CHAPTER-VII

NURTURING NETWORKS: THE SOCIAL DYNAMICS OF NODES AND TIES

7.1 INTRODUCTION

7.2 NETWORK SIZE DYNAMICS

7.3 SOCIAL REFERENCES DYNAMICS

7.4 DECISION MAKING DYNAMICS
7.1 Introduction:

A social network is a structure composed of nodes and ties. Memberships in a network, within the context of the stock market are formed at various levels. The networks formation dynamics were discussed in the previous chapter. Membership in a network brings with it various benefits. The exclusivity of the membership ensures that the benefits remain within the network. This chapter deals with the most import outcome of network membership i.e., access to varied and valuable information. The chapter considers the following aims and Hypotheses:

RO 5: To identify the importance of social referencing in investment decisions

H1: Membership in bigger network groups is positively related with the availability of varied and valuable information

H2: Investors base their investment decisions on anticipated decisions of other market players than on their independent forecast
Networks represent a fundamental medium for the emergence and diffusion of information. (Steeg & Lerman, 2011). The significance of tapping the information available exclusively in the networks is very crucial in the stock market context where the information available translates into financial gain for its members. The performance of an individual in the stock market is influenced by the attributes of the members of their network. Network performance can influence the adoption of financial innovations and investment styles. Analysis of this type of social influences may partly explain, among other things, why participation rates tend to sharply increase in times of high market returns.

Sociologists tend to assume, until proven otherwise, that actors’ behavior is strongly shaped by the complex interaction of many simultaneous constraints and opportunities arising from how the individual is embedded in multiple kinds of relationships. The characteristics and behavior of whole populations, as well, may depend on multiple dimensions of integration/cleavage. Solidarity may be established by economic exchange, shared information, kinship, and other ties operating simultaneously.

**Literature on social interaction**

Empirical studies on social interaction come from various fields and settings. One manifestation of the magnitude of the studies is the vocabulary they use: the social mechanism can be referred to as social influence, peer effects, community effects, neighborhood effects, network effects, herding, mimicking, conformity, or observational learning.

An important concept in the literature on social influence is processes of conformity: that is adjusting one's behavior or thinking to match those of other people or a group standard (Sherif (1936) and Cialdini aud Goldstein
There has been a considerable amount of research on social influence in general and conformity influence in particular (summarized by e.g. Cialdini and Goldstein (2004)). Yet, until now the literature has only infrequently touched upon individual investors’ conformity behavior. The relevance of this behavior in an investment setting, however, was already suggested by De Bonclt (1998: 835). He argued that: “… it seems likely that conformist behavior affects assets prices”.

The effect of conformist behavior on asset prices could be quite substantial if it would lead to herding which is considered one of the driving forces behind excessive stock market price movements like hypes crashes, and bubbles (Lynch. 2001: Ofek. 2003: Shanua et al.. 2005: Valliere & Peterson. 2004).

### 7.2 Network size dynamics and information availability

**H1:** Membership in bigger network groups is positively related with the availability of varied and valuable information.

Networks are integral part of human social life. From social to biological, individuals are deeply embedded in networks—even if one doesn’t actively seek to be networked. Although market actors also rely on categorical knowledge in their sense-making activity (and use risk and valuation models accordingly), it is information from networks that can be expected to be the most dominant way of reducing uncertainty about the past, present and future in the face of multiple flows.

This premise is actually antithetical to the mainstream finance’s assumption that prices include all available data/information (or market actors actually know what happened in the past). The main reason for this is that
the ever present dazzling stream of data/information on the screens is not self-explanatory. That is to say, the screens don’t talk back to market actors and tell them what has happened and what will happen! Such a higher datum is only achieved by market actors’ cognitive or calculative efforts with a view to incorporate this data into their investment decisions. (Tarim, 2011)

Recent research on these social networks has demonstrated that many large networks display a scale-free power-law distribution for node connectivity (Barabasi & Albert, 1999). This implies that there are many persons with only a few links to others and only a few persons with many links to others. In the before-mentioned literature, these heavily connected persons are called ‘hubs’ and in terms of market dynamics, the existence of such hubs may imply that a small proportion of investors having many contacts may have an exceptional influence on the investing behavior of many other investors. As was argued earlier in this thesis, herding may be an ultimate result of the socially inspired decision-making behavior of individual investors and is considered one of the driving forces behind excessive stock market price movements like hypes, crashes and bubbles (Lynch, 2001), (Ofek, 2003); (Sharma, 2005) (Valliere & Peterson, 2004).

The information availability dynamics can be conceptualized as being correlated to the size of the network. The more number of alters (connections) that a ego (investor) has, the more information is available to the ego. The size of the network is therefore an important determinant as to what amount of information is available to the investor. The same can be represented in the form of equations.

\[ ego + n\, alter = size\, of\, network \ldots \text{equation 1} \]

\[ I_a = size\, of\, network \ldots \text{equation 2} \]
Cancelling size of network on both sides, we get:

\[ \text{ego} + n\,\text{alter} = \text{size of network} = l_a = \text{size of network} \ldots \text{equation 3} \]

\[ \therefore l_a = \text{ego} + n(\text{alter}) \ldots \text{based on equation 1, 2 and 3} \]

Here,

\text{ego} \text{ is the investor,} \\

\text{n alter} = \text{the number of ties with other nodes} \\

\text{l}_a = \text{Information availability}

**TABLE 7.1 INFORMATION INDEX AND MARKET EXPERIENCE**

| Information index * What have you experienced more often when trading? Cross tabulation | What have you experienced more often when trading? |
| --- | --- | --- | --- | --- | --- | --- |
| | Can't say | I don't have any expectations. | More losses than I expected | More profits than expected | I have got as expected | Total |
| Information index | 0-5 nodes | 8 | 3 | 5 | 22 | 15 | 53 |
| 6-10 nodes | 2 | 0 | 2 | 15 | 19 | 38 |
| 11-15 nodes | 6 | 2 | 11 | 57 | 78 | 154 |
| 16-20 nodes | 3 | 1 | 4 | 9 | 8 | 25 |
| Total | 19 | 6 | 22 | 103 | 120 | 270 |

The table makes a cross reference between the size of the networks and frequency of profit made in order to test the hypothesis \( H_1 \) which says “Membership in bigger network groups is positively related with the availability of varied and valuable information” \( \{ l_a = \text{ego} + n(\text{alter}) \} \)
The findings show that 57 investors belonging to networks where the number of nodes in the network is between 11-15 have reported to have experienced profits more often than expected. This is also the average size of the network with a frequency of 154 respondents. This is in tandem with the hypothesis tested.

7.3 Social reference dynamics:

H2: Investors base their investment decisions on anticipated decisions of other market players than on their independent forecast.

This hypothesis focuses on the herd mentality that is seen in the market scenario. The stock markets are almost akin to gambling. Where, a rough probability of the outcomes is known, but no amount of calculations will lead to certainty in predictions. The hypothesis is indicated as below for the purpose of computation.

\[ i^\text{ego}_d < i^\text{alter}_d \]

In this equation \( i^\text{ego}_d \) represents the investment decision of the ego (the investor) and \( i^\text{alter}_d \) represents the anticipated decision of the other market players.
TABLE 7.2 WHEN A STOCK PRICE IS FALLING WHAT WOULD BE THE BEST OPTION

<table>
<thead>
<tr>
<th>Decision</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dont know</td>
<td>10</td>
<td>3.7</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>To buy expecting future gains</td>
<td>118</td>
<td>43.7</td>
<td>44.5</td>
<td>48.3</td>
</tr>
<tr>
<td>To go with popular mood and sell</td>
<td>137</td>
<td>50.7</td>
<td>51.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>265</td>
<td>98.1</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>System</td>
<td>5</td>
<td>1.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>270</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on the above data it can be seen that the option which states “to buy expecting future gains” \( i_{d}^{eg} \) is 118 whereas, anticipated decision \( i_{d}^{alter} \) which is indicated by the variable “To go with popular mood and sell” has a frequency of 137. Therefore, the hypothesis that market players base their investment decision on the basis of anticipated decisions of other market players is proved.

FIGURE 7.1 A NETWORK GRID REPRESENTING INFORMATION FLOW
The figure is a representation of linear flow of information. The nodes exert influence on their neighboring alters. The nodes that play the role of opinion makers by exerting maximum influence are shown as colored representations. The size of the representation is also an indicator of the influence level. The importance of appropriate and timely information in a market context cannot be emphasized enough especially in a the context of a developing nation like India.

The network diagram makes a representation of the flow of information from a central node to other nodes. The star shape represents the exclusive flow of information between family members. This is important to show that the family is both the source as well as receiver of information.

### 7.4 Information sources

The stock market has thousands of stock options that an investor can consider. To actually check the technical and fundamentals of all these stocks requires immense work which can only be done by dedicating a lot of time and resources, which is not possible in the case of all investors. Most of them investing are not full time professionals, but are mostly engaged in other professions and see the market as only a means of investing for the future. While for just a few it is the source of livelihood for those who invest as a means of supplementary income or as savings, the advice of a broker or some network becomes very important, as they do not have all the adequate resources to tackle the market by themselves.

The information given by network members becomes important not just top navigate the market, but is imperative to even gain entry into it. This is because in an imperfect, emerging market like India, stock markets are still seen as gambling. It is perceived to be an arena meant only for tube so called
experts. This acts as a deterrent. In a country as large India, making waves as one of the emerging economies of the world, it is surprising to see that a very small percentage of those qualified to invest, are actually doing so. This is because of various reasons, not necessarily economic in nature. For instance, the religious stance of Indians is to be frugal and not greedy.

Three key concepts of social networks would help to better elucidate this concept.

Network Pipes: Network pipes are the resource and information channels
Network prisms: Status signaling and certification channels
Network peeps: Social influence which allows for a point of reference

**Information Variety**

One of the advantages of being a member of a network is that the information that other members have is also available others in the group by the virtue of the position that they occupy in the network. This is even more important in the context of stock markets where the variety and depth of information available is exhaustive and is quite baffling for a new entrant to make sense of it. As such, network membership proves to be of great help to such investors. It is seen here that Investors having a lower level of investment knowledge or experience display more informational conformity behaviour
FIGURE 7.2: ADVERTISEMENT AS SOURCE OF INFORMATION

The above chart illustrates the advertisements as a source of information for the market participants. When asked how many respondents used advertisements, it was seen that very few of them relied on advertisements for making investments. This could be because of the connect factor of the advertisements which often does not create much faith in the minds of the investors. It is clearly evident that advertisements are the least preferred modes of information for the investors.

FIGURE 7.3: ADVICE OF BROKER AS SOURCE OF INFORMATION

The role of a broker is very important. The value given to the advice of a broker while making a market transaction is evident from the above diagram. The respondent’s reliance on the stock broker is high especially when they are novice investors.
Friends as a part of the primary circle in the network of the respondents are a major source of information. The information they give is backed by the trust that the respondents have on them. As such, it can be seen that 136 respondents always trusted their friends as a source of market information. This information when correlated with the information about the person who first initiated the respondent to invest shows that the friends are many times the people who encourage stock market participation. This can also be seen as behaviour being modeled on the basis of others. Only 5 respondents said they would never consider their friends as source of market information.

FIGURE 7.5: FAMILY AS SOURCES OF INFORMATION
On a five point likert scale, the respondents chose always as the option when asked if they would consider the family as a source of market related information. This goes to show the importance of the social institution of family on the economic decision making dynamics of the individual. Family is also a major source of encouragement for market participation, and a cushion in times of market losses. Also, the implication of either a profit or a loss can be felt largely by the family. As such, it is not surprising that a majority of 120 always consulted the family for advice. Hardly 3 respondents said they would never consult family for advice on market related matters.

**FIGURE 7.6: INTERNET RESOURCES AS SOURCES OF INFORMATION**

The internet has emerged as a powerful source of information. This is because; the internet itself is a representation of a network of individuals. The significance of this network lies in the fact that the membership into it is not restricted as that of the real world network. The only prerequisite for network membership is the ability to use the resource successfully. The information that this network is able to provide is limited only by the ability of the investor to tap it.

The internet has emerged as a significant source of information even in case of this study. 152 respondents said that they always used the internet as a source of market information. 30 respondents (11 percent of the sample) said they never used the internet. This is not a reflection of the lacuna of the
medium, but rather, the inability of the investor to access it. A scrutiny of the age group of the respondent who never used the internet would reveal the fact that these are the members belonging to the age group of above 45. This group is not much oriented towards the medium of internet for information.

**Figure 7.7: Materials published by companies as sources of information**

Kind of information that the companies provide is seldom objective. This information is biased in favor of the company that is publishing the information. Many a times the balance sheet, which is a mandatory document to be published, is itself designed to conceal more information than it can reveal. This makes the information published by the companies less reliable as sources of information for market investments. The data procured in this study also reveals this. Only 3 percent always refereed to these materials while an majority of 50 percent said they would never rely on these sources.
7.5 Information variety

Information exchange has been the keystone of a structured society.

H₁: Membership in bigger network groups is positively related with the availability of varied and valuable information

7.5.1 Social networks and market profits

Social networks provide access to social capital of not just the investor, but of all the members of the network. The graph below represents this. The nodes represented in Blue Square (brokers) and the ones that are connected to each other. But the other nodes represented in black dot (investors) are not connected to each other. They are only connected to one node each. But, because of the centrality of the node to which they are connected, even these nodes are in a position to access the entire information available in the network.

Figure 7.8: Network map of respondents of one brokerage firm
7.6 Social reference dynamics

It is a sort of modern truism that peer groups and role models provide concrete illustrations of how one should act in a given situation and enforce sanctions for misbehavior. Network theory builds on Simmel’s and Durkheim’s ideas about how the individual’s position in a social milieu shapes both his behavior and his underlying identity. For Durkheim, social networks shape the actions of individuals not only negatively, by undermining antisocial behavior, but also positively, by establishing accepted behavior patterns. Mark Granovetter (1985) spells out the implications of the network approach in an article challenging transaction-cost economists’ understanding of price gouging, in which gouging occurs when a supplier finds that he is the sole seller of a needed good. Granovetter argues that the norm against price gouging is enforced informally by members of an industry network; a seller who price gouges in times of scarcity will find that buyers turn elsewhere in times of plenty. Interpersonal networks thus enforce norms by sanctioning members who do not follow them. Development theorists find that societies with strong social networks have an advantage in development in part because they can effectively carry out both positive and negative sanctioning.

It is seen that investors are more inclined to use the investing behavior of other investors as an input for their own decision-making or on occasions they may even simply copy other investors’ behavior. Yet, this does not imply that investors’ are simply trying to adhere to the group behavioral normal. Feelings of uncertainty may also be an important cause of this behavior. In general, it has been found that when people are uncertain as to what action to take or feel to have a lack knowledge and experience relevant for a certain task, the observed behavior of those around them becomes an important input for their own decision-making (Festinger, 1954) (DiMaggio & Louch, 1998). This socially oriented decision making may occur in social networks that connect friends with friends of friends and so on (Watts, 2001).
A new actor entering an already existing market faces the challenge of positioning himself among already established actors. He enjoys a strategic advantage if he positions himself in a structural hole. Building links with other actors requires investments in social relationships, i.e., the formation of social capital. This social capital is provided first by the primary circle. After this initial leverage, an individual is able to make in ways into other networks. This is primary whole circle support.

**7.7 The primary whole circle support**

The primary circle of a respondent includes those people with whom the respondent has kinship ties along with those whom the respondent meets frequently. The primary circle comprises all those people whom the respondent look up for providing instrumental, emotional, and material support.

The primary circle plays an instrumental role in Initial investment advice, Advice for investing and encouragement during losses. The primary circle is termed as the ‘whole’ circle here because, it comprises not only of those who participate in the stock markets but also other who do not. For instance, in a family of four, only the son might be investing. Though his parents are not investors and neither is his wife, these people are significant
nodes in his network. This is because; the family provides support in other ways to the investors if not directly in terms of market tips and information. Many a times, these people may know somebody else who could give information required, just because of occupying a position in the said network.

7.8 The broker-client support system

The broker-client matrix forms the crux of the stock market relationship dynamics. The broker is the person with whom ever investor has to interact in order to carry out the transaction. Because of this frequency of interaction or the inevitability of the interaction, most of the investors seek to have amicable relations with the brokers. This might be for various reasons such being purely economical in terms of getting exclusive tips for making better profits or might be more social focusing on affiliations like gender, age, religion, education, etc.

FIGURE 7.10 DO YOU ALWAYS TRANSACT WITH THE SAME BROKER?
Trust is a factor that is built over a period of time. It does not emerge all of a sudden. To find out is this universal truism is applicable to the stock market context also, the respondents were asked if they transacted with the same brokers always. The data shows that 148 respondents that is 54.8 percent said they did. This shows that even though the markets are termed to be rational guided by economic factors alone, we can see that the investors as social actors, pursue their economic goals not just with the aim of making the maximum profit, but also try to make the profits within their socially defined parameters.

Conclusion:

The chapter endeavours to identify the importance of social referencing in investment decisions. The research hypothesis is $H_1$: Membership in bigger network groups is positively related with the availability of varied and valuable information and $H_2$: Investors base their investment decisions on anticipated decisions of other market players than on their independent forecast is tested empirically and proved to be correct.