacturing sector, where the task is to see how oil prices volatility are channeled via REX, GOEX, and MINING, causing variations in this sector. Third, is to show empirically that the Saudi economy is undergone symptoms of Dutch disease. On the other hand, *Figure 1*shows the behavior of the determinants under study. MANU, GOEX, and MINING move in the same direction. The rise in oil revenues raises GOEX then MANU. By the same token, REX moves in line with the oil mining and GOEX. Relative price is likely to conform to the GOEX. The aim of this paper is to analyze and investigate empirically the existence of symptoms of the Dutch disease. To do so, the manufacturing traded sector is examined. Utilizing structural VAR (SVAR) technique, the effects of changes in oil prices REX, GOEX, and MINING on MANU are empirically and rigorously tested. This paper is organized as follows. Section 1 contains an introduction. Section 2 reviews existing theoretical and empirical related literature. Section 3 builds on the related theoretical model, estimation and discussions of the empirical findings, and section 4 consists of the conclusion and policy implications.

Figure 1: Oil price, government expenditure, real exchange rate, mining, and manufacturing sectors



2. Literature Review

The recent growth of the mining industry oil, coal, etc. has led many economists to study the impacts of such booms on the rest of the home economy. Most theoretical analyses seem to agree that the price of non-mining traded goods will go up relative to traded good prices, and hence, the output of non-mining traded goods will shrink (Long, 1983). Equally important, the exploitation of mineral discoveries through exports would have an impact on the balance of payments of the lucky countries. In essence, natural gas discovery in Netherland influenced the exchange rate and relative prices causing the guilder to go up. Zuzana (2016) summarized the Dutch disease analysis with a small open economy which is consisted of three sectors. The two tradable good export sectors where prices are determined abroad and non-tradable goods is determined by local supply and demand, namely service sector. The sector that exports natural resources is called booming sector, which are the manufacturing and agricultural sectors. The major assumption is that capital is not mobile while labor is mobile between the three sectors. The goods are for final consumption, trade is balanced and commodity and factor prices are not distorted. The inflows of foreign currency from the booming sector cause higher demand, and spending effect occurs. The rise in demand for goods affects domestic prices or nominal exchange rate. Under fixed exchange rate, the inflows of foreign earnings increase money supply and hence, domestic prices. The flexibility of exchange rate will cause appreciation of the local currency leading to the rise in nominal exchange rate. Under fixed and flexible exchange rates, appreciation will occur. This situation reduces the competitiveness of the traditional good sectors and decreases exports. Imports become cheaper than local products causing labor and production to move from lagging traditional good sectors towards the non-traded good sectors. This is called de-industrialization. However, labor and production is in favor of non-traded sector, which called indirect de-industrialization or resource movement effect. Gregory (1976) developed a simple partial equilibrium model to analyze the impact of mineral development on the Australian economy. According to Snape (1977), the structure of Gregory's model was as follows: The discovery of minerals will lead to an increase in export supply which will bring external surplus. In order to correct this situation, revaluation or inflation would raise the non-traded good price relative to export and import prices. As a result of this, import-competing and pre-existing export industries are squeezed.

Porter (1978) concluded that the major lesson in terms of traded/ non-traded goods model is that, the gradual expansion of production possibility frontier to the right should have been associated with gradual

revaluation of the currency. Failure to do so, inflation is inevitable. According to him, if the exchange rate is allowed to gradually float, the relative size of the manufacturing would gradually decline. However, a rigid exchange rate policy would contribute to external imbalance. Neary and Corden (1982) were concerned with the phenomena called the Dutch disease. Their aim is to explore the nature of the resulting pressure toward de-industrialization. Their work is an extension of the work done by Snape (1977). Their primary work involves the effects of asymmetric growth on resource allocation and income distribution. They concluded that both the resource and the spending effects have contributed to the fall in the manufacturing sector with some reservations. Enders and Herberg (1982) developed a model to explain the Dutch disease. They assumed a fixed exchange rate. They concluded that the resource boom would lead to a decline in production and employment in the traditional export sectors (agriculture and manufacturing). The spending effect would increase the price of services leading to a higher nominal wage in both the service and the resource sectors. They suggested a cure for the Dutch disease such as price policy and production subsidy. Given these points, Corden (1984) surveyed the Dutch disease literature and developed an analytical model to explain the resource movement impact and spending effect. In the first paper, he tried to analyze the effect of monetary policy contraction and the oil boom in the United Kingdom. Using static analysis diagrams, he concluded that a monetary squeeze damage both the traded and non-traded good sectors. The similar effect from North Sea oil tends to squeeze the traded sector in the short-run. However, in the medium run, when adjustment takes place, there will be a shift from tradable to non-tradable goods. He asserted that this mechanism depends on the fiscal policy concerning oil revenues.

Wijnbergen (1984 a, b), presented an equilibrium model which is founded on Meade-Salter-Swan model of an open economy. The economy produces two goods: traded and non-traded. He assumed neoclassical production function where capital is not mobile and fixed. He argues that higher transfers (due to an increase in oil prices) lead to excess demand for non-traded goods. As a result of this development, real appreciation must take place causing resources to move out of the traded sector into the non-traded sector (service). Thus, he extended his model to deal with employment effects and inflation. Neary and Wijnbergen (1984), built on Eastwood and Venables model and incorporated wealth effect. However, their argument is this: with a strictly positive wealth elasticity of money demand, higher wealth leads to an incipient excess demand for money after an oil discovery. To accommodate this increase, the real money stock has to rise. They concluded that the rise in the money demand given the nominal money supply may cause contraction which will be sufficient to offset the expansionary effect of the oil boom. Hence, monetary policy can resolve this problem. Kamas (1986), developed macro econometric model incorporating the exchange rate and relative prices to see whether or not the Dutch disease exists in Colombian economy. Her theoretical justification is built on Corden and Neary (1982), and Corden (1986). Her macro models are examined at two levels. First, is to see the effect of coffee's boom on relative price and exchange rate. Secondly, is to see the effects of exchange rate and relative price over the aggregated sectors of the economy. Proxies are used for traded and non-traded prices. She concluded that during the period of 1967-1982, the Colombian economy experienced the Dutch disease and its consequences. Nevertheless, this study is mainly an application of Dutch disease literature.

Fardmanesh (1991), developed a three sector reduced form model to test the existence of the Dutch disease in five oil producing countries, Algeria, Ecuador, Indonesia, Nigeria and Venezuela. He used the world price and the shares of agriculture, manufacturing and service sectors in the non-oil GDP. He concluded that oil boom has affected the composition of agricultural sector in favor of the service and manufacturing sectors. This interesting study can be criticized on grounds that the spending effect is not accounted for. Moreover, the home price should be used to visualize the effects of the oil boom and the home price on the traded and non-traded sectors. Mironov and Petronevich (2015) examine the presence of the Dutch disease in Russian economy based on the classical model of the Dutch disease developed by Corden and Neary (1982). They analyze the correlations between changes in the real effective exchange rate of Ruble and the structural changes of the Russian economy for the period of 2002-2013. They estimated the resource movement and the spending effects and found signs of the Dutch disease. One of the signs is the negative impact of the effective exchange rate on the manufacturing sector economic growth, and on the workers' income changes. They also found positive link between effective exchange rate and returns on capital in the three sectors. However, the shift of labor from the manufacturing sector to the service sector cannot be explained by the Ruble appreciation alone. There are other factors affecting it. In the final analysis, recent literature is full of

empirical studies that have been dealt with some aspects of the Dutch disease such as foreign remittances inflow and foreign aids.

3. Methodology and Results

Following Botta (2014), macroeconomic framework of the financial Dutch disease, the long-term foreign direct investment (FDI) and short-term portfolio investment are allowed. The FDI concentrates on domestic natural resources sector only. Portfolio investment is in the form of short-term/medium term foreign debt. The model consists of two non-linear differential equations. Equation (1), determines exchange rate dynamics such that:

$$\dot{e} = e\{[imp_M(e) - exp_M(e) / e] - exp_{NR} + i_H D + \Phi_{NR} + \dot{R} + KA_{PI}(i_H - i_F - \delta(e, D)) - KA_{FDI}(N)\} \quad (1)$$

The imports and exports flows of manufacture goods are in foreign currency. Foreign currency denominated exports of domestic natural resources exp_{NR}, like oil. $i_H D$ is interest payments on foreign debt. Φ_{NR} is foreign firms profit and natural resources revenues. Foreign revenue variation is in the central bank $\dot{R}$; net capital inflow KA_{PI}; and KA_{FDI}. Furthermore, manufactured goods imports are in the foreign currency, and exports are in domestic currency. Both goods respond negatively and positively to nominal exchange rate respectively. It is interesting to note that manufactured goods, exports and non-traditional traded goods sectors are affected by real exchange rate. Although the inclusion of relative price in this model is viable, the decision is to ignore it since the model would not be affected. Finally, the amount of capital inflow is determined by the difference between $(i_H - i_F)$, where i_H and i_F are domestic and foreign investment risk δ. It is worthwhile to note that as exchange rate appreciates, the more domestic borrowers meet their payments in foreign currency. Hence, there exists negative relationship between domestic exchange rate and short-term portfolio capital inflows. KA_{FDI} is not assumed to depend on exchange rate because it is directed towards natural resources which exported to foreign markets. Thus, it is influenced positively by the stock of natural resources N. R is used by central bank to affect exchange rate in line with inflation target. Net portfolio flows consists of financial loans as a foreign debt changes as:

$$\dot{D} = KA_{PI}(i_H - i_F - \delta(e, D)) \quad (2)$$

Where:

$\partial KA_{PI}/\partial\delta < 0$; $\partial\delta/\partial e > 0$; $\partial\delta/\partial D > 0$.

The higher current foreign debt, the less domestic borrower loans get. To derive equation (1) with respect to the current exchange rate, the form can be reached after some manipulation process as:

$$\partial\dot{e}/\partial e \,|_{\dot{e}=0} = exp_M/e\{\gamma^e_{impM}X - \gamma^e_{expM} + 1\} - e\partial KA_{PI}/\partial\delta \cdot \partial\delta/\partial e \quad (3)$$

Where:

$X = imp_M/(exp_M/e)$, the manufacture import-export ratio.

$e(\partial imp_M(e)/\partial e)/imp_M = \gamma^e_{impM}$ and $e(\partial exp_M(e)/\partial e)/exp_M = \gamma^e_{expM}$.

The manufactured goods imports and exports are elastic to exchange rate. The first part is Marshall-Learner condition represents the initial manufacturing trade imbalance. With capital mobility, exchange rate dynamics depends on trade flows among other factors. The second part of equation (3) shows the effects of exchange rate shift on net capital flows. The signs could be either positive or negative. Negative is in the case of future depreciation of the home currency. Nonetheless, the higher is the foreign debt, the more appreciation of the exchange rate. The connection between D and $\dot{e}$ is satisfied as follows:

$$\partial\dot{e}/\partial D \,|_{\dot{e}=0} = ei_H - e\,\partial WA_{PI}/\partial\delta \cdot \partial\delta/\partial D > 0 \quad (4)$$

The goal of a resource abundant country is to enlarge the manufacturing sector. Its aim is possible to reach upper levels since it is full of opportunities to innovate and produce more in comparison with other sectors of the economy. The development of manufacturing sector can promote growth and considered a positive structural move. To look at factors that affect manufacturing progress with the assumption of manufacturing development through its share in real GDP (Botta, 2014).

$$MA = f(e, \rho, WA_{PI}, K_{NR}) \quad (5)$$

$\partial MA/\partial e > 0$; $\partial MA/\partial WA_{PI} < 0$; $\partial MA/\partial K_{NR} < 0$

Equation (5) is based on the assumption that non resource-based tradable good sectors, as a share of GDP, are positively affected by depreciated exchange rate. As a result, manufacturing development responds positively to the depreciation of the exchange rate. ρ represents the exchange rate variance. It may go up due

to interaction between FDI, short-term portfolio investment and exchange rate movements. Hence, as ρ rises, manufacturing sector declines. Furthermore, manufacturing development may be affected negatively by net portfolio capital inflows even there is no empirical evidence for this conclusion. Manufacturing development is affected negatively by the investment in natural resources sector. Looking at equation (6), there exist positive relationship between productivity Y_L growth and manufacturing sector development as:

$Y_L = g\ (MA)$ (6)

Where:

$\partial Y_L / \partial\ MA > 0;\ \ \partial(\partial Y_L / \partial\ MA) / \partial\ MA < 0;$

In sum, the natural resource sector will attract FDI, where capital stock will motivate natural resource exports and hence, manufacturing sector will decline and non-traded good sector (service sector) will expand. Since our attention here is concentrated on the real log traded (manufacturing) sector, the following eclectic model is specified:

$MANU_t = f\ (OILPI_t; REX_t; GOEX_t; MINING_t)$ (7)

f_1,and $f_2 < 0$; f_3, and $f_4 > 0$

$MANU_t = f\ (OILPD_t; REX_t; GOEX_t; MINING_t)$ (8)

f_1, and$f_2 < 0$; f_3, and $f_4 > 0$

Where:

$MANU_t$ is real log manufacturing sector. It includes: food, beverages and tobacco, textiles, wood, petroleum, coal and chemicals. It is calculated as follows: MANU = GDP (minus import duties) – (service + mining).

$OILP_t^i$ is change in real oil price; i = I (increase), and D (decrease).

REX_t is real exchange rate calculated as: Riyal (Saudi Currency)*CPI/WCPI.

$GOEX_t$ is real log government expenditure representing the spending effect.

$MINING_t$ is real log value of mining sector.

The Non-Linear Oil Price Effects: Nowadays, in the prominent literature, the symmetric real oil prices shock is specified as follows:

$\Delta OILP_t = OILP_t - OILP_{t-1}$

Where asymmetric real oil price shocks (positive $OILPI_t$ and negative $OILPD_t$) are constructed as:

$OILPI_t = \max\{0, \Delta OILP_t\}$ (9)

$OILPD_t = \min\{0, \Delta OILP_t\}$ (10)

The data used here, is collected from SAMA (Saudi Arabian Monetary Authority), annual statistics 2016. The real oil price implemented here is an OPEC basket price. The data covers the period of 1970-2015. Table 1 shows estimates of Ordinary Least Squares (OLS). The impact of oil price increase on MANU is negative as expected, and not significant, and between 0.15-0.22 percent. The effect of oil price decrease is negative, as expected a priori, but is not significant, and in the same range of the oil price increase, that is 0.15-0.27 percent. On the whole, the magnitude of variations of the oil prices is negligible. The sign of REX is negative indicating that 206 to 213 percent of the variations in MANU come from the variation in real exchange rate (appreciation of REX) Javaid (2011), Mironov and Petronevich (2015), Taguchi and Lama (2016), and Lar et al. (2016). By the same token, the effect of GOEX on the MANU is positive and significant at 1 percent level. The positive sign indicates that the Saudi government is working hard to support the manufacturing sector in order to boost the production base. After all, the model is free of serial correlation and stable too.

Unit Root Test: The AR (1) process is as follows:

$y_t = \delta\ y_{t-1} + \varepsilon_t$ (11)

$\varepsilon t \sim iid\ N(0, \sigma^2)$

Here, the purpose is to test whether δ is equal to 1 or not. When we subtract y_{t-1} from both sides, the AR (1) can be rewritten as:

$\Delta y_t = y_t - y_{t-1} = (\delta - 1)\ y_{t-1} + \varepsilon_t$ (12)

Performing a test for $\delta = 1$ is an easy task through t-test to check whether the parameter on the y_{t-1} is equal to zero or not. This is the Dickey-Fuller test. Furthermore, performing unit root tests is the goal to attain stationary variables, and avoid spurious in multivariate regressions. To go on in the analysis, Augmented Dickey-Fuller (ADF), and Phillips and Perron (PP) tests are applied. Results for these tests are close to each other, and thus, reported in table 2. The tests revealed that all variables are stationary at the

difference I(1) and significant at 1 and 5 percent level in the ADF and PP tests. Some of the variables, such as $MANU_t$, REX_t, $GOEX_t$ and the $MINING_t$ variables, are not stationary at level I(0).

Table 1: Dependent variable real manufacturing sector (MANU)

Dependent Variable	Intercept	OILPI	OILPD	REX	GOEX	MINING	R^2	F-statistic
MANU-1	4.864386 (7.0871)*	-0.001512 (-1.4264)		-2.132103 (-8.4475)*	0.681721 (13.2125)*		0.93	176.4733
MANU-2	4.275716 (5.4801)**	-0.002200 (-1.9318)		-1.978681 (-7.3708)*	0.611963 (8.9111)*	0.114400 (1.5092)	0.93	137.1526
MANU-3	4.596444 (6.9210)*		-0.001510 (-0.5458)	-2.061975 (-8.1455)*	0.699124 (13.7541)*		0.92	166.6105
MANU-4	4.128436 (5.1205)**		-0.002794 (-0.9201)	-1.943705 (-6.9871)*	0.652192 (9.5261)*	0.081174 (1.0226)	0.93	125.3584

*, **, and *** are statistically significant at 1%, 5% and 10% level respectively. Values in parentheses are t-values.

Table 2: Augmented-Dickey Fuller and Phillips-Perron tests

	Augmented-Dickey Fuller						Phillips-Perron					
	Level			1st Difference			Level			1st Difference		
series	Intercept	T&I	None	Intercept	T&I	None	Intercept	T&I	None	Intercept	T&I	None
$MANU_t$	1.73	2.65	2.25**	3.49**	3.67*	2.20**	1.58	1.92	4.21*	3.49**	3.67**	2.20**
$OILPI_t$	6.37*	6.44*	5.48*	9.88*	9.73*	10.14*	6.43*	6.53*	5.47*	32.44*	34.01*	33.52*
$OILPD_t$	6.69*	6.65*	5.08*	7.61*	7.52*	7.67*	6.69*	6.65*	5.42*	17.04*	16.76*	17.08*
REX_t	1.20	2.01	0.89	3.39**	3.31**	3.43*	1.59	2.33	1.18	3.09**	3.10**	3.14*
$GOEX_t$	2.26	2.47	1.79	6.88*	6.98*	6.33*	2.30	2.43	1.79	6.87*	6.98*	6.33*
$MINING_t$	2.14	2.55	0.91	5.63*	5.64*	5.62*	2.43	3.67	0.86	5.60*	5.62*	5.61*

*, **, and *** are statistically significant at 1%, 5% and 10% level respectively. T&I: trend and intercept.

Johansen Co-integration Test Result: Based on Hjalmarsson and Osterhold (2007) in Algaeed (2017), Johansen's methodology starts with VAR(p) as:

$$y_t = \Psi + A_1Y_{t-1} + \ldots + A_pY_{t-p} + e_t \quad (13)$$

Where: y_t is a nx1 vector of variables that are integrated of order one. ε_t is a nx1 vector of innovations. The VAR model can be written as follows:

$$\Delta y_t = \Psi + \Pi y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + e_t \quad (14)$$

Where:

$$\Pi = \sum_{i=1}^{p} Ai - I \text{ , and } \Gamma_i = -\sum_{j=i+1}^{p} Aj \quad (15)$$

If the coefficients of matrix Π has minimized rank r < n, then there exist n x r matrices φ and Φ each with rank r such that: $\Pi = \varphi\acute{\Phi}$ and $\acute{\Phi}y_t$ is stationary. Moreover, the reduced rank of the Π matrix is the trace and the maximum eigenvalue tests as:

$J_{Trace} = -T \sum_{i=r+1}^{n} \ln(1 - \hat{\lambda}_i)$

$J_{Max} = -T \ln(1 - \hat{\lambda}_{r+1})$

The analysis here used 3 lags for both OILPD and OILPI depending on unrestricted VAR lag order, LR, FPE, AIC, and HQ. From table 3, trace statistic test confirms the existence of 2 and 1 co-integrated equations at the 5 percent level. The null hypotheses for the trace and max tests are that, there are no co-integrations between OILPI and OILPD, GOEX, REX, MINING, and MANU. The null hypotheses are rejected. Thus, there exist long-run relationships among the variables.

Table 3: Johansen co-integration test

H_0	H_A	Eigenvalues	λ_{Trace}	95%	H_0	H_A	λ_{Max}	95%
With OILPI (lags = 3)								
r = 0	r = 1	0.858839	152.9488*	69.81889	r = 0	r = 1	70.48284*	33.87687
r = 1	r = 2	0.787482	82.46597*	47.85613	r = 1	r = 2	55.75420*	27.58434
r ≤ 2	r = 3	0.369213	26.71177	29.79707	r ≤ 2	r = 3	16.58833	21.13162
With OILPD (lags = 3)								
r = 0	r = 1	0.645458	82.49134*	69.81889	r = 0	r = 1	42.51404*	33.87687
r ≤ 1	r = 2	0.462759	39.97731	47.85613	r ≤ 1	r = 2	25.47364	27.58434
r ≤ 2	r = 3	0.166761	14.50366	29.79707	r ≤ 2	r = 3	7.479848	21.13162

r indicates the number of co-integrating vector. Critical values are from Mackinnon et al. (1991) p-values. * indicates significance of the test statistic at 5 % level.

Causality Tests: If there are two variables or two groups of variables j and k, then the necessary and sufficient condition for variable k not Granger cause variable j is that $A_{jk,\,i} = 0$ for i = 1, 2, ...,. Tables 4 and 5 reveal the causality tests. Pairwise Grange causality tests showed that causality is running from MINING to GOEX and from MANU to REX. On the other hand, causality test indicates clearly the acceptance of the null hypotheses that MINING do not Granger cause GOEX, and MANU does not Granger on REX. In essence, the null hypotheses for MINING does not Granger on GOEX and MANU does not Granger on REX are clearly accepted.

Table 4: Pairwise Granger causality tests, lags 5

Null Hypothesis	Observations	F-statistic	Probability
GOEX does not Granger cause OILPI	34	1.44857	0.2449
OILPI does not Granger cause GOEX		2.12242	0.0990
REX does not Granger cause OILPI	34	0.69014	0.6359
OILPI does not Granger cause REX		1.72533	0.1688
MINING does no Granger on OILPI	34	0.35630	0.8773
OILPI does no Granger on MINING		0.47941	0.7879
MANU does not Granger on OILPI	34	1.16558	0.3559
OILPI does not Granger on MANU		0.27923	0.9197
REX does not Granger on GOEX	41	0.72436	0.6105
GOEX does not Granger on REX		1.82569	0.1379
MINING does not Granger on GOEX	41	3.46507	0.0137
GOEX does not Granger on MINING		0.64270	0.6690
MANU does not Granger on GOEX	41	3.11583	0.0221
GOEX does not Granger on MANU		2.16418	0.0848
MINING does not Granger on REX	41	1.60503	0.1890
REX does not Granger on MINING		1.84639	0.1338
MANU does not Granger on REX	41	2.57476	0.0472
REX does not Granger on MANU		2.32031	0.0678
MANU does not Granger on MINING	41	1.63951	0.1800
MINING does not Granger on MANU		0.79001	0.5652

The Impulse Response Function: Granger-causality tests may not explain well the interaction between variables in a system contains different variables. In the real world, attention is paid to the response of one variable to an impulse in another variable in a system that contains different variables. If a variable reacts to an impulse in another variable, this will yield the latter causal for the former (Rossi, 2004), in Algaeed (2017). Following the literature, the Saudi economy can be represented by structural equations as follows:

$$A(L)\,X_t + B(L)\,Y_t = U_t \qquad (16)$$

Where A(L) and B(L) are n x m, and n x k matrices. X_t is an n x1 vector of exogenous variables and Y_t is k x1 vectors of endogenous variables. U_t is an n x 1 vector of random structural disturbances. The SVAR explains the effects of one standard deviation shock in the error term over the model's endogenous variables. The model applied here will have five variables with 5-dimentional column vector.

Table 5: Pairwise Granger causality tests, lags 5

Null Hypothesis	Observations	F-statistic	Probability
GOEX does not Granger cause OILPD	40	0.37610	0.8609
OILPD does not Granger cause GOEX		1.02166	0.4232
REX does not Granger cause OILPD	40	0.16946	0.9718
OILPD does not Granger cause REX		0.43337	0.8215
MINING does no Granger on OILPD	40	1.19247	0.3372
OILPD does no Granger on MINING		0.87698	0.5087
MANU does not Granger on OILPD	40	0.73778	0.6013
OILPD does not Granger on MANU		0.94731	0.4657
REX does not Granger on GOEX	41	0.724436	0.6105
GOEX does not Granger on REX		1.82569	0.1379
MINING does not Granger on GOEX	41	3.46507	0.0137
GOEX does not Granger on MINING		0.64270	0.6690
MANU does not Granger on GOEX	41	3.11583	0.0221
GOEX does not Granger on MANU		2.16418	0.0848
MINING does not Granger on REX	41	1.60503	0.1890
REX does not Granger on MINING		1.84639	0.1338
MANU does not Granger on REX	41	2.57476	0.0472
REX does not Granger on MANU		2.32031	0.0678
MANU does not Granger on MINING	41	1.63951	0.1800
MINING does not Granger on MANU		0.79001	0.5652

Where: y_t = ($OILP^i$, $GOEX_t$, REX_t, $MINING_t$, $MANU_t$) is a 5 x 1vector of endogenous variables. A is a 5 x 1 vector of constant terms. B_i is an 5 x 5 autoregressive coefficient matrices. U_t is a 5 x 1 vector of serially mutual uncorrelated shocks. The i^{th} is an oil price increase and decrease. The restrictions imposed and the contemporaneous structural parameter of the following order:

$$\begin{bmatrix} OILPi \\ GOEX \\ MINING \\ REX \\ MANU \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ a21 & 1 & 0 & 0 & 0 \\ a31 & a32 & 1 & 0 & 0 \\ a41 & a42 & a43 & 1 & 0 \\ a51 & a52 & a53 & a54 & 1 \end{bmatrix} \begin{bmatrix} e1t \\ e2t \\ e3t \\ e4t \\ e5t \end{bmatrix}; \text{ i = increase (+) and decrease (-)} \quad (17)$$

As can be seen, equation (17) is built on the assumption that the oil price changes are exogenously determined, and of course, this is the case. In order to examine the interactions and consolidate the causal relationships, SVAR, and impulse response functions and variance decomposition functions are used. In other words, the impulse response function from a VAR is a guide to whether the effects are short lived or permanent (Algaeed, 2017). It traces the effects of a one standard deviation shock in a certain variable on the current and future values of the rest of macro variables. *Figure 2, 3*, and table 6 and 7 show the IRFs of each variable in the study to a one standard deviation shock in the oil price. The response of MANU to OILPI is negative and continues negative till after the 20^{th}. At the beginning, the response of MANU to OILPI is positive and continues positively till the end of time span. The response of REX is negative until the 3^{rd} year, then becomes negative up to 9^{th} year and continues negatively. However, the response of GOEX is positive at the beginning until the 2^{nd} year, and then continues negatively. On the other hand, the response of MANU to REX, GOEX, and MINING is similar to the forgone analysis above with the exception of the response of MANU to OILPD, where it was positive at the beginning the turned to be negative till the end of the time span. Also, it should be noted that, with OILPI, ECT is negative and significant at 5 percent level and is about 245 percent. The error correcting term, explains the speed at which the system adjust to equilibrium at the rate of 245 percent annually. Nonetheless, with OILPD, ECT is negative and not significant and is about 72 percent. In sum, the results show the spectacular effects of the oil price changes on the Saudi economy. Thus, changes in earnings, changes in GOEX and REX influence MANU, and hence, influence the efforts of diversifications.

Table 6: Impulse response to Cholesky (d.f. adjusted) one S. D. innovations

Variance Decomposition for Oil Price Increase, OILPI					
Period	**OILPI**	**GOEX**	**MINING**	**REX**	**MANU**
1	20.75056	0.000000	0.000000	0.000000	0.000000
5	1.038034	-1.458611	-1.301539	4.165382	1.343698
10	-0.472413	0.387826	0.073506	-1.116644	0.222961
15	0.021498	0.308906	0.089105	-0.045964	-0.127216
25	-0.022451	0.072786	-0.007259	0.000654	0.036495
Variance Decomposition for GOEX					
1	-0.027133	0.184138	0.000000	0.000000	0.000000
5	0.009867	-0.047373	0.040713	0.024979	0.028910
10	-0.018175	-0.015423	0.012441	0.021109	0.064858
15	-0.009430	-0.048726	0.023760	0.011823	0.050708
25	-0.010652	-0.016830	0.019720	0.010538	0.042543
Variance Decomposition for MINING					
1	0.117732	0.020070	0.214468	0.000000	0.000000
5	-0.029086	-0.118567	0.064733	0.082901	0.152435
10	-0.023944	-0.070186	0.021152	-0.015938	0.085641
15	-0.022806	-0.032054	0.023406	0.012673	0.076699
25	-0.015970	-0.025961	0.027375	0.016645	0.064989
Variance Decomposition for REX					
1	-0.009924	-0.002342	-0.029375	0.036930	0.000000
5	0.008237	-0.006194	0.000554	-0.011616	-0.016374
10	0.001356	-0.001407	-0.008385	0.003296	-0.005328
15	0.001430	0.003695	-0.003740	-0.005253	-0.008786
25	0.002319	0.004617	-0.003591	-0.001971	-0.009326
Variance Decomposition for MANU					
1	-0.005069	0.007836	0.031332	-0.006856	0.035699
5	-0.010390	-0.021087	0.029461	0.036327	0.062443
10	-0.015698	-0.034508	0.030758	0.019380	0.070119
15	-0.016303	-0.035165	0.026440	0.015867	0.067831
25	-0.015161	-0.027501	0.025113	0.014155	0.061172
Cholesky Ordering OILPI, GOEX, MINING, REX, and MANU					

Table 7: Impulse response to Cholesky (d.f. adjusted) one S. D. innovations

Variance Decomposition for Oil Price Increase, OILPD					
Period	**OILPD**	**GOEX**	**MINING**	**REX**	**MANU**
1	15.32431	0.000000	0.000000	0.000000	0.000000
5	-0.814628	-0.950783	-0.641651	0.733851	0.255264
10	0.101180	-0.105525	-0.177147	-0.361415	0.086039
15	-0.009440	0.061103	0.010800	0.003709	-0.002145
25	-0.005918	-0.046618	0.036434	-0.004864	0.045718
Variance Decomposition for GOEX					
1	-0.029586	0.212397	0.000000	0.000000	0.000000
5	-0.025052	-0.026705	0.087965	-0.012445	0.046553
10	-0.002602	-0.073436	0.031089	-0.005858	0.035891
15	-0.003728	-0.037187	0.012234	-0.004605	0.028299
25	-0.004184	-0.021927	0.016886	-0.001295	0.024623
Variance Decomposition for MINING					
1	0.179023	0.032461	0.228870	0.000000	0.000000
5	-0.021056	-0.147470	0.079893	-0.009769	0.101895
10	0.003766	-0.089139	0.016729	-0.035729	0.046107
15	-0.007164	-0.035166	0.017495	-0.002689	0.038018
25	-0.005792	-0.033277	0.025117	-0.002231	0.035646
Variance Decomposition for REX					
1	-0.025498	-0.009330	-0.019930	0.035961	0.000000
5	0.008168	-0.001810	0.005306	-0.008723	-0.015047
10	-0.000546	0.000469	-0.004703	0.005169	-0.006265
15	0.001429	0.006374	-0.006185	-0.000856	-0.006440
25	0.000877	0.005982	-0.003833	0.000655	-0.005952
Variance Decomposition for MANU					
1	0.013055	0.007663	0.016040	-0.011755	0.036835
5	-0.012005	-0.035502	0.048008	0.007907	0.049618
10	-0.006297	-0.052684	0.033644	-0.005243	0.046624
15	-0.006128	-0.043862	0.026497	-0.004555	0.041617
25	-0.005724	-0.033954	0.023708	-0.002676	0.035618
Cholesky Ordering OILPD, GOEX, MINING, REX, and MANU					

Figure 2: Responses of GOEX, REX, MINING, and MANU to an OILPI

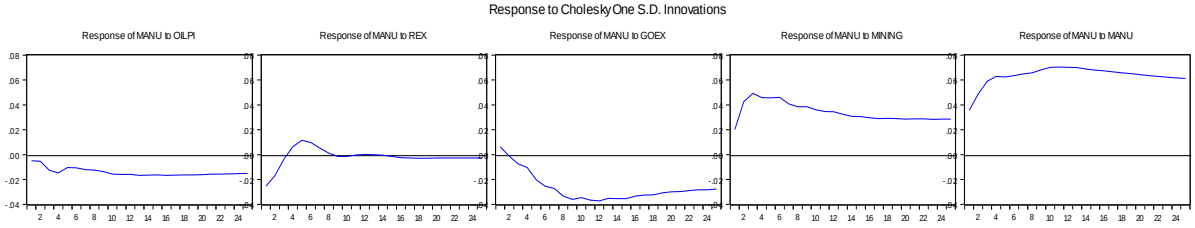
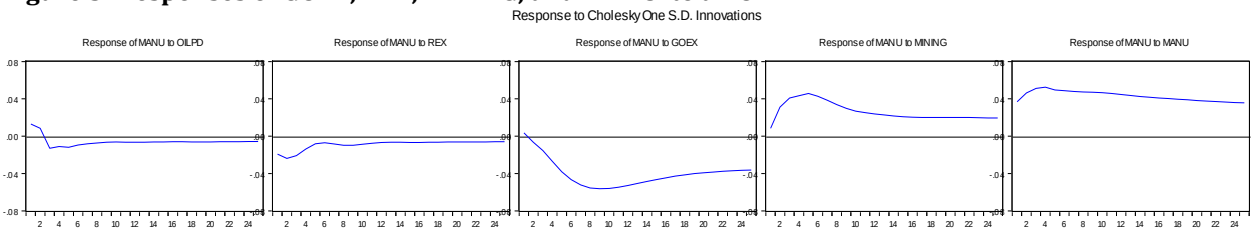


Figure 3: Responses of GOEX, REX, MINING, and MANU to an OILPD



4. Conclusion and Policy Recommendations

The aim of this paper has been to analyze and investigate the effects of oil price fluctuations on the Saudi manufacturing (traded) sector. The recent variations of the oil prices in international oil market shed light on the ongoing efforts of diversifications of the economy. Hence, such study can help policy makers in deciding the directions of priorities. As a matter of fact, this paper has examined thoroughly the impacts of such a shock (increase and decrease) on the manufacturing sector for the period of 1975-2015. The non-linear oil price changes have been investigated using structural VAR (SVAR) model. The Johansen co-integration tests showed an existence of long-run relationships among the variables, a non-linear oil price shocks (OILPI and OILPD), GOEX, REX, MINING, and MANU. In the short-run, and based on equations (7 and 8), REX influenced the MANU negatively. Furthermore, a 10 percent change in REX will affect MANU by 21 percent. The coefficient is significant at 1 percent level and has the expected sign. On the other hand, the government's effort to diversify the Saudi economy is clear. A 10 percent increase in government spending (the spending effect) leads to an increase in MANU by 6 percent, and vice versa. The results here are in line with the findings in the Dutch disease literature, Kamas (1986), Javaid (2011), Lar et al. (2016), Mironov and Petronevich (2015), and Taguchi and Lama (2016). By and large, it is clear from analysis that fluctuations in oil prices and oil earnings reflect upon the macroeconomic variables. Planning to nullify the severe impacts of Dutch disease symptoms must go through a good balanced strategy in diversifying the production base. As has been noted, in the long-run, sustainable supporting programs for the traded goods have to be well financed and established. Frequent support programs create unstable supply of goods and services. Pressure on government to cure the deficit should not hinder the efforts of creating strong traded goods base. In brief, the rise in domestic prices will affect relative prices which in turn will strongly influence traded goods sector negatively. Given these points, fiscal policy should be coordinated with the central bank (SAMA) to maintain stable prices to keep the traded sector progressing.

References

Acosta, P., Lartey, E. & Mandelman, F. (2007).Remittances and the Dutch Disease. *Federal Reserve Bank of Atlanta Working Paper,* 8, 1-38.

Algaeed, A. (2017). The Effects of Non-Linear Oil Price Shocks on the Saudi Saving-Investment Behavior. *Journal of Economics and Financial Issues*, 7(2), 155-165.

Botta, A. (2014). The Macroeconomics of Financial Dutch Disease. *DEM Working Paper Series,* 89, 09-14. Department of Economics and Management. Universits Mediterraneadi Reggo Calbria.

Corden, M. & Neary, J. P. (1982). Booming Sector and De-in dustrialisation in a Small Open Economy. *The Economic Journal,* 92, 829-831.

Corden, M. (1984). Booming Sector and Dutch Disease Economics: Survey and Consolidation. *Oxford Economic Papers*, 36(3), 359-380.

Corden, M. (1986). Fiscal Policies, Current Accounts and Real Exchange Rates: In Search of a Logic of International Policy Coordination. *Weltwirt. Arch*, 122, 423-438.

Enders, K. & Herberg, H. (1982). The Dutch Disease: Causes, Consequences and Calamities. *Weltwirt. Arch*, 83-84, 473-497.

Eromenko, I. (2016). Do Remittances Cause Dutch Disease in Resource Poor Countries of Central Asia? Central Asia Economic Papers, No. 18, January 2016.

Fardmanesh, M. (1991). Dutch Disease Economics and the Oil Syndrome: An Empirical Study. *World Development*, 19(6), 711-717.

Fielding, D. & Gibson, F. (2012). Aid and Dutch Disease in Sub-Saharan Africa. *Journal of African Economies*, 22(1), 1-21.

Gregory, R. (1976). Some Implications of the Growth of the Mineral Sector. *Australian Journal of Agriculture Economics*, 20, 71-91.

Hagen, E. (1968). Economic Growth with Unlimited Foreign Exchange and No Technical Progress, in Bhagwatti, J. N. and Eckaus, R. S. eds., Development and Planning.

Hamilton, J. D. (1996). This is What Happened to the Oil Price Macro economy Relationship. *Journal of Monetary Economics,* 38(2), 215-220.

Hjalmarsson, E. & Osterhold, P. (2007). Testing for Co-integration Using the Johansen Methodology Where Variables are Near-Integrated. IMF Working Paper; WP/07/141.

Javaid, S. (2011). Dutch Disease Investigated: Empirical Evidence from Selected South-East Asian Economies. *Journal of Economic Cooperation and Development*, 34(4), 51-74.

Kamas, L. (1986). Dutch Disease Economics and the Colombian Export Boom. *World Development*, 4, 1177-1198.

Lee, K., Ni, S. & Ratti, R. (1995). Oil Shocks and the Macro economy: The Role of Price Variability. *The Energy Journal*, 16(4), 39-56.

Lama, R. & Medina, J. (2012). Is Exchange Rate Stabilization an Appropriate Cure for the Dutch Disease?. *International Journal of Central Banking*, 3, 5-42.

Lar, N., Taguchi, T. & Sakurai, H. (2016). Does Foreign Aid Cause Dutch Disease: Case of Cambodia, Lao PDR, Myanmar, and Vietnam. *Journal of Reviews on Global Economics*, 5, 180-189.

Long, N. (1983). The Effects of a Booming Export Industry on the Rest of the Economy. *The Economic Record*, 58(59), 57-59.

Magud, N. & Sosa, S. (2010). When and Why Worry about Real Exchange Rate Appreciation? The Missing Link between Dutch Disease and Growth. IMF Working Paper WP/10/271, 1-33.

Mironov, V. & Petronevich, A. (2015).Discovering the Signs of Dutch Disease in Russia. Bank of Finland, BOFIT Discussion Papers 3/2015.

Mork, K. (1989). Oil Shocks and the Macro economy when Prices Go Up and Down: An Extension of Hamilton's Results. *Journal of Political Economy*, 97(4), 740-744.

Neary, P. & Corden, M. (1982). Booming Sector and De-industrialization in a Small Open Economy. *The Economic Journal,* 92, 825-848.

Neary, P. & Wijnbergen, S. (1984). Can Oil Discovery Lead to a Recession? A comment on Eastwood and Venables. *The Economic Journal*, 94, 390-395.

Paldam, M. (2013). The Political Economy of the Dutch Disease-A Survey. In Cabrillo, F., Puchades, ed. Constitutional Economics and Public Institutions. Essays in Honor of Jose-Pardo Edwards Elgar, Cheltentiam, U.K.

Porter, M. (1978). External Shocks and Stabilization Policy in a Small Open Economy: The Australian Experience. *Weltwirt. Archive*, 114, 709-735.

Rossi, E. (2004). Impulse Response Functions. Lecture Notes, Econometrics 10. Department of Economics, Universita di Pavia.

Rudd, D. (1996). An Empirical Analysis of Dutch Disease: Developing and Developed Countries. Economic Department, Honors Projects, Illinois Wesleyan University.

Snape, R. (1977). Effects of Mineral Development on the Economy. *The Australian Journal of Agricultural Economics*, 21, 147-156.

Taguchi, H. & Lama, B. (2016). Do Emigrant's Remittances Cause Dutch Disease? The Case of Nepal and Bangladesh. *Research in Applied Economics*, 8(4), 1-14.

Trevino, J. (2011). Oil Price Boom and Real Exchange Rate Appreciation: Is there Dutch Disease in the CEMAC? IMF Working Paper WP/11/268, 1-30.

Wijnbergen, S. (1984). The Dutch Disease: A Disease After All. *The Economic Journal*, 94, 41-55.

Wijnbergen, S. (1984). Inflation, Employment, and Dutch Disease in Oil-Exporting Countries: A Short-run Disequilibrium Analysis. *Quarterly Journal of Economics*, 99, 233-250.

Zuzana, I. (2016). The Dutch Disease: An Overview. *European Scientific Journal*, Special Edition, August, 2016.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

The Effectiveness of Enterprise Risk Management and Internal Audit Function on Quality of Financial Reporting in Universities

Wadesango N*, Mhaka C
University of Limpopo, Polokwane, Republic of South Africa
newman.wadesango@ul.ac.za

Abstract: This study examined the impact of enterprise risk management (ERM) and internal audit function (IAF) on the financial reporting quality (FRQ) of state universities in Zimbabwe. Utilizing a dataset of 250 respondents from across nine (9) state universities, the researchers examined the effectiveness of ERM and the IAF on the quality of financial reporting in state universities. The researchers employed the contingency theory and studied each university separately to report on items that are specific to each and then also establish a commonality in the definition of parameters to be used in setting up the benchmark against which future performance may be measured. The findings were that there is a strong and significant relationship between ERM and the FRQ and also that there is a positive relationship between the internal audit function and FRQ. Quality internal audit results improved corporate governance systems. The results also underscore the significance and need for central government to establish and monitor a system of good ERM processes that minimize corporate governance breaches and enhance integrity and independence in financial reporting in state universities.

Keywords: *Corporate governance, internal audit, enterprise risk management, financial management*

1. Introduction

The propagation of crises and scandals in recent years in Zimbabwean state enterprises has demonstrated the failure of the current governance systems. "These crises have prompted regulators to provide financial security laws and codes of conduct in the form of the Public Finance Management Act Chapter 22:19, Code of Corporate Governance for Parastatals and State Enterprises, and the Procurement Act, Chapter 2:14"(Smith and Adhikari, 2005:34). These laws give much importance to the concept of mandatory disclosure of financial information by these state run organizations and give, at a minimum, what may be considered as good business conduct. What is still interesting is the fact that none of these state run enterprises has shown an affinity to voluntarily disclose the results of their operations over and above the stipulations or mandatory minimums. Indeed, with globalization the role of voluntary disclosure is increasingly being debated at an international level (Smith, and Adhikari, 2005). Disclosure is situation specific and its measurement is with reference to an assessment of compliance to a set standard giving rise to a disclosure index. Disclosure however remains a theoretical concept that is difficult to measure directly (Marston and Shrives, 1991). The focus of this research was, however not on what is or what is not disclosed but rather on the quality of what is disclosed. It thus puts emphasis on the usefulness and true representativeness of the resultant financial reporting. While some prior studies (Hoyt and Liebenberg, 2011; Richardson, 2006b; Prawitt, 2009; Mayer et al. 2009) have focused on the effect of Enterprise Risk Management (ERM) on firm performance and value, they have not explicitly addressed the relationship between ERM and the quality of the financial reporting process. A strong financial reporting process includes diligence by preparing and monitoring parties such as the audit committee and auditors in providing accurate and transparent financial reports and associated disclosures.

On the other hand, the audit process and audit quality have a significant impact on the quality of financial reports (Knechel et al. 2013). A few prior studies (e.g. Kochetova and Net, 2011; McVay, 2006; Jones et al.2003; Jonas and Blanchet, 2002; Erickson, 2006) have examined the effect of strategic analysis and strategic risk (components of ERM) on auditor judgments, but these studies have not considered the effect of ERM on the audit process and audit judgments from a broader, more holistic contingent perspective. The strength of ERM impacts the company's monitoring of controls over major business risks, which is important for auditors to consider in audit planning (Bell et al. 2002; D'Aquila, 1998; Institute of Internal Auditors (IIA), 2005). Further, although audit committees and Chief Finance Officers (CFOs) are increasingly required to play a critical role with respect to ERM (Mikes, 2009), there has been no research that examines how either audit committees or (Chief Finance Officers) CFOs view the role of ERM in ensuring a high quality financial

reporting framework. The importance of this study is therefore to establish the contribution of enterprise risk management and internal audit function towards the quality of financial reporting in universities in a developing country.

2. Literature Review

Different authors define financial reporting quality in different ways. Asare et al (2008) define quality as '…a hierarchy of accounting qualities, with relevance and reliability considered the primary ones. In addition, the statement has a set of criteria, such as representational faithfulness, verifiability, neutrality, predictive value, feedback, comparability, consistency, and timeliness". One is then compelled to probably conclude that overall financial reporting quality is thus assessed on the basis of how well the reporting entity has covered each of the criteria given above. The Jenkins Committee (1994) did not refer to the "quality of financial reporting" but rather the "quality of reported earnings." Its definition is not very instructive, and it appears that quality is related to both the ability to predict and the relevance of the information. In identifying quality, the Jenkins Committee used several concepts that emphasize users' needs, such as understanding the nature of a company's businesses and performance, changes affecting the company, management's perspective, and others. Larcker et al. (2004), consider accounting quality as a factor useful in coming up with an industrial bond issue rating and not as an end in itself. They affirm that firms that consistently make timely and informative disclosures are considered less likely to withhold relevant unfavourable information. Although one should expect that "better" corporate governance leads to improved financial reporting, there is a lack of consensus as to what constitutes "financial reporting quality. Jonas and Blanchet (2002, 353) state, "in light of Sarbanes-Oxley Act (2002) new requirements, auditors, audit committee members, and management are now struggling to define "quality of financial reporting." Cohen et al. (2008) assert that rather than define "quality of financial reporting," it was more important to analyze factors such as earnings management, financial restatements, and fraud that clearly inhibit the attainment of high quality financial reports. One would then be expected to infer financial reporting quality by reference to the presence of these factors as evidence of a breakdown in the financial reporting process. Also one has to examine the role of the various players in the governance mosaic, as discussed below and the extent to which these players either individually or collectively influence the attainment of financial reports that are free from material misstatements and misrepresentations. This synergistic interplay is what regulates financial reporting quality and is the main focus of this study.

Good Corporate Governance: The corporate governance mosaic impacts the quality of financial reporting (e.g., transparency, objectivity) and, in the extreme, earnings manipulation and outright fraud. The governance mosaic includes those stakeholders inside and outside the firm. Unfortunately, prior research and the accounting profession have concentrated their focus primarily on the board of directors and the audit committee. This has given the impression that these two are the only or most important players in the governance mosaic. This is not so. For instance, the external auditor plays a significant role in monitoring financial reporting quality and hence can be viewed as an important participant in the governance process. All other players work synergistically in the corporate governance mosaic and deserve equal air play as the audit committee and the board of directors. Examples of such other actors include, but are not limited to, regulators, legislators, financial analysts, stock exchanges, courts and the legal system, and the shareholders. More so, current debate has failed to talk to the interplay between the stakeholders. These interactions such as those among the audit committee, the external auditor, the internal auditor, the board, and the management are crucial to effective governance and to achieving high quality financial reporting (Sarbanes-Oxley Act 2002). This interplay is also affected by outside forces such as by regulators and stock exchanges as well as by pressure to meet the stringent expectations of financial analysts. Thus external players often shape and influence the interactions among the members of the mosaic who are more directly involved in the governance of the organisation.

Also pathetic to research on corporate governance is the manner in which the governance debate has been unfairly looked at. Corporate governance plays a much more important role within an organisation. Larcker et al. (2004, 1) also debate this lack of deeper research by saying that current research has not been able to explain managerial behaviour and how this impacts organizational performance. Cohen et al. (2002) conducted an interview study with experienced auditors and revealed that management has a significant

influence over these parties. Some of the auditors in that study argue that if management does not want to be "governed", they can't be (Cohen et al. 2002:582). Moreover, management is fraudulently capable of placing passive, compliant members on the board who may satisfy regulatory requirements but are reluctant to challenge their appointers, the management.

Theoretical Framework: The study adopted the Social learning theory. This theory suggests that setting the tone at the top will inspire individuals within the organization to emulate the behaviour of attractive role models like ethical leaders (Bandura, 1977, 1986). Utilizing social learning theory, research suggests that good corporate governance trickles-down from the top level of management, to immediate supervisors, and ultimately to employees. For the financial reporting process, this trickle down impact is important because it means that by setting the tone at the top, ethical leaders can influence the reporting behaviour of not only management but also of those employees making the day-to-day decisions including final accounts preparation like deputies or assistant bursars and accounting assistants.

Hypotheses Development: Developing the discussion further, we investigated how the triad combination of internal audit function quality, ERM and good corporate governance work synergistically to create a control environment that can influence the quality of financial reporting. Since the strength of the internal audit function in ERM and good corporate governance are integral components of internal control, my interest is in examining how these two factors come together and influence an accounting decision which will ultimately affect reporting quality. Accordingly, we put forward the following hypothesis:
$\mathbf{H_1}$: "In an entity with a strong IAF and a weak ethical leader, accountants will be less willing to make a dubious journal entry than in all other conditions. Specifically, accountants will be less willing to make a questionable entry when there is a strong IAF and a weak ethical leader.
$\mathbf{H_0}$: In an environment with a weak IAF and a strong ethical leader, accountants will most likely take down instructions without questioning and hence lead to poor financial reporting".

The latter discussion also results in the following sub-hypothesis
$\mathbf{H_{Sub}}$: An environment with a strong IAF and a strong ethical leader is most likely to produce quality financial reports.

Research Questions: The following research questions guided data collection through surveys and interviews:

- How does the internal audit function in an organisation relate to the risk management practice within that very organisation?
- What is the relationship between ERM and good corporate governance?
- What is the relationship between ERM, good corporate governance and the internal audit function?
- What is the relationship between ERM; GCG; IAF and financial reporting quality?

3. Methodology

This study utilized a multiple case study design. Case studies are "an exploration of a 'bounded system' of a case or multiple cases over time through detail, in depth data collection involving multiple sources of information rich in context" (Creswell: 2013). In order to gain multiple perspectives in the area of ERM, IAF and CG as they relate to financial reporting quality, this study used the maximum variation sampling strategy (Creswell, 1998). To achieve this, two hundred and fifty (250) accounting professionals or personnel were recruited from the nine (9) state universities in Zimbabwe to participate in the study. The personnel included both executives and non-executives from the nine (9) state universities including one individual from each identified as the risk champion from that particular institution. There were also personnel from the IAF of each institution, an assistant bursar and a deputy bursar from each university, a representative from any such grouping in each university as is mandated to see to the risk management of the university other than the risk champion. The participants were identified with the assistance of a gatekeeper. The research used both a qualitative and quantitative approach to gather, analyze and describe findings.

Data Sources: The data sources that were used in this study comprised of both primary and secondary data.

Primary Data: Primary data was obtained from respondents using interviews and questionnaires administered to personnel in seven (7) of the nine (9) state owned universities in Zimbabwe.

Secondary Data: Secondary data was collected through the review of published financial statements, annual reports, and strategic plan documents of respective state universities. The internet was also widely consulted on current issues and publications on activities**.** A self- administered, structured questionnaire, interviews and documents were used to collect data.

4. Findings

Table 1: Category of Respondent

	Frequency	Percent	Valid Percent	Cumulative Percent
Executive Staff	3714.8	15.9	15.9	
Middle Management	147	58.8	63.4	79.3
Junior Staff Grades	48	19.2	20.7	100
Total	232	92.8	100.0	

Category of respondents: The respondents were categorized into executive staff, middle management and junior Staff grades within their respective institutions. In table 1 above, middle management had the highest number of respondents with a representation of 63.4% of the total respondents. This also represents 6.25% in default (non-respondents). Top management accounted for 15.9% of total respondents with a default of 7.5%. On the other hand, junior staff had a non-respondent rate of only 4%.

Factor analysis: The characteristics used in the variables of the conceptual framework were tested using factor analysis to establish whether they were good measurements. The extraction method used was the principle component analysis and the rotation method was Varimax with Kaiser Normalization. Items under internal audit function with a correlation of less than 0.4 were excluded from the rotation table (Richardson, 2006b) while under good corporate governance, items with correlation of less than 0.5 were excluded.

Factor Analysis of the Good Corporate Governance scale: Table 2 below, shows that seven constructs were appropriate for measuring good corporate governance, given, that they explained 72% of the total variance. The construct on clear institutional strategy accounted for 8% of the variance, while effective risk management explained 15% of the variance, discipline explained most of the variance 12%, fairness explained 10% of the variance, social responsibility represented 3%, self-evaluation 13% and transparency explained 11% of the variance. From the findings it is clear that the self-discipline, self-evaluation, effective risk management and transparency constructs are the most important (with Eigen values of 4.409 and 2.176 respectively). On the other side of the scale; social responsibility and institutional strategy as well as fairness were found to be of insignificant importance (with Eigen values of 1.747, 1.589 and 1.466 respectively).

Factor Analysis of the Internal Audit Quality scale: Internal audit quality accounted for 28% of the variance. According to table 2, a four-construct scale proved to be the most appropriate for measuring quality of the internal audit function in accounting for this total variance. The internal audit reporting structure construct accounted for the most variance of 12%. The independence construct explained 8% of the variance, with 5% being explained by the internal audit existence construct. Internal audit composition and capacity accounted for 3% of the variance. From the findings, it has been observed that internal audit reporting structure (with an Eigen value of 3.13) within the university system is the most important construct of internal audit function quality. The independence of the internal audit function is next in importance with an Eigen value of 1.519 whilst the existence construct at 5% and the internal audit team composition and capacity construct at 3% are of lesser importance (Eigen values of 1.186 and 1.026, respectively).

Table 2: Rotated Characteristic Matrix for Good Corporate Governance Characteristics

Question	1	2	3	4	5	6	7
GCG-B17	0.801						
GCG-B15	0.762						
GCG-B16	0.635						
GCG-B8		0.797					
GCG-B9		0.794					
GCG-B7		0.711					
GCG-B11		0.440					
GCG-B12			0.797				
GCG-B1			0.736				
GCG-B13			0.689				
GCG-B4				0.769			
GCG-B5				0.706			
GCG-B3				0.704			
GCG-A3					0.791		
GCG-A2					0.681		
GCG-B6					0.572		
GCG-B2					0.473		
GCG-B12						0.707	
GCG-B1						0.763	
GCG-B13						0.669	
GCG-B4							0.779
GCG-B5							0.716
GCG-B3							0.701
Eigen values	4.409	2.176	1.747	1.589	1.466		
% of variance	15	13	12	11	10	8	3
Cumulative % Var	15	28	40	51	61	69	72

Notes: Characteristic 1= Effective Risk Management, Characteristic 2=Self Evaluation, Characteristic 3= Discipline, Characteristic 4=Transparency, Characteristic 5= fairness, Characteristic 6= Clear Institutional Strategy, Characteristic 7= Social Responsibility

n=232

Table 3: Rotated Component Matrix for Internal Audit Function Components

Questions	1	2	3	4
IAF Q8	0.778			
IAF Q11	0.736			
IAF Q2		0.850		
IAF Q1		0.740		
IAF Q3			0.756	
IAF Q10			0.689	
IAF Q4			0.666	
IAF Q2				0.850
IAF Q1				0.740
IAF Q3				0.756
Eigen Value	3.130	1.519	1.186	1.026
% Variance	12	8	5	3
Cumulative % Variance	12	20	25	28

Notes; Component 1= Internal Audit Reporting Structure, Component 2 = Internal Audit Independence, Component 3 =Internal Audit Existence & Capacity, Component 4 = Internal Audit Team Composition

n=232

Inferential analysis: Inferential analysis was done where by correlations were obtained to establish the relationship that exists between variables conceptualized in the framework

Table 4: Spearman's Correlation matrix of the global variables

	FRQ	ERM	IAF	GCG
FINANCIAL REPORTING QUALITY (FRQ)	1.000			
ENTERPRISE RISK MANAGEMENT (ERM)	0.266	1.000		
INTERNAL AUDIT FUNCTION (IAF)	0.314**	0.329**	1.000	
GOOD CORPORATE GOVERNANCE (GCG)	0.421	0.213	0.178	1.000

**correlation is significant at the 0.01 level

Relationship between good corporate governance and financial reporting quality: This relationship is shown as significantly strong with r=0. 421.This clearly shows that good corporate governance plays a significant role in ensuring that financial reporting process produces quality results.

Relationship between the internal audit function and financial reporting quality: The results of the correlation matrix in Table 4 above shows that there was a positive significant relationship between the IAF and financial reporting quality (r=0.314, P-value <1%). The positive relationship implies that as the IAF improves the quality of services, financial reporting quality also improves. This clearly indicates that as the internal audit function performs its duty with diligence and independently with an enabling reporting structure, then an institution is more likely to digress from manipulation of transactions and results and thus produce quality financial reports that are free from misstatement and misrepresentation.

Relationship between financial reporting quality and enterprise risk management: A positive and significant relationship was also found to exist between ERM in aggregate and financial reporting quality (r=0.266, P-value < 1%). Deductively this shows that the stronger the efforts at instituting an enterprise wide risk management process the more likely the university is to quickly curb any anomalies in reporting and the result will be quality financial statements.

Multiple regressions: Regression analysis was performed using stepwise regression method to explain the variability of the relationship between the independent variables of ERM, GCG and IAF and, on the other hand, financial reporting quality as the dependent variable in state universities.

Table 5: Multiple regression analysis

Variable	Standard Coefficient	t-test	Sig.	R Squared	Adj. R Squared	F	Sig. F
IAF	2.166	0.031	0.174	0.390		35.910	0.000
ERM	0.238	4.058	0.000				
GOOD Corp Gov	0.482	7.528	0.000				

The results as shown in table 5 above, indicate a significant linear relationship between ERM, GCG and financial reporting quality (F=35.910, Sig=0.000). The relationship is linear because sig. is P< 0.5%.ERM and GCG explain 39.0% of financial reporting quality in which ERM (Beta=0.365) influences more of financial reporting quality than (Beta=0.200). This implies that 100% change in GCG led to 48.2% change in financial reporting quality and 100% change in ERM only resulted in 23.80% change in financial reporting quality.

Inferential analysis: The correlations were obtained to establish the relationship that exists between the constructs of the variables conceptualized in the framework.

Table 6: Spearman's Correlation Matrix for the Relationship between Good Corporate Governance and Internal Auditing Function

	GCG 1	GCG 2	GCG	IAF 1	IAF2	IAF3	IAF
GCG 1	0.000						
GCG 2	0.188**	0.000					
GCG	0.544**	0.899**	0.000				
IAF 1	0.108*	0.233**	0.247**	0.000			
IAF 2	0.039	0.123*	0.111*	0.376**	0.000		
IAF 3	0.110*	0.111*	0.131*	0.201**	0.238**	0 .000	
IAF	0.120*	0.201**	0.212**	0 .673	0.710**	0.728**	0.000

Note; GCG 1=Some Practice of good Corporate Governance, GCG 2= Selective Application and Practice of Good Corporate Governance, GCG=Absolute Compliance with dictates of Good Corporate Governance,
IAF 1= Internal Audit Reporting Structure, IAF 2=Internal Audit Independence, IAF 3= Internal Audit Existence, Composition of Team and Capacity, IAF = Internal Audit Function Quality
**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)

The results in table 6 above, show that there some significant positive relationships between the IAF constructs and GCG indicating that in state universities the internal audit function impacts greatly on the nature and quality of the governance systems. This is clear and consistent with the following findings made by Roth (2002). These are supported by the

- Selective application and practice of good corporate governance construct had 3 significant correlations (i.e. against internal audit reporting structure: r=0.233, p-value<1%; 'internal audit independence': r=0.123, p-value<5%; and 'Internal Audit Existence, Composition of Team and Capacity': r=0.111, p-value<5%)
- "Some practice of good corporate governance" abstract had 2 significant correlations ((i.e. against "internal audit reporting structure": r=0.108, p-value<0.05; and 'Internal Audit Existence, Composition of Team and Capacity': r=0.110, p-value<0.05)
- This positive relationship indicates that it is probable that when the internal audit function improves in quality (and thus adding value to its services), the quality of good corporate governance moves from non-compliance through selective application of best practice to absolute observation and adoption of good corporate governance styles. Deductively this will terminate in the entity's financial reporting quality increasing.

Table 6: Spearman's Correlation Matrix for the Relationship between Enterprise Risk Management and Good Corporate Governance

ERM1	ERM2	ERM3	ERM4	ERM5	ERM	GCG1	GCG2	GCG3	GCG
ERM1	0.000								
ERM2	0.092	0.000							
ERM3	0.309**	0.269**	0.000						
ERM4	0.252**	0.304**	0.259**	0.000					
ERM5	0.219**	0.280**	0.330**	0.377**	0.000				
ERM	0.563**	0.624**	0.635**	0.642**	0.708**	0.000			
GCG 1	0.129*	0.097	0.199**	0.279**	0.080	0.243**	0.000		
GCG 2	0.244**	0.119*	0.259**	0.270**	0.045	0. 261**	0.376**	0.000	
GCG 3	0.200**	0.103	0.430**	0.179**	0.078	0.262**	0.201**	0.238**	0.000
GCG	0.263**	0.113**	0.431**	0.316**	0.068	0.329**	0.673**	0.710**	0.728**	0.000

Note; ERM1= Management Buy-in, ERM2=Existence of a Risk Management Framework, ERM3= Effectiveness of Risk Management Process, ERM4=Enterprise Wide Knowledge of Risk Management, ERM5=Reporting framework, ERM=Enterprise Risk Management,
GCG 1=Some Practice of good Corporate Governance, GCG 2= Selective Application and Practice of Good Corporate Governance, GCG 3=Absolute Compliance with dictates of Good Corporate Governance, GCG = Good Corporate Governance.
**Correlation is significant at the 1% level

*Correlation is significant at the 5% level

According to Table 6 above, all the constructs of ERM showed a positive significant relationship with Good Corporate Governance. This indicates that the below listed are the most important characteristics of enterprise risk management in state universities. These are the ones that may be perceived as impacting on the quality of financial reporting.

- "Management Buy-In" with 3 significant correlations (i.e. against some practice of Good Corporate Governance: r=0.129, p<5%; 'Selective Application and Practice of Good Corporate Governance': r=0.244, p<1%; and 'Absolute Compliance with dictates of Good Corporate Governance': r=0.200, p<1%)
- "Existence of a Risk Management Framework" with one significant correlation (i.e. against 'Selective Application and Practice of Good Corporate Governance': r=0.119, p<5%)
- "Effectiveness of Risk Management Process" with 3 significant correlations (i.e. against 'Some Practice of Good corporate governance': r=0.199, p<1%; Selective Application and Practice of Good Corporate Governance': r=0.259, p<1%; and 'Absolute Compliance with dictates of Good Corporate Governance': r=0.430, p<1%)
- "Enterprise wide knowledge of risk management" with 3 significant correlations (i.e. against 'Some Practice of Good corporate governance' absolute compliance with statutory dictates: r=0.279, p<1%; 'Selective Application and Practice of Good Corporate Governance': r=0.270, p<1%; and 'Absolute Compliance with dictates of Good Corporate Governance': r=0.179, p<1%)

The interpretation of this positive influence is that when the institution's management accepts and fully embraces ERM (management buy-in), and when they put in efforts at establishing and supporting the existence of a risk management framework and that this risk management framework allows for the effective running of the risk management process through the intentional and dedicated spread of knowledge on enterprise risk management, this would result in improved financial reporting quality. This implies that the state university's financial reporting quality will improve from 'non-compliance with statute' to 'some compliance with statute'; and ultimately to absolute compliance with statutory dictates'.

Table 7: Spearman's Correlation Matrix for the Relationship between Good Corporate Governance and Enterprise Risk Management (Crossed with IAF)

	GCG1	GCG2	GCG	ERM/ IAF1	ERM/ IAF2	ERM/ IAF3	ERM/ IAF4	ERM/ IAF5	ERM/ IAF
GCG1	0.000								
GCG2	0.178**	0.000							
GCG	0.543**	0.900**	0.000						
ERM/IAF1	-0.169**	-0.038	-0.099	0.000					
ERM/IAF2	-0.048	-0.024	-0.015	0.091	0.000				
ERM/IAF3	0.019	0.129**	0.111*	0.310**	0.270**	0.000			
ERM/IAF4	-0.030	0.092	0.049	0.254**	0.318**	0.260**	0.000		
ERM/IAF5	-0.165**	0.035	-0.040	0.220**	0.210**	0.299**	0.378**	0.000	
ERM/IAF	-0.129*	0.085	0.030	0.571**	0.625**	0.640**	0.652**	0.710**	0.000

Note; GCG 1=No Observance of Codes of Best Practice, GCG 2= Some observance of Provisions of Codes of Best Practice, GCG=Good Corporate Governance
ERM/IAF1= Management Buy-in crossed with Internal Audit Existence, ERM/IAF2=Existence of a Risk Management Framework crossed with Existence of Internal Audit Function. ERM/IAF3= Effectiveness of Risk Management Process crossed with IAF Capacity and Quality of IAF, ERM/IAF4=Enterprise Wide Knowledge of Risk Management, ERM/IAF5=Reporting framework crossed with internal audit Independence and reporting structure, ERM/IAF=Enterprise Risk Management/Crossed with Internal Audit Function,
**Correlation is significant at the 1% level
*Correlation is significant at the 5% level

Table 7 shows that there was a mixture of both positive and negative significant correlations between ERM *x* IAF and good corporate governance constructs. Internal audit existence *x* ERM existence or institutionalization of the internal audit function and enterprise risk management had negative significant

correlation with good corporate governance; and IAF *x* ERM quality had positive significant correlations with good corporate governance.

- 'No observance of codes of Best Practice in Corporate governance' with 2 significant correlations (i.e. Management Buy-in crossed with existence of Internal Audit Function: r = -0.169, p-value<1%; and ERM framework crossed with Internal Audit Independence & Reporting Framework: r = -0.165, p-value<1%)
- 'some observance of Provisions of Codes of Best Practice': with 1 significant correlation (i.e. effectiveness of Risk Management Process crossed with IAF's Capacity and quality': r=0.129, p-value<1%)

The interpretation, as observed, is that when the quality of internal audit is coupled up with quality enterprise risk management the result is most likely to be the continual improvement of good corporate governance practices. With good corporate governance one expects quality financial reporting to prevail.

Discussion

Relationship between the internal audit function and enterprise risk management: IAF was found to have a positive, weak and insignificant relationship with ERM. This implies that the presence or absence of an internal audit function has very little and insignificant influence on the success or failure of the ERM process within an organization. This is consistent with the findings made by Dickinson (2010) who however goes further to assert that IA must maintain a degree of independence within the organization to ensure that "…they are in a position to critically assess the effectiveness of risk management and the adequacy of the control environment". Regardless of whether ERM and internal audit operate as distinct and separate units, or are closely aligned, it is imperative that they leverage off each other, continually developing knowledge of the environments in which they operate. The two must work within the same risk management framework and conduct dialogue to continually question and engage each other's perspective of the nature and severity of the risk profile. It is important that the IAF plays both a monitoring and participative role in ensuring that the risks the organization is exposed to are sufficiently mitigated. IA also checks on compliance to best practice in mitigating identified risks. IA and ERM also play complementing roles in the corporate governance processes of a university. In actual fact, IA is an inherent component or construct of ERM. No effective ERM effort can be implemented without roping in the eagle eye of internal audit. Dickinson (2010) also concludes his findings by saying that there are circumstances where the two functions of internal audit and ERM do not operate effectively. This happens when management dictates to internal audit in order to divert attention away from high risk areas. Resultantly this is why some organizations have enabling reporting structures that allow for IA to operate independently and for reporting channels that allow direct communication to the audit committee.

Relationship between internal audit function and financial reporting quality: According to the findings, there exists a significant positive relationship between internal audit function quality and financial reporting quality. The presence of the IAF in a university brings along the following benefits: improved accuracy of information, confirmed compliance to policy and statutory dictates, avoided cost since using internal audit means no external consultants are hired to do this with the result that the savings are put to improving other facets of financial reporting. IAF existence enhances compliance to laws and regulations to mitigate potential future fines or legal cases. Turner (2001) asserts that internal audit quality and external auditor tenure are important determinants of audit effectiveness and that their combined effect plays a critical role in preventing and detecting fraudulent misstatements. Mitra (2009) found that the shorter an auditor's tenure, the higher the risk of misstatement in the financial reporting process

Relationship between internal audit function and good corporate governance: There is some significant positive relationship between IAF and GCG indicating that in state universities the internal audit function impacts greatly on the nature and quality of the governance systems. This is clear and consistent with the findings made by Roth (2002) on the generalized relationship between internal audit and value addition through corporate governance. On the other hand, however, Abbott (2005), found that that the competence and independence of the audit function is negatively associated with the occurrence of fraudulent accounting

misstatements**.** Fairchild (2009) suggest that auditor tenure may have conflicting effects on the detection and /or revelation of management fraudulent behavior.

Relationship between good corporate governance and financial reporting quality: There was a positive and significant relationship found between GCG and financial reporting quality. This is consistent with the findings by Krishnamoorthy et al. (2002), who ascend that if constructs on good corporate governance are adhered to religiously, then the result is absolute compliance with statutory and preset dictates. This is interpreted as quality financial reporting. McDaniel et al. (2002) however found out that it was difficult to agree on what may be called quality financial reporting. Different organizations' assessments of relevance and comparability characteristics of quality were different from one organization to the next. According to the author this dilemma also exists in the comparison of the concept when done by financial accountants (literates) as compared to general business and investment experts. Literates raise more concern than experts on items that are non-recurring or receive high salience in the press.

Relationship between internal audit function, enterprise risk management, good corporate governance and financial reporting quality: According to Dickinson (2010), there are various models of governance but the generally accepted models are two of the main components of governance structure which are: the effectiveness of management's risk management practices and the internal audit's monitoring of how effective these practices are. It is no surprise that the variables in the conceptual framework to this study were found to influence each other and also affecting the dependent variable, FRQ, at varying magnitudes. The independent variables i.e. ERM and GCG (encompassing IAF) were found to be influencing financial reporting quality positively. However, ERM has the greatest influence. The variables: ERM and GCG positively and significantly relate to financial reporting quality. However, according to Armstrong et al. (2010), there is little evidence on the causal effect of corporate governance on financial reporting and they attribute this to the joint endogeneity of governance mechanisms and accounting systems. On the other hand, Cheng and Warfield 2005, found a negative relationship between managerial equity incentives and the quality of financial reporting. Others find no relation between the two. These mixed findings clearly indicate a lack of consensus as to whether there is that relationship or causal effect between corporate governance and financial reporting (and FRQ). The endogeneity of CG and FR and the determinants of each are equally intertwined and no clear cut distinction or causal effect can be inferred.

5. Conclusion

Internal audit function quality was found to influence financial reporting quality in the following manner: in that the strength, or quality, of the IAF will contribute to a distinctly different control environment depending on the strength of the good corporate governance in the university. This has been tested and proven to be true in the study. Internal audit plays the dual role of a promoter and supporter of both accuracy and process of financial reporting. The IAF serves as an independent party to help ensure that internal control over financial reporting and the corporate governance process are effective (i.e., process objective) in ultimately producing accurate financial results (i.e., accuracy objective).

Recommendations

- Government, through the relevant line ministries, should move in to supervise state universities and help uphold the principles of good corporate governance. This effort should be enforced through the mandatory request for the establishment and running of an efficient enterprise risk management system at each institution.
- Central government is encouraged to see to the existence and running of an effective ERM system in all state universities. This will ensure the existence of commonality in reporting frameworks, thus establishing a benchmark against which future performance can be measured. After all state enterprises rely heavily on subsidies accruing from taxpayers and if this is anything to go by, one would expect these institutions to effectively and efficiently use resources allocated to them this way.

References

Abbott, A. (2005). Linked Ecologies: States and Universities as Environments for Professions. Sociological Theory, 23 (2), 245–274.

Armstrong,C.S, Guay, W.R & Weber, J.P.(2010). The Role of Information and Financial Reporting in Corporate. Journal of Accounting and Economics, 50 (2), 179–186.

Asare, S.K., Davidson, R.A., & Gramling, A.A. (2008). Internal auditors' evaluation of fraud factors in planning an audit: The importance of audit committee quality and management incentives. International Journal of Auditing, 12 (3), 181-203.

Bandura, A.(1977). Social learning theory, Englewood Cliffs: Prentice-Hall.

Bandura, A. (1986). Social foundations of thought & action, Englewood Cliffs: Prentice-Hall.

Bell. M., Schreiner, S., Damianov, A., Reddy, R, & Bindereif, A. (2002). A Computerized Decision Aid for Client Acceptance and Continuance Risk Assessments, Auditing. A Journal of Practice & Theory, 21(2), 97-113.

Cheng, Q.& Warfield, T. (2005). Equity Incentives and Earnings Management. Accounting Review, 6 (7), 23-32.

Cohen, D.A., Ding, Y., Lesage, C & Stolowy, H. (2002). The Corporate Governance Mosaic and Financial Reporting Quality. Journal of Accounting Literature, 8 (4), 87-152.

Cohen, D.A., Dey, A. & Lys, T.Z. (2008). Real and accrual-based earnings manipulations in the pre- and post-Sarbanes-Oxley periods. The Accounting Review, 8 (3),757-787.

Creswell, J.W. (1998). Qualitative inquiry and research design: Choosing among five traditions. London: Sage Publications

Creswell, J. W. (2013). Qualitative Research Studying: How Things Work. New York: SAGE Publication

D'Aquila, J.M. (1998). Is the control environment related to financial reporting decisions? Managerial Auditing Journal,13 (8), 472-478.

Dickinson, H. (2010)' 'Pursuing legitimacy: Conceptualizing and developing leaders' performances'. *Leadership & Organization Development Journal*, 31 (7), 630-64

Erickson, I.(2006). The contribution of built, human, social and natural capital to quality of life in Intentional and unintentional communities. Ecological Economics, 59 (5), 56-87

Fairchild, R.(2009). An Entrepreneur's choice of venture capitalist or angel-financing: A behavioral game-theoretic approach. Journal of Business Venturing, 26(3), 359-374.

Hoyt, R.E. and Liebenberg, A.P. (2011). The value of enterprise risk management, The Journal of Risk and Insurance, 78 (4), 795-822.

Institute of Internal Auditors (IIA). (2005). Corporate governance. The Institute of Internal Auditors Homepage. Available at: http://www.theiia.org/?doc_id=1041. 31 (Assessed on 23 June, 2017)

Jonas, G, J and Blanchet, J. (2002). Assessing Quality of Financial Reporting. Accounting Horizons, 14 (3), 353-363.

Jones, C.M., Braithwaite, V.A & Healy, S.D. (2003). Auditors' ethical reasoning: Insights from past research and implications for the future. Journal of Accounting Literature, 22 (5), 45-103.

Knechel, W.R., Krishnan, G.V., Shefchik, L.B & Velury, U.K. (2013). Do Auditing Standards Matter? *Current Issues in Auditing*, 7(2), 16-26.

Kochetova, K and Net, T. (2011). Improving Auditors' Fraud Judgments Using a Frequency Response Mode. *Contemporary Accounting Research*, 28 (2), 837–858.

Krishnamoorthy, G., Wright, A. and Cohen, J. (2002), Audit Committee Effectiveness and Financial Reporting Quality: Implications for Auditor Independence. Australian Accounting Review, 12 (2), 3–13.

Larcker, D. F. & Richardson, S.A. (2004). Fees Paid to Audit Firms, Accrual Choices, and Corporate Governance. Journal of Accounting Research,42 (2), 625–658

Marston, C.L and Shrives, P.J. (1991). The use of disclosure indices in accounting research: a review article. *The British Accounting Review,* 23 (3), 195-210

Mayer, D.M., Kuenzi, M., Greenbaum, R., Bardes, M., Salvador, R. (2009). How low does ethical leadership flow? Organizational Behavior and Human Decision Processes, 108(4), 1-13.

McDaniel, J., Subudhi, A, & Martin, J.C. (2002). Torso stabilization reduces the metaboliccost of producing cycling power. Journal of Applied Physiology, 30(4), 433-441.

McVay, S.E. (2006). Earnings management using classification shifting: An examination of core earnings and special items. *The Accounting Review*, 81(3), 501-531.

Mikes, J. (2009). Contemporary Challenges in Risk Management: Dealing with Risk, Uncertainty. *Journal of Accounting Literature*, 8(3), 40-56.

Mitra, A. (2009). Moral, Ethical, and Social Responsibilities. *Journal of Innovative Education*, 7(1), 346–348.

Prawitt, D.F. (2009). Internal Audit Quality and Earnings Management. The Accounting Review, 84(4), 1255-1280.

Richardson, S, A. (2006b). Over-Investment of Free Cash Flow. *Review of Accounting Studies*, 6 (6), 23-34.

Roth, S. (2002). Insights into service operations management: A research agenda production and operations. *Management Journal*, 12(2), 23-37.

Sarbanes-Oxley Act (2002). Corporate and Auditing Accountability, Responsibility, and Transparency. New York: House Financial Services.

Smith, J and Adhikari, J. (2005). Exploring differences in social disclosures internationally: A stakeholder perspective. *Journal of Accounting and Public Policy*, 24(2), 123-151.

The Jenkins committee (1994). Company law. *Journal of the institute of Actuaries*, 89(2), 105-124.

Turner, J. (2001). Organizational Flexibility and Governance in a Civil Law Regime: Scottish Provincial Banking during the Industrial Revolution. Business History, 53 (1), 505-520.

Journal of Economics and Behavioral Studies (JEBS)
Vol. 9, No. 4, August 2017 (ISSN 2220-6140)

Determinants of Tax Non-Compliance among Small and Medium Enterprises in Zimbabwe

Banele Dlamini
Department of Accounting and Finance, Lupane State University, Zimbabwe
bdlamini@lsu.ac.zw; dlabukhosi@gmail.com

Abstract: Small and medium-scale enterprises (SMEs) are recognized global for being the backbone of the economy through; economic advancement; innovation, wealth generation and furthering growth. SMEs have a high tax non compliance rate which hinders the development they bring to many economies. This paper aims to establish the major determinants of tax non-compliance among SMEs in the Zimbabwean economy. The survey research design was used and the SMEs operating in the Bulawayo provincewere considered as the sample of the study. The stratified random sampling technique was adopted in eliciting information and questionnaires were administered in the collection of data from the respondents. 187 questionnaires were issued out and 150 were returned. Regression analysis was used to establish the relationship that exists between tax non-compliance and the predictive variables, using SPSS ver. 22. The study revealed that poor follow-up strategy and lack of a tax audit, high tax rates, financial constraints, abuse of public funds by authorities and tax education as the major determinants. SME operators should apply modern business survival strategies so as to counter financial constraints. ZIMRA should maintain a database for SMEs for tax audit purposes; intensify follow-up strategies, increase tax audits and increase tax support services to SMEs. The government should consider reducing tax rates (which are perceived to be too high) as they promote tax evasion and failure among SMEs.

Keywords: *Tax compliance, tax evasion, Small and Medium Enterprises, economic development and Zimbabwe*

1. Introduction

Globally, tax compliance among Small and Medium Enterprises (SMEs) is poor and a major problem as many countries fail to come up with ways to cut non-compliance. Small and Medium Enterprises (SMEs) are now the major employers and they play a very vital role in the development and growth of the Zimbabwean economy, but their contribution to the national budget is affected by tax non-compliance exercised by the operators. A study carried out by the Fin mark Trust revealed that Zimbabwe has 3.5 million Small to Medium Enterprises with only 2% of all these paying taxes to Zimbabwe Revenue Authority (ZIMRA; Masarirambi, 2013; CZI, 2015). A number of ways and strategies to cut tax evasion have been devised by ZIMRA as the government revenue collecting board to cut non-compliance among SMEs. SMEs is subjected to tax incentives as long as they are registered with ZIMRA, they are eligible to enjoy 100% Special Initial Allowance (SIA) on qualifying capital assets, which is allowed over a four-year period at the rate of 25% per year (www.zimra.co.zw). The Special Initial Allowance is a capital allowance ranked as a deduction, which reduces the tax due from the business since it has the benefit of reducing the taxable amount. The incentive enables re-investment which empowers growth through more of its earnings that have been retained for business. Workshops are conducted by ZIMRA on tax education. Are these methods conducted by ZIMRA real incentives for tax compliance? ZIMRA introduced a penalty of 100% of the amount due plus 10% interest per year to taxpayers who fail to file their tax returns in the stipulated time (Tapera, 2013). Heavy penalties have been charged with the authority to SMEs which fail to comply with the regulations on tax remittances. ZIMRA seem to be applying both persuasion and coercion strategies for tax compliance, relying more heavily on the semi-military operations which give results in the short run, but proving to be difficult to sustain in the prevention of tax evasion. The SMEs contributes a small amount of tax as compared to larger companies; they still need to be carefully considered due to the contribution they bring to the economic growth. The question then is why do other SMEs comply whilst the majority is not remitted their taxes? What are the major determinants of the failure to comply with the regulations of the tax authority?

The government uses tax revenue as the major source for capital and infrastructural development projects that will be of benefit even to the SMEs. The findings and recommendations of the study will help ZIMRA in the formulation of policies on collection of taxes among SMEs. Tax revenue contributes more than 60% of the national budget (Ministry of Finance 2013 and 2014). Reducing non-tax compliance among SMEs will fabricate an environment that eases the running of their businesses in the long run through infrastructural

development and economic growth. The study is significant because taxation is the pivot to economic, political and social development. The strong tax system plays three major roles in economic development; stimulate good governance (Odd-Helge & Rakner, 2009), lessen inequality (Cobham, 2005) and generates revenue (Keen, 2012). There is little evidence of research knowledge on the SMEs and tax noncompliance in Zimbabwe, previous studies focused on tax compliance challenges in fulfilling tax obligations among SMEs in Zimbabwe (Zivanai, Chari, Nyakurimwa, 2016). Utaumire, Mashiri, and Mazhindu (2013) conducted a study on the effectiveness of the presumptive tax system in Zimbabwe using ZIMRA as a case study; they did not consider the factors which cause tax evasion by SMEs. The study will also provide invaluable insights to the Government of Zimbabwe in the formulation of future tax policies and address the major contributing factors of tax noncompliance among SMEs. The government has to know and attend to the reasons why SMEs are invading taxes as they form the core of the majority of the country's economy. This paper is organized as follows; it gives the aims of the study and briefly defines SMEs in the context of Zimbabwe and reviews theoretical and empirical literature from earlier studies. Then method on the data collected in the study will be analysed to show the factors which cause tax evasion among SMEs in Zimbabwe. The conclusion will be made based on the findings of the study and recommendation of the major determinants of tax non-compliance among Small and Medium Enterprises in Zimbabwe.

Objectives of the study

- To identify the major causes of tax non-compliance among SMEs in Zimbabwe.
- To recommend possible ways of reducing tax non-compliance among SMEs in Zimbabwe.

2. Literature Review

Definition of SMEs: There are many definitions that have been brought forth by different authors, boards, and countries; the study will consider the definition applied in Zimbabwe. According to Small and medium enterprises act, chapter 24:11, an SME is a corporation or an unincorporated business entity which is managed by a person or jointly by more persons and it should either be a micro- enterprise or small enterprise or medium-sized enterprise. The SME Association of Zimbabwe defines in different categories as follows; a business with a turnover of less than US$240 000 or assets less than US$100 000 should be formally registered as a small business and a business with assets and turnover above the thresholds stipulated for small enterprises, but less than US$1 million each should be registered as a medium enterprise (www.smeaz.org.zw). ZIMRA defines SMEs as follows: a business with six (6) to forty (40) employees, annual turnover of US$50 000 to US$500 000 and assets valued between US$50 000 to US$1 million is treated as a small company, a business with forty-one (41) to seventy-five (75) employees, annual turnover, and assets between $1 million and US$2 million should be registered as a medium-sized company. A microenterprise is a business that operates below the threshold of a small enterprise (www.zimra.co.zw). All business entities in Zimbabwe are expected to remit taxes, according to their tax liability and SMEs also have a tax obligation.

Tax Obligations: Tax Obligations is the amount of tax due according to the current tax law. The Zimbabwe Revenue Authority (ZIMRA), as a body responsible for collecting revenue for the country through taxes, get its commission from the Revenue Authority Act [Chapter 23:11], which was passed by the parliament of Zimbabwe in 2002 and other related legislation. There are a number of taxes that operating SMEs in Zimbabwe are expected to remit, they may be obligated to any or all the following: Income Tax, Value Added Tax (VAT), Presumptive Tax, Capital gains tax, Pay As You Earn (PAYE), Estate duty tax, Withholding Tax (WHT), Investment income tax, among others (www.zimra.co.zw). Small traders who are not qualifying for income tax remittance should pay a tax referred to as a Presumptive tax. Those that register for income tax purposes with ZIMRA are expected to submit returns and payment of taxes according to the statutory requirements. The rate of tax on taxable income is 25% plus 3% Aids Levy (Tapera, 2013). Utaumire, et al (2013) stated that SMEs are willing to pay their tax obligations, which was contrary to the findings of a study conducted by Devos, (2014) who said tax payers try by all means to evade taxes; the tax authority should come up with strategies to counteract tax evasion.

Strategies to counteract tax evasion: ZIMRA introduced tax audits to reduce tax non-compliance and a penalty as a control aimed to reduce or discourage taxpayers from evading tax, a penalty of 100% of the amount due and a 10% interest is also used by ZIMRA (ICAZ, 2013). ZIMRA educate taxpayers through

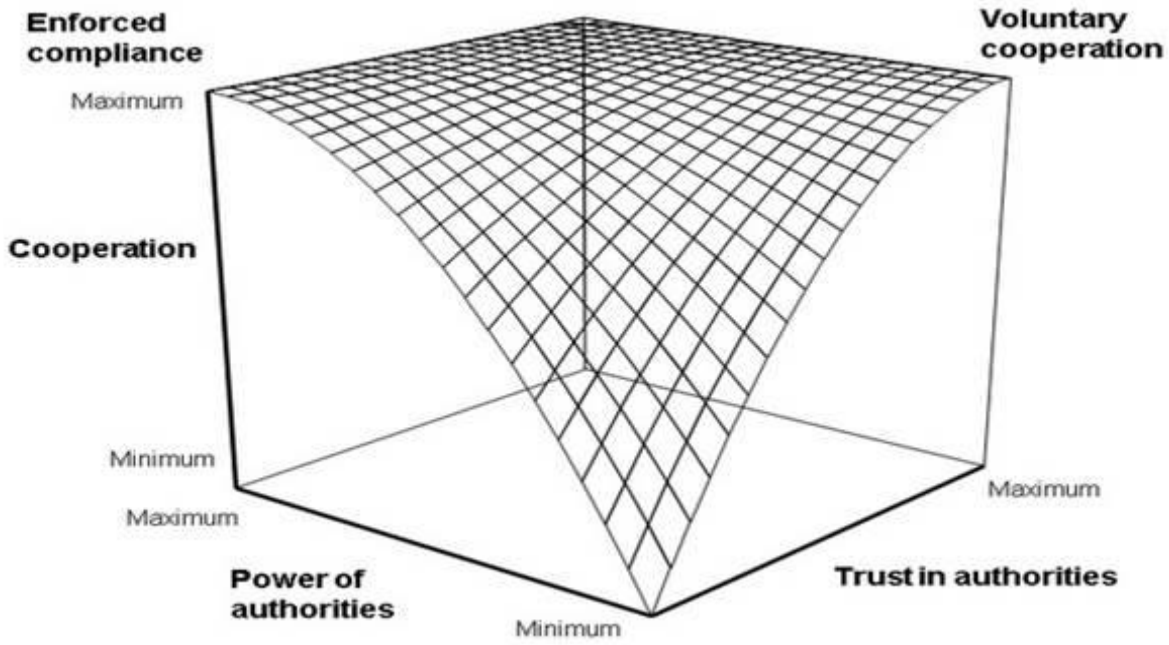
holding forums, workshops, and seminars educating the public on how to improve on tax compliance (www.zimra.co.zw; ICAZ, 2013). There is a toll-free line for taxpayers to seek clarity anytime on tax issues (www.zimra.co.zw). Reduction in the loss of revenue through the use of electronic devices in VAT collection and these devices are not to be tampered with. Small and medium businesses are encouraged to adopt Generally Accepted Accounting Practice (GAAP) in accounting so as to cut incidences of cheating on transactions. Whistle blowing, road patrols on the ZIMRA website and the dismissal of corrupt employees are other measures in place (AFRODAD, 2011). According to Mello, (2008) different strategies to cut tax non-compliance has been introduced in different countries such as tax audits, tax education workshops, tax farming, General Anti-avoidance Rule and many others. Amnesty to taxpayers who have defaulted was granted by South Africa to bring them back into the tax net. It was not successful with the small and medium sized businesses, but a success with larger taxpayers (www.afrodad.org). Zimbabwe granted a six months tax amnesty in October 2014 to March 2015, so as to aid taxpayers in regularizing their business affairs, but very few businesses came up front to apply for the amnesty. In order to come up with good strategies for tax evasion, tax compliance models have been developed by various scholars.

Tax compliance models

The A-S model: The A-S model is a formal economic analysis of tax evasion also known as the Deterrence model or Classical Approach; it was pioneered by Allingham and Sandro (1972), taxpayers who are assumed to be rational and moral making reasonable economical real decisions. Evading tax is grounded on perceived gains or losses (Gahramanov, 2009); if the gain expected by evading taxes is higher than the cost involved they evade taxes (Fischer et al. 1992; Devos, 2014). The taxpayers are assumed to have real knowledge of tax, penalty and detection rates as utility maximizers (Devos, 2014). The model state that at the moment of computing tax returns, the taxpayer is inclined to evade tax to maximize profits (Zivanai, et.al. 2016). The questions they have are; how much income should I report and how much tax should I evade? If the tax authority has a sound system and the likelihood of being caught is high and the penalties are inevitable, a rational economic decision maker will correctly remit taxes (Bătrâncea, 2012). When there is no tax audits performed and poor collection systems, taxpayers can remit less tax than what is expected. This implies that few taxpayers will evade taxes if detection is certain and penalties are severe (Ali, et.al. 2013). The model has been subject to harsh critics, as it assumes that taxpayers are fully rational utility maximizers; empirical studies show that many people are honest taxpayers and other taxpayers have never evaded taxes (Gordon, 1989; Erard & Feinstein, 1994; Andreoni, Erard & Feinstein, 1998). Yitzhaki (1974), suggested solutions to the shortcomings of the A-S model of tax evasion by setting a penalty on the amount of tax evaded and not on the undeclared income (Bătrâncea, et.al., 2012) suggesting the use of the slippery slope model.

Slippery slope model: The slippery slope approach assumes two major views to tax compliance is a hindrance of tax evasion by the performance of tax audits and severe fines and on the other hand cultivating a trusting relationship between the taxpayers and tax authorities (Kirchler, 2007; Kirchler, Hoelzl, and Wahl, 2008)**.** The model suggests that the trust in the tax authorities and power of tax authorities is both key dimensions in tax compliance both enforced and voluntary compliance. Power is related strongly to antagonistic climate and trust relates strongly to synergistic climate. Power is characterized by view where taxpayers are perceived as "robbers" looking for an opportunity to evade tax. This is the scenario in the informal sector in Zimbabwe (Zivanai, et al, 2014). Trust cause, voluntary tax compliance as taxpayers willingly returns their taxes as they perceive the authorities as a philanthropist in the society (Kirchler, 2007; Kirchler et al., 2008). According to the framework maximum level of tax compliance is achieved in the conditions of high power and or high trust, though the derived compliance, quality will differ whilst distrust and resistance is a result of a 'cops and robbers' climate which breeds cheating behavior (Bătrâncea, et.al. 2012). According to Tayler (2006); Kirchler*et al. (*2008); Fauvelle-Aymar (1999) the extent of trust the citizens have with their government influences their tax compliance; if they do not trust the government they will evade taxes.

Figure 1: The Slippery Slope Framework (Kirchler et al., 2008)



Fiscal and Social Psychology Models: The model blends economic deterrence aspects and social psychological aspects. Social psychology models focus on variables such as moral values and the perception of fairness of the tax system and the tax authorities. The behavior and attitude of taxpayers towards compliance is affected by the social groups, norms, and interactions, like any other form of behavior (Snavely 1990). The model also assumes that taxpayers are motivated to comply by the presence of government expenditure; if the government increases the provision of public goods and services, providing efficient in more accessible way commodities that are preferred citizens than tax compliance will increase (Levi 1988; Tilly 1992; Alm et al 1992; Moore 2004). Tax paid and the goods and services provided by the government are correlated, taxpayers are concerned about what they will get and benefit in the form of public goods and services from the government after making their tax payments (Fjeldstad and Semboja 2001; Moore 2004). If taxpayers in their circles view government as not willing to return back to the public, they influence each other not to comply and people comply believing that their peers are also complying whilst those who cheat understand that there are many of their peers who do the same.

3. Methodology

The survey research design was used, with the research aims in consideration, data was collected from primary sources and the SMEs operating in the Bulawayo provincewere considered asthesample of the study. A pre test was conducted to collect feedback about the research instruments. Both questionnaires and interviews were used to collect data. After a pilot test was conducted using 10 questionnaires on SMEs in the city of Bulawayo. A Postal questionnaire with closed ended questions, using an eight-point Likert scale was sent to 185 entities. Out of the 185 questionnaires issued, 150 were returned. The stratified random sampling technique was adopted to elicit information from SMEs operating the province. Ten key-informant interviews with accountants were conducted to collect qualitative data (with open-ended questions) from those who had responded to the questionnaires. The aim of the interviews was to gain more insights into the survey results and check the reliability of the quantitative data obtained through postal questionnaires. A model was developed to find the relationship between tax compliance and the determinants of tax compliance (Financial constraints, Tax audit, Tax education, Public funds abuse, and Tax rate) and the model was tested using regression analysis on SPSS version 22. Analysis of variance was used to check the strength of the relationship between dependents and independent variables. Tables were used for data presentation. Data collected from the interview was analyzed through summative content analysis and the quantitative data

from questionnaires was analyzed using SPSS ver.22. The hypotheses were collapsed into two main categories as:

H_0. There is no relationship between tax compliance and any of the determinants (Financial constraints, Tax audit, Tax education, Public funds abuse, and Tax rate).

H_1. There is a relationship between tax compliance and at least one of the determinants (Financial constraints, Tax audit, Tax education, Public funds abuse, and Tax rate).

Table 1: Tax Compliance and non compliance Studies Reviewed

Author(s)	Year	Method	Sample Size	Country	Findings of the study
Mukhlis, Utomo & Soesetyo	2014	Descriptive Method	61 respondents	Indonesia	Taxpayers comply when there is fairness and benefits that can be received from complying.
Damayanti et.al.,	2015	Descriptive Method regression analysis	323 individual taxpayers in the Central Java	Indonesia	Tax compliance behavior is influenced by the intention to comply, while the intention to comply is influenced by subjective norms and by the perception of the government.
Appah & Wosowei	2016	Relevant diagnostics tests and multiple regression models.	785 individual taxpayers	Nigeria	The findings of the study showed that the behavior of taxpayers is based on their financial condition, risk preference, the nature of the society in terms of the level of governance.
Alasfour et.al.,	2016	Descriptive & multivariate tests	375 respondents	Jordan	The study revealed that the extent of the governmental corruption and government expenditure has an effect on tax compliance. High tax rates and the taxation system's being perceived as unjust, causes non tax compliance whilst an increase in tax audit and heavy penalty rates reduces tax evasion.
Riahi-Belkaoui	2004	Multiple regression	30 countries	World-wide	The findings showed that tax compliance is positively related to the level of economic freedom, and the effectiveness of laws and negatively related to the rate of crime as a proxy for moral norms
Frey & Feld	2002	Descriptive statistics and regression analysis	23111 individual taxpayers	Switzerland	Tax morale of the taxpayers is raised when the tax (authority) officials treat them with respect.
Zivanai et.al,	2016	Survey	30 SMEs	Zimbabwe (Bindura)	Findings revealed that, lack of trust in the tax authority and the fact that fellow informal traders are evading taxes encourages other taxpayers not comply.
Maseko	2014	Descriptive statistics and correlation	163 respondents	Zimbabwe (Harare, Chitungwiza and Bindura)	The results indicated that high tax rates, the perceptions of SME operators about tax fairness, tax service quality and government spending priorities greatly affect their tax compliance decisions.

4. Results and Discussion

The regression equation was established as follows:

Table 2: Descriptive results

	N Statistic	Mean Statistic	Std. Error	Std. Deviation Statistic
Compliance	150	3.36	.152	1.862
Financial Constraints	150	3.86	.131	1.610
Tax Audit	150	3.57	.154	1.884
tax education	150	3.17	.102	1.252
public funds abuse	150	2.51	.109	1.340
Tax Rate	150	3.61	.089	1.092

Table 3: Regression statistics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.900[a]	0.809	0.802	0.827

Table 4: ANOVA [a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	417.961	5	83.592	122.084	.000[b]
	Residual	98.599	144	0.685		
	Total	519.56	149			

Table 5: Coefficients [a]

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	2.277	0.475		4.796	.000
Financial Constraints	-0.24	0.052	-0.208	-4.63	.000
Tax Audit	0.754	0.045	0.762	16.636	.000
Tax Education	0.081	0.059	0.055	1.382	0.169
Public Funds Abuse	-0.121	0.057	-0.087	-2.122	0.036
Tax Rate	-0.176	0.67	-0.103	-2.631	0.009

Table 6: Correlations

	Compliance	Financial Constraints	Tax Audit	Tax Education	Public Funds Abuse	Tax Rate
Pearson Correlation Compliance	1	-0.621	0.876	0.249	0.021	0.001
Financial Constraints	-0.621	1	-0.558	-0.028	-0.197	0.037
Tax Audit	0.876	-0.558	1	0.239	0.060	0.094
Tax Education	0.249	-0.028	0.239	1	-0.281	0.173
Public Funds Abuse	0.021	-0.197	0.06	-0.281	1	-0.354
Tax Rate	0.001	0.037	0.094	0.173	-0.354	1

The average compliance rating was 3.36 whilst the average education rating was 3.17 and that of public funds abuse was at 2.51 as shown in table 2. The results of the regression analysis shown in table 3 above were used to test the relationship between tax compliance and financial constraints, tax audit, tax education, public

funds abuse and tax rate among small to medium enterprises in Zimbabwe. The analysis shows that the adjusted R squared= 0.802; 80% of changes in tax compliance is explained by financial constraints, tax audit, tax education, public funds abuse and the tax rate. Correlation among predictor variables appears to be low and acceptable as shown in table 6 above. The model was run at 5% level of significance and the following results were obtained. The ANOVA summarized in table 4 reveals that p-value=0.00 which is less than 0.05 demonstrating a significant and valid model. The model reveals that tax compliance is inversely related to financial constraints; if financial constraint increase non-compliance, increase as shown by a coefficient of (-0.24) and results are similar to the findings by Appah & Wosowei, (2016). Tax audit has a strong positive relationship with tax compliance; with more tax audit there is an increase in tax compliance, these results are the same with the findings of Riahi-Belkaoui, (2004); Alasfour, et.al., (2016), and tax audit has the highest influence on compliance as is shown by a coefficient of (0.754). The A-S model also supports the results of the study; it states that if tax audit and follow-up strategies are poor, taxpayers will evade taxes and if penalties are not severe non-compliance will be high (Bătrâncea, 2012; Devos, 2014; Ali, et.al. 2013; Zivanai, et.al. 2016). These findings are in agreement with the results by Utaumire et al (2013) and Zivanai, et.al (2014) who noted that ZIMRA has weak follow-up and insufficient awareness campaigns.

Tax education has a positive insignificant relationship with tax compliance (coefficient=0.081), among all the variables it has the lowest influence. Public funds abuse has a negative relationship with to tax compliance as shown by a coefficient of -0.121 and (tax rate) -.0176; if public funds are abused there is increase in non-compliance, the results are consistent with results by Fjeldstad and Semboja (2001); Frey & Feld , (2002); Moore (2004);Riahi-Belkaoui, (2004); Maseko, (2014); Mukhlis, Utomo & Soesetyo, (2014); Dube (2014); Damayanti et.al., (2015); who stated that tax compliance is correlated with government expenditure on public goods and services and there is a strong negative relationship between the two. The tax rate is negatively related to tax compliance (coefficient= -. 0176); an increase in tax rate will reduce tax compliance, the results are correlative to the findings of Ojeka and Ojochogwu (2012); Alasfour, et.al, (2016) who agreed that high tax rates promote tax evasion among SMEs

5. Conclusion

The study examined the predictors of tax non-compliance among SMEs in Zimbabwe. Three main models on tax compliance were reviewed on literature, strong evidence of tax compliance determinants was provided. The study concluded that major leading factors in tax non-compliance of taxpayers are a lack of tax audit and poor follow-up strategies by the tax authority, high tax rates, financial constraints, public funds abuse by government and tax education. Taxpayers are aware of tax obligation and the possibility of being detected by tax authority is low though the penalties are heavy. ZIMRA should improve the tax administration system and reinforce the tax collection strategies and follow up on SMEs. Tax incentives like lowering the tax rates and tax reform will increase the revenue collection of taxes. Massive campaigns against evasion and avoidance of tax and intensive tax education should be embarked on. ZIMRA employees should also be well equipped for easy detection of tax evasion. Governments can consider developing a new tax system that suits SMEs which will lower compliance costs. Tax rates are perceived to be too high. The government should consider revising the tax policy or reducing tax rates as they promote tax evasion and failure among SMEs businesses. More support and increased tax incentives through tax support services should be offered to SMEs to cut their failure rate as they are the engine of economic growth.

References

African Forum and Network on Debt and Development (AFRODAD), (2011). What Has Tax Got To Do With Development: A critical look at Zimbabwe's Tax System.

Ali, M., Fjeldstad,O., HoemSjursen, I., (2013). Factors affecting tax compliant attitude in Africa: Evidence from Kenya, Tanzania, Uganda and South Africa.

Allingham, M.G., Sandmo, A. (1972). *Income Tax Evasion: A Theoretical Analysis*. *Journal of Public Economics* 1, 323-338.

Alm, J., G. H. McClelland & W. D. Schulze (1992). Why do people pay taxes? *Journal of Public Economics,* 48**,** 21-38.

Andreoni, J., Erard, B., Feinstein, J.S., (1998). Tax Compliance. *Journal of Economic Literature*, 36(2), 818-860.

Appah, E., Wosowei, E. C. (2016) Tax Compliance Intentions and the Behavior of the Individual Taxpayer: Evidence from Nigeria. Research Journal of Finance and Accounting www.iiste.org ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online) 7(13), 2016 1.

Bătrâncea, L., Nichita, R., Bătrâncea, I., and Moldovan, B.A., (2012). Tax Compliance Models: From Economic To Behavioral Approaches. *Transylvanian Review of Administrative Sciences,* 36, 13-26.

Cobham, A. (2005). *Taxation policy and development.* Oxford: The Oxford Council on Good Governance.

Damayanti, T.H., Sutrisno, T., Subekti, I., & Baridwan, Z. (2015)The Role of Taxpayer's Perception of the Government and Society to Improve Tax Compliance. *Accounting and Finance Research*, 4(1); ISSN 1927-5986 E-ISSN 1927-5994.

De Mello, L. (2008). Avoiding the Value Added Tax: Theory and Cross-Country Evidence", *OECD Economics Department Working Papers*, No. 604, OECD Publishing, and Paris.

Devos, K. (2014). Factors Influencing Individual Taxpayer Compliance Behavior, Springer Netherlands, eBook ISBN: 978-94-007-7476-6 http://www.springer.com/gp/book/9789400774759.

Dube, G. (2014). *Informal sector tax administration in Zimbabwe. University of KwaZulu-Natal, South Africa*.

Gahramanov, E. (2009). The Theoretical Analysis of Income Tax Evasion Revisited. *Economic Issues*, 14(1) 2009, 35.

Erard, B., Feinstein, J. S., (1994). Honesty and Evasion in the Tax Compliance Game. *Rand Journal of Economics*, 25(1), 1-20.

Alasfour, F., Samy, M., Bampton, R. (2016). The Determinants of Tax Morale and Tax Compliance: Evidence from Jordan, in John Hasseldine (ed.) *Advances in Taxation*, 23, 125–171.

Fauvelle-Aymar, C. 1999. The political and tax capacity of government in developing countries. *Kyklos,* 52**,** 391-413.

Fischer, C.M., Wartick, M. and Mark, M. (1992). Detection Probability and Taxpayer Compliance: A Review of the Literature. *Journal of Accounting Literature*, 11, 1-46.

Fjeldstad, O.-H. & Semboja, J. (2001). Why people pay taxes: The case of the development levy in Tanzania. *World Development,* 29**,** 2059-2074.

Frey, B. & Feld, L., (2002). Deterrence and morale in taxation: An empirical analysis. *Working paper,* No. 760.

Gordon, J.P.F. (1989). Individual Morality and Reputation Costs as Deterrence to Tax Evasion. *European Economic Review*, 33(4), 797-805.

http://www.zimra.co.zw/index.php?option=com_content&view=article&id=2285:tax-obligations-and-concessions-for-smes-&catid=21:did-you-know&Itemid=91

http://www.zimra.co.zw/index.php?option=com_content&view=article&id=1965:special-initial-allowance-for-small-to-medium-enterprise-smes&catid=21:did-you-know&

Keen, M. (2012). *Taxation and Development—Again.* New York: International Monetary Fund, Working Paper /12/220.

Kirchler, E. (2007). The Economic Psychology of Tax Behavior. Cambridge University Press, Cambridge.

Kirchler, E, Hoelzl, E & Wahl, I. (2008). *Enforced Versus Voluntary tax compliance: The 'slippery slope' framework. Journal of Economic Psychology* .01/2008.

Levi, M. (1988). *Of rule and revenue,* Berkeley: University of California Press.

Maseko, N. (2014). Determinants of Tax Compliance by Small and Medium Enterprises in Zimbabwe. *Journal of Economics and International Business Research* (JEIBR), 2(3), 48-57.

Moore, M. (2004). Revenues, state formation, and the quality of governance in developing countries. *International Political Science Review,* 25**,** 297-319.

Mukhlis, I., Utomo, S.H., Soesety, Y. (2014). Increasing Tax Compliance Through Strengthening Capacity Of Education Sector For Export Oriented SMEs Handicraft Field In East Java Indonesia. *European Scientific Journal*, 10(7) ISSN: 1857 – 7881 (Print) e - ISSN 1857- 7431, 170

Musarirambi, C. (2013). An investigation into factors associated with tax evasion in the Zimbabwe informal sector: A survey of MbareMagaba informal traders.

Odd-Helge, F., & Rakner, L. (2009). *The importance of taxes for development.* Bergen, Norway: Chr. Michelsen Institute.

Ojeka, A. & Ojochugwu W, A. (2012). Factors that affect tax compliance among SMEs in North Central Nigeria*. International Journal of Business and Management,* 7, 12*.*

Riahi-Belkaoui, A. (2004). Relationship between Tax Compliance Internationally and Selected Determinants of Tax Morale. Available at SSRN: https://ssrn.com/abstract=484022 or http://dx.doi.org/10.2139/ssrn.484022.

Snavely, K. (1990). Governmental policies to reduce tax evasion: coerced behavior versus services and values development. *Policy Sciences,* 23, 57-72.

Tapera, M. (2010). *Tax kit for business and economics*, 7th edition, Harare.

Tapera, M. (2013). Taxation principles in Zimbabwe. (ISBN 9780797462953).

Tayler, T. R. (2006). Psychological perspectives on legitimacy and legitimation. *Annual Review of Psychology,* 57**,** 375-400.

Tilly, C. (1992). *Coercion, capital and European states: AD 990-1992,* Malden, Massachusetts: Blackwell Publishers Inc.

Utaumire, B., Mashiri, E., & Mazhindu, K. (2013). Effectiveness of presumptive tax system in Zimbabwe: Case of ZIMRA Region one. *Research Journal of Finance and Accounting*, *4*(7), 114–120.

Woro, D., Sutrisno T, Imam, S., & Zaki B. (2015). The Role of Taxpayer's Perception of the Government and Society to Improve Tax Compliance. *Accounting and Finance Research*, 4(1), 180-184.

Yitzhaki, S. (1974). Income Tax Evasion: A Theoretical Analysis. *Journal of Public Economics*, 3(2), 201-202.

Zivanai, O., Chari F., Nyakurimwa, C., (2016). Tax Compliance Challenges in Fulfilling Tax Obligations among SMEs in Zimbabwe: A Survey of SMEs in Bindura.

Zivanai, O., Manyani, O., Hove, N., Chiriseri, L., Mudzura, M. (2014). The Effectiveness of Presumptive Tax and Its Impact on Profitability of SMEs in Zimbabwe. Case Of Commuter Transport Operators In Bindura.