CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The study of the behaviour of the individual investor is important for two main reasons (De Bondt 1998). First, individual investment behavior affects the well-being of households. Households are increasingly responsible for their own financial future. So the question of how they fare is more relevant than ever. Second, individual investor’s behavior appears systematic (Barber 2009a) and therefore, affects prices (Barber 2009b). Given this importance, it is surprising that the number of studies on individual investor behavior and performance is not vast. Although these studies indicate high heterogeneity in both individual investor behavior and performance, some important facts emerge. Many of the behaviors have negative impacts on outcomes. In line with the findings of Grinblatt & Keloharju and Odean showed that the stocks American investors bought underperformed the stocks they sold (Odean 1999). He also reported that stocks that Finnish investors bought exhibited a weak future performance. Barber and Odean also found that the average American individual investor earned very low risk-adjusted returns (Barber and Odean 2000). Barber (2009c), who analysed all stock market trades in Taiwan, indicated that individual investors lost as much as 3.8% per year, whereas professional investors gained from trading. Bauer et al (2009) provided evidence that online traders from Netherlands underperformed, especially those who traded in futures and options.

But it is also important to note that though weak (long-term) performance may be a stylized fact, it ignores two additional findings. First,
across four studies (Barber 2009a, Kaniel 2008, 2010, Kelley & Tetlock 2012), there was an intriguing evidence that individual investors’ trades positively predicted returns at short horizons in the US (Barber & Odean 2011). This implies that individual investors might perform well in the short run (one day to 30 days). Second, significant heterogeneity has been documented in individual investor behavior. Many of the behaviors discussed have a negative impact on portfolio outcomes, though not for all investors. For example, mounting evidence suggests that sophistication drives good financial decision making. So mechanisms to increase investor sophistication might have the potential to benefit investors. Financial education systems could introduce more sophistication to individual investors.

2.2 BEHAVIOURAL FINANCE

In the year 1912, Selden wrote a book titled ‘Psychology of the Stock Market’. This book is based upon the belief that the stock price movements dependent to a very considerable degree on the mental attitude of the individual investors. In 1956, the US psychologist, Leon Festinger introduced a new theory in social psychology: ‘the theory of cognitive dissonance’ (Festinger et al 1956). When two simultaneously held cognitions are inconsistent, this will produce a state of cognitive dissonance. The individual investor would strive to reduce it by changing their beliefs. Tversky & Kahneman (1973) introduced the availability heuristic: ‘a judgmental heuristic’.

Amos Tversky & Daniel Kahneman described heuristics that are employed when making judgments under uncertainty (Tversky & Kahneman 1974). They also described representativeness. Individual investors are asked to assess the frequency of a class or the probability of an event. They do so by the ease with which instances or occurrences can be brought to mind. In the journal of economics Kahneman & Tversky (1979) presented a critique of
the expected utility theory (Bernoulli 1738, Von Neumann & Morgenstern 1944, Bernoulli 1954). They described an alternative model of decision making under risk and developed an alternative model, which they called prospect theory. Kahneman & Tversky found empirically that people under weighed outcomes that were merely probable in comparison with outcomes that were obtained with certainty. People generally discarded components that were shared by all prospects under consideration. Under prospect theory, value is assigned to gains and losses rather than to final assets. Probabilities are replaced by decision weights. The value function is defined on deviations from a reference point and is concave for gains (implying risk aversion), commonly convex for losses (risk seeking) and is generally steeper for losses than for gains (loss aversion). Decision weights are generally lower than the corresponding probabilities, except in the range of low probabilities. The theory—which they confirmed by experiment—predicts a distinctive fourfold pattern of risk attitudes: risk aversion for gains of moderate to high probability and losses of low probability, and risk seeking for gains of low probability and losses of moderate to high probability. They highlighted that the psychological principles of decision modeling and the evaluation of probabilities and outcomes produced predictable shifts of preferences when the same problem was framed in different ways. Shiller (1981) discovered that stock price volatility was far too high to be attributed to new information about future real dividends.

Thaler (1980) argued that there were circumstances when consumers acted in a manner that was inconsistent with economic theory and he proposed that Kahneman and Tversky’s prospect theory be used as the basis for an alternative descriptive theory. Topics discussed under this theory are: under weighing of opportunity costs, failure to ignore sunk costs, search behaviour, choosing not to choose and regret, and pre commitment and self-control. The theory introduced the notion of ‘mental
accounting’. In an important paper, (Tversky & Kahneman 1981) introduced the concept of framing.

In 1985, Werner De Bondt and Richard Thaler published a paper, ‘Does the stock market overreact?’ in the Journal of Finance (De Bondt & Thaler 1985). This paper has laid the foundation for the start of what has now known as ‘behavioural finance’. Mental accounting is the set of cognitive operations used by individuals and households to organize, evaluate and keep track of financial activities. Thaler (1985) developed a new model of consumer behaviour involving mental accounting.

Tversky & Kahneman (1986) argued that the rational theory of choice did not provide an adequate foundation for a descriptive theory of decision making. Yaari (1987) proposed a modification to the expected utility theory and develops a so-called ‘dual theory’ of choice under risk. De Bondt & Thaler (1987) reported additional evidence that supported the overreaction hypothesis. Samuelson & Zeckhauser (1988) performed a series of decision-making experiments and found evidence of status quo bias. Poterba & Summers (1988) investigated transitory components in stock prices and found positive autocorrelation in returns over short horizons and negative autocorrelation over longer horizons, although random-walk price behaviour could not be rejected at conventional statistical levels. Kahneman, Knetsch and Thaler (1990) reported several experiments that demonstrated that loss aversion and the endowment effect persisted even in market settings with opportunities to learn and conclude that they were the fundamental characteristics of preferences.

assumption of the theory is loss aversion, i.e., losses and disadvantages have
greater impact on preferences than gains and advantages. Fernandez & Rodrik
(1991) modeled an economy and showed how uncertainty regarding the
identities of gainers and losers could lead to status quo bias. Kahneman et al
(1991) discussed three anomalies: loss aversion, status quo bias and the
endowment effect.

In the accounting literature, Basu (1997) found evidence for the
conservatism principle, which he interpreted as earnings reflecting ‘bad news’
more quickly than’ good news’. Bikhchandani et al (1998) indicated that the
theory of observational learning and particularly of informational cascades
could help explain phenomena such as equity market crashes. Barberis et al
(1998) presented a model of investor sentiment that displayed underreaction
of stock prices to news such as earnings announcements and overreaction of
stock prices to a series of good or bad news. In his third review paper Fama
(1998) defended the efficient market hypothesis that he defined in his first
paper. He claimed that apparent overreaction of stock prices to information
was about as common as underreaction. This argument is unconvincing.
Under and overreactions appear to occur under different circumstances and/or
at different time intervals. Odean (1998) found evidence for the disposition
effect, the tendency of investors to sell appreciated investments too soon and
hold depreciated investments for too long. Daniel et al (1998) proposed a
theory of security markets based on investor overconfidence and biased
self-attribution which caused changes in investors’ confidence as a function
of their investment outcomes which led to market under and overreactions
of market.

Camerer & Lovallo (1999) found that overconfidence and optimism
led to excessive business entry. Warmers (1999) studied herding by mutual
fund managers and he found that the highest levels in trades of small stocks

Hong & Stein (1999) developed a model on market populated by two groups of bounded rational agents, ‘news watchers’ and ‘momentum traders’ who led to underreaction at short horizons and overreaction at long horizons. Nofsinger & Sias (1999) found that institutional investors with positive-feedback traded more than individual investors and institutional herding impacted prices more than herding by individual investors. Veronesi (1999) presented a dynamic, rational expectations equilibrium model of asset prices in which, among other features, prices overreacted to bad news in good times and under reacted to good news in bad times.

overvalued, citing structural factors, cultural factors and psychological factors (Shiller 2000). Kahneman & Tversky (2000), editors of the book “Choices, Values and Frames”, presented a collection of research studies which have grown from their collaboration on prospect theory. Rabin (2000) provided a theorem showing that expected utility theory is an utterly implausible explanation for appreciable risk aversion over modest stakes. Lee & Swaminathan (2000) showed that past trading volume provided an important link between ‘momentum’ and ‘value’ strategies and these findings helped to reconcile intermediate-horizon ‘underreaction’ and long-horizon ‘overreaction’ effects.

Psychological research has established that men are more prone to overconfidence than women (especially in male-dominated areas such as finance), whilst theoretical models predict that overconfident investors trade excessively. Barber & Odean (2001) found that men traded 44 per cent more than women and thereby reduced their returns more than women and concluded that this was due to overconfidence. Barberis et al (2001) included prospect theory in a model of asset prices. Barberis & Huang (2001) compared two forms of mental accounting by incorporating loss aversion and narrow framing into two asset-pricing frameworks: individual stock accounting and portfolio accounting. The former was the more successful one. Gigerenzer & Selten (2001) edited “Bounded Rationality: The Adaptive Toolbox”, a collection of research papers which promoted bounded rationality as the key to understanding how individual investors made decisions. The book uses the concept of an ‘adaptive toolbox,’ a repertoire of fast and frugal rules for decision making under uncertainty. Huberman (2001) provided compelling evidence that people had a propensity to invest in the familiar, while often ignoring the principles of portfolio theory. Gilovich et al (2002) edited “Heuristics and Biases: The Psychology of Intuitive Judgment”, a book that compiled the most influential research studies on heuristics and
biases tradition since the initial collection in 1982 (Kahneman et al 1982). In the Introduction, Gilovich and Griffin identified six general purpose heuristics (affect, availability, causality, fluency, similarity and surprise) and six special purpose heuristics (attribution substitution, outrage, prototype, recognition, choosing by liking and choosing by default), whilst two heuristics have been superseded: representativeness, (replaced by attribution-substitution) (prototype heuristic and similarity heuristic) and anchoring and adjustment (replaced by the affect heuristic). Slovic et al (2002) described and discussed the ‘affect heuristic’: the specific quality of ‘goodness’ or ‘badness’. Holt & Laury (2002) conducted a simple lottery choice experiment and found differences in risk aversion between behaviour under hypothetical and real incentives.

Harrison & Rutstrom (2009) proposed a reconciliation of the expected utility theory and the prospect theory. Grinblatt et al (1995), analyzed the extent to which the investor purchased stocks based on their past returns and the influence of herd behavior. Around 155 mutual funds were analyzed for the 10-year period. The results showed that 77% of the investors in mutual funds were momentum investors buying stock of past winners but did not sell those of past losers. Mutual funds invested on momentum stocks which significantly performed better than others. Barber & Odean (2000) analyzed the common stock investment performance among the individual investors. The study was conducted among 66,465 households who traded at a large discount brokerage firms for six years. The results showed that average individual investor earned an annual return of 16.4%, tilted its equity investment towards high-beta, small value stocks, and churned his portfolio over 75% annually.

Overconfidence can lead to high trading levels and result in poor performance of individual investors. The authors concluded that trading was
hazardous to investor wealth. (Shapira & Venezia 2001) analyzed the investment behavior of the clients in a major brokerage firm in Israel. The behavior of the clients who made independent investment decisions were compared to those clients whose account was managed by the brokerage professionals. The results showed that the disposition effect was higher for individual investors and the professionally managed accounts were more diversified in investment and had earned slightly higher returns compared to the independent investors.

2.2.1 Portfolio Composition

Studies of portfolio composition mainly deal with how individual investors diversify their portfolio. Generally speaking, diversification in individual investor’s portfolios is limited, naive, and significantly influenced by proximity considerations. Choices about diversification arguably are among the most important portfolio decisions investors must make. Campbell (2006) calls diversification the “second major topic in household finance,” and using data from 100,000 Swedish households, he estimates that approximately half of the volatility in retail portfolios is non-systematic, due to a lack of sufficient diversification. Blume & Friend (1975) were identified a lack of diversification in U.S. retail portfolios; more than half the investors in their sample held only one or two stocks, and only a small minority of investors held more than ten. Using this same data set, Goetzmann & Kumar (2008) analyzed the lack of diversification more thoroughly. Almost 30% of the investors held only single stock and only 10% held more than ten in their portfolio. Anderson (2007) found under diversification in a sample of Swedish (online, small, very active) investors. The median (average) investor holds two (three) stocks. He suggests that the degree of diversification is related to individual investor’s skill. The level of diversification improves over time though the average number of stocks held increased from four to
seven during a six-year interval. Although holding more stocks generally improves diversification, the authors find no evidence of sophisticated diversification improvement (i.e., by holding less correlated stocks). In their study of 21,500 German online investors, Dorn & Huberman (2005) confirmed a lack of diversification in German stock portfolios, in that the average portfolio in their sample contained four to five positions. Especially young and active traders tend to under-diversify.

Various explanations for limited diversification have been advocated. For example, transaction and search costs or small portfolio sizes may be hurdles to diversified portfolios, or perhaps behavioral factors are needed to explain the empirical findings. Odean (1999) indicates that overconfidence leads to under diversification when investors hold unrealistic views about specific stocks. Goetzmann & Kumar (2008) confirm that the degree of under diversification related positively to overconfidence, as well as holding local stocks and trend chasing. Thus under diversification appears at least partly driven by behavioral factors, a finding further supported by evidence that shows under diversified investors typically underperform. In general, better diversified investors seem to have good stock picking abilities, and risk preferences also may play a role. Goetzmann & Kumar (2008) find that under diversified investors prefer risky (higher volatility, higher beta) stocks and stocks with more skewed returns.

Although this evidence on under diversification is rather robust, some additional remarks are necessary to provide a complete story. Campbell (2006) indicated that measuring an investor’s total portfolio was not easy, considering the lack of necessary data on each household or individual investor. In addition, evidence about limited diversification is limited itself, in that it tends to be based only on common stocks. Polkovnichenko (2005) found that many individual investors simultaneously held well-diversified
mutual funds and under diversified portfolios of equity stock. Thus a singular focus on equity stock understates the degree of diversification, because mutual funds generally provide investors with well-diversified portfolios. The huge size of the retail mutual fund market might imply that the limited diversification of individual investors is not as big a problem as many studies suggest. Calvet et al (2007) confirmed this view with another sample of Swedish households. 76% of Swedish individual investors that own individual stocks also hold mutual funds. Thus, many Swedish households’ investment portfolios are well diversified.

Portfolio concentration is generally considered an investment error. Goetzmann & Kumar (2008) find that under diversified investors typically underperform, though a small subset of active, under diversified investors outperform. Ivkovic et al (2008) suggest that individual investors hold concentrated portfolios to exploit informational asymmetries and that concentrated portfolios actually outperform diversified portfolios. In particular portfolios of wealthy investors or concentrating in non-Standard & Poor 500 local stocks, and stocks with low analyst coverage outperform others, which suggest that informational asymmetries drive concentration. Insufficient diversification becomes manifest in more forms than just holding a limited number of individual shares. The next sections offer more evidence of limited diversification among retail investors, as a result of naive diversification and a concentration of portfolios in local, domestic, own-industry, or own-company shares.

2.2.2 Impact of Proximity

Investors exhibit a clear preference for stocks to which they feel close. Evidence reveals an overweighing of own-company, own-industry, domestic, and local stocks. This preference may be driven by behavioral
phenomenon, such as the familiarity heuristic, the affect heuristic, myopia, or (perceived or real) informational asymmetries.

2.2.2.1 Local bias

Local bias is another example of how geographical proximity drives asset allocations. It implied a “home bias at home” (Coval and Moskowitz, 1999) that might induce unjust feeling of competence or make valuable information acquisition easier. Specifically, local bias refers to the tendency of investors to tilt their portfolios toward locally head quartered stocks. One of the first investigations of a preference for geographical proximity by Coval & Moskowitz (1999) showed that American investment managers preferred firms with headquarters near by their residence. In a subsequent study, Coval & Moskowitz (2001) note that preference for geographic proximity may be driven by informational advantages, because local holdings really do outperform various benchmarks. These results are in line with a preference for the familiar. Grinblatt & Keloharju (2001) provide further evidence about how familiarity drives individual investment decisions. Using data from Finland, they report that individual investors exhibit a preference for holding and trading nearby firms that share the same language and culture. Ivkovic & Weisbenner (2005) confirm this strong preference for holding local stocks among U.S. individual investors, who overweigh local firms by a factor of three on average. Local holdings outperform non-local holdings considerably, suggesting retail investors may be able to exploit informational asymmetries. The excess returns on local holdings are 3.2% per year and mainly driven by non-S&P500 stocks, for which information asymmetry is more likely. Massa & Simonov (2006) also provided an evidence of the impact of proximity. Their data is unique, in that it covers all wealth components (real estate, cash holdings, equity shares, and fixed income securities) of almost all Swedish households during 1995–2000.
Proximity is operationalised by professional and geographical proximity, as well as the holding period. Individual investors tilt their portfolios toward stocks that correlate positively with their nonfinancial income and hedging motives can be ruled out as an explanation. In line with Ivkovic & Weisbenner (2005), they reject the view that familiarity is a bias: Individual Investors benefit from overweighting close stocks. Proximity apparently provides a low cost information acquisition route and thus allows individual investors to improve their returns. Seasholes & Zhu (2010) question the information-based hypothesis and assert that previous findings are econometrically flawed. Using the same data as Ivkovic & Weisbenner (2005) but correcting for cross-sectional dependence (using calendar-time portfolios), these authors found that the performance differences between local and non-local portfolios, though positive, were no longer significant. They even found a negative performance of –1.7% per year for trades rather than portfolios, formed on the basis of geographical proximity. This negative effect increases for trades of stocks with more information asymmetries (non-S&P stocks). The authors thus concluded that individual investors did not exploit information asymmetry through geographic proximity.

### 2.2.2.2 Home-country bias

Home-Country bias refers to the tendency of the investors to overweight domestic securities in their portfolios. This behavior is inconsistent with the standard models that highlight the benefits of international diversification, due to the relatively low correlation among stock returns of various countries. French & Poterba (1991) were among the first to report the strong home-country bias in security selection. U.S. investors hold 92% domestic equity; Japanese investors’ hold 96%, U.K. investors hold 92%, German investors 79%, and French 89%. This overweighing of domestic stocks has been declining. French (2008) showed that the degree of U.S.
aggregate home bias has gradually declined over time, such that investors allocated only 2% to foreign stocks in 1980, 8.5% in 1990, 14% in 2000, and 28% to 2007.

Behavioral explanations focus on familiarity, optimism (about future returns on the domestic market), pessimism (about future returns on foreign equity), and perceived risks of foreign equity. French & Poterba (1991) assert that risk perceptions largely drive home bias, because individual investors perceive foreign securities as more risky than domestic securities due to their limited knowledge of foreign markets. Aversion to ambiguity drives the relative unpopularity of foreign securities. Statman (1999) also points out those foreign stocks are unpopular because of a lack of familiarity with the foreign stocks. According to behavioral portfolio theory (BPT), foreign stocks will be unattractive if their past returns are low, given that they are placed in the upside potential layer. Bailey et al. (2008) find that investors who diversify more domestically also invest internationally more often, which may suggest that behavioral factors play a role. The overconfident investors invest more abroad, but investors who display the local bias or the disposition effect invest less in foreign assets, resulting in a detrimental performance effect.

2.2.2.3 Own-company and own-industry stock

Traditional finance theory has a clear implication for employees investing in shares of the company they work for. When a firm fails, employees lose both their retirement savings and their job (Poterba, 2003). Yet employees’ investing in own-company stock remains widespread in US. Benartzi and Thaler (2001) find that on an average 42% of the wealth in 162 retirement plans is invested in company stock. Coca-Cola employees allocate 76% of their discretionary contributions to Coca-cola shares. Mitchell and Utkus (2002) estimated that 5.3 million employees (out of 23 million) in the
United States held more than 60% in own-company stock in their 401(k) plan, while 8 million had zero exposure to company stock.

Benartzi et al (2007) explain own-company stock in retirement portfolios as a result of bounded rationality by both employees and employers. Huberman (2001) instead relates investing in own-company stock to the familiarity heuristic. In a review of company stock in retirement plans, Mitchell & Utkus (2002) evaluate the rationale for the high fraction of company stock, for both employers and employees. Employers believe it boosts efficiency, worker productivity, employee morale, and eventually firm value by aligning interests more closely, though empirical evidence of these effects offers only mixed results. The appeal of having stock in “friendly hands” may also motivate employers to encourage employee stock ownership. Employees hold high fractions of company stock partly because of myopia. They perceive their own company stock as less risky than a well diversified equity fund. Survey data indicate that only a small fraction of investors (16%) realise that company stock actually is riskier than the overall stock market. Greater own company stock holdings also relate to past stock performance, because employees extrapolate past performance. Benartzi (2001) found that the allocation of discretionary contributions to company stock related strongly and positively to past returns.

Employees thus apply the representativeness heuristic (in particular, excessive extrapolation) to stock where they were employed. Huberman & Sengmueller (2004) analysed active changes to own-company stock investments in 401(k) plans. Although few employees make active changes to their retirement portfolios, inflows to employer stock relate to salient information such as past returns and business performance; thus the availability heuristic may play a role. This reaction to past performance is asymmetric. The strongest and most robust reactions occur with positive
absolute and market-adjusted returns. Past positive return sensitivity extends as far back as three years, whereas bad past performance does not have any effect. In addition, employees allocate more to own-company stock when firms match employee contributions with additional own-company stock.

There is no evidence suggesting an investment in own-company stock was driven by informational advantages. Mitchell & Utkus (2002) showed that portfolios that over weigh own-company stocks exhibited deteriorating performance and Benartzi (2001) found that allocations to company stock did not predict future performance. Finally, overweighing own-company stock may be related to the endorsement effect, which posits that employees interpret matching plans by the employer as an implicit advice. This effect is substantial. Plans in which employers match employees investments in company stock lead to company holdings that are more than twice as large as plans in which employees make all allocation decisions themselves. Related to the trend of excess holdings of own-company stock is overweighing of stocks based on professional proximity. Investors appear to prefer investments in the same industry in which they work. Doskeland & Hvide (2011), using all trades of individual investors in Norway over a 10-year period, found that they overweighed professionally close stocks. This overweighing is not driven by informational benefits, because professionally close portfolios and trades did not provide superior returns. Doskeland & Hvide (2011) thus confirmed the previous results about local investments that did not seem information driven. Their results are in line with both with familiarity and overconfidence. Familiarity has also been proposed as a potential driver of home country bias.
2.2.3 Behavioural Portfolio Theory

Many of these behaviors tempted Shefrin and Statman (2000) to develop a descriptive approach to portfolio composition, opposing the normative mean-variance approach proposed by Markowitz (1952). Their behavioral portfolio theory (BPT) explicates actual portfolio compositions of individuals by incorporating elements from mental accounting (Thaler 1985). Lopes (1987) developed SP/A theory, a psychological theory of choice under uncertainty. SP/A theory is a general choice framework rather than a theory of portfolio choice. However, SP/A theory can be regarded as an extension of the safety first portfolio model developed by Arzac. In SP/A theory, the S stands for security, P for potential, and A for aspiration. Lopes' notion of security is analogous to safety in safety-first, a general concern about avoiding low levels of wealth. Her notion of aspiration relates to a goal, and generalizes the safety-first concept of reaching a specific target value, such as S. There is no counterpart to potential in the safety-first framework. Lopes (1987) SP/A theory to addressed the impact of emotions (i.e. hope and fear).

In behavioural portfolio theory, individual investors build portfolios as pyramids of layers, with layers associated with particular goals, time horizons, and attitudes toward risk. Typically, investors built a bottom layer to avoid the risk of poverty and a top layer to achieve wealth aspirations. These layers represent distinct mental accounts, and co-variances between them are overlooked. Investors first label securities as “bonds” or “stocks” or “domestic” or “foreign,” which may inhibit a clear overall (frame-independent) picture of the portfolio. Also, “foreign” may be perceived as more risky, leading to more funds allocated to domestic stocks. Behavioral investors may also prefer securities framed in a way to guarantee a minimum payoff, which would explain the popularity of some structured products. The finding that people take more factors into consideration than just risk and return motivated Fisher and Statman (1997a) to focus on the differences in the
mean variance between optimal and actual portfolio decision making. They compared investments and food portfolios. Just as people assess the attractiveness of meals by considering various factors, beyond nutrition value and cost, investors care about more than risk and expected return. Food has other goals than to be fed at low cost and is, therefore, judged on palatability, variety, prestige, and cultural aspects. These authors conclude that optimization techniques dictate how investors should behave, but prescriptions should fit investor preferences, as in BPT. In another study, Fisher & Statman (1997b) evaluate investment advice from mutual fund companies using the insights of BPT. Mutual fund companies address such mental accounting in the labels of their funds. They frame their portfolios as layered pyramids of mutual funds, just as described by BPT. They advise individual investors to assign particular funds to particular goals, essentially advising them to ignore correlations between funds or asset classes. Although the portfolio recommendations of mutual fund companies may deviate from MPT-efficient portfolios, the authors concluded that the costs of ignoring the prescriptions of the mean-variance framework are small. In summary, diversification by retail investors appears suboptimal: The individual investor owns only a few stocks, divides wealth evenly over investment options, and bases allocation decisions on proximity.

2.3 TRADING BEHAVIOR

A long-standing anomaly in financial research has been the excessively large volume of trading in securities markets. In 2009 annualized turnover of the New York Stock Exchanges was 129%, though it declined to 86% in 2011 (NYSE, 2011). Black (1986) introduced the concept of noise trading in this context. He defines noise as anything that is not information, so noise traders cannot expect to profit from their trades. Although trading on noise may be irrational, there are many rational motives to trade: liquidity,
lifecycle considerations, rebalancing, private information signals, or taxes, for example. Barber et al (2009) estimate a 3.8% market-adjusted loss as a consequence of trading by individual investors, using all transactions of the entire Taiwanese market for a five-year period. Linnainmaa (2011) also posits that investors’ trade to learn, so return reductions as a result of excessive trading is the price that investors pay to learn, in which case it would be rational. But many other scholars believe that behavioral explanations are needed for observed trading volumes. Overconfidence (one source of noise) is widely cited as a possible driver of excessive trading. In this case, overconfidence refers to an irrational, excessive belief in one’s own abilities (the “better than average effect” or “hubris”) or an overestimation of the precision of information (“miscalibration”). Odean (1999), Barber & Odean (2000) tested an overconfidence-based trading hypothesis using data from a U.S. discount brokerage firm and find a large penalty for active trading, mainly due to transaction costs. Although the least active traders perform reasonably in line with the market, net performance is monotonically decreasing with trading activity. Although alternative explanations, including liquidity trading, rebalancing, tax motivated selling, or the joy of gambling, may explain some trading activity, the authors believed that trading was mainly explained by overconfidence. Barber & Odean (2001) tested the robustness of the overconfidence hypothesis using gender as a proxy for the degree of overconfidence. The underlying assumption that women are overconfident has been supported by many psychological studies. Barber & Odean (2001) confirmed that men trade significantly more actively than women (annualized turnover: 77% vs. 53%). However men underperform women (annualized net return difference: 0.94%). The differences between single men and single women are even more pronounced, suggesting that overconfidence is a cause of excessive trading.
To further explore the overconfidence-based trading hypothesis, Barber & Odean (2002) investigated the change in trading behavior after investors move from telephone-based to internet trading. Before going for internet trading, these investors outperformed both the market and a size-matched control group. After internet trading got introduced, they traded more frequently (average annual turnover before switching: 70%, after switching: 120%) and perform worse than they previously did, as well as compared with a control group. These findings support the overconfidence hypothesis. The switchers are likely more overconfident than non-switchers due to their self-attribution bias (i.e., their previous investment success was due to their own skill), the illusion of control (due to their active involvement in the trade), the illusion of knowledge (due to vast amount of data available to them), and cognitive dissonance (time and effort spent on information leads to the perceived necessity to trade). Further, support for the overconfidence hypothesis comes from Statman et al (2006), who explored the relationship between overconfidence and trading volumes at the macro level. Trading volume relates positively to lag stock returns, consistent with increased overconfidence as a result of past success and biased self-attribution. Their finding especially holds for subsamples in which individual investors have more impact. Also, Barber et al (2009) propose that the 300% turnover in the Taiwanese stock market was caused by overconfidence and the desire to gamble.

Glaser & Weber (2007) combine trading records and survey responses from German internet investors and find that investors who (incorrectly) perceive themselves as above average exhibit greater trading activity, whereas the degree of miscalibration has no effect. Although this finding supports the impact of the better-than-average form of overconfidence, it still seems surprising; given the vast literature that explains overconfidence as a manifestation of over-estimations of the precision of
information. Although Dorn & Huberman (2005) confirm substantial trading using data from German internet investors, their two proxies for overconfidence (self-attribution bias and the illusion of control) are not related to trading activity. They instead claim that self-reported risk aversion is the main determinant of trading. More risk-tolerant investors traded more aggressively. The reported differences are large, such that the monthly portfolio turnover of the most risk-averse investors is less than 10% compared with more than 30% for the least risk-averse. The finding that men trade more because of their higher degree of overconfidence is also disputed by Grinblatt & Keloharju (2009), who claim that overconfidence by gender fails to recognize that gender is associated with many other attributes (e.g., sensation seeking) that also affect trading. Sensation seeking is a psychological attribute linked to gambling behavior. Kumar (2008) relates trading to gambling motives. Sensation seekers are driven by intensity, novelty, and the variety of experiences. Grinblatt & Keloharju (2009) used the number of ‘speeding tickets’ received by an investor as a proxy for sensation seeking and found that it was strongly related to trading in addition to overconfidence. In line with Glaser & Weber (2007) and Grinblatt & Keloharju (2009) found overconfidence related to the better-than-average effect and not to miscalibration.

Dorn & Sengmueller (2009) showed a strong effect of entertainment and gambling motives on trading behavior. Their research was motivated by responses to a survey that called investing “a nice pastime” (Hoffman 2007). The most enjoyment or gambling prone investors churn their portfolio very often. Dorn & Sengmueller (2009) estimate that more than half of the turnover in their sample is driven by irrational explanations, and their findings do not change even when they include proxies for overconfidence, which actually appear unrelated to turnover. Bauer et al (2009) report results consistent with these findings. Option traders, in their sample of Dutch
internet investors, are affected most by entertainment and sensation-seeking motives, and these individual investors incur the largest portfolio losses, resulting from a combination of poor market timing and high trading costs. Dorn & Sengmueller (2009) concluded that financial economists often evaluate behavior in terms of effects on wealth, but they may ignore the impact of that behavior on welfare.

Graham et al (2009) estimate the impact of the competence effect, which posits that people are more willing to rely on their own judgment when they feel more competent (Heath & Tversky 1991). They found that perceived competence positively affected trading behavior. Although excessive trading may be a stylized fact for a specific group within the individual investor population, many studies document a completely different behavior, namely, strong inertia by many households. Inert behavior may relate to the status quo bias (Samuelson & Zeckhauser 1988), that is, an individual investor’s preference to leave matters unchanged. Individual investor generally has a deep aversion to regret. Active portfolio changes that turnout to be inferior (relative to having kept the status quo) are painful. Dahlquist et al (2011) document strong inertia in their sample of Swedish investors in retirement accounts. Again a large majority of them make virtually no changes: 68% of investors made no changes in their portfolios during 2000–2010, and an additional 16% made only one change. Inertia cannot be explained by transaction costs, which are absent in these samples. Contrary to Barber and Odean (2000, 2001, 2002), trading activity was actually beneficial in this case. Dahlquist et al (2011) show that performance increases monotonically with activity as a result of successful mutual fund picking.

This overview of trading activity by retail investors exhibits two stylized facts. Some investors trade excessively, and others do not trade at all. Excessive trading has mainly been observed in online accounts and relates to
the behavior of only a fraction of the individual investor population. Because inertia has typically been found in retirement accounts, it is necessary to distinguish inert behavior from rational buy-and-hold considerations.

2.4 SELECTING SECURITIES TO BUY

Grinblatt & Keloharju (2000) investigated the behavior of different investor classes in Finland over a two-year interval using the buy ratio. They find that Finnish individual investors follow a contrarian strategy. Using the buy–sell ratio may obscure the possibility of different drivers of buying and selling decisions. Barber & Odean (2011) find that investors both buy and sell stocks that have performed well. They use different thought processes involved when buying or selling. According to them, individual investors exhibit contrarian behavior only when they sell and momentum behavior when they buy. Although individual investors may pursue some sort of deliberate strategy in their buying decisions, many studies found that buying was influenced by the attention, representativeness, and affect heuristics.

2.4.1 Buying Based on Affect

The impact of the affect heuristic on investment decision making has not been studied as extensively as attention or representativeness. Affect may be defined as the immediate emotional response to some stimulus (e.g., stock of a particular firm). Kahneman (2002) stated in his Nobel Prize lecture, “the idea of an affect heuristic is one of the important developments in the study of judgment heuristics in the last few decades.” Affective feelings may guide decision making, especially when alternatives are difficult to evaluate (as is the case in many investment choices). Affect relates mood, which can affect prices in stock markets. Hirshleifer & Shumway (2003) find that nice weather puts individual investors in a positive mood, makes them more risk tolerance, and drives up prices. Cooper et al (2001) find that during the late
1990s (when positive sentiment about Internet businesses likely triggered positive affect), firms that added “dotcom” to their names experienced tremendous increases in market value (average abnormal returns of 74% within 10 days of an announcement), but in the early 2000s (when Internet businesses likely triggered negative affect), similar market reactions were observed for firms that removed “dotcom” from their names (Cooper et al. 2005). Statman et al. (2008) reported that firms with positive affect are associated with both high returns and low risk. They relate affective responses for firms to subsequent returns and found that a portfolio of admired firms’ stock underperforms a portfolio of stocks of less admired (or spurned) firms. Aspare & Tikkanen (2011) also provide survey evidence that people’s affect towards a company provides an extra motivation to invest in its stock. The impact of ‘affect’ does not relate to many of the investor characteristics studied, except for education. Affect’ plays a lesser role for investors holding a university degree. In an experimental setting, these authors provide evidence that excitement and anxiety - which relate to different regions of the brain - modify risk preferences. Risk aversion is diminished by excitement but increased by anxiety. Affect can be introduced exogenously or result from past outcomes, and it relates positively to confidence in one’s ability to evaluate risky investments, which in turn provides further evidence in support of the overconfidence hypothesis.

2.4.2 Buying Based on Attention and Availability

Merton (1987) noted that certain stocks grab investors’ attention and are thus considered for purchase. Buying decision is far more complex than the selling decision. Most people do not sell short and therefore only need to focus on the (few) stocks that they already own when they sell. In buying they can select from thousands of stocks. Barber & Odean (2008), therefore, hypothesize that attention influences the buying decision of
individual investors to a greater extent than does the selling decision. The availability heuristic relates to attention in that it deals with the degree to which information is readily available.

Lee (1992) finds a relation between buying behavior and earnings announcements that likely attracts investor attention. Lee assigns trades to individual and professional investors according to trade size (trades below $10,000 proxy for individual investor trades) and found a remarkable difference in their reactions to earnings news.

Barber & Odean (2008) investigated the existence of attention-based buying among both individual and institutional investors. Their proxies for attention-grabbing information were abnormal high trading volume, extreme previous day returns, and companies being in the news. On high volume days, individual investors are large net buyers. On low volume days, they are net sellers. Institutional investors engage mainly in buying on low volume days. On days following high negative or high positive returns, people mainly buy stocks. For institutional investors, the behavior depends on style. Momentum investors sell after negative returns and buy after positive returns, but value investors do the opposite.

When firms are in the news, individual investors also buy more of this stock than they sell. To test if the imbalance is caused by a constraint on short-selling, the stocks already in the portfolio are taken into consideration. In that case, selling dominates, but the same relative buy–sell imbalance is visible. Attention-based buying harms individual investors, because stocks bought underperform stocks sold. Seasholes & Wu (2007) support the attention hypothesis in their study of the trading behavior of arbitrageurs and individual investors. On the Shanghai Stock Exchange, stocks cannot rise above or below a daily price limit (for most stocks, ±10%). Stocks that hit their price limit are reported in the news and therefore more likely to be
noticed by individual investors. The authors find active individual investors buying the day after an upper price limit has been hit. The effect is even stronger for first-time buyers in the particular stock, supporting the attention-based buying hypothesis. Bae & Wang (2012) also support the investor attention hypothesis by investigating Chinese firms listed in the United States, which may include “China” in their name or not. China-named stocks significantly outperform non–China-named stocks during a boom period in the Chinese stock market, but they exhibit greater price reversal during downturns. In Hong Kong, they find no China-named effect, which suggests that attention drives the U.S. findings. Although the authors do not mention it, the representativeness heuristic may also play a role. The “China” label may easily be linked to positive news about the growing Chinese economy.

2.4.3 Buying Based on Representativeness

In buying decisions, the representativeness heuristic may play a role. Representativeness enables people to perceive systematic patterns in recent stock price movements or earnings, even when these patterns are random. Using perceived patterns, investors might extrapolate in a naive fashion and buy stocks that recently increased in value. When individual investors naively extrapolate past returns and exhibit the so-called extrapolation bias, they are positive feedback traders. In a survey of individual investors, De Bondt (1993) finds that typical non-expert expects this pattern to continue. The average percentage gap between the fractions of that is bullish and the fraction that is bearish increases by 1.3% for every percentage point that the Dow Jones rises during the week prior to the survey. Employees increase company stock allocations in their retirement portfolio, especially when it performs well (Benartzi 2001; Huberman & Sengmueller 2004). Bange (2000) provides additional evidence of positive feedback trading among small equity investors through survey data. Investors increase
their exposure to equity after positive market returns and decrease equity allocations after market downturns. Bange (2000) finds no evidence that these allocation changes reflect superior market timing ability. The findings are consistent with evidence from Barber et al (2009b), who document the positive relation of aggregate buying by retail investors with past returns. In analyzing trades of online investors, Odean (1999) also shows that individual investor buys follow positive market-adjusted returns. Individual investors buy securities that have outperformed the market in the previous two years. Although Chen et al (2007) confirm evidence of representativeness-based buying in China, they also find, contrary to Odean that individual investors typically focus on recent (past four months) returns. Whether incorporating past returns in investment decisions is really a bias? It depends on the investors’ estimated holding period. De Bondt & Thaler (1985) find long-term reversals (winners underperform losers over a three- to five-year horizon). This so-called winner–loser effect appears driven by investors becoming too optimistic about stocks whose prices have increased and overly pessimistic about stocks whose prices have decreased. Beyond the naive extrapolation and stereotyping, representativeness heuristic may influence investors’ buying decisions. Stereotyping may lead investors to confuse stock attributes with company characteristics. Chan & Lakonishok (2004) look into return differences between so-called growth (or glamour) stocks (high past growth rates in sales) and value stocks. The average five-year return difference was more than 60% in favor of the value stocks. This finding implies that many investors erroneously believe past performance is representative of future performance. Because the disposition effect posits that investors preferably sell winners.

2.5 SELECTING SECURITIES TO SELL

Selling decisions by individual investors typically relate only to stock they already own. A typical individual investor holds only a few stocks.
It makes the selling decision relatively easy compared with the buying decision. The disposition effect is the most prominent description of how individuals decide to sell.

### 2.6 DISPOSITION EFFECT

The disposition effect is a preference to sell winning security positions rather than losing positions; it is remarkably robust. Shefrin & Statman (1985) predict the disposition effect from elements of prospect theory (Kahneman and Tversky, 1979) and mental accounting (Thaler 1999). Odean (1998) tests the disposition effect hypothesis using a large data set of 10,000 online investor accounts during 1987–1993 and finds strong support. Odean (1998) compares the proportion of gains realized (PGR) with the proportion of losses realized (PLR) and finds that a larger part (by a factor of 1.5) of the winning positions get sold compared with losing positions. This disposition behavior is not justified ex post. By having sold the loser and holding on to the winner, investors could have earned a much larger return (3.4% for a one-year horizon). Selling losers and holding winners would also be more rational, considering the tax effects of these transactions in some systems. Alternative explanations for the disposition effect include a belief in mean reversion, portfolio rebalancing, liquidity demands, or a reluctance to sell at low prices due to higher transaction costs. But when investors believe in mean reversion, they seemingly should tend to buy past losers, which they do not do. If investors rebalanced their portfolio due to changed risk characteristics, it was expected that only a part of the positions would be liquidated, which again is not the case. Liquidity motives do not drive the effect. The disposition effect is not dampened for a subsample of stocks sold for which the proceeds are reinvested within three weeks of the sale.

Weber & Camerer (1998) find evidence of the disposition effect through an experimental approach. People are 50% more likely to realize
gains than losses. In line with Odean’s (1998) findings, investors’ possible belief in mean reversion can be ruled out, because the disposition effect was greatly reduced when stocks were automatically sold after each round. In a large-scale study of investor behavior in Finland, (Grinblatt & Keloharju 2001) also found evidence of the disposition effect for five investor groups (non-financial corporations, financial and insurance institutions, governmental organizations, nonprofit institutions, and households). Especially for large losses, there is a strong reluctance to take a loss, yet in December, investors accepted losses to realize tax benefits. Kaustia (2004) finds support for the disposition effects by analyzing a data set of initial public offerings (IPOs). An advantage of IPOs is the availability of a relatively unambiguous reference price, the offering price, which is shared among many investors. That study shows that stocks trading below the offering price since their IPO exhibits significantly more trading volume when the offering price is exceeded, especially when it happens for the first time. Feng & Seasholes (2005) document a presence of disposition effect among Chinese investors. Barber et al (2007) study the disposition effect in aggregate using a database of all trades in Taiwan. These authors report strong evidence in favor of the disposition effect. Investors in Taiwan are twice as likely to sell a stock for a gain as for a loss. A large majority of investors in Taiwan (84%) exhibit a disposition effect.

2.7 PERFORMANCE AND BEHAVIOR OF VARIOUS INVESTOR CLASSES

A comparison of the performance of various investor classes typically aims to address the question of the extent to which wealth transfers take place across various participants. Estimating these wealth transfers preferably requires data that cover a whole market considering the adding-up constraint on trading. In empirical literature on individual investor behavior,
two data sets cover a whole market and can identify participants. Grinblatt & Keloharju (2000) use all stock market transactions in Finland over a two-year time span. They find that stocks that individuals buy exhibit weak future performance, whereas sophisticated investors (e.g., foreign, professionally managed funds, investment banking houses) take the other side of the trade and exhibit strong performance. Barber et al. (2009) analysed all stock market trades in Taiwan. A similar and clear pattern emerges. Individual investors lose while professional parties gain. Comparing the buys and sells of individuals, they reveal that stocks sold outperform stocks bought by 75 basis points per month. The net market adjusted returns of Taiwanese individual investors in aggregate are –3.8%, which reflect the combination of bad stock picking, commissions, taxes, and bad market timing. Hvidkjaer (2008) analyzes all trades in the United States and finds that small trades offer a good proxy for retail behavior. His findings are in line with the two other studies. Small trades underperform the market by 89 basis points per month. He also finds that stocks with strong retail buying are growth stocks with high past returns and high advertising expenses. Other studies compare the behavior (rather than the performance) of individuals against that of professionals. Many of the behaviors exist among both retail and professional investor classes, but the most biased behavior occurs among individuals. Barber et al (2007) find that most investors in Taiwan (84%) exhibit a disposition effect, but mutual funds and foreign investors do not possess disposition effect.

2.8 IMPACTS OF SOPHISTICATION AND LEARNING ON INDIVIDUAL INVESTOR BEHAVIOR

An interesting question remains, namely, whether behavioral biases and errors are mainly a beginner’s phenomenon, such that experience reduces or even eliminates deviations in stock predictions. List (2003) found that the degree of market experience tends to correlate with the degree of rationality in
investment decision making. Most studies show that higher levels of sophistication are associated with better decision making and better outcomes. Bailey et al. (2008) find that wealthier and more experienced investors are more likely to hold foreign equity. In addition, behavioral factors play a role. Whereas overconfident investors invest more abroad, investors who display a local bias or the disposition effect invest less in foreign assets, resulting in detrimental effects on performance. Bailey et al. (2011) further noted that investors with higher income or education and more experience made better mutual fund investment decisions.

Feng & Seasholes (2005) study the disposition effect as a function of experience and investor sophistication for a group of 1,511 investors in the People’s Republic of China. On an average, these investors exhibit a disposition effect, but sophisticated and experienced investors have fewer problems with selling losing stocks. Dhar & Zhu (2006) also document a negative relationship among financial literacy, trading experience, and the disposition effect. According to (Loewenstein 2003), emotions have a strong impact on decision making, and experience relates to the level of these emotions. Lo & Repin (2002) indicated that there were significant differences in emotional responses between less experienced and experienced among derivatives and foreign exchange intermediaries. More experience leads to lower emotional responses. Goetzmann and Kumar (2008) look into investor characteristics and diversification. They find that the least diversified portfolios are held by young, low income, less educated, less sophisticated and non-professional groups. Graham et al. (2009) find that (perceived) competence mitigates home bias. In their whole sample, 38% of the investors hold foreign assets, but among those who feel more competent, 52% invest internationally. For investors with the highest degree of competence, the probability of holding foreign assets increases to more than 73%. In support of these findings, Abreu et al. (2011) show that after gaining experience in the
home market, investors start investing abroad and improve their portfolio performance. Kimball & Shumway (2010) use survey data and find that sophisticated investors invest more internationally, suggesting that home bias is an issue, especially for the less financially literate.

Another branch of literature looks into the effects of financial literacy and cognitive abilities. Lack of financial literacy or low cognitive abilities adversely affect the quality of financial decision making. Less literate people are less likely to participate in the stock market (Van Rooij et al 2011) and tend to diversify their portfolios insufficiently (Christellis et al 2010). Grinblatt et al (2011a) find a positive relation between Intelligent Quotient and stock market participation, and then they report that high-IQ investors show significantly better portfolio performance (Grinblatt et al 2012). Korniotis & Kumar (2012) also reveal that portfolio distortions such as concentration, excessive trading and holding local stocks must be conditioned by cognitive abilities.

2.9 INVESTOR’S PERSONALITY TRAITS

Psychographic factors play an important role in determining behavior of investors. These factors include gender, investor-life-cycle-stage, age, income etc. One of the important factors that play a significant role in determining investor behavior is his or her personality (Sadi, Ghalibaf, Rostami, and Gholipour & Gholipour 2011). Marilyn MacGruder & Barnewall (2012) distinguished investors into two simple types to help investment advisors to understand the nature of their clients. These include Active Investors and Passive Investors. Passive investors are those who became passively without great efforts. They became wealthy by inheriting the wealth of their parents or by risking the capital of others rather than their own. In contrast Active investors are those who earned their own wealth by risking their own capital. Passive investors need high security while Active
investors have more tolerance for risk (Barnewall 1987). Bailard, Biehl and Kaiser (BB&K) developed Five-Way Model by adding more dimensions in Barnewall model for better analysis of investor’s personality. They classified investors along two dimensions: Level of confidence and Method of action. First dimension describes whether the investor confidently approaches the different aspects of life or he or she is anxious in his or her approach. Second dimension describes whether the investor is careful, methodical and analytical in his approach or he or she is impetuous, emotional and intuitive. Based on these two axes, the authors identified five investor’s personality types named as Adventure, Celebrity, Individualistic, Guardian and Straight Arrow (Bailard et al 1986). Another popular psychographic model called Myers-Briggs Type Indicator (MBTI) model was developed by Isabel Briggs Myers and her mother, Katherine Briggs. MBTI elaborated different personality types based on certain aspects of human psychology (Pompian & Longo, 2004). According to the theory, every person has innate preferences that define how he or she will behave in a certain situation (Pittenger 1993).

Psychological as well as external factors can affect human behavior (Endler & Magnusson 1976). Personality traits have significant effect on investor’s behavior (Maital et al 1986). During 2000s Michael M. Pompian and John M. Longo used Myers-Briggs Type Indicator personality test and found that investors of different gender and personality types fall prey to various investment biases like overconfidence bias. They also suggested that investment advisors should consider gender and investor personality type as an important factor in client profiling and they should use these factors in creating investment programs that can minimize the ill effects of investment biases (Pompian & Longo 2004). Huei-Wen Lin used big five model to examine the relationship between investor’s personality traits and behavioral biases. According to Huei-Wen Lin, certain personality traits and
demographics are significantly correlated. He found that neuroticism has positive relationship with disposition effect and herding while it has no relationship with overconfidence bias. Extroversion, openness and conscientiousness have positive relationship with disposition effect and overconfidence bias while it has no relationship with herding behavior. Finally agreeableness was not susceptible to any behavioral bias (Lin 2011). In another research Sadi, Ghalibaf, Rostami, and Gholipour correlate the behavioral biases with investor’s personality traits in Tehran’s Stock Market by using big five model of personality. Their findings showed that extroversion has positive relationship with hindsight bias and consciousness has negative relationship with randomness bias. There was a positive relationship between neuroticism and randomness bias, escalation of commitment & availability bias. Openness has positive relationship with hindsight bias and overconfidence bias while it has negative relationship with availability bias. Finally agreeableness has no relationship with any perceptual error (Sadi, Ghalibaf, Rostami, and Gholipour & Gholipour 2011).

In psychology, the Big Five personality traits are the five dimensions of personality that are used to describe human personality. This theory is based on the Big Five factors. It is, therefore, called the Five Factor Model. The Big Five factors are neuroticism, openness, conscientiousness, extraversion and agreeableness. This study examines the behavioral aspects as related to their personal investment and portfolio management. If behavioral aspects are the good predictors of the actual behaviour and these intentions can be changed by the formation of attitudes, subjective norms, and perceptions of self-control, then they should be amenable to interventions from the financial counsellors. Thus, identifying the nature of a behavioral intention with respect to personal finance is important.
2.10 BEHAVIOURAL ASPECTS

Thomas Bailard, David Biehl and Ronald Kaiser developed a model called BB&K Five-Way model which enabled the classification of investor's personalities along the two axes namely level of confidence and method of action. Thomas Bailard, David Biehl and Ronald Kaiser provided graphic reorientations of their model and this model classified investor personalities along the two axes, “level of confidence” in the vertical axis and “method of action” in the horizontal axis. They introduced two axes to measure investor’s psychology “confident-anxious”, and “careful-impetuous”.

2.11 GAPS IN THE LITERATURE

From the review of literature, it can be noticed that psychological factors have played a major role in the investors’ decision on investments. Though in the developed nations, many studies have been conducted on investor behaviour, hardly very few studies have been carried out in the Indian context. Individual investor behavior is not a widely studied phenomenon in India. In the whole of Asia, there are very few studies conducted in this area of research. But behavioural studies related to individual investments are necessary to understand the investor psychology. The current study intends to study the behavioural biases among the capital market investors in India. No study has been conducted in India to test the relationship between the big five personality traits and investment biases among the individual investors. Although in India there are a few studies conducted to understand the behavioural aspects of mutual fund investors, no study has been carried out among the equity investors.
2.12 SUMMARY

Individual investor behaviour is not a widely studied phenomenon, particularly in India. Empirical evidence typically indicates deviations from normative recommendations among individual investors. For example, diversification is typically limited, trading is excessive for some but other investors never trade, and buying decisions are heuristically based while selling decisions are narrowly framed and influenced by loss and regret aversion. Individual investors as a group exhibit portfolio performance that is inferior to that of more sophisticated investor classes.

Within the group of individual investors, increased sophistication positively affects the quality of portfolio decision making. A related question is what type of the big five personality traits, behavioural aspects and behavioural biases is present among the individual investors in India. And identifying and examining the following aspects namely

the relationship between big five personality traits and investment biases, relationship between demographics of individual investors and investment biases, demographics of individual investors and behavioural aspects, can improve quality of the investment decision-making of individual investors. This thesis aims to contribute to the discussion on personality traits, behavioural aspects and behavioural biases.