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O. CHIWIRA
R. TADU
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*Oscar Chiwira and Ruramayi Tadu

BA ISAGO University College, Private Bag 149, Suite #268, KgaleView PostNet, Gaborone, Botswana.

Corresponding Author: Oscar Chiwira
E-mail: oscar.chiwira@baisago.co.bw
Mobile No.: (+267) 74261961
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ABSTRACT

Extensive literature exists on forecasting stock market returns. However a gap still exists in accurately predicting stock returns. This might have been due to the fact that many of these models base their forecasts solely on the fundamental factors, whilst ignoring the behavioral attitudes of investors that may also affect the dynamics of stock returns. The primary objective of this research is to develop a predictive regression model of stock returns that uses the behavioral approach. The model is based on two distinct behavioral attitudes of investors, which are rational behavior and irrational behavior. We argue that given information that may affect stock returns, a market participant either decides to react rationally or irrationally. This argument allows us to capture the reaction of market participants to both rational behavioral attitudes and as well as irrational behavioral attitudes that may affect stock returns.

Key words: Stock returns; behavioural approach; rational behavior; irrational behavior; portfolio management; linear regression.

1. INTRODUCTION

Extensive literature exists on forecasting stock market returns using price multiples, macroeconomic variables, corporate actions, and measures of risk (Ferreira and Santa-Clara, 2011:514). However, many of them have had very little success in accurately predicting stock returns (Timmermann and Granger, 2004:15). This might have been due to the fact that many of these models base their forecasts solely on the fundamental factors (e.g dividend growth and price –earnings ratios) that affect stock returns,
whilst ignoring the behavioral attitudes of investors that may also affect the dynamics of stock returns. This is understandable because the bulk of research in modern economics has been built on the notion that human beings are rational agents who attempt to maximize wealth while minimizing risk (Barber and Odean, 2011:1). In other words, market participants react sensibly or rationally to fundamental factors that affect stock returns. However, the notion of complete rational of rational behavior has long been disapproved in several behavioral finance studies. The influence of many irrational phenomena on investment behavior, such as the disposition effect, overconfidence and other personal psychological tendency that cannot be explained by traditional finance theory (Lin, 2011:6) have been found to be significant in influencing stock returns. Thus, there is need to develop stock return predictive models that take into account the behavioral attitude factors that affect stock returns. In this paper, we develop a predictive regression model of stock returns that uses the behavioral approach. Precisely, our model is based on two distinct behavioral attitudes of investors, which are rational behavior and irrational behavior. We argue that given set information that may affect stock returns, a market participant either decides to react rationally or irrationally. This argument allows us to capture the reaction of market participants to both fundamental factors (rational behavioral attitudes) and as well as irrational behavioral attitudes that also may affect stock returns. Thus, it is a significant improvement to most models that base their forecasts solely on fundamental factors that affect stock returns.

The paper is organized as follows: Section 2: We discuss the significance of irrational behavioral attitudes in predicting stock returns, Section 3: We discuss the development of a predictive stock return model using the behavioral approach and finally, Section 4: Concludes the paper.

2. THE SIGNIFICANCE OF THE IRRATIONAL BEHAVIOURAL ATTITUDES IN PREDICTING STOCK RETURNS

The traditional finance framework is largely built on the efficient market hypothesis (EMH) and its applications (Lindhe, 2012:4). The EMH, which postulates that markets are efficient if prices reflect all the information, private or public information, is based on the assumption of rational behavior. EMH is based on the assumption that human beings behave rationally when making financial decisions. Since, most finance models are based on the EMH, there is an assumption that human beings behave rationally when making financial decisions. Among those finance models that assume rational decision making by financial agents are predictive stock return models. Predictive stock returns models are basically financial models that predict the future prices of stocks. They help portfolio managers to:

- Determine the future performance of a particular stock and as well as the overall portfolio value,
• Determine future price movements of stocks and decide which particular stocks to buy or sell.
• Determine strategic asset allocations and
• Outperform other portfolio managers involved in asset trading.

Thus, predictive stock return models are an important element of effective portfolio management. But are stock returns really predictable? “The EMH was proposed based on the overpowering logic that if returns were forecastable, many investors would use them to generate unlimited profits. The behavior of market participants induce returns that obey the EMH, otherwise there would exist a ‘money-machine’ producing unlimited wealth, which cannot occur in a stable economy.” (Timmermann and Granger, 2004:15). In other words, stock returns can not be predicted and as such researchers attempting to develop stock predictive models might be wasting their time. However, researchers who develop predictive stock return models are convinced that stock returns are predictable. For example researchers like (Lacerda and Santa-Clara, 2010:2) went on to provide empirical evidence that provide that returns are indeed predictable. Whether stock returns are predictable or not, the major question is how successful has predictive stock return models been? There are many predictive stock return models that have been developed by researchers. Unfortunately, many of them are not freely available as they are normally sold to asset management firms who keep them a secret because they would want to outperform industry competitors. However, according to (Timmermann and Granger, 2004:15) many predictive stock return models have been unsuccessful in accurately predicting stock returns. It is important to note that the success of a predictive stock return model in accurately predicting future stock returns depends on the particular predictive stock return model used to predict them. Many of the predictive stock return models attempt to forecast stock returns using the fundamental factors that affect them (see Ferreira and Santa-Clara, 2011 and Lacerda and Santa-Clara, 2010). Much importantly, these predictive return models assume that market participants react sensibly or rationally to fundamental factors that affect stock returns. However, the assumption of rational behavior that underlies the traditional finance theory has been disapproved in several behavioral finance studies. Proponents of behavioral finance theory argue that, for certain reasons people sometimes deviate from full rationally. Thus, the deviation of financial agents from rational decision probably explains the failure of many predictive stock return models in accurately predicting stock returns, as claimed by Timmermann and Granger, (2004:15). The field of behavioral finance investigates whether certain financial phenomena are the result of less than fully rational behavior on the part of some agents in the economy (Barberis, 2011). The field has received a rapid increase in researches since 1980 (Lin,2011:6), primarily “fuelled by the
inability of the traditional framework to explain many empirical patterns, including stock market bubbles in developed countries such as Japan and the US (Khoshirat and Salari, 2011:169). The field has focused, with some success, on three areas of application: the pricing of financial assets; the portfolio choice and trading decisions of investors; and the behavior of firm managers (Barberis, 2011). Interestingly, one of the biggest successes of behavioral finance is a series of theoretical papers showing that in an economy where rational and irrational traders interact, irrationality can have a substantial and long-lived impact on prices” (Khoshirat and Salari, 2011:169). This means, apart from the fundamental factors, behavioral attitudes of investors have a real significant impact on the dynamics of stock returns. Thus, there may be a need to incorporate behavioral attitudes of investors in developing predictive stock return models. Which particular behavioral attitudes that may be of interest in predictive stock return models? Firstly, it is a behavioral attitude known as the disposition effect. The disposition effect is among the most widely replicated observations regarding the behavior of individual investors (Barber and Odean, 2011:1). It refers to the tendency by investors to realize gains and reluctance to sell those that have losses due to regret avoidance (Lin, 2011:6). In other words, investors tend to sell winning investments while holding on to their losing investments (Barber and Odean, 2011:1). To shed more light on the disposition effect phenomenon, Lin; (2011:7) described it as follows: “Investors are risk averters when they have obtained gains from their invested financial products. Contrarily, if an investment unwilling to recognize the investment losses and will hold the losing position continuously. At this time, they become risk lovers. In other words, the investors dislike incurring losses much more than they enjoy making gains, and are willing to gamble where losses are involved, so they will hold stocks that have lost value and be eager to sell stocks that have risen in value.” The existence of the disposition effects in financial markets is confirmed in several empirical studies. However, it seems that the disposition effect is significant during times of financial crises whereby stock prices tend to consistently fall down. This is confirmed in an empirical study by Lin (2011). Precisely, Lin (2011) utilized the disposition coefficient to verify whether the disposition effect exists in Taiwan and Chinese stock markets during the periods of financial crises. The empirical results show that during the 1997 Asian financial crisis, the disposition effect significantly exhibits in both markets. On the other hand, during the 2008 global financial crisis, the disposition effect only exhibits in Chinese stock market (Lin, 2011). Thus, the “disposition effect” is a significant irrational behavioral attitude that may need to be incorporated in predictive stock return models. Another behavioral attitude common in financial markets is “herd behavior”. It is defined as a behavioral tendency of an investor to follow the
actions of others (Hachichah, 2010). According to Junkets et al (2012:1) herding investors ignore their own noisy information and intentionally follow other market participants, since they infer from observed trading behavior that others have relevant information. This happens because our judgment becomes clouded when we observe the decisions of others (i.e. our decisions are no longer independent (Kamalodin, 2011:14). Precisely, herding happens when an investor

- Possesses no private information,
- Has private information yet is uncertain about it perhaps because it is of low quality,
- Considers his information-processing abilities to be inadequate
- Perceives others as better-informed
- Want to reduce the costs and time of obtaining information and
- Wants to maintain his reputation by being counted among the crowd, thereby revealing his abilities (see Shrivastava et al, 2010:145 and Zaharyeva, 2008:2).

Under rational ‘thinking’ investors should act in accordance with the information available to them and not ride on other people decisions. Thus, herding behavior is an example of an irrational behavioral attitude. According to the EMH, market prices are always right because they reflect the independent choice (or private signals) of market participants (Kamalodin, 2011:14). As such, practitioners are interested in whether herding exists, because the reliance on collective information rather than private information may cause prices to deviate from fundamental value and present profitable trading opportunities (Hachichah, 2010). Most empirical studies have shown herding behavior exists in some stock markets and whenever it exists it will be due to certain market conditions, in particular bull and bear market periods (see Al-Shboul, 2012; Chiang et al, 2010; Economou et al, 2010; Lindhe, 2012). Though herding behavior may not to exist in all markets, the fact that it can exist under certain conditions means that it has the ability to significantly affect market returns. Thus, similar to the disposition effect phenomenon, herd behavior may also need to be incorporated in predictive stock return models.

3. DEVELOPING A PREDICTIVE STOCK RETURN MODEL USING THE BEHAVIOURAL APPROACH

As earlier mentioned predictive stock return models are a very important element of portfolio management. As such their ability to accurately estimate future returns is of utmost importance to portfolio managers. The failure to incorporate certain irrational behavioral attitudes like the disposition effect and herding behavior which theoretical and empirical studies have pointed out to be significant behavioral attitudes in financial markets. It is therefore, imperative that we develop predictive stock return models that take into account not only the fundamental factors that affect stock returns, but also the irrational behavioral attitudes factors that affect stock returns. In this section, we develop a predictive stock return model that incorporates
irrational behavioral attitude factors. We start by arguing that stock return dynamics (changes) depend on both fundamental factors and irrational behavioral attitude of market participants. In other words:

**Changes in stock returns =F (fundamental factors; irrational behavioral attitude factors)**

(1)

Combining fundamental factors with irrational behavioral attitude factors in a single model might be complex and complicated. As such, we decide to develop a predictive stock return model that uses a pure behavioral approach. In order to do that we start by arguing that changes in stock returns depend on the behavioral attitudes of market participants. In other words:

**Changes in stock returns =F (behavioral attitudes of market participants)** (2)

There are two distinct behavioral attitudes that can be observed in asset trading. These are:

- Rational behavior
- Irrational behavior

Rational behavioral attitude is a situation whereby market participants make rational or sensible decisions based on the available set of information. Irrational behavioral attitude is a situation whereby market participants make irrational decisions that are inconsistent with the set of information available to them. This set of information can either be private or public information. We argue that market participants either decide to behave rationally or irrationally, subject to a set of information available to them. Thus we can say that:

**Changes in stock returns =F (Rational behavior and irrational behavior of market participants) subject to a set of information available to them** (3)

As can be observed, the above function defines changes in stock returns as purely a function of behavioral attitude of investors. The fundamental factor, described in equation (1) has essentially been eliminated and replaced with rational behavior. This is logical because market participants’ reaction to fundamental factors affecting a particular stock can be termed as rational behavior. The above function now defines changes in stock returns from pure behavioral point of view. It therefore allows us to develop our predictive stock return model using a pure behavioral approach. In developing the predictive stock return model, we start by assuming that there is a linear relationship between the changes in stock returns and the behavioral attitude factors (rational and irrational) that affect it. The equation can be written as follows:

\[ \Delta R_{t}\delta = \beta_1 F_{m,t} + \beta_2 H_{m,t} \] (4)

where:

\( \Delta R_{t}\delta \) is a measure of the change in stock returns observed at time \( t \); \( F_{m,t} \) is a measure of the degree of rational behavior in a particular market \( m \), observed at time \( t \); \( H_{m,t} \) is a measure of the degree of irrational behavior in a particular market \( m \), observed at time \( t \); \( \beta_1 \) is a coefficient measuring the sensitivity of stock returns to the degree of rational behavior observed in market...
m at time t; $\beta_{2,t}$ is a coefficient measuring the sensitivity of stock returns to the degree of irrational behavior in the market observed in the market at time t. As earlier mentioned, market participants decisions about a particular stock is subject to set of information available to them. We argue that market participants either decide to use the set of information available to them or decide to completely ignore the set of information available to them. When they decide to make use of information available to them to make decisions, they are making decisions based on fundamental factors affecting that particular asset. Conversely, when market participants decide to ignore information available to them when making decisions, they are making decisions that are not based on fundamental factors affecting the asset. Thus, we can re-define rational and irrational behavior as follows:

- **Rational behavior** - is a situation whereby market participants make decisions about a particular stock based on fundamental factors affecting the stock
- **Irrational behavior** - is a situation whereby market participants do not make decisions about a particular based on fundamental factors affecting that particular stock

Thus, variables and parameters in equation (7) can also be defined as follows:

- $F_{m,t}$ a measure of the degree at which market participants respond to fundamental factors affecting assets in a particular market m, observed at time t.
- $H_{m,t}$ is a measure of the degree at which market participants respond to non-fundamental factors in a particular market m observed at time t.
- $\beta_{1,t}$ is a coefficient measuring the sensitivity of stock returns to the degree at which market participants respond to fundamental factors affecting assets in a particular market m, observed at time t.
- $\beta_{2,t}$ is a coefficient measuring the sensitivity of stock returns to the degree at which market participants respond to non-fundamental factors in a particular market m observed at time t.

The change in stock returns at time t is simply the difference between the stock returns observed at time t and the stock returns observed at the previous time (t-1). This can mathematically be represented as follows:

$$\Delta R_{i,t} = R_{i,t} - R_{i,t-1} \quad (5)$$

where:

- $R_{i,t}$ is the stock return observed at time t
- $R_{i,t-1}$ is the stock return at time (t-1). In the other words it is the stock return observed the previous time. Substituting equation (5) for $\Delta R_{i,t}$ in equation (4) will result in the following equation:

$$R_{i,t} - R_{i,t-1} = \beta_{1,t}F_{m,t} + \beta_{2,t}H_{m,t} \quad (6)$$

The above equation simplifies to:

$$R_{i,t} = R_{i,t-1} + \beta_{1,t}F_{m,t} + \beta_{2,t}H_{m,t} \quad (7)$$

The stock return observed the previous day ($R_{i,t-1}$) is a known variable at time t. This means that it can be written as a constant. Thus,
we can replace \((R_{i,t-1})\) with a constant. In other words we can say that:

\[ R_{i,t-1} = \alpha_t \] (8)

Thus, equation (7) can be re-written as follows:

\[ R_{i,t} = \alpha_t + \beta_{1,t}H_{m,t} + \beta_{2,t}F_{m,t} \] (9)

To predict \(R_{i,t}\) we need to regress the above equation. Thus equation (6) becomes a regression model as follows:

\[ R_{i,t} = \alpha_t + \beta_{1,t}F_{m,t} + \beta_{2,t}H_{m,t} + \varepsilon_{i,t} \] (10)

The above equation means that there will be need to estimate parameters \(\alpha_t\), \(\beta_{1,t}\) and \(\beta_{2,t}\). Estimation of these parameters requires a sample of observations of variables \(R_i\), \(H_m\) and \(F_m\) taken over a period of time. Sample observations of variable \(R_i\) can be easily obtained from observed stock returns over a period of time. However, data for \(H_m\) and \(F_m\) will not be available. This is because it is practically difficult to measure the degree of rational behavior and irrational behavior prevailing in the markets. The only option will be use to use proxies of \(H_m\) and \(F_m\). For simplification purposes, we find a proxy for the variable \(H_m\). This means that we need to eliminate \(F_m\) in our regression model (equation 10). To do that we assume that market participants either behave rationally or irrationally when making a decision about a particular stock. In other words, market participants either respond to fundamental factors or non-fundamental factors affecting a particular stock. Mathematically, this means that the sum of the degrees at which market participants respond to either fundamental factors or non-fundamental factors should be equal to 1. Therefore we can represent the relationship between \(H_m\) and \(F_m\), mathematically as follows:

\[ F_{m,t} + H_{m,t} = 1 \] (11)

Thus we can eliminate \(F_m\) using the following equation:

\[ F_{m,t} = (1 - H_{m,t}) \] (12)

Substituting equation (12) for \(F_{m,t}\) in our regression model will result in the following regression model:

\[ R_{i,t} = \alpha_t + \beta_{1,t}(1 - H_{m,t}) + \beta_{2,t}H_{m,t} + \varepsilon_{i,t} \] (13)

As we can observe, instead of finding proxies of both \(H_m\) and \(F_m\), we now just need to find a proxy of \(H_m\). The question is what proxy should we use for \(H_m\)? Remember, \(H_m\) is a measure of the degree of irrational behavior prevailing in the markets. As earlier discussed, herding behavior and the disposition effect are the two most significant irrational behavioral attitudes prevalent in financial markets. This means that we can use measures of these two behavioral attitudes in financial markets, as a proxy of \(H_m\). The best option is to find a composite measure of these two behavioral attitudes. However, it is important to note that finding a composite measure is either be complex or mathematically impossible. The only option will therefore to use either a measure of the degree of herding behavior or a measure the disposition effect. To choose the behavioral attitude to use, we refer back to our definition of irrational behavior we
used in our analysis. Earlier, we defined irrational behavior as a situation whereby market participants do not make sensible decisions based on the available set of information. In other words we can say that irrational behavior is a situation whereby market participants decide to ignore their own set of available information when making a decision about a particular stock. The question is what happens when a market participant decides to ignore his own set of information? Obviously, he is most likely to follow the decisions of other market participants. In other words, if a market participant decides to ignore his own set of information, there is a high likelihood that he will decide to follow the herd. Thus, herding behavior is a behavioral attitude that suits most our own definition of irrational behavior and as such we will use it as a proxy of $H_m$. Now that we have decided to use a measure of herding behavior as a proxy of $H_m$, the next step is to decide on a particular measure of herding to use as a proxy. To do that we must assess common methods of herding behavior to find out if there are suitable for our analysis. There are two common measures of herding available in literature. There are the Christie and Huang (1995) approach (also called CH approach) and Chang et al (2000) approach (also called the CCK approach). In the CH approach, Christie and Huang (1995) argued that herding can be measured by using the cross-sectional standard deviations between stock returns and market returns as follows:

$$CSSD_t = \sqrt{\frac{\sum_{i=1}^{n} (R_{it} - R_{mt})^2}{n-1}}$$  (14)

where:

$CSSD_t$ is the cross-sectional standard deviation at time $t$; $R_{it}$ represents the observed stock returns on sector $i$ at time $t$; $R_{mt}$ represents returns of the stock market index at time $t$; $N$ is the number of firms. The CSSD of returns was then regressed against a constant and two dummies in order to identify the extreme market phases as follows:

$$CSSD_t = \alpha_0 + \beta_1 D_{Lt} + \beta_2 D_{Ut} + \epsilon_t$$  (15)

where:

$D_{Lt}$ is a dummy variable which equals the value of unity, if the market returns on time $t$ lies in the extreme lower tail of the distribution, or zero otherwise. $D_{Ut}$ is a dummy variable which equals to unity if market returns on time $t$ lies in the extreme upper tail of the distribution, or zero otherwise. According to Economou et al, (2010:7), in accordance with this model, herding is present if if $\beta_1$ and $\beta_2$ are statistically significant and when individual returns herd around the market consensus, dispersions are predicted to be relatively low”. This means that this model is suitable for detecting herding behavior in financial markets and not the degree of herd behavior. Thus, since we are interested in the degree of herd behavior in a financial market, we decided not to use CH model measure of herding behavior as a proxy of $H_m$. Chang et al (2000) proposed an alternative model to the one proposed by Christie and Huang (1995). Instead of using cross-sectional standard deviation of returns (CSSD), Chang et al (2000) uses cross sectional absolute standard
deviations of returns (CSAD), defined as follows:

\[
CSAD_t = \left(\frac{\sum_{i=1}^{N_t}(R_{it} - R_{mt})^2}{N_t - 1}\right)
\]  (16)

where: \(R_{it}\) represents the observed stock returns on sector \(i\) at time \(t\); \(R_{mt}\) represents returns of the stock market index at time \(t\); \(N_t\) is the number of firms.

Finance theory, through the conditional CAPM, states that under stock market normal conditions a linear relationship can apply between CSAD and market returns. However, during market stress, if herding is present, a non-linear relationship between CSAD and market returns may also exist (see Economou, 2012:124). Hence, Chang et al (2000) proposed the following nonlinear relationship between CSAD of returns and market returns as follows:

\[
CSAD_t = \delta_0 + \delta_1 |R_{mt}| + \delta_2 (R_{mt})^2 + \varepsilon_t
\]  (17)

Economou et al (2010:8) explained how Chang et al (2000) model works as follows: “A statistically significant negative coefficient \(\delta_2\) implies the presence of herd behavior. This is likely to increase the correlation among individual asset returns, and the dispersion among asset returns will either increase at a decreasing rate or decrease in the case of severe herding. If market participants are more likely to herd during periods of large price movements, then there should be a less than proportional increase (or decrease) in the CSAD measure. In the absence of herding, the relationship is linear and increasing, that is the dispersion increases proportionately with the increasing returns of the market.”

The description of how Chang et al (2000) approach works shows that this model is also suitable for detecting herd behavior and not measuring the degree of the of herd behavior in a financial market. As such we also decided not to use it as a proxy of \(H_m\). However, we decided to adopt a measure of herding which was proposed by Hachichah (2010). This is because his measure of herding can not only used for detecting herding, but can also be used to measure the degree of herding behavior in a financial market. It is therefore suitable for use as a proxy of \(H_m\). Hachichah (2010) measure of herding is based on GARCH models that assume dynamic volatility of the market trading volume and as well as the asset trading volume respectively. The GARCH models are as follows:

\[
V_{m,t} = a_m + b_m V_{m,t-1} + \varepsilon_t
\]
\[
h_{m,t} = \mu_m + \alpha_m h_{m,t-1} + \beta_m \varepsilon^2_{m,t-1}
\]  (18)

where:
\(V_{m,t}\) is the market trading volume at time \(t\); \(h_{m,t}\) measures the dynamic volume volatility of the market at time \(t\).

\[
V_{i,t} = a_i + b V_{i,t-1} + \varepsilon_t
\]
\[
h_{i,t} = \mu_i + \alpha_i h_{i,t-1} + \beta_i \varepsilon^2_{i,t-1}
\]  (19)

where:
\(V_{i,t}\) is the asset trading volume at time \(t\); \(h_{i,t}\) measures the dynamic volume volatility of the asset at time \(t\).

\[
H_{m,t} = \frac{1}{N_t} \sum_{i=1}^{N_t} [ (\mu_i - \mu_m) + (\beta_i \varepsilon^2_{i,t-1} - \beta_m \varepsilon^2_{m,t-1}) + (\alpha_i h_{i,t-1} - \alpha_m h_{m,t-1}) ]
\]  (20)

We therefore compute sample observations of
the variable $H_{m,t}$ using the above formula allows and also the corresponding sample observations of $(1 - H_{m,t})$. We then run a regression to estimate parameters $\alpha_t$, $\beta_{1,t}$ and $\beta_{2,t}$ described in equation (13). The result will be an estimated model of the regression model described in equation (13). The estimate model can be used to estimate out of sample observations of returns. Thus, it is a predictive stock return model that can be used to forecast future stock returns, developed using the behavioral approach. We present our predictive stock return model as follows:

$$R_{i,t}^* = \alpha_t^* + \beta_{1,t}^*(1 - H_{m,t}) + \beta_{2,t}^*H_{m,t}$$

(21)

where:

- $R_{i,t}^*$ is the estimated stock return of the $i$th asset at time $t$;
- $\alpha_t^*$ is an estimated parameter of $\alpha_t$, defined in equation (13);
- $\beta_{1,t}^*$ is an estimated parameter of $\beta_{1,t}$, defined in equation (13);
- $\beta_{2,t}^*$ is an estimated parameter of $\beta_{2,t}$ defined in equation (13);

This predictive stock return model is a significant improvement on some of existing models that ignore the behavioral attitude factors in influencing stock returns. However, this model has possible weaknesses. These include the use of herding behavior as a proxy of the degree of rational behavior and also the assumption that market participants either behave rationally or irrationally. It is important to note that herding behavior is only one of irrational behavioral attitudes and as such it may not adequately capture the degree of irrational behavior in financial markets. It also important to note that market participants can partly behave rationally and irrationally when making decisions. Nevertheless, despite its weaknesses, the model seems to be intuitive. This is mainly because it was developed using a pure behavioral approach. However, its success can only be confirmed in an empirical study. Hence, further studies on this model should empirically test it and as well suggest improvements on its weaknesses.

4. CONCLUSION

Predicting stock returns is an important element of portfolio management. It does not only help portfolio managers and individual investors determine the value of their portfolios, but also help them to make strategic asset allocations. It is important to most stock return prediction models are based on fundamental factors that affect stock returns. In other words, most predictive stock return models are based on the assumption that market participants respond sensibly to information that affect stock returns. This is an assumption of rational behavior in stock markets have long been disapproved in several empirical studies. The failure of most predictive models might be due to their inability to incorporate irrational behavioral factors that may affect stock returns. As such there was need to develop predictive stock return models that incorporate irrational behavioral attitudes of market participants. Thus in this paper, we developed a predictive stock return model using the behavioral approach. Using a linear regression model, we modeled stock returns as
function of the degree of the presence rational behavior and irrational behavior in a particular market. Using the Hachichah (2010) degree of herding as proxy for the degree of herding and the assumption that sum of degrees of rational and irrational behavior equal to one, we argued that it possible to compute sample observations of degree of both rational and irrational behavior and use them together with sample observations of stock returns to estimate our regression model. The resultant estimated regression model is basically a predictive stock return model which can be used to estimate future stock returns. Possible weaknesses of the model include the use of herding behavior as a proxy of the degree of rational behavior and as well as the assumption that market participants either behave rationally or irrationally. Herding behavior is only one of irrational behavioral attitude s and as such it may not adequately capture the degree of irrational behavior. Furthermore, market participants may partly behave rationally or and partly behave irrationally when making a decision about a particular stock. However, despite the weaknesses, the model seems to be intuitive because it was developed using the behavioral approach. However, its success can only be confirmed in an empirical study. Hence, further studies on this model should empirically test it and as well suggest improvements on its weaknesses.

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