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About stock markets predictability

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Abstract: We argue that the financial markets have a predetermined outcome. They behave deterministically but appear to follow random patterns. Stock prices have nothing to do with future expectations; they are a reflection of previous convictions coming from the confident investors. A financial crisis is the result of the lack of confidence that characterizes a market moments before the crisis. Stocks returns are perfectly correlated to each other and it is possible to obtain high gains consistently. Finally we provide a different way of assessing risk and suggest a method to sense future performances.

Keywords: *Stock, Market, Predictability, Confidence, Investors*

1. Introduction and Review of Literature

The academic field of financial economics is generally unable to predict the behavior of financial markets. The attempts are countless but with limited success. Research about the predictability of returns and market efficiency often uses sophisticated models but is unable to provide clear generalizations. The literature is rich with examples and is widely available to researchers. Some of the research such as Poterba and summers (1988) was able to detect a weak degree of predictability based on prior information. Other research found that some variable can explain future stock markets behavior. Examples of such variables include short-term interest rates (Campbell, 1991), yield spreads between long-term and short-term interest rates and between low- and high quality bond yields (Fama and French, 1989), stock market volatility (French, Schwert, and Stambaugh,1987), Eurodollar-U.S. Treasury (TED) spread (Ferson and Harvey, 1993), book-to-market ratios (Kothari and Shanken, 1997), dividend-payout and price-earnings ratios (Lamont, 1998), measures based on analysts' forecasts (Lee, Myers, and Swaminathan, 1999), consumption-wealth ratio (Lettau and Ludvigson, 2001), and dividend yields (Campbell and Shiller, 1988). However many research paper criticizes the literature mentioned above and rejects its findings on statistical grounds. They argue that the methodologies are often flawed or use poor assumptions. Example of such papers are Valkanov (2003), Ferson, Sarkissian, and Simin (2003), Ang and Bekaert (2003), and Goyal and Welch (2003).

This paper is quite different from what the literature has to offer. Its basic argument is that markets are driven by a small number of certain (confident) investors. The number of such investors fluctuates depending on the overall confidence level of the society at large about the financial markets. In good times the number of confident investors increases driving the market up and leading to the creation of new investments opportunities to accommodate the incoming confident investors. In bad times the market finds itself with a decreasing number of confident investors and a large number of irrelevant securities. This model has several implications. First, since the certain investors are holding firmly to the helm of the market, performance is determined by their investment choices and level of conviction about future prospects. Second, the market value of a security comes from the confident investors' choices not from the security's fundamentals. Third, stocks are perfectly correlated to each other as their performances are precisely interrelated. Fourth, it is possible for traders to obtain consistent positive returns as long as they are able to maintain an attitude of confidence and consistency. Fifth, risk should be redefined and measured through confidence scores not through interim stock fluctuations. Finally, it is possible to forecast future performance through an index of confidence. This paper is organized as follows. First we present the model. Second we discuss the implications of this new perspective. Third we compare this new approach to the currently applied valuation process. Fourth we link this model to market movements. Fifth, we discuss the implications of this model to how stocks correlate. Sixth, we discuss whether it is possible to consistently beat the market. Seventh, we redefine risk. Finally we conclude.

2. The Model

In this section we assume a one period model and call a Certain Investor (CI) a person who is confident about the outcome of a portfolio of stocks. Let us assume for example that a market contains one CI. That investor is certain about the outcome of his investment. As such if the market contains one single security the outcome of this security will be known, unique and equal to the investors desired certain outcome. If the market contains two securities there will be an infinite number of combinations leading to the certain outcome and the outcome of each stock cannot be known in advance. If a second CI enters the market the outcome of both securities will be known in advance. When a third certain investor enters the market a situation will arise where a third security must be created. Little by little the number of securities increases and the market expands thanks to an increase in the number of CIs. Let us assume that at some point of time there are *S* securities in the market and *N* CIs. Each CI will invest in a portfolio containing various securities and will be certain about the outcome of the portfolio but not the outcome of each security. The returns of the *N* portfolios are as follows:

$$\begin{cases} R_1 = \sum_{s=1}^{S} X_{1s} r_s \\ R_2 = \sum_{s=1}^{S} X_{2s} r_s \\ \cdots\cdots\cdots\cdots \\ R_i = \sum_{s=1}^{S} X_{is} r_s \\ \cdots\cdots\cdots\cdots \\ R_N = \sum_{s=1}^{S} X_{NS} r_s \end{cases} \quad \text{or} \quad \begin{bmatrix} R_1 \\ R_2 \\ \cdots\cdots \\ \cdots\cdots \\ R_i \\ \cdots\cdots \\ \cdots\cdots \\ R_N \end{bmatrix} = \begin{bmatrix} X_{11}\cdots\cdots X_{1s}\cdots\cdots X_{1S} \\ X_{21}\cdots\cdots X_{2s}\cdots\cdots X_{2S} \\ \cdots\cdots\cdots\cdots\cdots \\ \cdots\cdots\cdots\cdots\cdots \\ X_{i1}\cdots\cdots X_{is}\cdots\cdots X_{iS} \\ \cdots\cdots\cdots\cdots\cdots \\ \cdots\cdots\cdots\cdots\cdots \\ X_{N1}\cdots\cdots X_{Ns}\cdots\cdots X_{NS} \end{bmatrix} * \begin{bmatrix} r_1 \\ r_2 \\ \cdots \\ \cdots \\ r_s \\ \cdots \\ \cdots \\ r_S \end{bmatrix}$$

Where r_s represented the return of security *s* and X_{is} represent the proportion of wealth invested by CI *i* in security *s*. *s* varies from 1 to *S* and *i* varies from 1 to *N*. that is there are *N* CIs and *S* securities. R_i represents the return of CI *i*. In this system of equations the CI's returns and weights are predetermined by choice. In other words the return of each portfolio is known in advance along with the exact asset allocation. The returns of the portfolios are known with certainty because the certain investors invested in them. The returns of all securities are the unknowns in the equations. If *S*<*N* then the numbers of CIs exceeds the number of securities and the system of equations above doesn't have a solution. In such a case the market will introduce at least *N*-*S* new securities to accommodate the new CIs and keep all the ambitions going. If *S*=*N* then the number of CIs equates the number of securities and the system of equations above will have a unique solution. In such a case the market can function with the current number of securities. For every new CI that comes to the market a new security will have to be created to accommodate all CIs. When *S*=*N* the market is usually well behaved and highly predictable. If *S*>*N* then the number of securities exceeds the number of CIs and the system of equations will have an infinite number of solutions. In such a case the market accommodates comfortably all CIs and can welcome *S*-*N* new ones and satisfy their desires.

3. Implications

When the number of securities is the same or slightly higher than the number of CIs (*S*≥*N*) the stock market is unpredictable but not unreliable because most stocks are guided through collective awareness. In that case we can say that the market is guided. When the number of stocks is much larger than the number of CIs (*S*>>*N*) plenty of stocks may be unguided by collective awareness and thus start behaving like a missile that lost its trajectory. The following script highlights a potential market behavior. Let us imagine that a market starts with five securities. In such a case the market can accommodate up to five CIs. As soon as the number of

CIs approaches five there will be a pressure to create new securities. The creation of new securities will bring in more confidence and therefore more CIs. As the number of CIs increases and approaches the new number of securities there will be pressure again to create additional securities. This is how a market expands. At some point when the number of securities becomes large and a drop in confidence kicks in, some CIs leave the market or loose their certainty. In such a case N becomes smaller and S remains unchanged. This could destabilize the market because it leads in part to a selling wave. This selling further decreases confidence and new CIs might leave the market or become less certain. Collective awareness start shifting from positive to negative and the market becomes unguided ($S>>N$). If confidence is not restored the market will suffer further.

During periods of lack of confidence, the number of CIs can decrease leaving the market without guidance and therefore unable to function properly. This lack of mental guidance could lead to a financial crisis. A crisis is usually misunderstood as it is often blamed on such things as excess risky borrowing, lack, or excess of regulation, too much speculation, or other explanations. But all these explanations are superficial and they only serve to nurture discussions, newspaper articles, and TV programs. A crisis is generally a result of lack of certainty. The source of uncertainty can be difficult to trace, indoctrination however plays a major role. If the media around the world, for example, start using the word recession over and over in good economic times, sooner or later we creatures of habits become unknowingly certain that recession is already here and therefore become consuming and behaving as if recession is already here. As a result real recession shows up. Similarly if TV stations around the world start using optimistic slogans in bad economic times, sooner or later the situation will reverse. Monetary policy or fiscal policies are tools to take the economy in a desired direction, but they only work if they shift awareness.

How about fundamentals?

Current theory argues that the value of a security in efficient markets reflects its fundamentals. That is a security is worth the present value of its future cash flows discounted at the appropriate discount rate. I argue instead that the value of a stock today is a reflection of previous awareness. For example if the overall perception is that the market will just keep going up over the next few months or years, that's exactly what will happen. The value of each stock cannot be predicted because there is an infinite number of ways to satisfy all certain investors. But the overall direction of the market can be sensed in advance if one were to identify some certain investors and truck their investments. The market goes where collective awareness goes, in other words the market moves in such a way that all beliefs are met, the bearish ones, and bullish ones. Strong thoughts create the outcome and the events are shaped to satisfy the confident investors.

Market Movements

Certain investors are not necessarily bullish. Certainty comes from positive and negative emotions. If one were to be very afraid that his or her portfolio might collapse, it will at some point of time. Certain investors include the bullish who is forcing positive outcomes through unbounded optimism and the bearish who is forcing negative outcomes through emotions of intense fear. The link between thoughts and subsequent realities is an issue that has been a topic of long discussions between psychologists, philosophers, and mystics throughout recorded history dating back to Socrates and Plato. Many consider this topic to be unscientific because it cannot be subjected to the process of falsification. This paper doesn't get into this interesting debate but it goes inline with the conjunction that the world as we see it is a mirror reflection of previous thoughts. In other words strong beliefs materialize sooner or later. The literature about quantum physics and consciousness timidly supports that statement. A person forges its way in life consciously or unconsciously through thoughts. Society at large progresses consciously or unconsciously as well through collective awareness. For example an economy cannot be in recession unless the event is preceded by the belief that a recession is coming. Similarly an economy cannot be booming unless the prevalent thoughts before the good economic times were positive and optimistic. That is why the only way to move out of a recession is to elevate human awareness and the only way to get into a recession is to lower it.

About Correlations

Let us assume a simple case of four stocks and two certain investors. Let us also assume that the first investor uses three stocks and the second investor invests only in two. In such a case we get the following system of equations:

$$\begin{cases} R_1 = X_{11}r_1 + X_{12}r_2 + X_{13}r_3 \\ R_2 = X_{21}r_1 + X_{22}r_2 \end{cases}$$

As mentioned earlier the unknowns are $r_1, r_2,$ and r_3. r_3 can be written as a function of r_1 and r_2 as follows:

$$r_3 = \left[\frac{R_1 - R_2}{X_3}\right] - \left[\frac{X_{11} - X_{21}}{X_3}\right] r_1 - \left[\frac{X_{12} - X_{22}}{X_3}\right] r_2,$$

$$r_3 = \left[\frac{\frac{R_1}{X_{11}} - \frac{R_2}{X_{21}}}{\frac{X_{13}}{X_{11}}}\right] - \left[\frac{\frac{X_{12}}{X_{11}} - \frac{X_{22}}{X_{21}}}{\frac{X_{13}}{X_{11}}}\right] r_2,$$

$$r_3 = \left[\frac{\frac{R_1}{X_{12}} - \frac{R_2}{X_{22}}}{\frac{X_{13}}{X_{12}}}\right] - \left[\frac{\frac{X_{11}}{X_{12}} - \frac{X_{21}}{X_{22}}}{\frac{X_{13}}{X_{12}}}\right] r_1.$$

The above equations show clearly that the three stocks are perfectly correlated to each other. They are completely interdependent. The argument could be extended recursively to more stocks and more certain investors. This of course completely negates conventional wisdom. So why is it that the traditional way of measuring correlation does not capture that? Let's take the example of the equation that relates r_3 to r_1. It clearly shows that there is a perfect linear relationship and therefore the correlation should be 1 or -1. However the model here uses a single period. Once investors move to a new period, perceptions and expectations can change. Consequently the weights and desired portfolio returns can change. In such a case the stocks remain perfectly correlated but the nature of their interdependence changes. In summary, all investments that get the attention of the certain investors are perfectly correlated at any point of time but the nature of their interdependence changes with time. The stock market works like one entity (or a well-orchestrated symphony), investments are stitched together, and the stitching factor is collective awareness. The fourth stock does not appear in the above equations as it doesn't appeal to the certain investors. It is out of the loop as it is completely unrelated to the three others.

Beating the Market

Overall the academic field of finance rejects the idea that a trader can consistently beat the market. Many strategies and trading rules have been examined and the outcome is usually the same: no one can beat the market consistently. Some traders however insist that they can. Traders are on the field, they are the ones getting their hand dirty. It is therefore more logical to trust them. Academicians on the other hand do not trade as much; instead they (or we I might say) use theories and statistical methods to fit some data to a story. These methods are often ingenious but they disregard an important factor. Traders with consistent profits are usually focused on a trading plan that they use with an uncompromising rigor. This relentless focus becomes a certainty after a while. As a result of this focus traders become certain investors and their desired outcome materializes. They reach their desired outcome because of their consistency and conviction

not their strategy. Academicians cannot capture this effect. No ex post strategy can work consistently because certainty cannot be applied to data. So no theory or statistical method can do the job, simply because focus and awareness cannot be used ex post regardless of how ingenious the statistical method is. Convictions can only be used ex ante. Only ex ante strategies where the event is yet to happen can produce consistent gains if and only if the feeling of confidence accompanies the investment strategy. It's all about conviction not strategy.

Risk Redefined

A common sense definition of risk is the likelihood of unfavorable outcome. As such the certain investors are not facing any risk because the outcome of their investment is a sure thing. We call them the risk-free investors. The other investors (they constitute the majority) have different degrees of certainty. These investors are not particularly focused on a specific outcome and therefore do not influence very much the overall workings of the market. I defined risk in terms of investors not investment as it is routinely done in the financial economics literature. A risky investor is an investor who is hesitant, wishful, or careless about the outcome of his investment. There are of course various degrees of hesitancy, wish-fullness, and carelessness. Therefore there are various levels of risks. A certain investor is a risk free investor because he/she obtains the desired outcome by the power of focus. The higher the number of certain investors, the higher the level of confidence and the less risky the market is. This goes against conventional wisdom. What matters in this theory is the outcome of an investment not its interim fluctuations. As discussed previously there are infinite ways to satisfy the certain investors. It may seem that a stock is plunging here and another one is sky rocketing there but at the end their combinations will yield the desired and predetermined outcomes. A stock may fluctuate widely and therefore may appear to be risky but all it does is adjust to the various investments desires of the certain investors. Risk therefore can be measured through an index that reflects the current thoughts of the investors. A large sample of investors can be surveyed and simply asked to share their perceptions of where the market is going and their degree of certainty. This method can detect current collective awareness and may provide a good economic indicator. It will not describe how the events will unfold but should have a sure outcome.
Additionally overall market risk can be measured as follows:

$$\text{Market Risk} = \sum_i w_i \frac{1}{dc_i},$$

Where w_i represents the proportion of the i^{th} investor investment compared to the overall market value. dc_i Represents the degree of certainty of the i^{th} investor, *dc* can vary from zero to infinity. Zero means completely uncertain and infinity means totally certain. $\frac{1}{dc_i}$ represents the risk of the i^{th} investor. When an investor is certain (risk-free) $\frac{1}{dc_i}$ equates zero.

When investors have a high degree of confidence about an outcome (good or bad), the market risk will be small, and collective awareness, as measured by the index described above, is reliable. Alternatively when investors have a low degree of confidence about an outcome (good or bad), the market risk will be high and collective awareness, as measured by the index described above, is unreliable.

4. Conclusion

In this paper we present a new theory. In it we argue that financial markets are guided through awareness. What we call the certain investors are a group of people or institutions that are confident about the outcome of their investments. It is them who maneuver the market and all outcomes result from their choices and level of confidence. This theory has many implications. First, current prices are reflection of previous thoughts not current fundamentals. That is, the past and only the past explains what is happening now. Second, a financial crisis is a result of luck of certainty. Third, any two stocks are either perfectly correlated or totally unrelated. Finally, given the current research method it is impossible to test scientifically whether a trader can generate high profits consistently. The capital asset pricing model is a theory that fascinated academicians for quite a

long time. It has one similarity to the theory presented in this paper: it postulates that one factor and one factor only can explain everything. That factor was called the market portfolio. In this paper we also defend the idea that one factor guides and explains the market; this factor is collective consciousness (unlike collective unconsciousness formulated by the psychologist Carl Jung). It is not some sort of a portfolio but rather a set of powerful thoughts and beliefs. It guides the market deterministically in a seemingly random pattern.

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