

The Determinants of Household Debt in Malaysia

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Abstract: This study aims to observe the determinants of the factors affecting household debt in Malaysia. This study has listed six independent variables that would affect Malaysia's household debt: real interest rate, inflation rate, unemployment rate, household consumption expenditure, gross domestic product (GDP), and housing price index (HPI). This research was conducted by using annual data for 30 years (1991-2021); this study also used a quantitative approach to the collection of data using secondary data such as the website of the World Bank, Department of Statistics Malaysia, Eikon Thomson Reuters, and Bank Negara Malaysia. A theoretical model with the hypothesized relationships was tested with the help of the structural equation modelling procedures. Findings showed that the unemployment rate and gross domestic product have a positive and significant relationship with household debt. These determinants are directly affecting household debt in Malaysia, especially in microeconomic factors. This study will contribute to a better understanding that household debt can be influenced by other factors. Further study on the other determinants of household debt may result in varying results.

Keywords: *Household Debt, Real Interest Rate, Inflation Rate, Unemployment Rate, Household Consumption Expenditure, Gross Domestic Product (GDP), Housing Price Index (HPI), Malaysia.*

1. Introduction and Background

Household debt has been historically high in many countries. Household debt can be described as "household liabilities that require payments of interest to the creditors at a set date," as stated by the Organization for Economic Co-operation and Development (OECD, 2022). Over the past two decades, household debt in Malaysia has increased at a rapid pace, and the country's ratio of household debt to GDP has reached an all-time high in recent years. Malaysia is a country that has had a high rate of overall debt growth (Cai Yunchao, 2020). The level of household debt in Malaysia has become a problem for the nation's economy because of the social and economic impact it has on the nation (Zain, et al, 2019). Concerns have been voiced over Malaysian households' ability to maintain their financial stability considering the rapid increase in household debt. The fact that households have borrowed substantial amounts of credit and that consumer credit is available to a bigger number of people suggests that the households are in greater financial trouble. Although it is undeniable that household debt is essential to the upkeep of one's financial health, the quick development in household debt poses a threat to the expansion of a nation's economy.

As mentioned by Birruntha (2022), Malaysia has one of South-East Asia's highest household debt-to-GDP ratios. The household debt to gross domestic product (GDP) has increased from 67.2% in 2002 to 89% in 2021 (Data, 2022). The debts owed by households in Malaysia amount to about RM1.38 trillion, which is more than the debts owed by the federal government to its creditors. Housing loans accounted for 58 percent of the total RM1.38 trillion, while other debts accounted for 14 percent, 13 percent for personal loans, 12 percent for car loans, and the remaining 3 percent for credit card debts (Malay Mail, 2022). Between the years 2018 and 2021, it is anticipated that the level of debt that Malaysian households will carry will rise by around 17%. Because of this, questions have been expressed about the nation's ability to continue to make its debt payments, particularly during times of crisis. The fact that most households in Malaysia do not have adequate savings reserves makes this problem considerably more difficult to solve.

The impact of household debt on economic growth has attracted considerable interest among researchers in the past few years. Theoretically, households borrow to fund their consumption. Besides that, borrowing activity is also for investment in non-financial assets (Khan et al., 2021). However, high levels of household debt can be detrimental to borrowers where aggregate consumption and output shrink due to high interest (Khan et al., 2021). At the end of 2021, Malaysian household debt to GDP recorded an increase of 89 percent

compared to 96 percent a year ago (2020). However, it shows relatively higher than developed economies such as the US (80% of Q4 2021) and the UK (86.4% of Q4 2021) (Amanda, 2022). This shows that Malaysia has recorded almost RM1.4 trillion in debt value in 2021 (Bank Negara Malaysia, 2022). In addition, as of June 2021, there are approximately 44% of newly approved loans and 35% of outstanding household loans (Bank Negara Malaysia, 2022).

Moreover, high household debt will decrease purchasing power and lead to slow economic growth. It also will increase the poverty rate and bankruptcy rate in Malaysia. This study is in line with (Bogdan et al, 2022), who claims that rising household debt could cause solvency issues, especially during economic downturns. As we are aware that the country has been hit by the COVID-19 pandemic since 2020, here we can see a realistic example of the negative impact of household debt on the economy as well as people (Amanda, 2022). This was proven by a study conducted between May 27 and June 10, 23 percent of Malaysian respondents said they were struggling financially with 45 percent feeling they had just succeeded (Amanda, 2022). Thus, to support the household economy, the government has given incentives to Malaysians, namely on June 30, the special withdrawal facility of the Employees' Provident Fund (EPF) consists of *i-Lestari*, *i-Sinar*, *i-Citra* and a one-time special withdrawal of RM10,000 (Amanda, 2022).

Objectively, the government's goal to help the people who struggle with financial issues is achieved; however, it also gives a side effect to the people. When the contributors have exhausted their savings in the EPF, they will start making loans to financial institutions to pay their loan expenses. If they cannot access loans from banks, they will start borrowing from moneylenders with high interest rates (Amanda, 2022).

The rapid increase in household debt is undeniably a major concern among policymakers (Abd Samad et al., 2020). Future welfare may also be in danger from rising household debt. A sharp rise in household debt can cause solvency issues, and this weakness can develop into significant challenges, particularly during times of crisis. Given this context, economic authorities should keep an eye on family debt and support measures that encourage a healthy balance between its advantages and disadvantages.

The identification of factors that influence household debt is crucial for this goal to develop an effective policy (Dumitrescu et al., 2022). This study focuses on the determinants that influence household debt cases in Malaysia. The next level of household debt in Malaysia could lead to another financial crisis as it is at an alarming level. Determining the relationship between household debt and its determinant as well as the key variables impacting household debt are the goals of this study. The empirical way of investigation uses annual time series data spanning duration of 30 years of observation from 1991 to 2021 for six variables such as interest rate, inflation rate, household consumption expenditure, unemployment rate, gross domestic product (GDP) and housing price index. The reason for selecting the year 1991 as the initial year is the study found that there is the existence of a long-run equilibrium relationship between the household debts with the variables selected. The ending year of 2021 was opted in this study because despite major economic obstacles in 2021 including inflation, supply shortages, and restrictions on specific industries because of the epidemic. As a result, creditors seemed eager to offer credit to anyone who may benefit from it. Consumers looked to be handling their bills well more than a year after the epidemic began since the default rates on debt payments were unchanged.

In this study, descriptive statistics analysis, correlation coefficient analysis and regression analysis are used for the estimation of the impact of six variables, namely, interest rate, inflation, unemployment rate, consumption, and gross domestic product (GDP). Data was collected from The Department of Statistics, Malaysia (DOSM), Eikon Thomson Reuters, and the World Bank's website. This study can show whether the real interest rate, inflation rate, unemployment rate, household consumption expenditure, gross domestic product (GDP) and housing price index are positive and significant in relation to household debt. In conclusion, these findings have important implications for Malaysian policymakers.

2. Literature Review

Household Debt: Household debt can be defined as all household liabilities including non-profit households (CANAKCI, 2021). Economists are becoming increasingly concerned about the possibility of financial

instability because of the unsustainable growth of household debt in both developed and emerging countries. The rising amount of debt carried by households is a source of concern for both the government and the household sectors. Economists focusing on macroeconomics have been interested in this topic to examine and investigate the elements that contribute to household debt in Malaysia as well as the influence that it has.

Several studies have attempted to understand the factors affecting household debt growth covering different countries. Research conducted by (Bogdan et al, 2022), explored the influence of several macroeconomic determinants on household debt in OECD countries. It was discovered by looking at a sample of 26 OECD countries for the period of 2002q1 to 2020q4 that shocks in house prices, investment, and mortgage credit interest all influence household debt. An unexpected rise in house prices increases household debt. An increase in investment leads to higher levels of borrowing, which in turn increases household debt. Higher levels of debt are positively linked with household debt.

Other findings were presented by (Roseline & Ronney, 2021), who conducted research into the factors that lead to excessive household debt in South Africa. They concluded that increased household debt is caused by variables such as the rising cost of living, high-interest rates, disasters and other unpleasant trigger events, as well as income disparity. The author notes mortgages are the single most major contributor to household debt in South Africa.

Identified by another researcher, using the macro panel data from Asia Pacific countries from 1994 to 2016, found a positive link in the long run between household debt and household consumption, housing price index, and labor force participation (Kusairi, et al, 2019). Moreover, the authors find that there is a negative link in the long-run changes in household debt with the unemployment rates and the dependency ratio. The authors also place a great emphasis on the fact that the labor market has a significant influence on the level of household debt over the long run.

Meanwhile, a study carried out by Zain et al (2019) investigated the factors that determine household debt and discovered that GDP, base lending rate, and housing price all had a favorable association with household debt. On the other hand, there is a correlation between household debt and the unemployment rate that is negative. According to the authors, the writers remark that the housing price is the most significant factor associated with household debt.

Real Interest Rate: The interest rate was fixed in a market where the demand for savings from other households and businesses seeking to borrow money for consumption and investment exceeded the supply of savings offered by certain households and businesses. In this situation, the interest rate could never be zero, much less negative. Although a negative interest rate would indicate that the political, economic, and social conditions were so perverse that the virtue of saving and lending as a personal activity promoting the best interests of society had become a vice to be avoided, a zero-interest rate would imply that savings had transformed into a free good (Bitros & Viladi, 2022).

A real interest rate has been modified to take inflation into account. After adjustment, it indicates the actual interest rate that a borrower must pay and the actual return that a lender or investor will receive. Real interest rates indicate the rate at which current items are gradually preferred over future ones. Real interest rates are determined by reducing nominal rates by an estimation of the economy's inflation rate. A real interest rate that is negative means that the principal's buying power has decreased (Group, 2022).

Interest rates can have a positive or negative impact on household debt based on different research approaches. Interest rates can have a positive relationship with household debt as higher interest rates will affect more home debt (Catherine et al., 2016). There is also a view that the application of the survey model and the correction of the relevant vector errors are greatly impacted by the interest rate, which has a favorable impact on household debt. In this 2016 study, Hafizah looked at the factors influencing Malaysian household debt and discovered a substantial positive relationship between interest rates and changes in household debt (Khan et al., 2016). According to Catherine's research, interest rates are highly correlated with household debt since rising rates and increasing consumer spending happen when the economy is doing well (Catherine et al., 2016).

Previous research has shown that low-interest rates cause household debt to increase. The rise in household property and mortgage debt was also influenced by low-interest rates. Financial pressure on people with significant debt is growing because of rising interest rates. According to (Yahaya & Sarwe, 2019), both savers and borrowers will suffer as a result.

According to a past study by (Lugo, 2008), in the 1970s, McKinnon and Shaw and other economists started to make the case for financial liberalization to encourage austerity, investment, and growth. This is based on the claim *that* administrative control over nominal interest rates and extensive financial market regulation are the main reasons why real interest rates are frequently negative in developing nations. Contrary to the conventional belief that real interest rates and private investment have a negative relationship, this argument claims that real interest rates have a net positive impact on private investment.

H1: There is a relationship between real interest rates and household debt.

Inflation Rate: A rise in the cost of household purchases of goods and services is referred to as inflation, and the rate at which those prices change is how inflation is determined. The rate of inflation is another factor that affects household debt. A study conducted by Catherine et al (2016) in determining the influence of macroeconomic determinants on household debt in developed Asian countries discovered that inflation rate and household debt have a significant negative correlation, with higher inflation lowering a household's potential to borrow. In terms of borrowing, inflation will reduce the value of the debt, providing greater incentives for households to borrow. Additionally, this finding is supported by Kusairi et al (2019) indicates that the inflation rate and other macroeconomic variables such as interest rate and unemployment rate decrease household debt.

Moreover, research by Nomatye and Phiri (2018) that studied the macroeconomic factors influencing household debt in South Africa discovered a slight but positive correlation between the inflation rate and household debt. When the inflation premium is multiplied by real interest rates, the power of inflation to enhance credit demand is neutralized by the increase in nominal interest rates, making inflation's overall impact insignificant.

H2: There is a relationship between the inflation rate and household debt.

Household Consumption Expenditure: Since 2000, the ratio of debt to income among Malaysian households has been showing an upward trend (Lean-Ee Lee et al., 2021). Hence, one of the factors affecting household debt in Malaysia is consumption expenditure. Many studies are showing the relationship between household debt and consumption expenditure such as (Azwani Mohamad et al., 2019; Hammad et al., 2016; Lean-Ee Lee et al., 2021). The research also had done in China and the United States (U.S.) (Barrot et al., 2022; Canakci, 2021). Bank Negara Malaysia defines consumption expenditure as the total money spent on final goods and services by individuals and households for personal use and enjoyment in an economy.

Consumption expenditure can be assumed to have a positive relationship with household debt which has a similar result as the past study done by Hammad et al. (2016). The beginning of the study is an investigation into the relationship between household consumption and the composition of household debt in Malaysia where the researcher uses the Toda-Yamamoto non-causal test. This finding has shown the relationship between the two variables exists in the case of consumer debt. This means that consumer debt or consumption expenditure has had an impact on the level of household debt. Therefore, to control the high level of household debt is to focus on moderating the level of consumer debt because it is riskier for the economy (Hammad et al., 2016).

Other than that, a study by Azwani Mohamad et al (2019) has been made to analyze the determinants of household debt in Malaysia. Inflation rate, consumption expenditure, interest rate and unemployment rate have been used as independent variables. The results show a positive relationship between consumption expenditure and household debt. The results obtained show that consumption expenditure has a positive and significant relationship with household debt at the 1% significance level. In addition, it also proves that consumption is the most significant variable in influencing household debt compared to other variables such as the unemployment rate, interest rate and inflation rate (Azwani Mohamad et al., 2019).

H3: There is a relationship between household consumption expenditure and household debt.

Unemployment Rate: The unemployment rate is the percentage of persons who are out of work (occupied labor force + unemployed). An unemployment rate per age group may be calculated by dividing the number of unemployed persons in each age group by the labor force participation rate for that age group. Similarly, unemployment rates may be determined by gender, semiprofessional category, area, country, qualification level, and so on. The unemployment rate is not the same as the share of unemployment, which represents the proportion of unemployed people in the overall population.

The unemployment rate in each country is another important determinant of household debt. A previous study by Turinetti and Zhuang (2014) discovered that the unemployment rate had a negative impact on household debt. They also stated that as the unemployment rate rises, household debt decreases. This assertion is backed by Schooley and Worden (2010), who performed a study on the financial behavior of a cross-section of US households using the public database of the 2007 Federal Reserve Board Survey of Consumer Finances (SCF). They argue that the possibility of unemployment raises household income uncertainty, which impacts consumption and savings. With job and income uncertainty increasing during the crisis, households save more to build a buffer and hence borrow less.

Okuns' Law, as a basic rule of thumb, says that unemployment is negatively correlated with economic growth. This study proved that the economic cycle has a major impact on a household's ability to pay off debt. Due to the slowdown in economic activity, the household sector faced higher financial sustainability to sustain mortgage payments, resulting in more impaired loans. The business cycle indicator, the unemployment rate, proxies the decline of this macroeconomic factor. According to previous research, an increase in the unemployment rate increases the probability of default (Agarwal & Liu, 2003; Beck et al., 2015; Bellotti & Crook, 2009; Castro, 2013; Messai & Jouni, 2013).

H4: There is a relationship between the unemployment rate and household debt.

Gross Domestic Product (GDP): The GDP measures the total market value of a country's final goods and services generated each year. Household debt has a significant impact on GDP both immediately and over the long run (Yahaya, 2019). A study conducted by Nomatye (2017) found positive and significant influences of GDP on household debt at moderate to high levels of GDP. Therefore, implying that households tend to acquire larger levels of debt whenever there is an improvement in the outlook for the economy. The GDP is linked to a rise in mortgage debt as well as an increase in consumer debt, and the higher the GDP, the more this link exists (Zain, et al, 2019). A rise in GDP will encourage households to take out additional loans, which will result in a rise in the total amount of debt held by households. However, the result gained by (Abd Rahman & Masih 2015) is vice versa. Since household debt is exogenous, changes in other variables, such as lending rate and GDP, may not impact it.

H5: There is a relationship between gross domestic product (GDP) and household debt.

Housing Price Index: The cost of residential properties is an essential factor to consider when analyzing the factors that determine household debt in Malaysia given that a sizable amount of household debt is comprised of mortgage obligations. In fact, Nomatye (2017) who examined South African household debt macroeconomics using quarterly data between 2002q1 and 2016q4 found that house prices are related to household debt. This is further corroborated by the findings of a study by Zain et al (2019), which found a favorable correlation between the amount of household debt and housing prices. This is because the researcher emphasized that the increase in house prices will burden the new buyers since the average household income is not keeping pace with the rise in the cost of housing. Similarly, Bogdan et al (2022) investigated the causes of household debt in OECD countries on a macroeconomic level. They conclude that household debt contributes to higher home prices. When housing prices are greater, household debt is also higher, and the impact of this relationship becomes more significant as the degree of debt rises.

H6: There is a relationship between the housing price index (HPI) and household debt.

3. Research Methodology

The goal of this study is to create a regression model and predict the variables based on the regression coefficient. According to Sekaran and Bougie (2009), this approach gives a method for objectively measuring the degree and character of the connection.

The sample applied in this study comprised household debt data between the years 1991 to 2021. The sample of this study will be using time series yearly data. This study embedded secondary data that consisted of our independent variables which are real interest rate, inflation rate, household consumption expenditure, unemployment rate, gross domestic product, and housing price index. Many studies are showing the relationship between household debt and these six independent variables. Among them are the study by Zahariah Mohd Zain (2019), which found a favorable correlation between the amount of household debt and housing prices as well as a study done by Azwani Mohamad et al (2019) that shows a positive relationship between consumption expenditure and household debt. Apart from these Kusairi et al. (2019) indicate that the inflation rate and other macroeconomic variables such as interest rate and unemployment rate decrease household debt. Meanwhile, according to (Yahaya, 2019), household debt has a significant impact on GDP both immediately and over the long run. The data on real interest rate, inflation rate, household consumption expenditure, unemployment rate, gross domestic product, and housing price index, were retrieved from the website of the World Bank, Bank Negara Malaysia (BNM) and Eikon Thomson Reuters. First, a correlation analysis will be run to identify the correlation between the dependent and independent variables, as well as to discover the multicollinearity problem in the regression. The Durbin-Watson test is used to detect autocorrelation problems. The regression equation is as below:

$$HD = -\alpha + \beta_1 IR + \beta_2 INF + \beta_3 CONS + \beta_4 UR + \beta_5 GDP + \beta_6 HPI + \mu$$

Where,

HD = Household Debt

IR = Real Interest Rate

INF = Inflation Rate

CONS = Household Consumption Expenditure

UR = Unemployment Rate

GDP = Gross Domestic Product

HPI = Housing Price Index

B1,2,3... = coefficient value

μ = error term

A total of 51 years for our data of independent variables were issued throughout the study period. However, not all years were included in the final sample after several filtering and selection processes. The sample selection criteria are listed in the following:

1. Inclusion of real interest rate data from 1990 to 2021 and exclude the data before it.
2. Inclusion of inflation rate data from 1990 to 2021 and exclude the data before it.
3. Inclusion of household consumption expenditure data from 1990 to 2021 and exclude the data before it.
4. Inclusion of unemployment rate data from 1990 to 2021 and exclude the data before it.
5. Inclusion of gross domestic product (GDP) data from 1990 to 2021 and exclude the data before it.
6. Inclusion of housing price index data from 1990 to 2021 and exclude the data before it.

After the filtering and selection processes, 20 years for our data of independent variables were excluded, leaving only 31 years for our data of independent variables in the final sample of this study for estimation via regression model.

4. Results

This section presents descriptive statistics of the variables in household debt of 31 observations from 1991 to 2021. The descriptive analysis includes household debt, real interest rate (IR), inflation rate (INF), household consumption expenditure (CONS), unemployment rate (UR), gross domestic product (GDP), and housing price index (HPI). In addition to the descriptive analysis, Correlation Coefficient Analysis and Multiple Regression Analysis are also included for describing the relationship between household debt and the independent variables.

Table 1: Descriptive Statistics Analysis

Variables	Mean	Median	Min	Max	Std. Dev
Household debt (%)	62.005	68.800	21.000	93.220	22.784
Real interest rate (%)	3.314	3.351	-3.903	11.782	3.625
Inflation rate (%)	2.535	2.477	-1.139	5.441	1.466
Household Consumption Expenditure (RM-Billion)	99.830	72.129	25.640	218.264	66.852
Unemployment Rate (%)	3.396	3.390	2.450	4.609	0.456
GDP (RM-Billions)	194.517	162.691	49.143	372.701	113.435
Housing Price Index (%)	109.965	95.446	74.083	165.216	29.197

As demonstrated in Table 1, the mean household debt is 62.005 percent ranging from a minimum of 21.000 percent to a maximum of 93.220 percent. Household debt has a standard deviation of 22.784 percent, indicating that the amount of household debt does not diverge too far from the mean of 62 percent.

As for the independent variables, the real interest rate had a maximum of 11.782 percent in 2009 and a minimum of -3.903 percent in 2008. While it has an average score of 3.314 percent. The maximum score of the inflation rate is 5.441 percent which is in 2008 and a minimum of -1.139 percent in 2020. While it has a mean of 2.535 percent. The inflation rate recorded the lowest amount due to the COVID-19 pandemic that occurred in 2020. The pandemic has caused Malaysia to fall into deflation as it suppressed demand for goods and services. Next, the score for household consumption expenditure is within the range of RM 25.640 billion (1991) to RM 218.264 billion (2019) and the mean is RM 99.830 billion. Private consumption grew faster than the long-term average (2011–2018) of 7% in 2019. According to BNM, this growth was fueled by favorable labor market conditions and chosen government interventions notwithstanding mild inflation (Lim, 2020).

The unemployment rate has a maximum of 4.609 percent (2021) and a minimum of 2.450 percent (1997) with a mean of 3.396 percent. In 2021, it recorded the highest rate due to more businesses still not being allowed to resume their business and needing to follow the standard operating procedures (SOPs). The gross domestic product has a minimum score of RM 49.143 billion (1991) and a maximum of RM 372.701 billion (2021). While the mean is RM 194.517 billion. The recovery from the pandemic resulted in an uptick in economic activity, which led to the highest level of GDP ever recorded in 2021. The continuous growth in the manufacturing sector, the rebound in the services sector, the expansion in household consumption, and the favorable growth in net exports all contributed to improved economic performance (Department of Statistics Malaysia, 2022).

Lastly, the housing price index variable has a minimum score of 74.083 percent (1991) and a maximum of 165.216 percent (2020). While the mean is 109.965 percent. In 2020, the housing price index was the highest it had ever been. This is because Malaysia had its first deflation since 1969, with an inflation rate of -1.139 percent, which was the lowest it had ever been. Thus, it tends to push up house prices. The standard deviation for the variables of real interest rate, inflation rate, household consumption expenditure, unemployment rate, GDP, and housing price index is 3.625 percent, 1.466 percent, RM 66.852 billion, 0.456 percent, RM 113.435 billion, and 29.197 percent respectively.

Table 2: Correlation Coefficient Analysis Results

VARIABLES	1	2	3	4	5	6	7
Household debt	1	-0.3752	-0.5116	0.9003	0.2511	0.9081	0.7364
Real interest rate		1	-0.1626	-0.3227	-0.0294	-0.3652	-0.1587
Inflation rate			1	-0.4443	-0.2129	-0.4343	-0.4334
Household Consumption expenditure				1	0.0721	0.9935	0.8785
Unemployment rate					1	0.0229	0.1355
GDP						1	0.8383
Housing price index							1

Correlations are used to measure the strength of a relationship between two variables. Based on Table 2, household consumption expenditure (CONS), unemployment rate (UR), gross domestic product (GDP), and housing price index (HPI) show positive correlation with household debt, with values of 0.9003, 0.2511, 0.9081, and 0.7364 respectively, whereas real interest rate (IR) and inflation rate (CPI) shows negative relationship with household debt, with a value of -0.3752 and -0.5116 respectively. Furthermore, real interest rate (IR) and inflation rate (CPI) show a negative correlation with all the independent variables, while household consumption expenditure (CONS), unemployment rate (UR), gross domestic product (GDP), and housing price index (HPI) shows a positive correlation with all the independent variables in the correlation results. Moreover, all values of the independent variables illustrate a low correlation with each other, except household consumption expenditure (CONS) with gross domestic product (GDP), whose value is more than 0.9. This shows that there is a multicollinearity issue between independent variables.

Based on the results, we have found that the log GDP and log household consumption expenditure have a multicollinearity issue as it has a value of more than the threshold of 0.90. Therefore, we have run the VIF to prove the results. As a result, we have dropped log household consumption expenditure as it has the highest centered value, which is higher than threshold 5, which means it has a multicollinearity issue. In line with that we keep other independent variables namely, real interest rate, inflation rate, unemployment rate, GDP and housing price index.

Table 3: Multiple Regression Analysis

Dependent Variable	Household Debt		
Independent Variables	Coefficient	t-Statistic	Probability
Real Interest Rate (%)	-0.4	-0.879	0.388
Inflation Rate (%)	-1.996	-1.564	0.13
Unemployment Rate (%)	11.143	2.209	0.034
Log GDP (RM-Billions)	77.372	5.932	0.000
Housing Price Index (%)	-0.132	-1.062	0.298
R-squared	0.8980	F-statistic	44.03954
Adjusted R-squared	0.8777	Prob(F-statistic)	0.00000
Durbin Watson Stat	0.7967		
Number of observations	31		

Based on the result above, the F-statistic of 44.04 indicates that the models are fit as the F-statistic is significant at a 1 percent level and proved with a probability lower than 0.05 (0.000). This model is good for interpretation and free from multicollinearity issues after being fixed by the Newey-West test. The model is mainly to analyze whether the independent variables are significant or insignificant to the dependent variable. Therefore, if the value of probability (p-value) is lower than 0.05, it means that the model is

significant. In addition, Durbin Watson Stat stated above 0.7967 which means it has a positive serial correlation. This is because the value is between 0 and 2.

Based on the regression results in the table above, R-squared shows 89.80% of the multiple cases of household debt in Malaysia that could be explained by the variation of independent variables which are, interest rate, inflation rate, unemployment rate, log GDP, and housing price index. Meanwhile, the adjusted R-squared indicates that only 87.77% of the household debt in Malaysia can be explained by the variation in all independent variables. The remaining 12.23% shows that there are independent variables that are not included in the above model also explaining the dependent variables (household debt). Therefore, the researcher may suggest future research to further explore the reasons for the increase in household debt in Malaysia. This is because there are still factors that have not been studied by the researchers. Hence, we can see there are only two independent variables found to be significant to the dependent variables. The variables are namely Log Gross Domestic Product (GDP) and Unemployment Rate.

Discussion: Based on this study, household debt is significantly and positively related to the unemployment rate and GDP. We also discovered a negative relationship between household debt and the interest rate, inflation rate, and housing price index. Finally, the results are consistent with other international research on the topic. The study conducted by CANAKCI (2021) examined China's household debt and found that GDP has a positive impact on household debt whereas the result gained in (Roseline & Ronney, 2021; Bogdan et al, 2022), found a negative link between household debt and inflation rate. Meanwhile, based on the study by Dumitrescu et al., (2022) show that the housing price index relation with household debt is a positive relationship, however, the unemployment rate has a negative relationship with household debt. The positive relationship between household debt and the unemployment rate suggests that more debt relates to higher unemployment during the next four years. A one percentage point rise in debt typically increases the chance of a future financial crisis by one percentage point.

Besides that, with a 95% confidence level and the value of probability lower than the threshold of 0.05, the study found that there is a positive significance between the unemployment rate and household debt which means we have enough evidence to reject the null hypothesis (H0) and accept the alternate hypothesis (H1). It shows the highest unemployment rate is the highest household debt. This is because unemployment will drive them to lose their income; hence, people will tend to borrow more as they need to finance their needs and consumption.

The result of the relationship between household debt and the unemployment rate however in contrast to the study conducted by Turinetti and Zhuang (2014), which discovered that the unemployment rate had a negative impact on household debt. They also stated that as the unemployment rate rises, household debt decreases. This assertion is backed by Schooley and Worden (2010), who performed a study on the financial behavior of a cross-section of US households using the public database of the 2007 Federal Reserve Board Survey of Consumer Finances (SCF). They argue that the possibility of unemployment raises household income uncertainty, which impacts consumption and savings. With job and income uncertainty increasing during the crisis, households save more to build a buffer and hence borrow less.

On the other hand, a study conducted by Nomatye (2017) found positive and significant influences of GDP on household debt at moderate to high levels of GDP. Therefore, implying that households tend to acquire larger levels of debt whenever there is an improvement in the outlook for the economy. In addition, according to Zain et al (2019), the GDP is linked to a rise in mortgage debt as well as an increase in consumer debt, and the higher the GDP, the more this link exists.

5. Managerial Implications and Recommendations

In general, household debt is one of the ways that make it easier for people to spend beyond their means. For example, buying a house, buying a car, and using a credit card because some people cannot afford to buy it in cash. Therefore, this study is important in enabling people to spread out their consumption of goods and services for their lives. "Fixed income" or "life cycle" in economic theory, according to the model, consumption is influenced by predicted lifetime income for one particular (Francis-Devine, 2022). Apart from

that, this study found that the unemployment rate has a positive significance on household debt. Therefore, those who have been unemployed will tend to borrow more to keep their financial stability. Furthermore, a high GDP also will increase household debt because financial institutions or banks are willing to lend money in line with the increase in GDP.

Future researchers are advised to broaden the research, despite the empirical data presented in this study on the significant determinants that affect household debt in Malaysia. Therefore, future researchers may observe other countries also to get a more holistic picture of results, or perhaps future researchers may conduct a comparison study between Malaysia and other countries. It is recommended to compare the determinants of household debt in Malaysia with other determinants of household debt. Future research should investigate the variables that might react differently to household debt in Malaysia. In addition, there are still a variety of other variables besides those used in this study that can affect household debt in Malaysia, such as real household income, household savings, and lending rates according to the most recent research on the topic.

Future research should be able to gain more clarity on the determinants driving household debt in Malaysia by looking at more variables. Therefore, more research on this subject is anticipated to conclude the factors influencing household debt in Malaysia. Therefore, everyone involved including individuals, society, the government, and financial and private institutions must play their respective roles in addressing the burgeoning phenomenon that is currently sweeping through society. This is especially true when it comes to introducing some guidelines to curb the trend of rising household debt, which is only getting worse. Furthermore, future researchers may add more data and observations. As this study only conducted 31 observations and used annual data, this study has been facing difficulty in doing the research. Thus, it is very convenient to conduct more data perhaps more than 30 years and use other time frames such as daily, monthly, and quarterly data to see realistic results.

Conclusion: Using time series data from 1991 to 2021, the objective of this study was to investigate the determinants that affect household debt in Malaysia (i.e., real interest rate, inflation rate, household consumption expenditure, unemployment rate, gross domestic product, and housing price index). Our technique of empirical investigation is the quintile regression method, which allows us to analyze the effects of household debt on several variables across several distribution points. Besides that, the thing that makes the study of this article different compared to other articles is the period taken, which is between 1997 and 2021. This is because the period from 2019 to 2021 is the period where the covid 19 pandemic occurred which has had a significant impact compared to the previous year which also gives great different implications to the determinants of household debt. In addition, our study is more extensive compared to previous studies where it is not only focused on certain factors. For example, previous studies from (Ma'in et al., 2016; Mohamed et al., 2020; Nizar, 2016) only focused on the relationship between household debt and macroeconomics. Indirectly it has limited future researchers to study the factors affecting household debt. Hence, future researchers will not get enough materials. However, there are also previous studies that did research broadly which do not focus on any aspect such as the study by (Zain et al., 2019). The study by (Zain et al., 2019) only consists of four independent variables such as inflation rate, consumption expenditure, inflation, and unemployment rate which contrast with our study which consists of six independent variables in addition of GDP and housing price index. Here, it clearly shows that our study has its unique characteristics that are distinctive compared to past studies.

This study also recommends a significant positive relationship between household debt and GDP. Therefore, we have enough evidence to reject the null hypothesis (H_0) and accept the alternate hypothesis (H_1) as it shows there is a relationship between GDP and household debt. It demonstrates that household debt can boost economic growth in the short run, as households who borrow can spend more. However, in the long term, high debt in the economy can make a recession deeper and longer. The coefficient of determination (R-squared) of 0.878 indicates weak power of the correlational degree among the dependent variable and independent variables.

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