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Test of Endowment and Disposition Effects under Prospect Theory on Decision-Making Process of Individual Investors at the Nairobi Securities Exchange, Kenya

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Abstract

This study examined investment simulations on investors in the Nairobi Securities Exchange by adopting the Prospect Theory developed by Kahneman and Tversky in 1979. It revealed that the process of investment decision making deviates from standard finance principles and is based on "Behavioral Economics Theory". The study tested and identified two effects namely: the endowment effect or the tendency to become attached to assets even when better investment opportunities emerge and the disposition effect that is the tendency to sell assets that have gained value (winners) and keep assets that have lost value (losers). The study concluded that both endowment and disposition effects influenced the decisions made by individual investors. The gender, length of trading in the stock market and consulting financial investment advisors had no effect on endowment effect. Further, the study concluded that endowment effect is motivated by a higher regret of commission than regret of omission by investors.

Key words: behavioral finance, market efficiency, prospect theory, investor psychology, Nairobi Securities Exchange, Kenya

Introduction

The bedrock on which finance is theorized is the notion that financial markets are efficient. A market is efficient with respect to a particular set of information if it is impossible to make abnormal profits, other than by chance, by using this set of information to formulate buying and selling decisions (Fama 1970). The term market efficiency has two meanings. One meaning is that investors cannot systematically outwit the market. The other is that security prices are rational. Rational prices reflect only utilitarian characteristics such as risk and not value-expressive characteristics such as sentiment (Statman 1999). The traditional finance paradigm seeks to understand financial markets using models in which agents are "rational". Rationality means two things. First, when they receive new information, agents update their beliefs correctly, in the manner described by Bayes' law. Secondly, given their beliefs, agents make choices that are normatively acceptable, as in Savage's notion of Subjective Expected Utility (Barberis and Thaler, 2003).

Bayesian theory argues that the probability of an event can be viewed as the degree of belief of an "ideal" person. These ideal persons' beliefs are considered the most efficient ones even if they are completely subjective, as long as they are consistent and follow the basic axioms of probability theory. Accordingly rational decision making and

probabilistic reasoning should be based on the key axiom of indifference, where if concrete evidence does not exist regarding the relative likelihood of two events, these events should be considered equiprobable with one another. Bayesian theory provides the probabilistic framework within which rational investment decisions should be made on the basis of all relevant information. The assumption is that investors evaluate gambles according to the expected utility framework.

Expected utility model is a highly structured procedure for rational decision-making. Experimental work shows that people systematically violate the Expected utility theory when choosing among risky gambles (Barberis and Thaler, 2003). Other studies found that agents weigh outcomes and the probabilities associated with expected outcomes clearly violating the expected utility theory which requires that expected utility functions be linear in probabilities. Based on the deficiency of expected utility theory, alternative theories have been developed by different scholars. The non-expected utility theories include weighted expected utility theory (Chew and MacCrimmon 1979, implicit expected utility (Chew 1989, Dekel 1986), disappointment aversion (Gul 1991), regret theory (Bell 1982, Loomes & Sugden 1982), rank dependent utility theories (Quiggin 1982, Segal 1987, 1989, Yaari 1987), and prospect theory (Kahneman and Tversky1979 and Tversky and Kahneman 1986).

Of the non-expected utility theories, this study used the prospect theory since it is the most promising for financial applications (Barberis and Thaler, 2003). Most of the other non-expected utility models are quasi-normative models and they try to capture some of the anomalous experimental evidence by slightly weakening the axioms of expected utility theory. However, prospect theory is not a normative theory. It captures people's attitudes to risky gambles as parsimoniously as possible (Barberis and Thaler 2003). Tversky and Kahneman (1986) argue convincingly that normative approaches are doomed to failure, because people routinely make choices that are simply impossible to justify on normative grounds, in that they violate dominance and invariance.

People often fail to respond rationally to new information as they completely fail to follow the idealistic mathematical framework. Kahneman and Tversky (1979) found that under conditions of uncertainty, human decisions depart from those predicted by standard economic theory. Andrikopoulos (2006) posits that behavioral finance offers alternative explanations on the key question of why prices deviate from their fundamental values. The tendency of human beings to overreact and under-react in certain circumstances, deviating from Bayesian optimum rational decision-making, arises from psychological biases such as conservatism and the representativeness heuristic (Kaestner, 2005).

Since time and cognitive resources are limited, investors cannot analyze the data the environment provides optimally. Due to the finite nature of human information processing capacity, there is need for imperfect decision making procedures, or heuristics that arrive at reasonably good decisions cheaply. Human judgment may take heuristic shortcuts that systematically diverge from the basic principles of probability (Hirshleifer 2001).

These observations on the limited nature of human capability have opened a wider and intimate debate on the theoretical framework of finance found in the efficient market hypothesis. A growing number of studies in the late 1970s and through early 1980s showed anomalies comparing with this theory casting serious doubts on its efficacy. From the 1990s a lot of focus of the academic discourse shifted away from the analysis of these anomalies comparing the efficient market hypothesis towards a deeper study of human psychology as related to financial market leading to the growth of behavioral finance.

Decourt, Accorsi and Neto (2005), while studying behavioral finance and the investment decision making process in the Brazilian financial market using an investment simulator tested and identified endowment effect, disposition effect, fear of regret and framing effects. The results showed that investors had their rationality affected by psychological

aspects. Financial psychology has conclusively demonstrated that human cognition has many irrational components even when we are trying to make rational decisions. Cognitive illusions in intuitive judgment are most likely to affect investment decisions (Kahneman and Riepe 1998).

There is no doubt that an understanding of how investor psychology impacts on investment outcomes will generate insights that benefit financial advisory relationship. The enhanced relationship will be a portfolio to which the advisor can comfortably adhere while fulfilling the client's long-term goals. The study of behavioral finance will help understand what underlies the decisions creating investment goals by individual investors. Behavioral finance is focused on the application of psychological and economic principles to investigate what happens in markets in which agents display human limitations and complications for the improvement of financial decision-making. It is also defined as the application of psychology in finance (Statman, 1999).

Proponents of behavioral finance posit that it has three main themes heuristics, framing and market inefficiencies: Heuristics imply that people often make decisions based on approximate rules of thumb, not strictly rational analyses. Framing asserts that the way a problem or decision is presented to the decision maker will affect their action while market inefficiencies attempts to explain observed market outcomes which are contrary to rational expectations and market efficiency. These include mispricing, non-rational decision making, and return anomalies (Shefrin, 2002). It is with this background that this study is founded as it attempts to delve deeper on the effect of behavioral finance in the context of the NSE in Kenya.

Statement of the Problem

The de facto reigning financial paradigm, the Efficient Market Hypothesis (EMH) / Capital Asset Pricing Model (CAPM), duo asserts that securities prices are rational and that they reflect only the fundamental or "utilitarian" characteristic such as risk but not "psychological" or "value expressive" characteristics such as sentiment. Although standard finance represents a great evolution to the understanding of financial market's mechanisms, it is not a perfect tool. Today's standard finance is so weighed down by anomalies that reconstructing financial theory along behavioral lines makes sense (Statman 1999).

Thaler (1999) concludes: "In many important ways, real financial markets do not resemble the ones we could imagine if we only read finance textbooks". The investors' limited knowledge of the investment process can compromise the risk management mechanisms available today. Better decisions are made by knowing the mechanism for making investment decision and it does constitute an important step to risk control management. Harbaugh (2003) affirms that simple economic models are often poor predictors of human behavior. The need for more detailed studies of human behavior in the process of making investment decisions cannot be underscored in order to improve theory.

The central focus of this study was to establish whether or not individual investment decisions vary from the assumptions of rationality. Statman (1999) argues that market behavior often diverges from what we would expect in a rational efficient market and that standard finance basically is built on rules about how investors "should" behave rather than on principles describing how they actually behave.

In view of this, it is necessary establish whether behavioral factors influence decisions by individual investors trading at the Nairobi Securities Exchange (NSE). Whereas many studies have been carried out in other developed financial markets, little is known about the effects of behavioral factors on individual investors' decision making in Kenya. Thus, this study aimed at addressing this question "Do behavioral effects influence investment decision making by individual investors at the NSE?"

Objectives of the Study

The study objectives were threefold as follows:

a) To establish if there are behavioral effects in individual investment decision-making process at the NSE.
b) To identify the existence of endowment effect on the decision making process of individual investors at the NSE.
c) To identify the existence of disposition effect on the decision making process of individual investors at the NSE.

This paper is organized as follows: section one is on the introduction and objectives of the study, section two contains literature review on prospect theory, endowment effect and disposition effect. Section three details the research design while section four discusses the results. Section five concludes with the conclusion and recommendations.

Literature review

Modern finance theory is grounded in one basic premise that markets are efficient because investors are always rational and they either maximize returns for an acceptable level of risk, or minimize risk without sacrificing returns. Markowitz (1952) assumes investors care about two statistical properties of his portfolio: the mean return and the variance, later defined as concept of risk. Investor does consider expected return a desirable thing and variance of return an undesirable thing. Rational investor should maximize the desirable factor and minimize the undesirable one. Sharpe (1963) proposes a more simple technique of portfolio analysis, called diagonal model. The major characteristic of the model is the assumption that the returns of various securities are related only through common relationship with some basic underlying factor. The return from any security is determined solely by random factors and this single outside element: the security's beta. Sharpe (1963) and Lintner (1956) developed the CAPM, which relate the expected return to the standard deviation of assets to verify if a particular asset is being negotiated in the fair price. Sharpe (1963) uses the beta to measure the relevant risk, the systematic risk. The last pillar of modern theory of finance is the EMH developed by Fama (1991).

Ample empirical evidence show the existence of "effects" that the CAPM cannot explain or contradict the efficient market hypothesis in that all relevant information is not fully reflected in prices. They indicate either market inefficiency or inadequacies in the underlying asset-pricing models. There are three types of market anomalies namely, fundamental anomalies, technical anomalies, and calendar anomalies which contribute to irregularities in stock's performance.

In the last years from questionings raised about market behavior, emerges what Haugen (2000) calls "New Finance". The markets are no longer considered efficient: once researches evidence that the investors are not always rational in their decision-making. Behavioral finance, commonly defined as the application of psychology to finance has become a very hot topic, generating new credence with the bursting of the tech-stock bubble in march of 2000. The "dot-com bubble" or sometimes the "I.T. bubble" was a speculative bubble covering roughly 1995-2000 with the National Association of Securities Dealers Automated Quotations (NASDAQ) peaking at 5132.52 points by March 2000. During this period stock markets in western countries realized an exceptional rise in their value from growth in the new internet sectors and related fields.

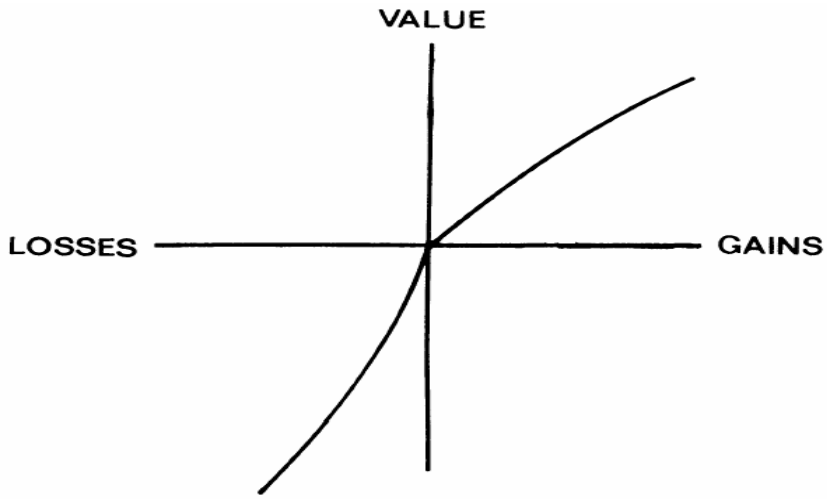
Behavioral finance applies scientific research on human and social cognitive and emotional biases to better understand economic decisions and how they affect market prices, returns and the allocation of resources. This field is primarily concerned with the rationality, or lack thereof, of economic agents. Behavioral finance models and interprets

phenomena ranging from individual investor conduct to market-level outcomes (Statman 2006). According to Lintner (1956) behavioral finance is "the study of how humans interpret and act on information to make informed investment decisions" (cited in Brabazon, 2001). It is also defined as the application of psychology in finance (Statman, 2006). Behavioral finance offers alternative explanations on the key question of why prices deviate from their fundamental values (Andrikopoulos, 2006). Its key argument is based on the claim that human behavior and perceptions represents two crucial elements of financial decision making (Hirshleifer, 2001). Financial psychology studies have conclusively demonstrated that human cognition has many irrational components, even when we are trying to make rational decisions. Cognitive illusions in intuitive judgment are most likely to affect investment decisions according to Kahneman and Riepe (1998).

Prospect Theory

The Prospect Theory was first developed by Kahneman and Tversky in the Prospect theory published in 1979. It simply captures people's attitudes to risky gambles as parsimoniously as possible. Kahneman and Tversky, (1979), in their landmark paper, defined value in terms of gains and losses rather than final wealth positions. The value function is consistent with the way gambles are generally framed and with the way people perceive attributes such as brightness, loudness or temperature relative to earlier levels. It has a kink at the origin. People behave differently to gains and losses. The value function for losses is convex and relatively steep while the value function for gains is concave and not quite so steep. This indicates a greater sensitivity to losses than to gains. People are risk-averse over gains and risk seeking over losses. A value function, which satisfies these properties, is displayed in Figure 1.

Figure 1 A hypothetical value function



Source: Kahneman and Tversky (1979)

The interpretation of the value function allows concluding that losses hurt more than gains satisfy, implying that decision makers will be risk averse when choosing between gains and risk seeking when choosing between losses Kahneman and Tversky (1979) observe that people often weight an event extremely improbable as impossible to happen, and they consider the event extremely probable as certain. People tend to overweigh small probabilities and are more sensitive to differences in probabilities at higher probability levels. A 20 percent jump in probability from 0.8

to 1 is more striking to people than a 20 percent jump from 0.2 to 0.25. This feature has been known as the "certainty effect". The overweighting of small probabilities introduces risk-aversion over gambles which have a small chance of a large loss (Barberis and Thaler, 2003)

The important ingredient in behavioral finance models is the assumption about preferences, or how investors evaluate risky gambles and assign weights to them. Kahneman and Tversky (1979, 1992) argue that decision-makers facing risky prospects consistently confuse issues of form and substance.

Thaler, (cited by Bernstein, 1996) decided to ask a few friends how much they would be willing to pay to eliminate a one-in-1, 000 chance of immediate death and how much they would have to pay to willingly accept an extra one-in-1, 000 chance of immediate death. What he found was that they wouldn't pay much for the extra margin of safety but demanded huge sums to accept additional risk, which is not, strictly speaking, rational. The deviation from rationality and the continued indifference between form and substance in investment decision making is as a result psychological biases and these behavioral anomalies violate the standard theories in economics.

Endowment Effect

Thaler (1980) described the endowment effect, founded by Kahneman, Knetsch and Thaler (1991) as the fact that people often demand much more to give up an object than they would be willing to pay to acquire it. It implies that when a person comes into possession of a good, he or she gives to it a higher value than before possessing it. The endowment effect has the consequence to lead people to give more weight to a loss than to a foregone gain and, consequently, for this reason it is influenced by the loss aversion.

The endowment effect is founded in Kahneman, Knetsch and Thaler (1991) experiment. 77 students were randomly assigned to three conditions .One group, the Sellers, where given mugs and asked whether they would be willing to sell the mugs .A second group of Buyers were asked whether they would be willing to buy the mug. The third group, called choosers, were not given a mug but were asked to choose, for the prices, between receiving a mug or that amount of money. The choosers behaved more like the Buyers than sellers. Kahneman, Knetsch and Thaler (1991) believe that the endowment effect is an implication of loss aversion.

The Disposition Effect

The disposition effect according to Ritter (2003) refers to the pattern that people avoid realizing paper losses and seek to realize paper gains. For example, if someone buys a stock at $30 that then drops to $22 before rising to $28, most people do not want to sell until the stock gets to above $30. The disposition effect manifests itself in lots of small gains being realized, and few small losses. In fact, people act as if they are trying to maximize their taxes! Weber and Camerer (1998) describe the disposition effect as: 'the tendency to sell assets that have gained value (winners) and keep assets that have lost value (losers)". They realized an experiment where subjects bought and sold shares in six risky assets. Subjects did tend to sell winners and keep losers, exhibiting the disposition effect.

Shefrin and Statman (1995) in their seminal paper, as the title of their work showed that the people tend to have "disposition to sell the winners too early and to ride the losses too long". According to Prospect theory, if an individual investor is risk-averse over gains, she should sell a stock that is trading at a gain anchored to the purchase price; and if she is risk seeking over losses she should be inclined to hold on a stock that is trading at a loss (Kahneman and

Tversky 1979). Odean (1996), while studying the US market, obtained data by a brokerage house for 10,000 accounts and tested the disposition effect. He found that there is an investors' preference to sell winners and to hold the losers, except in December, but this, he said, can be explained by tax reasons. He showed that this investor behavior cannot be motivated by rebalancing portfolio reasons or by reluctance to increase the trades to minimize the transaction costs.
Brabazon (2000) explains that being adverse to regret results in people fearing the feeling that they are responsible for a bad decision. People are most likely to regret actions (or even failures to act) that they perceive as being "out of character" for them. If they followed someone's recommendations in straying from their normal path, the regret will easily turn into resentment and anger. They aim to achieve feats that make them feel proud and avoid those that make them feel shame or regret. Nofsinger (2007) shows that regret aversion results in a 'disposition effect' where investors sell well performing stocks too soon and ride poorly performing stocks for too long. Regret aversion may also result in what is known as herding behavior as an investor feels more comfortable investing in a popular stock if everyone else believes that it's good one (Brabazon, 2000).

Shiller (2000), argues that, individual investors who are unsure about what stock to invest in, are adverse to regret and happy to go with majority rulings; decide to opt out of making the decision. Instead they attempt to free ride the information that the first investor must have had. This notion suggests that it is reasonable for, less sophisticated investors to mimic financial gurus or to seek advice from successful investors, since using their own information/knowledge would incur a higher cost. This particular aspect of investor behavior can lead to "speculative bubbles" which historically have resulted in stock market crashes.

Research Methodology

The study adopted an exploratory approach using descriptive survey design to investigate the behavioral biases/factors that affect investment decision making by individual investors trading shares at the Nairobi Securities Exchange (NSE). The research was conducted in 2008 on 100 individual investors trading shares in listed companies in the NSE. At the time of study, there were about 750,000 account holders at the NSE (CMA, 2008) operating accounts with the Central Depository Settlement System and 19 licensed and operational stock brokerage firms.
Five individual investors were randomly selected each from the nineteen stock brokerage firms and the public gallery during the day's trading. A semi structured questionnaire consisting of both open-ended and closed-ended questions was used.
The study adopted scenario analysis by simulating investment decisions to test the endowment and the disposition effects.

Data Analysis Procedure

The study adopted the data analysis method used by Decourt et al (2005) in a study on behavioral finance and investment decision making process in the Brazilian financial market. The method was modified using the prospect theory of Kahneman and Tversky (1979), the lead model of this study. This allowed a stage-by-stage decision process enabling the respondent to simulate some investment decisions.

First Scenario

The respondents were presented with Ksh 180,000 in cash to invest in stocks, dollars and government bonds. The outlook of the Kenyan economy was presented as favorable and presented good prospects for listed companies. The most rational decision expected was higher investment in stocks than other assets.

The economic outlook was then assumed unfavorable for the Kenyan economy. The respondent was presented with Ksh 120,000 in cash to invest in the three assets. The endowment effect was tested with a view of answering the question "Will investors avoid change and become attached to their investment?"

Second Scenario

The respondents were presented with hypothetical cases to simulate investment decisions in testing the disposition effect. The respondents were asked to states who was more likely to be upset between an hypothetical investor A who initially bought a share at Kshs 100, and hypothetical investor B who had bought the same stock when it was trading at Kshs 200 with the stock closing at Kshs 160 yesterday and currently trading at Kshs 150. The disposition effect was tested with a view to ascertain whether investors would sell winners and hold on to losers.

The research analyzed the applied tests and their effect in each of the questions asked in the research as provided in the following table.

Table 1: Tests and Effect to be Examined in The Study

Effect	Test	Objective	Results indicating the existing effect
Endowment	Compare the composition of a portfolio for the scenario of positive and gloomy economic outlook.	Verify if respondents become attached to their assets (Endowment effect).	**Significant difference among portfolios. (Students t-test)**
Disposition	**Compare the difference between the choices taken in selling losing and gaining stocks**	**Verify if there is a tendency of keeping losing assets (disposition effect).**	**Significant difference among choices made. (Chi-square)**

Source: Author

Data Analysis and Interpretation

The response rate was 100 % where 56% of the respondents were male and 44% were females. Majority (50%) of the respondents had college education while 39% had university education. This suggests that many of the respondents had a level of enlightenment necessary to make rational investment decisions and to respond accordingly to changes in the

market. The study revealed that majority (76%) of the respondents had been trading in the stock market for a period of less than 5 years. This confirms that interest in stock market trading for retail investors in Kenya is a new phenomenon. Majority (84%) of the respondents had made share transactions not exceeding ten in the three months preceding the study. This suggests that many of the investors did not actively trade with their stocks and 34% of the respondents held to their stocks for a year or longer while 11.8% held on the stocks for a period between 6 months and one year. The average stock holding period was found to be 7.81 months with a standard deviation of 6.021. this suggest that majority of the investors are short term traders while running a risk of lost opportunities to maximize returns by holding to shares for long without trading.

Majority (61%) sought professional financial advice while 39% did not and that for majority of the respondents made decisions influenced by the popular opinion about the market. The findings show that many of the investors were happy to conform to the crowd than to follow the advice from professional investment advisors even though majority sought for it. They were susceptible to influences to buy or sell stocks that were not necessarily based on the rational analysis of the situation in the market. This evidences herding behavior by respondents.

Investor Rationality

A positive economic outlook was presented to the respondents where they were required to invest Kshs 180, 000 in three portfolios namely stocks, dollars and government bonds. Majority (64.4%) of the funds would be invested in stocks. An average of 22.5% of the funds would be invested in government bonds while dollars would attract the lowest investment at 13%. This shows that the majority of the respondents would make the expected financial decisions in the prevailing economic and market conditions.

The Endowment Effect

When the economic outlook is presented as pessimistic, majority (77%) of the respondents would not make a portfolio change while only 23% would change their mix of assets in the unattractive economic scenario. The respondents did not invest as expected by standard finance principles as they became attached to their investment. The endowment effect was identified with investors in the experiment. This is consistent with the findings of Kahneman and Tversky (1979) and Decourt, Accorsi and Neto (2005).

The study revealed that when faced with unattractive economic outlook and poor prospects in the stock market; majority of those that would make changes would invest in government bonds (table 1). The investors did not invest as expected by rationality principles as a significant investment should have been made in dollars than in any other asset. Generally the findings are consistent with the findings of Decourt, et.al (2005). Investors had their rationality affected by psychological aspects as their investment decisions do not agree with the principles of rationality.

A chi-square test (table 2) was used to determine whether there were significant differences between groups in their decision to shift or maintain their combinations. The findings show that more males compared to females would change their combinations. The differences were however not significant. The findings show that the gender of the investor does not influence endowment effect. The study showed that the length of presence of investor in the stock market does not influence endowment effect. Further, some of those seeking professional advice would make a shift compared to those that never sought professional advice, though the differences were also not significant. This emphasizes the observation that investors are more likely influenced by popular opinion about the market than professional investment advice.

The Disposition Effect

The tendency to keep losing assets known as disposition effects was tested. The respondents were asked to state who was more likely to be upset between an hypothetical investor A who initially bought a share at Kshs 100, and hypothetical investor B who had bought the same stock when it was trading at Kshs 200 with the stock closing at Kshs 160 yesterday and currently trading at Kshs 150. The majority (75%) of the respondents believed that investor B was more upset while 21% said A was more upset. When asked why the investor is more upset, majority of the investors showed a tendency to anchor on the purchase price of the stock. Consequently investor B feels a greater loss than investor A.

The respondents were asked to assume that they were holding in two different accounts two block of shares A and B but of same company. They were required to state the one they would sell in the prevailing circumstances. Majority of the respondents (68%) revealed that they would sell stock A that had made gains while 28% of the respondents would opt to sell stock B to avert further loses. It shows that the latter's sale decision is motivated by a desire to minimize the losses while the former would sell to maximize the gains.

The findings show that investors have the tendency to sell assets that have gained value and keep assets that have lost value. The investors were affected by the disposition effect, a tendency of keeping losing assets. This is consistent with the breakthrough findings of Kahneman and Tversky (1979), that, if an individual investor is risk-averse over gains, she should sell a stock that is trading at a gain anchored to the purchase price; and if she is risk seeking over losses she should be inclined to hold on a stock that is trading at a loss.

Another scenario presented to the respondents was of two investors G and L. Investor G is presented to have failed to take up an opportunity to switch from company X to company Y which would have increased his fortune by Kshs 200,000. Investor L on the other hand moves from company Y to company X and also misses the opportunity to make Kshs 200,000 had she stayed on. The respondents were asked to state who of the two investors would be more upset. Many of the respondents reported that L would be more upset (64%) than G (28%).Investor G has missed opportunities while L has failed attempts. This shows that the investors will most deeply regret outcomes of commission than outcomes of omission although in economic terms the outcomes are the same. A chi-square test was used to find out whether there were significant differences between the two groups of respondents.

The study showed that 85.9% of the respondents that reported investor L to be more upset would not change their investment combination in scenario one above. On the other hand, 53.6% of those that said investor G to be more upset would not change the combination. The chi-square test results shows that the differences between the two groups were significant at $p<0.05$. The findings show that the respondents deeply upset by failed attempts were more likely to avoid changing their portfolio even when the market conditions demanded otherwise. The findings suggest that the endowment effect is most likely as a result of a higher regret of commission than regret of omission.

Investors who regret missed opportunities are observed to most likely adjust with the market conditions implying that they take more risks than those people who regret attempts that failed. They are most likely to hold a higher proportion of their wealth in stocks.

Conclusion, Summary Of Findings And Recommendations

Summary of Findings

The study found out that investors did not invest as expected by standard finance principles as they became attached to

their investment. The endowment effect was identified with investors in the experiment with 23% of the respondents changing their portfolio mix while 77% failed to change even when the economic outlook demanded such a change. The gender, length of trading in the stock market and consulting financial investment advisors had no effect on endowment effect. Male investors were observed to make a better diversified portfolio than female investors.

The findings also show that investors deeply upset by failed attempts were more unlikely to change their portfolio unlike investors who regretted missed opportunities. 85.9% of the respondents deeply upset by failed attempts would stick with their investment combination whereas 53.6% of those deeply upset by missed opportunities would not change the combination. The latter group are observed to most likely change with the market conditions implying that they take more risks than those people who regret attempts that failed. They are most likely to hold a higher proportion of their wealth in stocks. The endowment effect is most likely as a result of a higher regret of commission than regret of omission.

Another behavioral effect found was the disposition effect. The investors were affected by the disposition effect, a tendency of keeping losing assets. Majority of investors, 68.0% showed the tendency to sell assets that have gained value (winners) and (28.0%), keep assets that have lost value (losers).This is consistent with the breakthrough findings of Kahneman and Tversky (1979).

Limitations of the Study

A limitation of the study lay in the fact that the experiment was carried out using assumed transactions rather than pure transactions which can make the respondents take risk differently than those taken in real life investment. Another limitation is that some of the respondents showed inadequate knowledge of the financial market requiring more time in assisting them interpret and record the data collection form.

Conclusion

The collaboration between finance and other social sciences that has become known as behavioral finance has led to a profound deepening of our knowledge of financial markets. This interdisciplinary approach is necessary for future studies to fully understand the underpinnings of investor psychology. Indeed, we have to distance ourselves from the presumption that financial markets are efficient, and that price changes always reflect genuine information. Evidence from behavioral finance helps us to understand, for example, that the recent stock worldwide stock market boom, and then crash after 2000, had its origins in human foible and arbitrary feedback relations, must have generated real and substantial misallocation of resources. The challenge for economists is to make this reality a better part of their models.

Recommendations

In further research, it is important to bear in mind the demonstrated weaknesses of efficient markets theory and maintain an eclectic approach. While theoretical models of efficient markets have their place as illustrations or characterizations of an ideal world, we cannot maintain them in their pure form as accurate descriptors of actual markets.

Further research can also be done to establish whether or not the institutional investors have their investment decisions affected by behavioral effects. To enrich further researches in this field, researchers may conduct a longitudinal study on sampled investors and use quantitative data available from their trading accounts.

The observations of this study point out the need for more efforts to increase investor education to improve knowledge in financial markets. Increased investor education will improve the help reduce the influence of behavioral effects in rational investment decision making process.

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Appendix

Table 2: Respondents Revised Investment Choices

Stocks		Dollars		Government bonds	
Amount	**%**	**Amount**	**%**	**Amount**	**%**
32,455	27.05	33,000	27.50	54,545	45.45

Source: Research Findings

Table 2 shows that when faced with unattractive economic outlook and poor prospects in the stock market; majority of those that would make changes would invest in government bonds (45.45%). The investors did not invest as expected by rationality principles as a significant investment should have been made in dollars than in any other asset.

Table 3: Chi-Square Tests On Decision To Shift Or Maintain Their Combinations On Investment

	Would you change your combination from the ones you indicated above?		Total
Sex	**Yes**	**No**	**p-value**
Male	15 (26.8%)	41 (73.2%)	0.310
Female	8 (18.2%)	36 (81.8%)	
Length at stock market			
Below 5 Years	16 (21.1%)	60 (78.9%)	0.410
Above 5 Years	7 (29.2%)	17 (70.8%)	
Seeks professional advice			
Yes	13 (21.3%)	48 (78.6%)	0.616
No	10 (25.6%)	29 (74.4%)	

Source: Research Findings

Table 3 show that 26.8% of the males compared to 18.2% of the females would change their combinations. The differences were however not significant as evidenced by $p>0.05$.The findings show that the gender of the investor does not influence endowment effect. It can also be seen that 29.2% of those that had been trading for more than five years would make changes compared to 21.1% of the investors of less than five years in the stock market. The differences were also not significant at $p<0.05$. This shows that the length of presence of investor in the stock market does not influence endowment effect. Further, 25.6% of those seeking professional advice would make a shift compared to 21.3% of those that never sought professional advice. The differences were also not significant at $p<0.05$. This shows that extent of information about the fundamentals of stock markets does not free investors from the endowment effect. This emphasizes the observation that investors are more likely influenced by popular opinion about the market than professional investment advice.