

6305AFE Advanced Microeconomics

Assessment 3: Research-Based Assignment

Research Question

How behavioural-finance helps improve the understanding of financial markets and the impact on stock prices?

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1.0. Introduction

Behavioural-finance, that is, the incorporation of psychology and sociology perspectives into the field of finance, is a prominent research area that contradicts much of the efficient market hypothesis theory (Thaler, 2005). Research in the field of psychology reports decision-making behaviours as biases, which have implications in relation to investing (Holmes & Paudyal, 2012; Loewenstein, 2000; Shleifer, 2000). These biases impact the ability to process information and indicate that emotions affect investment decisions. Consequently, behavioural-finance extends the traditional paradigm leading to a profound deepening of knowledge of financial markets.

The following essay will critically evaluate how behavioural-finance helps improve the understanding of financial markets and, ultimately, the impact on stock prices. The essay commences with an introduction to traditional-finance theory followed by the rationale behind behavioural-finance. Stock market deviations and psychological biases will be reviewed, concluding with the significance and impact of behavioural-finance research on financial markets.

2.0. Finance theory

2.1. Conjecture to traditional-finance theory

The four axioms of expected-utility theory was coined by Von Neumann and Morgenstern (1944) and acts as the criterion for individual decision-making. The four axioms, which define a rational investor, include completeness, transitivity, independence and continuity. If all axioms are satisfied, then an individual is rational, and preferences can be represented by a utility function. In some situations, actual behaviour systematically differs from expected-utility theory predictions (Allais, 1953). The psychological factor of loss-aversion is unable to be explained utilising expected-utility theory. Consequently, the rational behaviour assumption underlying neoclassical economics cannot explain certain systematic deviations (Bowman, Minehart, & Rabin, 1999; Kahneman & Tversky, 1979; Thaler, 1980, 2012).

According to Fama (1970) stock markets are efficient and all information available to investors are factored into the prices of all securities. The efficient market hypothesis does not require investors to be rational, such that, individual investors will act randomly, but as a whole, the market is always right. This theory argues that markets are efficient, stock prices reflect all available information, and any attempts to outperform the market results from a chance of luck rather than an individual's skill. However, in reality, some investors continually produce

returns excess to the market. Simon (1957) coined the term ‘bounded rationality’, which indicates there are limits to what and how people process information. Thaler (1980) extended this rationale and documented that economic decisions are influenced by three aspects of human psychology: cognitive limitations (or bounded rationality), self-control problems, and social preferences. These aspects impact the information utilised by individuals to base their decision, and therefore, violating the full information assumption within the efficient market hypothesis.

2.2. Behavioural-finance theory

Behavioural-finance theory has important implications for financial markets, in particular, the role in corporate finance and asset pricing. Behavioural-finance theory argues that markets fail to reflect economic fundamentals and significant and persistent pricing biases arise (Odean, 1998; Shiller, 2003; Shleifer, 2000; Shleifer & Vishny, 2003; Thaler, 1980). Traditional-finance theory assumes investors are rational and all decisions made are based off rationale thoughts. However, irrational behaviour is present among all humans and future company performance can be forecasted utilising irrational expectations (Grossman & Stiglitz, 1980). Thaler (1980), coined ‘endowment effect’, that is, the tendency of individuals to value items more just because they own them. Consequently, phenomena associated with psychology inhibits rational decision-making, which often deviates security prices from their fundamental value. Barberis and Thaler’s (2003) behavioural-finance survey emphasises that the irrationality of investors is not the sole determinant which affects asset prices. The study indicates that psychological factors exhibit a role that leads to systematic asset pricing deviations. Consequently, theoretical models of market efficiency have an important place in characterising an ideal world, however, realistically, there are shortcomings to these models. For example, efficient market theory can eventuate to inaccurate interpretations of speculative stock market bubbles. Advocates of behavioural-finance believe psychological forces interfere with the concepts underlying traditional-finance theory (Coval & Shumway, 2005; Grossman & Stiglitz, 1980; Milgrom & Stokey, 1982).

Tversky and Kahneman (1974) suggest that many individuals systematically deviate from the rational behaviour assumption by overreacting to new information. In an influential behavioural-finance study, Bondt and Thaler (1985) opposed the traditional-finance model assumption of rational behaviour. The study found that stock-markets overact to new information, which systematically deviates asset prices from their fundamental value. In a following paper, Bondt and Thaler (1987) tested the robustness of these results further. The

findings supported the overreaction hypothesis and the tendency for mean-reversion in financial markets. Mehra and Prescott (1985) coined the term, equity premium puzzle, which refers to the historical return on equities in comparison to bonds over a 100-year period. Benartzi and Thaler (1995) proposed a behavioural-finance explanation for the equity premium puzzle through utilising loss-aversion. The study postulates that reference points differentiate amongst investors, which ultimately affects equity returns. Bonds are generally considered risk-free, whilst securities carry a premium to compensate investors for additional units of risk. The study further suggests that investors holding equities often utilise the return from bonds as the reference point. Consequently, a psychological loss occurs when the return from an equity investment is below that of a risk-free counterpart. Therefore, loss-aversion is commonly used to describe the risk premium observed in financial markets.

Shefrin (2001) argues that investment is a significant determinant of current and future wealth but designing and managing a portfolio requires a vast cognitive load. Heuristic-driven bias, that is, the concept that investors knowledge of statistics and probabilities is limited and, instead, rely on intuition and previous experiences (Shefrin, 2002). The focus on non-objective and non-statistical data makes investors susceptible to errors from poor decision-making. These heuristic biases include overconfidence, loss-aversion, regret avoidance, home, frame dependence, availability and representativeness (Coval & Moskowitz, 1999; Giglio & Shue, 2014; Kahneman & Tversky, 1991; Loomes & Sugden, 1982; Scheinkman & Xiong, 2003; Shefrin, 2002). These psychological factors inhibit individual investors decision-making ability, which ultimately introduces systematic effects upon financial markets.

Companies with strong recent performance can often be overpriced, whilst underperforming companies can often be undervalued relative to their fundamentals. If individual investors decide to purchase securities without first investigating financial fundamentals, the impact upon share price would be minimal. However, when irrational behaviour is systematic, price deviations within the market occur (Lux, 1995). Consequently, behavioural-finance theory contends that various patterns, such as overconfidence, loss-aversion and overreaction, occur amongst individual investors and, ultimately, large groups of investors. If this systematic effect arises, a company's share price might not reflect the underlying economic fundamentals. For example, if a company's performance surprises the market in one quarter, future expectations commonly adjust relative to previous expectations. If this becomes a systematic effect, investors will typically drive the price above the underlying value (Coval & Shumway, 2005).

2.3. Financial market anomalies

Stock market deviations have received considerable attention from academics, particularly, short-term momentum and long-term price reversals (Bondt & Thaler, 1985; Jegadeesh & Titman, 1993; Rouwenhorst, 1998; Thaler, 2005). First, momentum occurs in financial markets when recent high performing stocks are followed by further positive returns. Behavioural-finance theorists argue that systematic underreaction deviates stock prices from fundamentals (De Long, Shleifer, Summers, & Waldmann, 1990; Shiller, 2003; Shleifer & Vishny, 2003). That is, investors underrate the true impact of earnings, share repurchases and divestitures and, therefore, delay their reaction to new information. Second, price reversal demonstrates that high-performing stocks over recent years typically become low-performing stocks over the coming future years (Coval & Shumway, 2005). This phenomenon arises from an overreaction by investors on a company's recent performance, inflating current share price. As additional information is presented to the market, investors adjust their expectations and price reversal occurs (Giglio & Shue, 2014).

Presently, academic research has no clear consensus on whether irrational investors alone are responsible for the short-term momentum anomaly and long-term price-reversal effect (Jegadeesh & Titman, 1993; Malkiel & Fama, 1970; Thaler, 2005). The assumptions underlying rational investors decisions could merely be incorrect and consequently future risks would not be factored into the underlying fundamental value. Furthermore, academic research suggests that momentum biases could persist even if all investors were rational (Daniel, Hirshleifer, & Subrahmanyam, 1998). Therefore, behavioural-finance theory indicates that irrational investors might not be the sole determinant of market anomalies.

3.0. Psychological biases

The behavioural-finance research postulates that investors can act irrationally, but also, psychological factors impact equity returns. The following section will describe the most prominent psychological biases evident in academic research. The biases include overconfidence, loss-aversion, regret avoidance, frame dependence, home and anchoring.

3.1. Overconfidence

The psychological phenomena known as overconfidence is the sense that an individual has an overstated view of their own ability and tend to have unjustified confidence in their decision-making ability (Scheinkman & Xiong, 2003). Barber and Odean's (1999) study found that chief executive officers, lawyers, doctors and students tend to overrate the accuracy of their opinion

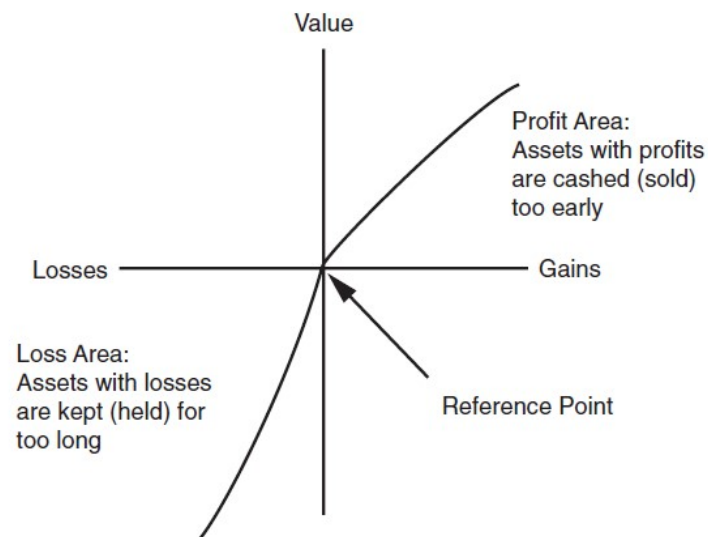
of the future. Humans tend to view the world in a positive manner, which creates ongoing sources of bias towards forecasting of future decisions. In particular, overconfident investors may overestimate their ability to identify profitable investments (Barber & Odean, 2001; Holmes & Paudyal, 2012). Modern portfolio theory suggests holding diversified portfolios to mitigate risk associated with future market fluctuations (Markowitz, 1952). However, overconfidence hinders an investors ability to diversify their portfolio on the premise of their own misguided confidence. Bondt and Thaler (1987) demonstrated that individual investors over inflate their stock-picking ability. The findings showed that investors prefer companies, which they know substantial information about in their portfolio on the basis that they would outperform.

In reality, broader factors influence investment performance and investors often underestimate the effect of the broader market (Carhart, 1997; Fama & French, 1993; Jegadeesh & Titman, 1993). In addition, overconfident investors often engage in excessive trading, which negatively impacts their returns (Scheinkman & Xiong, 2003). Researchers suggest this arises from self-attribution bias, that is, the sense that positive outcomes following a decision result from an individual's ability or skill (Shiller, 2003; Thaler, 2005). However, this bias is limited to positive outcomes and a negative outcome is attributed solely to bad luck. Furthermore, this impacts the ability to utilise all available information in the decision-making process. Cognitive dissonance suggests that people prefer to not admit they are wrong and introduce a judgemental basis to support their claims (Goetzmann & Peles, 1997; Shiller, 1999). For example, when a stock is continually underperforming because of bad news, a rational investor will sell the stock and seek out an alternative to invest their funds. However, cognitive dissonance impacts this ability, whereby, an investor blocks out evidence of how bad a stock is performing and chooses to seek evidence that supports their belief to hold their position.

3.2. Loss aversion

Traditional-finance theory emphasises the trade-off between risk and return. Risk emulates from the variability of outcomes and investors should be compensated a higher return for additional risk borne. An investors risk attitude determines the level of risk they are willing to bear whilst seeking a return from their investment. In contrast, behavioural-finance theory suggests investors are most sensitive to loss than to risk and return. Kahneman and Tversky (1979) coined 'prospect theory', which argues that losses and gains are valued differently, and individual decisions are based on perceived gains relative to perceived losses.

Figure 1: Prospect Theory Value Function



Source: Kahneman and Tversky (1979)

Prospect theory suggests that individuals do not derive utility from consumption or wealth, but rather gains and losses relative to some reference point. Individuals are more sensitive to losses than to gains, which is demonstrated in the kink at the reference point in Figure 1, whereby, the utility function is steeper in the losses region. Furthermore, individuals exhibit diminishing sensitivity to returns, such that, in the event of a loss, the emotional impact on an individual is greater than that of an equivalent amount of gain. In a situation where the end result is receiving \$50. The first option is receiving the \$50 straight away or the second option is gaining \$100 and then losing \$50. The authors postulate that individuals prefer to receive the \$50 straight away as a single gain is more favourable than originally having more cash and losing some. Whilst Kahneman and Tversky (1979) proposed prospect theory, Thaler (1980) first applied prospect theory to economic issues. Thaler demonstrated the importance of reference points and the impact of loss aversion in deterministic settings. In addition, Shefrin and Statman (1985) and Odean (1998) support the above arguments by demonstrating that individuals tend to sell a winning position and hold a losing position.

3.3. Regret avoidance

Humans have the desire to avoid regret and often this impacts the ability to make decisions. The effect of inertia is evident in financial markets, whereby investors become complacent and decide to not make necessary adjustments to their portfolios (Thaler, 2005). Investors considering adjusting their position in certain investments might lack certainty about the merits of taking action and, therefore, just wait and see what happens. This is often the most

convenient path and the tendency to procrastinate introduces biases such as overconfidence and irrational investor behaviour. These factors can impact the performance of individual companies within an economy, whereby, market sentiment can overinflate the value of a certain asset class or individual securities. This entices herd behaviour, such that people unconsciously move with the herd, which ultimately creates huge swings in financial markets (Lux, 1995).

3.4. Frame dependence and home bias

Traditional-finance theory promotes the diversification of securities in a portfolio and to consider how risks associated with individual securities offset others within the portfolio. Therefore, it is important to focus on aggregate portfolio performance, in comparison to individual securities. However, humans tend to overwhelmingly focus on the performance of specific securities and not the portfolio as a whole (Shleifer, 2000). This narrow mindset increases investors sensitivity to losses and exhibits a greater tendency to adjust their position in the short-term, which ultimately hinders long-term performance. Additionally, research demonstrates that investors prefer investing in familiar assets and believe familiarity is associated with low risk (Coval & Moskowitz, 1999). This is often referred to as home bias, which investors overweight assets from their own country. Consequently, inadequate diversification occurs, and investors often underestimate the risks involved with their decisions.

3.5. Anchoring

Anchoring theory is a psychological weakness that involves placing too much attention on the initial piece of information discovered (Nofsinger, 2016). An individual has the tendency to anchor their opinion on something that first captures their attention. Consequently, all subsequent judgements are made in relation to the anchor, and all information is interpreted around the anchor. An investor often over anchors their initial assessment and provide insufficient attention to reassessing the initial information and additional information introduced (Holmes & Paudyal, 2012). For example, if a stock was purchased 2 years ago for \$4, which appeared to be at fair value, an investor could perceive that the current trading price of \$2 is cheap. However, the company is currently under investigation for fraudulent behaviour. The investor chooses to insufficiently pay attention to new information and continues to focus on the 'anchor' to assess the future performance.

4.0. Market sentiment and fundamental analysis

Psychologists and behavioural-finance theorists believe that individual's emotional capabilities are a significant determinant in becoming a successful investor (Coval & Shumway, 2005; Daniel et al., 1998; Kahneman & Tversky, 1984, 1991; Shiller, 2003). Research suggests that self-discipline is the biggest factor to develop to overcome the aforementioned biases (Shiller, 2003; Shleifer & Vishny, 2003). It is important to consider the prevailing investment climate, however, it is imperative to make decisions as objectively as possible by utilising quantitative criteria. In the finance world, investors often base their decisions off irrelevant and inaccurate figures. For example, investors could notice a considerable fall in price after continuous growth in the past. Some investors could interpret this as short-term market movements, creating an opportunity to buy. However, the decline in value is due to changes in future expectations of the underlying economic fundamentals. Consequently, it is vital to analyse a company's fundamental profitability, liquidity, leverage, and growth, whilst integrating current market valuation multipliers, such as P/E ratio or EV/EBITDA, into the decision-making process.

5.0. Conclusion

Behavioural-finance theory provides an important rationale in explaining financial market anomalies. Irrational investor behaviour impacts emotions and demonstrates that cognitive errors arise and influence the decision-making process. The presumption that stock markets are efficient and all information available to investors are factored into the prices of all securities was previously believed beyond doubt. However, in reality, market inefficiencies create arbitrage opportunities for investors. Psychological factors inhibit individual investors decision-making ability, which ultimately introduces systematic effects upon financial markets. Psychological biases encapsulating behavioural-finance include, for example, overconfidence, loss-aversion and anchoring. These biases indicate that investors risk attitude changes depending on the current market sentiment. Consequently, these psychological biases introduce limitations amongst traditional-finance theory. Behavioural-finance theory indicates that irrational investors might not be the sole determinant of market anomalies and psychological factors explain these contradictions. Consequently, the integration of behavioural-finance into the traditional paradigm deepens the profound knowledge of financial market behaviour.

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