THE BEHAVIOR OF MALAYSIAN STOCK MARKET INVESTORS: A PROSPECT THEORY PERSPECTIVE

By

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ABSTRAK

Kajian ini adalah daripada perspektif perlakuan ke atas kewangan korporat dan bertujuan menerangkan perlakuan pelabur dari segi psikologi, terutamanya melalui penerangan menggunakan "Prospect Theory". Dalam kajian ini, perlakuan pelabur diukur melalui jumlah urusniaga dan reaksi terhadap keuntungan luar dugaan syarikat. Adalah dijangkakan bahawa jumlah urusniaga akan meningkat jikalau keuntungan sebenar melebihi dari keuntungan yang dijangkakan. Kajian ini menggunakan sebanyak 109 syarikat yang disenaraikan di papan utama Bursa Malaysia untuk enam suku tahun bermula suku ketiga tahun 2001. Keputusan menunjukkan perlakuan pelabur adalah berbeza daripada apa yang dijangkakan, dan perlakuan ini tidak dipengaruhi oleh saiz syarikat. Walaubagaimanapun, dengan menggunakan analisis regresi ke atas jumlah urusniaga, didapati pelabur lebih memberikan perhatian kepada harga sesuatu saham dan saiz syarikat berkenaan.

ABSTRACT

This research comes from a behavioral viewpoint on corporate finance and tries to explain the behavior of investors from a psychological approach, specifically by using prospect theory. The behavior of investors is captured through trading volume and the reaction is based on earnings surprise during earnings announcements. It is hypothesized that trading volume and earnings surprise is positively correlated, thus, predicting that investors would trade more during positive earnings surprises compared to negative earnings surprises. The sample of this study is 109 companies from the main board of Bursa Malaysia over a period of six quarterly earnings announcements. The results indicate that this behavior is not exhibited by investors and that this relationship is not influenced by firm size either. Nevertheless, a regression model on trading volume indicates that investors are more concerned with stock price and firm size rather than earnings surprise when they trade during earnings announcements.

Chapter 1

INTRODUCTION

1.1 Introduction

The field of corporate finance has been largely dominated by the efficient markets hypothesis (EMH) in explaining phenomena in the financial markets. Most of this research has been centered on the assumption that market players are efficient and thus, are rational decision makers armed with perfect or near-perfect information. Nevertheless, it is observed in the real world that not all market players are rational and efficient decision makers. As such, a behavioral approach has been advocated to explain these deviations from the market efficiency theory.

Specifically, this paper focuses on the behavior of investors as market players and how they react to earnings news announcements. Investors are thought to be irrational market players because most of them do not have access or rather instant access to information. Previous research has shown that investors tend to react substantially more positively to positive earnings surprises and less negatively to negative earnings surprises (Frino, Johnstone, & Zheng, 2004; Ding, Charoenwong, & Seetoh, 2004). This asymmetric behavior of investors supports the proposition that market players are irrational decision-makers. Consequently, this paper attempts to explain these asymmetric behaviors through the use of prospect theory (Tversky & Kahneman, 1979 in Frino *et al.,* 2004) as a behavioral approach in finance.

Prospect theory (Tversky & Kahneman, 1979 in Frino *et al.,* 2004) lends itself from psychological theory into the decision-making process. This theory postulates that people are generally loss averse or are reluctant to realize a loss rather than a gain because if by doing so, they face the painful reality of regret. Thus, prospect theory

(Tversky & Kahneman, 1979 in Frino *et al.,* 2004) is seen to be able to explain this "disposition effect" whereby market players are reluctant to realize losses due to psychological considerations rather than economic rationality as proposed by EMH (Myagkov & Plott, 1997; Devetag, 1999; Case & Shane, 1998; Loughran & Ritter, 2002; Frino *et al.,* 2004; Johnstone, 2002; Ackert, Church, & Deaves, 2003; Shefrin & Statman, 2003; Ding *et al.,* 2004; Stracca, 2004; Oehler, Heilmann, Lager, & Oberlander, 2003; Statman & Caldwell, 1987; De Bondt, 1998; Daniel, Hirshleifer, & Teoh, 2002; Fromlet, 2001).

1.2 Problem Statement

The ability to predict behavior of financial markets has long fueled research in corporate finance. The most prominent of the studies is the efficient market hypothesis (EMH) which was introduced by Fama, Fisher, Jensen, and Roll in 1969 (Fama, 1991; Fama, 1998). This line of research advocates an economically efficient market whereby the behavior of markets can be predicted and any anomalies of the market will be adjusted to the equilibrium in the long-run. Thus, this theory postulates that market players are informed and rational individuals that make efficient decisions. In other words, theory has been formed through formal analysis and describes the decisions of hypothetical fully rational individuals (Devetag, 1999).

Nevertheless, there is a new wave of research that argues that the market is not always efficient as market players are not always informed and rational in making decisions (Ackert *et al.,* 2003; Daniel *et al.,* 2002; De Bondt, 1998; Odean, 1998b). Consequently, these researchers advocate that there are other elements that affect the behavior of markets. More specifically, they argue that theory is derived mainly from psychological research and is aimed at pointing out behavioral patterns and cognitive

mechanisms that constitute actual decisions by real individuals (Devetag, 1999). Hence, a behavioral approach has been advocated to explain these deviations from the market efficiency theory and thus, is arguably, a better theory to explain financial markets behavior.

The few studies on behavioral finance show that this is still a relatively new area in explaining capital market phenomenon. More interestingly, to date, there have only been a handful of studies regarding behavioral finance in the Malaysian setting (Hameed & Ting, 2000). As such, there has not been much research on the behavior of investors and the Malaysian context.

Hence, this study investigates the behavior of investors reacting to surprises (positive and negative) in earnings announcements in the Malaysian stock market and attempts to explain this phenomenon through behavioral finance. More specifically, this research will be using prospect theory which was developed by Kahneman and Tversky in 1979 (in Frino *et al.,* 2004) to explain the behavior of investors. In addition, the effect of firm size on the behavior of investors during earnings announcements is also investigated as there has been previous research on firm size having an impact on trading volume during earnings announcement (Bamber, 1987; Christensen *et al.,* 2004).

1.3 Research Objectives

Subsequently, this paper aims:

(1)   to examine whether investors in the stock market react differently to positive earnings surprises compared to negative earnings surprises;

(2)   to examine whether this reaction can be explained by prospect theory;

(3)   to examine whether investors behave differently towards earnings surprises depending on firm size; and

(4)   to examine investors behavior during earnings announcement by incorporating financial information on firm size, firm risk, stock price, and growth.

1.4 Research Questions

In tandem with the objectives, this study attempts to answer the following questions:

(1)   Do investors in the stock market react by trading actively during positive earnings surprises?

(2)   Do investors in the stock market react by holding onto the stocks during negative earnings surprises?

(3)   If this reaction is true, what is the explanation for this behavior?

(4)   Does firm size affect the behavior of these investors?

(5)   Are investors influenced by other information during earnings announcements such as firm size, firm risk, stock price, and growth of the company?

1.5 Definition of Key Terms

Certain key terms need to be clarified to have a comprehensive understanding of this research. In particular, earnings surprise is the difference between actual and expected earnings. The "asymmetric behavior" of investors is defined as the tendency to react substantially more positively to positive earnings surprises and less negatively to negative earnings surprises (Frino *et al.,* 2004; Ding *et al.,* 2004).

Prospect theory (Kahneman & Tversky, 1979 in Frino *et al.,* 2004) is defined as a descriptive theory of human decision making under uncertainty and can be considered as the alternative to expected utility maximization theory which is a

normative theory that postulates about the way people should behave (Loughran & Ritter; 2002; van der Sar, 2004). Prospect theory has a value function defined on gains and losses relative to a reference point, rather than absolute levels of total wealth such as in a utility function (Loughran & Ritter; 2002; van der Sar, 2004). Two main features of this value function are that (Loughran & Ritter; 2002; van der Sar, 2004):

(1)   it is S shaped, convex in losses (people are risk seeking in the domain of losses) and concave in gains (people are risk averse in the domain of gains); and

(2)   it is asymmetric, steeper for small losses than for small gains (loss aversion as people's sensitivity to wealth losses is higher than to wealth gains).

Thus, the axioms of prospect theory (Kahneman & Tversky, 1979 in Frino *et al.,* 2004) which are *loss aversion* and *diminishing sensitivity* can explain the impact of losses on utility is more than the gains of the same magnitude (Myagkov & Plott, 1997). Hence, prospect theory provides insights into the behavior of market players "to sell winners too quickly, and to ride losses too long" (Dupont & Lee, 2002; Devetag, 1999; Case & Shane, 1998; Loughran & Ritter, 2002; Frino *et al.,* 2004; Johnstone, 2002; Leggio & Lien, 2003; Ackert *et al.,* 2003; Shefrin & Statman, 2003; Ding *et al.,* 2004; Stracca, 2004; Oehler *et al.,* 2003; van der Sar, 2004; Statman & Caldwell, 1987; De Bondt, 1998; Daniel *et al.,* 2002; Statman, 1999; Fromlet, 2001; Myagkov & Plott, 1997).

1.6 Significance of Study

This research has both theoretical and practical implications. From a theoretical standpoint, firstly, this study offers to extend the theory on explaining decisions of players in financial markets from a behavioral approach. Secondly, this research

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contributes some insights into the debate between a behavioral approach compared to the economic rationality approach in explaining phenomena in financial markets. Thirdly, this study provides further justification for the relationship between psychology and finance in explaining behaviors of market players in the financial markets. Fourthly, this study also extends research from a behavioral approach based on evidence from the Malaysian stock market context. Finally, this research has practical considerations for investors to be more careful and aware during negative periods as they are prone to irrational decision-making especially in riding losses rather than realizing losses.

1.7 Organization of Remaining Chapters

The following chapter reviews the current and relevant literature, and provides the theoretical framework and development of hypotheses which capture the variables and directional relationships that are involved in this research. Next, Chapter 3 outlines the methodology of the study in terms of research design, definition and operationalization of the variables, population and sampling frame, and the collection and analysis of data. Subsequently, Chapter 4 presents the results of the study and finally, Chapter 5 summarizes the findings of this research. This section also includes a discussion on the implications and limitations of this study with further direction for future research.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

This section shall review the literature related to this study and starts with the broad scope of behavioral finance and funneling down to the literature involved in the framework of this study, which includes the variables and the relationships involved in this study for the formation of hypotheses testing.

2.2 Review of the Literature

2.2.1 Behavioral Finance

The recognition that individual behavior influences affect market outcomes initiated the new research stream called behavioral finance (Ackert *et al.,* 2003). Thus, as stated, this line of research applies lessons from psychology to financial decision-making (Ackert *et al.,* 2003). Behavioral finance rejects a vision of market players' behaviors based on the maximization of expected utility (Stracca, 2004). This argument is based on the overwhelming evidence available that market players, both in controlled experiments and in real life situations, behave in a way that violate the axioms of expected utility (Starmer, 2000 in Stracca, 2004). Thus, it should be emphasized that the focus of behavioral finance is a positive theory of human behavior under risk and uncertainty, rather than a normative analysis of behavior which is more typical of the mainstream research (Stracca, 2004). Put in another way, behavioral finance represents an alternative way of looking at financial markets, which accommodates deviating behavior (van der Sar, 2004).

It is argued that the resurgence of behavioral finance was fueled by two main factors:

(1) the mounting empirical evidence that existing financial theories appeared to be deficient in fundamental ways; and

(2) the development of prospect theory (Kahneman & Tversky, 1979 in Olsen, 1998) as a model of decision making that is an alternative to subjective expected utility theory with more-realistic behavioral assumptions (Olsen, 1998).

Hence, the revival of behavioral finance is mainly due to the weaknesses of the theory of efficient markets. In particular, Ball (1994) argues specifically that this theory has three limitations:

(1) the theory fails to explain certain aspects of share price behavior, referred to in the finance literature as "anomalies" such as price overreactions, excess volatility, price underreactions to earnings, the failure of CAPM to explain returns, the explanatory power of non-CAPM factors, and seasonal patterns;

(2) defects in efficiency as a model of markets where it (a) fails to incorporate information acquisition and processing costs; (b) assumes homogeneous information and beliefs; (c) does not digress on the role of security analysts; (d) fails to consider transaction costs; and (e) ignores market microstructure effects; and

(3) problems in testing the efficiency model (for example, the expected returns model may be misspecified).

Thus, these limitations breed support for behavioral theories as an alternative to mainstream finance theories. The arduous task of determining whether markets are rational or otherwise lies ahead but only with new competing models can this question

be examined more clearly (De Bondt & Thaler, 1989). De Bondt and Thaler (1989) support the notion for new theory developments that are consistent with empirical facts and can offer new testable predictions rather than the traditional models which assume all agents to be fully rational. In addition, they state full support for models that incorporate nonrational expectations but argue that these are difficult to be tested. As such, the behavioral finance literature has not reached a level of maturity which would allow it to provide a coherent, unified theory of human behavior in market contexts and totally replace expected utility and mainstream economics and finance (Stracca, 2004). However, cumulative prospect theory (Starmer & Sugden, 1989 and Tversky & Kahneman, 1992 in Stracca, 2004) is approaching a point where behavioral finance can represent a unified theory of behavioral market players under risk which is argued to be possibly more superior (in some contexts) to expected utility (Stracca, 2004). Hong and Stein (1999) also presented a unified behavioral model whereby they argue theirs is one that meets all the three criteria, (1) the assumptions about investor behavior that are either a priori plausible or consistent with causal observation; (2) able to explain the existing evidence in a parsimonious and unified way; and (3) able to make a number of further predictions that can be subject to "out-of-sample" testing and that are ultimately validated, that a new theory should be expected to satisfy. Nevertheless, the meeting of psychological and financial research is necessary for a better understanding of the market mechanism in general and financial markets in particular (Muradoglu, 2002).

2.2.2 Prospect Theory and Behavior of Investors

As defined in Chapter 1, prospect theory (Kahneman & Tversky, 1979 in Frino *et al.*, 2004) is a psychological theory which has been applied to financial decision-making.

As such, this theory is consistent with a behavioral approach to understanding financial phenomena. The role of prospect theory in behavioral finance is one of significance as argued previously, the resurgence of this line of research was basically fueled by the development of this theory. Prospect theory rests on four axioms:

(1)   *Decision utilities*: Decisions reflect a maximization based upon decision utilities.

(2)   *Reference dependence*: The carriers of decision utilities are changes in states (prospects) as opposed to outcomes or final states. These changes are relative to some outcome called the reference point.

(3)   *Loss aversion*: The decision utility function is steeper in the losses than in the gains. That is, the negative of a given movement in the loss direction from the reference point outweighs a positive of an equal movement in the gain direction.

(4)   *Diminishing sensitivity*: The decision utility function is convex in the loss domain and concave in the gain domain (Kahneman & Tversky, 1979 in Myagkov & Plott, 1997).

The use of prospect theory in this research is consistent with the definition given by Dupont and Lee (2002):

> "*Prospect theory ... where losses impact the agent's utility more than gains of the same magnitude*".

In other words, prospect theory incorporates the following behavioral principles:

(1)   individuals encode outcomes as gains and losses relative to a natural reference point, usually given by their current status or by an aspiration level;

(2)   losses are valued more heavily than corresponding gains; and

(3)   individuals show a diminishing sensitivity to both gains and losses. That is,

adding gains yields a less than proportional marginal utility and adding losses

yield a less than proportional marginal disutility (Devetag, 1999).

Over the years, prospect theory has been used to explain numerous financial

phenomena in the financial literature. For example, prospect theory has been used in

explaining behavior in project terminations. It is suggested that managers tend to

become entrapped into losing projects and throw away good money after bad as they

attempt to rescue them due to loss aversion (Statman & Caldwell, 1987). Equally,

Case and Shane (1998) showed that a high terminal value having unequivocally

positive effects on risk taking in project decisions. This research emphasized on the

notion that framing matters to decision makers which is consistent with prospect

theory. The paper discusses in particular that decision makers' risk-taking

propensities are asymmetric around a reference point (a certain critical level of

performance). Anything framed below this critical level is a loss and people tend to be

risk seeking whereas, anything framed above this critical level is a gain and people

tend to avoid risk (Case & Shane, 1998).

Prospect theory has also been used as a foundation for the development of

decision models such as in Pennings, Candel and Egelkraut (2003) whereby they

propose a behavioral decision-making model that provides insight into how and why

owner-managers decide the way they do regarding hedging services. Specifically,

they assume that owner-managers evaluate the futures price as a gain or loss relative

to their internal reference price which is consistent with prospect theory being

reference dependence (Pennings *et al.,* 2003).

Loughran and Ritter (2002) uses prospect theory as a theory of bargaining in

initial public offers (IPOs). They argue that prospect theory can provide an

explanation for why issuers bargain hard over the offer price in a bad state, whereas they are pushovers in bargaining over the offer price in a good state (Loughran & Ritter, 2002). Thus, Loughran and Ritter (2002) used prospect theory to explain the underpricing of IPOs.

Benartzi and Thaler (1995) extended the "loss aversion" axiom of prospect theory to the equity premium puzzle. The puzzle involves a difference between the historical returns of stocks and bonds that is too high to be consistent with standard finance theory (Shefrin & Statman, 2003). They concluded that the equity premium puzzle reflects what they call "myopic loss aversion" which is the combination of two behavioral concepts: (1) investors are assumed to be *loss averse*, meaning that they are distinctly more sensitive to losses than to gains; and (2) even long-term investors are assumed to evaluate their portfolios frequently. In other words, two factors contribute to an investor being unwilling to bear the risks associated with holding equities, loss aversion, and a short evaluation period (Benartzi & Thaler, 1995). This finding is supported by Olsen (1997) in a research on professional money managers whereby he found that this group of investors exhibited "myopic loss aversion" as well.

Nevertheless, later researchers have extended Kahneman and Tversky's (1979) prospect theory to investment decisions to predict that investors have "the disposition to sell winners too early and ride losses too long" (Shefrin & Statman, 1985 in Oehler *et al.,* 2003). They labeled this behavioral phenomenon which is prompted by the human desire to avoid regret or losses as the "disposition effect" (Oehler *et al.,* 2003). The fear of regret leads investors to postpone losses whereas, symmetrically, the desire for pride leads to the realization of gains (Ackert *et al.,*

2003). Thus, due to this fear of realizing "actual" losses and the pride of realizing gains, investors tend to realize gains instead of realizing losses.

Several studies have used this extended version of prospect theory such as Frino *et al.* (2004) when examining the propensity of futures traders to realize profitable position, but "ride" equivalent losing positions. In a similar setting but using stock market investors, Odean (1998a) provided the same evidence that investors show a disposition to ride losses while realizing gains. He suggested that previous studies have shown rational reasons for investors to act in this way, but even when these rational motivations are controlled for, these investors still continue to prefer selling winners and holding losers. Hence, this behavior is consistent with prospect theory and is also consistent with a (mistaken) belief that their winners and losers will mean revert (Odean, 1998a). This is supported with studies that have shown the existence of short-term price reversals using daily, weekly, and monthly returns (Dyl & Maxfield, 1987; Bremer & Sweeney, 1988; Brown, Harlow, & Tinic, 1988; Howe, 1986; Lehmann, 1988; Rosenberg, Reid, & Lanstein, 1985; Jegadeesh, 1987 in De Bondt & Thaler, 1989). This finding of investors riding losses and realizing gains is replicated for investors in other countries such as Finland (Grinblatt & Keloharju, 2000) and Israel (Shapita & Venezia, 2001).

Johnstone (2002) in a paper evaluating decisions from the perspectives of both behavioral and prescriptive economics, highlighted prospect theory as an explanation of managers dissatisfied with the results of their investments, and having lost money, appear to compound their losses by selling out at prices less than their own estimates of the remaining financial worth of the failed assets. Prospect theory was used to explain the "escalation effect" in terms of risk seeking after losses.

A more direct approach by Ding *et al.* (2004) was the use of prospect theory to explain asymmetric stock market reactions resulting from an earnings surprise. Furthermore, their research also documented that the behavior of financial analysts, who are argued to have more information and therefore, have the ability to make efficient decisions, are also influenced by this behavioral pattern.

This paper is more interested in the extended version of prospect theory as a "disposition effect". This is tied very closely to the principle of aversion to regret as explained above. Nevertheless, Kahneman and Tversky (1982) give a more comprehensive description of this principle (Myagkov & Plott, 1997):

> "*Regret is a special form of frustration in which the event one would change in an action one has either taken or failed to take … regret is felt if one can readily imagine having taken an action that would have led to a more desirable outcome. This interpretation explains the close link between the experience of regret and the availability of choice: actions taken under duress generate little regret. The reluctance to violate standard procedures and to act innovatively can also be an effective defense against subsequent regret because it is easy to imagine doing the conventional thing and more difficult to imagine doing the unconventional one*" (p. 173).

2.2.3 Prospect Theory and the Malaysian Context

To date, there has been minimal research on behavioral finance in the Malaysian market. Nevertheless, it has been shown using data of KLSE from September 1993 to May 1994 that the Malaysian stock market is inefficient in the short and long-run as growth from one stock index can be used to predict growth of another stock index (Habibullah & Baharumshah, 1995). Hence, there is support for the violation of the EMH hypothesis and the expansion of behavioral finance as a means of explanation for these phenomena. However, more interestingly, research on prospect theory per se and the Kuala Lumpur Stock Exchange (KLSE) is scarce, if not the least. Hence, it would be very interesting to investigate whether the Malaysian investors behave in the same way postulated in the West. The aim here is to seek that similarity or difference

and further explain the cause (or one of the causes) of this behavior using psychological characteristics rather than traditional financial theory which is known to have unrealistic assumptions of the real world such as investors being efficient decision makers.

2.3 Theoretical Framework and Hypotheses

2.3.1 Earnings Surprises and Behavior of Investors

In a rational world, the link between earnings surprises and the behavior of investors would be very dependent on a reference or expected value of earnings. Should the actual earnings be as expected, then, there is no earnings surprise. However, the probability of getting such an event such is very low. More realistically, actual earnings and expected earnings will differ. Previous research such as Brown (2001) uses analyst estimates of earnings as the reference point to measure earnings surprises. Nevertheless, there has been research documenting that the use of formal accounting releases such as annual earnings and interim results to be proxies for earnings surprises (Ryan & Taffler, 2004). Hence, this gives support for past financial information as an indicator of expected earnings.

2.3.2 Trading Volume and Behavior of Investors

Practically most of the research on the stock market has been focused on certain events and how it has impacted stock prices (Bamber, 1987). Studies on trading volume have not been as numerous. Although both price and trading converge on a macro level such as economic factors, there are certain micro or individual aspects especially investors' reactions that are captured differently by these two variables (Bamber, 1987). More specifically, it is argued that a firm's stock returns are

dependent on trading volume and as such, trading activity would have a better reflection on stock valuation (Kim & Verrecchia, 2001).

Most of the literature on trading volume has been linked to profitability of return and have shown in general that this relationship is negatively correlated (Chordia, Subrahmanyam, & Anshuman, 2001; Wang & Chin, 2004; Wang & Yu, 2004; Ali & Sanda, 2000). Using trading activity as a proxy for liquidity, Chordia *et al*. (2001) argue that there is strong evidence to suggest stocks with high variability in trading activity would have lower expected returns. Wang and Chin (2004) using data on the Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE) showed that past returns and past trading volume are related in that low-volume stocks (losers) outperform high-volume stocks (winners). In addition, they showed that low-volume stocks experience return continuations whereas high-volume stocks demonstrate return reversals in intermediate horizons of 3-to 12-month periods. This is further supported with evidence from the futures markets (Wang & Yu, 2004). Although this explanation is consistent with liquidity premiums, Odean (1998b) provided a behavioral approach to this phenomenon arguing that trading volume increase when price takers, insiders, or marketmakers are overconfident. Nevertheless, Hameed and Ting (2000) found a positive relationship between trading volume and contrarian profits using data from the Malaysian market. Another research on the Malaysian scene which focused on the relationship between stock price and trading volume provided evidence that there is support for this relationship but the direction of causality is more pronounced from returns to volume rather than the reverse (Ali & Sanda, 2000). Thus, although the relationship between trading volume and returns are still in debate, these previous research lend support for trading volume as a classification of winners and losers and that, mean reversion exists in

intermediate horizons. More interestingly, the Malaysian evidence has shown support that trading price has an impact on trading volume compared to the reverse (Ali & Sanda, 2000).

Previous studies on trading volume have concentrated on investors' beliefs and their reaction surrounding an earnings announcement (Bamber, Barron, & Stober, 1997; Ziebart, 1990). Ziebart (1990) found that the change in abnormal trading activity is positively related to changes in aggregate expectations of the investors which reflect the surprise in the earnings announcement between the present week and the previous week. In other words, Ziebart (1990) hypothesized that stock trading volume would be positively related to earnings surprise regardless of the direction of this surprise so long as it is a deviation from the expected. Bamber *et al.* (1997) lend support for this when they studied trading volume and three different aspects of disagreement in investors' belief surrounding earnings announcements. They showed that all three dimensions of disagreement were positively related to trading volume around earnings announcements.

Nevertheless, it is argued that trading volume reflects investors' behavior or activity whereas stock prices capture the aggregation of investors' beliefs (Beaver, 1968 in Bamber, 1987 and Bamber & Cheon, 1995). Thus, since this paper is interested in measuring and explaining investors' behavior, trading volume would be a more precise measure compared to stock prices. In addition, trading volume has been found to be more sensitive to earnings information compared to price (Bamber, 1987). Furthermore, the reaction of trading volume to earnings announcements continues on longer than price reaction (Morse, 1981 in Bamber, 1987).

As previously discussed, trading volume is a better indicator of investors' beliefs than price and therefore, it is argued that volume reflects investor's behavior.

Although previous studies (Ziebart, 1990) have shown that trading volume is positively correlated with earnings surprise regardless of the direction of the surprise, the relatively low explanatory power of the variables included warrant further research into this matter. Using psychological theory as a base for investor behavior, specifically prospect theory, it is hypothesized that investors would be willing to sell winners too early and ride losses. Thus, investors would be willing to trade more for winning stocks or stocks that are seen to have a positive earnings surprise and trade less for losing stocks which are stocks having a negative earnings surprise because they do not want to realize losses. Hence, the relationship between trading volume and earnings surprise is as follows:

H1: The mean of trading volume for a particular stock experiencing positive earnings surprise would be higher than the trading volume mean of a stock experiencing negative earnings surprise.

2.3.3 Firm Size, Trading Volume, and Investor Behavior

Bamber (1987) on investigating unexpected earnings, firm size, and trading volume around quarterly earnings announcements, used firm size as a proxy for predisclosure information as this is known before the earnings announcement is made. This argument is based on the foundation that more public information is likely to be available for larger or more widely-followed firms (Christensen, Smith, & Stuerke, 2004). Hence, it is hypothesized that smaller firms are riskier as information on these companies are less available compared to bigger, usually more established firms (Bamber, 1987; Christensen *et al.,* 2004). As such, these firms seem to be harder to extrapolate earning expectations and consequently, are riskier. As risk and return have a positive relationship, it is hypothesized that smaller and inherently riskier firms

would provide higher returns compared to larger and less risky firms. Consequently, an investor would be biased on investing in small firms compared to larger firms when earning announcements are good or better than expected as he/she is assumed to be risk averse. Hence, investors are more likely to hold to small stocks and sell off or buy large stocks when an earnings surprise is seen to be positive or good news. Nevertheless, this bias would be of the opposite direction when earning announcements are negative whereby investors would be panic-stricken and sell off more of small stocks compared to larger stocks as they are seen to be riskier. Of course, this is with the assumption that larger stocks may pose a higher probability of "bouncing back" into good shape. Hence, investors would expect a mean-reversion for larger stocks and consequently, hold onto these stocks compared to smaller stocks during an event of negative earning surprises. Thus, we would expect:

H2: The mean of trading volume for a large firm stock experiencing positive earnings surprise would be higher than for a small firm stock experiencing positive earnings surprise.

H3: The mean of trading volume for a large firm stock experiencing negative earnings surprise would be lower than for a small firm stock experiencing negative earnings surprise.

2.3.4 Trading Volume, Earnings Surprise, Firm Size, Firm Risk, Stock Price, and Firm Growth

Inferred from the relationship in the first hypothesis, another hypothesis is developed which tests the relationship between trading volume and earnings surprise. In other words, this relationship is also hypothesizing that trading volume and

earnings surprise are positively correlated. In addition, this relationship is supported by previous research whereby unexpected earnings are positively related to the magnitude of trading volume reaction (Bamber, 1987) and as such, this relationship can be rewritten as the hypothesis of:

H4: The higher the earnings surprise, the higher the trading volume for a particular stock during earnings announcement.

Past researchers have also found that firm size to proxy for predisclosure information and this is found to be positively related to trading volume (Atiase & Bamber, 1994; Bamber, 1987). Hence, the relationship between firm size and trading volume is:

H5: The bigger the size of the firm, the higher the trading volume during the earnings announcement.

This relationship is very much linked to the perception of traders on the risk of the company due to insufficient information on smaller firms which are then, considered riskier (Bamber, 1987; Christensen *et al.,* 2004). Hence, it can be inferred that the perception of the firm's risk is related to trading volume and the relationship that can be hypothesized is:

H6: The higher the perceived risk of the firm, the higher the trading volume during the earnings announcement.

In addition, there is also argument that the reaction of investors during earnings announcements is influenced by stock price as well (Atiase & Bamber, 1994). Nevertheless, the relationship between stock price and trading volume is controversial (Atiase & Bamber, 1994). Due to this nature, the relationship hypothesized is:

H7: Stock price is related to the trading volume of the stock during an earnings announcement.

Another area that has an impact on investor's behavior is the growth expectations of firms. Skinner and Sloan (2002) found that growth stocks had stock prices positively associated with earnings surprises. Hence, this relationship can be translated to trading volume as growth stocks are seen to be safe and having a "bright future" by investors and therefore, they would be willing to trade more actively for the stock. Thus, the relationship hypothesized is:

H8: The higher the perceived growth of the stock, the higher the trading volume during earnings announcement.

Therefore, the relationships hypothesized from H4 to H8 can be incorporated into a model as shown below in Figure 2.1:
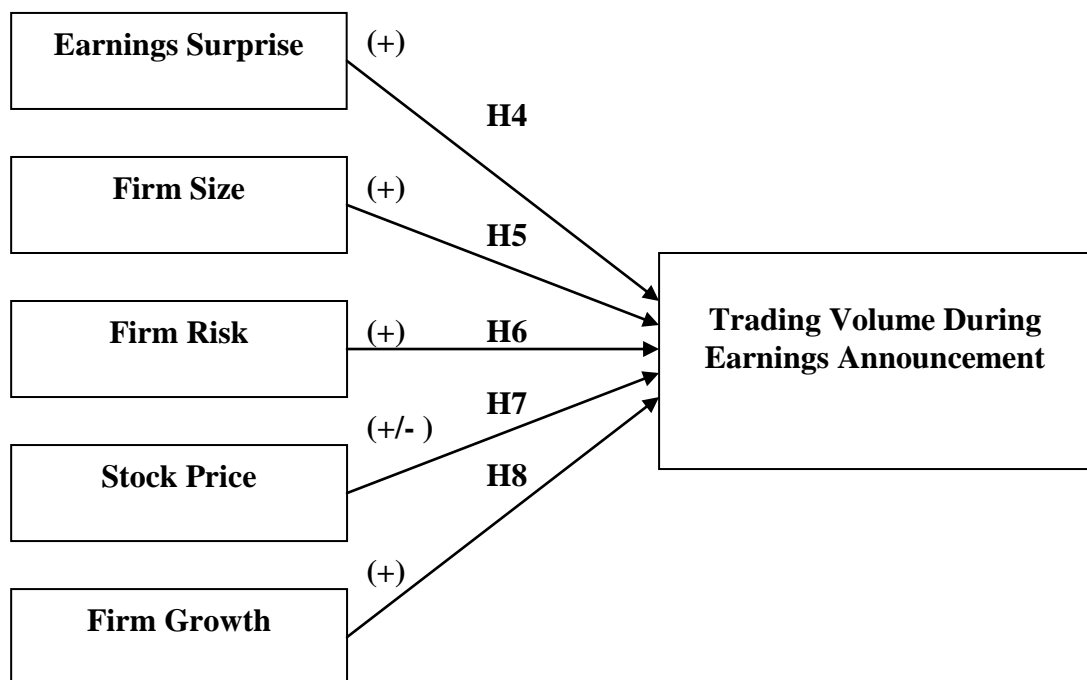

Figure 2.1: **Theoretical Framework**

2.4 Summary

Previous research on behavioral finance has been scarce if compared to studies based on EMH underpinnings. Furthermore, the studies of behavioral research in corporate finance have been even more limited in Malaysia. As such, this paper is to address this issue and to use prospect theory, a psychological basis in explaining the behavior of investors in the Malaysian stock market in the event of an earnings surprise. This paper uses trading volume as the reflection of investor behavior and proposes that positive earnings surprise will generate a high degree of trading volume and negative earnings surprise will generate low trading volume because investors are reluctant to realize losses. In addition, firm size is also studied to ascertain the specific impact on the relationship between trading volume and earnings surprise. Furthermore, a model is tested for estimating the trading volume during earnings announcements.

Chapter 3

METHODOLOGY

3.1 Introduction

This chapter presents the method in which this research was conducted and looks into more detail on the operationalization of the variables involved in this study. Furthermore, the process of sampling and the techniques used in analyzing the data is also discussed. This section outlines that this study used an event study method as its research design.

3.2 Research Design

The design for this study is similar to an "event study" method popularly used in finance, accounting, and industrial organization (De Bondt & Thaler, 1989). The definition for this type of study is given by De Bondt and Thaler (1989) as:

> *"Event studies attempt to measure the financial impact of a change in the company's environment by focusing on the change in the firm's stock market value around the time that news about it first became known to the public. Typical events include takeover bids, new equity issues, changes in accounting rules, or a change in the tax law"* (p. 200).

However, this study is concerned with trading volume and the behavior of investors with the event being earnings surprises during earnings announcements.

Since this is a correlational study specifically on trading volume and earnings surprise and then expanded onto trading volume and other variables, hypothesis testing using data in a noncontrived setting is deemed appropriate (Sekaran, 2003). The units of analysis for this study are public listed companies on the main board of the Bursa Malaysia.

3.3 Variables

The variables for this research are discussed further in this section. Trading volume is the dependent variable in this study whereas earnings surprise, firm size, firm risk, stock price, and firm growth are the independent variables.

3.3.1 Trading Volume

The calculation of trading volume, which is the dependent variable is determined through several metrics as it is difficult to capture this reaction. Nevertheless, it has been argued that the bulk of trading volume reaction happens on days -1 and 0 of earnings announcement dates (0 denoting the earnings announcement date) but abnormal trading volume persists for up to 5 days after the announcement (Morse, 1981 in Atiase & Bamber, 1994; Morse, 1981, and Cready, 1988 in Utama & Cready, 1997; Bamber, 1987; Bamber, *et al.,* 1997). In response to the length of the event window, Kross, Ha, and Heflin (1994) argue that a too wide window might reduce the signal-to-noise ratio whereas too narrow event windows would exclude the event of interest. Trading volume also needs to be adjusted for the overall market level of trading (Atiase & Bamber, 1994). This is done by subtracting the daily percentage of shares traded on the KLSE on day *t* from each firm's daily percentage of shares traded (Atiase & Bamber, 1994). According to Ziebart (1990), this firm trading volume ratio which is defined as the weekly shares traded over shares outstanding is regressed on the market index of trading volume (52 weekly observations for the year prior to the year in which the earnings announcement is made).

Nevertheless, Bamber (1987) and Bamber and Cheon (1995) argued that there is no theoretical basis for choosing a particular measure of abnormal or unexpected