Bachelor Thesis - Finance

Effects of Social Interaction in Financial Markets

To what extent do the effects of social interaction differ regarding high- and low-risk transactions in the financial market?

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Abstract

This literature study proves the existence of effects of social interaction in financial markets by taking into account diverse disciplines. Those effects are important to study for the reason that they are economically consequential. More thorough insights would make it possible to analyze the different financial transactions taking place nowadays better and this in turn may lead to more accountable investments. The major finding of this study is that these effects of social interaction seem to be rather big and a distinction can be made between varying types of ties, their motives and their behavioral consequences. An essential finding is that more risk-averse individuals tend to be less trusting and in that way they are in turn also less willing to share and acquire information via social networks.

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Chapter 1: Introduction

Nowadays, research more often acknowledges that social interaction has a great impact on many situations and behaviors regarding diverse areas in daily life. In the past, social interaction was mostly taken into account when doing research on social psychology while investigating behavior of people, but later on those social aspects were considered also important when analyzing for instance economics, organization, and behavioral finance. According to MacKenzie (2004), more attention is paid to the "local" effects of social interaction, instead of only stating that consequences of financial connectivities are a kind of external coercive force experienced as the market's "invisible hand". These effects can be thought of as local effects of interaction in the sense that they involve relatively limited numbers of people who are in some sense known to each other, or at least the effects of whose actions are known. A few real life examples that shed light on this subject are: the rise of social media; the increased attention for accountability regarding the environment, marketing, but certainly also financial investments; and the commotion originated by the credit crisis, so that efficiency and accountability of investments gained importance. An example presented in the news of how social media can be used to assess the financial markets is that predictions can be made about the financial markets by looking at tweets at Twitter. By analyzing tweets over a period of 10 months, Indiana University scientists found they could predict the rise and fall of the Dow Jones Industrial Average by means of looking at the nation's mood[1]. What is also important here is that Twitter is a social medium which can easily spread rumors on which people tend to act in masses.

By performing a questionnaire survey, Shiller and Pound (1989) find that interpersonal communications are important to consider when looking at investor decisions. The questions focused for instance on the influence of word-of-mouth communications, and so these questions elicited what fraction of investors turned out to be unsystematic and influenced by it. Moreover, a study by Hong, Kubik and Stein (2004) on the relationship between social interaction and stock market participation proves with empirical data that the attractiveness of the market increases with the number of peers participating in the same market. In this field of research different hypotheses are set up regarding the either positive, as the one by Hong, Kubik and Stein (2004),

[1] (Bland, 2010)

or negative, which Gillbert and Lieberman (1987) suggest, effects of this social interaction on investment behavior; those different hypotheses will come forward within chapter four.

Next to investigations on the nature of the effects of social interaction within networks, an investigation has been done within the discipline of organization and sociology about strong and weak ties, and the consequences of these different types of ties on behavior. Granovetter (1973) documents that weak ties are actually a better way to reach cohesiveness, for which a theoretical analysis was used with potentials for mathematical modeling. When speaking about social networks and the interaction within, trust is a key indicator to reflect on, surely when considering the relationship with financial transactions for which a certain level of trust is needed when imitating a transaction of another investor with a certain level of risk. Di Cagno and Sciubba (2010) find, by means of letting some subjects play a trust game, that when social interaction is present it is more likely that the profits achieved are higher. When taking into consideration not only the social interaction in financial markets, but when extending this effect with the (possible) difference in characteristics and importance of social interaction on high- and low-risk financial transactions, a deeper understanding can be gained to use for financial analyses. To my knowledge, this is not investigated in the literature yet.

Nevertheless, it seems interesting to investigate the different effects of social interaction that come into play when choosing which asset to invest in. In this way, a better analysis of the market becomes possible with reference to these economically consequential effects and this in turn may lead to more accountable investments. This paper will examine varying disciplines in order to investigate the effects of social interaction in financial markets by the following research question: *To what extent do the effects of social interaction differ regarding high- and low-risk transactions in the financial market?*

This research question will be answered using the following structure: the second chapter will be focused on sociology, organization theory and economics by discussing especially social network analysis and theory, and different network ties. Thirdly, a chapter will be about risk-attitudes, so risk- averse as well as risk-seeking behavior, and levels of trust. The next chapter will consist of evidence proving the existence of the effects of social interaction on financial behavior. Lastly, the results about the effects of social interaction on risk-attitudes and

consequently on both high- and low-risk financial transactions will be combined in order to draw a relevant conclusion.

Chapter 2: Social Networks

Social networks can be found everywhere around us. The people or entities within a social network are connected to each other by means of social ties. These ties exist within for example organizations, family, or groups of friends; and next to that they can be localized very near to each other or can be spread all around the world. These ties thus differ regarding both their degree of distribution and their nature; they can among others be characterized as informal versus formal, indirect versus direct, and strong versus weak.

2.1 Distinction between different network ties

First of all, a distinction can be made between the influence of strong and weak ties on diverse aspects which can be considered as essential when studying the process of decision making regarding different types of investments in the financial market. A familiar theoretical research about the cohesive power of weak and strong ties done by Granovetter (1973), argues that the degree of overlap of two individuals' networks varies directly with the strength of their tie to one another. This overlap is predicted to be least when their tie is absent, most when it is strong, and intermediate when it is weak. An example of a strong tie could for instance be a very close friend, whereas a weak tie could be presented by a colleague working in another department at another location. The research concludes that weak ties are actually a better way to reach cohesiveness and to reach a situation in which the probability that people act in concert is great. The strength of a tie is in this research seen as a combination of several factors. These factors include the amount of time invested in the social relationship, the emotional intensity, the intimacy, and the reciprocal services which typify the tie. The reason why weak ties can be a more effective way to reach cohesiveness is mainly because of the fact that those weak ties are able to reach a larger number of people and in that way they can bridge a greater social distance. One further observation which can be important for this investigation is that it is commonly the case that people receive crucial information from individuals whom they had not seen for a while.

2.2 Strength of weak ties

Furthermore, Friedkin (1982) investigates empirically the information flow within organizations, and his results add to the former conclusion about the strength of weak ties (Granovetter, 1973), that weak ties are more central than strong ties in accounting for information flow about activities outside an organizational subsystem. However, on the other hand, strong ties tend to have a more central position in accounting for information flow about activities inside an organizational subsystem. Overall, it is again confirmed that the contribution of weak ties is impressive since persons tend to maintain more weak than strong ties. In that way, a conclusion that can be drawn from the above part is that weak ties are most relevant when considering the great area over which the information flow is spread, and the cohesiveness that can be reached. Weak ties thus are able to broaden the information flow for the reason that there are many of them and because of that they are able to reach plenty of people. Regarding information that can be useful for financial decision making, these weak ties are thus considered an important source since the financial market is also widely dispersed with much information on many different investment options to be taken into consideration.

2.3 Strength of strong ties

As a result of a theoretical analysis, Jack (2005) demonstrates that strong ties are instrumental for business activity and it is these ties that provide, besides knowledge and information, the opportunity to extend and enhance business and personal reputations. Next to that, strong ties are responsible for invoking weak ties, which hence is of great importance given the strength of those weak ties presented in the literature.

Uzzi (1996) reveals, by combining theory with an empirical analysis, that embeddedness is an exchange system that shapes motives and expectations and promotes coordinated adaptation, which suggests that firms organized in embedded networks with strong ties have higher survival chances than do firms which maintain arm's-length or weak market relationships. A comparative perspective on game-theoretic models resulted in a finding of Raub and Weesie (1990) which suggests that embeddedness performs a positive task in relation to attaining efficiency. This can be motivated by the result of individually rational behavior in perfectly embedded systems.

However, as the time lag lengthens in which actors are informed on the behavior of their partners vis-à-vis third parties, the conditions for efficiency become more restrictive.

The influential strength of strong ties is also confirmed by Brown and Reingen (1987), who show that strong ties are more likely to be utilized as sources of information for related goods and at the micro level. Besides that, these ties are more likely to be activated for the flow of referral information. The fact that strong ties have greater chance to be used for the flow of information can be made clear by the greater frequency of social contact. However, at the macro level, weak ties are said to display an important bridging function; they can play a crucial role in the flow of word-of-mouth information. This last finding thus extends the research of Granovetter (1973) about the strength of weak ties presented earlier, by providing empirical evidence that the bridges displayed by weak ties are activated as intergroup information channels. By taking into account this result, it can be explained how dyadic interaction among people is able to aggregate to form large-scale patterns. In addition, Lin (2006) shows that a distinction can be made between females and males when taking into account the influence of instrumental ties on information sharing; this influence turns out to be stronger for females.

In summary, weak ties are considered as very meaningful, because these ties are able to spread information more easily, among others by playing a crucial role in the flow of word-of-mouth information. In that way they are useful in making generally known some updates and facts about the financial market transactions. For the reason that persons hold a great number of weak ties, a great cohesiveness can be reached. On the other hand, strong ties can play an essential role while spreading information within an organization; they can be of great importance with reference to the building of a reputation also by means of referral information; and they are able to enhance efficiency. Moreover, these strong ties are responsible for invoking the weak ties.

2.4 Network ties and the financial market

Shane and Cable (2002) combine a theoretical analysis with in-depth fieldwork in order to investigate the effects of direct and indirect ties on venture finance decisions. A conclusion that can be drawn is that these ties indeed influence these decisions by providing a mechanism by which investors obtain information through a process of information transfer. Reputation is seen as a mediator within this process, indicating that investors exploit their social ties to gather

private information about the actors on the market and their opportunities. In this way, information asymmetry can be overcome. This process of gaining information allows entrepreneurs without high-capital endowments to obtain resources to pursue business opportunities. However, the statement that social obligations influence the investment decisions made by investors is not supported by this research.

Regarding the influence of corporate governance on financial decision making Carpenter and Westphal (2001) show, when examining the board's ability to contribute to the strategic decision making process, that the strategic context of social network ties is an important influencing factor on corporate governance. This strategic context means that the ties are aligned with the strategic needs of the firm and this context involves director appointments that concern the exchange of relevant strategic knowledge and perspective based on strategic expertise.

A very relevant finding that can be easily related to the subject of investments decisions is the one of Suk-Young Chwe (2000). The finding suggests that a communication network helps coordination by informing each stage about earlier stages and by creating common knowledge within each stage. Three stages or social roles are important here: the initial adopters, the followers and the late adopters. To come to this finding a coordination game was considered and subsequently it turns out that each person wants to participate only if others participate. Consequently, social structure is thought of as a communication network by which people tell each other their willingness to participate. The mechanism that is important here is the „I will go if you go' mechanism.

Considering information seeking and sharing, which is a subject that comes across in many investigations related to social network ties, Borgatti and Cross (2003) propose by means of a model that the probability of seeking information from another person depends on different variables. This probability is the function of knowing what that person knows; valuing what that person knows; being able to timely access that person's thinking; and perceiving that seeking information from that person would not be too costly. These variables are hypothesized to mediate the relation between physical proximity and information seeking. The results of this investigation provide strong support for this proposed model. Another factor based on social interaction, that is investigated to influence the information and consequently the beliefs a person holds about his world, is a personality's predisposition. This predisposition influences the

person's social behavior according to Kelley and Stahelski (1970). The subject of information seeking and sharing is important to consider here for several reasons. First of all, this is the case since the research question is about the influence of social interaction on financial behavior, and information seeking and sharing turns out to be essential when talking about social interaction. Besides, the financial market is a market that is based on predictions which are formed by means of sources of information.

2.5 Conclusion

In conclusion, results indicate that network ties are fundamental when studying the financial market. These ties within social networks are exploited by investors making venture finance decisions to gain private information in which information asymmetry can be overcome, and by communicating their willingness to participate the probability increases that other investors are also going to participate in the market. Furthermore, the strategic context of these ties turns out to be critical with reference to the financial decision making of the corporate governance. Moreover, research suggests that indeed the degree of distribution and the nature of network ties are important to take into consideration, because of their possible diverse impact.

Chapter 3: Risk and Trust

Risk-attitudes and levels of trust are essential factors to think about when examining financial investment decisions. People can show risk-averse as well as risk-seeking behavior and it is interesting to take into account the motives for these different kinds of behavior, which can also be influenced by the social interaction with their dissimilar network ties. The same situation appears to be true when considering diverse levels of trust. These levels can also lead to different kinds of behavior and can also be manipulated by the social networks.

3.1 Relationship risk and trust

At first, Kanagaretnam et al. (2009) statistically demonstrate a relation between risk-attitudes and levels of trust, namely that more risk-seeking individuals turn out to have a higher level of trust in comparison to risk-averse individuals in a situation where individuals neither have strongly pro-social nor strongly pro-self social value orientations. When individuals are highly pro-social it is shown that these will reciprocate more as the sender's trust increases, and the other way around. In this case, the sender is the one who provides the financial information to the receiving individual. In this way, high levels of trust are associated with equal to high levels of openness and consequently high levels of information sharing. This sharing of information is an essential element to consider when dealing with the effects of social interaction in the financial market, since it is proven that the risk-attitude influences the level of trust and subsequently the level of information sharing.

The relationship between risk and trust is again confirmed in a research presented by Crust and Keegan (2010). This research is mainly directed towards athletes in examining their attitudes towards physical risks, however also psychological risk is taken into account. In this context, psychological risk is initiated as the willingness to engage in activities that society does not approve of, which appears to be oriented towards social contexts. Results suggest that the mental toughness subscale of interpersonal confidence, which can be seen as trust in other persons, is significantly and positively related towards psychological risk. Psychological risk can play a significant role in decision making regarding among others risky financial investments.

3.2 Risk

Regarding risk, different motives are found in literature in order to explain various risk-attitudes. Social interaction is related to risk-attitudes in the sense that interaction may influence the forming of these attitudes and the other way around risk-attitudes may also influence the degree and nature of social interaction. When focusing on the financial market, an empirical finding about risks within this market by Prucyk (2005) is that the sensitivity of investors concerns not only the absolute level of volatility, but also the changes in the level of volatility. This can be explained by the reason that an increased inventory risk arises when volatility is changing. The increased inventory risk is caused by a significant increase in the quoted spread and inventory cost component of the spread considering a sample of very liquid stocks during trading periods when volatility is changing fast.

After performing an experimental analysis examining the effects of network positions and individual risk-attitudes on individuals' strategic decisions, Rosenkranz and Weitzel (2008) note that a global factor like the regularity of the network structure influences behavior. The coordination of individual play with regard to strategic investment decision making is bounded by local and individual factors. These factors include the number of network ties, local clustering within the network and individuals' risk-attitudes.

Besides, Steinbacher (2009) uses a social network in order to simulate different circumstances, to study how different risk-attitudes of investors within financial markets influence their decision when choosing to invest in either risk-free or risky assets. In this research, investors use their social network to acquire information in order to choose a strategy. Pure risk-aversion turns out to be the dominated strategy in most of the circumstances. A key determinant of the decision making turns out to be first-order stochastic dominance with the level of omniscience and preferences of investors also playing a significant role. In the model the following condition holds: the lower the level of omniscience, the higher the probability that an agent takes every strategy from his neighbor as long as they award him with higher returns. So, the lower the level of omniscience, the more use an agent makes of social interaction within his network.

Furthermore, Isa and Ameer (2007) again motivate the statement that social interaction is able to practice a great impact in financial market transactions. The conclusion that is drawn here, after

performing empirical tests and by making use of a capital asset pricing model, is that hedge fund managers with more network ties and accordingly with high affiliation have access to a market niche of wealthy investors. In this way they are consequently able to increase their investor base and in the end achieve a higher annualized rate of return, which is based on the results of the top 25 hedge funds. In relation to risk, it is also suggested in this article that the prior skills and knowledge of investors significantly influence their risk-attitude. So, for instance if their prior skills and knowledge are high when starting to invest in certain assets available at the financial market they may be more willing to take risks, because they already know more about the possible consequences and on how to manage them. The other way around, it could also be the case that those investors are risk-averse because of the fact that they possess certain knowledge about possible negative consequences where investing in certain risky investments may lead to.

Scherer and Cho (2003) present a very relevant finding regarding risk perceptions in relation to social interaction. The approach is based on a network theory of contagion and this approach suggests that it is the relational aspects of individuals and the resulting networks and self-organizing systems that influence individual perceptions. The central hypothesis in this paper proposes the existence of risk perception networks, which should be seen as relational groupings of individuals who share, and perhaps create, similar risk perceptions. This hypothesis was tested by collecting data and consequently performing a statistical analysis using a matrix of relational social linkages in comparison to a matrix of individual risk perceptions. This paper thus provides very clear evidence with reference to the great impact social networks may have on the risk-attitudes of investors.

A factor which may also influence the risk-attitude of investors according to Olsen and Cox (2001) is gender. Their evidence suggests that in the investment area, non-professional women investors appear to accept less risk than their male counterparts, after controlling for factors such as age, education, wealth and experience. This difference appears to be related to evolutionary and social factors. Next to non-professional investors, the paper also investigates the risk/gender difference for professionally trained investors. Subsequently, it is found that risk attributes, such as the possibility of loss and ambiguity, are more heavily weighted by women investors compared to their male colleagues. Additionally, risk reduction is more heavily emphasized in

constructing the portfolio by women. The differences are clearest when considering portfolios at risk extremes.

One more factor which has strong effects on the perceptions of risk of investors is the familiarity of asset names. In order to be able to draw this conclusion, Weber et al. (2005) performed an experiment which was meant to examine how the type and presentation format of information about investment options affect the expectations about asset risk, returns, and volatility of investors. Next to that, it was tested how these expectations relate to asset choice. So, the conclusion drawn is that the familiarity of asset names is important to take into account when speaking about investors' perceptions of risk. Moreover, the judgments of asset risk turn out to be good predictors of asset allocation.

Finally, when summarizing the information presented in literature about risk, there are strong arguments which support the announcement that the risk-attitudes of investors may be strongly influenced by the social network surrounding them. These findings show that the characteristics of the network structure affect the risk-attitudes, as well as the prior skills, the knowledge base and the gender of investors. A factor that seems to be also essential beside of the actual level of volatility is the change in volatility and also the familiarity of the asset names turns out to be influential. The social network may be used in order to acquire information and as a way to gain access to a market niche of wealthy investors. In that way this will lead to an increased investor base and in the end an increased annualized rate of return may be reached.

3.3 Trust

Taking into account trust while studying different data sets, Guiso et al. (2008) prove that a general lack of trust leads to a limited participation on the stock market. The perception of the risk faced by investors when participating in the financial market is a function of not only the objective characteristics of the stock, but also of the subjective characteristics of the investor. The lack of trust comes from the risk of being cheated, experienced by some investors in deciding whether to buy stocks. This decision requires an assessment of the faith of the investor that the data in their possession are reliable, and that the overall system is fair.

Furthermore, besides risk, also with regard to trust it can be stated that it can have a positive impact on the profits achieved by means of financial investments. Di Cagno and Sciubba (2010) find that, in a trust game, when social interaction is present it is more likely that the profits achieved are higher. The experimental design included two main treatments where social networks were either built before or after the trust game, and next to that a baseline was used where the subjects played a trust game without forming networks. The following conclusions can be drawn according to this experiment. When the network is built before participating in the trust game, the overall level of trust turns out to be lower but offers are in that case directed towards more trustworthy recipients. Whom to trust seems to be related to a common past history. In the occasion that the trust game precedes the building of a network, continuation play enforces higher levels of trust. The two main factors that are of importance here are the information accrued and the reputation that may follow. Profits turn out to be significantly higher when the network formation informs the decision of whom to trust.

Next to that, Dekker et al. (2002) hypothesize that perceptions based on trust and perceptions of the structural environment of individuals affect relationship change more than the „„actual'' environment individuals operate in. In this case, it is not only about the perceptions that one individual has of the organizational and social environment, but also about the influence perceptions of alters have on the behavior of the individual. Accordingly, it is found that perceptions have a greater impact on relationship change than „„actual'' network variables have. Furthermore, it seems to be very useful to distinguish between levels of perceptions and the change effects that these perceptions may have. Next to that, a distinction must be made between trust in abilities and trust in intentions, for the reason that each dimension of trust enhances different types of information requests. With reference to trust, the effects of trust as well as the change in the interpersonal amount of trust are considered here.

3.4 Conclusion

In summary, risk and trust are certainly influential factors when analyzing the effects of social interaction in the financial market. There also exists a relationship between these two factors, which turns out to be positive in the sense that a higher level of trust leads to a higher level of risk-seeking behavior. It works also the other way around when stating that a person with a risk-

seeking attitude will be more trusting. Both factors can have a positive effect on profits achieved in the financial market. Information sharing is a variable which is frequently mentioned within literature and it can be concluded that an increased level of trust means a greater level of information sharing. Furthermore, it is outlined that subjective characteristics of investors, perceptions of trust, and the network structure itself are of great importance. The social network is a way to acquire information and it may lead to a greater investor base.

Chapter 4: Social Interaction in relation to Financial Behavior

The former chapters provide evidence for the existence of the effects of social interaction on financial behavior. These effects can be either positive or negative, for which different motives for certain types of behavior need to be discussed in order to be able to explain the nature of those effects. Some of these effects may be easy to detect when monitoring and moreover, monitoring may also lead to the adaptation of portfolios after interaction with a monitoring group of shareholders. Next to this, the types of information sources and the communication processes used to come to a certain type of behavior within the financial market are also important to consider in order to provide even more thorough evidence of the effects of social interaction in the financial market.

4.1 Nature of the effects of social interaction on financial behavior

Some hypotheses propose that social interaction has a positive effect on the behavior of investors, like the study by Hong, Kubik and Stein (2004) on the relationship between social interaction and stock market participation. This study proves with empirical data that the attractiveness of the market increases with the number of peers participating in the same market. However, other studies propose a rather negative effect on for instance the amount of money invested. An example of such a negative effect is found in an empirical investigation performed by Gilbert and Lieberman (1987) which states that larger firms in an industry tend to invest when their rivals do not.

4.2 Motives for certain types of behavior

Moreover, the hypotheses also differ with reference to the suggested motives for this behavior. Paranque et al. (2005) state after comparing some models and theories that on the one hand, agents will anticipate the behavior of others and imitate it, though on the other hand they will try to seek for an opportunity not seen by the other investors. According to this study, choosing one investment strategy over another will probably be influenced by for instance characteristics of the social network, or by the risk-seeking behavior of the investor.

4.2.1 Herding

Imitating the strategy of someone else, which is repeatedly called herding in this respect, is frequently addressed in literature about the financial market by both empirical and theoretical research. The most important reasons that are often said to cause herd behavior in financial markets are imperfect information, compensation structures, and concern for reputation according to Bikhchandani and Sharma (2000). Their evidence also suggests that the tendency to herd is greater in emerging markets, for the reason that the environment in these markets is characterized by weak reporting requirements; lower accounting standards; lax enforcement of regulations; and costly information acquisition. Moreover, Lux (1995) adds to the main reasons for herding that those investors can also be seen as acting irrationally. Next to that, Avery and Zemsky (1998) show, when studying the relationship between asset prices and herd behavior, by means of a model that herding arises in case there are two dimensions of uncertainty. These two dimensions are specified as the existence and the effect of a shock to the asset value.

Regarding imperfect information, which is one of the reasons mentioned by Bikhchandani and Sharma (2000) in order to give an explanation for herd behavior, the process of herding develops as follows: the first investor acts on private information and the several investors deciding in sequence imitate the decision taken by the first investor. The private information will never be revealed and the investors that follow only take into account the first manager's decision. In this respect, the herding is based on very little information and the actions of the first investor are taken as a kind of benchmark.

According to the same research about herding (Bikhchandani & Sharma, 2000), the compensation structure provides an additional reason to imitate the benchmark. If the investor underperforms the benchmark, the compensation gained will decrease and this situation will require the agent to imitate the benchmark´s portfolio even more compared to when trading alone.

Another aspect related to herding, which may be of importance for managers taking investment decisions, is their reputation in the labor market. In relation to that, Scharfstein and Stein (1990) draw the conclusion after analyzing some statistical models, that private information may be ignored and instead some managers may simply mimic the investment decisions of others. The basic idea underlying this conclusion is that if an investment manager is uncertain of the ability

to pick the right stocks and manage the portfolio, conformity with other investment professionals may decrease the probability of failure. If other investors do the same thing in a similar situation, herding occurs.

Once considering not only the motives for herding, but when instead looking at the time interval when herding actually occurs, the following paper may be useful. Boyson (2010) outlines, as a result of a theoretical analysis, that managers are incentivized to herd more as their careers progress in case they have more experience. This can be explained by the finding that senior managers that deviate from the herd have a significantly higher probability of failure and beside of that they do not experience higher fund inflows compared to their less-senior counterparts.

In summary, herding is a phenomenon which is frequently spotted in the financial market and because of the fact that investors have to interact in some way in order to be able to herd, this is an essential aspect to keep in mind. Several motives for herding exist, like: imperfect information; compensation structures; reputational concerns; uncertainty; or herding can just be seen as irrational behavior. Next to this, it has been proven that herding occurs more when careers progress.

4.2.2 In contradiction to herding

In contradiction to the sources listed above, Cipriani and Guarino (2005) show, by performing experiments, that herd behavior seldom occurs in laboratory markets in which informed investors trade for informational reasons only. Sometimes it occurred that subjects did not follow their private information, and in some cases they did so because they engaged in „contrarian behavior'. It also happened frequently that subjects preferred to ignore private information and abstain from trading. This finding indicates that financial markets' informational inefficiency may be caused by limited market participation.

Additionally, the contrarian behavior of investors is confirmed by Drehmann et al. (2005). With this contrarian behavior they mean that investors trade against the market and against their own signal. In order to explain this result, an error model is used which is completed by doing empirical experiments. The finding that herd behavior driven by informational externalities does not seem to be an important force within financial markets confirms the former finding and this

contrarian behavior may have a stabilizing effect since it implies that agents tend to differentiate from the investments of their predecessors. However, the article also states that herding is not completely ruled out because of the existence of herding based on reputational concerns and payoff externalities.

Besides, Jordan (1999) concludes that opportunistic behavior may also occur in financial markets when the investors are able to exploit an informational advantage over outsiders in order to be able to increase their rate of return and reduce the riskiness of their investments. In this research managers and directors of bank holding companies were considered, and the results are grounded by empirical evidence. So, regarding this conclusion investors may, beside of herding, act opportunistically if they possess information others may not have. In case such an investor is successful in creating a portfolio the chance in turn is great that other investors are going to imitate him and consequently the herding phenomenon is present again.

When closing the part about contrarian behavior, it can be stated that there are many situations in which other behaviors than herding can be traced back in the financial market. It is even indicated that herding driven by informational externalities is not even considered as important in some settings, since sometimes investors just act in contradiction to the information available. This contrarian behavior may even have a stabilizing effect. Furthermore, opportunistic behavior may occur in the market based on the exploitation of informational advantages.

4.3 Information and communication

Informational cascades and different communication processes are an important complement of the literature on the social behavior within financial markets when trying to get more thorough insights on this subject. In some sense, informational cascades are also related to herding and the communication process is of course strictly related to social interaction. When taking into account the fact that the decision making of investors in the financial market is mainly based on expectations, it is obvious that these expectations have to be grounded by any kind of information source. One of the information sources used is information based on the choices made by other investors, as is discussed in the former part about the types of financial behaviors

existing. These other investors may be either partners or competitors. Next to that, public information plays an important role.

4.3.1 Sources of information and informational cascades

As proved before, the information gained in processes of social interaction is essential for investors. In a study based on the empirical analysis of questionnaires by Oberlechner and Hocking (2004), this is confirmed concerning foreign exchange traders. Their results suggest that for those traders beside of wire services, which is the greatest source of information, personal contact at both their own banks and at other banks is a very important source of market information. Moreover, the most important sources of information for financial journalists working at wire services are by far their personal contacts at commercial banks. This can be explained since those sources are directly related to the market and therefore they are able to interpret market reactions. Consequently a kind of cycle consists, as the information of the wire services often consists of the perceptions and interpretations of trading participants, which are again directed back to the traders in the market.

In addition, Kinoshita and Mody (1997) recognize the importance of the choices of other investors within decision making regarding which investment to make in the financial market. Here, evidence is provided about the fact that investment decisions are positively correlated to the firm's own previous investment as well as to the current or planned investments by competitors. However, it is also proved that the information about investments by competitors becomes less important in the case that the investor already has more experience in the market.

Regarding public information, Mitchell and Mulherin (1994) empirically find that the number of Dow Jones announcements and market activity are directly related. The announcements represent daily reported news stories by Dow Jones, and the measures of market activity in this research include: trading volume; the absolute value of market returns; and the sum of the absolute value of firm-specific returns. Those two turn out to share common day-of-the-week patterns. This empirical result thus initiates that investors react highly on the public news available.

Bikhchandani et al. (1992) show that equilibrium switches within society can be explained by informational cascades after studying some empirical models and analyzing examples. Such an informational cascade occurs when an individual decides that it is optimal, after observing the actions of other investors in the market, to follow the behavior of the preceding investor without regard to his own information. In some situations, cascades can be broken when for instance a high-precision person takes a decision based on own information or when public information is disclosed. Consequently, the research also offers an explanation for the influence of peers, namely that individuals obtain information from the decisions of others. According to this, informational cascades are also accountable for the rapid spread of new behaviors.

4.3.2 Communication process

That the structure of the communication process is of relevance regarding the making of identical choices is investigated by Ellison and Fudenberg (1995), who find that less communication between agents leads to choosing for the action that is on average superior. These findings are the result of the analysis of a simple statistical model of word-of-mouth communication, which type of information flow is considered as leading to efficient learning on the social level. However, this social learning is, according to the findings, often most efficient when communication is fairly limited. In case efficiency is not an issue and the choices are equally good on average, herding may occur within small sample sizes and diversity within large sample sizes.

In relation to communication in financial markets, Grinblatt and Keloharju (2001) document that when communication proceeds in the investor's native tongue, it is one aspect that makes investors more likely to hold, buy and sell stocks of that particular firm. Moreover, it turns out that if a firm is located near the investor the shares are more attractive, and next to that it is also better if the chief executives of the firm have the same cultural background as the investors. This influence of language, distance, and culture is most prominent among households and less savvy institutions. A regression analysis indicates that the marginal effect of distance is less for firms that are more nationally known; for distances that exceed 100 kilometers; and for investors with more diversified portfolios.

In conclusion, it is interesting to investigate which information sources and which communication processes are regarded as useful by investors on the financial market. The main information sources used are: wire services or public information; personal contacts at banks; and the own previous investment and the current or planned investment by competitors. Informational cascades regularly occur in financial markets. When speaking about the communication process it can be said that less communication may often lead to the best action chosen by investors. The investigation of information and communication leads also to the conclusion that herding comes in again in many occasions.

4.4 Monitoring

Monitoring activities in the financial market are considered here, because in situations where these activities are performed, some interaction between the passive and active shareholders exists which in turn influences the portfolio investments.

In a paper analyzing the effects of large shareholder activism on securities market equilibrium, Admati et al. (1994) show by means of developing a framework, that a free-rider problem may arise. In that situation, passive shareholders benefit from the monitoring activities of the large investors, although they do not incur the costs associated with those monitoring activities. Despite this, it is also found that in a portfolio context with risk-averse investors, large shareholder activism is consistent with equilibrium even if the initial holdings of the large investors are equal to zero. Moreover, under some conditions the equilibrium holdings are independent of the monitoring activities, where all investors hold a market portfolio of risky securities. Large investors sometimes also adapt their portfolio choice by the available monitoring technology and by the initial endowment of shares.

4.5 Conclusion

After all, the different motives and sources for diverse types of behavior became clear in this section and hence even more evidence is provided to state that the effects of social interaction are really important to take into account when analyzing the financial market. These effects can either have positive or negative impacts on the financial outcomes. Herding, contrarian behavior

and opportunism are all types of behaviors which are frequently seen in the financial market based on motives like informational concerns, compensation structures or reputational matters. What is more, diverse sources of information and communication processes are used in order to come to these types of behaviors and monitoring in turn may be used to spot these behaviors. Moreover, monitoring may lead to the coming into existence of differences between and exploitations of diverse groups of shareholders, which leads to the adaptation of portfolio choices.

The consideration of these different aspects leads to the ultimate conclusion that there is a great connection between all those aspects and the aspects already discussed in the former chapters, so that by now a clear picture can be drawn about the effects of social interaction in financial markets. All elements discussed are combined in the following chapter in order to draw an overall conclusion.

Chapter 5: Conclusion and Recommendations

The main point proved in this research is obviously that the effects of social interaction in the financial market are frequently spotted and that those effects are therefore essential to take into account when analyzing the financial market transactions. Research suggests that the degree of distribution and the nature of network ties are important to take into consideration, because of their possible diverse impact.

Firstly, when combining the results of the literature review of risk and trust and the ones about social network ties, the following conclusions can be drawn. Network ties are in general mainly used in order to spread and acquire information, although a distinction can be made between diverse types of ties. Regarding weak ties, it is shown that these ties are able to ensure great cohesiveness by transferring the information over a wide range. On the other hand, strong ties are able to enhance efficiency; spread the information within organizations; and the information of strong ties can be used to build a reputation. Overall, it is proven that social network ties are able to increase the investor base by the „I will go if you go' mechanism.

Given the fact that the more risk-averse investors are, the less trusting they are; consequently it turns out that those risk-averse investors will be less willing to share and use the information provided in the social network. It also works the other way around in that higher levels of trust lead to higher levels of risk-seeking behavior. Subsequently, risk-seeking and in consequence more trusting individuals will use their social network more often in order to use this information when making investment decisions, and those investors are of course more willing to invest in high-risk transactions in the financial market.

According to the results that consider gender, women are generally spoken more risk-averse than men, and in that way they are likely to be mostly involved in low-risk transactions and if they are used as a tie, their information will accordingly also be in favor of these types of transactions.

Herding, contrarian behavior and opportunistic behavior all are types of behaviors that are frequently seen in the financial world. In case of herd behavior, the first investor takes risks based on private information and the followers in turn act less risk-seeking, as they act based on the results already shown by the first investor. So, in this case social interaction by means of

imitating the actions of others in the network results in less risky transactions. Acting opportunistically or acting in a contrarian way in this occasion thus leads to more risky investments, since the result is still unsure.

Lastly, one conclusion that can be drawn in order to answer the main question of this paper is that less communication leads to the best action taken, hence although social networks are an important source for financial market transactions, sometimes minimal contact leads to the optimal result.

Future research should, besides focusing on providing evidence for the existence of the effects of social interaction in the financial market, lay its focus only on the specific differences between the impact of those effects on varying financial transactions. This investigation should be based on an up to date empirical analysis comparing different social networks, different types of investors and different types of financial transactions.

Furthermore, future research should also take into consideration more subjective characteristics of investors when choosing for certain types of investments. In that way, an even clearer picture can be created about types of investors and the financial transactions they engage in. Combining these results with the kind of social networks that exist may lead to the possibility to create a very precise expectation of the future investments in the financial market.

References

Admati, A. R., Pfleiderer, P., & Zechner, J. (1994). Large Shareholder Activism, Risk Sharing and Financial Market Equilibrium. *The Journal of Political Economy* , Volume 102, No. 6, Pages 1097-1130.

Avery, C., & Zemsky, P. (1998). Multidimensional Uncertainty and Herd Behavior in Financial Markets. *The American Economic Review* , Volume 88, No. 4.

Bikhchandani, S., & Sharma, S. (2000). Herd Behavior in Financial Markets. *IMF Staff Papers* , Volume 47, No. 3.

Bikhchandani, S., Hirschleifer, D., & Welch, I. (1992). A theory of fads, fashion, custom, and cultural change as informational cascades. *The Journal of Political Economy* , Volume 100, Pages 992-1026.

Bland, E. (2010, November 1). *Tech News.* Retrieved April 2, 2011, from Discovery News: http://news.discovery.com/tech/twitter-stock-market-finance.html

Borgatti, S. P., & Cross, R. (2003). A relational view of information seeking and learning in social networks. *Management Science , 49* (4 p.432-445), Volume 49, No. 4.

Boyson, N. (2010). Implicit Incentives and Reputational Herding by Hedge Fund Managers. *Journal of Emprical Finance* , Volume 17, Pages 283-299.

Brown, J. J., & Reingen, P. H. (1987). Social Ties and Word-of-Mouth Referral Behavior. *The Journal of Consumer Research , 14* (3 p. 350-362), Volume 14, No. 3.

Carpenter, M. A., & Westphal, J. D. (2001). The Strategic Context of External Network Ties: Examining the Impact of Director Appointments on Board Involvement in Strategic Decision Making. *The Academy of Management Journal , 44* (4 p. 639-660), Volume 44, No. 4.

Cipriani, M., & Guarino, A. (2005). Herd Behavior in a Laboratory Financial Markets. *The American Economic Review* , Volume 95, No. 5, Pages 1427-1443.

Crust, L., & Keegan, R. (2010). Mental toughness and attitudes to risk-taking. *Personality and individual differences* , Volume 49, No. 3, Pages 164-168.

Dekker, D., Krackhardt, D., & Franses, P. (2002). Dynamic Effects of Trust and Cognitive Social Structures on Information Transfer Relationships. *Research Paper* .

Di Cagno, D., & Sciubba, E. (2010). Trust, trustworthiness and social networks: Playing a trust game when networks are formed in the lab. *Jounal of Economic Behavior & Organization* , Volume 75, No. 2, Pages 156-167.

Drehmann, M., Oechssler, J., & Roider, A. (2005). Herding and Contrarian Behavior in Financial Markets: An Internet Experiment. *The American Economic Review* , Volume 95, No. 5, Pages 1403-1426.

Ellison, G., & Fudenberg, D. (1995). Word-of-Mouth Communication and Social Learning. *The Quarterly Journal of Economics* , Volume 110, Pages 93-125.

Friedkin, N. E. (1982). Information flow through strong and weak ties in intraorganizational social networks. *Social Networks , 3 273-285*, Volume 3, No. 4, Pages 273-285.

Gilbert, R. J., & Lieberman, M. (1987). Investment and Coordination in Oligopolistic Industries. *The RAND Journal of Economics* , Volume 18, No. 1, Pages 17-33.

Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology* , Volume 78, No. 6, Pages 1360-1389.

Grinblatt, M., & Keloharju, M. (2001). How Distance, Language, and Culture Influence Stockholdings and Trades. *The Journal of Finance* , Volume 56, No. 3, Pages 1053-1073.

Guiso, L., Sapienza, P., & Zingales, L. (2008). Trusting the Stock Market. *Journal of Finance* , Volume 63, No. 6, Pages 2557-2600.

Hong, H., Kubik, D. J., & Stein, C. J. (2004). Social Interaction and Stock Market participation. *The Journal of Finance* , Volume 59, No. 1, Pages 137-163.

Isa, R. M., & Ameer, R. (2007). Hedge fund performance and managerial social capital. *The Journal of Risk Finance , 8* (p. 246-259), Volume 8, No. 3, Pages 246 - 259.

Jack, S. L. (2005). The Role, Use and Activation of Strong and Weak Network Ties: A Qualitative Analysis. *Journal of Management Studies , 42* (6 pages 1233-1259), Volume 42, No. 6, Pages 1233-1259.

Jordan, J. S. (1999). Bank Managers' Opportunistic Trading of their Firms' Shares. *Financial Management* , Volume 28, No. 4 .

Kanagaretnam, K., Mestelman, S., Nainar, K., & Shehata, M. (2009). The impact of social value orientation and risk attitudes on trust and reciprocity. *Journal of Economic Psychology vol. 30* , nr. 3 p. 368-380.

Kelley, H. H., & Stahelski, A. J. (1970). Social interaction basis of cooperators' and competitors' beliefs about others. *Journal of Personality and Social Psychology , 16* (1 p. 66-91), Volume 16, No. 1, Pages 66-91.

Kinoshita, Y., & Mody, A. (1997). The Usefulness of Private and Public Information for Foreign Investment Decisions. *World Bank Policy Research Working Paper* , No. 1733.

Lin, C.-P. (2006). Gender differs: Modelling knowledge sharing from a perspective of social network ties. *Asian Journal of Social Psychology , 9* (3 p. 236-241), Volume 9, No. 3, Pages 236-241.

Lux, T. (1995). Herd Behaviour, Bubbles and Crashes. *The Economic Journal* , Volume 105, No. 431, Pages 881-896.

MacKenzie, D. (2004). Social Connectivities in Global Financial Markets. *Environment and Planning vol. 22* , 83-102.

Mitchell, M. L., & Mulherin, J. H. (1994). The Impact of Public Information on the Stock Market. *The Journal of Finance* , Volume 49, No. 3.

Oberlechner, T., & Hocking, S. (2004). Information sources, news, and rumors in financial markets: Insights into the foreign exchange market. *Journal of Economic Psychology* , Volume 25, No. 3, Pages 407-424.

Olsen, R. A., & Cox, C. M. (2001). The Influence of Gender on the Perception and Response to Investment Risk: The Case of Professional Investors. *Journal of Behavioral Finance* , Volume 2, No. 1, Pages 29-36.

Paranque, B., Baets, W., & Pruden, H. (2005). Agent Behaviour, Financial Market and Welfare Theory. *International Journal of Business & Economics* .

Prucyk, B. (2005). Specialist Risk Attitudes and the Bid-Ask Spread. *Financial Review , 40* (2 p. 223-255), Volume 40, No. 2, Pages 223-255.

Raub, W., & Weesie, J. (1990). Reputation and Efficiency in Social Interactions: An Example of Network Effects. *American Journal of Sociology , 96* (3 p. 626-654), Volume 96, No. 3.

Rosenkranz, S., & Weitzel, U. (2008). Network Structure and Strategic Investments: An Experimental Analysis. *Working Paper Series* .

Scharfstein, D. S., & Stein, J. C. (1990). Herd Behavior and Investment. *American Economic Review* , Volume 80, Pages 465-479.

Scherer, C. W., & Cho, H. (2003). A Social Network Contagion Theory of Risk Perception. *Risk Analysis* , Volume 23, No. 2, Pages 261-267.

Shane, S., & Cable, D. (2002). Network Ties, Reputation, and the Financing of New Ventures. *Management Science , 48* (3 p. 364-381), Volume 48, No. 3.

Shiller, R. J., & Pound, J. (1989). Survey Evidence on Diffusion of Interest and Information Among Investors. *Journal of Economic Behavior and Organization 12* , 47-66.

Steinbacher, M. (2009). Acceptable Risk in a Portfolio Analysis. *MPRA Paper* .

Suk-Young Chwe, M. (2000). Communication and coordination in social networks. *Review of Economic Studies , 67* (p. 1-16), Volume 67, No. 1, Pages 1-16.

Uzzi, B. (1996). The sources and consequences of embeddedness for the economic performance of organizations: the network effect. *American Sociological Review , 61* (4), Volume 61, No. 4.

Weber, E. U., Siebenmorgen, N., & Weber, M. (2005). Communicating Asset Risk: How Name Recognition and the Format of Historic Volatility Information Affect Risk Perception and Investment Decisions. *Risk Analysis* , Volume 25, No. 3.