BEHAVIORAL ECONOMICS: THE IMPACT OF NEWS ON INVESTOR SENTIMENT IN FINANCIAL MARKETS

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Behavioral economics: The impact of news on investor sentiment in financial markets

Dissertation written as part of the Double Master’s Degree Program between Insper and Nova SBE to obtain a Professional Master in Business Administration (Insper) and an International Master in Management (Nova SBE).

Concentration: Behavioral Finance

Supervisors:

Prof. Gazi Islam – Insper
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EXECUTIVE SUMMARY

Capital markets are said to be efficient if they fully and correctly reflect all relevant information in its prices (Fama, 1970). Based on this idea, the only determinant of a security’s price is its fundamental value, calculated as the present value of discounted expected future cash flows. Because prices already reflect all public information, it is not possible to make abnormal economic profits by analysing the balance sheets, income statements or announcements of dividend changes (Malkiel et al., 1991). The only determinant of expected profit of holding a security is the risk associated with it.

Throughout time, theorists and especially practitioners have challenged this efficient market hypothesis, which found evidence that investors are indeed able to earn excess risk-adjusted rates of return by the help of analysing predictable patterns (Malkiel 2003). One of the first market anomalies challenging the efficiency of financial markets were found by Philip Brown and Ray Bale in 1968, who observed that market prices react sharply to earnings announcements when new information becomes available, and then continue drifting in the same direction for various months.

Because these systematic pricing errors are usually not explainable by market frictions, financial research focuses on the psychological and behavioural elements of stock price determination. In this sense, focus is put on the context in which economic agents make their decisions, and the influence of human feelings such as greed, excitement, anxiety and panic in this decision making process. We will therefore integrate individual and cognitive processes and their particular constraints into economic theory both on individual, and collective level. Because humans show patterns in their behaviour, certain market reactions to putatively irrational human behaviour actually become explainable by the help of “emotional finance”.

Human irrationality is only able to influence market prices if the masses as a whole adapt to certain feelings, emotions or beliefs. Throughout this research we will see that humans actually tend to converge in their belief and perceptions of reality, leading to masses as a whole taking on a certain position. As seen in various examples of bubbles in stock markets throughout history, this generalized belief of
the masses about what is perceived to be true can have drastic impact on valuations and therefore prices of securities.

In analysing which forces lead masses to take on a certain position, we analyse the effects that the media has in influencing the perceptions of investors. The power of the media in influencing these perceptions may not be underestimated, as even sophisticated analysts draw their conclusions on irrelevant aspects of how financial information is presented (Hirst and Hopkins, 1998).

In analysing the influence of the media leading to distorted security prices, we investigate towards the media coverage on United Airlines in the period of 09.08.2008 until 09.14.2008, a period in which the United Airlines stock was undervalued due to a previous false news report about the bankruptcy of the airline. Among other interesting findings, we find that an excessively negative tone in the news coverage regarding United Airlines resulted in the sentiment of investors becoming excessively negative. By the help of this case study, we display the influence of media on human irrationality on prices in financial markets, and determine negative investor sentiment to be the main cause responsible for the undervaluation of United Airline stock in September 2008.
ABSTRACT

This thesis analyses the extent of irrational human behaviour in the financial world, and the implications that these behaviours have on prices in financial markets as a whole. Because this research covers various fields, from general economic theory, over human cognition and group decision making to power of the media, we start out by explaining the link between these areas, by integrating individual and collective cognition into economic theory.

Doing so, we show how an individual’s cognition is influenced by its peers and the surrounding, leading to group decision-making, a process in which individuals subordinate their own beliefs under the generalized belief of the group. In this regard a special focus will be put in analysing the effects that the media has in influencing the minds of the masses. We will then go on to investigate towards the effects that irrational investor behaviour has on the prices of believed to be efficient financial markets.

In these introductory sections, this theses complements to behavioural, financial and economic literature by explaining the impact of individual cognition within these already established theories and explaining the role the media has in influencing collective cognition and therefore altering prices in financial markets.

While most of recent research in cognitive science has focused on forming hypotheses and models of cognition and subjecting them to experimentation (Bourgine, 2004), this theses contributes to behavioural and financial research by testing the impacts of certain behaviour paradigms in the case of the United Airline Stock undervaluation in September 2008. Doing so, we empirically analyse the course of this undervaluation, the context in which it occurred and which cognitive phenomena might be responsible for the undervaluation. By means of textual analysis of media coverage regarding United Airlines throughout this episode we explain the influence of the media leading to this mispricing, and ultimately define excessively negative investor sentiment resulting from this media coverage to be the main reason for this undervaluation.

Key words: Behavioural finance, News coverage, efficient markets, investor sentiment
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1. INTRODUCTION

The human brain is without a doubt one of the most interesting and fascinating fields of studies: The power that the brain has over the rest of the body can be seen by the example of the “Placebo Effect”, where hopeless patients suffering of severe diseases ranging from cancer to Parkinson, have been cured by the sole treatment of plain sugar pills. Only because these patients strongly believe in the efficiency of the “drug”, as if by magic, they actually cure their disease by themselves. This effect illustrating the power about the human brain over the rest of the body can therefore be described as the “most effective medication known to science, subjected to more clinical trials than any other medicament yet nearly always doing better than anticipated. The range of susceptible conditions appears to be limitless” (O’Donell, 1995 p.1).

The placebo effect outlines the power that perceptions about what is believed to be true have not only over the body, but also over general human behaviour and emotions or decision-making. In this sense, psychologists as well as economists have been studying various cognitive phenomena in order to understand certain putatively completely irrational human behaviours for long periods of time. These behaviours are extremely interesting to observe in a business context; an area in which rational decision making in order to opportunistically maximize value is one of the main postulates for success (Bourgine, 2004). We will therefore integrate individual and cognitive processes and their particular constraints into economic theory both on individual, and collective level. As we will see throughout this paper, by analysing the behaviour of financial market participants, certain putatively completely irrational behaviours become understandable and might even turn out to be rational.

This thesis analyses the extent of irrational human behaviour in the financial world, and the implications that these behaviours have on financial markets as a whole. In this sense, a focus will also be put on the emotions leading individuals to make certain putatively completely irrational investment decisions. As we will see, throughout the process of price finding for securities, general investor sentiment as “a belief about future cash flows and investment risks that is not justified by the facts at hand” (Baker and Wurgler, 2007) regarding the economy in general or about a certain security in specific play a vital role. We will analyse in depth, how negative investor
sentiment evolves and which impact the media has in generating it: Different media sources are accessible regardless of place and time, due to technological progress over time. It is extremely challenging for the human brain to distinguish from which sources of media to rely on, in a world where one is confronted with numerous different, partially contradicting information and opinions (Engelberg and Parsons, 2011). In this sense the impact of the media not only on the efficiency of markets, but also on the sentiment of financial market participants are analysed.

This paper builds up on existing literature on behavioural finance theory. Here a special focus will be put on the effects of negative affectivity, as humans prove to wrongly assess risk due to a misperception of reality resulting from negative emotions. Because human emotions and irrationalities only effect financial markets when the masses as a whole adapt certain behaviours, a focus will be put in understanding how certain human mind sets and behavioural paradigms are adapted by many people, leading to “group think” or even mass movements, ultimately distorting prices on financial markets.

Whereas most behavioural economics models are quite abstract and theoretical, this theses complements research by the means of empirical qualitative and quantitative research. In this sense, this thesis builds up on previous research from the area of behavioural economics. We analyse various relevant behavioural economics theories and bring them into context of real life financial markets. Doing so, we empirically analyse and validate the implications of various behavioural finance models by analysing the mispricing of United Airline (UAL) Stock in September 2008: On September 8th of 2008, a six-year old newspaper article about United Airlines filing for Chapter 11 was mistakenly republished online. The market reacted with a plunge of the airline’s share price from $12 to $3, which can be seen as a sign for efficient markets, in which the new information is incorporated into the new price. Yet, only shortly after, this information was revised, and it took six trading days for the share price to return to pre-event levels. This intensive case study analyses all factors contributing to the undervaluation of this security. We will do an in depth analysis of the previously explained theories on behavioural economics, and analyse the role of the media in this surrounding, and the implications that is has on behaviour of agents. Among other interesting human information processing phenomena and emotions, we will identify negative investor sentiment due to
excessively negative media coverage in this episode to be one of the main explanations for this mispricing puzzle.

This thesis is built up as follows: After an outline about group information processing, the implications that human cognition has on financial markets will be explained in chapter 3. Doing so, the efficiency and limitations of financial markets will be explained from a behavioural perspective. The following fourth chapter explains the role of the media in influencing the perceptions of humans, and how they can affect prices on financial markets. We will then go on by constructing an in-depth analysis of the case of the United Airline Stock undervaluation from the period of 09.08.2008 until 09.14.2008.

2. GROUP INFORMATION PROCESSING

2.1 Emotional Convergence

This thesis investigates towards how human mind-sets, their perceptions and emotions effect their economical actions and decisions. In this sense, every human being is unique in which motivational forces and rationalities drive him/her to act in a certain way. Yet, humans show certain behavioural paradigms and patterns in their actions. (De Martino, Kumaran, Seymour, Dolan, 2006) In order to analyse the effects of human (ir)rationality on the marketplace, it is necessary to analyse the whole of market participants, by aggregating individual behaviour to behaviour of the masses.

Experimental studies on different reference groups such as people in relationships or college roommates as done by Anderson and John (2003) have proven that people in fact converge in their emotional mind-set. By the help of coordination of certain thoughts and behaviours, mutual understanding and agreement is increased. This in turn leads to stronger emotional similarity, which brings about certain benefits such as cohesiveness in decision-making and problem solving (Anderson and John, 2003). These studies prove how originally unique human beings converge to be more alike to their peers, influencing their perceptions, opinions and decisions.

The effects that the surrounding has on ones own actions can be compared to individual behaviour in groups: Despite the benefits of discursive decision-making of
heterogeneous groups, groups in practice tend to adapt to a behavioural phenomenon called “Group Think” (Janis, 1972). Due to the diversity in opinions, perspectives, talents and insights, groups should be better in decision-making than individuals by themselves. The full use of all the information available to the group by exchanging, discussing and integrating the information distributed over the group members in theory leads to a superior decision making. Yet, research shows that groups in practice are poor users of this distributed information, as individuals focus more on already evident common knowledge or assumptions. Because group members are oftentimes not as open to new information, too easily satisfied with an emerging consensus and hesitant to move against this consensus, a low level of information elaboration, following low-quality decisions is very common (van Knippenberg et al., 2010). Groups fail to discuss individual group members' unique information, but instead rather focus more on information known to all members before discussion (Stasser and Titus 1985). The “group think” phenomenon can therefore serve as theoretical basis, explaining how it is possible that originally unique humans merge in their opinions and especially actions towards a “mainstream” consensus.

2.2 Groupthink

Irving Janis (1972) first published his idea of “Groupthink” as a form of group behaviour, in which involved individuals limit the thinking for themselves. Janis analyses what occurred in the Kennedy White House before the Bay of Pigs invasion by means of psychoanalytic understanding of the structural characteristics of the organizational context, in which the CIA representatives dominated the decision making process. Based on his findings, he coins the term groupthink as “a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members striving for unanimity override their motivation to realistically appraise alternative course of action” (Janis, 1982 p.9)

Groupthink can be considered a feature of a “basic assumption group” as coined by Bion (1952). In this basic assumption group, instead of processing information to reflect on risk and return as external realities/conditions, agents treat information from outside of the group only as “background noise”, ignoring alternatives, and feeling secure by everyone doing the same. In this sense, group
members are afraid of being left out and are instead united by their common belief in a supporting “cover story”. In contrast to a basic assumption group, a “Work Group” is defined as one in which each individual thinks for himself, and uses the group to test and elaborate rather than to conform.

Groupthink stands for an excessive form of concurrence seeking among members of high prestige groups. It is excessive because group members value the group and being part of the group extremely high. Members strive for quick and smooth unanimity on the issues that the group confronts, also by suppressing personal doubts. A strong confidence in the inherent morality of the group, combined with an evil picture of the groups opponents serve as justification for silencing dissenters. Depending on the surrounding, this can lead to dramatic consequences such as a distorted view of reality, excessive optimism producing hasty and reckless policies, or neglect of ethical issues. Because of these weaknesses and reduced self-questioning and self-reflecting, these groups are kin to initiate certain projects that result in fiascos. A grouping is especially vulnerable to groupthink, when its members are similar in background, when the group is insulated from outside opinions and when are no clear rules for decision making within the group (Janis, 1982)(Hart, 1991).