Effects of Social Interaction in Financial Markets

Bachelor Thesis Finance

'What are the effects of Social Interaction in Financial Markets?'

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Abstract

This thesis investigates the effects of social interaction in financial markets. Different types of social interaction have influence on the financial market. In this thesis, the types that are considered are: one-sided and two-sided social interaction, interaction in groups and observational interaction. These different types affect different aspects of the financial market. Here, the aspects that are considered are: participation, behavior, managers, price and innovation. Results show distinguishing effects depending on the type of social interaction, and depending on the aspect of the financial market this type is applied to.

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1. Introduction

Social interaction is generally described as 'the contact with others' or 'the behavior between two or more people'. However, social interaction can also be seen as a broader concept; different types of social interaction exist. Social interaction can be classified according to the number of parties involved: one-sided, two-sided or in groups. Besides, it can be classified according to the effect of the interaction: observational learning, conformity and the peer effect. One-sided social interaction occurs when reading a book or watching television. Two-sided or social interaction in groups takes place during classes or lectures, when talking to others, during shopping, or when visiting a sport club. The observational way of social interaction happens when observing someone else.

Social interaction fits in the contemporary approach to apply the influences of this concept to different fields of research. In this thesis, the influence of social interaction is applied to the field of Finance. According to Duflo and Saez (2002), social interaction influences the behavior of investors and therefore the decisions made in the financial markets. Besides, different types of social interaction influence managers (Meyerson, 1993), and innovation within firms. Moreover, prices in the financial market are influenced by social interaction (Granovetter, 2005). Because of the significant influence of social interaction on economic outcomes, social interaction could be useful in order to make standard economic models more extensive. If the aspects of social interaction that strongly affect economic action are added to the standard economic models, one should be able to increasingly explain the actions that occur in the financial market. Therefore, the main question of this thesis is: *What are the effects of social interaction in financial markets?*

Research in this field has shown how different types of social interaction have an impact on financial markets. One-sided social interaction can influence financial markets decisions: financial news providers play a crucial role in financial markets, according to Oberlechner and Hocking (1994), in order to give information to the traders and investors for decision making. In addition, according to Campbell (2001), investors use the Internet as an important information source to keep informed about the financial markets and about the securities traded on those markets, which leads to a higher rate of decisions being made, based on this social interaction source. However, according to Nofsinger (2003), social interaction is more effective when it is two- or more-sided than when it is one-sided, because, as McGuire (1985) shows, more people together stimulate the interaction and this increases the emotions.

Two-sided social interaction can influence participation in financial markets with word-of-mouth communication between two (or more) people. According to Becker (1991), a participant of

the financial market may enjoy talking with other participants, who are also interested in the financial market, about the news of the market and the fluctuation of the stock prices.

The third influence of social interaction is in groups. According to Ozsoylev (2006), in groups or social networks, people in different clusters of the network make different decisions, while those in the same cluster make similar ones. This means that participating in a group influences the decisions made by the investors. Besides, Collins and Clark (2003) state that the social network of top managers can influence firm performance.

Social interaction might also influence participation in financial markets by observational learning. For example, according to Hong, Kubik and Stein (2004), investors may learn from one another either about the high returns that the market historically provided, or about how to complete trades. Furthermore, people are influenced by the behavior and decisions of other people and this can lead to imitating. Besides, the influence of peers can be important in determining the price of a trade (Granovetter, 2005), and in influencing the decision to start participating in the financial market (Hong et al., 2004).

The effects of these different types of social interaction are investigated in three sections. The first section is about the participation in the financial markets. Social interaction has an influence on the participation in the financial markets. The first question that will be answered in this section is: *What are the general reasons for participating in the financial markets?* Further, the focus will be on the effects of the different types of social interaction on the rate of participation in the financial markets. The second question that will be answered is therefore: *How do different types of social interaction affect the participation rates in financial markets?*

The first part of the second section is about the Rational Expectations Model. This model will be explained following the assumption that decisions are not influenced by social interaction but only by private information, like the price. The first question that will be answered in this section is therefore: *What is the Rational Expectation Model in the financial markets according to the Efficient Market Hypothesis?* However, research has shown that different forms of social interaction do have influence within the financial markets. For example, according to Ozsoylev (2006), each trader infers additional information by observing other traders. This is in line with Behavioral Finance, a concept that includes the influence of social interaction in explaining the market. The first aspect that is influenced by social interaction is behavior within the financial markets. The second question in this section is therefore: *After investors decide to start participating in the financial markets, what effects do the different types of social interaction have on the behavior within the markets?*

In addition to the behavior within the financial market, the influence of social interaction on more general aspects of the market can be investigated. In the third section, the influence of social interaction on managers, prices and innovation will be described. So, the question in this section to be answered is: *What is the effect of social interaction on general aspects within the financial markets?*

Answers to the questions described above will be found in papers that have been written about these topics. Literature research will give an overview of what has been discussed in the literature about social interaction in financial markets.

The remainder of this thesis proceeds as follows. First, a Literature Overview will give background information about the different types of social interaction. In Section I the general reasons for participating in the financial market will be described and the types of social interaction will be applied to the reasons to participate. Section II first discusses the Rational Expectation Model and after that it will outline the different types of social interaction as an influence on the behavior in financial market. Section III discusses the influence of social interaction on general aspects within the market. The last chapter concludes, summarizes and gives a review.

2. Literature Overview

Participants of the financial market have to form their opinion on which they base their decisions and behavior. Different sources of social interaction can be used to do this. This chapter will give an overview of different sources.

2.1 One-sided Social Interaction

2.1.1 Printed and Other Media

Printed media is communication by publishing. News is printed on paper to make information available for the public. Examples are newspapers, magazines and advertisements. Other media consists of all the media that is not included in printed media. Examples of other media are television or radio. People use media as a source by adapting or implementing the information they get to apply in the financial market.

2.2 Two-sided Social Interaction

2.2.1 Word-of-Mouth Communication

According to Stern (1994), word of mouth involves the exchange of spoken messages between a contiguous source and a recipient who communicate directly in real life. The receiver does not see this communication as a marketing tool, but rather as real life speech in which the communicator is an independent person. Therefore, because word of mouth is an independent personal source, it is seen as a trustworthy and flexible communication instrument. Furthermore, word-of-mouth communication is a significant factor in determining behavior of people. Buttle (1998) claims that word of mouth has a bigger impact on the behavior of people than other marketer-controlled sources. For example, Day (1971) computes that word of mouth is nine times as effective as advertising when changing negative or neutral attitudes towards a product into positive attitudes.

2.2.2 Internet

In the last few years, the Internet developed as a source for information. The Internet proceeded as a new channel to have contact with each other besides conversations, or word-of-mouth communication in real life. Nofsinger (2003) states that the technique has developed a lot and instead of speech, many broadcast mediums are used nowadays. Sharing knowledge on the Internet instead of in face-to-face conversations has become a normal way of life. Over the last years, Internet has become more accessible and as a consequence, the amount of investment advice and information has grown.

2.3 Social Interaction in Groups

2.3.1 Social Networks

Ozsoylev (2006) states that agents not only base their decisions on their own views, expectations or information, rather, they observe demands of others and infer information from the actions of those whom the agent interacts with. The others that are observed by the agent are determined by a given directed graph; this graph shows the pattern of interaction among the agents and is called the 'social network'. This graph is used for decision making in financial markets as well as the price of the security and the signal on risky security payoff.

Several theories dwell on behaviors in the social network. Ozsoylev mentions a theory from DeMarzo, Vayanos and Zwiebel (2003) in his paper. The theory is about the model of opinion formation in a social network. In the social network, the different agents share information with each other, this means that there is a significant chance that an agent gets information twice. When information is heard twice (or more), the agent is more likely to assume this is true or good than when the information is heard once, and thus is more likely to base his or her decision on this information; this is called 'persuasion bias'. Therefore, the agents who are well-connected in the social network may have more influence in the formation of opinions in the economy; this is called 'social influence'.

Ozsoylev (2006) presents different forms of Social Networks; cycles, trees and stars. In a cycle (see Figure 1), symmetric interaction takes place, because agents observe demands of the same number of agents. In a tree (see Figure 2), there is a hierarchic scheme of social interaction, this is an asymmetric pattern and therefore brings heterogeneity in the financial markets. The last form is the star (see Figure 3), where there is a central agent who is observed by every agent in the economy.

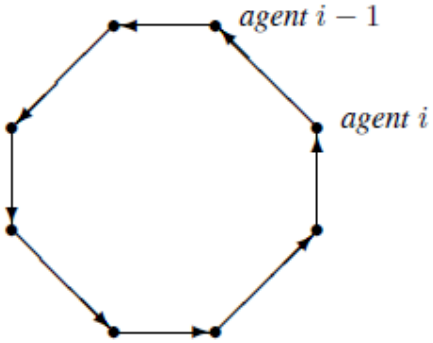

Figure 1: A cycle representing social interaction (Ozsoylev, 2006)

The arrows show the directions of demand observations. For all i = 1,..., n, agent i has additional information that comes from observing the demand of agent i – 1.

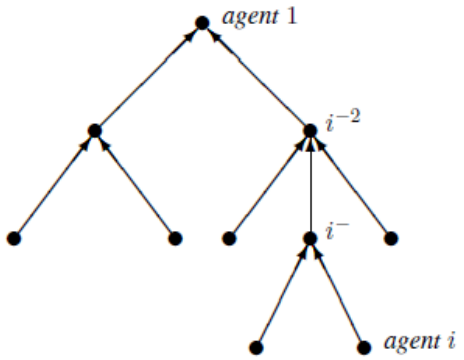

Figure 2: A tree representing social interaction (Ozsoylev, 2006)

The arrows show the direction of demand observations. For all $i > 1$, agent i has additional information that comes from observing the demand of agent i^{-}.

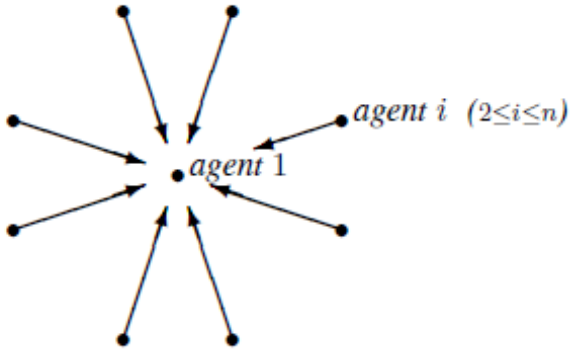

Figure 3: A star representing social interaction (Ozsoylev, 2006)

The arrows show the direction of demand observation. For $2 \leq i \leq n$, agent i has additional information that comes from observing the demand of agent 1.

2.4 Observational Social Interaction

2.4.1 Peer Effect

A peer is a friend or a close relationship. A group of peers has the same characteristics, or similar behavior. Adolescents choose friends on the basis of common values, personality dynamics or life orientations. Peers do interact a lot with each other and find each other's opinion important. Therefore, the peer effect can be defined as the influence that (actions of) friends have on the adolescents. Influence of peers differs in strength varying the closeness of the relationship; best friends for example are the most important sources of influence. Research that has been done on the influences of peers, shows significant results. Jaccard, Blanton and Dodge (2005) find that fifty

percent of the adolescent behavior is determined by genetic origin and fifty percent reflects the influence of peers.

2.4.2 Herding, Observational Behavior and Conformity

Devenow and Welch (1996) define herding as behavior patterns that are correlated across individuals. Bikhchandani, Hirsleifer and Welch (1998) state that people tend to adopt the same behavior; this is an evolutionary adaption that has survived over thousands of generations by taking advantage of the hard-won information of others. The simplest cause in which people show the same behavior is that they face more or less the same decision problems in their life. These decision problems are related to information sources, alternatives and payoffs. To make a decision, different things can be done. An analysis of each alternative is the first possibility, but is costly and time-consuming. Another option is to see what someone else has done and observe if the payoff that belongs to the decision leads to enough satisfaction. If so, it is possible to make the same decision. This influence resulting from the process of gaining information by observing others is called 'observational learning' or 'social learning'.

Conformity is defined by Bernheim (1994) as the adapting to the social norms of a group in order to achieve prestige, acceptance, esteem or popularity. Social norms within a group serve as a benchmark for the individuals of the group to compare with. The social norms can be learned, according to Nofsinger (2003), by conversation and observing behavior. When individuals within the group do not behave according to the social norms, the social group punishes these individuals, even when the deviations from the social norms are very small.

3. Within the Financial Market

3.1 Participating in the Financial Market

In this paragraph, general reasons for participating in the financial market will be described and thereafter the types of social interaction will be applied to the reasons to participate.

3.1.1 General Reasons for Participating

Participating in the financial market means that someone joins the financial market by starting to invest in financial products. Reasons for participating in the financial market are various.

Hong, Kubik and Stein (2004) mention four reasons for participation in the financial market. First, participation in the financial market is positively related to wealth; when wealth increases, participation in the market also increases. The reason for this is that participation in the market involves fixed costs. When the investor is wealthier, he or she is able to invest more and to spread the fixed costs. Therefore when the wealth increases, fixed costs do not prevent wealthy investors to participate in the stock market, while the fixed costs are a restraint for poor investors. Second, participation in the financial market is positively related to education. The reason for this positive relation is that higher education decreases the fixed costs. The fixed costs consist of setting up an account, completing trades, understanding the reasons of the fluctuation in stocks and understaning the news about financial markets. When an investor is higher educated, it is easier to comprehend these things. Third, participation in the financial market is positively related to non-Hispanic, white race. The last reason for participating in the financial market is personality. People who are optimistic and less risk-averse have higher expectations of future stock-market returns and are less afraid of risk taking. These people will be more likely to participate in the stock market.

3.1.2 Influence of Social Interaction on Participating

Next to the general, well-known reasons for participating in the financial market described in the previous subsection, other factors might influence the participation rate as well. According to Guiso, Sapienza and Zingales (2004), individuals who live or were born with a higher level of social capital are more likely to invest in stocks. Karlan (2005) describes social capital as the social skills and networks of an individual. Social capital can be seen as an underlying aspect of social interaction. Different types of social interaction can influence the decision to participate in financial markets. Influences of word-of-mouth communication and influence of peers are described in this section.

3.1.2.1 Influence of Word-of-Mouth Communication

Brown, Ivkovic, Smith and Weisbenner (2008) investigate the relation between word-of-mouth communication and the decision to participate in the stock market. There are different reasons why word-of-mouth communication can be related to this decision. First of all, word-of-mouth can be used to learn from each other, instead of other mechanisms, how the market works. Second, according to Becker (1991), a participant of the financial market may enjoy talking with other participants, who are also interested in the financial market, about the news of the market and the fluctuation of the stock prices. The participants like this, just as much as they like to discuss their hobbies or interests. Third, the results of the research of Brown et al. (2008) show that a ten-percentage point increase in the average ownership in a participants community leads to a four-percentage point increase in the likelihood that an individual will own stocks. This effect is stronger for more sociable communities and this is consistent with the word-of-mouth effect.

3.1.2.2 Influence of Peers

Duflo and Saez (2002) study the effect of peers related to choices made in the field of finance. Their theory outlines that whether or not to participate in retirement plans is influenced by the choices of the co-workers of the individual. The individual is significantly influenced by the average participation rate among the co-workers to start contributing to the retirement plans himself. According to Hong, Kubik and Stein (2004) this research can be applied to the decision to start participating in the financial market as well, and might have the same effect.

Another study about the influence of peers is from Hong et al. (2004), they construct a model that has two types of investors: the non-social investors and the social investors. In this model, the investors are classified by the following characteristics: knowing their neighbors, visiting their neighbors and attending church. The social investors have lower fixed costs when their peers participate in the market and this makes it more attractive for them to also participate in the market. These fixed costs exist of an idiosyncratic component: the difficulty to understand financial terms, and a common component: the attendance of less brokerage firms in the country. Hong et al. (2004) investigated 7500 households; the more social households, those who interact with their neighbors or attend church, are indeed more likely to invest in the stock market, so there are higher participation rates among the social investors than among the non-social investors. Another finding is the social multiplier effect: changes in things that affect the relation between the peers may impact the participation rate. The participation rate of the socials is more sensitive to changes in those exogenous parameters.

3.2 Behavior within the Financial Market

This paragraph will first discuss the Rational Expectation Model and after that it will outline the different types of social interaction as an influence on behavior.

3.2.1 Rational Expectations Model and Behavioral Finance

The efficient markets hypothesis became popular in the 1970s. According to Fama (1970), the efficient market exists when the prices of the market reflect all accessible information at every moment. It is in the efficient market not possible for investors to earn money with private information.

With the assumption of full rationality of all agents, new information related to the value of a financial product will immediately influence the price of a product. When there is positive information, the price will increase, and with negative information, the price will decrease. Because of the full rationality, agents will absorb the information in the same way and thus all discover the same price. Oberlechner and Hocking (2004) describe that agents will make decisions on the basis of all available information and use the information fully and in an unbiased way.

However, in the 1980s some anomalies were reported that were not in line with the efficient theory. Following this movement, people started to believe that the market process needs an understanding of markets participants' assumptions, beliefs and expectations about other markets, to explain these anomalies. This was the beginning of a broader view on the financial market.

Oberlechner and Hocking (2004) state that to understand the reality of financial markets in a better way, psychological and behavioral approaches must be used to analyze the human information processing and decision making in markets. This so called 'Behavioral Finance' stands in sharp contradiction to much of the efficient markets theory. Shiller (2003) describes behavioral finance as finance from a broader social science perspective, such as psychology and sociology. Behavioral finance considers a more physiological way of determining the prices of financial products. Shiller (2003) states that stocks show excess volatility relative to what would be predicted by the efficient markets model.

Behavioral finance does not take into consideration the assumption of full rationality of market participants and full efficiency of human information processing. Given this fact that economic agents are not able to balance all the costs and benefits of their decisions, agents cannot be fully informed. As a consequence, Brown, Ivkovic, Smith and Weisbenner (2008) show that agents must rely on information obtained through for example word-of-mouth communication and thus make their decisions based on what they have learned from social interaction. Behavioral

finance includes the influences of different types of social interaction on the market, whereas the efficient markets theory does not include these influences.

3.2.2 Influence of Social Interaction on Behavior

As seen in the previous subsection, agents often need to rely on social interaction to make their decisions within the financial market. Different types of social interaction can influence these decisions or the behavior of participants of the financial market. Influences of printed media, Internet, word-of-mouth communication, social networks and observational behavior will be described in this section.

3.2.2.1 Influence of Printed Media

Financial news providers play a crucial role in financial markets, according to Oberlechner and Hocking (2004), to give information to the traders and investors for decision making. Tetlock (2007) measures the interaction between printed media and the stock market. The daily content of the Wall Street Journal is related to the stock market returns of the Dow Jones. The results are as follows: negative and weak words in the column significantly forecast a decline in the stock market returns, and forecast an increase in the traded volume. This means that high levels of media pessimism forecast downward pressure on market prices as well as unusually high or low values of media pessimism forecast high market trading volume. Besides, the negative and weak factors significantly follow the market declines; this means that low market returns lead to high media pessimism.

Furthermore, Engelberg and Parsons (2011) investigate the interaction between the printed media and financial markets. The difference between the paper of Tetlock and the paper of Engelberg and Parsons is that in the first paper, correlations between stories reported by the media and stock market reactions are shown, but in the second, the main question is if there exists a causal relation between media coverage of a financial event and the reaction of an investor. For the research, nineteen separate local markets in the U.S. were chosen and a local newspaper was linked to those markets. The result shows that trading in a local market is heavily related to the local printed media. Local press coverage increases the trading volume in S&P 500 Index firms of local investors by nearly fifty percent. A special result is seen on days with extreme weather. On these days the delivery of the local newspaper failed and the relation between media coverage and trading disappeared.

Implications for the large influence of the media on the investors and therefore on the stock market are as follows. A firm wants to influence the media to ensure a higher return on their stock. Dyck, Volchkova and Zingales (2003) present examples of ways the firm can have influence on the

media. The firm can influence the opinion of a journalist in a financial column or the firm can purchase advertizing space.

3.2.2.2 Influence of Internet

According to Campbell (2001), Internet plays an important role in keeping financial markets better informed. There are different reasons to call Internet a growing 'core component of the communication infrastructure'. First, there is a low cost for the user and it is easy accessible. Moreover, Internet allows private investors to access information about exchange traded securities anywhere in the world. Investors get their information from the Internet in various ways and from various suppliers. Stock exchanges, brokerage firms, banks and investment advisers use the Internet as a source of information about their financial products (Campbell and Kecmanovic, 2011). Examples of information on the sites of listed companies are market data and trading recommendations.

In recent years, the role of reporting the financial news changed. Instead of the real content, the speed of the news has become the most important factor, and the reporting of immediate events has become more important than background information. In a questionnaire in the paper of Oberlechner and Hocking (2004), foreign exchange traders were asked about their most important characteristic of news items. The answer that was given most was: 'It is available to me before it is available to others'. Oberlecher and Hocking (2004) therefore conclude that fast information is crucial in the financial market.

Oberlecher and Hocking (2004) describe that the cooperation between financial news suppliers and foreign exchange trading institutions changed, because of technological developments. On the one hand, institutions try to increase their influence on news suppliers, to supply their own news with electronic news services. On the other hand, news suppliers provide electronic systems, which allow market participants to trade with each other.

Campbell and Kecmanovic (2011) investigate growing phenomena on the Internet: Internet-based forums and digital conversations. Investors share their knowledge and learn from one another through active or passive participation in the discussions. Social interaction is mediated by language and in the case of discussion sites the language is used in messages. The communication on the discussion sites shows the intentions of the participants to achieve a common understanding and the intention to manipulate others. The main subjects in these discussions are the shares of listed companies, the trading strategies, tax implications and private research. Research demonstrates that posts on the discussion sites are linked with stock market activity. Increased posting activity on day one is followed by significant changes in the trading volume and share price

returns on day two. Clarkson, Joyce and Tutticcia (2006) study the stock price returns for a company that was defined as a takeover target in discussion forms. They illustrate that the stock price returns were positive abnormal.

Campbell and Kecmanovic (2011) show that discussion sites are sometimes misused or that they contain false information. This false information can have an influence on the discussed companies. Most of the time this wrong information is harmful to firms which are thinly traded and which have low capital. The stock price volatility increases due to the rumors on the sites, and as a consequence this generates an impact on the reputation and can affect the ability of a company to get employees, to raise debt or to place equity. It can even lead to a financial loss for the individual investors. Besides, the exchange of the messages sometimes leads to strategic behavior. An investor can post positive messages on the discussion sites about a company in order to encourage others to buy the stocks. The result is that after investments of the discussion-participants, the stock price increases and the original poster can sell his or her stocks with a profit.

3.2.2.3 Influence of Word-of-Mouth Communication

Shiller (2000) states that word-of-mouth transmission of ideas appears to be an important contributor to day-to-day or hour-to-hour market fluctuations. When a participant is asked how he or she derived the initial interest in the most recent stock purchase, many participants would mention a discussion with a personal contact or peer. Hong et al. (2005) investigate word-of-mouth communication among investors. Investors who live in the same city use more word-of-mouth communication than investors in different cities and therefore the stocks they buy can be related. The reason that investors in the same city use more word-of-mouth communication is that they are in direct contact with each other more often. To conclude, trades of fund managers in the same city respond more sensitively to each other than trades of managers in different cities, even when local stocks are excluded.

3.2.2.4 Influence of Social Networks

Ozsoylev (2006) investigates whether social interaction through social networks has an effect on portfolio decision-making. Several results emerge from this investigation. First, the correlation of demands of agents within a cluster of a portfolio is larger than the correlation of demands of agents across different clusters. Second, the higher the agent climbs in the hierarchy of a social network, the more influence the agent has on the price. This is because the weight of an agent's signal in price depends on the number of followers of that agent, and a more influential agent has more followers. The third result is about inefficient information aggregation due to social interaction in financial

markets. This inefficient information is caused by the pattern in the social network. The different- or asymmetric-patterns can cause signals of agents to be over weighted, while all signals should be of the same weight. Agents could have false or inaccurate information and still share this with a large audience; this can affect the prices in the financial markets, even though this is a wrong representation.

3.2.2.5 Influence of Observational Behavior

Banerjee (1992) states that each decision maker looks at decisions made by previous decision makers before making his or her own decision; people will do what others do even though the private information suggests to do something different. If, for example, an individual has negative private information about a stock, but observes three other agents who buy the stock, the individual will also buy the stock. Different effects of herding or observational learning are seen in financial markets.

First, it can lead to strategic behavior, which increases the profit (Hirshleifer, 1995). Traders can prefer to acquire information in the same stock as the other investor, when investors discover the same information at different times. The first investor who discovers the information can profit from the information if it is likely that other investors will soon discover the same signal. So, the expected utility from gathering information can increase if the number of other investors who gather the same information also increases.

Second, Scharfstein and Stein (1990) provide evidence that herding is done by managers who are afraid of their reputations and therefore mimic the investment decisions of other managers. Following the herd can assure that the majority of people is doing the same and there is therefore no reason to be afraid of deviating from the others in the group.

Third, herding can cause different empirical phenomena according to Devenow and Welch (1996), like paying dividends, recommending stocks, mergers between companies, investing in R&D etc. These phenomena are based on the 'cascade model', which explains herding. In the cascade model, actions instead of private information can be publicly observed.

3.3 General Aspects within the Financial Market

Social interaction is used everywhere, this is the reason that social interaction has an influence on many aspects within the financial market. In this paragraph, the influence of social interaction on general aspects within the financial market: managers, prices and innovation, will be described.

3.3.1 Influence of Social Interaction on Managers

Social interaction can have an influence on managers. This influence is often caused by social networks. The social interaction can be a mediator between the managers and firm performance or income. Collins and Clark (2003) state that the social network of top managers can influence firm performance. The social networks of top managers refer to the relationships they have with employees and people within the organization (the internal networks) and other actors outside the organization (external networks). These networks differ in size, range and the strength of the ties. Top managers are important persons in an organization in terms of social interaction, because managers have a lot of contacts and are in a good position to collect and manage information they get. The study of Collins and Clark (2003) supports the statement that social networks have a positive influence on firm performance and therefore can create competitive advantage for firms resulting in higher sales growth and better stock performance. The reason that there is a positive relation is because social networks serve effective information gathering. This information-flow throughout the firm is important in order to reduce uncertainty, and increase effective actions, and efficient information gathering. Top managers can use their social networks to make sure this process works well and thus leads to higher firm performance.

Besides, social interaction in the form of social capital can influence the income of managers. Meyerson (1993) describes social capital as valuable relationships a person has accumulated over time. This network of people can be used to create sources and opportunities. Meyerson (1993) concludes that social capital has a powerful impact on managers' income attainment.

3.3.2 Influence of Social Interaction on Prices

Within markets, there is an influence between the price of a trade and the relationship with the partner of the trade, this shows the effect of social interaction on prices. Knowing the partner, according to Granovetter (2005) impacts the price, the shifting costs to trade with different partners and the market situation.

When there is information asymmetry when entering a trade, and the seller can judge the buyer better than vice versa, the price rises above the competitive level. Buyers have often more problems with judging the quality of goods than sellers have with judging the creditworthiness of

buyers. However, when sellers do have problems with checking the creditworthiness of buyers, they lower the prices. The reason for this is that sellers want to create a continuing relationship with the buyer by lowering the prices, and with this longstanding relationship it is possible to attain the personal information needed to create trust. This longstanding relationship results in lower credit risk costs. An example is a study of Uzzi (1999) of banking firms in Chicago that shows that the firms that have personal contact with bankers pay lower interest rates on loans.

The phenomenon 'clientelization' can be described as trading only with partners known to the trader. Trading with known partners can result in the fragmenting of markets. Baker (1984) studies this subject with stock options. The reason for this is as follows: each trader has a group of relationships, but this group is limited. The trader seeks trust and control, and thus only wants to trade with the group of relations. However, when there are more traders on the trading floor than a trader can have relationships, there is a communication problem. The trader is not able to sustain all the relationships and the group has to break up into cliques. Prices in large trading groups are more volatile due to the communication problems, but these cliques make the volatility increase even more. This increasing volatility leads to more profit opportunities and attracts more traders to the market. The result of this research is in contradiction with the efficient market hypothesis, in which prices stabilize if the numbers of trades increase.

3.3.3 Influence of Social Interaction on Innovation

Innovation is the process of innovating by presenting a new idea, product or idea. Innovation can be created, according to Granovetter (2005), by 'pulling together previously unconnected resources for a new economic purpose'. Unconnected resources can be caused by separated social networks of individuals or transactions. Granovetter (2005) states that innovation in the financial market can be a result of different types of social interaction.

First, innovation can be caused by social inner circles. A social inner circle is a group of people, who have a lot of power and influence and consist of prominent and political figures. An example of a financial instrument innovated by a social inner circle, is the option. In the 1960s, the general perception about options was not very positive; options were seen as a dubious gamble. In these years, financial derivatives were so unimportant that no reliable figures can be found for market size. However, members of the Chicago Board of Trade (CBT), the beginning of the Chicago Board of Options Exchange, started an intensive lobbying campaign in the 1960s. This campaign led to intensive interaction, social control and collective action between insiders and resulted in the acceptance of the option. By 2000, the value of financial derivative contracts worldwide was in excess of $100 trillion.

Second, innovation can be caused by a break away from established practice. The lower the corporate social hierarchy the innovation is introduced in, the more extreme the influence of the innovation is. An example is the trading in junk bonds, started by Michael Milken around 1970. In these years, the general opinion about trading in junk bonds was negative; especially the traditional firms were reluctant. But, thanks to the large successes of trading in junk bonds by Milken, the financial market became more and more interested in this type of trading.

Third, innovation can be caused by combining recourses in a new way. Venture capital is an example of this type of innovation. Venture capital is the financing of new and risky firms. Before the 1960s the social networks of the financiers of such a firm were decoupled from the social networks of the industry. Examples of financiers were pension funds or wealthy families. The problem was that these financiers had no insights in the industry and it was hard to evaluate the development of the firm. The solution to this problem is as follows: specialists with a lot of money from within the industry have to finance the new firms. This new model is advantageous; there is more technical knowledge and a broader social network within the industry. Besides, the financier is more able to adapt to the demands of the firm and have a supporting role in the firm, because of the financiers insights in the industry.

4. Summary, Conclusion and Review

This last chapter will summarize, conclude and will give a review on the previous chapters.

In order to understand the reality of financial markets in a better way, psychological and behavioral approaches are used to analyze the human information processing and decision making in markets. This so called 'Behavioral Finance' stands in sharp contrast to much of the efficient markets theory. This broader concept of science takes into consideration the influences of social interaction on financial markets.

There are different types of social interaction. In this thesis one-sided, two-sided and social interaction in groups have been discussed. Besides, the influence of the observational social interaction: the peer effect, herding, observational behavior and conformity have also been discussed. These types of social interaction influence different aspects within the financial market. In this thesis, research has been done on the participation within the financial market. Besides, research has been done on the influence of social interaction on behavior, managers, price, and innovation within the financial market.

The results of the influence of social interaction on different aspects within the financial market can be used to attain an increased understanding of the markets. According to the findings of this thesis, the following influences can be considered. *Participation in the financial market* is influenced by word-of-mouth communication and the peers. This is because participants of the market learn from each other and like to discuss news of the market with each other. Besides, the fixed costs decrease when peers participate in the market and this makes it more attractive to participate. *Behavior* is influenced by printed media, because investors react on things they read and use this information to trade on the market. Secondly, it is influenced by Internet, because Internet offers the possibility to share knowledge by using discussion sites and this changes intentions of investors, the posts on the discussion sites are linked with stock market activity. Moreover, it is influenced by word-of-mouth communication which creates initial interest in a financial product, and by social networks, which influences behavior by information of different agents in different patterns. The last influence is observational behavior, which leads to strategic behavior in creating higher profits, and it leads to herding; following the decisions of the majority. Furthermore, the social interaction of *managers* influences firm performance. This is the case in social networks of top managers, these networks serve effective information gathering and can therefore result in a competitive advantage of the firm. Besides, social capital of managers influences their own income, depending on the sources and opportunities they create with their social capital. *Prices* are also influenced by social interaction, because in trading with a known partner, different aspects play a

role in changing the price of the product; for example the continuous relationship between the partners. Besides, social interaction leads to higher price volatility due to the fragmenting of markets, which is caused by communication problems. Finally, *innovation* is influenced by social interaction, because innovation needs a source to start the idea; this source can be a social inner circle, just a person or the combining of new resources. Moreover, in order to spread innovation people are needed to pick up the idea and to share and use it.

The results of the influence of social interaction on different aspects within the financial market can be used to improve the market. For example, if community effects influence the individual stock market participation, the government can introduce measures to increase the stock market participation in communities and therefore increase the general participation level. Besides, internet increases the possibilities to use social interaction, overcoming the limitations of face-to-face interaction. Therefore, it increases the possibilities to share knowledge.

Although it is difficult to simplify and adapt the influences of social interaction on financial markets into a standard economic model, it would be useful to do more research on this field of science to get more insights in the market. I would suggest presenting these results next to the standard models, so that people (students) get real insights in the market. The market does not behave according to standard models, so to explain what is really happening, the standard models need extra information. With more insights about how the market behaves in the real world and how people behave according to different types of social interaction, it may become possible to predict future economic changes and maybe even economic crises in a better way.

5. References

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