



Exploratory social network analysis of affiliation networks of Indian listed companies



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ABSTRACT

Interlocking directorates play a crucial role in the corporate governance system. In this paper we analyse the structural characteristics of the network of the interlocking directorate of National Stock Exchange (NSE) listed Indian companies using the tools of social network analysis to examine the effects of the underlying network on the performance of companies and directors. A component analysis of the network shows that 78.5% of the companies fall under one giant component with the largest island containing 6 companies. The giant component was further analysed for clusters and centrality measures. The results show that the highly boarded directors who constitute just 2.25% of the director population are associated with 42% of the total listed companies which account for 65.5% of the total market capitalisation. The top central actors in both director as well as company networks have been identified. The calculated values of mean path length and global clustering coefficient provide evidence for the existence of small world structure in the Indian corporate field.

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1. Introduction

The industry has played a crucial role in the transformation of India as an emerging global economic power. The policy of liberalisation in the early 1980s has brought about fundamental changes in the economic activities and industrial environment in India. Important among these changes is the growth and the stretch of the corporate sector in the country which in the pre-liberalisation era comprised of a few public sector companies and private manufacturing firms. In the past few years, Indian companies have participated in the worldwide trend of consolidation through cross-border mergers and acquisitions (Singla et al., 2012) and this has led to substantial changes in the structure of corporate governance in India. Corporate governance has become central to the financial performance and overall growth of Indian industries in the post-reform era.

The board of directors, which is the prime decision making body of a corporate firm, has a significant role in the governance of any corporate. *Interlocking directorate* refers to the situation in which the same person shares positions on the boards of more than one firm. Interlocks lead to a complex web of interconnected firms

and directors with important socio-political and economic consequences. There has been quite a number of studies on the causes of interlocking (Scott, 1991; Glasberg, 1987; Mizruchi, 1996) and its effects on board relationships, formulation of strategic decisions and sharing of information (Gulati and Westphal, 1999; Zaheer et al., 2000; Haunschild and Beckman, 1998). Most of the studies on interlocking directorate are focused on developed countries and there is a dearth of such studies relevant for developing and emerging economies like India.

In this paper we report the results of a detailed analysis of the interlocking board of directors of Indian industry using tools of social network analysis and its implications from a network perspective. We identify the major players in the Indian corporate sector by virtue of their position and ties in the network of interlocking directors and firms. The network is also analysed for the existence of small world structure.

2. Interlocking directorates

Corporate governance refers to the system by which corporations are directed and controlled. This includes monitoring the distribution of rights and responsibilities among different stakeholders in the corporation specifying the rules and procedures for making decisions in corporate affairs and providing the structure through which corporates set and pursue their objectives and

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respond to the social, political and market environments. At the core of corporate governance is the board of directors, which is the primary decision making body of any corporate company. The composition of the board of directors is an important factor affecting the relationship between corporate owners and managers on one hand and the liaison among corporate players on the other.

The board of directors usually consists of inside directors and outside directors. The inside directors are important persons who are directly associated with the firm such as the CEO, top executives, retired managers, directors of subsidiaries or parent organisers, etc. (Pennings, 1980) while outside directors are persons not directly associated with the firm. The practice of including outside directors has over the years given rise to the phenomenon of *interlocking directorate* which refers to the situation in which members of a board of directors serve on the boards of multiple companies. Two firms A and B may be interlocked directly when their boards share a director, or indirectly when they each have directors who also serve on the board of a third company.

The origin and growth of interlocking in the corporate world, as well as its socio-political impacts, have been an area of interest to many researchers (see Scott (1991), Glasberg (1987), Mizruchi (1996) and references therein). There are conflicting views as to the cause of the origin and spread of interlocking practice in the corporate world. Some researchers hold that the heightened dependence on resources and the need to reduce uncertainty have led to an increased demand for individuals holding multiple directorships as they are supposed to have greater access to information, resources, etc. (Salancik and Pfeffer, 1978). Class hegemony theory, on the other hand, assert that interlocks are formed based on social ties among the upper class where the elites seek to promote upper class cohesion through interlock across corporations (Koenig and Gogel, 1981; Sonquist and Koenig, 1975). Some companies go for co-opting executives of successful corporate players into their board to enhance their reputation and earn the good will of their stakeholders. Whatever be the reason, the increased linkages between board of directors resulting from interlocking has been reckoned as a key characteristic of the development of the global economy over the past two decades (Kentor and Jang, 2004).

Interlocks act as communication channels, enabling information to be shared between boards via multiple directors who have access to inside information of multiple companies. Thus interlocks can be seen as a diffusion instrument through which information is disseminated through a network (Chua and Petty, 1999). In particular, this may also lead to sharing of strategic information and inter-organisational knowledge among corporates allowing powerful and influential firms to exercise control over others (Seidel and Westphal, 2004; Haunschild and Beckman, 1998). The information flow resulting from interlocks may also promote coordinated action by two or more firms towards achieving a common objective (Sonquist and Koenig, 1975). This may also help develop mutual trust and obligations in an otherwise competition-ridden corporate world.

Interlocks have reportedly helped improve the performance of companies in many cases. In particular, profits made by firms have been shown to have a direct and positive correlation with the number of interlocks (Haunschild and Beckman, 1998). In business environments with greater uncertainty, firms with more interlocks exhibit better performance as measured by sales growth and return on equity (Nicholson et al., 2004).

There has been a few studies on the phenomenon of interlocking directorate in specific countries like the US (Roy, 1983), Kuwait (Mahdi et al., 2012), France (Yeo et al., 2003), Italy (Rinaldi and Vasta, 2005), New Zealand (Firth, 1987), Australia (Stening and Wai, 1984), Canada (Ornstein, 1984), etc. This paper examines the existence and implications of interlocking in the context of Indian corporate sector, using tools of social network analysis.

3. Indian corporate network

The economic policies of India, after gaining independence from the British rule in 1947, were essentially socialist in nature and oriented towards greater state control and intervention, presumably to insulate the country from economic shocks or upheavals. These included centralised planning, complex industrial licensing laws, nationalisation of banks, tight restriction on foreign investments, imports and exports, public ownership of major heavy industries etc.

The results were low rate of growth of the economy which stagnated at around 3.5% from 1950s to 1980s, low per capita income which averaged 1.3% and poor infrastructure investment due to public sector monopoly (Kaushik, 2013).

India's corporate sector consists of both private and publicly held companies with the private sector companies vastly outnumbering the public ones and constituting the bulk of small scale enterprises. However, until nearly the end of the twentieth century, the public sector, which consisted of mere 0.25% of the total number of companies and about 2% of the total listed companies, accounted for almost two-thirds of the book value of equity, more than one-third of paid up capital and about 15% of market capitalization (Goswami, 2002). Despite having monopoly in major heavy industries, most public sector companies suffered huge losses due to poor management and lack of competition while the role of private enterprises were minimal in the larger economic activities.

A Balance of Payments crisis in 1991 pushed the country to near bankruptcy in 1991 which acted as a catalyst required to transform the economy through a series of economic reforms and liberalisation policies in early 1990s to unshackle the economy. The effects of these changes became immediately evident. The total market capitalization, which was only 5% of GDP in 1980 reached 60% of GDP by the end of 1993. Between 1980 and 1993 the number of mutual funds investors rose from 2 to 40 million and the Indian stock market became one of the largest in the world (Singh, 1998). The fruits of liberalisation reached their peak in 2007 when India recorded its highest GDP growth of 9%, becoming the second fastest growing economy in the world, next only to China.

The increased competition to which corporate India was exposed since the mid-1990s has led to drastic restructuring of management practices and rise of professional managers who value corporate governance and transparency. There has been phenomenal growth in market capitalization with greater emphasis on creation and distribution of wealth. The Indian corporate world was faced with a greater need for capital which they tried to raise through international collaborations or mergers and by listing abroad. The tendency of foreign investors to increase their exposure in well-governed firms saw more and more companies adopting internationally accepted standards of transparency, accounting and disclosure and demanding new corporate governance standards (Afsharipour, 2009), leading to the growth of new managerial practices such as interlocking directorates.

A hallmark of the liberalisation policies in India was that the reforms in the industrial sector were complemented by the financial sector reforms that were introduced along with them (Guha-Khasnobis and Bhaduri, 2000). Prior to these reforms, banking in India was characterised by a greater degree of state ownership and far reaching regulations especially in the allocation of credit and the setting of interest rates. The reforms primarily included deregulation of interest rates, easing of directed credit rules under the priority sector lending arrangements, reduction of statutory pre-emptions and lowering of entry barriers for both domestic and foreign players (Roland, 2005). The financial sector reforms made it imperative for firms to rely on capital markets to a greater degree for their needs of additional capital (Varma, 1998). The institutionalization of the capital markets tremendously

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