EFFICIENT MARKET THEORY

AND

HOW INVESTORS ACT IN THE REAL WORLD

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Gereği için arz ederim.

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ABSTRACT

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This thesis analyzes validity of the efficient market theory and how investors make decisions in real world situations and the psychological factors associated in this procedure by examining research studies on investors and relating these to the evidence from the case of Turkish Financial markets.

ÖZET

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Bu çalışma etkin pazar kuramını sorgulamakta ve yatırımcıların gerçek hayatta nasıl karar verdiğini ve kararlarına etki eden psikolojik faktörleri, yatırımcılar üzerine yapılmış çalışmalardan ve Türk Finans Piyasalarından örnekler dahilinde incelemektedir.

To My Grandmother,

TÜRKAN ESENKAN

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INTRODUCTION

The aim of this dissertation is to critically investigate the efficient market theory and searching how investors make decisions in real world situations and the psychological factors associated in this procedure by examining research studies on investors and showing evidence to these ideas from the case of Turkish Financial markets.

In this dissertation efficient market theory will be discussed and its challenges to it will be mentioned through the behavioral considerations in the financial markets. Then the decision making process with uncertainty and risk will be covered. Afterwards how people form their expectations, which are important components of a decision, will be studied. Then the psychological factors that are present in the financial markets will be mentioned in detail covering cognitive bias, simple heuristics, mental accounts, emotionality, self control and motivation and social influence. The next is the classification or segmentation of the investors according to the topics that are covered, it will be followed by several implications and suggestions to investors. The last part is formed with interviews conducted in Turkey with very important experts of its financial markets in order to observe the evidence of the above studies in Turkey with specific reference to the crisis in 2001 and economic situation afterwards and its effects on financial markets.

CHAPTER 1

EFFICIENT MARKET THEORY & RATIONALITY AND BEHAVIORAL CONCEPTS IN FINANCIAL MARKETS

First chapter will start with an overview of financial theories and figure out psychological variables associated.

- Efficient Market theory is the main economic and financial theory about what happens in financial markets.
- Portfolio Theory tells investors how they should act while putting together their portfolios of assets.
- The main assumption of the financial market theory is that the individual knows and observes the Bayesian rules for handling probabilities.

1.1 EFFICIENT MARKET THEORY

The efficient-market theory has the main purpose of explaining aggregate market outcomes and making predictions about future developments.

As Redhead (2003) mentioned the efficient market hypothesis makes five assumptions;

1. Assumes that the investors are rational.
2. Information is available instantaneously to investors and that information is used by rational investors immediately.
3. Rational investors have adequate funds.

4. Market impact effect, transaction costs and required compensation for risk are not large enough to chane trading at prices close to fundamental value.
5. Rational investors do not believe that the markets are semi strong form efficient.

It is meaningful to investigate how well these rationality-based models succeed in explaining and predicting market behavior.

Efficient-market theory and its complements like CAPM of portfolio choice do not give good descriptions of investor behavior, and also they do not serve as good predictors of individual stock-price developments. Certainly deviations from what the theory predicts, but that on the whole financial markets tend to behave in rough accordance with the theory according to Fama (1998). Fama maintains that efficient-market theory can handle the deviations found and that the alternative formulations of theory are by far too vague.

Thaler (1999a) argued that there is now much evidence that portfolio choice theories are inadequate and that all financial theories must incorporate psychological findings.

Warneryd (2001) mentioned that researchers in behavioral finance are similar to other economic researchers and develop micro models which they use to explain behavior at the market level. He stated that psychological variables have mostly been used in micro models with the aim of explaining macro-level data and for many purposes, a focus on individual financial behavior, including a search for investor segments with different properties,is highly desirable.

Warneryd (2001) stated that aim is to have better descriptive and explanatory theory at the micro level, that is, the individual and household level as financial

economics from the point of view of psychology. He noted that social psychology mass communication theory are important points in this respect. CAPM is based on expectation and risk and Psychological researchers are more intent on directly measuring individual expectations and variables relating to risk. Behavioral finance researchers are more inclined to make use of quantitative models that are plausible and look at the consequences at the market level.

Warneryd (2001) described that there are two sides to descriptions and explanations of individual investor behavior.

First one, which is closest to the rationality-based models, deals with the investor's use of models, what guides her\his behavior, what variables best explain such financial behavior. Explanations at the aggregate level may be different from those at the micro or individual level.

Explanations of individual financial behavior is important. Explanations at the aggregate level may be different from those at the micro or individual level. Plott (1990) stated that explanations of individual financial behavior are improved by the inclusion of psychological variables.

Warneryd (2001) cited that writers in economics accept psychological concepts at all, they attempt to make the psychological concepts compatible with the rationality. Aggregate, macro-level concepts, derived from objective data. Financial economics has received many suggestions of psycological variables that could be used better to explain and predict financial behavior. Noise traders' expectations are assumed to be formed under the influence of ministerpretations of economic information, limited information-processing capacity, emotions such as overoptimism, and (lack of) self-control.

1.2 INFORMATION CONCEPT IN EFFICIENT MARKETS

According to efficient market theory, stock prices move up or down as a consequence of new information on fundamentals. With this assumption, De Bondt and Thaler (1985) brought the question that it seems strange that stock prices may undergo substantial changes when there is no new information. De Bondt and Thaler (1985) gave an explanation with overreactions in such cases.

Fama (1998) distinguished three levels of market efficiency:

1. The weak form of efficiency: stock prices reflect all information contained in the record of past prices. It is based on the random walk idea, which mentions the equal likelihood of upward and downward price movements howvere states that in the long run upward price movements dominate downward price movements.

   Several studies are made by Brealey and Myers (1996) to identify evidence on the weak form of efficiency. Studies in this respect can be grouped into three categories as: trying to find a cycle, correlation between current and previous price movements. Another category of study is based on the trading rules especially the ones used by chartists.

2. The semistrong form of efficiency: stock prices reflect past prices, but also all other publicly available or published information, which contain both macroeconomic information and noneconomic information. Macroeconomic information contains information like interest rates and inflation. Noneconomic information contains information like like political events, developments.

3. The strong form of efficiency: stock prices reflect public information and, in addition, all the information that can be acquired through painstaking analysis of the company and the economy and especially inside information.

Grossman and Stiglitz (1980) introduced the concepts of informed traders and information costs to handle the fact that some traders may make more profits. While the original theory presumes that all information is public and has immediate effect, the Grossman and Stiglitz presume that there can be lagged and hidden information that remains private with a trader or investor and does not show up in public through trading actions for some time.

1.2.1 Hidden Information and Price Actions

Caplin and Leahy (1994) constructed a three-stage model of market dynamics.

In the first stage called "business as usual routine behavior" tended to keep information of common interest trapped in private hands. Individual traders could change their routines and commitments only at some cost.

In the second stage, in market crashes private information reached a threshold that triggered other traders to change their behavior. These actions released mass information to the market.

The final stage "wisdom after fact" involved the market's response to this news as other participants reacted to the initial departure from routine behavior.

In this model the sudden change occurs only when some investors had collected significant private information.

So the economy before the crash was not regarded as a state in which information aggregation had failed, but was in a stage of waiting for the accumulation of information.

Lee (1998) commented the opposite and said that the stock market before the crash is in a boom although the true private information if it could be studied would reveal the opposite.

Romer (1993) distinguished between two approaches in explaining asset price movements:

1. The efficient market view in which asset prices are rational assessments of expected future payoffs; prices reflect external news about future interest rates and returns
2. A 'fads', 'noise' or 'bubbles' view in which there is a component of prices that is not tied to fundamentals; changes in prices can therefore reflect news about fundamentals as well as changes in factors that are not fundamental.

Romer (1993) further argues that an important part of price movements are caused neither by external news nor by irrationality, but by the internal news that the trading process itself provides. Strong price movements can then be compatible with rational decisions.

Romer (1993) has two models to explain price movements without accompanying news.

One model assumes that investors are uncertain about the quality of other investors' information and rely too much on the market price.

The second model is based on widespread dispersion of information and small costs of trading. Immediate processing of private information for trade is more costly than delayed processing so the price of stocks may move long after agents acquire information.

Bulow and Klemperer (1994) mention that rushes to trade and large changes in price may arise as a direct result of rational and strategic behavior in efficient markets. They define 'frenzy' as multiple sales at a single price. A crash occurs if, after trade takes place, it becomes common knowledge that no further purchases will be made until the price has fallen to some given strictly lower level. The current willingness to pay is central to the model and as a consequence market becomes very sensitive to new information.

Lee (1998) also supports the above ideas by a model which agents learn from others' action choice and noted that the model posits a setting in which information is dispersed throughout the economy in the form of private signals. A signal is presumably a knowledge or information change.

Lee (1998) also suggested that due to information aggregation failure, hidden information accumulates in the market. A small trigger that provokes a change in action choice may reveal the information and give rise to a high volality in the absence of an accompanying event.

Lee (1998) explains market crashes by assuming that there are four stages:

1. boom
2. euphoria
3. trigger~informational cascades
4. panic~informational avalanche

An informational cascade is an event in which a sequence of agents takes identical action as they try to exploit the information available from the history of previous action choices.

An informational avalanche is the sudden reversal of an informational cascade.

Agents in Lee's model delay their trades only when there has been a sequence of trades that has revealed substantial information, and they trade only after a trigger, so that the model is able to explain the process of price build-up and subsequent burst.

A market crash is described as a procedure that corrects a public belief which is inconsistent with the current distribution of private information by Lee (1998).

Zeira (1999) employs the concept of overshooting which is reminiscent of De Bondt and Thaler's (1985) concept of overreaction. It means that when prices go up no one knows when the rise will stop and the tendency is to pay higher prices until a change in expectations is triggered. Zeira`s papers were based on the two characteristics of many booms and crashes. The first one was that after the crash, the stock prices were still higher than at the beginning of the episode. The second was many booms and crashes have followed financial liberalizations, which reduces entry costs, induces entry of new investors and thus generates a boom and a subsequent crash. He also pointed two potential triggers for booms and crashes, namely rapid technical progress and reduction of entry costs to the market.

1.2.2 What Does Information do?

Information flows that do not fulfill the requisites is an important reason for why inefficiencies occur. (Samuelson, 1994)

- Dissemination must be perfect so that all concerned have physical access to the news.
- Humans have to be dependable automatons to be able to act in concordance with the requirements.

So financial economists focus on the deficiencies in the information flow.

Knowledge is used as the information in this respect. Three types of assumptions exist as Warneryd (2002) mentioned:

1. Those about dissemination and aggregation of information
2. Those admitting learning and adaptation
3. Those about private or hidden information

He cited that in the real world time and space differences occur in the reception of information so asymmetries of information are created and individual investors can learn from observing their own successes and failures and from observing those of others, which is called feedback effect.

Also he noted that some investors receive private signals from events in their own environment and private information makes the unequal knowledge.

Banerjee (1992) cited that traders observe one another's actions and are influenced towards acting in the same way, to display herd behavior. It may also be totally reverse manner and acting in order to do something totally different and therefore information aggregation that thus emanates from social influence implies that all traders do not react at the same time and in the same place.

Warneryd (2001) mentioned that at any rate, the hidden knowledge has the power to change the market dramatically if any traders are triggered at the same

time.According to Katona (1975) there is a similarity between information avalanches, cascades and social learning hypothesis which deals with how large groups of people slowly and serially through face-to-face contacts learn new attitudes. While social learning is ordinarily a slow process, such learning may sometimes occur rapidly and dramatically through the aid of the news and other mass media along with influence from peer to peer as Katona (1975) mentioned.

Warneryd (2001) noted that people in general do not refrain from disclosing private information about stocks to peers and it is possible to elicit private information from representative population groups. One interpretation of the Index of Consumer Sentiment showed that it taps private knowledge and the success of the index demonstrates that subjective information can become available and aggregated in such a way that it can be used for meaningful predictions of business cycles as suggested by Warneryd (1999).

1.3 BAYES THEOREM

In financial economics, a main tool is probability theory; and probabilities quantify uncertainty. Bayesian thinking allows individuals to assign probabilities to unique events.

$$P(H\backslash D) = \frac{P(H)\,P(D\backslash H)}{P(H)\,P(D\backslash H) + P(-H)\,P(D\backslash -H)}$$

Where;

p(H\D) is the posterior probability of hypothesis H after datum D has been observed;

p(H) is the prior or base-rate probability of hypothesis H before D is observed;

p(D\H) is the probability that D will be observed if H is true;

p(H)p(D\H) is the posterior probability of D when H has been observed

p(-H)p(D\-H) is the posterier probability of D when non-H has been observed; and

p(D)=p(H)p(D\H)+p(-H)p(D\-H) is the unconditional probability of D.

1. Ten percent of the employees of a certain company have been to business school.Of these, 70 per cent hold administrative positions.
2. Of those that have not been not to business school, 30 per cent hold administrative positions.
3. An employee is selected at random from the administrative staff.What is the probability that s/he went to business school?
4. Let p(H) be the probability that the person has been to business school and p(D) be the probability that s/he belongs to the administrative staff.

The sought probability is P(H\D).Using the above formula it is calculated as follows:

p(H) =0.10

p(D\H) =0.70

p(H)P(D\H) =0.10*0.70

p(-H)p(D\-H) =0.90*0.30

$$= \frac{0.10*0.70}{0.10*0.70 + 0.90*0.30} = 0.21$$

1.4 MAIN MODELS OF PORTFOLIO DESIGN: THE CAPITAL ASSET PRICING MODEL

The Capital Asset Pricing Model (CAPM) is based on the works of Sharpe (1964) and Lintner (1965).

The model rests on the basic assumption of perfect competition rather than on market efficiency theory. The market efficiency theory deals with the use of information while CAPM shows how rational investors should combine risky assets with a given distribution of returns.

The model is based on the following assumptions:

1- All assets can be freely traded

2- Investors operate over a one-period planning horizon

3- Investors can hold long or short positions in all assets

4- Investors are indifferent between any two portfolios with identical means and variances

5- A riskless asset exists

It is usually assumed that cash, bank accounts, and treasury bills represent the riskless alternative.

The reward for holding a risky security as part of a well diversified portfolio is based on its

B(beta) risk, the market or systematic risk. Beta is the ratio of change in the return on a stock to a change in the returns on all stocks in a stock market. It is the measure of the sensitivity of the asset return to market movements.

$$E(R_i) = R_0 + B_i * RP_m$$

Where;

$E(R_i)$ is the expected return on asset i

R_o is the risk free interest rate

B_i is the sensitivity of asset i to market movements

RP_m is the market risk premium equal to $E(R_m)-R_o$

The CAPM formula comprises two basic concepts that are studied in both economics and psychology; expectation and risk.

Warneryd (2001) noted that researchers have found patterns in stock returns that are not easily explained by CAPM and these are often called anomalies. There are many rule of thumb tactics for portfolio selection. A few anomalies tend to give excess returns to some investors as sometimes are recognized by the defenders of the efficient market theory. Fama and French (1996) identified two kinds of anomalies in this respect:

- -Effect of firm size: small firms tend to give higher returns.
- -Book to market ratio: firms with high book to market ratios appear to give higher returns,

Fama and French (1996) concluded that in a regression model with the addition of these two anomalies the excess returns are explained quite well and the result were consistent with CAPM.

They also concluded that there is a choice between rationality based behavioral assumptions and a variety of psychological hypothesis about financial behavior.

1.5 MEAN-VARIANCE MODEL

Stiglitz (1990) points out that determining the fundamental value of an asset to be held for a period of time has three parts:

The first part is to estimate the returns (the dividends of stocks),

Second part is to estimate the terminal value the asset will have at the end of the period,

Third part of the problem is to decide on the discount rates to be used for translating future returns into current prices.

Markowitz (1952) introduced an efficient process for selecting portfolios, mean-variance optimization, used expected returns, standard deviations, and correlations that for a particular level of expected return, the resulting portfolio would offer the lowest possible level of risk, usually measured as standard deviation or variance.

A continuum of these portfolios displayed in dimensions of expected return and standard deviation is the efficient frontier. Use of the model leads to diversification.

The portfolio variance is minimized subject to two conditions:

1- the expected return on the portfolio must be maximum

2- all securities must be considered

The way implementation of portfolio theory introduces several problems such as the estimation of the required parameters and unreliability problem due to parameters estimated from small samples. For example in turbulent times stock returns have tendency to be highly correlated. The variances increase, which means that the risk becomes greater. Chow (1999) stated that the benefits of

diversification tend to disappear when all stocks are plummeting in the same way. Chow (1999) suggests a remedy for this by calibrating returns as a function of events and then estimating risk parameters from these event-measured observations.

1.6 THE MUTUAL-FUNDS SEPARATION THEOREM

Tobin (1958) and Lintner (1965) have introduced Mutual Funds Separation Theorem, which gives very definite guidance for portfolio composition and is directly related to the most basic CAPM.

According to the theorem, more risk averse investors should hold more of their portfolios in riskless assets. The composition of risky assets should be the same for all investors.

Canner (1997) critized Tobin (1958) and Lintner (1965) as their advice that more risk averse investors should hold more of their portfolios in riskless assets contradicts the conclusion that all investors should hold same proportion of risky assets. He also distinguished three types of risk takers:

1- conservatives

2- moderate

3- aggressive

Canner (1997) examined a number of reasons that could explain why advisors and consequently investors do not live up to the mutual funds theorem. Advisors and investors focus on the problem that the ratio of bonds to stocks declines as risk aversion falls.

Canner's (1997) one suggestion was that there is little difference in return from cash and from bonds and that bonds may be safer than cash and this may influence the bond/stock ratio in a portfolio. Another suggestion was that in mutual funds separation theorem there is an assumption that all assets are traded. Human capital, the present value of future labor earnings is probably the most important non-traded asset, human capital has exactly the same return as stocks.

Therefore:

BONDS / (HUMAN CAPITAL + STOCKS)

However Canner (1997) rejected that idea by saying,

first human capital may not be equal to stocks and the return on human capital need not to be correlated with either stocks and bonds;

second if there was an effect those who hold more human capital would have a smaller proportion of their holdings in stocks.

(BONDS-DEBTS) / STOCKS

Canner (1997) noted that as investors became more willing to accept risk, they would proportionally increase both the denominator and the numerator. So two main objections were raised to this explanation.

First it cannot explain the observations that the young people hold more stock than the old, since the young people have more debt the opposite should be true.

Second if the existence of nominal debt were important for recent advice, the advice should be different for homeowners and renters as well as for fixed rate mortgages and adjustable rate mortgages.

Canner (1997) also mentioned that although the asset allocation of some of the recommended portfolios look quite different from efficient portfolios, the cost of nonoptimization is small.

So the investors who receive and presumably follow the advice from financial experts may not be explained by fully rational models. But near-rationality does not mean great losses. Some other authors have introduced the label of noise traders to designate investors who do not invest optimally in the sense of the theory.

1.7 RATIONALITY AND FINANCIAL MARKETS

The so-called random walk theory was born with two types of research; theoretical and empirical. Moore (1962), Granger and Morgenstern (1963) and Fama (1965) demonstrated empirically that stock movements are random. From theoretical side Samuelson (1965) and Mandelbrot (1966) stated that if:

- Information gathering is cheap,
- Buying and selling are costless,
- Everyone interprets the information in the same way,

then changes in the stock market behave as random walks.

Also as Cootner (1964) mentioned prices have no memory and yesterday has nothing to do with tomorrow and careful study of the history of a given stock's price is, for a profit-seeking investor, pointless.

Economists construct an ideal model of an optimally functioning market and compare reality with the ideal model.

Efficient Markets are defined as markets where;

- All information is public and all traders reveal their information through their purchase or selling bids
- Stock prices immediately absorb all new information
- Stock prices are assumed to follow a random walk
- No prediction of future stock prices can be made on the basis of current prices since all information is already contained in the current prices
- Changes in stock prices do not show any pattern since if there was a pattern some traders would spot it and make profits.
- Investors should only look at the (future) fundamentals of stocks: dividends and earnings growth of the firm.
- The theory also mentions that one cannot consistently beat the performance of a random selection of stocks. So what is the rational behavior in an efficient market?

Rationality involves gains being maximized over a period using the most relevant information. Deviations from the theory are explained by random deviations from rationality that cause undue fluctuations in the market. Such deviations are often called as psychological, and attributed to the influence of cognitive and social-psychological and sometimes purely emotional factors. The defenders of the theory maintain that the deviations are not large enough to disconfirm the theory.

- In an efficient market stock prices are determined by expected future dividends, discounted (with a discount rate of usually market rate) to present value and adjusted for inflation.

All available information about future prices is used in accordance with rational expectations theory. New information about factors affecting fundamentals is the only thing that counts.

Elaborations of the efficient market theory may involve the assumption that stock prices are set by a market maker or smart money traders to be equal to the expected fundamental value of the security.

Can changes in prices be forecasted on the basis of new information that concerns future earnings or dividends (and prices)?

According to the efficient market theory the answer to this question is no, but according to the behavioral finance theory, answer is a yes. Prices can be predicted if the systematic nature of the errors that investors make is recognized and studied.

However these models do not deal with the question of why the individual wants to invest money. Whereas Life Cycle Hypothesis (LCH) focuses on future consumption needs, especially after retirement, under the assumption that people want to maintain approximately the same standard of living over their whole life.(Warneryd,1999)

1.8 CONSENSUS ON A SINGLE THEOREM?

Efficient Market Theory in its original form is based on the assumption that there are neither trading costs nor information costs.

Grossman and Stiglitz (1980) have introduced a model to distinguish arbitrageurs (informed traders) and uninformed traders. The former considered costs of both getting information and of trading whereas the latter were guided only by

observing price. They also mentioned that there is a conflict between the efficiency with which markets spread information and the incentives to acquire information.

Warneryd (2001) cited that the role of information for stock-price developments is a complicated matter that is not only dependent on the individual investor's costs for acquiring information, but also, at least accordng to behavioral scientists, a matter of personal characteristics such as the cognitive capacity to deal with and evaluate the information and the social diffusion of information.

He also noted that in behavioral finance, the remedial actions include the employment of thinking and methods from psychology and the new focus on investor differences makes research move in the direction of distinguishing segments of investors with differing inclinations and propensities to react and also aim is to make research more descriptive and less abstract.

1.9 VOLALITY, BUBBLES, SHOCKS AND CRASHES

1.9.1 Long term returns on stocks and the equity premium puzzle

Shiller (1990) mentioned, that if stock prices are highly correlated with dividends, one might conclude that the movements in prices are driven by fundamentals. He is also skeptical about the superiority of stocks over bonds and believes that the evidence that stocks will always outperform bonds over long time intervals simply does not exist.

Shiller (2000) defined, The equity premium is the difference between the expected return on the market portfolio of common stocks and the risk free interest rate. He also noted that the risk premium that investors seem to want from investment in

stocks is according to the researchers, much bigger than would be warranted by the actual differences in risk between stocks and riskless treasury bills.

The equity premium puzzle refers to the fact that the average performance of stocks is so much higher. Mehra and Prescott (1985) stated the transaction costs, liquidity constraints as possible factors.

Why do investors demand high returns on stocks? Do they really have extremely high degree of risk aversion that the size of the equity premium implies?

The first study on the question above done by Dimson (2000) interestingly showed that the three countries with the highest equity premiums have the highest participation in the stock market. Probably the high equity premiums have contributed to increasing the proportion of the population with stocks.

The second study by French and Fama (2000) consisted of two models. One of them was the average realized returns whereas the other one included the expected dividend growth rate. The authors suggest that the differences between the results of the two models depend on unexpected capital gains, the result of a decline in discount rates.

Psychological answers to equity premium puzzle have been suggested. Benartzi and Thaler (1995) propose two components in investors' demand for compensation as

- people have loss aversion
- the willingness to take risk increases with increasing time horizon.

Stephan (1999) mentions that investors are more familiar with bonds and other less risky securities and need an extra premium to invest in stocks, which they

find less familiar and are more uncertain about. Also people recall the stock exchange crashes very easily and exaggerate the long run risks connected with investing in stocks.

1.9.2 Bubbles

Stiglitz (1990) states that if the reason that the price is high today is only because investors believe that the selling price will be high tomorrow- when 'fundamental' factors do not seem to justify such a price- then a bubble exist. At least in the short run the high price of the asset is merited, because it yields a return (capital gain plus dividend) equal to that on alternative assets.

Fama (1998) claimed that efficient market theory admits ups and downs even large ones. Temporary booms, bubbles, minor crashes can apparently be accommodated in the theory.

1.9.3 Attempts to explain bubbles and crashes

Warneryd (2001) cited that the studies in this respect can be categorized as:

1- examination of general economic trends, business cycles

2- search for long-term patterns in stock price data

3- search for short-term patterns in stock price data

4- assumptions about psychological changes; either with learning or with the diffusion and use of the information

5- mass phenomena and social influences such as herd behavior

He also mentioned that the explanations based on efficient market and rational expectations theory focus on the emergence of new information that could trigger the bursting of a bubble or a dramatic fall in stock prices and notable changes in information have characteristically not been found in connection with stock market crashes.

Schwert (1990) suggests that the October 1987 crash was characterized by significantly increased volality of stock prices.

Shiller (1990) studied on the factors that makes stock prices move over time. He tested the efficient market model examining the assumption that real stock prices equal the present value of rationally expected or optimally forecasted future real dividends, discounted by a constant real discount rate. Over long periods of time the correlation between stock prices and dividends is high. He concluded as that this looks like good confirmation of the assumption that the stock rates develop in the way efficient market theory posits; the investors rely on so called fundamentals when they make their investment decisions and their expectations are on average close to later realized returns.

Shiller (1990) also pointed out an interesting phenomenon that if most managers become optimistic at the same time as the public does, they may increase dividends because present trends cause prices to increase. He mentioned that the feedback theory of bubbles assumes that when market prices as a whole rise substantially, many success stories are created and disseminated and such stories lead other people to invest in the hope of achieving similar success. Reverse is also possible to occur.

Shiller (1990) states three factors:

1- structural factors

2- cultural factors in which mass media is an important component

3- psychological factors, primarily psychological anchoring effects and herd behavior.

Warneryd (2001) noted that the attempts have involved looking for deviations from efficient market theory such as anomalies in trading strategies. Traders who behave in an irrational manner, often called 'noise trader' (Black 1986), have been blamed for stock market turbulence, including crashes. However according to Warneryd (2000), to the extent that noise traders are passive investors in which reactions are slower and they choose to involve in a few number of transactions, they may have dampening effect, slow down the fall and help the recovery, since they tend to hold on their portfolios, even at the risk of further losses, if they are possessed by the loss aversion.

Shiller (1989) proposed a type of explanation that included the assumption that there was an abundant portfolio insurance (setting a floor value for a portfolio with limits that release immediate selling when stock prices have dropped to the floor) which is related with the idea of stop-losses which mentions to depart from the tactic immediaterly when it causes loss and portfolio insurance.

Lee (1998) rejected this hypothesis and mentioned that the surprise after the market crash was not that there were more portfolio insurers than expected, but rather there were fewer insurers. Also the crash was observed in countries without portfolio insurance.

1.9.4 Psychology and Formation of Bubbles

According to Stiglitz (1990), a bubble arises when a stock price is currently high only because investors believe that the selling price will be high tomorrow and fundamental factors dO not seem to vindicate such a price. In the short run the high price of the asset may be justified because it yields a return equal to that on an alternative asset. A bubble means that there is an upward stock price trend, usually steep, that is suddenly interrupted by a drop that is also steep. Stiglitz (1990) cited that the first component of bubbles is the expected development of future earnings, which may well be exaggerated due to unjustified extrapolations.

The second component is expectation about others' expectations or what actions to expect from other investors. There may be expectations of immediate bandwagon effects that strongly enhance the upward effect or result in mass reactions that mean the burst of the bubble. He noted that if the first component dominates there is seldom a bubble whereas as second component dominates the more likely a bubble is to start forming.

Warneryd (2002) cited that the investors form their expectations on superficial, biased information and slim evidence, transmitteed by peers and the news media and, for some investors, by financial advisors.

He mentioned that investors may closely follow the development of certain stock prices an let their observations of ups and downs determine their actions, disregarding actual price earnings and similar ratios. He also cited that the influence from others should not be underestimated. Bandwagon effects may occur, meaning that the mere number of people who act in a certain wayputs pressure on others to do same which is called herd behavior; he suggested that if

investors in certain situations are led by primary affective reactions that often inspire immediate actions without further thinking, the field seems open for overreactions and if earlier experience is perceived by the individul as inadequate, individual becomes inclined to depend on new information fromthe environment.

He also mentioned that investors who have followed ups and downs of stock prices over long periods of time and have made money are less likely to react immediately and affectively to highly positive and negative news and studies of dynamic decision making indicate that people are generally slow to respond in adequate measure to exponential developments so

when a crash seems to be rapidly approaching, to sell as much as possible at short notice and not sell losers too late in the downfall; maybe they are reluctant to give up momentum strategies that have richly paid off earlier and thus keep enhancing the growth of the bubble.

Warneryd (2002) noted that financial economists use news in two senses; the first sense is that events that will change fundamentals re brought to public attention, the second is that the effect of changing stock prices themselves, often called the feedback effect.

Shiller's study (1989) supports the idea that a stock market crash may be, if not caused, at least enhanced by rumors among professionals and big investors.

1.10 MORE CRITICS ON EFFICIENT MARKET THEORY

Shefrin and Statman (1994) cite a number of important findings as challenging the theory:

1- Abnormal returns due to firm size

2- Variability in earnings-to-price ratio

3- Performance of past winners and losers

4- Turn of year effects

5- Excessive volality

6- The equity premium puzzle

The emergence of bubbles and crashes can be added to this list.

Bayes Theorem is particularly useful when updating base-rate probabilities on the basis of specific data. However as Tversky and Kahnemann (1982a, 1982d) mentioned people do not revise probabilities, as they should when there is new information and they tend to concentrate on the new information and forget the base rate, especially when the new information is casual. This is called as "the base rate fallacy"or "the representativeness heuristic" by Tversky and Kahnemann (1982a, 1982d).

However some authors like Dawes (1999) suggests it may be impossible to act as an Bayesian, because probabilities cannot be combined by humans without a good story; the story must be relevant and justify the combination and the expert advice on investments in stocks is not based on efficient market theory; it is likely to be based on observations of empirical phenomena and little on coherent theory.

However Fama (1998) rejects cognitive and other psychological attempts to remedy the theory, consistent with the market efficiency hypothesis that the anomalies are chance results, apparent overreaction to information is about as common as underreaction, and post-event continuation of pre-event abnormal

returns is about frequent as post-event reversal and most long term return anomalies tend to disappear with reasonable changes in technique says Fama.

The assumption of the rational use of information that lie behind efficient market theory have been challenged from several angles as listed by Warneryd (2001):

1- All information may not be reflected in stock prices because of delays; all information is not public; investors may have gained experience that they do not make public through operations in the market.

2- 2Investors may not deal with probabilities in the way that Bayes Theorem requires.

3- Investors are not independent of one another; there may be herd behavior.

4- The time perspective used: long term variations in long term may be closer to random walk than short term price movements.

There are long periods where price change on the market is independent from day to day and long periods when the market demonstrates dependence, for yesterday's price change does, to some extent, predict today's price change, as mentioned by Schacter (1986). He also noted that whereas Fama (1965) found that the stock price movements on the New York Stock Exchange followed a random walk in his study of four and a half years, they extended the study to 14 years. His conclusion is that it must be recognized that stock price is a social fact by describing the price of a stock as an opinion, an aggregate opinion, the moment-to-moment resultant of the evaluation of the community of investors and is subject to the same set of social pressures and cultural influences as any other opinion rather than an objective and rationally determined number.

Also as Jones, Rendleman and Latane's (1981) study against the semistrong form efficiency mentioned that there is a time gap between earning announcements and price movements which can produce an opportunity to create profit.

As Redhead (2003) notes the enourmous profits made by insider trader like Ivan Boesky is a strong evidence against the strong form of efficiency because the strong form efficiency requires that there could not be any profits generated on the basis of insider information.

1.11 BEHAVIORAL CONCEPTS

Except for efficient market theory, there is no coherent theory for explaining market behavior.

As Shefrin and Statman (1994) emphasized if all investors behave rationally, as the theory of efficient market theory presupposes then there would be no need for a behavioral theory, all investors would then be Bayesian and guided by probability calculations.

It is interesting to look a little more closely at the behavioral implications of CAPM as outlined by Shiller (1989).

First it involves perfect competition which means that all investors behave as if they no market power over the prices.

Second markets are frictionless, implying that there are no transaction costs, taxes or restrictions on security trading and all assets and securities are infinitely divisible and marketable.

Third it is assumed that all investors have homogeneous prior believes and Bayesian expectations.

Fourth all investors simultaneously receive the same relevant news that determines market prices.

Fifth individual preferences are restricted in the sense that all investors care only about the risk and expected return tradeoff.

Finally all investors are rational expectations utility maximizers as rationality postulate implies.

Black (1986) proposed the idea that there exist two types of traders; one type of trader, which represents the majority of traders, is rational and uses information as the theory posits.

The other type who is labeled as irrational since they do not use information in the right way. They are alternatively called noise traders as proposed by Black (1986).

In some views the noise traders disturb the market; in other views they are responsible for the stock price patterns that investors make money on.

Rational behavior in the restricted sense of pure economic theory is used as a model against which actual behavior is compared and easily stamped as irrational.

While the previoust assumption among financial economists was that irrationality is unpredictable, Thaler (1999) and Shefrin (2000) in behavioral finance have enlarged ideas from cognitive psychology that some deviations from rational behavior can be explained and even predicted.

1.12 THE CONCEPT OF NOISE TRADERS AND INEFFICIENT MARKETS

1.12.1 Characteristics of a Noise Trader

The theory of market efficiency only deals with perfectly rational traders on the stock exchange.

- No investor neglects the information that is relevant to the formation of prices and there is no private information that can influence individual decision making in investing.
- Prices are assumed to reflect future profits, discounted to todays value.
- The theory says nothing about how information is disseminated or how individual stock prices are set.
- All information about firm is public and known by every trader.
- Prices follow a random walk where changes occur due to circumstances that cannot be foreseen.
- There is no way of predicting future stock prices on the basis of current prices, since all information is already utilized in forming the current prices.

The advice given to investors according to theory is that they should make sure that she/he has a big enough sample of stocks in order to do as well as market and the rest depend on luck.

In contrast most of the investors seem to believe that stock prices can be foreseen and in particular that there are stocks that have the wrong value, are mispriced, given their future returns, that is, dividends and capital gains.

Black (1986) launched the noise trader concept, he explained the noise as what makes our observations imperfect and noise is done by noise traders by their reactions toward the information.

De Long (1990a,b) and Lee (1991) distinguished between the rational traders, who make their investments quite similar to what theory assumes, and noise traders who base their investment at least partly on irrational factors. (De Long 1990a) also mentioned that most investors do not diversify and invest in popular funds that charge high fees and do not beat the market and They do their own kind of research, which they believe in and also they sometimes do not take into consideration the information that could give them an edge

In Thaler`s (1992) view noise traders are positive feedback traders who forecast continuations of past returns. He refers to rational traders as information traders and having unbiased expectations whereas noise traders are defined as making systematic forecasting errors.

Behavioral finance models often include some concept of noise traders or noisy prices.

De Bondt (1998) has also found similar conclusions as above, from his studies about noise traders:

- they discover naive patterns in past price movements
- share popular models of value
- not properly diversified
- trade in suboptimal way

He suggested that noise traders prefer to sell when prices fall and tend to buy when prices go up since they always expect a continuation of trends.

How are the rational buyers affected from the activities of the noise traders is a crucial question.

It is often assumed that both groups suffer from the disturbances caused by the noise traders but information traders restore the market balance as mentioned by Warneryd (2002) and there are also opposite opinions saying that there are few arbitrageurs or market makers who react properly on new information and set the stock prices at the right level.

The behavioral CAPM proposed by Sheffrin and Statman (1994) specifically incorporates the noise traders beliefs. The theory centers on a market where both information traders and noise traders participate.

1.12.2 Effects of Noise Trading

Black (1986), who launched the idea that noise traders reacted to noise rather than fundamental information, assumed that these traders necessarily lost money on the average, but that they made it possible for information traders to make profits.

De Long (1991) stated that in the early 1990s a divergent view appeared probably as a consequence of the developments in the stock returns increased the wealth of many investors and despite their misperceptions, excessive risk taking and excessive consumption; the noise traders can earn higher profits than do rational traders and can survive and dominate the market in terms of wealth in the long run.

He also concluded that noise traders who speculate using technical analysis cause trading volume to be exceptionally high when they are active, for example a tool used for determining patterns in stocks, called head and shoulders technique sales lower prices, and buying increases prices and effects disappear in two weeks. Severn (1998) maintained that irrational noise traders earn high returns for bearing risk that they themselves create and the noise traders arose from the defects in financial markets, which are caused by irrational behavior through mispresenting information, avoidance of exposure to information; this effect is offset by the arbitraging activities of rational traders.

Noise traders are often called as emotional and disposed towards overoptimism or overpessimism. Noise traders are open to make systematic errors in their forecasts. Siegel (1992) mentioned that noise traders were an important reason of the 1987 stock exchange crisis, an increase in the number of forward-looking speculators can increase the volality about fundamentals.

1.12.3 Passive Investors and Noise Traders

There are certainly more than two categories of traders.

Kelly (1997) distinguishes three kinds of investors:

1- Smart money traders: behave rational

2- Noise traders: buy high- sell low

3- Passive traders: do little business

He also assumed that the probability of an investor to be a noise trader declines as the income rises because the one with high income have greater incentives to acquire reliable information about the market and constitute the majority of smart

money traders. He mentions that the participation of noise traders have a negative effect on the future stock returns while smart money traders have a positive effect and passives has no effect.

1.13 STRATEGIES AND TACTICS

A rational individual is forward looking and plans for the future by making sure that resources will be available for future consumption. The procedure to invest can be defined in two steps; first postponing consumption and then second step of putting the savings into determined assets.

Most strategies make use of what is called market anomalies which tells us that most strategies and tactics imply a disbelief in the efficient market theory.

Strategy desigs long term plans and tactics designs short term operational plans. Techniques are the sets of instruments in order to imply strategy and tactics.

All these are based on the belief that stock prices can be predicted.

1.13.1 The Concepts of Diversification and Indexing

Diversification refers to the proportion of riskless assets compared to risky assets or spread within an asset category.

Sheffrin (2000) mentions that investors do not understand the principles of diversification at all well and therefore make many mistakes in composing portfolios.

Many investors prefer to invest in mutual funds although they could get higher returns from long-term investment in their own portfolios of stocks. Schlarbaum (1978) suggests two reasons for this:

First one is that mutual funds provide an easy way of diversifying even with small investments.

Second is that the professional money manager are assumed to have skills superior to those of the individual investor.

Benartzi and Thaler 1998 report a study of how what they called naïve investors invest. They found that there is a common tendency to use the simple rule of dividing evenly among the asset types offered which is called 1/n heuristic. Read and Loewenstein (1995) called the tendency as diversification bias and suggested two reasons for this:

First one is time contraction, which is the tendency to compress time intervals as if they were short and second one is choice bracketing which is the tendency to treat how choices are framed together from those that are framed apart.

Indexing means to invest in assets in which average returns follow an index over stock-price changes during a time interval.

1.13.2 Contrarian and Momentum Strategies

Contrarian strategies buy stocks that performed poorly over the past two to five years so called prior losers and sell short stocks that performed well over the same period so called prior winners as defined by Shiereck (1999) and Chan (1999)

Shiereck (1999) and Chan (1999) defined momentum strategies as they entail the purchase of stocks that performed well in the past and sell the stocks that performed poorly. They mentioned that contrarian strategies are connected with expected or assumed overreactions to news about earnings, implying that

overreactions will be over soon and momentum strategies are connected with expected or assumed underreactions to news about earnings.

Studies on contrarian strategies based on the time series data on stock rate developments over long periods of time as cited by (Shiereck, 1999; Thaler, 1992; Dreman, 1999) and they indicate that contrarian strategies can yield good profits and also momentum strategies seem to hold over short periods of up to 12 months whereas contrarian strategies perform better with a three to five year horizon.

However several objections occurred against the above statement based on two ideas by Hong and Stein (1999):

- small firms tend to be early losers and to give excess returns in the long run.
- Extra compensation for extra risk taking connected with investing in losers.

Hong and Stein (1999) introduce two new investor categories as newswatchers and momentum traders. Each newswatcher recognizes some private information, but fail to extract other newswatchers` information from prices.

Hong (2000) cited that if information diffuses gradually across the population, prices underreact in the short run and the underreaction means that the momentum traders can profit by trend chasing.

Hong (2000) also tested the gradual information model and concluded three points:

- the profitability of momentum strategy declines sharply with firm size
- holding firm size fixed, momentum strategies perform better among stocks with low analyst coverage

- the effect of analyst coverage is greater for stocks that are past losers than for past winners.

Chan (1999) too worked on this topic and concluded that over an intermediate horizon of three to twelve months, past winners on average continue to outperform past losers, so that there is momentum in stock prices.

Moskowitz and Grinblatt (1999) distinguished between individual stock momentum and industry momentum strategies. The former buy past winners sell past losers whereas the latter buy stocks from past winning industries and sell from past loosing industries. Industry momentum strategies appeared to be highly profitable even after controlling for

- firm size
- book to market equity
- individual stock momentum
- cross sectional dispersion in mean returns
- potential microstructure effects.

In another study, in Finland, by Grinblatt and Keloharju (2000a), were found that most Finnish households as well as professional investors tended to use contrarian strategies whereas foreign investors with large funds used momentum strategies which came out to be more profitable.

Authors pointed out an important result that if large investors pursue momentum strategies, it must follow that small investors use contrarian strategies since purchases and sales must match.

1.13.3 Technical Analysis

Technical Analysis is used to identify trend changes at an early stage and act accordingly.

Technical analysis is meaningless according to efficient market theory. It is less used when the stock market is up and in turbulence times.

Several types of patterns used in the analysis are

- head and shoulders
- m-tops or w-bottoms
- triangles
- trading ranges and rectangles
- flag formations
- gaps

It should also be considered that technical analysis have a highly subjective nature of.

1.13.4 Mean Reversion or Regression Towards the Mean

Shiller (1990) noted that Regression towards the mean or mean reversion is the statistical fact that in a chance process extreme values are likely to be followed by less extreme values. It means that extreme values have restricted variation. A high value is more likely to vary downwards and a low value is more likely to vary upwards and in both cases the values get closer to the mean.

An investment strategy based on expected mean reversion is similar to a contrarian strategy, but it may be more short term as suggested by De Bondt and Thaler (1985).

1.13.5 Stop-Loss Tactics and Portfolio Insurance

Stop-Loss Tactics impose that a limit that releases immediate selling when the stock price has dropped to that limit.

If a similar procedure is run for the whole portfolio rather than for a specific stock, it is called portfolio insurance. Lee (1998) suggest that in the October 1987 crash, it was suggested that portfolio insurance and stop-losses, if they did not cause anyhow enhanced the rapid fall of stock prices when a number of such programs went into effect at the same time.

1.14 THE BEHAVIORAL CAPITAL ASSET PRICING MODEL

The fact that there are noise traders is a fact that many traders are not rational information users in the efficient market sense doubts the Capital Asset Pricing Model.

Keeping the distinction between information traders and noise traders, Shefrin and Statman(1994) developed the Behavioral Capital Asset Pricing Model(BCAPM).

According to them information traders are rational and follow Bayesian rules. Noise traders are non-rational because they commit cognitive errors.

They concentrate on two errors (1)underweighting of base-rate information, and (2)probability mismapping.

Base rates are in principle derived from earlier occurrences of events and are often defined as prior probabilities. Tversky and Kahneman (1982c, 1982d) defined The base-rate fallacy as the failure to take account of the prior probability when estimating a conditional probability. If people fail to take base rates into consideration when making inferences, they do not behave as Bayesians as efficient-market theory posits.

Tversky and Kahneman (1982c, 1982d) demonstrated that people tended to neglect base-rate information in favor of similarity judgments. When estimating the probability P(H\D), subjects look at the similarity between some aspect of H and D. This is the respresentativeness heuristic. It is not always wrong to neglect the base rates. In Shefrin and Statman's (1994) view, noise traders are underweighters of base rates and make forecasts by overweighting recent events; they underweight more distant events and most recent changes will continue in the same way.

Warneryd (2001) suggested that the probability mismapping can be compared to 'gambler's fallacy', If the stock price of a certain firm or the stock index has gone up continuously for a long time, it is expected to come down. He mentioned that this cognitive error leads to the expectation that the stock price will fall whereas the base-rate underweighting involves beliefs of continued rise and if the two cognitive errors operate to the same extent, the errors may cancel out and the average effect equal zero, which means that the market can be efficient as if there were no noise traders.

1.14.1 Compatability of Theory With Market Behavior

The main question concerns why price movements, also labeled market volatility, are much more extreme than explained by changes in (expectations about) the fundamentals of dividends and capital gains. Warneryd (1991) noetd a very important henomena that the authors of the efficient marekt models consistently reject the idea that the market behavior is irrational. The first attempts to exploit psychological theories that may explain the irrationality assumption often involve efforts to make the theories compatible with rationality. Models of herd behavior can be taken as an example and these authors of efficient market thoery do not require that assumptions be realistic. Friedman (1953) asserted that the true measure of the value of economic theory was the accuracy of the predictions it made and also the assumptions made could be false, but they remained valid as long as the predictions were better than those made under any other assumptions and the micro models involve concepts that are unobservable unless subjective data are accepted. If the consequences can be tested against some set of data, there may be support for the model. He also noted that sometimes the tests against empirical data are illustrations rather than tests, since the data have been selected after the fact and the selection may have been guided by a search for confirming data and major concern is that many micro models may explain phenomena after the fact, but they have little predictive power and in some, not all, cases have only fair postdictive power.

1.14.2 Use of Information

Hidden knowledge is a central concept in the Information models of financial economics. Warneryd (2001) suggested that hidden has the special meaning that

the individual does not reveal the information through overt behavior; one of these involves somebody to act and the others look for the release of hidden information, the act is observed by other traders who are followed by an ever-increasing herd of others barely touch on personal influences neglect the role of impersonal media.

He also mentioned that a large number of psychological experiments demonstrate that people do not use more than a fragment of the available information when they are presented with more than a few items of information. Confidence in the decision increases with the number of information cues, but the quality deteriorates as mentioned by Magnusson and Ekehammer (1972).

They cited that people use only a little of the available information has been confirmed in many experiments and outcome feedback is information that describes the accuracy of the response, while cognitive feedback represents information about the reason for this accuracy and thus has explanatory or predictive value. A study by Jacoby (1984) at the New York Stock Exchange result supported the hypothesis that better-performing subjects were more likely to ignore outcome-only feedback and better decision makers were less likely to access outcome-only feedback information than poorer decision makers and a revision of the generally accepted concept that feedback always had a positive impact on performance.

1.14.3 More Than Enough Information

Jacoby (1984) noted that in consumer behavior theory, consumers were flooded with information of varying quality and trustworthiness from many sources.

Information overload was assumed to lead to worser decisions. Jacoby (1984) asked two questions:

- can consumers be overloaded
- will consumers be overloaded

He replied to both questions as no because they are highly selective in how much and which information they access, and tend to stop well short of overloading themselves.

However, Malhotra (1984) critized the above statement and said that too much information may worsen decisions and at the same time increase the decision makers confidence in the decision and he cited that cues used to build up the pertinent expectations are chosen on the basis of earlier experience of cues and outcomes of similar decisions. Less the experience, more the outside influences may dominate the decision criteria of the individual. Many investors search not just for information but also strong recommendations to buy and sell stocks and to switch between funds.

1.14.4 Mass Media

Mass media expand the space that can be covered in a short span of time. Warneryd (2001) suggested that new media like internet provide tools that may change behaviors and give rise to new functions and the role of mass media as transmitters of information and influencers is complex. He cited that market makers and arbitrageurs presumably get information before it reaches the widespread news media; people with inside information is a special case, with legal restrictions that limit their use and dissemination of information.

Niederhoffer (1971) investigated the relation between the world events and movements in stock prices. He noted that news of world events could reach the public in summaries of news stories that many observed, but few read to the end, according to communication experts and the size of the headlines is then an indicator of the importance of the event. The world events occur at 10 percent of the time, Headlines judged as bad for the economy had a tendency to be followed by bad headlines and headlines judged as good for the economy had a tendency to be followed by good headlines. He also pointed that the days with world events were somewhat more likely to be followed by large changes in stock prices than randomly selected days and the effects of world events were much greater than the isolated world events.

Cutler (1989) looked at the NYSE following what the authors called macroeconomic events and major non-economic events. The authors used 7 macroeconomic activities such as industrial production, interest rates and inflation. They found that a substantial fraction of return variation could not be explained by macroeconomic news. They then studied the the stock market reaction to major non-economic events such as elections, illness or death of the president and international conflicts. They have found some effects, like the heart attack of president Eisenhower and decline of S&P composite Stock Index.

Also Cutler (1989) mentions that if many investors accept market prices as indicators of value and so do not trade on the basis of their own assessment of values, market values will be more susceptible to those who trade on the basis of their own assessments.

1.14.5 The Activity of Mass Media

Does mood or sentiment influence stock markets and if so what is the role of the mass media?

Warneryd (2001) answered as the causal relationships are far from clear because stock prices seem to affect the general mood in the economy even the people with no stocks and in mass media the format that the news are given maybe even more important than the news itself and he noted that mass media select, emphasize, distort and dramatize, thus manipulate and even delude their audiences. He suggested that in recent years new and effective ways of spreading rumors have become available through internet and people want to know what lie behind events and financial press tends to explain recent changes in stock prices with good news after prices rise and bad news after prices fall.

Andreassen (1987) tested the hypothesis that the expectation that, change will either persist or regress to previous levels, depends in large part on whether causal attributions are provided to explain recent changes. If such attributions are provided, for example by mass media, the tendency to make predictions of reversion towards the mean is diminished. The mass media can induce changes in subsequent behaviors of receivers. A supporting statement form Dawes (1999) is that people cannot handle probabilities unless they are accompanied by causal information.

CHAPTER 2
DECISION MAKING AND EXPECTATION FORMATION

2.1 DYNAMIC DECISION MAKING

2.1.1 The Decision Making

Warneryd (2002) stated that the developments in cognitive psychology that have largely replaced behaviorism in its strict theoretical sense gives a better ground for studying decision making. Cognitive psychology has a main focus on information processing and memory and tends to construe decisions as the outcome of information handling.

He mentioned that deviations from economic rationality are often ascribed to limited cognitive capacity, as suggested by bounded rationality theory, but are also often blamed on feelings, emotions and deep seated driving forces over which the individual has little control.

Many studies of decision-making in practice suggest that genuine decision-making is extremely rare; most actions were routine or followed habit formation as suggested by Katona (1975).

Decisions are rarely outcomes of well-structured processes. Brehmer (1992) tends to view decision making as attempts to gain control, to achieve some desired state of affairs, rather than a procedure of deliberate choice between alternatives with different outcomes.

2.1.2 Complicated Systems and Decision Making

Decision making under conditions which require a series of decisions, where the decisions are not independent, where the state of the world changes, both automatically and as a consequence of the decision makers' actions, and where the decisions have to be made in real time are the components of complex systems as pointed out by Brehmer (1992).

Dynamic decisions are decisions in a context and in a time setting. He mentioned that decision making by individual investors may be different from that of the professional investors, even apart from differences in knowledge and skills, while the former can usually disregard the possible influence of their purchases and sales on stock rates, the latter may have to consider the direct consequences of their actions and possible counteractions from other large operators. The professionals often face the demands of dynamic decision making.

Economists are interested in outcomes and change in outcomes and psychologists are interested in processes, as Herbert Simon has suggested. The former wants to be able to predict outcomes without necessarily studying details in the process unless they are essential for predicting the outcome. The latter wants adequate descriptions of the processes so as to explain decisions. Experimental asset markets offer a way to economists to study dynamic decisions and their outcomes (Güth, 1997)

The real-time character of the decisions creates special problems for the decision maker. Brehmer (1992) mentioned that the decisions have to be made when the environment demands decisions from them and one way to achieve this is to lower the aspiration level, and try to control the task at some lower, and less

stressful level which does not require many decisions. He mentioned that dynamic decisions may often be compromise between a good strategy for controlling the decision task, and a strategy that enables the decision maker to exert some measure of control over the rate at which he has to make decisions (Brehmer, 1992). He defined dynamic decision making as a general competence to cope with complex systems. Brehmer (1992) also stressed the importance of setting clear goals; this is in fact necessary if one wants to make evaluations afterwards.

He proposed, Epistemic competence, which is knowledge on the area concerned, would lead to better performance, epistemic competence did not check on their results in any systematic way as they should have done. Heuristic competence involves setting goals and checking results as stated by Brehmer (1992).

2.1.3 Frequent Failures in Complex Decision Making

Unsuccessful dynamic decision making is categorized in two main groups by Brehmer (1992).

The first group encompasses failures in the goal formulation process, which is the first essential step in dynamic decision making. 'Thematic vagabonding', which is a tendency to shift goals, 'encystment' which means sticking to a specific goal that is akin to a felt special competence.

The second group of pathologies comprises refusal to learn from experience.It includes passivity or refusal to make any decision at all.It may also mean blaming others or the system for one's own failures.It may mean delegating responsibility that cannot or should not be delegated.

Brehmer and Dörner (1993) implied that people have considerable difficulty taking into account not only the direct effects of their actions, but also the more distant effects and the side effects because of the general problems of coping with time demands.

People have a tendency to reduce the number of possibilities and consider only one or a few causes.People have great difficulty integrating different courses of action, which is often necessary in the complex real world. Nonlinear growth of what is then usually seen as linear processes.

In planning, Brehmer and Dörner (1993) told that the correct level of determination is necessary. Plans with too low a level of resolution come to an end quickly because the conditions and consequences of actions are considered too superficially. If the level of resolution is too high, planning never comes to an end.

Brehmer and Dörner (1993) explain these errors in terms of certain general characteristics of people as information-processing systems (1)forgetting, (2)capacity limitations; the principal instrument for coping with new and uncertain systems works sequentially and slowly, and can

only process rather small amounts of information, which leads to attempts at economizing, (3)protection of competence, and (4)overweighting the current motive.

Protection of competence: to act a person needs to be convinced, not acknowledging failures and not checking the effects of their actions.

Overweighting the current motive: people are concerning with the problems that they have for the moment so they developments may lead problems in the future.

Dynamic decision-making may involve stress and emotions that affect decisions and that no doubt be worthy of researcher attention.

A model can be built for decision makers in finance, in particular for those involved in continuous activities in financial markets such as stock traders who are transacting via PC monitors.

2.2 UNCERTAINTY AND RISK

2.2.1 The Concept of Risk

Risk is a social construct invented to cope with the dangers and uncertainities of life. (Mellers, 1998)

Knight (1921) declared that risk, which had been used to cover both measurable and unmeasurable uncertainty, should be used only for measurable uncertainty. Risks are then measured as probabilities, which is the common way of quantifying uncertainty.

2.2.2 Expected Utility Theory

Expected Utility theory, introduced by Bernoulli, is a theory of decision making under risk. The decision maker has options, which lead to outcomes whose probabilities are known. Individuals are assumed to attempt to maximize expected utility in their choices by weighting the utility of each outcome with its probability and choosing the option with the highest weighted value. He also mentioned the existence of diminishing marginal utility of money.

Risk averse people have concave utility function whereas risk acceptant people have convex utility function.

2.2.3 Theories of Regret

Warneryd (2002) defined Regret as it is both cognitive, comprising the data on the action or inaction and emotional and regret follows the non-fulfillment of an expectation.

Warneryd (2002) stated that there may be a preparatory effect involving attempts to avoid actions that may be followed by regret, to minimize the probability of regretting afterwards and there may be after the fact regret that leads to changes in behavior, a kind of learning;

both effects seem to depend on how painful the emotional regret is.

He suggested that selling winners to early and losers too late as well as not buying at the right moment easily create regret.

Two causes of regret cited by Kahneman and Tversky (1982) are purchasing stock that rapidly loses value or not selling stock when it is at its height.

Gilovich and Medvec (1995) cited two important results about regret:

Recent regrets tend to involve actions whereas distant regrets tended to involve failures to act.

Zeigarnic effect is tendency to recall unfinished tasks better than completed tasks.

Loomes (1988) told that it seems likely that investors learn mostly from commission of error and vow not to repeat the same mistake again, loss aversion would further strengthen such a tendency and learning from regret is likely to make investors more passive.

He mentioned that exception occurs when an investor is becoming desperate in efforts to succeed.

However failures do not always lead to regret. Causal attribution theory notes a difference if a failure is attributed to oneself or the blame is put on somebody else.

2.2.4 The Concept of Expectation

One interpretation of uncertainty is that there is no certain knowledge about the future, only more or less well-founded guesses, which can be called expectations.

De Bondt (1993) mentioned that market price is the mathematical expectation of the perfect foresight price. Since perfect foresight is not always possible mathematical and human expectations do not always match.

He metioned that macroeconomics is founded on the basis of economical expectations, which can quantitatively be derived from objective data; in behavioristic psychology the concept is replaced by expectancy, which means an observable tendency to perform an act; economic psychology has adopted the view that expectations are scenarios that people have and can talk about, expectations are formed on the basis of experience and information. Also perception, memory, cognitive processing and emotion play important roles in the formation of expectations.

Warneryd (2001) defined that there are two main types of expectations:

Contingent: concern outcomes of events that cannot be influenced by the individual.

Intentional: leaves room for influencing future events and may be seen as beliefs in the degree of efficacy of actions undertaken by the person.

Also expectations can be a mixture of two.

He cited that the old economy was based on expectations and that the new economy, which is dominated by considerations of the internet and high tech firms, is based on hope which is also an expectation, but with a slight foundation in facts and plenty of emotional loadings.

Karniol and Ross (1996) cited that expectations can also be described as views of possible futures and differ in three dimensions.

- good or bad outcomes
- contrability
- temporal distance

2.3 RISK ATTITUDES

2.3.1 Definitions of Risk Attitudes

A risk attitude is a property of an individual and can in principle be elicited from the individual.

As Canner (1997) and LeBaron (1989) cited financial advisors often distinguish between their clients according to their willingness to take risks.

Risk attitudes can be grouped in three as cited by Raiffa (1968):

Risk Averse:

In a bet which is not degenerate, risk averse prefers the expected utility of bet to the itself of the bet. In this situation the expected utility of the result should be greater than the expected utility of the bet.

if we notate possibble results of the bet with x;

$$u\,(\,E(x)\,) > E(u(x)\,)$$

Risk Neutral:

In a bet which is not degenerate, risk neutral is indifferent between the expected utility of bet and the itself of the bet. In this situation the expected utility of the result should be equal to the expected utility of the bet.

$$u\,(\,E(x)\,) = E(u(x)\,)$$

Risk Seeker:

In a bet which is not degenerate, risk seeker prefers the itself of the bet to the expected utility of bet. In this situation the expected utility of the result should be less than the expected utility of the bet.

$$u\,(\,E(x)\,) < E(u(x)\,)$$

2.3.2 How to Determine Risk Attitudes

The composition of the portfolio reveals the true risk preferences.

Palsson (1996) found that the degree of risky investment was negatively correlated with age: older people tended to have more of their assets as bank deposits.

In the wake of game theory, Farquhar (1984) and Hogarth (1987) developed ways of assessing subjective expected utility through choices.

Hypothetical risky choices are the most common method of studying risk and utility in economics and psychology and as a rule economists are more insistent than psychologists that the choices should not be purely hypothetical, but have some monetary consequences for the subject whereas psychologists point to

experimental comparisons of the effects of different incentives on choices and tend to draw the conclusion that subjects can be sufficiently motivated by incentives not directly related to the outcome of the choices as noted by Kahneman and Tversky (1979) and Tversky and Kahneman (1992); they listed several ways of eliciting the risk attitudes:

1. Choice between a certain alternative and a probable alternative
2. Choice between two probable alternatives with the same or unequal expected value
3. Request for a certain value equivalent to a probable value
4. Request for a probability statement that majes the subject indifferent between two alternatives; one of them is certain
5. Request for a probability that makes the subject indifferent between two alternatives; one of them has a known probability

Preference reversal phenomenon demonstrates the similarity between different techniques in eliciting risk attitudes.(Laughhun, 1980)

In a study by Tversky (1990) and Lopez (1994), when people are asked to choose between two options; one of which A-has a high probability of winning a small sum B- low probability of winning a large sum; people tend to choose A and tend to pay more for B.

The size of monetary incentive increases the risk taking. While general tests for risk propensity do not seem to work well, tests of risk taking in specific areas do better.

2.4 PROSPECT THEORY

Actual risky choices deviate considerably from what maximization of expected utility presupposes.

Prospect Theory, presented by Kahneman and Tversky (1982), involves an attempt to reconcile theory and behavioral reality. It pays attention to gains and losses rather than to total wealth, assumes that subjective decision weights replace probabilities and that loss aversion rather than risk aversion is an overriding concept.

Prospect is an outcome with a probability.

2.4.1 Reference Points, Framing, and the Value Function

The authors defined choices involving risk are assumed to occur in two steps. The first step is called editing and consist of a preliminary analysis of the problem in which the available options are identified, the consequences of each option are valued, and the probabilities that are associated with each outcome are reviewed. An important aspect of editing process is the framing in which a reference point is set, marking the borderline between loss and gain. The second step is evaluation in which the edited prospects are evaluated and the preferred prospect is selected.

Prospect Theory of Kahneman and Tversky (1982) makes the following suggestions:

1. The concave utility function for wealth is replaced by an S shaped value function for changes in wealth. People think of changes in wealth or amounts of goods in terms of gains or losses rather than in terms of total assets after the change.

2. Choices are framed as gains or losses in terms of deviations from a reference point, which can be the status quo or a level of aspiration.
3. The value function is assumed to be concave above the reference point and convex below it. People are then risk averse with respect to gains and risk seeking with respect to losses.
4. The value function is steeper for losses than for gains. (loss aversion)

In prospect theory, risk aversion is no longer defined as a uniform characteristic of the utility function over wealth. Risk aversion is defined as the preference for a sure outcome over a prospect with an equal or greater expected value.

Risk seeking is exhibited if a prospect is preferred to a sure outcome with equal or greater expected value.

According to prospect theory, people are risk averse for gains with high probabilities and losses with low probabilities; risk seeking for gains with low probabilities and losses with high probabilities.

Prospect theory observes the strong preference for positive outcomes that are certain, the so called certainty effect.

In the application of prospect theory, many interesting phenomena relate the framing of options, whether those are framed as gains or losses, which in turn depends on the reference point or goal.

Olsen (1997) found that subjective investment risk was a function of four attributes

1. the potential of below target return
2. the potential for a big loss

3. the investors feeling of control

4. the level of knowledge

If the target is set high, subjects would take more risks to avoid what they framed or perceived as losses if the returns were below the reference point.

In another study Laughhunn (1980) used 237 managers and focused more specifically on below target returns. In situations where only non-ruinous losses were involved, 71 percent of the managers were risk seeking for below target returns. When possibility of bankruptcy information is given to managers 64 percent reversed their behavior to risk averse action.

So a return of a given size may, in the case of a below target return, lead to more risk taking and, in another case in which the return exceeds the reference point, inspire more careful risk taking.

Whether you think of an outcome as a gain or loss will depend on your choice of reference point. According to prospect theory, losses loom larger than gains.

In prospect theory, people are assumed to know the probabilities of each outcome and to replace them with decision weights that underestimate high probabilities and overestimate low probabilities.

Einhorn and Hogarth (1985) presented an ambiguity model in which people are assumed to assess ambiguous probabilities by first anchoring and then adjusting this figure by mentally simulating or imagining other values that the probabilities could take. According to ambiguity model people do not know certain probabilities.

They mentioned the implication of this model as a probability distribution should be used rather than a single value and concluded that the existence of large prizes with low probabilities would be more attractive than the possibilities of winning smaller prizes with much higher probabilities.

If somebody gets a gift of a certain value, there is a tendency to ask a higher price than the value of the gift when it was received which is called endownment effect.(Thaler 1980)

The effect is attributed to loss aversion; people are unwilling to part with something they have and prospective gains have to be larger to outweigh losses. Some kinds of savings can be explained by this effect. Katona (1975) noted that people rather borrowed than touched their buffer capital in temporarily difficult situations. Amateur investors tend to keep their losing stocks too long and buy winning shares too late.

Benartzi and Thaler (1995) used myopic loss aversion to explain why people in general invested in bonds rather than stocks, even though stocks were much more profitable over a longer period.

Prospect theory has faced criticism. Critics of Smith (1991) have suggested that when choices are repeated and people are given time to learn or adapt, their choices become more closer expected utility theory.He cited that experimental economists criticize the use of hypothetical choices with little or no monetary incentives, no chance of learning over time, and without influence from other agents in the market.

2.5 HEDONISM AND DISREGARD OF EXPECTATIONS

Warneryd (2002) mentioned that behaviorism in its strict sense stands for the conviction that past experience, labeled learning, dominates behavior and will govern future behavio and cognitive psychology recognizes the import of information use, human thinking, and goal formation. It leaves room for future orientation that is not wholly dependent on the past

Boring (1950) distinguished between two kinds of hedonism, which is essentially the pursuit of happiness or pleasure: hedonism of future or teleology or finalism and hedonism of the past with a focus on learning.

Hedonism of the past is replaced with expectancy, which is essentially an extrapolation of the past overt behavior; past experience became synonymus with past overt behavior.

Keynes (1936) brought expectations into focus as a crucial concept in macroeconomics and used the concept to explain the role of expectations in investments during business cycles.

Loewenstein (1992) introduced the Discounted Utility Model as anticipation to subjective expected utility.

2.5.1 The Concept of Anticipations

Anticipation is a special kind of expectation in that realized anticipated pleasure could have present utility or in other words future emotions are imagined and the imagination gives rise, which is called savoring, or fall, which is called dread, to feelings now.

Elster and Loewenstein (1992) mentioned that the focus is on the role played by comparing past and the future; past experience shapes the upper and lower limits of the individual's range of comparisons.

In rational expectations theory, there seems to be a tendency to play down the influence of past experience in favor of new information that can be handled as quantitative economic information.

To what extent past experience is integrated with information not based on direct experience?

When does new information get the upper hand and when does past experience dominates over new information?

According to De Bondt and Thaler (1985,1987) the availability and representativeness heuristics stated that recent experience is more easily attended to than older experience also through the help of overreaction hypothesis.

Therefore they cited positive feedback from rising stock prices, that reinforces price developments, breeds positive expectations about the future. In financial matters the boundaries between interpretations of the past, hope, fear, and expectation are fuzzy and hard to disentangle.

(Ajzen, 1991) noted that economists view expectations as determined by objective factors such as earlier developments or new information and skeptical about measuring subjective expectations; in behavioristic psychology, expectancy is an extrapolation of earlier performed behavior and both expectancy and expectation are good predictors of behavior.

There are conflicts between behavior and expectation since many factors besides expectation may influence behavior.

2.5.2 Subjective Expected Utility and Expectations

It is the basic decision theory that provides rules for making optimal decisions. The process is to assign weights based on subjective utility on the alternatives with corresponding probabilities and then choosing the highest expected utility in a decision process.

The problem is that there may be correlation between the preferred state and rank, since the people tend to overestimate the likelihood of preferred outcomes and another problem is focusing on the wrong dimension. According to Kahnemann and Snell (1990), the future utility should be as utility today and should not change and they also mentioned that psychologists think that preferences are rather unstable and susceptible to influences.

Kahnemann and Snell (1990) distinguish utility in three types;

- *Predicted utility:* it is the expected experience utility.
- *Decision utility:* it is the utility derived from the mechanical formula used by decision theorists.
- *Experience or hedonic utility:* the utility that individual gets from the outcome which he or she naturally has to predict.

Karniol and Ross (1996) cited that expectations are scenarios in which the past and the future are bridged through processes where data from memory, available information and imagination are employed.

2.6 A MODEL OF EXPECTATION FORMATION

Expectation can be represented by a formula according to Warneryd (1997):

$$EXP_{t+1} = w_1 B_{pt} + w_2 B_{at} + w_3 B_{it}$$

EXP_{t+1} is expectation about period t+1 stated at time to

B_{pt} is set of beliefs based on extrapolation of past experience at time to

B_{at} is set of beliefs due to discrepancies between expectations and outcomes (learnings) at time to

B_{it} is set of beliefs based on new information at time to

w_1, w_2, w_3; are empirical weights which can vary from 0 to1

B_{at} represents error learning. This set of beliefs operates primarily when expectation is similar to a goal or plan, an intentional expectation.

B_{it} is a set of beliefs that can be divided into two subsets of beliefs, one pertaining to the individual; the other to economy wide information.

B_{pt} is based on past experience, in general most expectations are based on this.

All are subjective and may be influenced by biased cognitive processes and emotions.

The basic idea is that expectations are formed and revised on the basis of past experience of a phenomenon, on the basis of learning from how successful earlier,

intentional expectations were, and finally, on the basis of new information in the individual's immediate or more distant environment.

He asked an important question is that what weight is given to past experience when there is conflicting new information? and answered that a simple criterion for rational expectations is that the discrepancies between expectations and realizations are minimal.

2.6.1 Theories on Expectations

Three main theories exist for expectations in economics according to Muth(1961):

1- more or less sophisticated extrapolation of earlier experience

2- adaptive expectations; based on learning from differences between outcomes and earlier expectations

3- rational expectations

The big issue for both economists and psychologists is how past experience and new information are integrated by individuals when they form expectations about the relevant future.

Attfield (1985) stated that the theory of rational expectations is intended as a theory of how expectations of a wide range of economic variables are formed. While the main emphasis is on the use of new information, the optimal use of information may involve pure extrapolation and sometimes an adaptive process.

Lovell (1986) mentioned that expectations are a rich and varied phenomenon that is not adequately captured by the concept of rational expectations; while the

predictions of some forecasters may be characterized as rational, in other instances the assumption of rationality is clearly violated. He presented two reasons which are measurement error and shifts in the environment that may cause shifts from rationality.

2.6.2 Relation between Expectations and Goals

Intentional expectations are close to goals as if goals also are seen as cognitive representations of states that people desire to attain.

Ainslie and Haslam (1992) proposed a distinction which is usually made between proximal and distal goals. The former refers to goals to be attained in the near future and latter in more distant future; since distal goals presuppose sacrificing something now in favor of later consumption, they put more demand on self-control than proximate goals while proximal goals help to sustain motivation and distal goals may require some proximal goals to be set. In addition, Hellman (2000) found that the goals set by individuals for themselves is much more effective than the goals set for them.

2.6.3 The Gambler's Fallacy and Antiregressive Behavior

If the gambler believes that the recent trend will continue, the behavior is called antiregressive. Causal information is necessary for antiregressive behavior.

Andreassen (1987) stated that news media provided such attributions in financial markets.

When does past experience dominate and when can new information reverse expectations?

Firmly based past experience is very hard to shake and contrary information has little influence. Expectations based on past experience can be very sticky while expectations based on new information may be shaked more easily.

Information about social events and other people's behaviors and also world events may also contribute to the information of financial expectations.

2.6.4 What Do Subjective Expectations Perform in Financial Markets

Individual financial decisions depend on subjective expectations that mostly vary among investors, but sometimes coincide for large groups called segments. This is hard to reconcile with the principles of efficient market theory.

The CAPM and the efficient market theory assume that there is individual rationality and that all traders are rational expectations utility maximizers, involving the rational use of economic information. All available information is rationally used and reflected in the stock prices. Information traders use a proper Bayesian learning rule to form estimates whereas noise traders commit errors because they employ non-Bayesian thinking.

Warneryd (2001) mentioned that subjective expectations involve perceptions of future states and vary between people and over time because of many factors besides financial information and prior expectations refer to the effect of previously acquired knowledge about contingencies and covariation between events, that is how things hang together.

Theories about expectations are essential in explanations of financial market developments. The role of expectation formation is shown by the occurrence of financial market bubbles in which the price of an asset first skyrocketed and then plummeted.

To explain bubbles and crashes, Shiller (1989) noted that stock market operations were swayed by fads and fashions. A fad became a bubble if the contagion of the fad was spread through prices and people were attracted by observed price increases rather than by any fundamental value. In the bubbles same pattern of expectation development seems to have occurred. In a stable world reliance on the past experience is the most rational use of information.

Despite the teachings of efficient market theory, past developments may be a good guide for judgments of future developments, but many influences can change the value of past experience. When does the period on which past experience is based start and when does it end are also very important questions.

Hence, observers of the financial market as Shiller (1989) above, have begun to consider private information within the realm of rational expectations theory.

2.6.5 Expectations and Social Influence on Them

Maital and Maital (1981) cited that interpersonal trust had a significant influence on inflation expectations as had also income and age.

It is commonly assumed that there are two sets of components in stock price developments. One set has to do with expected future dividends and the other is what the other traders will be willing to pay for a certain stock.

As Keynes (1936) implies that the investor forecasts socially influenced stock prices instead of company earnings. Returns will depend on earnings and guesses on how other investors wil be willing to pay.

It is likely that the considerations of private investors are often rather of the type continue to go up or start going up.

Warneryd (2001) suggested the following equations about expectations:

$$P_s = E_s (P_o)$$

$$E_s (P_o) = E_o (\sum_{i=1}^{T} D_t) + E_o (\sum_{i=1}^{T} PI_t)$$

P_s is the price the agent is willing to pay for a certain stock

P_o is the price others are willing to pay

E_s is the agent's own expectation

E_o is the agent's expectation of other agents'expectations, discounted to present value

D_t is the dividend discounted to current value

PI_t is the increase in value of company discounted to current value

T is end of time horizon.

For some stocks, the expectations about future earnings and dividends may be most important for others expectations about the future value of the company dominate.

In some stock value rests on the belief or expectation that other investors in sufficient numbers will be attaching a certain value to the stock.

As De Bondt and Forbes (1999) noted people have tendency to explain other peoples behavior as a consequence of intrinsic factors, the persons motives, rather than of environmental impact or external situation. The assumption is made that there is a closer link between situation and action. This type of mistake is called the fundamental attribution error.

Among traders on stock exchange it seems to be frequently assumed that other traders will react in the same way which may result in herd behavior.

2.6.6 Manipulation

Shefrin (2000) stated that there are certainly attempts to influence expectations for example in initial public offerings.

Previous experience with similar products may give some indication of the utility of the new product, but mostly customer has to rely on the information provided by the seller.

Manipulation can occur in many ways without being illegal. Starting a rumor that is supposedly based on insider information is hardly illegal in any country, unless perhaps done by an insider, while acting on insider information is.

He mentioned one way of manipulating stock prices involves splitting up a sale or purchase of a large quantity in such a way that expectations of a change in demand are created. A rumor that a big buyer is planning to buy a large amount of a certain stock is bound to increase the stock price.

Expectation is a fundamental concept both in finance and economics. While in these sciences it is equal to mathematical expectation, in modern cognitive psychology, expectations are formed by individuals on the basis of available information. Past experience long dominated the hypothesized formation of expectation, in one case the mathematical expectation based on the earlier development data, in the other case an individual tendency based on the observable earlier behavior. With rational expectations theory in economics and cognitive psychology replacing behaviorism, they focus on the role of information and differs from what earlier experience attests.

Simon (1990) cited that decision makers in general take little time to make their decisions and seem to use instant scenarios.

The problem of expectation formation consists of past experience and new information which are given different weights depending on a number of factors.

As Warneryd (2001) suggested trend reversals in stock prices can be dealt in this respect, a reversal of a trend occurs when past experience is given a low weight for some reason, such as the emergence of dramatic news that strongly contradicts earlier experience and

from a psychological point of view, the fact that there is no news when good news was expected can bring about frustrated expectations, which may change behavior.

2.7 EXAMPLES FROM STUDIES OF INVESTORS

In this section the studies on investor behavior are discussed.

2.7.1 A Mail Questionnaire Study of Brokerage Firm Customers

The study is done by Lease (1974), by surveys directed towards special groups of investors.

The results showed that the most popular investment tool is fundamental analysis with 42 percent. It includes analysis of business conditions, industry outlook, earnings, and quality of management. Whereas the technical analysis was used by just 4 percent of the investors. The technical analysis involves stock price movements, supply v.s demand, amount of odd-lot trading, resistance levels, short interest, charts etc.

Second most popular tool among the investors was a combination of fundamental and technical approaches with 21 percent.

The objective of the investors was long term capital appreciation. They also mentioned that they enjoy in investing activities and thought that they could do better by managing their own portfolios of stocks other than putting their money in mutual funds.

2.7.2 A Panel Study of A Small Sample of Stock Owners in Wisconsin

De Bondt (1998) analyzed a group of 45 stock-owners in their weekly forecasts on Dow Jones Industrial Average and of the stock price of one of their main equity holdings.

The participants came out to be overoptimistic about the likely performance of their own stocks, but not about the performance of the stocks covered by the Dow Jones. They also underestimated the covariation in returns between their portfolio

holdings and the market index. Participants were unlikely to use betas or other measures of covariation to construct optimal portfolios.

89 percent agreed with: "I would rather have in my stock portfolio just a few companies that I know well than many companies that I know little about". 70 percent agreed on the importance of knowledge.

2.7.3 Non-Stock Owners' Feelings about Owning Stocks

Psychonomics, Capital (1999) concluded that women and older respondents are more skeptical about owning stock.

Some subjects thought that the chances of making a good profit would be high if stocks were acquired. On the other hand owning stocks would mean suspense, sleepless nights for a few and a need to obtain information all the time.

2.7.4 Risk Attitudes and Risk Taking

According to subjective utility function the willingness to take risk increases as the investors get more money.

However there is a deviation seen in a study by Lupfer (1970). The difference depends on investing own money or others' money which confirms the mental accounting theory.

Teams investing their own money:

- transacted fewer lots of stock
- requested more market information
- accumulated a larger profit

- exhibited a less stable influence hierarchy than teams investing anothers' money.

In a study by Zucherman (1979), results showed that individual investors could accurately judge risk level of investments for all but the riskiest categories. No relationship was found between knowledge of risk and risk level of chosen investments. Participants did not match risk level of their investments to their self-reported risk level.

Another study (Carducci and Wong, 1998) of risk taking in finance and personality, found that Type A subjects took greater risks than Type B. Type A people are characterized by time urgency, high level of competitiveness, aggression, irritability, and impatience. Type B are people who are relaxed, easy-going, low competitiveness, and a tendency for self-reflection. This result supported the importance of behavioral factors in finance.

Traditionally, the typical small wealth owners have been assumed to be very risk averse and avoided or limited their investment in stocks and other risky assets.

Warneryd (1996b) found that some investors with high-risk aversion invested in some risky investments, which they could afford loosing money on.

A study by Muller and Peters (1999) on German investors showed that investors who are less risk averse and more prone to take risks are more optimistic about the future and feel more competent than those who are more risk averse. More optimism could be caused by previous experience and more experience which lead to feelings of more competence and control.

Also another interesting outcome of this study was that people were tended to invest the inherited money rather than their own money. The authors also noted

that when asked about their risk taking, the investors tended to overestimate the willingness to take risk.

Also they stated when the investor gets closer to make the decision, the resistance to goals becomes dominant than the attractiveness of the goals.

2.7.5 Determinants of Risk Aversion

In a Swedish study, Gunnarsson (2000), it was concluded that for risk aversion, economic variables, like wealth and income, were significant but could explain variance less when compared to psychological and socio-demographic factors, like age, gender and personality characteristics.

2.7.6 Composition of Portfolios and Risk Aversion

In a Dutch study conducted by The CentER Savings Survey collected interview data on Dutch households from the end of 1992 to the end of 1997. It was revealed the clear differences among the groups of risk taking attitudes. The most risk averse group has on average a lower proportion of the financial assets than the other two groups. (risk averse and less risk averse)

However it was different in Sweden, Gunnarsson (2000), it is said to have among the highest percentage of stock owning households among the world after Australia and in front of US. But the general concept was confirmed that the more risk averse seem to have invested more money in bonds.

2.7.7 Trading Activity and Risk Aversion

In the Dutch study the level of trading is measured as changes from one year to next:

a-in the number of firms in which were held by stock owner

b-by changes in the number of stocks during one year

The inclination to increase the number of firms invested in and thereby reaching more diversification was weak and as a result the activity level was low in this sense.

The least averse were more active than others. Those who were more active and changed their portfolios had a much larger share of the stocks than those who made no changes.

CHAPTER 3

PSYCHOLOGICAL CONCEPTS THAT ARE CRUCIAL FOR FINANCIAL MARKETS

3.1 INFORMATION PROCESSING OF HUMAN

Black metioned that (1986) attention is selective and leaves out potentially relevant information. With modern mass media and active social environments, competition for attention is intensive. Black (1986) who introduced the concept of noise trader, pointed out that investors were surrounded by permanent noise which makes it difficult for them to act rationally.

Black (1986) defined Cognitive bias as; it is often referred as limited cognitive capacity, meaning that only a little of all available information can be handled at the same time. The bias also includes active interference from memories and emotions.

3.2 EXPERT KNOWLEDGE

Ericsson and Lehmann (1996) stated that, as cognitive theory suggest, humans are far from perfect information processors.

Are there people who consistently do better than others and if so under which circumstances?

Talent, instruction, and practice are traditionally held to be important for developing expertise.

They cited that experience is worth less than deliberate practice, which is systematic and structured training and three of the most cited characteristics of the experts are superior memory and better at perceiving patterns and also gathering and handling information.

The design of artificial intelligence systems with an effectiveness resembling that of human experts used in many areas including finance like the softwares used for stock price forecasting.

Holyoak (1991) makes a distinction among experts as routine and adaptive experts.

The former is assumed to solve familiar type problems whereas the latter is assumed to be able to invent new procedures, which mentions their better conceptual understanding.

Ceci and Liker (1986) mentioned that, a central hypothesis has been that structured knowledge is the source of power in expert thinking. The advantages of structured knowledge that leads to superior pattern recognition may not be obvious in efficient financial markets with prices performing random walks however there is room for experts in markets that are affected by noise trading, that is in ordinary financial markets.

3.2.1 The Term of Pattern Recognition

De Bondt (1998) mentions that there are many people who;

- discover naive patterns in past price movements

- share popular models of value
- are not properly diversified
- trade in suboptimal ways

Even if stock prices truly follow a random walk, people will be able to convince themselves that there are patterns that have predictive value.

De Bondt (1998) stated that, often an extrapolation bias is found which refers to the price change of the past are expected to continue. People are steadily optimistic in bull markets and pessimistic in bear markets.

Some traders place great importance on chart patterns, while others are aware of them but have allocated little importance in their trading activities.

De Bondt (1993) reported a study on 38000 forecasts of stock prices and exchange rates.

He found that non-experts expected the continuation of apparent past trends in prices, were optimistic in bull markets, and were pessimistic in bear markets. As a result expectations of risk also depended on prior performance. The subjects price predictions conflict with the gamblers fallacy or what goes up must go down.

Barberis (1998) points that investors using the representativeness heuristic might disregard the reality that a history of high earnings growth is unlikely to repeat itself, they will overvalue the company and be disappointed in the future when the forecasted earnings growth fails to occur. He explained the effects of noise traders appear to be in two ways.

First, due to their misinterpretation of information, they see patterns where there are none.

Second, their behavior creates disturbances in the financial market that may appear as patterns.

Lee (1998) mentioned that, a sudden, drastic trend reversal may mean that earlier cues of a change in trend have been neglected. In this respect financial economists have developed models on how cues or signals can be ignored.

3.3 ACTIVITIES ABOUT THE UNKNOWN

Gigerenzer and Goldstein (1996) distinguished three approaches to the way organisms make interferences about unknown aspects of the environment:

1. The laws of human inference are the laws of probability and statistics
2. Heuristics and biases
3. Bounded rationality

First approach is based on Bayesian thinking and second approach involves simplified decision making, using simple rules of thumb and simple procedures and it is closer to reality in the sense that the approach can be used directly for explanations and predictions of individual behavior. However the authors are critical of this approach, which they describe as using rationality as a norm and basis for comparison. They state that heuristics and biases approach fails to recognize the behaviors as appropriate and adaptive to the environment at a certain point in time. A major criticism is that it is said to focus on human errors,

defined as deviations from the an unrealistic model of rationality and to overlook the smart tricks used by humans to produce good outcomes. By the way the creators of the heuristics and biases approach, Tversky and Kahneman mentioned that this approach is often useful and sometimes lead to characteristic errors or biases and that their studies mainly focused on them.

Kahneman and Tversky (1996) emphasize that their approach is not meant to be a critical evaluation of actual behavior and that the use of heuristics may be a smart way of overcoming the complexities of reality. The bias in cognitive bias refers to the selections that are needed at all steps in the information process and is not related to rationality.

Bounded rationality, is a theory of limited cognitive capacity that was launched by Herbert Simon (1995).

Gigerenzer and Todd (1999) stated the possibility that economic rationality may do worse than smart heuristics due to the complexities of the situation. Their thinking on behavior is in line with traditional differential psychology in which comparisons of effects are not made with ideal models, but with other people who do not use the same heuristic, or with situations in which no heuristic was used. Secondly, the approach also reveals interesting alternative explanations to some robust judgment and decision phenomena. Thirdly, the approach proposes hypotheses that involve algorithms.

3.4 THE HEURISTIC-AND-BIASES APPROACH

When people face tasks that involve judgments of frequencies or probabilities, they employ heuristics to make the judgments easier:

A heuristic is essentially a procedure for problem solving that functions by reducing the number of possible alternatives and solutions and thereby increases the chance of solution. Warneryd (2001) noted that many authors in the field of finance use the concept of cognitive bias to explain decisions in financial markets. While cognitive bias generally refers to limited cognitive capacity, the use in behavioral finance often concentrates on the fact that people utilize heuristics to facilitate their decision-making. Financial economists see the utilization of such heuristics as deviations from rationality and they call those 'cognitive errors' rather than using the psychologists more positive word, 'heuristics'.

3.4.1 The Base-Rate Fallacy and Representativeness

Tversky and Kahneman (1982a) proposed that people tend to simplify their judgments and decisions through the use of a few simple heuristics that help them avoid difficulties. They defined base rate fallacy as paying too much attention to the specific symptoms and too little to the statistical frequency of the disease. When the base-rate or prior probability is high, there could be a tendency to overlook the specific symptoms. They demonstrated that, in contrast to what economic theory posited, people had a tendency to neglect base-rate information in favor of similarity judgments (Tversky and Kahneman, 1982c, 1982d).

They mentioned that people in situations of uncertainty tend to look for familiar patterns and are ready to believe the pattern will repeat itself and intuitive

forecasting should be distinguished from statistical forecasting. Kahneman and Lavallo (1993) introduced the concept of inside view. With the inside view, the forecaster overvalues the specific details that s/he knows and disregards or downplays statistical facts that are relevant to the problem outside view.

Gigerenzer and Hoffrage (1995) stated that people find it more natural to handle frequencies than probabilities.

The results of their study are interpreted as indicating that frequentist representations cause various cognitive biases to disappear, including overconfidence, and base-rate neglect. Fiedler (2000) argued that when making a judgment, people sample information from memory and from the environment and then make inferences on the basis of the information represented in the sample. The authors stress that the neglect of base rates is primarily associated with low base-rate probabilities. The size of the cognitive sample is important.

Gigerenzer and Hoffrage (1995), Fiedler (2000) discussed natural rather than probabilistic situations and assert that people are not inclined towards logical inference and deductive reasoning.

They cited that in finance, undue attention to the base rate may occur when the majority of stocks go up and details about a specific firm are neglected and investors may believe in its stock without grounds so when the majority of the stocks go up, a positive effect spreads to stocks that may not deserve.

Warneryd (2002) defined the phenomenon as a well known term in the psychology of learning and is called 'generalization' or in experimental psychology often 'stimulus generalization'. What is known to be true about all

known members of a class of objects is true of all members including those not yet observed.

'Discrimination' which means that differences, especially minor ones, are attend to. When people are anxious they tend to generalize more stimuli and discriminate less.

Shefrin and Statman (1994, 1995) ascribe two cognitive characteristics to noise traders in their Behavioral CAPM.

One is the best-rate fallacy, which they treat as synonymous with representativeness.

Noise traders are assumed to underweigh base-rate information. They make forecasts by overweighting recent events and by underweighting more distant events that form the base rate. Noise traders assume that most recent patterns will be repeated in the future.

Representativeness is an assessment of the degree of correspondence between a sample and a population (Tversky and Kahneman, 1983). It was one of the first cognitive concepts to be used in attempts to explain stock-price developments (De Bondt and Thaler, 1985);they also suggested thatIn times of high volatility of stock prices, the interpretation of the change in the price of a certain stock may be disturbed by some information that is similar to or seems to explain the change for a particular company.

De Bondt and Thaler (1985) stated that investors were overoptimistic and overreacted in favor of winners and undervalued losers because of the representativeness heuristic and cited that returns of growth companies were highly risky and thus low after risk adjustment.

Solt and Statman (1989) notes that investors overestimate the probability assume that a growth stock is a stock of a growth company because a growth stock is similar to agrowth company.

Why do investors favor growth stocks even though they apparently give lower long term returns than more ordinary stocks?

Solt and Statman (1993) mentioned that Apart from the operational definition of a growth company or regression towards mean, the answer is deemed to be psychological and there is then a choice between cognitive and emotional factors. Solt and Statman (1993) choose cognitive factors and suggest the representativeness heuristics. So returns and the growth companies are assumed similar in such a way that both stock prices and firm will grow.

The tendency to overweight the recent performance is the basis of representativeness.

3.4.2 Availability Heuristic

The availability heuristic apparently covers a large number of everyday experiences.

Tversky and Kahneman (1982) stated that a person is said to employ the availability heuristic whenever he or she estimates probability or frequency by the ease with which instances or associations can be brought to mind. Instances of frequent classes are recalled better and faster than instances of less frequent classes. (Tversky and Kahneman 1982; Rothman and Hardin 1997)

Stephan (1999) distinguishes availability between;

1. experience based availability

2. memory based availability

3. imagination based availability

Experience based availability means that people rely on what they have seen or heard.

Memory based availability depends on the ease with which memories are available and can be brought to mind. It is related to well known characteristics of memories such as:

- how intense the attention was
- the salience of the impression
- the vivacity of the impression
- the familiarity of the object or event
- spatial and temporal propinquity

Higher the values on these factors the stronger the memory trace and the higher the availability is.

For example when the well known companies had a majority of losers and the less well known companies had a majority of winners, there was a clear tendency to report that there were more losers, despite the fact that there were more winners. The results of the well known companies were more available and tended to dominate the impression.

The imagination based availability arises as a consequence of how easy it is to imagine something as defined by Tversky and Kahneman (1982); they also mentioned that it is easier to imagine pairs of two than sets of eight.

Stephan (1999) cited an example for availability heuristic that stock prices seem apt to go up when a new sales contract is announced, even though the value the contract is insignificant in relation to total sales volume.

French and Poterba (1991) found that investors seemed to avoid foreign stocks and that there was probably a psychological reason for this- own country bias.

Tversky and Kahneman (1983) explained conjunction fallacy as being caused by the use of representativeness and availability heuristics. Fallacy means breaking the conjunction rule. The rule states that the probability of stock B being a winner is larger than or equal to the probability of stocks A and B being winners.

The conjuction fallacy implies that probability of stock B being a winner increases if it is considered with the probability of stock A being a winner at the same time. A person may see the addition of something familiar to an uncertain event as raising probability when it actually decreases it.

Tversky and Kahneman made a study by presenting subjects three options; with equal probability to have red (R) or green (G) for each place; to bet on

1. RGRRR
2. GRGRRR
3. GRRRRR.

Sequence 1 can be obtained from sequence 2 by deleting the first G.

By the conjunction rule sequence 1 is then more probable than sequence 2. In the study, 88 percent chose sequence 2 as having a higher probability than sequence 1. The authors attribute this to the representativeness heuristic because second sequence was judged to be more similar to the distribution of faces of the dice.

3.4.3 Concepts of Anchoring Bias and Adjustment

Stephan (1999) defined Anchoring bias, as people make estimates by starting from an initial value that is subjected to adjustment before final answer is arrived at.

When investors are asked to give confidence intervals for probability estimates the intervals are often too narrow, which is ascribed to the effect of anchoring.

If there are anchoring effects, financial analysts could be expected to stick too much to their former estimates when there are surprise changes in firm earnings.

Tversky and Kahneman (1982) discussed how the subjective estimate of some quantity will vary depending on how the estimate is performed.

In their study the industrial averages of Dow-Jones they analyzed how estimates will vary on a particular day depending on the procedure used:

- person is asked to select values of the Dow-Jones that correspond to specificied percentiles of the probability distribution.
- the person is asked to assess the probabilities that the true value of the Dow-Jones will exceed some specified value.

They found that the subjective estimate of some quantity varies depending on how the estimate has performed.

Stephan (1999) suggest that anchoring heuristic can create overconfidence, meaning that investors have a tendency to believe too much in their well considered estimates.

He also found that there were anchoring effects from tasks that were unrelated to the crucial forecasts and knowledge of anchoring effects may protect investor from accepting an offer to buy stocks, too easily.

3.4.4 Role of Conservatism

In behavioral finance, the concept of conservatism has been used to explain slow reactions to new information.

Edwards (1982) pointed human misaggregation of data as the major cause of conservatism.

The following authors pointed out conservatism to explain underreactions to economic news.

Shefrin (2000) suggested that financial experts have to revise probabilities when new information arrives. He also suggests that financial analysts are inclined to make only partial adjustments at first and are slow to arrive at the correct estimation of the new probabilities.

Barberis and Shleifer (2000) suggested that the presence of both under and overreactions of stock prices can be explained by conservatism and representativeness. In their study the typical investor thinks that the securities market moves between two states and that different models govern earnings in each state.

Under model 1 earning shocks are likely to be revised in the following period (reversion towards mean) so that a positive shock to earnings is more likely to be followed in the next period by a negative shock than by another positive shock. The decisions tend to be conservative and involve underreactions to news.

Under model 2 shocks are more likely to be followed by another shock of the same sign and earnings trend. Investor decisions are based on the assumption of similarity of patterns, which is predicted by the representativeness heuristic.

The authors assume that the switches between the models are rare for the typical investor.

Griffin and Tversky (1992) suggested that investors pay too much attention the strength of the evidence and too little to its statistical weight.

Griffin and Tversky (1992) mentioned that representativeness heuristic has been held to be inconsistent with conservatism, and they tried to reconcile overconfidence, which is similar to

Representativeness and underconfidence which is similar to conservatism.

They tested if people focus on the strength or extremeness of the available evidence with insufficient regard for its weight or credence.

This mode of judgment yields overconfidence when strength is high and weight is low, and underconfidence when strength is low and weight is high.

The assumption is that people update their beliefs depending on the strength and weight of the new evidence.

The strength of the evidence is inferred from aspects like salience and extremity whereas weight has to do with such factors as sample size.

stated that overconfidence and conservatism or as sometimes labeled as underconfidence are apparently not compatible in the sense that they cannot occur at the same time.

3.4.5 Hindsight Bias

In hindsight bias people consistently exaggerate what could have been anticipated in foresight and they even misremember their own predictions as Fischoff (1982) notes.

Hindsight depends on memory and memory is fallible. Memory traces are deficient because of errors in impressions, limitations in storage capacity, and interference in recall processes.

Relationship between confidence and hindsight is called "knew it all long effect".

Hoffrage and Hertwig (1999) argue that hindsight should not be seen as an error in information processing. It is a by-product of two generally adaptive processes:

- *first*, updating knowledge after receiving new information and
- *second*, drawing fast and frugal inferences from this updated knowledge.

Three views of hindsight bias are presnted by Hoffrage and Hertwig (1999):

1. It focuses on potential harmful effects
2. It stresses the adaptive aspects since hindsight bias may contribute to the esteem we enjoy from others and from ourselves.
3. It maintains that memory must be selective and recall when memory has sorted out certain traces is a constructive adaptive process.

The authors also mention that updating makes us smart by preventing us from using information that may be outdated due to changes in the environment. Adaptive updating has an uninvited by-product: hindsight bias. But this by-

product may a relatively low price to pay for a memory that works fast and frugally.

Azar (2000) developed a model called RAFT (Reconstruction After Feedback with Take The Best) with the basic idea that any feedback or correct information people receive after they have conducted their initial analysis changes the knowledge base underlying the original judgment and causes a bias toward the new information.

The RAFT model predicts that hindsight bias should be strong because people must reconstruct the outcome.

The RAFT model assumes:

1. If people cannot remember the original judgment they will reconstruct the judgment based on what they know about the situation.
2. Feedback about an event's outcome automatically updates a person's knowledge about the situation.
3. People will reconstruct their original judgment using the updated knowledge rather than the knowledge they originally had.

Hindsight bias like other heuristics implies adaptive behavior that should not be classified as flaw or error.

Fischoff (1982) told that hindsight is necessary since perception of a "surprise-free past" may bring a surpriseful future.

Emotional hindsight though often biased, may influence the disposition to act in future situations and, if includes pride, perhaps lead to buying or, if produces regret, to selling at the wrong moment.

3.4.6 Importance of Heuristics and Biases

Warneryd (2002) stated that if deviants are few, the tendency is to accept the evidence of the heuristic and view the heuristic as a general psychological law.

If the deviants are numerous, the researchers tend to look for additional variables so as to be able to explain the individual differences.

Camerer (1987) stated that with the experience of subjects increasing, the market developes in a Bayesian direction. This does not disprove the representativeness heuristic. It rather confirms that there are groups of, maybe inexperienced people who use heuristic.

This indicates that there are different segments in the market based on the experience of each segment. Author also hints that if economic theory used evidence of systematic irrationality that operated like the representativeness heuristic, it might make better predictions.

Why learn about the use of heuristics?

Warneryd (2001) answered with the following statments:

1. The use of heuristics is studied because that financial theory does not explain or predict a number of phenomena in the market place and hypothesis are derived from observations in the actual market behavior can promote understanding of individual behavior in financial markets.

2. those operating in financial markets, professionals as well as private investors, may utilize or already be utilizing knowledge about heuristics to their advantage.
3. it may be a good idea for investors to examine financial advice from professional advisors and scrutinize their own decision making, always noting the possibility of mistakes due to the use of overly simplifying heuristics rather than proper analysis.

3.5 FAST AND FRUGAL HEURISTICS

People use simple heuristics when they face uncertainty and these heuristics tend, according to this approach, to be adjusted to the environment and the situation at hand which is called ecological rationality.

3.5.1 The Concept of Bounded Rationality and Simple Algorithms

The probabilities are not the most common form of expressions of uncertainty about future.

Mostly people do not deal with probabilities as quantities and when they do they tend to distort them. The heuristics and biases approach has demonstrated that people tend to misinterpret probabilities, and has shown some rules for distortions such as the use of decision weights instead of probabilities.

Simon (1955) presented the bounded rationality theory, an alternative to maximizing utility which is to search and decide on the first acceptable alternative.

Reber (1985) gave an updated definition of the theory as:

The theory describes a man as a decision maker who circumscribes the situation by limiting the amount of information to be dealt with, then behaving in a rational fashion with this limited knowledge base.

Gigerenzer and Goldstein (1996) cited two prevailing aspects from Simon's (1955) bounded rationality: firstly, the cognitive aspect that signifies limited capacity and is often seen as synonymous with representativeness heuristic and biases; secondly the minds of living organisms should be understood relative to the environment in which they evolved.

3.5.2 The Probabilistic Mental Model (PMM)

Gigerenzer and Goldstein (1996) stated that in PMM the decision maker follows one of a set of simple algorithms,essentially using available probability cues and the decision rests on only a few cues.

One such simple algorithm is 'take the best' and its steps are:

1. *Recognition principle:*

   Recognition principle says that if one of two objects is recognized, the recognized object is chosen.

2. *Search for cue values:*

   Potential cues may be ranked from highest to lowest value and the individual looks for the highest-ranking cue in the search for cue values.

3. *Discrimination rule:*

   The next step is to see whether the cue discriminates between the objects- the discrimination rule.

4. *Cue-substitution:*

   If the cue does not discriminate, the search starts a new and potentially discreminating cue is searched for- the cue substitution principle.

5. *Maximizing rule for choice:*

   With the selection of the best algorithm, the maximizing rule for choice states that the object with the positive cue is chosen or, if no cue discriminates the choice will be random.

"Take the last" algorithm implies that the cue that discreminated last time is tried first.

Authors mentioned that the method is quick and efficient in comparison with classical inference methods. Method appears to give a reasonably accurate description of how inferences are made in many practical situations such as investment decisions.

Gigerenzer and Goldstein (1996) noted that the PPM algorithms are subsumed under the one reason decision-making. The PPM family of algorithms is aimed at enhancing fast inferences in situations where there is time pressure and limited cognitive capacity.

3.5.3 The Recognition Heuristic

Many people seem to be doing well in the stock market without seeing themselves as experts and without consulting experts.

According to Goldstein and Gigerenzer (1999) such investors use simple, fast and frugal heuristics. The main argument behind the usefulness of simple heuristics is

that ignorance may facilitate the right decision if it necessitates simple rules for reaching right decision.

One such heuristic is called recognition heuristic, which can be described as that if one of two objects is recognized and the other is not, then it is infered that the recognized object has the higher value.

The authors give an example for this heuristic; a study of guesses about which English football team would win the F.A. Cup third round matches. Turkish students did almost as well as English students, 63 percent versus 66 percent right. The success of the Turkish students explained by the fact that they used city recognition as a cue for football team performance. Cities with successful football teams are likely to be large, and large cities are likely to be recognized.

The availability and recognition heuristics show some resemblance.

Goldstein and Gigerenzer (1999) maintain that there are two important differences:

- recognition is binary, either recognized or not;
- how often one has been exposed is unsequential, no further knowledge matters.

Availability is about recall and not recognition.

Success of the recognition heuristic presupposes that there is neither recognition of all stocks nor complete ignorance of all stocks; partial ignorance is a requisite.

The superiority of international over domestic recognition and the superiority of laypeople over experts in stock picking, support the notion that a certain degree of ignorance can be a virtue.

Why do the recognition effect may arise in markets?

Grinblatt and Kelaharju (2000) emphasized that companies with dominant market shares are likely to be both highly recognized and profitable. Recognition and ignorance effect have low predictive value if the market is not stable or is moving downwards. However recognized companies would do better also in bearish markets.

The results from using recognition heuristic may cast some light on home equity effects. The home equity puzzle means that investors show a strong bias towards investing in domestic stocks rather than in foreign and in local stocks rather than national as analyzed by French and Poterba (1991) and they called the effect own country bias and suggested that unfamiliarity as suggested by Tversky and Heath (1991) made choices look riskier when dealing with unknown values, which is similar to the result of recognition heuristic effect.

3.6 MENTAL ACCOUNTING

Statman (1999) says that behavioral investors build portfolios as pyramids of assets, layer by layer. The layers are associated with particular goals and particular attitudes toward risk. Some portion of wealth is in the downside-protection layer, designed to avoid poverty; other portion of wealth is in the upside-potential layer, designed for a shot at being rich.

According to Mental Accounting, revenues from different resources may be treated differently. Shefrin and Thaler (1988) treat mental accounts as one of the building blocks of their Behavioral Life Cycle concept in behavioral finance.

People tended to vary in their risk taking depending on which mental account they were dealing in.

Henderson and Peterson (1992) proposed the categorization theory. Categorization is a fundamental process and involves how information that is being processed or stored in memory is organized. The former specifically dealts with money and categorization could encompass all sorts of concept formation.

There is a resemblance between mental accounting assumption and the assumptions behind categorization theory.

These are the 7 principles of categorization:

1. Knowledge of elements.
2. The grouping of elements is spontaneous and can occur very quickly with minimal thought and effort.
3. Cognitive efficiency is improved.
4. The groupings provide expectations about the nature of an element.
5. The elements activated in a category are often context-dependent.
6. An element may be a member of more than one category.
7. Categories are ordered in hierarchies. Therefore differ in their degree of inclusion or abstraction.

Warneryd (2001) mentioned that the idea that people tend to sort changes in wealth into different categories and that different categories mean different propensities to consume is in clear contrast to the Life-Cycle Hypothesis and economic theory.

Behavioral Life-Cycle Hypothesis (BLCH) was presented by Shefrin and Thaler(1998). They emphasized the role of framing and mental accounts. Income from different sources is framed into different mental accounts and is not as same as economic theory implies. They pointed three sources of wealth and corresponding mental accounts are distinguished in BLCH:

(a) current spendable income,(b)current assets,(c)future income.

They also mentioned that the propensity to consume additions to wealth is also assumed to depend on the form in which the wealth is received, for example a bonus is likely to be treated as current income and more of it will be consumed whereas lump sum amount, it is likely to be treated as belonging to the assets account and less of it is consumed.

Keynes (1930) was sure that the unrealized losses when shares dropped in value made people inclined to save while gains in unrealized value could accelarate the increase in spending on consumption.

Shefrin and Thaler's (1998) hypothesis of mental accounts, combined with loss aversion hypothesis of prospect theory of Kahnemann and Tversky (1982), implies that unrealized gains and losses may be treated differently from what Keynes assumed.

Heath and Soll (1996) cited that;

First, people label money as relevant for a certain class of goods.

Second, they label the goods as relevant for a certain pool of money for such activities like Budget-setting or expense-tracking process.

Task for researchers is to investigate which mental accounts people have and whether and how those mental accounts affect saving and investing.

Thaler (1999b) notes that three components of mental accounting have received the most attention.

- The first component reflects how outcomes are perceived and experienced, how decisions are made and subsequently evaluated.
- A second component of mental accounting involves the assignment of activities to specific accounts. Expenditures are grouped into categories, spending is sometimes constrained by implicit or explicit budget rules.
- The third component of mental accounting concerns the frequency with which accounts are evaluated and 'choice bracketing'.

Thaler (1999b) concludes that mental accounting influences choice, each of the components of mental accounting violates the economic principle of fungibility.

A 'double-entry' mental accounting theory is proposed by Prelec and Loewenstein (1998). The model implies that, in a hedonic perspective, payments should be tightly coupled to ideas of the benefits of consumption.

Kahneman and Tversky (1984) had inspired, Moon et al. (1999) how relative savings are judged within different frames or mental accounts. The potential monetary saving on an item is viewed relative to the original expected cost of that item. The relative saving to be made has been found to be more important than the absolute saving.

The authors suggest that some mental accounts are less important when the absolute amount to be saved increases over a certain threshold.

Winnett and Lewis (1995) hypothesized that the propensity to consume would be lower for a non-realized increase in share value, that is , a wealth effect, than for an increase in dividend. They found that all income from capital tended to be seen as non-spendable. They found that 'accounts have labels and purposes and there is evidence of non-fungibility'.

3.6.1 Predictability of Cognitive Biases

The first heuristic to be reviewed was the base-rate fallacy, which is similar to the representativeness heuristic.

When symptoms are at hand in a diagnosis and, at the same time, actual or potentially retrievable data on the occurrence of the event (the base rate) exist, people tend to neglect the base rate. They are likely to concentrate on some characteristics of the diagnosis and the similarity of those to some part of the base-rate characteristics.

The approach focuses on the ecological study of cognitive processes and on elucidating how these processes are affected by situation and environment.

The concept of mental account has not been explored in financial research, although it has an important role in the Behavioral Life-Cycle Hypothesis of saving (Shefrin and Thaler,1988).

Warneryd (2001) asked the following question and answered respectively: What people do with non-realized losses and gains on securities?

Knowledge about what mental accounts do people in different segments use in dealing with their stocks will determine the answer.

3.7 EMOTIONS

Emotionality, what Keynes called animal spirit, is the feelings of optimism and self confidence and coupled like; overreaction and optimism, underreaction and pessimism.

Warneryd (2001) brought several important questions as:

1. When do affects and emotions lead to individual investment decisions that are destructive in the sense that they yield losses?
2. When do effects and emotions improve investment decisions?
3. When do market-level stock-price developments, which can usually be interpreted in many ways, actually reflect effects and emotions among investors?

Warneryd (2001) noted that the presumption is that there is no rationality in emotions, the labels like overreaction, optimism, underreaction, pessimism are attached to phenomena at the market level and based on aggregate stock price data and they do not directly pertain to the individual behavior.

According to him relationships between macro and micro levels vary. Macropsychological concepts may be restricted to descriptions and explanations at the aggregate level.

Warneryd (2001) defined pessimism can be defined as a sudden and drastic drop in a stock market index without any single individual being necessarily

pessimistic; in some cases, the assumption is made that exactly the same psychological model and the same concept labels can be applied at both macro and micro levels and also in some cases, economists develop a micro model that can explain the macro model. In the latter cases, input of ideas from psychology is used in the search explanations of developments that cannot be explained with the aid of current economic theory.

Langbein and Lichtman (1978) rised the question as to what extent such hypotheses are useful and really valid at the aggregate level. Can the relationship between the macropsychological variables and other macro variables be the same as those between the corresponding variables at the individual level? Neglecting the differences between micro and macro is referred to as the fallacy of composition or the ecological fallacy by Langbein and Lichtman (1978).

As we see in the works of Jevons (1871) and Bohm Bavek (1888), everything that deviates from rational economic behavior is sometimes blamed as being due to effect or emotions. Irrational and emotional are seen as the same thing. This neglects the possibility that emotions may accompany rational behavior and that irrational behavior may be generated by many factors such as insufficient information.

As Simon (1990) emphasizes cognitive psychology is beginning to recognize the importance of feelings for behavior and is devoting some interest to cognitive representation of feelings and emotions.

3.8 OVER and UNDERREACTIONS

Barberis (1998) mentioned that the underreaction evidence shows that over horizons of perhaps 1-12 months security prices underreact to news.

Securities that have had a long record of good news tend to become overpriced and have low average returns afterwards.

Chan (1999) noted that many kinds of overreactions have been distinguished and they all clash with efficient market theory, which posits that stock prices immediately absorb all information. One kind involves lasting effects of (higher) earnings information and effects up to six month after an announcement have been observed. Chan (1999) noted another kind of over or undereaction is long term and means that prices do not change in accordance with the information for periods of several years and the effects may be short or long term and they may be cumulative over time or corrected immediately. He cited that extrapolation and probably also adaptive expectation formation lead to overreaction to originally good news and favor momentum strategies; if expectations are rationally formed, trustworthy new information may lead to different reactions that imply contrarian strategies if the information points in the direction of reversal of trend.

De Bondt and Thaler (1985) alleged that investors behaved irrationally in placing too much weight on recent information, and therefore failed to make proper Bayesian forecasts with probabilities revised after new information had emerged. They found overreactions which they ascribed to use of the representativeness heuristics. This involves an overreliance on the most recent information or experience and lack of interest in earlier long-term trends, the so called base rates. The findings showed that prior losers among stocks became winners in later

periods and prior winners became later losers in a period of three to five years. These authors recommend more use of contrarian strategies.

However there were several questionings about the research of De Bondt and Thaler.

Atkins and Dyl (1993) mentioned that large price changes that occurred on a single day were followed by price reversals on subsequent days. This was evidence that stock prices overreacted to new information. However when abnormal returns based on the market model were measured, which considered both differences in risk among common stocks and the effect of market fluctuations, the price reversals were well within the bid-ask spread and therefore ruled out profitable trading strategies. The authors concluded that the price developments were compatible with market efficiency.

In another critic, Bernstein (1985) noted that stock market in particular was efficient in rapidly incorporating information that would affect prices in the short run, even if it failed to process more complex and longer run information in an efficient manner.

Daniel (1998) based over and under reactions on two well known psychological biases:

- Investor overconfidence about the precision of private information
- Biased self attribution that causes asymmetric shifts in investors confidence as a function of their investment outcomes.

In theory investors put too much trust in their own knowledge and skill.

According to Daniel (1998), Biased self attribution implies that future success depends on one's ability and gives rise to positive short lag autocorrelations (momentum), short run earnings grift, but negative correlation between future returns and long term past stock-market and accounting performance and the crucial point of the theory is that investors will overreact to private information signals and underreact to public information signals. He also mentioned that short run overreactions are followed by long run correlation and short run positive autocorrelations are compatible with long run negative autocorrelations.

A study by Swallow and Fox (1996) aimed on to determine whether New Zealand investors were economically rational.

Model was based on the representativeness heuristic, proposes that investors will overreact to small pieces of recent information, hence stock prices will temporarily overshoot their true value; overreaction was measured as the market adjusted returns on these companies stocks and result showed a strong support for overreaction hypothesis.

They noted that investors overreacted to the to the good or bad news, which led to abnormal returns on the selected days, suggesting that small amounts of information can cause unrealistic optimism.

De Bondt (1991) investigated as he describes the behavior of smart money, with the same idea as if those who were generally supposed to be rational traders behaved in the same way as naive subjects in cognitive experiments.

Three main findings emerged:

1. The average forecast had no predictive power and was useless for investment strategy
2. The experts overreacted, their forecast errors were systematic, and the errors were related to the market price-earnings ratio and to expected inflation
3. The predictions were strongly mean reverting

De Bondt and Forbes (1999) investigated the accuracy and dispersion of the earnings forecasts that financial analysts in the UK made for a ten-year period from 1986 to1997.

The authors found strong evidence of excessive optimism and overreaction bias in the forecasts. They also reported weaker, but suggestive, evidence of herding behavior among analysts. Avoidance of future regret was also an important motivator.

Brehmer (1992) emphasized that the main thing to remember is that past experience is extrapolated and dominates expectation formation until and unless there is dramatic news to the contrary and it is assumed that social influence and social support may be essential.

In sum, Warnerd (2001) suggested that there is evidence that the effects of news can lead both short run underreactions, which means delayed effect, and to overreaction of some duration;

while the advocates of the efficient market theory reject the psychological effects and prefer to explain in such terms as firm size effect, January effects and chance

variations; researchers with an orientation towards behavioral science on the other hand, seek the reasons for overreactions in psychological factors such as the representativeness heuristic and biases.

3.9 THE CONCEPT OF MOOD

3.9.1 Kinds of Mood

Deviations from rationality can be explained by external factors such as restricted access to information and limitations in cognitive capacity.

According to Schacter (1986) the concept of mood is used to characterize both the developments at a stock exchange and the behavior of investors. Stock markets are often depicted as being in a certain mood.

Schachter (1986) notes that; mood is then described through the observations of aggregate behavior and attempts are made to find reasonable explanations for the change in mood and if bull markets inspire optimism, people will talk more about the stock market, boast about their successes and be more willing to trade than when there is a bear market. He stated the mood at the market level, described as patterns in stock price movements, may affect future trader behavior in two ways:

It may be contagious and give rise to corresponding mood states in a growing number of individual investors and produce effects that appear in subsequent behavior.

Or the mood label may suggest to observers that the mood may spread to a large numbers of investors who will act in accordance with the mood.

Bagozzi (1999) cited that an individual mood is described as relatively short-lived emotional state, a temporary disposition to feel and behave in a certain way. Bagozzi (1999) noted that mood is usually longer lasting than emotions and lower in intensity and the main characteristic of mood is that it is not directly coupled with action tendencies and explicit actions, as are many emotions. According to Bagozzi (1999) individual mood state is likely to have some influence on a person's interpretation of past events and of new information. The influence is likely to be less when the mood is temporary than when it is a persistent characteristic of the person.

3.9.2 Optimism and Overoptimism

Thaler and Johnson (1990) defined optimism and pessimism as they are usually seen as moods which may rapidly change due to external and internal circumstances and are not considered as a personality trait that is stable over long periods of time. They noted that those who are characterized by a deep rooted pessimism that is similar to personality trait probably do not participate in stock markets, and those who are constantly overoptimistic are likely to fall out fairly soon after having consumed too much or speculated too optimistically.

Bagozzi (1999) stated that mood has been shown to affect processing of information and optimism tends to lead to less processing of arguments and consequently higher proneness to being convinced whereas sad or neutral moods lead to more effortful information processing.

Keynes (1930), whose expression in 'separate compartments' foreshadows the much later concept of mental accounts, drew the conclusion that owners of shares

and bonds were more likely to 'save' when they were losing 'paper value' than when the 'paper value' was rising, in this instance they were more likely to refrain from new extravagancies and to pay off debts.

Keynes (1930) talked about unreasonable optimism and he called it as 'animal spirit'.

Schachter (1986) hypothesized that when investors made profits through a general rise in the stock prices, they would become more independent and make freer choices of stocks. When they lost money through falling prices, they would become more dependent and susceptible to social influence.

Thaler and Johnson's (1990) paper, 'the house money effect,' gave support to optimism hypothesis. In contrast to economic theory, which holds that prior gains or losses should have no influence on decisions, the authors launched the hypothesis that prior gains and losses do influence decisions. They noted that the common sentiment is that events in the stock market, notably changes in fundamentals, are the major causes of changes in optimism or pessimism and in ad hoc explanations offered by experts in the trade media, the focus is on the events related to stocks, but also more general conditions (such as changes in unemployment or inflation) that influences interest rates.

Thaler and Johnson's (1990) suggested to improve the predictions of the behavior we should look at the chain:

Events--Mood change--Financial behavior--Mood change

They also mentioned that the above chain also gives rise to question of whether an optimistic mood leads optimistic expectation or vice versa. The best answer probably is that habitual optimism can affect expectations and expectations of

favorable outcomes can inspire optimism and by the so-called defensive pessimism, individuals may use low expectations to cope with their anxiety so that it does not become totally destructing. Low expectations may help individuals manage risky situations.

Schwartz and Strack (1985) note that people assume that their well being at the time of the judgment is a reasonable and parsimonious indicator of their well being in general. Therefore, they evaluate their life as a whole on the basis of their mood at the time of judgment.

3.10 CONFIDENCE AND SELF CONFIDENCE

3.10.1 Confidence in Decision Making

Keynes (1930) argued that profit expectation, and the state or degree of confidence, or weight, that investors placed in their profit forecasts, determined investment.

Individuals differ in how much confidence they have in their judgments and decisions, but, on average, they tend to overestimate their own ability.

Warneryd (2001) cited that overconfidence among investors, both professionals and private individuals, is used to explain upward stock-price movements and labeled feedback effect. It should be noted that a person can also have high confidence in a judgment that involves negative developments in stock price.

3.10.2 Importance of Overconfidence

Overconfidence is related to the person's perception of her/his ability in relation to a task.

As Shefrin and Statman (1994) cited, intuitively, it is assumed that more information leads to better decisions and more confidence in judgments and decisions. Only the second part is confirmed by the research. Maximum decision quality is often reached after use of only a few, say three or four, available information cues.

Swedish psychologists, Magnusson and Ekehammar (1972), found that confidence in judgments grew with increasing information, but that accuracy began decreasing after a few items had been utilized.

Gigerenzer (1991) found that overconfidence bias disappeared when subjects estimated frequencies that were more familiar to them rather than single event probabilities.

Assessment of confidence in the stock-investing area tend to be of a more casual nature, being 'after the fact attempts' at explanation as defined by Gigerenzer (1991).

Stephan and Kiel (1997) suggest that overconfidence is more likely when there is halfway knowledge, when people believe that they know more than they actually do.

Camerer and Lovallo (1999) hypothesized that overconfidence could explain why people entered into a risky business. Overconfidence and risk taking seemed highly correlated.

Another observation on a kind of self-confidence came from Weinstein (1980), in which through surveys of risk perception in which people tend to see risks to themselves as lower than risks to the population in general. Many people are optimistic about their own prospects than about other people's prospects. As the author cited cognitive and motivational considerations led to predictions that degree of desirability, personal experience, perceived controllability, and stereotype salience would influence the amount of optimistic bias evoked by different events.

3.10.3 The Overconfidence Concept in Behavioral Finance

Daniel's (1998b) model, securities' prices are affected by fundamentals and by misperceptions of firms prospects.

The author assumed that individuals are overconfident about their ability to revaluate securities, and hence overestimate the precision of their private information signals. People believe too much in what they think they have learned from their own experience. Hindsight bias may serve to reinforce overconfidence.

As Camerer and Lovallo (1999) suggested overconfidence can also be learned from observing others, directly or via mass media. Such overconfidence can be even more disastrous than overconfidence based on self-attributed achievements,

as crash and bubble examples of the Dutch Tulipmania and the South Sea bubble suggest.

According to Odean (1999), confidence was one possible cause of excessive trading. The gains that overconfident investors realized through trading were less than they anticipated and did not even offset the costs of trading.

This is an interesting way of outlining a learning process which encompasses self-attribution and a growing belief in the trader's own skill when things go well.

Gervais and Odean (1999) stated that with growing experience the tendency to be overconfident decreases, since disappointments lead to more realistic appreciation of the trader's own skill. They mentioned that this reasoning agrees with the success part of level of aspiration theory; level of aspiration is a kind of goal that an individual sets for her/his performance in a certain respect.

They cited that the consequence of overconfidence may then be that the trader trades too aggressively and thereby increases trading volume and market volatility, at the same time lowering her/his own expected profits because of the number of transactions.

Overconfidence does not make traders wealthier, but the process of becoming wealthy can make traders overconfident (Gervais and Odeon,1999).

It may inspire entrepreneurship, openness to innovation, and financial risk taking.

3.10.4 Role of Overconfidence

Searching for confirming information is a way of making sure that the judgment or decision is right and confirmatory information is another reason for confidence in one's own judgments.

The confirmation bias exists when people tend to choose confirming rather than disconfirming information.

Davidsson and Wahlund (1992) tested the hypothesiss that had found some confirmation, namely that increasing concreteness in the task would weaken the tendency to look for opposed evidence.

3.10.5 Information and Confidence

Bloomfield (1998) divided their subjects into two groups with different amounts of information. The task was consisting of estimating the value of securities and making a decision on how many stocks to buy at a price slightly lower than the estimated value.

While the idea was that, if the quality of information is high, the less informed subjects would be less confident in their estimates, these subjects turned out often to be more overconfident than the better informed subjects.

Wealth was transferred from less informed investors to informed investors because the former tended to buy high and sell. The conclusion was that if professional investors were given inside information which was unknown to the less informed, the welfare of the latter could be harmed unless they were made aware of their informational disadvantage.

As Bloomfield (1998) mentioned the more reliable information would lead to underreaction whereas the less reliable information was expected to lead to overreaction.

By his work two types of portfolio formation rules were distinguished.

- The information based rule involved selling and buying depending on the favorability of value relevant information that was independent of the market price.
- Price based portfolios buying and selling were determined by changes in the market price following the information release.

As a result, he has predicted that price based portfolios would give higher overreactions or smaller underreactions than information based portfolios because market prices typically include an element of random error that is subsequently reversed.

3.10.6 Kinds of Control

Perceived control is an important factor in Ajzen's (1991) Theory of Planned Behavior and it can be seen as a form of confidence.

Perceived control may be an illusion as Langer (1982) mentions, illusion of control, which is defined as an expectancy of a personal success probability inappropriately higher than the objective probability would warrant. People are also act though chance events are subject to control.

She hypothesized that factors from skill situations involving competition, choice, familarity, and involvement introduced into chance situations would cause subjects to feel inappropriately confident and she found results confirming to that people would not distinguish chance from skill determined evennts even if they were aware of the chance factors.

Tversky and Heath (1991) also made similar research on this topic and found supporting results to Langer's hypothesis.

They let their subjects to choose between two alterantives:

1- A stock is selected at random from the Wall Street Journal. You guess whether it went go up or down tomorrow. If you are right, you will win 5 dollars.

2- A stock is selected at random from the Wall Street Journal. You guess whether it will go up or down yesterday. You can not check the paper. If you are right, you will win 5 dollars

It turned out that 67 percent of the subjects selected the first alternative and illusion of control makes people believe that they can influence future events even if they have no such power.

3.11 EMOTIONALITY FROM VARYING ANGLES

3.11.1 Affects, Feelings, and Emotions

Emotions are increasingly recognized for the constructive role they play in higher forms of human experience as mentioned by Cacioppo and Gardner (1999)

Karniol and Ross 1996 state that happiness, anger, sadness are apparently generated by the current states; fear and hope are generated by anticipated states.

Hedonic psychology is concerned with feelings of pleasure and pain, of interest and boredom, of joy and sorrow, and of satisfaction and dissatisfaction which are so applicable to the traders in the financial world as cited by Kahnemann (1999).

He cited that the majority of stock owners are rather passive and consequently less shaken by emotions than the relatively few highly active speculators and traditionally feeling had more of an experiential tone and affect and emotion were

more related to arousal, which is a phsychological condition of being more or less alert.

Mood and affect are often synonymus and the same models can be used to explain them.

Affect Infusion Model, designed by Forgas (1994), describes how affect or mood is infused into information processing. The amount of influence depends on the type of processing. He identified four strategies.

- Direct Access: involves a pre-exisitng evaluating that gives no new affect.
- Motivational Processing: is directed towards an exisiting goal
- Heuristic: affect infusion is likely since effects are experienced as information in situations where no pre-set goal or earlier evaluation exist.
- Substantive Processing: requires people to select, learn, and interpret novel information about a target and relate this information to pre-existing knowledge structures.

All these strategies seem applicable to financial behavior.

With increasing uncertainty and increase in new data, the possibility for affect may increase and may have significant effect on action.

Cacioppo and Gardner (1999) cited that counterfactual thinking or comparing objective outcomes with imagined outcomes that might have been shown to leave bronze medalists at the 1992 Summer Olympics apparently happier than silver medalists... even though, by objective standards, an Olympic Silver medal is higher value than a bronze medal.

They explained the fact through positive affects towards an object may arise as a pure consequemnce of repeated exposure to it which is called the mere exposure effect. It is similar to the effect of increasing familiarity like the way some internet companies have been in recent years, may have raised their attractiveness and the prices of those stocks.

They also cited that people are reported to speculate recklessly without regard to the fact that they may be exposed to ruinous losses and even in times of less turbulence in the markets, ill-considered speculation may bring ruin although it seems more rare than when bubbles are building up. Cacioppo and Gardner (1999) noted that fear leads to panic when prices seem to drop drastically and anxious investors try to sell as quickly as possible. What on the surface appears to be fear and greed in connection with some stock market events may be better explained by cognitive capacity, mass influence from others and some other less sensational emotions.

Cacioppo and Gardner (1999) noted that emotions are important since they have effects on expectations and actions like hope is an expectation of a very special kind, first it is colored by emotion, second there may be a light of will, third there is some notion of uncertainty.

3.11.2 Emotional Arousal

Arousal Theory assumes that organisms strive for optimal levels of arousal as defined by Svensson (1997) and also gambling and stock speculation may be a way of getting more exciting experiences. Another point in the theory is that the optimal arousal level is a function of task difficulty.

For really difficult decisions, Svensson (1997) suggested that it is desirable to have a relatively relaxed posture because the optimal arousal level is lower than for an easy decision and higher than the arousal when the individual is completely at rest; the more difficult the investment decision is, the more relaxed the decision maker should be, in reality, decision makers probably fail to reach the optimal arousal level and become more tense with increasing difficulty of the task.

Kaufmann (1999) argued that emotional arousal can be a source of bounded rationality, when arousal is at a low level, an increase causes the person to increase the effort level devoted to information gathering and problem solving. He cited that if emotional intensity increases beyond the optimal arousal level, the quality of decision making increasingly deteriorates. The marginal product of arousal becomes negative. Kaufmann mentioned that bounded rationality can be divided into two parts; one part arising from cognitive limitations and the other from extremes of emotional arousal and both parts involve restrictions on information processing, but for different reasons.

3.11.3 The Peak-End Rule

Stephan and Kiell (2000) cited that memories of past experiences of pain are influenced by the peak experience and by the end experience.

Stephan and Kiell (2000) made the following study to explain this concept:

The scenario described three investors with the same total losses but different distributions of them:

A	-2000,	-2000	-1000
B	-500,	-3000	-1500
C	-1000,	-3000	-1000

According to the peak-end rule, B will be seen as the biggest loser and the most disatisfied investor since both the peak and the end event were higher.

3.12 MOTIVATION

Motivation can be seen as drives that push an individual to act. It is a link between the present and the future.

Goals, plans, and intention as well as expectations become legitimate concepts.

For investors profit is the most important motive or reason given, followed by risk. Muller and Peters (1999) noted that some knowledge stock owners may think of the often assumed, sometimes fulfilled, relationshipbetween high risk and high profit and believe that it is necesary to take risks in order to make profit.

Alternatively, it seems likely that taking certain risks appears attractive and create excitement and thrill. It is then similar to the utility of gambling.

3.12.1 Achievement Motivation

Muller and Peters (1999) suggest that the achievement motive could contribute to explaining financial behavior. Higher motivation for achievement leads more willingness to take risks in investments. Atkinson (1957,1964) postulates that the motivation for performing a certain activity is a function of the expectancy of success and the expectancy of failure and suggested the following equation for tendency of success:

$$T_s = M_s * P_s * I_s$$

T_s is the tendency to achieve success through an activity

M_s is the motive to achieve success, a stable characteristic of the person

P_s is the the expectancy or probability of success

I_s is the incentive value of success at an activity, defined as $Is = 1 - Ps$

So, the lower the probability, the higher the level the incentive value.

The tendency to avoid failure (Taf) through the performance of an activity is defined in a similar way:

$$T_{af} = M_{af} * P_f * I_f$$

If $T_s > T_{af}$ then the individual will perform the activity.

An interesting question concerns what happens as a result of experiences with success or failure. Weiner (1972) suggested the following:

1- Motivation is enhanced following failure among individuals high in resultant achievement motivation.

2- Motivation is inhibited following failure among individuals low in resultant achievement motivation.

3- Motivation is decreased following success among individuals high in resultant achievement motivation.

4- Motivation is enhanced following success among individuals low in resultant achievement motivation.

Weiner (1972) suggested that if we apply these statements to the financial world then, an investor who has a high achievement motivation is likely to avoid stocks with extremely high or extremely low probabilities of success.

3.13 SELF CONTROL

3.13.1 Concepts Associated with Self Control

According to Fischer (1930) and Keynes (1936) thrift was an important conceptin explanations of individual and nation differences in savings and investments and thrift was assumed to depend on two sets of factors.

One set had to do with perception-cognition and was called 'anticipation' and 'foresight', what in modern theories of saving is called 'forward looking'.

The other set comprised volitional factors and was labeled 'self control' and 'willpower'.

Foresight is closely related to self control and almost a prerequisite; foresight and willpower are closely connected as suggested by Fisher (1930); they are both essential components of self control and high degree of foresight enables a person to give to the future such attention as it deserved and a high degree of self control enabled a person to abstain from present enjoyment and foresight has to do with thinking and self control with willing.

3.13.2 Willpower

As Rae (1834) mentioned industriousness and thrift were many held to be characteristics of those who displayed the virtue of saving money.

Thrift was determined by the ability to anticipate the future and by self control which was also called 'willpower'. The determination to sacrifice a certain amount of present good, to obtain another greater amount of good, at some future period, may be termed the effective desire of accumulation as suggested by Rae (1834)

'All men prefer a greater to a less' is the foundation of the rationality postulate which is formulated and explored by John Stuart Mill (1836) and Jevons (1871).

Warneryd (2001) suggested that human greed in this respect was not meant to be derogatory; on the contrary, the desire was a prerequisite for saving and investing and the problem was that the desire not always effective and did not prompt to action.

He mentioned three interpretations of the role of the prompt to action seem possible:

1- Environmental stimuli or situational factors are decisive. Income level changes and changes in interest rates may be such factors.

2- If a person's foresight and desire for accumulation become strong enough.

3- A link is necessary between desire for accumulation and action; such as self control or will pushing.

News of plummeting stock rates that provokes immediate reaction is an example.

Panic reactions of individuals may be triggered by headlines that yell about market level panic. In such cases the stimuli may lead directly to actions without requiring deeper cognitive or other processes.

Hoch and Loewenstein (1991) framed self control as a struggle between two psychological forces, as desire and willpower.

They classified two groups of self control strategies,

- attempts to directly reduce desire to spend
- overcoming of desire through a variety of willpower tactics.

A good reason for exercising self control is the need to guard against undue optimism about profit chanes in investing and against making investment with greater risks than the investor can afford as mentioned by Shefrin (2000).

He mentioned that if self control is equal to hedonic self regulation, its purpose is to serve a person's well being in two ways; one way involves a focus on promotion of ends and a person wants to make sure that certain pleasant things also happen in the future; the other way is a protective focus aimed at safety and responsibilities.

O'Donoghue and Rabin (1999) noted the maintenance of self control is viewed as a fight between doing things now or later as.

3.13.4 Ability to Delay Satisfaction

As Mischel (1984) cited one fundamental human quality, the ability to purposefully defer immediate gratification for the sake of delayed.

Mischel (1984) ran experiments in which the children could have a desired object, for example a marshmallow immediately or two marshmallows after a delay.

How people evaluate about the outcomes is crucial. The more the children focus on the arousing qualities of the blocked goals, the more frustrating and aversive the choice conflict and the delay.

He cited that one implication is that people at one moment make choices that they later regret and which they would not have made if they had devoted enough forethought to the choice.

Hoch and Loewenstein (1991) noted that proximity and vivid representation raised problems for behavior to be consistent over time, with no intervening change of preferences.

According to Hoch and Loewenstein (1991) one aspect of self control is taking time to reflect on matters and not jumping to decisions that current emotions favor, and to train oneself to view certain single decision as part of a longer series of similar decisions over time.

3.13.5 Self Control and Cognition Behavior Consistency

The concept of self control implies that the characteristic is stable over time and situations.

An important function for self control is to control the prioritization of goals so that long term goals get adequate consideration.

Self regulation usually refers to situations in which people have to engage in aversive activities like working on boring tasks or refraining from some pleasurable activity as cited by Kuhl (1985).

Kuhl (1985) concluded that the individual is assumed to have knowledge about her-his own strategies for managing intentions. Such strategies are:

- selectively attending to information which is supporting the current information.
- selectively encoding goal related information of incoming information.
- activating positive emotions and enhancing the motivational basis of the current intention by manipulating.
- the internal
- or the external incentive structure
- avoiding over long decision making

Procrastination, cited by Akerhof (1991), occurs when present costs are unduly salient in comparison with future costs, leading individuals to postpone tasks until tomorrow without foreseeing that when tomorrow comes, the required action will be delayed yet again.

3.13.6 Self Control and Its Relations with Other Personality Characteristics

Ainslie (1975, 1991) cited that the anectodal evidence often intimates that investors are to a large extent constantly shaken by emotions they if they have good self control such feelings like fear and hurt, will not govern their future financial behavior.

He cited that good self control and more relaxed attitudes to stock ownership may lead to less trading but more successful stock ownership and the developments make it possible to start looking for links between perceptions and actions and in this endeavor not to shy away from concepts like future orientation and self control.

Kuhl and Bechmann (1985) personality generally stands for behavioral consistency of long duration and personality traits or factors are essentially abstracted summaries of earlier behavior.

As Ajzen (1991) suggested that past behavior is the best predictor of future behavior.

3.13.7 Future Orientation and Self Control

The Five Factor Model is the personality theory that emerged in VSB Panel. The five factors are extraversion, agreeableness, conscientiousness(which is similar to self control), emotional stability and intellect.

Three possible roles for foresight;

- foresight plays a minor role not for only aggregate level but also for individual explanations.
- foresight being strong to evoke behavior that provides for the future.
- foresight in itself may not be enough, but there is a link between cognition of future needs and provision for the future.

Warneryd (2000) notes that measures that represented foresight(future orientation) and self control were significant and increased the explained variance of saving behavior.

3.13.8 The Behavioral Life Cycle Hypothesis and Self Control

The concept of self control is one of the main features of The Behavioral Life Cycle Hypothesis and Self Control of Shefrin and Thaler (1988).

They included three elements in their discussion of self control:

a- internal conflict

b- temptation

c- willpower

The internal conflict arises because of dual preference systems, one concerned with the long run and other with the short run. The former is called the planner and the latter is the doer.

Shefrin and Thaler (1988) viewed temptation as an absolutely necessary element and declared that models of saving without it weremisspecified. The reason was that some situations were more tempting than others and this influenced saving and willpower is said to represent the real psychic costs of resisting temptation. The assumption makes it possible to express self control as a behavioral cost. The authors also used framing, which refers to how the individual describes an alternative to her-himself and chooses a reference point with which alternatives are compared, and also mental accounts and wealth is framed into different mental accounts.

They noted that self control always demand effort and imposes immediate costs on the person, it may take plenty of imagination to visualize the long run benefit.

3.14 IMPATIENCE, TIME PREFERENCE, AND LACK OF SELF CONTROL

Fisher (1930) explained impatience and proposed the alternative label of time preference, which is simply estimated as the discount rate that a person used when comparing alternative future enjoyments at their present value.

Impatience is assumed to be negatively correlated with saving behavior.

Sociodemographic characteristics are important when explaining impatience. Young age, low education, and low income were such factors. In addition personality differences influenced time preferences. It seems likely that speculators on stock exchanges have high rates of time preference, that is, they tend to use high discount rates in their choices of investments.

In a Norwegian study by Eckbald and von der Lippe (1994), 261 lottery winners were studied,

Emotional reactions to winnings were few, aside from moderate happiness and relief, winners emphasized caution, emotional control and inconspicuous spending, betting was moderate both before and after winning, experiences after winning were predominantly positive and life quality was stable or had improved and a slightly more impatient pattern of spending was a characteristic of younger winners.

The results support other findings that lottery winners are not gamblers, but may be realists with good self control as mentioned by Warneryd (1996).

3.14.1 Speculation

Keynes (1930) believed in long term investing, but recognized that some people had an urge to make money quickly and that those people tended to become losers.

Bloch (1999) defines speculation as simply buying at a low price in the hope of selling later at higher one. He states that speculators serve a useful purpose in identifying gaps in the market and shortfalls in supply, all too often, their short

term profit orientation and the concomitant psychologicl scenarios mutate the process into one that distorts the market and leads to a protracted period of disequilibrium; even if the typical investor in most stock markets, in particular in countries with widespread ownership of stocks, tends to be cautious and make few transactions, active traders and speculators are frequent and visible in financial markets and according to him it seems likely that with the increased spread of participation in the stock market, a smaller proportion of stock owners are speculators now.

Galbraith (1987) suggested that when stock prices plummet, those who have used stocks as collateral for loans are pressed by the brokerage firms and banks who through margin calls request these investors to pay off or provide more collateral. The speculator will have to sell securities or other assets unless she or he has cash. The abrupt selling activities may further reinforce the downward tendency and a crisis may develop. Stock market crashes make news media look for losing speculators, whereas those who speculated in a coming crash and did it at the right time may remain unnoticed by the public eye.

No one would deny that stock price developments give rise to emotions, but all may not agree that emotions such as joy and fear may drive stock prices towards extremes, upwards or downwards.

Warneryd (2001) defined that overreaction in a bull market is often explained as investor optimism while overreaction in a bear market is explained as investor pessimism; optimism in its turn is attributed to overconfidence, which is said to be due to self attribution of earlier successes in the market place.

Part of the game that constantly goes on in financial markets is probably that investors, especially fund and money managers, always are looking for signs that may indicate strong reinforcement of the trend or trend reversal as cited by Warneryd (2001).

3.15 INFLUENCES FROM OTHERS

3.15.1 Stock Markets

Ellis (1993) suggested that stock prices are set in a process leading to consensus, which arises as a consequence of social interaction between people at the workplace and in almost any other conceivable social context and the active investor is constantly open to impressions from the social enviroment.

Schachter (1986) similarly called stock prices 'opinions' that like other opinions may change due to many factors, mostly having to do with influence from others. Stock markets are arenas where people interact with and influence one another.

He noted that the current financial theory models are highly mechanical and pay little attention to the flexibility and variability of social behaviors and most of the social influences and interactions are by definition incompatible with economic rationality and produce inefficiencies, at least viewed at the macro level.He concluded that social interaction creates non addivity, which disturbs the relationships between the micro and macro level models by making aggregation difficult.

Bull markets, bear markets, bubbles, burst of bubbles and crashes appear to have their origin in social influences as mentioned by Smith (1991); social influence may mean to follow a market leader, to react simultaneously with other investors

on identical information, or simply to imitate behavior, spurred directly by one's own observations or indirectly by mass media reports on what significant other people are doing.

As Smith (1991) indicated on the basis of cognition alone, without the language of the market and ongoing social interaction with other agents, rational decision is frustratingly illusive.

Social influence is not only strongest when the individual feels uncertain and finds no directly applicable earlier experience of her/his own, but such situations may lead to an active search for some kind of social support and confirmation.

3.15.2 Social Influence and Critical Mass

In efficent markets, traders act on information that is public. If private information diverges from public information, it is a disturbance and social influence serves to suppress.

Switch from private to public information occurs is studied by the help of private information.

Warneryd (1994) suggested the personal convictions about likely outcomes are in the economic models neglected in favor of mechanical imitation of other investors' behavior.

3.15.3 Social Influence over Growth Stocks

Shefrin and Statman (1994) cited the belief that good stocks are stocks of good companies.

They noted that stock prices are based on expectations and expectations of stock prices may for the wrong reasons remain stable over long periods of time or be prone to change abruptly and it appears that changes in stock prices are based on what investors believe about other investors' reactions to fundamentals and their expectations with respect to other investors' expectations.

Hellman (2000) noted that managers of funds, who often have the imposed goal of being at least as good as the index, may have been forced to buy growth stocks with little substance value and the index serves as a measure of other investors' performance. The same may have been true of private investors with high set goals.

3.16 SOCIAL INFLUENCE

3.16.1 Kinds of Social Influence

Warneryd (2001) suggested that social influence can be in many types:

- small group experience
- direct observation and interpretation
- reports on behavior
- bandwagon effects

He mentioned that social influence is largest in situations of certainty, when other people are assumed to possess some kind of knowledge that could be useful for arriving at the best decision and people try to evaluate their attitudes and capacity against those of other people as comparison objects; the two major types of influence from groups are:

- information received from a person or group
- norms that give rules for behavior

He suggested that a different type of influence suffuses expectations about how the market will react to news, especially dramatic news. As named by Leibenstein (1950), bandwagon effect is the fact that many people acting in the same way puts pressure on other people to behave or act in the same manner.

De Bondt and Thaler (1999) apply this effect to finance as the following:

The homogeneity of the information signals received by the investment community; the similarity in interpretation of news items because of mental frames that are socially and professionally shared; incentive systems that encourage money managers to mimic each other's trades; and notions of prudence and fiduciary duty that depend on external validation.

Social influence, social interaction and exchange, and group decision making are all areas in which significant others are concerned.

3.16.2 Social Learning

Bandura (1977) defined social learning as it involves a person acquiring social behavior, relations with other people, by copying the behavior of models whom she/he respects.

The learning occurs in three ways:

1- *Direct learning:* economic behavior and other behaviors are learned because other people administer rewards and punishments that are directly related.

2- *Indirect learning:* this is often called 'vicarious learning' since people learn social behavior from watching what other people are rewarded or punished for.

3- *Imitation:* An individual acquires new behavior and performs new acts after observing another individual's behavior.

All three forms of social learning are open to mistakes, without knowing it people may misinterpret the connections between rewards, punishment, and behavioral acts.

Mechanical imitation plays an important role in informational cascades and herd behavior.

Katona (1975) suggested a new learning process in which new attitudes and behavior patterns were learned and which as a rule developed slowly and serially due to interpersonal contacts.

Katona (1975) cited that what the mass media reported could have greta influence upon such social learning. The concept embodied the notion that behavior which was ordinarily characterized by habits and routines and was predictable, could suddenly and simultaneously change in large population segments following news that were inconsistent with current cognitive maps.

3.16.3 Social Dependency

Schacter (1986) defined the degree to which a person is dependent on what other people think and do varies with a number of factors. Social influence presupposes uncertainty and diminished self confidence.He also noted that the strength of tendency will depend on the extent to which the circumstances change and how incorrect the former opinion was. According to him dependence should increase in bear markets when many investors lose money and independence will increase in bull markets when investors make money and are satisfied with their performance and also he defined causal attribution theory that investors prefer to attribute successes to themselves while they experience losses in bear markets as 'bad luck'.

Asch's (1952) experiments showed that people judging tasks were inclined to follow the examples of others even when they had a feeling that the judgment was wrong which is called conformity.

3.16.4 Relations with Others

Warneryd (2001) mentioned that in social groups the interaction pattern and group influence on individual members naturally vary with the structure and communication lines of the group, which may also vary with member characteristics and situation in which the group operates.

Tuckman (1964) mentioned that personality tests helped classify the members of the groups as abstract, that is , individuals who perceived a more multifaceted world and who thought in terms of alternative intrepretations and approaches, or

concrete in their approach to problems, that is, characterized by low integration of impressions and simple and categorical information processing. He also noted that more abstract individuals would be more flexible and open to diversify and they would display more environmental sensitivity, more informationnal orientation, greater differentiation, and more integrated strategy in dealing with the task.

Levine and Moreland (1990) defined Social Relations of Stock Investment Clubs as they are the groups of people who together plan and decide on investment of their jointly contributed means. The advantages are:

1- better posibilities of diversifying

2- joint expertise

3- cooperation

Latane (1981) noted the presence of other individuals on people's phsychological states, subjective feelings, cognitions, values, and behaviors- the so called social impact. It is based on the Psychological Law, which is modeled on the marginally decreasing utility of money; the first other person in a social force field is ascribed greater impact than the hundreth and also when the tendency to do something is inversely proportional with the number of people involved it is called inhibition or division of social impact.

Ekman (1955) suggested four possible effects of cooperation.

- individual
- summation
- average
- probability

He noted that individual effect relates to how individual performance is influenced by the cooperating situation and the effect can be facilitating, deteriorating, or none at all.

He also mentioned that the summation effect sets in when the cooperation is of a nature such that the individual performances can be added to one another, with the resulting collective performance representing the sum of individual performances and the average or compensation effect comes into play when several persons take part in ratings so as to make these more accurate.He concluded that the probability effect is a function of the number of those cooperating and the important point is that the individual motivation may increase or decrease with the social facilitation effect.

Camerer and Lovallo (1999) presented reference group neglect which refers to the tendency to under adjust to changes in the reference group one competes with. It is said to be a by product of a psychological phenomenon called 'inside view'; an inside view forecast focuses on the abilities and resources of the group itself, constructing scenarios of future progress, and extrapolating current trends; an outside view ignores special details of the case at hand, constructs a class of cases similar to the current one, and guesses where the current case lies in that class.

3.17 HERD BEHAVIOR

Shiller (2000) mentioned that the essential meaning of herd behavior is that investors tend to do as other investors do, at least if they are exposed to information about others' behavior.

They imitate behavior and disregard their own information or private signals, which for some investors are supposedly contrary to the current information from others.

How can mass reactions start an develop into panic or crashes?

Bonerjee (1992) cited that someone makes a wrong decision at one point and this action is copied by others who follows in a sequence as suggested by.

Like football hooligans abusing people and effecting everything close to them.

Ogburn and Nimhoff (1950) suggested that leadership and suggestibility became two important elements in the debate of crowd behavior.

Ogburn and Nimhoff (1950) emphasized the following principles;

First, herd behavior may be a simultaneous reaction to common stimuli rather than a chain reaction as pictured by some authors.

Second, in finance, concepts like frenzy and panic are labels put on observable phenomena at the market level and may find little or no corresponding individual behavior.

Third, even if many people react in the same manner, not everyone in the potential mass does.

Fourth, it is debated in psychology to what extent there can be an affective reaction that precedes cognitive evaluation of a stimulus. The question is whether an affective reaction can precede and rule out cognitive evaluation altogether or delay it. If there is a primary affective effect, people may be much more ruled by emotions than is generally assumed in rationality discussions.

Zajonc(1980) cited that affective reactions to stimuli are often the very first reactions of the organism, and for lower organisms they are the dominant reactions; affective reactions can occur without extensive perceptual and cognitive encoding, are made with greater confidence than cognitive judgments and some reactions that may be important for our survival may be guided by primary affects and little or no deliberation. This may be true for certain reactions following events in the stock market.

Scharfstein and Stein (1990) cited that correlated prediction errors lead to the sharing the blame effect that drives managers to herd.

Bikhchandani (1992) pose the question of why mass behavior is often fragile in the sense that small shock can frequently lead to large shifts in behavior. Answer is that individuals rapidly converge on one course of action on the basis of some, but very little, information suggesting that a different course of action is optimal or that underlying circumstances have changed, whether or not they really have. He suggested that informational cascades explain not only conformity but also other fluctuations such as fads, fashions, booms and crashes. He mentioned that an "informational cascade" occurs when it is optimal for an individual, having observed the actions of those ahead of him, to follow the behavior of the preceding individual without regard to his own information.

Russell (1976) observed that people were more likely to follow a high status person than a poorly dressed person across the street against a red light. This explained behavior by that the characteristics of the first mover.

Shiller (1995) rejects the idea that there is a first mover whose example others follow without considering their own information.

Shiller (1995) pointed out the possible herding mechanisms include:

1- the basic human need to create a meaningful self-image

2- the salience of shared mental frames in ambiguous situations

3- payoff externalities in information acquisition

4- informational cascades,

and as the forecast horizon lengthens, the accuracy of the EPS forecasts deteriorates sharply but analyst consensus is unaffected and remains strong.

As De Bondt and Forbes (1999) cited there are sheep and shepherds among the investors and as more analysts produce forecasts, disagreements rise, but only up to a point; so avoiding regret may be an important influence for the private investor.

3.18 CAUSAL ATTRIBUTION THEORY: SUBJECTIVE ANALYSIS OF CAUSES

Heider (1958) cited that in common-sense psychology, the result of an action is said to depend on two sets of conditions, namely factors within the person and factors within environment.

The founder of attribution theory ,Heider, raised the important question concerned what made a person attribute effects to objects or events in the environment and

what made her or him attribute effects to acts and dispositions of the person involved.

Kelley (1967) has formulated some general criteria for what guides causal attribution. An attribution to an object can be explained by the degree of covariation between the effect and the following four criteria:

1- whether there is distinctiveness

2- whether there is consistency over time

3- whether there is consensus

4- whether there is consensus over sense modalities

Kelly and Michelle (1980) suggested that, in the world of finance, successful acting by a group of professionals is more likely to be attributed to personal qualifications than to general upturns. If they fail, it must be a consequence of an unfavorable environment since they are professionals. Such attributions, if made by clients and the general public, may secure the survival of mediocre fund and money managers.

3.18.1 Success and Failure

Weiner (1985) noted that the warrior needs to know why he is winning battles so he can survive the next one.

He continued as perceived causes, lead to expectations regarding future events. If a person analyzes his or her performance and interprets successes and failures as due to external circumstances rather than personal factors such as competence the expectations of future will be founded how these circumstances are expected to

develop. If the causes are perceived as pertaining to the individual her or himself, strategies for the future become quite different and may involve personal development.

Weiner (1974) systemized the perceived causes reported by his subjects into four categories based on two two-valued dimensions: stability (stability, unstable), and locus of control (internal, external).

Attributions to Causality

Stability	*Internal locus of Control*	*External locus of Control*
Stable	Ability, skill	Task difficulty
Unstable	Effort	Luck

According to Weiner attributions are subject to four kinds of bias:

- Tendency to underestimate the influence of situational factors on behavior and overestimate the impact of personal, dispositional factors.
- Observer is prone to see his or her own behavior as normal
- Affective consequences for the perceiver may bias the attribution
- A perceiver may have many illusions about causality

Kelley (1967), Crittenden (1983), Harvey and Weary (1984) emphasized that in behavioral finance self-attribution of success is often viewed as the single or main cause of overoptimism. People are ready to accept credit for successful stock investing.

Muller and Peters (1999) noted the way other people's successes and failures are attributed to causes is important for the development of the stock markets. They also mentioned that research in social psychology gives support to Keynes's and other economists` intuition that sharing the blame may be an impetus to action. A well-known fact is that people tend to use more elaborate explanations for their own actions than they do for the actions of others.

3.19 RUMORS

Rose (1951) noted that rumor is not a possible influence in efficient market since all investors get the news about fundamentals at the same time and they immediately react.

Rose (1951) citeed that rumor passes from person to person and so could not reach all people simultaneously.

Three dimensions characterize the rumor:

It is the information that is

- not well verified
- is of local or current interest or importance
- is intended primarily for belief

What is the difference between news and rumors?

A true rumor is news that for some reason comes out prematurely as Rose (1951) defines.

Di Fonza and Bordia (1997) mentioned three steps in transmission of rumor is studied:

1- Generation

2- Spreading or transmission

3- Effects on beliefs,

and rumors are transmitted for various reasons, such as wanting to share beliefs or liking the idea of being seen as knowledgeable.

Allport and Postman (1952) found three types of changes of the original messages:

1- *Leveling:* refers to the fact that as rumors travel it tends to grow shorter, more concise, more easily grasped and told.

2- *Sharpening:* what is left after leveling is clearer and more focused

3- *Assimilation:* it has to do with the force exerted by the recipients` habits, interests, and sentiments.

Rosnow (1991) distinguishes between wish rumors and dread rumors. The former invoke hoped-for consequences, the latter invoke feared or at least disappointing consequences.

Non-involvement rumors do not concern the recipient.

Even if people are unaffected by a rumor, they may want to pass it on since they may want to seem knowledgeable or may have an interest that is promoted by the spread of the rumor.

It is found that dread rumors are more likely to spread.

Rose (1951) explained that while rumors sometimes can be true and excellent predictors of events, rumors without foundation in reality may also entail consequences in the stock market for example about mergers or expected changes in earnings or in earning capacities.

Rose (1951) measured the influence of what he called the factor of stickiness. This factor comprised all factors that prevented the stock market from being perfectly competitive in the very short run. It was assumed that if rumor affected stock prices, it did it by creating a trend, that is, it caused prices to move in a single direction over a period of time.

- In his studies the author concluded three factors that could not be neglected:
- -Waiting a few days to see what trend the market will take
- -Reading the daily quotations
- -Rumors

These three factors might be interrelated.

In another study Pound and Zeckhauser (1990) tried to figure out whether excessive returns over the market could be realized by acting based on the rumors. They concluded that the market acted efficiently to rumors since simple trading strategies based on buying and selling rumored targets` stocks yielded zero excess return. They concluded that investors who do not get news or hear rumors are assumed to be tracking, which means that stock prices are expected to revert towards the mean and investors then buy when the price is low and sell when price is high.

Di Fonzo and Bordia (1997) found in their simulation study, that their subjects who are exposed to news, published rumors, or unpublished rumors departed from tracking equivalently while controls adhered strongly to tracking. Furthermore, ignorance continued to be profitable.

As Warneryd emphasizes rumors undoubtedly affect stock markets. This has been known ever since the first stock exchange opened in England in 1770`s.

CHAPTER 4

INVESTOR SEGMENTSAND SUGGESTIONS ON PRIVATE INVESTING

4.1 DIFFERENCES BETWEEN INVESTORS AND INVESTOR SEGMENTS

Warneryd (2002) mentioned that many observations and studies of financial markets suggest that individual investors, like people in general, do not display the rational behavior that efficient market and portfolio choice theories posit, not even when averages over long periods of time are considered. He emphasized that while the pursuit of rationality implies limited dispersion around the mean and suggest homogenmity and similarity among investors, non rationality leaves room for the pursuit of many types of goals and opens up possibilities of many ways of acting. According to Warneryd, in economic psychology the prevalent tendency is to stress the importance of individual differences and to group people into clusters or segments on the basis of differences in behavior or personal characteristics. Clusters formed on the basis of differences in one set of variables are then compared with regard to other characteristics.

4.1.1 Benefits of Allocating Investors into Segments

Warneryd (2002) noted that a fundamental idea in many marketing policies is that there exist groups of potential and actual consumers who have to be treated differently in achieving marketing success. He also noted that segmentation is based on either differences in perceived benefits or on psyhological variable by segmentation it may be possible to explain earlier developments and make forecasts of aggregate behavior in a better way. He told that the effects of policy

changes at the macro level, such as changes in interest rates or the effects of plummeting stock prices, may vary for different segments of investors. Margin buyers may react more strongly than usually passive investors.

According to Niederhoffer (1971) and Schacter (1986) all investors very seldom react in exactly the same way to news and other mass media reports that depress stock prices. If they did, there would not be any buyers willing to buy the stock that anxious sellers throw into the market. The effects of catastrophes events may vary significantly between segments of active and passive investors.

4.1.2 Many Types of Investors

The debate over market efficiency has already recognized that there may be more than one kind of investor and launched the concept of noise trader for a kind of non rational investor.

Campbell and Mankiw (1991) noted that Life Cycle Hypothesis can explain only part of household savings and proposed the existence of two kinds of savings. In their study one group is consisted of those who were liquidity constrained or rule of thumb consumers and who spent all of their current income. The other group comprised those who were forward looking consumption smoothers and who behaved in accordance with the rationality based LCH and invested their money.

Weil (1991) suggested three groups of investors:

- non savers
- forward looking savers
- non forward looking savers

Whereas Shiller (1989) proposed a model with two types of traders in financial markets:

smart money investors and ordinary investors. First is assumed to search systematically for investments with abnormal returns and to respond quickly and appropriately to information that becomes publicly available. Ordinary investors include everyone who does not respond to expected returns optimally forecasted, but are supposed to overreact to news and be vulnerable to fads.

Kelly (1997) distinguished between three types of investors:

- *Smart money traders:* behave rationally
- *Noise traders:* buy high and sell low
- *Passive investors:* do little business

Kelly assumes that the probability to become a noise trader declines with the income because those with high income have greater incentives to acquire reliable information about the market.

Canner (1997) ditinguished three types of risk takers among investors:

1- Conservative

2- Moderate

3- Aggressive

The study also showed that the ratio of bonds to stocks falls as the investor became more willing to take risk.

4.1.3 A British Survey of Market Segments of Savers

Harrison (1994) reported on financial segments. She arrived at the idea of four financial segments through cross matching financial knowledge and financial maturity with two values each as high and low.

1- Apathetic minimalists (42%)

2- Financially confused (16%)

3- Capital accumulators (10%)

4- Cautious investors (32%)

The capital accumulators are married, male, aged 55-64 years, had older children or none, had higher education, had high income, and were heavy savers.They are knowledgeable and ready to take risk.

The cautious investors were more often single, aged 16-34 years, had finished education at age 18-25, were employed in supervisory or managerial occupations and had very high income.

The survey also founded that a large proportion of the two investor clusters (capital accumulators, cautious investors) were persistent savers for long term goals and were rather passive as investors.

It is interesting that if the financially confused, who had low income and low education, had stocks, the stocks mostly came from privatization issues.

In their studies of Saver Groups, Gunnarsson and Wahlund (1997) suggested six saver groups in their analysis of a 1993 sample of 503 Swedish households who were interviewed in a mail survey. The six groups were labeled as follows:

1- Residual Savers: they put aside money when some money was left and preferred saving forms with high liquidity

2- Contractual Savers: they seem to have borrowed freely and saved through paying off debts and had a debt to asset ratio of 4.2

3- Security Savers: they were the heaviest investors in retirement related financial instruments and their debt to asset ratio is 1.3

4- Risk Hedgers: they had large financial wealth, invested in risky and long term assets. Their debt to asset ratio is 0.52

5- Prudent Investors: they had large savings and avoided risky investments, preffering bonds to stocks. Their debt to asset ratio was 0.28

6- Divergent Strategies: they had well diversified portfolios and invested in risky, complex, and unusual assets such as options. Their debt to asset ratio was 0.5

Gunnarsson (1999) studied the Dutch data from CentER Savigs Survey by using factors like;

liquid and transactional saving forms, savings or deposit accounts, bonds, saving certificates, mutual funds, common stocks, pension insurance, and employer-sponsored savings plans.

The study resulted with five cluster as:

- Diversifiers
- Liquid savers
- Security focused savers

- Risk minimizers
- Non savers

Stock owning was common among the diversifiers. The main differences among the clusters were household net income, netr wealth, and being a homeowner. There are two important psychological factors which were the attitudes to financial risk taking and the importance of safe savings.

Gunnarsson (1999) suggested that when we analyse the segmentation studies it should be taken into consideration that the relatively low transaction of stocks in certain clusters do not show that there is a lack of knowledge and interest but there is mean discretion and self control.

Muller and Peters (1999) conducted interviews with a sample of around 3500 households.

They have used six psychological variables:

1- The need for control of financial matters
2- The fun found in dealing with financial matters
3- The preparedness to take risks
4- The prefernce for simplicity in investments
5- The quest for liquidity
6- The preference for personal advice from financial experts

They labeled the following groups:

1- *The professionals:* very familiar with finances, high income makes taking high risks possible

2- *The choosy:* knowledgeable, low risk taking, prefers real estate and fixed income securities

3- *The player:* takes high risks, main goal is to have fun and gratifying experiences and interested in stocks.

4- *The holder back:* over average income, suspicious of everything, rejects advice and has high risk aversion

5- *The regular savers:* this person regularly and patiently puts aside money from under average income, appreciates advice but wants simple investing

6- *The constrained:* does not have enough cash to invest, liquidity considerations are very important

7- *The resigned:* the idea of investing money is foreign and uninteresting because of poor financial situation, immediate liquidity.

In a later study the purpose was to figure out the psychological resistance to buy stocks.

The components were risk taking, returns, liquidity and simplicity

Those who wanted high liquidity and simplicity and were highly risk averse were not attracted by the higher returns that stocks can give.

Those who were willing to take higher risks are frequently among the professionalsand the players.

4.2 NOISE TRADERS AND THEIR SHARE IN MARKETS

While the assumed size of the rational investors varied from 100% to doubts about whether it exists totally at all, Black (1986) asserted that noise trading was

prevalent and actually a prerequisite for a functioning financial market in practice. His implication is that the noise traders create new opportunities for those who are able to look through the patterns of noise trading and use the knowledge to their own advantage. He mentioned that most privately owned stocks are held by people who are well to do and can relatively easily afford loses on their holdings. A small group of investors speculates actively and some of those buy at the margin, that is , they buy stocks on borrowed money.

Warneryd (2002) suggested to distinguish investors, from individual investor point of view, into four:

1- *Investor who invests some:* but never all of their wealth in risky securities, prefer to buy bonds and not very active

2- *Wealthy investors:* systematically invest in securities and who often employ the services of the experts

3- *Investors who speculate:* have few other assets and sometimes borrow money

4- *Naive investors:* who are enticed by the stories of high profits, lured by the marketing efforts accompanying privatization sales of stocks

4.3 THE DEFINITION OF TYPICAL STOCKHOLDER

In financial economics, the economic description of the rational stock investor dominates. Warnerd (2002) mentioned that efficient market theory needs enlargement, Bayesian investor who handles probability distributions expertly, the theory nowadays allows for considerable individual deviations from rationality, and recognizes the existence of so called noise trading. He pointed out the

disagreement that is rather focused on how disturbing to the market noise trading is. In behavioral finance, the typical stock owner or trader is characterized by cognitive limitations and the use of simplifying heuristics, commonly referred to as cognitive bias or cognitive errors. He suggested that there are a few highly active stock holders who may gain less than the market portfolio because they trade too much. Their scenarios are instant scenarios and new information is rapidly merged with highly selective memories of successes and failures.

Warneryd (2002) stated that there are many passive investors who hold on to their financial assets, inspired by their mostly strong loss aversion. Relatively passive stock holders may hold a considerable proportion of total stock value which is increasing day by day because of factors like; retirement savings, privatization activities.

4.3.1 Similarity Between Expectations as Scenarios

Warneryd (2002) suggested that private investing depends on images of the future that investors, guided by selective memories and selective information, often under the influence of others. He concluded that the image derives from formation of expectations, which can be assumed to give a direction to and even guide behavior.

Brehmer (1992) defined scenarios as which often are colored by emotions, are the person's images of the future or rather possible futures. They are composed of past experiences, mixed with causal attributions, pieces of new information, and social influencesfrom different sources, some of them also with assumptions

about cause and effect., and pure fantasies about what the future will and should be like and all scenarios are related with person's self-image.

Shiller (2000) raised the question of to what extent is it possible to understand and predict the scenarios that will determine an individual investor's behavior, or to aggregate the scenariosof different persons into something that can predict what will happen at the market level?

He also answered as the past and the present are treated by the aid of heuristics that make life simplier. It may be arguable whether the heuristics are smart, whereas there is more aggrement that the heuristics are fast and frugal. Causal attributions tend to have a self serving bias and involve ascribing successes too much to one's own skill and efforts and failures to bad luck or to others' misdemeanor. When potential investors see other people, apparently without any special qualifications, being successful in stock investments, the temptation to invest in earlier profitable stocks are there.

People tend to base their judgments and decisions on samples from memory and from the environment. Fiedler (2000) proposed that heuristics and many other cognitive phenomena, called errors, can be explained by sampling theory. Investment scenarios may be based on inadequate sampling due to the fact that memory is selective, causal attributions are self serving or denigrating the skills of others, and external information sources are biased and reveal too little of the needed information.

4.3.2 Future Orientation

Future orientation means that a person should form an image of future.

Warneryd (2002) stated that an intentional expectation that comes true is to a varying degree the outcome of a mixture of skill and luck and also most people seem to agree that with more skill, less need is felt for luck.

As he defined in financial world the skill means being able to make accurate forecasts and to put in mental effort behind a transaction however investing skill is hard to measure in any adequate way since the outcomes always seem to depend on may facvtors besides skill and also luck is not always recognized by the person who experienced a positive outcome and had made som effort.

Warneryd (2002) suggested that The Long Term Capital Mangement showed that the knowledge and skill are not always enough of a protection against decisions that may turn out to have bad, even disastrous consequences and most of the time people are led by their samples of their own experience and their perceptions of their own skill.

4.3.3 Level of Trading Activity and Use of Diversification

Warneryd (2002) mentioned that survey interviews and examination of account transactions provide arguments for believing that many stock holders are highly inactive and he also noted that according to some thinking and empirical research, those who are inactive and do not trade too much do better in the long run than those who closely follow stock market ups and downs in their own trading.

As De Bondt (1998) suggested diversification is a golden rule both according to Bernoullian probability theory and financial theory and the concept of diversification seems foreign to many investors for two main reasons:

- -people want to invest in stocks of companies they think they know and believed in, which keeps down the number of companies invested.
- if one has stocks in many different firms, they may develop differently and in ways that threaten the loss aversion.

Kahneman and Lovallo (1993) pointed that the concept of a market portfolio seems to clash with the way many investors view stocks. In the first place, the investor has and wants to have feelings about his or her stocks, approaching a personal relationship with a chosen company. Composing a market portfolio implies that stocks may be included that the investor does not believe in and may not like.

4.3.4 Ethical Investing

Warneryd (2002) defined ethical or social investing as the investor avoids investing in stocks from certain types of companies and also notes that the use of ethical rather than social implies that the individual's own belifes are in focus.

He listed three cases that may be distinguished;

- Inveestor may decide not to buy any stock in certain companies, If he or she becomes the owner of the stock through inheritance or through new acquisitions that a company makes, he or she is inclined to sell these stocks, maybe even with some loss. -The second case is the investor's wish to support a cause actively by investing in companies that, are outstanding in environmental protection or pursue social goals to a greater extent than other companies.

- The third case involves participation in funds usually means that there is a mixture of stocks that is hard to follow in detail and new acquisitions may result in involvement in firms that manufacture or sell goods that are not ethically acceptable to the ethical individual investor.

Statman (2000) reports a number of criteria for socially responsible companies:

- Companies that derive 2% or more of their sales from military weapons systems
- Companies that derive any revenues fromthe manufacture of alcohol or tobacco products
- Companies that derive any revenues from providing gaming products or services

Lewis and Mackenzie (2000) states that the individuals are neither cranks nor saints; they are commonly middle income professionals mixing ethical investments with not so ethical ones.

This persistence cannot easily be dismissed merely as fashionable or faddish behavior in the market place.

4.4 THE PERFORMANCE OF PROFESSIONALS

The professionals in the field may be thought to have more skill on the basis of their experience and training. Professionals may be more prone to use forecasts made by financial experts, but such forecasts seem to have flaws judging from studies made by De Bondt (1991,1993). The authors commented that all forecasters added a lot of subjective judgment to the model and the cognitive

biases or the cognitive capacities of the professional investors resembles that of ordinary people.

Warneryd (2002) mentioned that four types of professionals can be distinguished in financial world:

- Newsletter writers
- Financial analysts
- Professional traders
- Financial advisors and brokers

Shefrin (2000) notes that professional money managers' performances are often poorer than the market portfolio performance. He cites that if skill is a factor in fund performance than the winners of the previous year should be the winners of the next.

In sum, the predictions of stock prices and recommendations made by newsletter writers do not appear overly successful, according to the findings. Financial analysts do not do too well with their forecasts which, besides the difficulty of the task, is also attributed to the special considerations they have to make because of clients. Studies of fund managers often show that, in bull markets, funds rarely do better than the market portfolio, while still being profitable.

4.5 AGGREGATE EFFECTS

4.5.1 Psychological Micro Models

Warneryd (2002) suggested several ways in this respect; about the efficient market hypothesis; the simplest line is to regard the deviations as dispersion that

is larger than really expected but still compatible with the micro model; another line is to concentrate on the macro data and discount the importance of the micro model; a third line of thinking is to extend or even twist the rationally postulate a little; a fourth way is to find a new micro model, elaborating the rationality concept or just using rationality as a benchmark.

He defined what researchers in behavioral finance have done as the rationality benchmark which defines the kind and quantity of errors in cognition which.

When some aspect of theory needs an explanation of a financial event, it is desired that test is made at the individual level implying that the selected principle works.

Tversky and Kahneman (1983) mentioned that behavioral finance and experimental economics have joined forces and that may experiments with a focus on individual psychological characteristics have been and are being performed.

4.5.2 The Psychological Stock Market Wealth Effect

Warneryd (2002) suggested that people who have accumulated money are in saving theories assumed to consume more and when stock prices go up and stock holders become richer on paper, but do not realize their paper gains, the possibility of a wealth effect is largely unrecognized.He stated that lower value of stock holdings would lead to pessimism and more control of expenditure; higher value would lead to optimism and more willingness to spend.

He also made an important conclusion as stating that positive and negative wealth effects are not symmetric if prospect theory is correct and paper losses are bound

to give more emotions than the corresponding paper gains if people are characterized by the strong loss aversion that prospect theory assumes.

4.5.4 Do Passive Investors Prevent Deeper Panics

Warneryd (2002) cited a very crucial point that if a significant portion of the stock capital is owned by investors who are characterized by loss aversion, there will be no real bursts of bubbles, at least not with long lasting events. Loss aversion will make investors refrain from realizing their losses and make them hope for improvement at least in the distant future. Warneryd (2002) mentioned that in 1929 crash, and critized the idea that there were relatively few passive investors, which enhanced the ill consequences.As Shiller (1989) noted, in 1987 there were more passive investors, which made the recovery easier and smoother after the professionals had panicked. In the year 2000, there may be so many of the passive investors that global bubbles do not grow and later explode, but dissolve less dramatically. Bubbles may still arise and burst in industries whose stocks are shunned by passive investors.

Warneryd (2002) also noted that before, stock markets were dominated by rich people, some of whom speculated, and by pure speculators with small financial resources. Over the last decades, the investors in stock markets have changed, there is a tendency for wealth owners, including small ones who are persistent savers, to invest part and far from all of their wealth in stocks.

The interest for stocks has increased as a consequence of intensive campaigns in connection with privatization of telecommunications monopolies. However survey results from several countries has shown that the majority of investors are

rather passive and make few transactions. Their share of total stock owning is of considerable size.

Warneryd (2002) emphasized that marketing of financial services seems to be built upon the presumption that all investors are active and always eager to increase their wealth, referred to as greed and this misconception is probably enhanced by the financial theories that are dominant. Many investors invest only in one or a few firms. It seems likely that they believe in the particular firms and are willing to trust some of their money to one or a few wellknown firms for long term investment.

He gave the example that for old people the rule of thumb says that the percentage of stocks in less risky bonds should be 100. At least two reasons for this; one is the that old-age pensioners seem to want to supplement their retirement income from capital. The second reason is the risk of paying inheritance tax on a fictitious amount of money.

Warneryd (2002) also brought the question that can the long term, mostly passive investors in stocks have a balancing influence on stock price developments in such a way that the probability of expansive bubbles bursting is strongly reduced?

He answered as, earlier when most of the stock value was held by very active stock holders, many of whom engaged and proffesional money managers, panic sales were more likely than today.

According to Warneryd (2003) the passive investors who are disparagingly counted among noise traders in financial economics are in fact the stabilizing element in the financial markets.

Black (1986), who introduced the noise traders concept, also mentioned that the existence of noise traders is essential for liquid markets.

Warneryd (2002) concluded as in the long run there will be some return to fundamentalism, a development that will be complemented by some guesses about other investors' expectations.

He noted that it seems likely that when stock ownership is broadened in a country, the proportion of total stock value held by passive investors will increase and may even reach a considerable proportion and if this is the case and the hypothesis of the stablizing infliuuence of passive stock ownership in bubble times hold, the stock markets in countries with low proportion of stock holders should be more sensitive to bubbles and crashes which take longer time to recover than countries in which there are many passive stock owners.

He suggested that with increasing participation in the stock market, the new phenomenon of trading through the Internet may work in the other direction and increase short run volality at least. Stockholders who ordinarily trade rarely and after careful consideration may be tempted to trade more often and take more risks in the hope of gaining more. Day traders are relatively few and their efforts to make short run profits may not be sufficient to shake the stock markets, but may increase the volality of single firm stocks.

4.6 SUGGESTIONS FOR THE PRIVATE INVESTOR

4.6.1 Several Suggestions

The role of psychology often seems to be provide some help with hypotheses when elegant economic models fail to explain.

Therefore;

1- Do not believe that one has to be active all the time to make money on investments in stocks, but stay reasonably informed.

2- Do not pay too much attention to the stock market and do not believe that you need to pay continual attention to stock price developments.

3- If you are new to the market, begin by investing in mutual funds with a good spread of stocks over firms and industries.

4- Try to diversify by buying and holding stocks that are a representative sample of the market. If this is not possible, make sure that much of your investment in stocks is in diversified mutual funds.

5- Be more afraid of single firm losses and bankruptcies than of total stock market crashes

6- If you can not afford to spread your investments over a wide assortment of stocks, close to a so called market portfolio, be prepared to pay the charges of one or more funds that are well diversified.

7- Do not borrow money to buy stocks unless you have a collateral that is not based on stocks.

8- Be careful about the inheritance taxes.

9- If you are wealthy enough, you may indulge in some recreational stock buying such as doing some high risk investing on a small scale.

10- Buy high risk stocks only if you can well afford to lose the gamble.

11- Remember that the fundamentals of some firms may deteriorate and the stock lose value while all other stocks go up.

12- Check carefully the time perspective and kind of growth of your investment before you invest in a so called growth stock.

Whereas under certain circumstances all can gain from stock market investments, all can not beat the market.

Hunting for the mispriced stocks is popular in some investor circles and it has probably contributed to financing companies that otherwise would have had difficulties.

Can everyone gain on stocks in the long run?

It is possible under certain conditions:

1- stock prices are based on fundamentals (dividend and firm value)

2- expectations about future fundamentals usually come true, that is, are realistic predictions of the future values

3- stock prices rise as most firms grow and become more prosperous.

4- only a minority of firms show losses and/or drop out altogether.

There are also some disturbances:

1- Stock prices may not be based on the fundamentals, but on cognitive, emotional and social factors.

2- Expectations, both of ups and downs, are often exaggerated and based on the extrapolations of earlier trends for lack of new public information to the contrary.

3- Stock prices also move in the absence of new information

4- If reactions to public information are hard to predict, reactions to some kinds of missing information with potentially disastrous effects are even harder to foresee.

5- There are high intercorrelations among stock prices, implying that many firms are affected by ups and downs independent of fundamental growth factor.

It is not possibleto make accurate predictions for the stock market as a whole or for individual stocks. The numerous attempts to explain booms followed by stock crashes convincingly demonstrate that even after the fact explanations are inadequate.

CHAPTER 5

PSYCHOLOGICAL FACTORS AFFECTING THE FINANCIAL MARKETS IN TURKEY

PSYCHOLOGICAL FACTORS AFFECTING THE FINANCIAL MARKETS IN TURKEY

5.1 TYPES of CRISIS and DEFINITIONS

There are various types of "crisis". Caprio (1998) categorized the crisis as; currency crisis, banking sector crisis, financial crisis and foreign debt crisis. The foreign exchange and balance of payments crisis are considered under the currency crisis

Currency crisis involves a sharp movement and change in capital flow and currency rate.

Currency crisis may occur in two ways:

First case is when an adjustment in the currency of a country, based on its value against a foreign currency, results with a devaluation. Second way is the authorities of a country is forced to defend their currency by raising the international reserves volume and interest rates.

Also, most of the time it occurs when the constant or semi constant rate regulations are present or when there is a cash outflow from the country. The currency crisis can be defined briefly as the significant devaluation of the currency.

A *Banking crisis* takes place when financial failures prevent banks from fulfilling their obligations or postpone them. These failures mainly occur when the loan and interest payments are in default. Another reason is that when the customers of the bank perceive or become weary of the bankruptcy of the bank, they tend to withdraw their savings from banks very rapidly and in a panic. When the government reacts to these instances with bank saving operations or expropriation of banks the crisis deepens.

Financial crisis have devastating effects on the real economy and cause the breakdown and ineffective functioning of the financial markets. It involves the mutual debt obligations of the banks and other financial institutions. It can be based on insolvency of some banks in the banking sector and can trigger the banking crisis as well. The most significant effect is a substantial decrease in the value of assets (IMF, 1998).

Foreign loan crisis is the case when a country has difficulty in paying back either its foreign government or private sector loans.

Although banking crisis triggers the currency crisis, the relation is not one way, the currency crisis also deepens the banking crisis. Usually the climax of the banking crisis occurs after the crash of currency (Caprio, 1998).

Amount of increase in costs and losses caused by banking crises in production is much greater compared to amount of increase in costs and losses caused by currency crisis. This is because of both the losses incurred in the production and

also the need of high amounts of financing to restructure the financial sector. In emerging markets these losses are much more destructive than in the markets of developed countries. (Kaufman, 2000).

Usually banking crisis ends in three years whereas the currency crisis ends in half of this time.

5.1.1 Contagion Effect

Kawai (2001) mentioned that countries may have similar problems in their financial structures (like the problems relating to constant currency regulations and foreign loans in US dollar problems in Asia) so that crisis may occur simultaneously as a common shock in many countries all around the world. Even if there is an absence of common shocks, presence of contagion through the channels between these countries may make them vulnerable to the crisis. One of these channels is the trade relations between the countries. When one of the countries devaluates its currency, the other is affected because this situations puts a pressure on the second country to devaluate in order to maintain competitiveness. This effect is not just based on the amount of trade between the countries but also on whether these countries are competitors of each other or not. Another channel is the financial relations. The contagion effect is more clear when the financial sectors of these countries are closely related, when these countries have the same creditors, or when these creditors' portfolios are related with each other. As was the case in Asia, the investors and the creditors tend to sell their assets in the other market in case of a liquidity problem. Creditors tend to recall their loans in other countries other than the country of crisis because when the

information is costly the creditors may not obtain enough information about the other country. These factors causes the people to act in a herding behaviour and accelarates the contagion effect (IMF, 1998).

5.2 THE REASONS FOR THE 2001 CRISIS IN TURKEY

The crisis in Turkey contains several common features with crisis in other countries, but several unique features as well. As Yay (2001) mentioned, the reasons of the crisis were present in Turkey before and this was the reason for the initiation of the stabilization program. However the stabilization program have brought about some additional problems, too.

According to Yay (2001) the main reasons of the 2001 crisis can be grouped and defined under the following headings:

1-Macroeconomic/Structural Reasons

2-Problems in Banking and Financial Sector

3-Stabilization Program Based on the Fixed Exchange Rate System

4-Unstable Capital Movements

5-Political Unstability

5.2.1 Macroeconomic/Structural Reasons

The first macroeconomic reason is substantial amounts of government debt incurred to finance the government deficits, causing a vicious circle. Domestic loans were wrongly perceived as not creating inflation, however with the strategy

of using loans with shorter maturity and increasing interest rates and this method greatly contributed the increase in inflation. Obviously the chronic inflation problem of Turkey, which goes 25 years back, is considered as the second important macroeconomic reason.

The Fixed Exchange Rate System was not capable of handling these problems. In addition, the failure to establish the required laws and legislations were other barriers to the success of the stabilization program.

5.2.2 Problems in Banking and in Financial Sector

Babuscu (2000) stated that the banks in Turkey constitute 80% of the financial sector.

According to Babuscu (2000), the problems of the banks can be listed as follows:

A- Starting from mid 80's, due to financing of the government deficit with domestic loans, there was a significant increase in the real interest rate. We should take into consideration that the risk of loans is also high when the inflation is high. In such a circumstance the government bonds got the highest demand from the banks. In this inflation period, although the amount and number of credits decreased, banks earned very high profits when compared to their assets and equity. The maturity period of domestic loans increased to 15 months by the stabilization program, the banks started to finance their papers with the short term deposits of their customers and with foreign loans which brought about interest rate risk because of dismatching of the maturity periods.

B- As the results of liberalization movements in early 1990's, the banks started to take foreign loans. By the increase of the open positions the difference between the change in interest rate and change in foreign currency rates had become important. As this difference increased in favor of interest rates, the banks increased their open positions. This caused the government to increase the foreign currency reserves and it could sell bonds with much lower interest rates.

The Fixed Exchange Rate System supported the increase of the open positions of the banks which climbed up to $19 billion by 2000. The banks had a total of $11-12 billion bank deposits which shows the seriousness of the problem.

C- Çakman and Çakmak (2001) commented that government banks were constituting a high proportion in the banking sector. The inefficient and irrational management styles of these banks were also among other reasons of the upcoming problems. The so called "mission losses" of the government banks were mainly because those banks were giving credits based on political considerations and pressures. Another reason is that Treasury sold government bonds to government banks with much less interest and much longer maturity when compared to other buyers. This enabled the government to show the government loans and budget deficit much lower than its real value.

D- Yay (2001) mentioned that the control inspection and regulation activities were also insufficient in banking sector. Most of them were established with limited capital and aimed to finance the business of the founder. Many of them allocated credits to the companies of the owners which ended with default loans.

The lack of control, inspection and adequate techniques multiplied the problems and caused panic in the banking sector.

E- Yay (2001) stated that the forecasted decrease in interest rates with the disinflation program, would bring an end to the profitability levels of the banks. In intermediate term it was assumed that the banks will turn back to their original functions and activities by giving credits and bearing the credit risk associated. All these would cause banks to consider the risk management seriously.

5.2.3 Stabilization Program Based on the Fixed Exchange Rate System

According to Yay (2001) the most important aspect of this kind of a policy is that it does not only encourage the banks but the whole society to obtain foreign currency loans. This increased the demand for foreign currencies and especially imports so the current deficit is increased. The current deficit was also supported by increase of value of US $ against Euro and the increase in oil prices.

5.2.4 Unstable Capital Movements

It was believed that in compliance with the theory when the foreign capital entered the market the reserves of Central Bank increases, liquidity increases and this supports the decrease in interest rates. This view had been changed drastically after 6-7 months as we have discussed in this dissertation before. The incerase of demand to government bonds and stocks created an artificial optimism which effected the decisions of the investors, too. However since these investments are not direct investments and ready to leave the country even in a very small scale fear by the investors.

5.2.5 Political Unstability

It could be rather too much to expect from a coalition cabinet to solve the acute economic problems of Turkey as we have discussed, without causing unrest. It was a very important mistake that the stabilization program and requirements were not shared by the public in detail and their contribution was not provided. The panic in the investors were more than any other time, the crash of the stock exchange market deepened the crisis, the expectations and decision making procedures of investors were not analised. This proved to be an example to show how an economic or financial program could be a failure when behavioural finance is not taken into consideration.

5.3 INTERVIEWS and EXPERTS' OPINIONS on THE SUBJECT

First, I have interviewed with Dr. Halit Soydan, who is the Vice Chairman of Yapi Kredi Bank, and Chairman of Yapi Kredi Investments. Yapi Kredi Bank is one of the top three banks in the finance sector of Turkey.

Mr. Soydan began by stating the current position of Efficient Market Theory. He said that Efficient Market Theory is still used as a flag in the world of finance, but face serious criticisms due to the several events over the last 30 years and these events were real and effective events. These events confirm the inefficiecy of markets according to Mr. Soydan. He chose Turkish market as an example and suggested that ISE (Istanbul Stock Exchange) had performed quite well in a

country like Turkey which is a fledgeling market and an emerging economy and is considered as an example to many countries in the same situation as Turkey. He gave the example of crisis in February 2000; just before the crisis, the ISE 100 index was at 22000, whereas today at August 2003 there is an optimism in the market as the prices have gone up to 12000. So he stated that in a time period of more than 3 years the stocks have lost half of its value. We should also consider that this was the nominal value that we could have gained an alternative return.

So in Turkish market where the ups and downs are so many and so great like a roller coaster as Mr. Soydan defined, where there have been times in which deregulation was required, and where there is no precaution or regulation is set for inside traders; it is difficult to state that there is an efficient market in Turkey.

He mentioned the factors that caused the current rise in stock price index from 7000 to 12000 after such a horizontal and volumeless journey since the crash in 2000. He suggested that there was a crisis expectation in the minds of investors. It was based on an economic crisis expectation in 2003 autumn or early in 2004. He gave an example to foreign expectations as the comment of Economic Intelligence Unit of The Economist. They were expecting a crisis just until two or three months ago. Mr. Soydan mentioned that it is impossible to expect investments from people whose expectations developed in a pessimistic way even waiting for a crisis.

Now the expectations are changing rapidly. The Economic Intelligence Unit of The Economist mentions the difficulty in the sustainability of Turkish economy due to high debt levels but most important thing is that now they were not talking

about crisis. He said that the importance of investor behavior is clearly seen in the current situation of Turkey and the concept of investor behavior and their valuation of financial assets will always be important and my dissertation topic and research in it, will always stay crucial.

He noted other fundamentals as well. First inflation is following a decreasing trend which is currently 25.6%, secondly the economic growth rate which is over 5% whereas there is a significant stagnation in the world as an example German economy which is in a bad condition. Then I asked him a question, which was beside of my set of questions that whether this growth rate of Turkey was a real value after such a crash of the economy. He answered as some part of this value should be credited to the compansating growth after such crisis however most of it is based on the good mood of the current economy and he gave as the forecast of the ministry of foreign trade which was 38$ billon and revised to 41$ billion now as the signs of these good mood. Also the minister of foreign trade mentioned his expectation of Turkish economy to reach 100$ billion of export which is a motivating factor for investors.

Altogether he mentioned how factors combine and cause herd behavior and effected all the market and proceeded the economy to its route.

He mentioned the high level of real interest value which is very close to 20%. He explained that he used to calculate it through dividing over the counter bond's interest rate by inflation value which makes almost 20%. Although he mentioned that if the current interest rate decreases of Central Bank continues then by the end of the year the real interest rate will be close to 12% and even though it is still a high value it is valuable when we compare it with the last year and it is a very

rapid decrease in a period of 6 months. Also there have been two other important events that effected the economy in a positive way. First the IMF has postponed the payment of the debts which was about 8.5$ to 10$ billion. So the concerns in the minds of investors disappeared. Second the relations with US tend to recover with the approval of the soldier deployment request of US. As refers for the optimist wind in the market we can mention two surveys conducted by chambers. Aegean Chamber of Industry's survey 4 months ago came out to be pesimistic from the perspective of investors however Istanbul Chamber of Industry's survey of this month pointed out the optimistic expectations of the market.

Then Mr. Soydan stated a very important result. The investors still do not choose stocks as a considerable portion of their portfolios. He suggested the reasons as the 1994 crisis, the effects of the earthquake at 1999, economic crisis at February 2001. All these crisis have caused expectations to be pesimistic and because of herd behavior it was spread all through nation and caused investors not to choose stocks as an investment instrument.

Mr. Soydan explained his opinions about the hot money phenomenon as the following. He said that he agrees with me on my opinion of hot money as a reason for the inefficiency of the markets. He noted the Asia crisis in 1997, which was started at Malaysia then spreaded out. The Quantum fund of George Soros had triggered the crisis by moving 2.5$ billion from Malaysia due to symptoms of fundamental problems of Malaysia eonomy. The crisis then spreaded to Russia and the government had established moratorium. Finally the crisis had come to

Turkey because the trade between Russia and Turkey which is named "suitcase trading", caused a loss of 20$ billion for the Turkish economy. As an anectode he told that in 1997 the Nobel Prize in the economy field was given to Black and Scholes for their option pricing model. Mr.Scholes was also a shareholder and a manager of so called Long Term Credit Management. He decided to have hedge funds in these Asian Tigers with the expectation of higher return however he lost 4$ billion. Federal Reserve tried to hold a package of 4$ billion for recovery of this lost.

He mentioned that between 1991-1999 Turkish economy has lost serious amount of money because of hot money. He explained the process with an example; Soros borrows 50$ billion from East Asia then he is coming to Turkey buying government bonds and having forward agreements to convert the Turkish Liras to foreign currency at the payment date and then earning the difference of interest rates. This was known by Ankara but the bureaucracy in Ankara could not courage to prevent it because they got afraid of its sudden escape that could bring serious damage afterwards.

He summarised when hot money decides to come to a country. First is the prevailance of high interest rates as it was over 30% before in Turkey; second repressed foreign currency which keeps the Turkish Lira more valuable then it should supposed to be if it would have been stated by the norms of the free market. When we compare the situation with today we observe the decrease in interest rates, fluctuating foreign currency, decisions of the government towards

the aim of stability both financially and politically and in addition improving relations with US combined and formed the optimistic mood in the investors.

He also referred the reasons in the near past why the pessimistic mood of the investors was creeated especially in the last 30 years and he reasoned thios to the inflation in thew country. He also pointed out the two sectors that were mainly suffered because of this as banking and construction sectors which contain important employment figures. This caused the unstability in the economy and restricted both foreign and domestic investments.

He mentioned that the behavioral CAPM was a very important aspect to be included in the dissertation because of the risk premium concept. He told that the investors ask for risk premium according to their expectations about the future. If interest rates show a tendency to increase then it is obvious to expect from investors to decrease their share of stock investments in their portfolios. So if the interest rates are about 10% with the existence of floating rate of foreign currency then we can wait from investors to locate their wealth into stock investments.

Then we discussed the dissemination of information in Turkey. Even though we are behind the western countries in the dissemionation techniques like internet or disclosure standards of firms for financial information The Capital Markets Board of Turkey (SPK) has defined the procedures and details in the disclosure of financial information for the firms in the stock exchange in the fist week of

August 2003. However we have negative examples from Western countries, first information dissemination is more efficient than in Turkey, like Enron.

He concluded that the information dissemination will be more efficient with the increasing use of technology and internet.

We have talked about the strategies like momentum and contrarian strategies that are used in the stock markets.

He suggested to employ strategies according to risk attitudes of the investors whether risk averse, risk neutral or risk seeking. For example for a risk averse person, it is suitable to chose his/her stocks from IMKB 30. This is another reason for the inefficient marjets because it is meaningless to expect the same evaluation of news and events from people who differ totally in their risk attitudes.

Mr. Soydan stated two criteria necessary for a meaningful analysis; first the firm should be mature enough for such analysis both in means of expertness and experience then secondly the analysis should be based on the audited information. In Turkey there is also effort to bring all companies into the standards of Uniform Chart of Accounts. Even though there is inflation for the correctness of the analysis which is inflation. The inflaton accounting will be used by the firms starting from next year so that the accounts will be reflecting much more clear. He suggested the importance of sector analysis in the procedure of selecting a stock. In order to choose the right sector it is necessary to perform a macro analysis. It involves the analysis of the economic conditions and expectations of the economy

both in global and in local scale then looking for the opportunities that the sectors can obtain in the close future.

He also mentioned the regulations that are motivating the investor to proceed to stock market investments, which are margin trading and short sales. These will contribute to achieve the depth of the stock market. So, as the number of players and amount opf money circulated in the stock exchange are increased it will be much more difficult to manipulate the stocks. Furthermore, in Turkey there are few players dominating the market with large amounts of shares which brings the danger of manipulation which could be considered as a factor for the inefficiency of the Turkish stock market.

In explainig his ideas about overpriced and underpriced shares Mr.Soydan stated that there have been always overpriced and relatively less underpriced stocks present in the stock exchanges. The crucial point in the stock investments, is that investors should be after determining trends. Investors may earn from stocks if they determine the direction of the trend, the trend should not suppose to be inclining as a necessary factor to be successful as many people assume. He said that stop loss tactics are very common in Turkey, too. Also mean reversion and base rate fallacy are also existing in Turkey and restricts the chance to determine the trend. So the importance of experts emerged. In Turkey investors who does not take any advice and tend to avoid diversification may be faced with unpleasant results. Experts are people who live 24 hours with the conjuncture of the economy. Their investments to information technology and human capital is

much more greater than an investor could make especially the amateurs. This business is made of combinaton of many disciplines. There are also financial instruments for amateur players as well like unit trusts. Mortgage funds are very common in the world especially in the US however it is in the initial period in Turkey like unit trusts. All these created with the aim of diversification. The exemptions applied to these instruments also a motivating factor for investors to consider these instruments. So the investors should diversify their investments between foerign currency, unit trusts, government bonds like they should diversify their stock investments between sectors or between firms in the same sector Finally he suggested that when the correct analysis and expectations combine with mathematical instruments then the choice will be correct most of the time and this dissertation is crucial to understand how these expectations are formed based on behavioral considerations and environmenatl effects that investors always live with.

My second interview was with *Mr. Ege Cansen,* who is the CEO of a financial consulting firm named as Cansen & Cansen and a column writer on economics in the most circulating newspaper of Turkey.

Mr. Cansen mentioned his views of the similarities between the concept of perfect market and the efficient market theory. He said that even if we accept that the listing of the stocks according to prices or market capitalizations are correct then we we are faced with the question of whether to buy the high priced one or the

low priced one? The aim is to guess correctly what will happen tomorrow in order to gain profits.

Mr. Cansen defined every investor in stock exchange as betting. However there should be another side loses the bet and we should remember that both sides considers and evaluates the same set of data. This stresses the difference of analysis and evaluation which is obviously present among the investors. Most of the amateur or small investors tend to work with fund managers or experts in order to be successful or at least feel comfortable psychologically as being supported or adviced by someone who is an ``expert``. However even these experts in which we might assume from them to act similarly does not hold and they even analyse and evaluate the events and facts differently.

About the efficiency of Turkish markets he stated that there is a tendency in the Turkish investors to believe that their market is comparatively less efficient. There are reasons for that, too. The recent history of the markets had very demotivating events for the investors. There have been many manipulative events that caused many investors to face serious losses and these combined with the herd behaviour and resulted the general pessimistic mood of the Turkish investors. When we compare Turkish market to the western markets we face with the reality that the latter had a significant experience and well established and settled law system which can prevent potential manipulations. Being open to manipulations is at least a factor to consider the Turkish market relatively less efficient. Certainly there had been serious losses for the originators of the manipulative actions. However Turkish markets have developed through these unpleasant experiences.

Mr. Cansen has stated one of the serious problems of Turkey as the volatility in the market. The index value equivalent to the American dollar was 3.15$ in 2000. However, today it is 0.86$. This is also demotivating for the investors. There have been decreases in the Down Jones as well but even the steepest ones were between 30% and 40% whereas the decline in Turkey was about 85%. This pointed out the fact that the high value of index at 2000 must have been a bubble.

He also mentioned that especially the small investors first think abpout to keep their wealth then increasing it. So, the volality detorirated the expectations of the investors about the stock exchange. He agreed with the need to enlarge the number and the volume of the investors in order to decrease the effects of crises. The passive investors tend to react comparatively slower than the big players and he defined the structure of the stock exchange market in Turkey as being dominated by small number of investors with large amount of stocks.

As an economist he said that the crashes in the stock markets is a crucial symptom of economic crisis even can be coinsidered as a triggering factor.

The `hot money` is another factor that supports the crisis and dismotivates the investors. He noted that hot money is a very important problem of many undeveloped countries. He said that because of the floating rate regualtion of foerign currency there is no risk for another hot money problem and there is no significant similarities in the market compared to 2000.

Even though there are more investors who change to Turkish Lira investments there are still many investors holding their considerable amount of portfolio in the foreign currency and this is due to the expectations of the people.

According to Mr. Cansen the strategy to choose should be directly related with the tolerance to wait and the size of the investment. The large investor determines the entry and exit levels and do not apply stop loss actions whereas the small investor can not afford any loss and realizes his/her loss by applying stop loss actions. He also suggested that the ones who frequently transact do not profit and even loose in the long run. Obviously it does not mean that investors should be stuck on the stock and keep it forever but decide on the exit level as they have done in entering, so that psychologically the investor is not effected negatively afterwards from his/her previous actions. Most of the investors according to him have difficulty in selling decision of their stocks.

Mr. Cansen defined two analysis in the determination of stocks. First the investor should apply fundamental analysis through the firms and have a list of candidate firms, then the investor should use technical analysis to determine the fluctuation and the tops and bottoms of the stock price and then he/she should also determine the enter and exit values, too. So by the technical analysis the investor will try to determine a trend and pattern in order to gain profit. Technical analysis can be made on total stock index and as well as both sector wide and firm wide. The determination of trend is also crucial because the declining trend always contains ups and downs that can bring profitabkle transactions to the investors. Even all

these action seem to be as many transactions and quite contradictory to what we have mentioned just before if the investor knows what he is doing then the danger of many transactions dissepear.

Mr. Cansen defined his explanation as a market is efficient when it can find and provide low cost financial instruments for the firms or private investors when they ask; like the firms would ask in increasing the equity share.

He also suggested to figure out ways to state in order to define more efficient ways and techniques to make the market more efficient.

In general he mentioned that this study is very useful in understanding the behavioral side of investors because in reality rather than many mathematical models the investors decide with their expectations, moods, effects from their social environment, with heuristics, suggestions and advices and also with the dominant affect of herd behavior.

CONCLUSION

The aim of this dissertation was to critically analize the efficient market theory, then studying the behavioral considerations in financial markets and psychological factors that form the basis of overall decision making processes of investors with the role of investor groups and segments, and as a result challenging the rationality based efficient markets theory.

Through the dissertation the psychological factors and theorems and differences among investors have been analized in detail through their psychological properties, risk attitudes, varying values given to different information, the strategies used, heuristics and biases they employ, level of moods, emotional dimensions, motivation degrees, level of confidence and self control, level of social influence they face with and their reactions to different events in the market.

By this dissertation we can conclude that in private investing how the future is seen by the investors is very important; it is guided by selective memories and selective information and this procedure is usually influenced by outside effects like expert ideas and herd behavior.

Several suggestions have been given to the investors related to current structure of financial markets, which deviates substantially from what the efficient market theory and rationality based theorems supports.

The interviews conducted in Turkish market presented us case evidence to the dissertation about the inefficiency and behavioral aspects of the financial markets.

The reasons of so-called inefficiency or the reality of current financial markets have been studied and their compatability was checked in the Turkish market through qualitative opinions. As a result the theorems of psychology and behavioral finance found their real life applications in Turkey, which made it a valuable case study in challenging the efficient market theory.

The principles of efficient market theory failed to explain the real life situations. The main difference among the investors emerged from each investors' unique way of analyzing, evaluating events and information and making decisions with varying kinds and levels of outside effects. It can be concluded that today through the increasing acceptance of theorems of behavioral finance and psychology; it is now accepted that investors now do not just take into consideration the factors solely suggested by rationality. The Behavioral CAPM explaines the investor behavior where efficient market theory fails.

The varying evaluation and decision making activities proceed with different tactics and strategies among the financial markets especially so called fast and frugal heuristics and biases that investors have.

The existence of so called noise traders who are labeled as irrational, came out to be a factor that could prevent the deeper shocks and destructions after the crashes in stock markets which found evidence in our case in Turkey, in 2001 crisis. The shock in the stock market would have been better absorbed if there were more passive investors in the Turkish market. This leads us to suggest that measures should be taken for marketing and spreading stock investments especially through the passive investors.

In the future these behavioral phenomena should be analyzed and investigated statistically in depth.

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