BOARD INTERLOCKING IN CHILEAN CORPORATIONS: AN EXPLORATORY RESEARCH

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ABSTRACT

Interlocking directorates is a widely studied, applied measure of governance practice. Most of the research has been limited to data from developed countries and studies interlocking as an explanatory variable of other governance constructs. This work conceptualizes interlocking as a rational decision of the owner/controller of a company, as a dependent variable of board's design, and applies the concepts in an emerging market business environment. We found significant associations between interlocking and firm characteristics such as ownership structure, industry and regulation. We finally draw some conclusions on the direct application of corporate governance theories in developing countries.

Keywords: Corporate Governance, Emerging Markets, Boards of Directors, Interlocking, Networks

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BOARD INTERLOCKING STRATEGIES IN EMERGING MARKETS: THE CASE OF CHILE

In our increasingly globalized economy, companies must adapt their governance practices to maintain their competitive edge. In recent decades, a large stack of corporate governance research and practices has been developed (Daily, Dalton and Canella, 2003; Tricker, 2000). This knowledge, mostly developed in Anglo-Saxon countries, is spreading around the world through professional and academic networks, sometimes with few adjustments made, despite the many differences that characterize business environments in other countries.

In most emerging markets, the study of corporate governance is at its infancy (Singh, 2003). The development of governance institutions and regulations is incomplete; capital markets are not widely developed, and shareholders tend to control companies through pyramid-shaped structures (Laporta et al, 1999). We argue that testing Corporate Governance knowledge in an emerging market environment may help in the creation of new insights. Thus, it is our intention to test current interlocking directorate theories in a developing country –namely, Chile.

Chile is an interesting emerging market to study governance due to the high capitalization of its asset-trading market in relation to its GDP, its open economy (free trade agreements and high level of foreign trade), its relatively deeper and interconnected financial market (many Chilean firms have issued ADRs), the development of its institutions in recent years (laws, regulations), and the presence of highly diversified corporate groups as well as world-leading institutional investors.

The composition of the board of directors is essential for the development of good corporate governance (Zahra and Pearce, 1989; Monks and Minow, 2004). Among other composition issues, interlocking has been widely analyzed in literature on board of directors (Mizruchi, 1996). In essence, an interlocking directorate allows for an inflow of feedback information from a wider corporate scan. This information can keep a board aware and strategically poised as to other firms' likely actions. Therefore, interlocking inevitably affects corporate behavior.

Thus, we intend to analyze if interlocking is used by the owners of the Chilean corporations to enhance their board's performance as is stated in the interlocking literature. We will first review interlocking directorates' literature to determine the current status of research on interlocking.

INTERLOCKING DIRECTORATE THEORIES

As Mizruchi (1996) defined, an interlocking directorate occurs when a person affiliated with one organization sits on the board of directors of another organization.

The study of interlocking practices started in the early twentieth century, when the U.S. Pujo Committee called attention to this behavior during the Great Recession. Later, it became the focus of intensive research in the 1970s, 1980s, and 1990s, when the study of cross-organization relationships flourished. Additionally, the fact that interlocking directorates were relatively easy to identify in reliable, publicly available databases, made them increasingly popular as a primary indicator of inter-firm network ties. To tackle questions arising from interlocking directorates, several researchers turned to network analysis (Burt, 1983, Mintz and Schwartz, 1985; Mizruchi, 1992, 1996; Pfeffer and Salancik, 1978; Useem, 1984). As Pettigrew (1992: 164) pointed out, the study of interlocking directorates has a clear focus on the structural analysis of business in the societal context, and its distinctive methodological approach relies on the use of network analysis.

Interlocking has proven to be important. First, as social network research has convincingly demonstrated, the exercise of power can take place through formal authority or informal influence (Tichy, Tushman, and Fombrun, 1979; Pearce and David, 1983). Following this point of view, interlocking directorates may be considered as a mean of exerting formal or informal influence among corporations by sharing one of the most influential resources in the organization - directors.

In addition, research on social networks suggests that common network ties, such as common group membership embedment, enhance social cohesion between actors in a network (Gartrell, 1987; Marsden and Friedkin, 1993). Accordingly, it is reasonable to expect that the number of common board ties between directors at large companies accounts for a good sign of friendship ties between them (Seidel and Westphal, 2004:236). Besides, directors of large companies tend to have great demographic similarities, including backgrounds and common experiences (Zweigenhaft and Domhoff, 1998). The similarities increase the likelihood that social interaction on boards will lead to friendship (Lazarsfeld and Merton, 1954; Suitor and Keeton, 1997). Regardless of whether they promote friendship or not, interlock directorates demonstrated their potential to provide access to key information among companies. On the adoption of poison pill takeover defenses, Davis (1991) provides an instructive model of how network centrality, as reflected in interlock ties, is a form of social capital that provides access to the information that flows through the network (1991: 592). Ultimately, both access to information and friendship ties among members affect corporate behavior.

Despite three decades of research on interlocking directorates and its widely accepted methods, the field attracted some critics. Hirsch & Whisler (1982), Stinchcombe (1990) and Pettigrew (1992) pointed out that very little is known about the processes through which interlocks might affect corporate behavior, and they argue that this analysis fails to capture not only the richness and complexity but also the general outlines of board dynamics and cross-organization relations. Another group of critics accepts the legitimacy of quantitative indicators to predict corporate behavior but argues that interlocking directorates fail to account for these behaviors. For example, Hirsch pointed out numerous reasons for outside directors to be appointed to boards, though these reasons may have little to do with specific relations between the organizations involved.

Although interlocks may not be useful in predicting every significant form of corporate activity, it might be incorrect to claim that interlocks "just do not predict much that is interesting in strategic choices of firms." Indeed, there is strong proof that they do predict such choices. For example, in the study of the adoption of poison pills, Davis (1991) provided significant evidence that interlocking networks matter and that they do influence the behavior of firms.

The study of how interlocking directorates influence corporate behavior also led academics to further explore the motives for joining more than one corporate board. In the following section, we analyze several of them, organized under three main bodies of literature: cross-organization relationships, director career advancement and social cohesion. These, we argue, enable three levels of analysis to enrich the discussion and to show why the study of interlocks is important.

As stated by Zajac (1988:437), cross-organizational reasons are the most studied; however, there are not the only ones. According to Zajac (1988:428),

The prevailing view of interlocking directorates sees them as vehicles for interorganizational coordination and control. For example, Pfeffer and Salancik (1978) and Aldrich (1979) viewed interlocks as dyadic interorganizational strategies that, like mergers and joint ventures, are "used to manage the organization's relationship with the environment," for example, by reducing "competitive uncertainty" (Pfeffer and Salancik, 1987: 165). However, it is not obvious that board members with two or more directorships actually function as interorganizational linkages; in joining another board member may simply be acting on personal motives.

Keeping Zajac conclusions in mind, our paper presents the flock of literature organized under two main approaches to probe the origin of interlocks:

1- Inter-organizational models, suggesting that interlocking takes place to connect firms for various reasons, but mostly for resource dependence purposes.
2- Inter-personal models, suggesting interlocking is a personal matter, with two main schools:
   2.1- Career advancement models, suggesting that interlocks afford individuals a means for career development
   2.2- Social ties models, pointing out that interlocking based on social ties among members of the upper class has led to the study of these directorates as a class-level phenomenon.

1- Inter-organizational Models

Inter-organizational models focus on motives at the organization level. Within this perspective, four reasons leading to the creation of an interlock or relationship between two firms have been identified. Researchers have tried to establish whether interlocking directorates are motivated by attempts to collude, to co-opt sources of environmental uncertainty, and to monitor or to gain legitimacy.

1.I. Collusion

The collusive model looks at interlocks as structural mechanisms that reinforce collusion and subsequently help the development of business cartels. After the 1914 Clayton Act, which expressly prohibits interlocks between firms deemed to be competing in the same markets, the number of interlocks among leading US firms dropped sharply (Mizruchi, 1982). However, whether interlocks between competitors are motivated by attempts to collude, they are effective in such aim or they are irrelevant is yet to be empirically demonstrated. There are no systematic data on firms' motives for interlocking, and this may be a reason why research on interlocking anti-competitive effects has virtually disappeared (Mizruchi, 1996:274).

1.II. Co-optation

Selznick (1949) defines cooptation as the absorption of potentially disruptive elements into an organization's decision-making structure. An early example was provided by Thompson and McEwen (1959), referring to a corporation that invited onto its board of directors a representative of a bank to which the firm was heavily indebted. These occurrences have led some researchers to argue that interlocking directories allow corporations to co-opt or infiltrate one another and thereby coordinate

their behaviors (Kono, et al, 1988). Additionally, drawing on this example, authors like Dooley (1969), Pfeffer (1972), Allen (1974), Pfeffer and Salancik (1978), Burt (1983), Mizruchi and Stearns (1988), amongst others, examined the extent to which inter-firm dependence contributes to the existence of interlocks. Although their findings are mixed, on balance they support the view that interlocking directorates are associated with cross-organizational resource dependence.

Among the main representatives of the resource dependence perspective, Pfeffer and Salancik (1978) stress the functions performed by outside directors in linking the organization with its environment. They can provide access to valuable information about, for instance, how to secure needed resources from the environment (Judge & Zeithaml, 1992; Pearce & Zahra, 1991; Pfeffer & Salancik, 1978). As well, several other scholars have suggested that boards can also provide ongoing advice and counsel on strategic issues (Baysinger & Butler, 1985; Gomez-Mejia & Wiseman, 1997; Johnson, Daily, & Ellstrand, 1996; Whisler, 1984; Zahra & Pearce, 1989). According to Haunschild and Bekman (1998: 815), "existing theories support the view that interlocks provide information, which affects firms´ adoption of strategies and structures." Following these notions, these scholars suggested that, if interlocks provide information, their influence should diminish to the extent that alternate sources of information are available.

Consequently, based on the resource dependence perspective, interlocking is the main way of linking a firm to its environment in order to guarantee its access to key resources and information. Hence, interlock directorates contribute to reducing uncertainty.

1.III. Monitoring

A few academics assert that interlocks, when associated with inter-firm stockholding or lending relationships, even serve as a vehicle of cross-organization control (Kono, et al.: 864).

According to Murray (2005: 6), the approach that focuses on emphasizing control intends to provide independent motives for the actions of interlocking directors. "The Weberian-based theorists taking this approach want us to see interlocking as an issue of managers' control and power rather than ownership or class collusion. Power is treated as multifaceted because it resides with many shareholders rather than capitalist-owners. The companies that managers control are usually characterized as relatively democratically run, in ways that are answerable to the wider community, and diversely owned by 'mum and dad' shareholders."

An alternative interpretation of the basis for interlocking to monitor is that of the agency perspective. The agency perspective suggests that personal social ties and obligations between managers and directors critically impair a board's capacity to monitor and control management decision making and performance, thus diminishing effective board involvement in the strategy-making process (Coase, 1937; Jensen & Meckling, 1976; Fama & Jensen, 1983; Shleifer & Vishny, 1997). As a solution, large stockholders, bankers, and customers frequently expect to achieve board representation trough experienced external directors, suggesting that interlocks are instruments for corporate control.

Besides, several studies have examined the influence of outside directors on board strategic decision-making practices (Johnson, Hoskisson & Hitt, 1993; Judge & Zeithaml, 1992). They suggest that the presence of more outside directors might promote involvement by raising the level of monitoring and control. Hence, it is safe to argue that, according to the agency perspective, interlocking is a way of appointing qualified directors to monitor management.

Still, it is often empirically impossible to distinguish monitoring interlocks from cooptation ones. In both cases, interlocking follows resource dependence flows (Mizruchi, 1996: 276).

1.IV. Building Legitimacy

Having reviewed collusion, co-optation and monitoring as possible causes of interlocking, we should finally look at legitimacy as another source of interlocks in inter-organizational models. There are two theoretical approaches to consider this issue namely, the institutional and the neo-institutional approaches.

Institutional scholars believe that institutions influence (but they do not determine) the range of outcomes within organizations. They shape the social and political processes by which stakeholders' interests are defined, aggregated and represented with respect to the firm (Aguilera & Jackson, 2003:450). Certo (2003), relying on institutional and signalling theories, describes how board structures influence the decision-making processes that investors use when purchasing shares of firms undertaking initial public offerings (IPOs):

Boards with high levels of social capital also may improve board prestige in the IPO context. For example, managers may increase board interlocks to strengthen the firm's connections to other prestigious organizations (e.g., Mizruchi, 1996). Board affiliations with prestigious clients or suppliers might contribute to investor perceptions of board prestige. Additionally, directors with increased levels of social capital may use their contacts to help the company recruit new top managers (Barry, Muscarella, Peavy, & Vetsuypens, 1990). Thus, IPO firms may benefit from directors with high levels

of social capital, since these connections demonstrate to investors that the focal firm is embedded within a prestigious social network (e.g., Granovetter, 1985; Mizruchi, 1996)." (Certo, 2003: 437)

Thus, institutional researchers argue that interlocking is used for co-opting sources of prestige. In this way, firms appoint qualified directors to gain legitimacy in front of shareholders, investors, managers, and other relevant stakeholders. From the neo-institutional approach, we learn that organization changes are isomorphic. These are changes "that generate uniformity within a population, forcing its members to resemble each other" (Powell & DiMaggio, 1991). According to this perspective, there are three ways to apply isomorphism: coercion -derived from formal or informal regulations-; mimesis –due to uncertainty, firms copy from corporations viewed as leaders-, and normation – derived from professionalization-.

The neo-institutional approach assumes that the main responsibility of the board is to adapt to the environment in an effort to gain legitimacy. Hence, a mix of coercion, mimesis and normation is usually applied for this purpose, regardless of firm performance (Kanter, Stein & Jick, 1992). In terms of interlocking directorates, this would mean coercion derived from Corporate Governance codes and guidelines. Furthermore, the uncertain effects of governance mechanisms force firms to mimic these from corporations they consider leaders; and, finally, there may be normation in the case of governance practices developed by educators and consultants.

The quest for legitimacy may be an alternative source of interlocking, where firms are seeking not so much an alliance with another firm as the prestige that such association may convey. Besides, legitimacy may also be a prerequisite for the securing of resources (e.g.: the probability of the bank lending money to a firm may increase if the bank believes that reputable individuals direct the firm (DiMaggio and Powell, 1983)). Although the concept of legitimacy has always played a prominent role in organizational theory (Scott, 1992), the legitimacy model has received little attention from interlock researchers. We believe that a possible reason for this is that the model is difficult to test, and its predictions are closely related to those of the resource dependence model.

All in all, considering the drawbacks in identifying the motives for interlocking and the mixed results obtained, we may conclude that most inter-organizational models for interlocking grounds are primarily based on resource dependence ideas. In most cases, traditional resource dependence theorists believe that interlocks are the results of corporate attempts to reduce uncertainty and constraints inherent to economic market structure.

2. Interpersonal Models

2.1 Career Advancement Models

Interlocking may also respond to motivational needs of the individuals involved in such practice, giving way to career advancement models. The firm whose board an outsider director joins is making an organizational-level decision to invite such person, but the outside director's decision to join the board may be motivated by either the interests of the firm he works for or the individual himself -or a combination of both.

From the perspective of the host organization, we have already discussed the various motives that lead to the appointment of an outside director to a firm's board. However, in terms of the individual who is invited to join a board, interlocks may be motivated by financial remuneration, prestige, and contacts that may provide a useful network for future employment opportunities (Zajac, 1988). The existence of interlocks is viewed as a consequence of a decision made for reasons not directly related to the desire to link organizations.
In a sample of large Dutch firms, Stockman et al (1998) determined that most director appointments were drawn from a relatively small number of individuals with high levels of experience and expertise. The authors suggest that directors are chosen for their individual characteristics rather than for the organizations they represent. Useem (1984), in the development of his "inner circle" perspective, points out that being invited to join a board extends the range of network and acquaintances, as well as the experience of the appointed director.

Thus, interlocks provide benefits to both the host firm and the invited director that are independent of the specific relations between connected organizations. Instead, these benefits are a function of the individuals involved. Nevertheless, this is not incompatible with the inter-organizational models described above. First, interlocks created by individuals may be independent of the relation between the firms they represent (Mace, 1971). On the other hand, individuals draw their experience and expertise from their present and past organizational relationships. Hence, a director who is appointed for his expertise may not remain completely independent of his present and past experiences.

A few still maintain that interlocks are largely unintended consequences of managerial attempts to acquire the advice of experienced business friends or to advance their own careers. Also, traditional methods applied to the interlocking field make it difficult to observe personal motives. Finally, career advancement models are complements as well as alternatives to inter-organizational models of interlocking directorates.

2.2. Social Ties

Throughout the literature review, another level of analysis was revealed. A third group of interlock theories, explaining interlocking in terms of social structure conditions, leads to the study of this practice as a class-level phenomenon. Indeed, interlocking may indicate social ties among members of the upper class -what Mills (1956:123) has called the "sociological anchor of the community of interest, the unification of outlooks and policy."

Drawing from Mills (1956), several authors like Domhoff (1967), Zeitlin (1976) and Useem (1984), have considered interlocks to be a class integration practice. Zeitlin (1976: 900) even presents this perspective as an alternative to the inter-organizational model when he considers directors not as individuals acting on their own interest but rather as capitalists appropriating the profits of their integrated activities. This process is driven by the identification and appointment of director candidates with similar backgrounds, characteristics, and political beliefs from within the personal networks of incumbent board members.

During the 20th century in Britain, it is believed that a club made up of men educated at public schools (British code for smart private secondary schools) and Oxford or Cambridge ran government and business ("How Britain's Elite Has Changed," The Economist, December 5, 2002). From this perspective, interlocking directorates protect directors' welfare and, by extension, the welfare of the individuals who belong to that class.

The overall issue of whether interlocks are primarily organizational or class phenomena is described in early studies on "broken ties". Koenig (1979), Ornstein (1980) and Palmer (1983) study the frequency with which accidentally broken interlocks between firms are rebuilt as an indicator of whether such interlocks represent significant links between organizations. Their findings suggest that most broken ties are not reconstructed with the same firm, inferring that most interlocks reflect interclass social ties rather than inter-organizational ties. However, this conclusion is not easy to sustain because it fails to conceptually link the reconstitution of a broken tie to the origin of an interlock. Mizruchi and Stearns (1988) argue that even a resource dependence–based interlock will not necessarily be replaced with another tie to the same firm; it may be replaced with an equally useful tie to another firm, for example another firm in the same industry. Subsequent studies on broken ties have tried to predict the conditions under which reconstitutions occur (Ornstein, 1984, Palmer et al, 1986).

Thus, whether for intraclass unification or for other social conditions –a business transaction between firms, a social tie between firm leaders and a limited availability of suitable candidates to be appointed directors-

interlocking cannot be considered a governance practice, isolated from the business and social context in which it occurs.

Hence, the study of interlocking directorates presents two complementary and coexistent perspectives described in the main types of interlocking models: inter-organizational, career advancement and social cohesion models. Also, this literature review has led us to conclude that most of the research on interlocking has been carried out in developed countries such us the United States, Australia and others.

From the two perspectives discussed, we have chosen the inter-organizational one, since it accounts for most existing studies, though we do share some of the criticism it has received.

Consequently, we believe that there is an opportunity to test interlocking at firms typically controlled by families or the state, to check if the designers of the board's composition use this tool as stated in literature.

THE USE OF INTERLOCKING

In this section we present our hypotheses on what type of firms is expected to use interlocking more intensively.

Traded corporations

Analysts are relevant market players who report on firms' financial situation, indirectly exerting pressure for performance. Efficient markets price firms' shares to reflect expected corporate performance accurately, providing a metric for managerial quality and a basis for compensation (Jensen & Mecklin, 1976). Therefore, we believe that listed corporations, compared to those that do not trade their shares, need interlocking directorates to gain legitimacy, to improve their strategy and to have access to market information and resources.

Moreover, for directors, sitting public corporations' boards may mean stronger career development. These firms tend to be widely known in the business environment; the press keeps track of their actions, and its results are usually published and analyzed in the market. Such pressure for performance may become more intense in certain moments of a firm's life –for example, at Initial public offerings (IPOs), when signals to the market may be essential to the success of the firm. Certo (2003) describes how board structures influence investors' decision-making processes when purchasing shares of firms. Such firms are relatively unknown to investors and suffer from a liability of market newness. On the basis of

the signalling theory, institutional theory and sociological research on prestige, Certo (2003) suggests that investors' perception of board prestige indicates organizational legitimacy, thereby reducing the liability of market newness and improving IPO performance.

Finally, board members of firms that trade shares are more exposed and, therefore, more legally liable than those who sit on the boards of private companies. Shareholder-elected directors monitor top management in the interests of shareholders, and threats of shareholder suits and tarnished reputations prevent them from falling down on the job (Fama & Jensen, 1983).

H1: Traded corporations will display significantly more interlocking activity than those that do not.

Professional Investors

According to Tricker, in recent years, the appearance of professional or institutional investors has become one of the drivers of corporate governance development.

Consequently, the presence of institutional or professional investors would be expected to lead to a higher sophistication of corporate governance practices, like interlocking directorates. As shareholders, institutional investors may press to improve governance practices of firms they invest in, thus increasing their centrality. The premise by which these investor groups operate is that board composition has a direct and significant impact on firm value (Fromson, 1990; Schellhardt, 1991).

By considering the governance reforms sought by shareholder activists, we can gain insight into governance practices that are perceived as both legitimate and effective in protecting shareholders' interests. Shareholder activism is designed to encourage executives and directors to adopt practices that insulate shareholders from managerial self-interest by providing incentives for executives to manage firms in shareholders' long-term interests.

H2: Firms with large Institutional shareholders will engage in significant interlocking activity.

Multinational Firms

In most of the latest literature, the big multi-national companies are seen as benchmarks in management and governance practices, and almost all of the governance research has been developed on samples of the Fortune 1000 companies.

H3: Firms under foreign control will show higher interlocking activity than domestic firms.

Financial Institutions

Since the beginning of interlocking research (Davis & Mizruchi 1999), financial institutions have been regarded as central players in business networks for various reasons. Banks may encourage interlocking to protect their investments in firm equity, or client firms may turn to interlocking as a strategy to appoint bankers to their boards in order to gain access to financial information or resources.

Several authors have suggested -and interviews with bankers have confirmed (Richardson, 1987)- that bankers often join a board when a firm is in financial distress. This finding points to an interpretation of interlocking as an attempt to monitor company performance. Researchers have identified links between stock ownership and board representation (Mizruchi, 1982; Burt, 1983), and the fact that the appointment of bankers to a firm's board tends to follow periods of declining performance (Richardson, 1987; Mizruchi & Stearns, 1988) is consistent with a monitoring perspective.

Virtually all research has found banks to be the most central firms in networks, arguably reflecting the importance of their influence in directing capital flows (Mintz & Schwartz, 1985; Mizruchi, 1996). However, Davis and Mizruchi (1999) show that changes in American commercial banking represent one aspect of the so-called new economy. As capital flows become more global and information technology becomes widespread, old social structures are transformed. Banks traditionally traded on an information asymmetry that gave them superior intelligence about potential borrowers, and they helped maintain that asymmetry by staffing their boards with directors of highly central corporations who could give them the most expansive access to economic data. As deregulation in the US opened the way for banks to participate in a broader range of industries across a larger geographical scope, banks would become even more central actors (Friedland & Palmer, 1994). Yet, Davis and Mizruchi (1999) prove that quite the opposite has occurred.

H4: Financial businesses should show a significantly higher interlocking activity as compared to non-financial ones.

Regulated markets

Some authors view organizations as being embedded in networks of interdependencies and social relationships (Granovetter 1985). The need for resources -financial or physical- and information make these organizations potentially dependent on their environment. In the case of firms operating in highly regulated markets, such as utilities, this dependence can become essential for their survival. Selznick (1949) has shown that these firms tend to apply cooptation strategies. They try to influence their

environment, including the suppliers of strategic resources for decision making. Since interlocking is an easy-to-adopt practice that can be very useful for including stakeholders in the firm's strategic decision-making, we posit that firms operating in regulated markets will tend to show a highly-connected board of directors.

H5: Firms that operate in regulated markets may display a significantly higher interlocking activity than those in non-regulated markets.

Having presented our hypotheses, in the next section we shall explain the methodology and models used.

DATA

We believe that Chile is an appropriate country to study the development of Corporate Governance because of several reasons. Chile has registered consistent GNP and export growth over recent years; it has joined world trade through several treaties; its leading business companies have successfully expanded internationally, and its institutions have shown sustained stability.

Chilean corporate governance features the following characteristics. First, shareholders appoint board members on OECD's one-share-one-vote principle. Second, most companies are still controlled by a single majority shareholder, who has the power to decide on board composition. While the average controlling shareholder holds over 2/3 of the property in traded and non-traded companies, the fact is that, over the past twenty years, 80% of the largest 250 Chilean companies have changed their majority shareholder. In Chile, controlling shareholders have the power to appoint directors, so they can shape the board according to the attributes they consider most suitable. Interlocking has turned into a board design variable, thus controlling shareholders can determine network centrality.

Thirdly, Chile has become a fashionable emerging market, with strong competitive and institutional pressures. There is a very tough presence of institutional investors (pension funds called AFPs), which have played a fundamental role in the nation's massive process of deregulation and privatization and are currently considered as the most professional investors in the market. Based on analysts' conclusions, Chilean governance practices as well as its regulations seem to be better than those present at other emerging markets (OECD & McKinsey). Hence, the study of Chile affords an opportunity to analyze findings that share the realities of both emerging and developed markets.

To determine the use of interlocking by Chilean companies, we will analyze the local interlocking network, measuring interlocking intensity through network centrality.

Dependent Variables

Several centrality measurements will be used -namely Degree, Betweenness and Closeness (through the Reachness concept) Centrality- to deepen our analysis. Some authors (Wasserman and Faust 1994) have clarified the individual meaning of different centrality measures of degree, betweenness and closeness as:

- Total effect centrality –the total relative effect of an actor on the other actors in the network.
- Immediate effect centrality –the speed with which an actor's total effects are realized.
- Mediative effect centrality –the extent to which specific actors have a role in transmitting the total effects of other actors.

Degree Centrality

Degree measures the number of contacts that each actor has. An actor with a high centrality level, as measured by its degree, is located "where the action is" in the network. This actor is in direct contact or is adjacent to many other actors. Freeman (1979) defines an actor-level degree centrality index CD(ni), where d(ni) is the degree of node i, calculated as follows:

$$CD(ni) = d(ni) = xi+ = \Sigma j \; xij = \Sigma j \; xji$$

Where xij represents the link between actor i and actor j, xji represents the same link in the opposite direction and g is the total number of actors in the network.

The standardized measure of degree centrality is: $C'D(ni) = d(ni) /(g-1)$.

Closeness Centrality

Actor centrality is also measured in terms of distance between actors. Proposed by Bavelas (1950) and Leavitt (1951), this measure focuses on how close an actor is to all other actors in the network. The idea is to measure how quickly this actor can interact with all others.

Sabisussi (1966) defines actor closeness as: $CC(ni) = (\Sigma j \; d(ni, nj)) \; -1$

Where d(ni, nj) is the distance from node i to node j. The standardized measure of closeness is $C'C(ni) = CC(ni) \; (g-1)$.

Betweenness

The third centrality index is betweeness; it assess whether an actor is a bridge between two others or not. An actor is central, as measured in terms of betweenness, if he/she lies between other actors on their geodesics.

Anthonisse (1971), and then Freeman (1977) were the first to quantify this measure, considering the probability that a path from actor j to actor k takes a particular route. Assumptions are that all lines have equal weight, and that communications will travel along the shortest route.

Let gjk be the number of geodesics linking two actors, the probability of using each is 1/gjk and the probability that a distinct actor, i, is "involved" in the communication between two actors. The actor betweeness index for ni is: $CB(ni) = \Sigma j< k\ gjk(ni)/\ gjk$.

Moreover, the standardized measure of betweeness centrality is:

$C'B(ni) = CB(ni) / [(g-1)(g-2)/2\ ]$.

Independent Variables

In order to assess previously stated hypotheses, we shall describe how independent variables will be considered. All independent variables are category dummy variables, and these are the following:

In the Traded corporations' category, we shall only include firms trading at the Santiago Stock Exchange.

Institutional shareholding: we will consider only Chilean Pension Funds (AFP: Administradoras de Fondos de Pensión). As mentioned above, we intend to measure long-term investors' involvement, and AFPs are forced by law to invest in this way. Firms with institutional shareholding are those in which AFPs are one of the twelve leading shareholders.

The Foreign Control category will include firms in which foreign companies or individuals own more than 50% of total stock.

Financial: to determine whether a firm is a financial business or not, we consider the code established by Chile's Financial Institutions Regulating Agency (Superintendencia de Bancos e Instituciones Financieras).

Regulated: to identify firms operating in regulated markets, we have grouped them by sector, considering a regulated sector as one where the Chilean government intervenes most -examples include utilities, public services and energy.

Control variables

In the interlocking literature reviewed above, we find that variables such as firm size, debt-equity ratio, board size and financial results have been used linked to interlocking.

Firm size: Mintz and Schwartz (1981) have found a positive correlation between company size and number of interlocks. Moreover, the five largest firms in each of these categories appear to be far more interlocked than the industry average. Furthermore, this is not a case of a few major corporations repeatedly linked to smaller firms. The authors document that larger firms are linked to each other in a tight, well-integrated network (Mintz & Schwartz, 1981: 854). In the present study, we measure firm size using Assets Logarithm.

Financial Leverage: several authors (Davis & Mizruchi 1999) state that financial institutions try to limit their credit risk by sitting their executives or directors at the boards of their largest debtors. This control variable is defined by a firm's debt/equity ratio.

Board size: The larger the number of directors, the more likely board interlocks will be. Moreover, there is a quality ingredient, since companies are also more likely to appoint qualified directors -what Davis and Mizruchi (1999) have called "diplomats". This variable simply considers the number of directors sitting on each board.

Financial Results: A great deal of corporate governance literature explores the link between governance practices and company results (Daily, Dalton & Canella 2003). Although this is not the intention of the present study, we include this control variable, adopting Return on Equity (ROE) to measure firms' financial results.

Sample: description and analysis

The data used comes from the Superintendencia de Valores y Seguros de Chile (SVS), the Chilean Securities and Exchange Commission. Their figures on debt and equity are drawn from the financial statements that firms report to the SVS.

The initial database included 2004 data on 556 firms and their corresponding 2,033 directors. The total number of valid cases was 3,347, which means that – in average– directors in Chile sit simultaneously on the board of 1.64 corporations. The companies in the sample accounted for a significant share of the country's corporations. In addition, the sample included the most important companies in it.

On the whole, firms' sales turnover reached $49,600 million Chilean pesos in 2004, and their assets were valued in $171,000 million Chilean pesos (0.13 % of GDP)[1].

The number of companies in each category in the sample is:

Table 1

Category	#
Traded	190
Financial	15
Regulated	119
Foreign control	99
Institutional investors	56

Board Size

In reference to the size of Chilean Boards, we have found that they usually range from 2 to 11 members - 5 members being the mode and 6 the average number of directors per Board. Also, only a 10 % of the companies presented large boards (with 9 or more associates).

[1] 49,600/ (39,127,799) in millions of pesos 1996 base.

Table 2 - Board Size in Chilean Companies

# Members	# Companies	%
3	24	4%
4	32	6%
5	219	39%
6	52	9%
7	164	29%
8	10	2%
9	43	8%
10	5	1%
11	7	1%
Total	**556**	**100%**

Company Interlocking

First, we calculated the number of ties each company had to others in the network with Freeman's degree. We found that 459 out of the 556 companies were connected to another firm. However, 17% were untied and did not share any director with other companies. A typical company shared an average of 10.4 directors with others - 55 being the highest number of connections between companies identified. On the other hand, 7% of the companies showed more than 40 links.

Table 3 - Companies Degree Frequency

Degree	# Companies	%
0	97	17%
Less than 5	138	25%
Less than 10	105	19%
Less than 20	130	23%
Less than 30	51	9%
Less than 40	21	4%
Less than 50	11	2%
Less than 60	3	1%
Total	**556**	**100%**

The most connected companies under this measure are:

Table 4 - Companies with high degree centrality

	Degree
Cristalerias De Chile S.A.	55
Empresas Copec S.A.	54
Navarino S.A.	54
Banco De Chile	50
Banmedica S.A.	49
Cn Life, Compañía De Seguros De Vida S.A.	47
Compañia De Seguros De Vida Consorcio Nacional De Seguros S.A.	47
Compañia De Seguros Generales Consorcio Nacional De Seguros S.A.	47
Cia. Electro Metalurgica S.A.	46
Cia. Sud Americana De Vapores S.A.	46
Sm Chile	45
Quemchi S.A.	43
Sociedad Punta Del Cobre S.A.	42
Industria Nacional De Alimentos S.A.	41
Quiñenco S.A.	40

Then we measured 1st-degree centrality reach in order to determine the number of different companies that could be reached in one movement, avoiding redundancies (same directors in two companies).

Table 5 - Companies Closeness

	Degree	**Reach n=1**
Empresas Copec S.A.	54	33
Sociedad Punta Del Cobre S.A.	42	32
Entel-Chile S.A.	31	31
Cia. Sud Americana De Vapores S.A.	46	30
Cristalerias De Chile S.A.	55	30
Banmedica S.A.	49	29
Industria Nacional De Alimentos S.A.	41	27
Banco De Chile	50	26
Sm Chile	45	26
Navarino S.A.	54	26
P&S S.A.	35	25
Cn Life, Compañia De Seguros De Vida S.A.	47	25
Compañia De Seguros De Vida Consorcio Nacional De Seguros S.A.	47	25
Compañia De Seguros Generales Consorcio Nacional De Seguros S.A.	47	25
Quiñenco S.A.	40	24

We turned to Betweenness to add a different view. The data showed that fewer companies were in a bridge position as compared to the number of companies connected, since 244 companies were at the “end” of the network.

Table 6 - Companies Betweenness

Betweeness	# Companies	%
0	244	44%
1000	229	41%
2000	49	9%
3000	22	4%
4000	7	1%
5000	3	1%
6000	2	0%
Total	**556**	**100%**

The table below includes companies with a higher betweenness index.

Table 7 - Companies with high betweenness centrality

	Betweenness
Entel-Chile S.A.	5918
Empresas Almacenes Paris	5190
Ing Seguros De Vida S.A.	4274
Empresas COPEC S.A.	4037
Ferrocarril Del Pacifico	4036
Enaex S.A.	3996
BCI	3815
Industria Nacional De Alimentos S.A.	3752
Soc. Quimica Y Minera De Chile S.A.	3645
Colbun S.A.	3563
Sociedad Punta Del Cobre S.A.	3363
Sociedad Anonima Viña Santa Rita	3150
Aguas Decima S.A.	2978
Soc. Pesquera Coloso S.A.	2891
Bicecorp S.A.	2758

Directors Data

Links between companies occur through its directors. Hence, we applied all three centrality measures to directors´ interlock analysis. In reference to the number of boards per director, we found that 69,3% of the directors belong to just one board. Consequently, just 624 directors build all the links among companies (to 556 companies). In addition, few directors participate in more than five boards (only 52).

Table 8 - Number of Boards per Director

	# Boards
Garcia Dominguez Patricio	13
Büchi Buc Hernan	11
Matte Larrain Bernardo	11
Perez Mackenna Francisco	11
Bezanilla Saavedra Victor	10
Hurtado Vicuña Juan	10
Ibañez Langlois Gonzalo	10
Mac-Auliffe Granello Juan Jose	10
Angelini Rossi Roberto	9
Caceres Contreras Carlos	9
Claro Valdes Jaime	9
Menendez Duque Gonzalo	9

According to our study, the most linked director has 79 ties, sitting in boards totaling 79 directors, while the average number of ties is 9. The frequency of directors' centrality degree looks as follows:

Table 9 - Director´s degree

Degree	# Directors	%
10	1570	77%
20	306	15%
30	93	5%
40	33	2%
50	15	1%
60	10	0%
70	3	0%
80	3	0%
Total	**2033**	**100%**

To sum up, only 64 directors work jointly with more than 30 other directors within studied boards. Therefore, information transfers along the network is concentrated in few directors.

Table 10 - Most Linked Directors / Degree

Director	# Boards	Degree
Garcia Dominguez Patricio	13	79
Perez Mackenna Francisco	11	73
Büchi Buc Hernan	11	72
Matte Larrain Bernardo	11	67
Hurtado Vicuña Juan	10	63
Mac-Auliffe Granello Juan Jose	10	63
Ibañez Langlois Gonzalo	10	60
Luksic Craig Guillermo	8	60
Menendez Duque Gonzalo	9	59
Sanchez Guzman Baltazar	8	58
Tuset Jorratt Antonio	9	57
Claro Valdes Jaime	9	56
Angelini Rossi Roberto	9	54
Caceres Contreras Carlos	9	53
Bauza Bauza Jaime	8	52

As in company interlocks, whether directors are in contact with peripheral counterparts' or whether they have repeated contacts, betweenness centrality measurements allow for a better appreciation of their impact within the network. Thus, betweenness measurements reveal how much information is handled by each director.

Table 11 - Most Mediator Directors / Betweenness Centrality

	# Boards	**Betweenness**
Büchi Buc Hernan	11	107704
Carey Tagle Jorge	8	79515
Cortazar Sanz Rene	5	77585
Hurtado Vicuña Juan	10	63431
Caceres Contreras Carlos	9	60025
Mac-Auliffe Granello Juan Jose	10	55860
Perez Mackenna Francisco	11	54300
Yarur Elsaca Daniel	3	53954
Tuset Jorratt Antonio	9	50472
Marin Correa Jorge Eduardo	7	49584
Etchegaray Aubry Alberto	4	42918
Agüero Garces Fernando	5	41181
Gardeweg Ossa Francisco	7	41154
Guerrero Gutierrez Ignacio	5	35711
Cox Donoso Jose	6	35183

Looking at Rene Cortazar Sanz's position, we see that high betweenness may also be achieved by directors sitting in a small number of boards. Despite his involvement in only five boards, this director displays one of the highest betweenness scores. Also, the data shows that most directors do not serve on several boards, while many belong to companies with just a few links. Therefore, the number of directors with low betweenness scores is high.

Like in companies, many of these contacts are repeated. Calculating top-level reach centrality, we find that the director with the fewest repeated contacts is Antonio Tuset Jorrant, who sits at boards with 48 other individuals. The director registering the greatest closeness centrality is Juan José Mac Auliffe Granello, who reaches all other 1406 directors in the lowest number of steps.

Table 12 - Most Mediator Directors / Reach n=1

	# Boards	Degree	Reach n=1
Tuset Jorratt Antonio	9	57	48
Büchi Buc Hernan	11	72	47
Perez Mackenna Francisco	11	73	47
Carey Tagle Jorge	8	50	45
Mac-Auliffe Granello Juan Jose	10	63	45
Caceres Contreras Carlos	9	53	44
Matte Larrain Bernardo	11	67	43
Marin Correa Jorge Eduardo	7	44	39
Cortazar Sanz Rene	5	37	37
Vial Echeverria Leonidas	7	42	37
Gardeweg Ossa Francisco	7	38	36
Ibañez Langlois Gonzalo	10	60	36
Hurtado Vicuña Juan	10	63	35
Gazitua Achondo Luis Felipe	6	37	35
Bezanilla Saavedra Victor	10	47	34

Method

Once our sample and variables have been defined, we may proceed to outline our analysis method. To confirm our hypotheses, we shall first carry out an Analysis of Variance (Anova) to determine whether there are significant differences in centrality measurements across company types. Then, we shall deepen our study by including control variables through a regression analysis.

Table 13 - Anova for Degree

Anova degre traded finance regulated instinv econtrol, partial

	Number of obs = 556			R-squared = 0.0996	
	Root MSE = 10.2715			Adj R-squared = 0.0915	
Source	**Partial SS**	**df**	**MS**	**F**	**Prob > F**
Model	6421.50254	5	1284.30051	12.17	0.0000
traded	504.766657	1	504.766657	4.78	0.0291
finance	8.48913825	1	8.48919825	0.08	0.7768
regulated	1046.75545	1	1046.75545	9.92	0.0017
instinv	2714.87886	1	2714.87886	25.73	0.0000
econtrol	649.39189	1	649.39189	6.16	0.0134
Residual	58027.1665	550	105.503939		
Total	64448.6691	555	116.123728		

Four hypotheses can be confirmed at a level of 5% of significance. Traded companies, companies in regulated markets, multinational companies and companies in which institutional investors have invested have a centrality that differs from that of the others. No conclusions may be drawn for financial firms.

Reach

Table 14 - Anova for Reach

Anova dwreach traded finance regulated instinv econtrol, partial

	Number of obs = 556			R-squared = 0.0958	
	Root MSE = 52.8319			Adj R-squared = 0.0876	
Source	**Partial SS**	**df**	**MS**	**F**	**Prob > F**
Model	162672.783	5	32534.5567	11.66	0.0000
traded	27496.7588	1	27496.7588	9.85	0.0018
finance	3087.40237	1	3087.40237	1.11	0.2934
regulated	32218.8598	1	32218.8598	11.54	0.0007
instinv	45345.9517	1	45345.9517	16.25	0.0001
econtrol	1611.54162	1	1611.54162	0.58	0.4477
Residual	1535162.53	550	2791.2046		
Total	1697835.32	555	3059.16273		

Three hypotheses may be confirmed at a level of 5% of significance. Companies in regulated markets and in which large institutional investors have invested, as well as listed companies, have a centrality hat differs from the rest. No conclusions may be drawn for financial and foreign-control firms.

Betweenness

Table 15 - Anova for Betweenness

anova betweenness traded finance regulated instinv econtrol, partial

Number of obs = 556 R-squared = 0.1300

Root MSE = 778.251 Adj R-squared = 0.1221

Source	Partial SS	df	MS	F	Prob > F
Model	49799609.8	5	9958721.96	16.44	0.0000
traded	2298467.52	1	2298467.52	3.79	0.0519
finance	2272896.66	1	2272896.66	3.75	0.0532
regulated	3057046.35	1	3057046.35	5.05	0.0251
instinv	27094189.7	1	27094189.7	44.73	0.0000
econtrol	10160.9011	1	10160.9011	0.02	0.8970
Residual	333121467	550	605675.395		
Total	382915077	555	689937.076		

Again, two hypotheses may be confirmed at a level of 5% of significance. Companies in regulated markets and in which institutional investors have invested have a centrality that differs from that of the others, although companies featuring institutional investors are highly significant. No conclusions may be drawn for public, financial and foreign-control firms.

Regression Analysis

Since these data may be influenced by other variables, we will work with control variables. We managed to get asset, liability and income data for 377 companies of the total 556.

A correlation analysis (Table 16) shows that, among independent and control variables used, several register high correlation –e.g., public companies are highly correlated to firms with foreign control and institutional investors, while financial institutions are highly correlated to companies in regulated markets. The same applies to control variables: companies belonging to economic groups are large.

We may also analyze the nature of dependent variables. All of the centrality measures are restricted range variables, since they cannot be lower than 0. Thus, this is a case of Corner Solution Response, as a significant share of our sample population is null, and the rest follows a random distribution. Such is the case of many economic variables, and there are models especially adjusted for these cases, recommending the use of the Tobit model to partially correct these errors (Wooldridge2003).

Table 16

Correlations

		Numdir	Pubtraded	Financ	Regulated
Numdir	Pearson Correlation	1	.258**	.249**	.128*
	Sig. (2-tailed)		.000	.000	.013
	N	377	377	377	377
Pubtraded	Pearson Correlation	.258**	1	-.004	-.060
	Sig. (2-tailed)	.000		.946	.243
	N	377	377	377	377
Financ	Pearson Correlation	.249**	-.004	1	.364**
	Sig. (2-tailed)	.000	.946		.000
	N	377	377	377	377
Regulated	Pearson Correlation	.128*	-.060	.364**	1
	Sig. (2-tailed)	.013	.243	.000	
	N	377	377	377	377
Econtrol	Pearson Correlation	-.057	-.138**	.020	.204**
	Sig. (2-tailed)	.266	.007	.698	.000
	N	377	377	377	377
Instinv	Pearson Correlation	.231**	.372**	.005	-.061
	Sig. (2-tailed)	.000	.000	.918	.240
	N	377	377	377	377
Logas	Pearson Correlation	.249**	.280**	.302**	.284**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	377	377	377	377
Leverage	Pearson Correlation	-.031	-.246**	.193**	.207**
	Sig. (2-tailed)	.547	.000	.000	.000
	N	377	377	377	377
ROE	Pearson Correlation	.024	.023	.005	.009
	Sig. (2-tailed)	.644	.660	.926	.856
	N	377	377	377	377

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

Econtrol	Instinv	Logas	Leverage	ROE
-.057	.231**	.249**	-.031	.024
.266	.000	.000	.547	.644
377	377	377	377	377
-.138**	.372**	.280**	-.246**	.023
.007	.000	.000	.000	.660
377	377	377	377	377
.020	.005	.302**	.193**	.005
.698	.918	.000	.000	.926
377	377	377	377	377
.204**	-.061	.284**	.207**	.009
.000	.240	.000	.000	.856
377	377	377	377	377
1	-.069	.014	.163**	.062
	.181	.788	.002	.228
377	377	377	377	377
-.069	1	.343**	-.087	-.011
.181		.000	.093	.829
377	377	377	377	377
.014	.343**	1	.171**	.004
.788	.000		.001	.938
377	377	377	377	377
.163**	-.087	.171**	1	.046
.002	.093	.001		.370
377	377	377	377	377
.062	-.011	.004	.046	1
.228	.829	.938	.370	
377	377	377	377	377

First, we apply the tobit model to degree.

Table 17 - Tobit for Degree

Tobit degree traded finance regulated econtrol instinv numdir logas leverage roe, 11 ul

Tobit estimates — Number of obs = 377

LR chi2 (9) = 164.77

Prob > chi2 = 0.0000

Log likelihood = -1234.3005 — Pseudo R2 = 0.0626

degree	**Coef.**	**Std. Err.**	**t**	**P>|t|**	**[95% Conf.**	**Interval]**
traded	-2.848702	1.255241	-2.27	0.024	-5.317048	-.3803564
finance	-10.4054	2.994642	-3.47	0.001	-16.29416	-4.516643
regulated	4.444657	1.386186	3.20	0.001	1.712919	7.176396
econtrol	3.135595	1.312215	2.39	0.017	-5.715976	.5552147
instinv	3.938545	1.791485	2.20	0.029	.4157132	7.461378
numdir	3.970445	.3575623	11.10	0.000	3.267323	4.673567
logas	1.768502	.6471121	2.73	0.007	.4960001	3.041003
leverage	-3.759146	1.77177	-2.12	0.035	-7.243209	-.2750821
roe	-.2204265	.5666755	-0.39	0.698	-1.334755	.8939019
_cons	-25.05062	4.919022	-5.09	0.000	-34.72354	-15.3777
_se	9.96091	.4026845		(Ancillary parameter)		

Obs. Summary: 57 left-censored observations at degree <= 0

319 uncensored observations

1 right-censored observation at degree>= 54

All of our hypotheses are validated at a 5% of significance but three have change signs, – Traded, foreign control, and financial companies. Among control variables, only ROE is not significant and leverage changed the sign.

We now apply the tobit regression to the betweenness data,

Table 18 - Tobit for Betweenness

tobit betweenness traded finance regulated econtrol instinv numdir logas leverage roe, 11ul

Tobit estimates — Number of obs = 377

LR chi2 (9) = 179.08

Prob > chi2 = 0.0000

Log likelihood = -1966.314 — Pseudo R2 = 0.0436

betweenness	**Coef.**	**Std. Err.**	**t**	**P>|t|**	**[95% Conf.**	**Interval]**
traded	-159.945	127.2265	-1.26	0.209	-410.1272	90.23718
finance	-368.1591	290.6212	-1.27	0.206	-939.6458	203.3275
regulated	227.4209	137.936	1.65	0.100	-43.82072	498.6626
econtrol	53.67287	131.4669	0.41	0.683	-204.8477	312.1934
instinv	646.0351	170.4711	3.79	0.000	310.8153	981.2549
numdir	374.6286	36.45569	10.28	0.000	302.941	446.3162
logas	218.9124	65.69196	3.33	0.001	89.73363	348.0911
leverage	-335.3626	195.9368	-1.71	0.088	-720.6587	49.39957
roe	-68.20029	54.28624	-1.26	0.210	-174.9504	38.54987
_cons	-3683.031	509.543	-7.23	0.000	-4685.012	-2681.05
_se	927.1529	45.04098		(Ancillary parameter)		

Obs. Summary: 148 left-censored observations at bewee~s<= 0

228 uncensored observations

1 right-censored observation at betwee~s>= 5189.689

Only the institutional investors feature turns out to be significant at the 5% . In terms of control variables, we find that only company size and number of board members are significant.

Finally, we analyze Reach centrality. This measurement is only valid for connected companies, since, otherwise, we would be working with infinites. In this case, our sample includes only 320 companies.

Table 19 - Tobit for Reach

Tobit dwreach traded finance regulated econtrol instinv numdir logas leverage roe, 11 ul

Tobit estimates — Number of obs = 320

LR chi2 (9) = 65.13

Prob > chi2 = 0.0000

Log likelihood = -1541.1916 — Pseudo R2 = 0.0207

dwreach	**Coef.**	**Std. Err.**	**t**	**P>|t|**	**[95% Conf.**	**Interval]**
traded	-2.939943	5.129818	-0.57	0.567	-13.03348	7.153595
finance	-13.62049	11.52872	-1.18	0.238	-36.30463	9.063661
regulated	9.895307	5.471426	1.81	0.071	-.8703864	20.661
econtrol	-3.122898	5.149619	-0.59	0.552	-13.45216	7.206362
instinv	13.20609	7.014202	1.88	0.061	-.5951997	27.00738
numdir	7.537617	1.471852	5.12	0.000	4.641571	10.43366
logas	7.612918	2.651544	2.87	0.004	2.395684	12.93015
leverage	-20.84329	8.15509	-2.56	0.011	-36.88942	-4.797167
roe	-1.845158	2.164328	-0.85	0.395	-6.103737	2.41342
_cons	15.34768	20.12512	0.76	0.446	-24.25094	54.94629
_se	37.73855	1.580152		(Ancillary parameter)		

Obs. Summary: 18 left-censored observations at dwreach <= 2

299 uncesored oservations

3 right-censored observations at dwreach>= 171.2499

We find that none of the hypothesis are validated, only size of companies and of the board are significant at 5%.

DISCUSSION

Our results reveal that companies featuring institutional investors and operating in regulated markets make a more active use of interlocking. Similarly, larger companies and companies with more board members also tend to be more central. Our findings, along with many other studies, also confirm that board centrality does not bear an influence on results.

Due to Chilean market specific characteristics, financial companies, traded companies and large multinationals register significant low interlocking activity and, thus, not hold a central position in Chilean companies' governance networks.

Traded

Our findings indicate that traded companies do not use interlocking in a different manner than private companies. This may mean that, in emerging markets, corporate governance still does not constitute a strong signal for common Stock Exchange investors, although it is viewed as significant by institutional investors, as we shall see later.

For many years, capital markets have evolved in developing countries; however, they have some particular characteristics. First, their use has been limited to the strongest firms or to capital-intensive industries. Second, the percentage of shares traded is small relative to total ownership. Yet, the impact of this small number of traded shares on the firm may be enormous since market regulating entities make public corporations submit relevant information, abide by stock exchange regulations and signal the market on the high level of board independence and effectiveness. We may then expect firms that are traded in local stock exchanges to possess more sophisticated governance systems, but this is not true yet.

Institutional Investors

The centrality of companies where large institutional investors participate actively is not surprising. Pension funds are the most significant investors in Chile. These data may indicate that investors seek companies with professional boards in an attempt to protect their customers' savings. Boards featuring more professional and knowledgeable members may inspire greater confidence from executives at institutional investment companies.

Multinationals

Multinationals' low interlocking interest may be attributed to Chile's relatively small market size according to global standards. In small markets, multinational companies' subsidiaries are not viewed as strategic. Strategic guidelines are set by headquarters or other, larger affiliates. As a result, Chilean subsidiaries' governance bodies tend to be rather closed. In addition, these companies are not likely to value the fact that their local board members –usually their top executives- serve at other boards.

Large multinationals have been normally studied as based in the countries hosting their headquarters or highly significant subsidiaries. Indeed, they may be viewed differently in emerging markets, and their corporate governance institutions may adopt a different meaning there. We argue that, if the market is not strategic to multinational firms, their local boards may have a passive attitude. Decision-making may be centralized in headquarters, allowing local firms enough latitude to execute headquarters' decisions. Thus, local boards may be considered as a rubber stamp, and they may be made up by executives and people related to the firm, such as external service-providers –lawyers, auditors-. In short, these boards are not highly connected.

Multinationals do not find value in having their executives sit on boards of other firms. Hence, these companies do not encourage their members to have an organizational focus. However, this may change in the case of the country of origin or in strategic markets, where boards may be regarded as more active and interlocking may have a new meaning in creating a business network. Our third hypothesis hinges on the fact that Chile is not a large or strategic market for multinational companies.

Financial

Results for financial companies are surprising, but there is a strong explanation. In the case of Chile, the evolution of relationships between banks and firms has led to a series of special characteristics. During the 1980s, Chile went through a severe financial crisis, and both government and market regulators set forth a legal reform. The presence of banks in some of the largest business groups was identified as a cause of such crisis. Apparently, business groups could use their own banks to finance projects of doubtful profitability in their firms. In case of recession or macroeconomic turmoil, these firms could not pay back their debts and went bankrupt or spread the problem throughout the entire domestic financial system.

From them on, regulations were set to guarantee the independence of banks and their client firms, specifying that interlocking was viewed as a sign of a close relationship between a firm and a bank. We believe this may have discouraged interlocking with financial institutions in Chile. In fact, bank directors are expected to be isolated from firms' boards, since this would prevent the bank from investing in such business.

Regulated Markets

Companies operating in regulated markets show signs of greater interlocking activity, matching the vision stated by the Resource Dependence theory. Apparently, these companies design their boards in such a way as to exploit their members' knowledge and expertise to enhance their performance or to include sectors that interact with their governance bodies. This would provide an interesting starting point for further analysis in order to explore these companies' interactions with other parties.

CONCLUSIONS

Most interlocking research has been developed in Anglo Saxon environments, studying firms with dispersed share ownership. This is not very common in emerging markets, like Chile, where firms are closed and controlled by their owners.

We believe our findings may be relevant for the global advancement of corporate governance practices. As noted, institutional development conditions, local regulations, management practices and market size all bear an influence on corporate governance body composition. Thus, some caution should be exercised before automatically exporting governance practices to emerging countries. Practice adjustments may be required to suit companies internal and external environments.

Some key notions of Corporate Governance Contingency Theory, which we trust will help us. Over the past decade, many academics faced the challenge of delving deeper into Global Corporate Governance (Lightfoot: 1991; Kester: 1993; La Porta, Lopez-de-Silantes and Shleifer: 1999, Strebel: 2004).

Even though the field allowed for the study of different facts and approaches (with their consequences diverse results), there was a widely-accepted common denominator: certainly, corporations' external factors (sometimes referred to as environmental factors) created contingencies that shaped Corporate Board structure, systems, roles and performance.

We believe that interlocking directorates are driven by the same type of contingencies. Hence, interlocking should be studied and interpreted under the light of the external factors that create contingencies for Corporate Governance and Boards in each particular scenario (country, industry).
As Strebel (2004: 59) has pointed out, "to cure weak corporate governance, new regulations and codes of best practices might be necessary, but they won't be sufficient. What is also required is the acknowledgement that governance has to continually adapt to changing conditions because a company, its management and business environment are forever evolving." Additionally, externalities vary from country to country and from market to market.

Strebel (2004: 60) also referred to the constraint of market economy to capture and price every single corporate action through its stock value, because information can never be fully transparent in the real world. In addition to market economy, Boards are influenced by economic, socio-cultural, psychological and political forces, which each have their own separate, independent dynamics. Moreover, he pointed out that at any period in time, "Boards must emphasize a particular subset of activities in decision making and resource allocation. The dominant subset of those activities is called driving governance role (auditing, supervising, coaching and steering)." Thus, a focused view of governance restricted to the auditing role is appropriate in markets with insignificant externalities.

However, when markets are not efficient and well regulated, boards have to deal with factors that fall outside markets and regulations. If external factors are excluded and ignored, they may eventually undermine companies' long-run economic performance. Hence, the boards of companies active in emerging economies have to take an even broader view of their oversight and policy responsibility because value creation in emerging markets requires a wider range of company activities than in the developed world.

External conditions not only have been known to shape Boards' roles but also Corporate Governance systems. As Kester (1993: 1) showed by comparing the best-known systems in the United States, Japan and Germany, each of these countries has a distinctly different approach to corporate governance, based on their cultures, legal systems, and sets of incentives, safeguards and dispute resolution processes used to control and coordinate the actions of various stakeholders.

> "Briefly, the Anglo-American system of corporate governance had shown to be a comparatively legalistic system predicated on ideals of shareholders democracy and oriented towards the maximization of shareholder value. This corporate governance system was the product of constantly evolving American jurisprudence.
>
> The Japanese system, in contrast, had shown to be characterized by heavy reliance on implicit contracting among corporate stakeholders reinforced by largely non-legal incentives, safeguards, and dispute resolution process. Corporate equity ownership was heavily concentrated among major financial institutions and other corporations with an important commercial interest in the company in question. The Japanese system seeks to maximize value through the establishment of long term commercial relationships.
>
> The German system had shown to bear many similarities to the Japanese system, particularly in the maintenance of long-term commercial relationships, but to differ with respect to board composition. One of the most unique of German corporate governance was the structure of its board's directors. The supervisory board had reflected the company's financial and commercial relationships and provided other stakeholders with a voice in the company. In Germany, employees and shareholders nominally enjoy equal representation on the Board."

All three nations have developed highly effective contracting and corporate governance systems. None of them, however, are static. Accordingly, Board members should continuously monitor how they are affected by legal systems, corporate profiles, and other factors.

Based on our findings, it may be safe to say that boards in Chile are not used for control purposes, since public and financial companies do no seem to do so. Probably, during initial development stages, the intention may be to boost boards' shareholders' equity or status. Hence, the companies that rely more heavily on interlocking are those operating in regulated markets or those in need of attracting institutional investors.

Has the use of several centrality definitions been helpful? Indeed, we believe it has. In Chile, as well as in other markets featuring economic groups, a large number of boards are likely to share many of the same members. This increases the degree number without providing the benefits sought by interlocking –more or different information and enhanced control. Further analysis should be devoted to this development.

The key limitation for our study may be the use of a single inter-organizational theory to explain interlocking phenomena. We believe choice grounds in these environments definitely include career advancement and social ties as major components. Other studies may be conducted, adding other personal variables and tracking broken ties, in order to establish how boards are rebuilt after changes. Also, additional studies should be carried out in other environments with similar characteristics in order to draw possible comparisons.

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