Determinants of Intra-group Interlocking in European listed business groups

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Abstract

Purpose: The phenomenon of Interlocking Directorship within the same business group (the Intra-group Interlocks, IgI) has received little attention by scholars, especially when the interlocked affiliated-group companies are listed. Focusing on listed business groups, characterized by the presence of at least two affiliated-listed companies, and following the contingency perspective, this study aims to explore the determinants of IgI.

Design/methodology/approach: The study analyses the controlling shareholder type (family, State, coalitions), the business ties, and the separation between ownership and control, focusing on 315 business groups listed in different European countries, *i.e.*, Belgium, France, Greece, Italy, Spain, and Portugal. The social network analysis is applied to these groups, to compare the networks that originate from the corporate board of directors.

Findings: In groups controlled by the State the density of social links is lower than in those controlled by families and coalitions. The strength of IgI is also related to the degree of correlation of firms' industries, even if this correlation is influenced by the separation between ownership and control and by the country regulation that protects minority shareholders. Overall, the results show that for listed groups the agency theory better explains the determinants of the IgI phenomenon.

Originality/value: This study contributes to the understanding of why board members of listed parent companies sit (or do not sit) in the listed subsidiary boards. Relying on agency theory and resource dependence theory, it also proposes a theoretical framework.

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1. Introduction

An interlocking directorship (ID) or multiple directorships exist when 'a person affiliated with one organization sits on the board of directors of another organization' (Mizruchi, 1996, p. 271). According to Palmer (1983), 'interlocking directorates are considered relationships between corporations or enterprises, and directors are considered the agents of these relationships' (p. 40). The ID has been widely investigated in the literature on corporate governance (Koenig et al., 1979; Mace, 1971; Mizruchi, 1996), particularly regarding the concerns of the effect on firms' performance. Some prior studies document a positive association between ID and firm performance (e.g. Ong et al. 2003; Phan et al., 2003; Yeo et al., 2003), while others observe a negative effect (e.g. Fligstein and Brantley, 1992; Kaczmarek et al., 2012; Loderer and Peyer, 2002) or no relationship (e.g. Geletkanycz and Boyd, 2011; Kiel and Nicholson, 2006) among them.

The phenomenon of ID within the same business group (the Intra-group Interlocks, IgI) (i.e. the presence of the same director in two or more affiliated-group companies) has received much less attention by scholars (Rommens et al., 2007), especially when the interlocked affiliated-group companies are listed. The business group is a 'collection of formally independent firms under single common administrative and financial control' (Chang and Hong, 2002, p. 266), while the 'listed group includes all companies (listed and not listed) which are linked by a control relationship to the listed company, i.e. those that control or are controlled by the listed company itself' (Bianchi and Bianco, 2006, p. 6).

The low interest in the literature on IgI is probably due to the fact that scholars assume that listed firms are mainly independent of each other, even if they are linked through ownership ties, i.e. being under common control and management (Di Carlo, 2014). For instance, Di Pietra et al. (2008) study the phenomenon of busy directors including in their sample some Italian listed companies that belong to the same family business and/or to different ownership type (e.g. family, State, coalitions). Croci and Grassi (2013) use

a corporate board network analysis, showing that in 2008 Pirelli & Co. SpA was the most connected firm. However, in that year the company was one of the numerous listed companies controlled by the Tronchetti Provera family (i.e. Telecom Italia, Pirelli Real Estate, Camfin, TIM, see Enriques and Volpin, 2007), thus the high network degree is strongly affected by the IgI. In a recent study conducted on all Italian listed companies during a 16-year period, Fattobene et al. (2018) detect the existence of a cluster of companies whose links are very dense and persistent over time and highlight that the heart of the network is even more connected after the financial crisis of 2008.

Listed affiliated-group companies are not always independent (Bianchi and Bianco, 2006, p. 7); for Italy, Di Carlo (2014) finds that ten Italian families control 28 listed companies, which represents 11.4% of the non-financial Italian listed firms. Moreover, when analyzing the management activity of the parent company over its listed subsidiaries he finds that about 30% of the sample declares it is directed by the parent company.

The presence of minority shareholders in the affiliated-listed subsidiaries opens up an agency problem between the controlling shareholder and those minorities (La Porta et al., 2002), as well as between the parent company and affiliated-listed subsidiaries (the so-called headquarters-subsidiary relationship, Kim et al., 2005). That problem is particularly relevant when the group is not only controlled but also directed by the parent company in order to manage the group as a single economic entity, since the transactions among companies may provide more opportunities to favor the controlling shareholder, therefore damaging minorities (Di Carlo, 2014). Thus, because of the agency problem that characterizes listed firms, we may expect that in affiliated-listed companies the phenomenon of IgI is different compared to that of groups where subsidiaries are not listed.

In order to understand the determinants of IgI, different perspectives using different theories can be adopted. According to the resource dependence theory (Pfeffer, 1972; Pfeffer and Salancik, 1978), IgI may be beneficial, originating a system effect that leads to a business group value that is higher than the sum of the single legal entities (e.g., synergies that derive from the scope and scale economies). In the agency theory framework (Jensen and Meckling, 1976), IgI can be interpreted both negatively and positively. Indeed, it can damage firms' value by increasing the probability of extraction of private benefits, but it can also enhance the monitoring function. ID is a phenomenon with many nuances and IgI is even more multifaceted leading to controversial results on its impact on business group performance.

Since the positive and negative perspectives may coexist, the net effect of IgI on firms' performance is theoretically ambiguous. Integrating agency and

resource dependence theories, Zona et al. (2018) find that the effect on firm performance may be positive or negative depending on the firm's relative resources, power imbalance, ownership concentration, and CEO ownership.

Focusing on listed business groups, characterized by the presence of at least two affiliated-listed companies, and following the contingency perspective (Aguilera et al., 2008), this study aims to explore other determinants of IgI[1]. In particular, the study analyzes the controlling shareholder type (family, State, coalitions), the business ties, and the separation between ownership and control, focusing on 315 listed business groups in different European countries, i.e. Belgium, France, Greece, Italy, Spain, and Portugal.

Relying on a unique and hand-collected database, we conduct a Social Network Analysis (SNA) to process relational data of shared directors among companies of the same groups (Drago et al., 2015; Horton et al., 2012; Zona et al., 2018). SNA permits a description of the social links among affiliated-listed companies. The basic units of the network are represented by the boards of directors, which are connected through the shared directors; the number of shared directors within the network and the persistence of the links over the years inform on the strength of the IgI.

The analysis reveals that ownership type is related to the strength of IgI, and that in groups controlled by the State, the presence of social links is lower than in groups controlled by families and by coalitions. Business correlation has been shown to be related to the strength of IgI since a higher presence of shared directors is observed in business groups whose firms have a high degree of business correlation, than in those in which the degree is low. Finally, the separation between ownership and control plays a crucial role in shaping social links within business groups. The analysis reveals that the higher the separation between ownership and control, the lower the strength of the IgI. Moreover, we find that this link is affected both by the degree of business correlation and the level of the risk of expropriation.

The reminder of this paper is organized as follows. The next section analyzes the literature on IgI, Section three is dedicated to the hypothesis's development, Section four describes the sample and Section five the methodology. Section six discusses the results and Section seven concludes with the potential implications for researchers, practitioners, and regulators.

[1] Listed companies need to be at least two because the ID is observed only among listed companies that belong to the same group; for this study, the ID between a listed parent company and its non-listed subsidiaries, or between non listed subsidiaries is irrelevant.

2. Review of intra-group interlockings

The literature suggests two theories to explain the determinants of IgI: resource dependence theory (Pfeffer, 1972; Pfeffer and Salancik, 1978) and agency theory (Jensen and Meckling, 1976). According to the former, IgI may benefit the firm and its outsiders; the latter considers the IgI as potentially harmful for corporate outsiders (minority shareholders and creditors) or beneficial, as a monitoring mechanism.

2.1. Resource dependence theory perspective

According to the positive perspective based on resource dependence theory, the board function is the provision of resources (Pfeffer, 1972; Pfeffer and Salancik, 1978). In particular, IgI facilitate transfers of capital, information flow, know-how and managerial personnel within the group (Haunschild and Beckman, 1998; Maman, 2000; Orrù et al., 1989; Schoorman et al., 1981; Zona et al., 2018). Indeed, resource dependence theory posits that power is based on the control of resources that are considered strategic decisions of an organization. Thus, interlocking is motivated by the possibility of influencing the affiliated-group organizations to adopt policies that decrease the risks associated with dependence on a particular resource. In a business group the presence of the same directors in the affiliated-group companies is quite common since it is an intra-group informal (social) tie that allows these firms to be connected to each other (Goto, 1982; Khanna and Rivkin, 2000; Koenig and Gogel, 1981), reinforcing the ownership ties. Through IgI the parent company can manage and coordinate the affiliated companies as a single economic entity, having a positive impact on the business group performance, thanks to the synergies and the scope and scale economies that can be activated (Singh et al., 2007). This happens particularly when business ties within the group are elevated (De, 2003). Indeed, the management and coordination activity of the parent company over its subsidiaries allows achieving the 'system effect', in the sense that the value of the whole organization (i.e., the group entity) is higher than that of the sum of its parts (i.e. the subsidiaries). The positive effect of IgI has been mainly documented in developing economies (De, 2003; Khanna and Palepu, 2000; Khanna and Rivkin, 2000), where capital markets have a high degree of inefficiency (Claessens et al., 2006; Goto, 1982; Khanna and Palepu, 1999; Khanna and Yafeh, 2007; Leff, 1978) and transactional costs are high (Coase, 1960; Williamson, 1985). In this context, business groups could be

considered as an effective substitute of the market (Khanna and Palepu, 1999; Leff, 1978).

2.2. Agency theory perspective

According to agency theory (Jensen and Meckling, 1976), IgI allows the controlling shareholder to extract the private benefits of control (negative effect of IgI) and/or to monitor the opportunistic behavior of the management of subsidiaries (positive effect of IgI).

Private benefits

Agency theory is used to interpret the IgI as a potential instrument that allows the dominant shareholder to extract private benefits at the expense of outsiders (Dyck and Zingales, 2004; Nenova, 2000). When the ownership is in the hands of a dominant shareholder, the agency problem emerges, increasing the risk that ID becomes an instrument in the hands of the ultimate owner – positioned at the top of the group structure – to extract private benefits at the expense of minority shareholders of the subsidiaries (Meeusen and Cuyvers, 1985; Silva et al., 2006). This can happen primarily in pyramidal business groups (Attig and Morck, 2005; Silva et al., 2006; Wolfenzon, 1999; Yiu et al., 2005) where the dominant shareholder controls an elevated amount of resources with a limited investment in the equity (Almeida and Wolfenzon, 2006; Claessens et al., 2000; La Porta et al., 1999). Within pyramidal groups, the tunneling of resources from the bottom to the top of the group is undoubtedly one of most studied ways to extract private benefits (Almeida and Wolfenzon, 2006; Chang, 2003; Friedman et al., 2003; Morck and Yeung, 2003). The dominant shareholder might also have incentives to divert resources at the expense of the minority shareholders of the subsidiaries (Almeida and Wolfenzon, 2006; Buchuk et al., 2014; Claessens et al., 2000; Faccio et al., 2001; Friedman et al., 2003; Morck, 2005). Indeed, the cash flow rights he/she owns in the parent company are higher than those in the subsidiaries. The risk is even higher when the controlling shareholder, through the parent company at the top of the group, not only controls but also manages its listed subsidiaries (Di Carlo, 2014), and the boards of the latter do not have sufficient independent directors to mitigate that risk (Moscariello et al. 2019; Shan, 2013).

The other ways to extract private benefits using the IgI are those connected to the nepotism in family business groups (i.e. the presence of incompetent family members within subsidiary boards, Khanna and Rivkin, 2006).

Monitoring function

In the agency theory perspective, IgI may also be used as a monitoring mechanism (Mizruchi, 1996). Through the connections within the affiliated companies' boards, the controlling shareholder (the principal) positioned at the top of the group could protect himself against the opportunistic behavior of the management of the subsidiaries (the agents) (Yiu et al., 2005). The monitoring function of IgI is particularly needed in the case of separation between control and management (Claessens et al., 2000). Indeed, delegation of the exercise of control power from the holding company to the subsidiary raises the headquarters/subsidiary agency problem, mainly studied in multinational enterprises (Kim et al., 2005), given that the interests of the subsidiaries may not be aligned with either the parent or that of the group as a whole. Thus, the monitoring function may have a positive effect on group performance. All the activities included in the monitoring function (i.e. monitoring CEO, monitoring strategy implementation, CEO succession, evaluating and rewarding the CEO/top manager) ensure that managers operate in the shareholders' interest (Hillman and Dalziel, 2003).

3. Theory and hypotheses

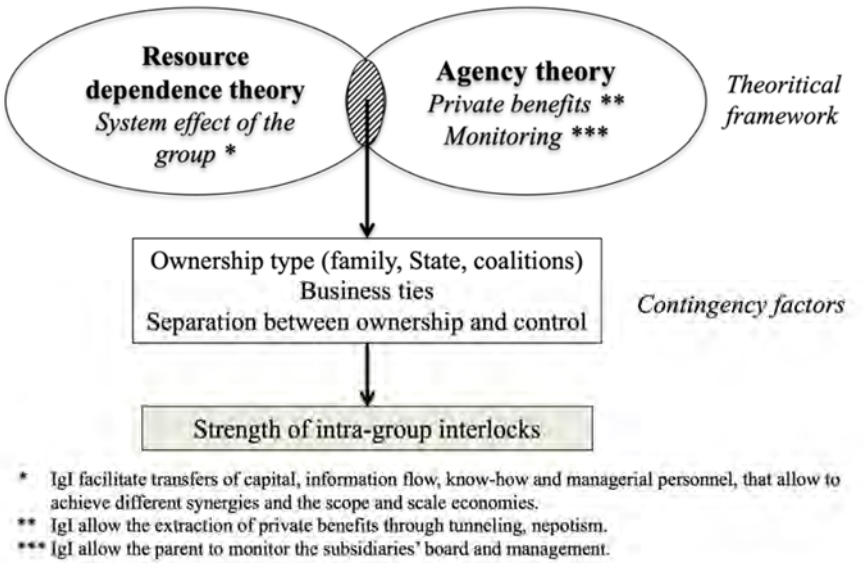
Directors may combine activities for both monitoring and providing resources (Hillman and Dalziel, 2003). Both resource dependence theory and agency theory (positive vis-à-vis negative) are affected by inconsistencies since they are unable to cope with the different kinds of possible cases. These inconsistencies are reflected in the controversial effect that IgI have on business group performance (Zona et al., 2018). The findings are mixed, i.e., positive relationship (e.g. De, 2003), negative relationship (e.g. Meeusen and Cuyvers, 1985) and no relationship (e.g. Rommens et al., 2007).

In order to better interpret the ID, scholars propose a contingency-based model that considers the board diversity (age, gender, nationality, education, board tenure and financial background) as an internal contextual variable that effectively moderates the baseline interlocking-firm performance relationship (e.g. Kaczmarek et al., 2012; Shropshire, 2010).

In our theoretical framework (Figure 1) we hypothesize that the agency problems, coming from the different types of ownership structure of the parent company (Claessens and Fan, 2002), the business ties among affiliated listed group companies and the separation between ownership and control, may impact on the strength of IgI. Thus, we take the ambiguity in performance outcomes as the motivation to introduce hypotheses on the contingen-

cies that may explain the observed ambiguity in outcomes. To the best of our knowledge, the effects of the type of controlling owner and of the separation between ownership and control on the interpretation of the strength of IgI (i.e., the number of interlocked directors) have never been analyzed in affiliated-group companies that are also listed.

Figure 1 – Theoretical framework



3.1. Ownership type

The present study focuses on listed groups with an ultimate owner (La Porta et al., 1999) represented by families, States or coalitions, since they are more homogeneous in terms of agency problems. Indeed, they are all characterized by the conflict between the controlling shareholder and minority shareholders (principal-principal conflict, or Agency Problem II, Dharwadkar et al. 2000; La Porta et al., 2002; Young et al., 2008), while in widely held corporations the conflict is that between management and minority shareholders (agent-principal conflict, or Agency Problem I, Faccio et al., 2001; Jensen and Meckling, 1976). Thus, the recommendations for companies with an ultimate owner may be strongly different compared to the widely held corporations. For instance, regarding the independence of the board to

solve the agency problem, while in a widely held corporation the board should be independent from the management, in a concentrated ownership it should be independent from both the management and the controlling shareholder (Moscariello et al., 2019). Moving on from those considerations, we believe that the existing studies on ID, which refer to widely held firms, cannot be generalized to firms characterized by the presence of a controlling shareholder; the latter plays the main important role in choosing the board of directors and in influencing board independence. We could expect that these aspects are even more relevant when the company is not only listed but also belongs to a business group, since there are roles of the boards that characterize only affiliated-group companies, especially if these companies are listed (Bianchi and Bianco, 2006).

Family ownership

Some prior studies documented the presence of family members on the boards of the parent company and its subsidiaries (e.g. Silva et al., 2006), and others even consider the family connections as one of the ties that delimit the boundaries of the group (e.g. Khanna and Rivkin, 2006). The presence of family members within the listed-subsidiaries boards can be for different reasons that can result in positive or negative perspectives that are mainly connected to both the bright and dark sides of the business groups (Buchuk et al., 2014).

For the first perspective, in family groups a higher number of social ties through IgI can help to mitigate the potential opportunistic behaviors, thanks to the monitoring role that family members exert on the management of the parent and subsidiary companies (Yiu et al., 2005), especially when a separation between ownership and management exists (i.e. when the parent delegates the exercise of the decision-making power to its subsidiaries). That delegation raises the headquarters-subsidiary agency problem, mainly studied in multinational enterprises (Kim et al., 2005), since the interests of the subsidiaries may not always be aligned with those of the parent company or that of the group as a whole. Family ties mitigate the opportunistic behavior, given that directors who govern the affiliated-group companies share common goals (Khanna and Rivkin, 2006).

The cultural distance between the home and host countries together with subsidiary staffing composition further increases the goal incongruence (Roth & O'Donnell, 1996).

Moreover, the controlling family can be interested in increasing the social ties within the group in order to manage the group as a single economic entity, fostering the system effect of the group (Di Carlo, 2014). Indeed, the

ultimate controlling party is the owner, for the percentage owned, of the subsidiaries' cash flow rights. The opportunity to achieve the system effect is obviously higher in groups with strong business ties among affiliated-group companies.

The second perspective concerns the possibility that the controlling shareholder dominates the subsidiary boards in order to extract private benefits (Dharwadkar et al., 2000), using an instrument such as tunneling. IgI can also reflect chance patterns of inheritance and nepotism in subsidiary boards (Hendry, 2002; Khanna and Rivkin, 2006, p. 337; Schulze et al., 2001).

State ownership

In State-controlled groups the phenomenon of IgI seems to be underestimated by scholars. However, many countries are characterized by a strong presence of the State in the ownership of listed companies (e.g. Italy and China) (La Porta et al., 1999). Listed State-controlled companies belong to the so-called mixed enterprises (Boardman and Vining, 1989; Vining et al., 2014), since the ownership is characterized by the presence of both private and State owners. In these companies the objective can be twofold: maximization of profit, and promotion of the socio-political interest (e.g. maintaining social order through control of the level of unemployment, Eckel and Vining, 1985; Shan, 2013). The latter objective may generate a conflict of interest between the State and private shareholders (Pargendler et al., 2013), the so-called principal-principal (P-P) agency problem.

In the State-controlled firms, appointment of the board members may be guided by the logic of politicians' private interests to increase rent seeking, circumvent government regulation on pay limitation, and enhance political capital (Shan, 2013), instead of firm performance, since politicians are not owners of the cash flow rights. De Alessi (1980) states that the key difference between the State-controlled firm and those that are controlled by private owners is characterized by the non-transferable ownership. Due to this type of ownership, the capitalization of these shares cannot reflect their market value. Politicians who control those parent companies and their subsidiaries are not owners of the cash flow rights and, as a consequence, the incentive of managerial behavior oversight and monitoring would be reduced. Thus, we expect that in the State-controlled groups the incentive for the listed parent to monitor the management (Mizruchi, 1996) of the listed subsidiaries and to achieve the system effect are lower than in the case of family groups, since the interest of the principal (the politicians, as agents of the citizens) may be less aligned with the interest of the business group, not being owners of the residual claim. In that case, there may be a tendency of politicians to

increase the link with external parties (i.e. the appointment of external directors) instead of the IgI. Moreover, problems of inheritance and nepotism in subsidiary boards are almost absent in these groups, compared to the family groups. These lines of argument lead to the following hypothesis:

Hypothesis 1. In groups controlled by the State the strength of intra-group interlocks is lower than in groups controlled by families.

Coalition ownership

The coalition is a form of control where some owners, using instruments such as shareholders' agreements, jointly control the corporation (Claessens et al., 2002; Faccio and Lang, 2002). The coalition is considered to be an instrument to control a company without a majority of shares (Bianchi and Bianco, 2006).

Coalitions, as private owners, have an interest in monitoring the subsidiaries' management and in reaching the system effect of the group since they are owners of the residual claims and thus are less interested in limiting the IgI, fostering the appointment of external directors compared to the State-owned groups.

To the best of our knowledge, there are no studies on IgI within groups controlled by coalitions of shareholders that conjointly own the company, normally through a shareholder agreement (Gianfrate, 2007). The coalition is considered to be an instrument to control a company without a majority of shares (Bianchi and Bianco, 2006).

Since the coalition is the owner of the cash flow rights, as in family firms it has the incentive to use the IgI for increasing the social ties and managing the group as a single economic entity. Thus, the IgI may be higher than in groups controlled by the State, since politicians do not have the same incentive, not being owners of the cash flow rights.

Compared to the family group, in groups controlled by coalitions patterns on merit and nepotism are absent (or much less relevant), thus for this reason IgI may be lower. Volpin (2002) shows that the coalition, through a voting trust agreement, is more efficient in comparison with the case where the control is totally in the hands of a single major shareholder.

Similarly to family-controlled groups, the agency problem may arise, i.e., the conflict of interest between the controlling coalition and minority shareholders (La Porta et al., 2002; Zingales, 1994). Thus, IgI may also be used by the controlling coalition for the extraction of private benefits of control, tunneling resources from the bottom to the top of the group (Cheung et al., 2006). However, this effect may be mitigated, compared to the family group,

since coalition limits the conflicts between large owners and minorities (the control-enhancing role of shareholder coalitions) (Jiang and Peng, 2011).

The following hypothesis applies:

Hypothesis 2. In groups controlled by coalitions, the strength of intra-group interlocks is higher than in groups controlled by the State but lower than in groups controlled by families.

3.2. Business ties

According to the transaction costs theory, transactions within business groups are more efficient than the market governance of transactions (Coase, 1960; Williamson, 1985), thanks to the reduction of some transaction costs. Indeed, this is the reason why, in markets with a high degree of inefficiency, business groups are largely diffused (e.g. in developing economies, Claessens et al., 2006; Khanna and Palepu, 1999; Khanna and Yafeh, 2007).

The use of the resource dependence theory to interpret the IgI assumes that there is the possibility to achieve the 'system effect' within the group, so that the value of the whole organization (i.e., the group) is higher than the sum of the value of each individual (i.e., the value of the holding firm plus its subsidiaries), considering the affiliated-group companies as a single economic entity (Di Carlo et al., 2016).

The interpretation of IgI with the lens of RDT is based on the assumption that there is an actual ability to achieve the system effect in the group, thus a transfer of resources is expected between the affiliated-group companies. Consequently, this effect is more achievable by integrated groups (i.e., in those where the business of the single affiliated company is vertically or horizontally integrated). In this regard, De (2003) finds that the more heterogeneous Indian groups have weaker interlocks compared with the integrated groups. We formulate the following hypothesis:

Hypothesis 3. The stronger the business ties between the affiliated-group companies the higher the strength of intra-group interlocks.

3.3. Separation between ownership and control among affiliated-listed group companies

The literature on corporate governance uses cash flow rights to measure corporate ownership and voting rights for control (Faccio and Lang, 2002). The cash flow rights owned by the ultimate owner are the measure of the

separation between ownership and control, and that separation is a proxy of the degree of expropriation by the ultimate owner (Claessens et al., 2000; Faccio et al., 2001; Jensen and Meckling, 1976). Claessens and Fan (2002) and Gomes (2000) suggest that an elevated amount of cash flow rights can be viewed as a credible commitment that the controlling owner will not expropriate minority shareholders. In this regard, Silva et al. (2006) analyze the effects of social ties (i.e., presence of relatives of the controlling shareholders on the board of directors and of IgI) on the financial performance of Chilean affiliated-group companies by considering the ownership-control structure of those firms. They find that the social ties increase performance when the separation between ownership and control is low. This is probably due to a better coordination and a higher monitoring by other relevant shareholders. In contrast, the social ties decrease performance when the separation between ownership and control is high. Thus, their findings confirm the assumption of the agency problem between controlling shareholder and minority shareholders, in the case of high separation between ownership and control.

If minority shareholders of affiliated-listed companies believe that IgI are an instrument to extract private benefits, they may react, causing a decrease of the share price in the market that exceeds the advantage that the controlling shareholders obtained by the expropriation of private benefits (Gomes, 2000). Thus, the reduction in the share value could overcome the positive effect for the controlling shareholder that derives from the extraction of private benefits. Consequently, with the intent to convince minority shareholders that he/she is not able (or interested) to extract private benefits, the controlling shareholder could find it useful to signal the market with a low strength of IgI, especially when the perceived risk is high. The stock prices would not then be discounted when the minority shareholders of the subsidiaries are persuaded to believe that controlling shareholder will not engage in private benefits transferring. In this way, the controlling shareholders will secure the value of their shares at the current price and also retain the opportunity of private benefits transferring (Claessens and Fan, 2002; Djankov et al., 2008). Indeed, the IgI may be more informal than absent, especially when affiliated-listed companies are strongly integrated regarding their businesses and thus the link among boards is necessary in order not to lose the system effect of the group. McNulty and Pettigrew (1999) argue that the holding company may informally communicate with the subsidiaries board and effectively take decisions.

In this sense, previous studies suggest that an elevated amount of cash flow rights can be a credible commitment that the controlling owner will not expropriate minority shareholders (Claessens and Fan, 2002). We could ex-

pect that this effect is more evident in countries with lower protection of minority shareholders. In other words, in countries with a higher degree of protection of minority shareholders, the incentive to increase the IgI due to the elevated business correlation that allows achieving the system effect, is less compensated by the risk connected to the separation between ownership and control that suggests decreasing the IgI.

This is also in line with the findings of Rommens et al. (2007), which suggest that group companies (including parent companies) have more IgI when they are located at a higher hierarchical group level, probably because of the lower separation between ownership and control.

Based on these reasonings we suggest the following:

Hypothesis 4a. The higher the separation between ownership and control, the lower the strength of IgI.

Hypothesis 4b. In groups with higher separation between ownership and control, the high business correlation is associated with a higher strength of the IgI than in groups with lower separation

Hypothesis 4c. In countries where the risk of expropriation is lower, the higher strength of IgI related to a high business correlation is less compensated by the perceived risk of expropriation connected to the separation between ownership and control, and that is related to a lower IgI.

4. Research design

4.1. Sample composition

The data refer to 315 business groups belonging to the European markets characterized by the so-called insider model of corporate governance, in particular, the Latin one (Italy, Spain, France, Belgium, Greece and Portugal). Companies that operate in these countries are characterized by (Franks and Mayer, 1997; Koslowski, 2009; Weimer and Pape, 1999): ownership concentration (mainly families and State); friendly takeover; priority given to the value creation for the stakeholder; the voice option is the main answer to the firm inefficiency; and conflicts of interest between majority and minority shareholders. Differently from the network-oriented system (Germany, Austria, Scandinavian countries) – the second system of corporate governance within the insider model – the top management team does not suffer from the influence of banks and employees, even though there could be institutional

investors limiting and affecting its discretional power due to their relevant ownership.

Within the selected cluster of European countries, we take into account 931 listed companies, which identify groups made up of three listed companies, on average. These countries, and especially some of them (e.g. Italy, Melis and Zattoni, 2017), also include the presence of pyramidal business groups (Aganin and Volpin, 2003) where the risk of expropriation of minority shareholders through related party transactions is particularly high.

The sample is composed of 199 parent companies (PC), 354 first level sub-holdings (S), 150 second level sub-holdings (S1), and 108 subsidiaries (D) while for the other companies we found no information about the group structure. In order to identify these levels, using the corporate website and Orbis database, for each group we studied the ownership of the listed affiliated companies. The first level sub-holding is the listed company directly controlled by the parent, while the second level is the listed sub-holding controlled by the parent through a directed controlled sub-holding. Subsidiaries are listed affiliated companies that are controlled, but, differently from the sub-holdings, in turn they do not control other companies. The observations refer to the last available year for each company (about 95% of the observations in the sample refer to the years 2017 and 2018), according to the Orbis database.

4.2. Methodology

We applied Social Network Analysis (SNA) (Mitchell, 1969; Wasserman and Faust, 1994) to compare the different networks that originate from corporate boards of directors of companies that belong to the same business group. In particular, boards of directors are treated as the basic unit of the SNA, the vertices (or the nodes), whose edges represent the shared directors, and the overall graph, consist of the totality of nodes and segments which connect pairs of nodes. Considering that the relationship of company A to company B is the same as the relationship of company B to company A, and therefore edges have no orientation, and that there are separate groups of nodes with no relationship between groups, an undirected disconnected graph is considered without losing information about the relationships of the structure.[2] Social network statistics provide tangible numbers to support the

[2] All measures of centrality, of network structure and graph layout, are obtained using Gephi. Gephi is an open-source program available at www.gephi.org.

graphical visualization of the network and allow exploration of facets of the network that are not easy to perceive from a visual perspective.

The metrics that help us to assess the overall structure of the network are the following:

- *Average degree:* this is computed as the number of nodes divided by the number of edges and provides information about the average number of connections in the network.
- *Average weighted degree:* this weights the number of connections for the actual number of links for each node over the time window. It is useful to understand the strength of IgI since it considers that more than one director can connect two companies and takes into account the persistence of the links over the years.

To test Hypotheses 1 and 2, three networks are considered, according to the three ownership types: family, State and coalitions. To test Hypothesis 3, the variable described in the previous section on business correlation is used to distinguish two networks: business correlated and not correlated. To analyze the relationship between the strength of IgI, business correlation, and ownership concentration, within each country, testing Hypotheses 4a, 4b, and 4c, a three-dimensional matrix graph has been built. On the abscissas, the degree of IgI (as proxied by the Average weighted degree) is represented, while the ordinates show the business correlation. The third dimension – represented by the diameter of the circles within the Cartesian plan – is the ownership concentration, computed as the percentage of IgI belonging to companies where the parent company's cash flow rights are above or equal to 50%.

4.3. Results

Descriptive Statistics

The distribution of observations by years is shown in Table 1 (Panel A).

Table 1 – Distribution of observation, by year (Panel A) and descriptive statistics (Panel B)

Panel A Last available year	Variable	No. of obs.	Mean	Median	Std. Dev.
1999	Cash flow rights	1	0.62	0.62	0.00
	No. of directors	2	8.00	8.00	0.00
	listed	2	1.00	1.00	0.00
2010	Cash flow rights	0	0.00	0.00	0.00
	No. of directors	1	9.00	9.00	0.00
	listed	1	1.00	1.00	0.00

Panel A Last available year	Variable	No. of obs.	Mean	Median	Std. Dev.
2011	Cash flow rights	5	0.98	0.98	0.01
	No. of directors	5	5.40	7.00	2.19
	listed	5	0.60	1.00	0.55
2012	Cash flow rights	5	0.50	0.50	0.00
	No. of directors	5	9.00	9.00	0.00
	listed	5	1.00	1.00	0.00
2013	Cash flow rights	3	0.51	0.48	0.04
	No. of directors	5	11.20	10.00	5.02
	listed	5	0.40	0.00	0.55
2014	Cash flow rights	1	0.55	0.55	0.00
	No. of directors	1	10.00	10.00	0.00
	listed	1	1.00	1.00	0.00
2015	Cash flow rights	11	0.75	0.95	0.29
	No. of directors	17	9.06	7.00	5.23
	listed	17	1.00	1.00	0.00
2016	Cash flow rights	76	0.82	0.98	0.23
	No. of directors	87	9.61	8.00	5.01
	listed	87	0.80	1.00	0.40
2017	Cash flow rights	1623	0.58	0.50	0.26
	No. of directors	1954	40.48	30.00	132.37
	listed	1954	0.82	1.00	0.39
2018	Cash flow rights	149	0.48	0.40	0.24
	No. of directors	227	53.93	53.00	25.75
	listed	227	0.80	1.00	0.40

The table shows the distribution of the observations by years. *Cash flow rights* have been defined as the right to receive dividends from the final owners and are reported as a percentage of other shareholders. The variable *listed* identifies whether or not the company is listed in one of the sampled markets (dummy variable: Yes/No). Country ISO code helps to identify companies' geographical distribution while the variable *type of control* describes whether the companies are controlled de jure or de facto.

Panel B Variable	Obs (nodes)	Mean/Percentage	Std. Dev.	Min	Max
Business correlation	1152				
Yes	637	55.3%			
No	515	44.7%			
Type of ownership	2,304				
Family	1589	69.0%			
State	199	8.6%			
Coalition	138	6.0%			
n.a.	378	16.4%			

Panel B Variable	Obs (nodes)	Mean/Percentage	Std. Dev.	Min	Max
Listed	2,304				
Yes	1,878	81.5%			
No	426	18.5%			
Geographic distribution by Country ISO code	2,304				
Belgium	139	6.0%			
Spain	591	25.7%			
France	1,280	55.6%			
Greece	71	3.1%			
Italy	149	6.5%			
Portugal	74	3.1%			
Type of control	2,304				
De jure	1,580	68.6%			
De facto	330	14.3%			
n.a.	394	17.1%			
Cash flow rights	2,304	50.0%	5.9	0.0	100.0

The table shows the main variables analyzed for all the nodes of the sample. *Cash flow rights* have been defined as the right to receive dividends from the final owners and are reported as a percentage of other shareholders. The *business correlation* variable defines whether companies within the same business group, tied by a link (IGI), belong or not to the same sector (dummy variable: Yes/No), following the methodology and the NACE Rev.2 macro categories. The variable *type of ownership* identifies the person or people who hold the "control power" over the company and therefore the type of control (family, State, coalition). The variable *listed* identifies whether or not the company is listed in one of the sampled markets (dummy variable: Yes/No). Country ISO code helps to identify companies' geographical distribution while the variable *type of control* describes whether the companies are controlled de jure or de facto.

The database contains the IgI among companies and has been built by identifying, for each company, the business group to which it belongs and the names of the members of the board of directors. When considering as the unit of analysis those companies where intra-group interlocked directors sit, the sample consists of 446 companies which originate a network of 2304 nodes and 1152 links (representing about 48% of the total number of companies sampled). Business groups are defined through the identification of the ultimate owner (Faccio and Lang, 2002), i.e. the controlling companies or individuals at the top of the group, and their voting rights. Out of the 2304 nodes, 1878 (81.5%) refer to companies listed on the relative country's stock market.

Table 1 (Panel B) presents an overview of the characteristics of the IgI links identified for the whole sample. Business correlation is defined according to NACE Rev.2 core code 4 digits using the following procedure. In order to identify the *business correlation*, the 21 macro categories defined by the NACE Rev.2 classification (from A that refers to agriculture, forestry and fishing sector

to U that identifies activities of extra territorial organizations and bodies) are considered. Companies belonging to the same macro category reported by NACE Rev.2 are considered as business correlated (dummy variable business correlation: yes). For instance, Abertis infraestructuras, S.A. and Acs actividades de construccion y servicios, S.A., both operate in the macro-sector NACE Rev.2 Constructions & Materials, thus the business of these companies is considered as correlated.

The descriptive statistics in Table 1 show that slightly more than half of the links among companies concern correlated businesses (55.3%), are mainly controlled by family (69%), and are *de jure* controlled (68.6%). Regarding geographical distribution, more than half of the companies are French (55.6%), while the rest are from Spain (25.7%), Italy (6.5%), Belgium (6.0%), and Greece and Portugal (3.1% each). The average percentage of cash flow rights owned by the ultimate owner is 50%.

Table 2 describes companies' distribution by type of ownership (family, State, coalitions) and country. The data show that for each of the countries analyzed, most of the companies belong to a family group. Among the countries considered, it is only in Spain and Belgium that the number of companies controlled by the State is lower than that of companies controlled by coalitions.

Table 2 – Ownership type by countries

Country	No. of obs	%	Country	No. of obs	%
Spain			Greece		
Family	*313*	13.6%	*Family*	*37*	1.6%
State	*5*	0.2%	*State*	*26*	1.1%
Coalition	*13*	0.6%	*Coalition*	*0*	0.0%
n.a.	*260*	11.3%	*n.a.*	*8*	0.3%
Belgium			Italy		
Family	*59*	2.6%	*Family*	*113*	4.9%
State	*7*	0.3%	*State*	*32*	1.4%
Coalition	*40*	1.7%	*Coalition*	*4*	0.2%
n.a.	*33*	1.4%	*n.a.*	*0*	0.0%
France			Portugal		
Family	*1051*	45.6%	*Family*	*16*	0.7%
State	*126*	5.5%	*State*	*3*	0.1%
Coalition	*80*	3.5%	*Coalition*	*1*	0.0%
n.a.	*23*	1.0%	*n.a.*	*54*	2.3%

Table 2 shows the distribution of companies according to the type of ownership, by country. The variable *type of ownership* identifies the person or people who hold the "control power" over the company (family, State, coalition). Country ISO code permits identifying companies' geographical distribution.

Table 3 shows the number of IgI links between either correlated or not correlated businesses, by country. Descriptive evidence shows a diversified situation: in three out of the six countries analyzed (Greece, Belgium and France) IgI links mostly concern correlated businesses, while the opposite occurs in the other countries (Italy, Spain and Portugal).

Table 3 – Companies' business correlation, by country

Country	No. of obs	%	Country	No. of obs	%
Spain			Greece		
Yes	*47*	4.1%	*Yes*	*25*	2.2%
No	*255*	22.1%	*No*	*18*	1.6%
Belgium			Italy		
Yes	*38*	3.3%	*Yes*	*31*	2.7%
No	*29*	2.5%	*No*	*35*	3.0%
France			Portugal		
Yes	*486*	42.2%	*Yes*	*10*	0.9%
No	*151*	13.1%	*No*	*27*	2.3%

Table 3 shows the distribution of companies according to business correlation, by country. The variable *business correlation* defines when companies tied by an IGI link belong or not to the same sector (dummy variable: Yes/No), following the methodology and the NACE Rev.2 macro categories identified. Country ISO code permits to identify companies' geographical distribution.

Finally, in Tables 4 and 5 descriptive statistics about type of ownership and business correlation are reported. Table 4 reveals that the majority of listed companies are family-owned (61.9%). Table 5, on the other hand, shows that in the groups controlled by the State and coalitions many IgI concern companies with unrelated businesses. In State-controlled groups more than 72% of IgI are among companies in unrelated sectors, and in groups controlled by coalitions this percentage rises to 84%.

Table 4 – Listed companies by type of ownership

Ownership type	No. of obs	%
Family		
Listed	*1426*	61.9%
Not Listed	*163*	7.1%
Coalition		
Listed	*76*	3.3%
Not Listed	*62*	2.7%
State		
Listed	*130*	5.6%
Not listed	*69*	3.0%
N.a.		
Yes	*246*	10.7%
No	*132*	5.7%

Table 4 shows listed/not listed companies by type of ownership, indicating whether or not the company is listed in one of the sampled markets (dummy variable: Listed/Not Listed). The variable *type of ownership* identifies the person or people who hold the "control power" over the company (family, State, coalition).

Table 5 – Usiness correlation by type of ownership

Ownership type	No. of obs	%
Family		
Yes	*462*	40.1%
No	*327*	28.4%
Coalition		
Yes	*60*	5.2%
No	*11*	1.0%
State		
Yes	*70*	6.1%
No	*27*	2.3%
N.a.		
Yes	*45*	3.9%
No	*150*	13.0%

Table 5 shows the distribution of companies according to the degree of business correlation, by type of ownership. The variable *business correlation* defines when companies tied by an IGI link belong or not to the same sector (dummy variable: Yes/No), following the methodology and the NACE Rev.2 macro categories identified. The variable *type of ownership* identifies the person or people who hold the "control power" over the company (family, State, coalition).

Empirical results

In order to investigate the strength of IgI we process relational data through social network analysis (SNA).

Table 6 – Social Network measures of IgI in groups controlled by coalitions, State and families

Network measures / Ownership type	Nodes	Edges	Av. Degree	Av. Weigh. Degree
Coalitions	44	25	1.136	6.273
State	51	45	1.765	4
Family	257	235	1.829	6.226

Table 6 summarizes the SNA metrics, for the network of IgI within groups controlled by coalitions, State, and family. For the groups controlled by coalitions, the number of nodes is 44 and the number of edges 25; in the IgI State network the number of nodes is 51 and the number of edges is 45;

and in the IgI family network, these are 257 and 235, respectively. The high diffusion of the phenomenon of IgI in family business groups compared to State controlled groups is revealed by the measures of average degree that are equal to 1.829 compared to 1.765 and suggests that almost every company shares a director within the group to whom it belongs. This metric also reveals a higher value of links in the IgI State network than in the coalition one, for which the value is 1.136. A network measure that captures better the intensity of the phenomenon of IgI is through the average weighted degree, which not only reveals the existence of a social link but also the numerosity of those links. A value equal to 6.226 for the IgI family network, compared to 4 for the State one, clearly indicates that the companies of the same family group share more directors than companies in the same group controlled by the State. This finding support Hypothesis 1. In groups controlled by coalitions, the weighted average degree is 6.273, which is higher than the value associated with the IgI State network (4), but also slightly higher than the family one (6.226), thus only partially confirming Hypothesis 2.

Overall, these data confirm that the type of ownership is related to the strength of IgI: in groups controlled by the State the strength of interlocks is lower than in groups controlled by families and by coalitions.

Table 7 – Social Network measures of IgI for firms who operate in sectors with high or low degree of correlation

Network measures / Business correlation	Nodes	Edges	Av. Degree	Av. Weigh. Degree
High	232	200	1.724	5.491
Low	269	207	1.539	3.829

Table 7 summarizes the SNA metrics, for both the network of business correlated and the not business correlated firms. For the business correlated firms' network, the number of nodes is 232 and the number of edges is 200, while for the firms whose businesses are not correlated, they are 269 and 207, respectively. The high diffusion of the phenomenon of IgI in business correlated compared to not correlated groups is revealed by the measures of average degree that are equal to 1.724 as against 1.539. An average weighted degree value of 5.491 is observed for business correlated companies, while it is 3.829 for companies whose sectors are not correlated. This evidence suggests that groups whose sectors are correlated (stronger business ties) share several directors, and that the value is higher than in companies within the same groups but whose sectors are not correlated.

Overall, these data confirm that the degree of correlation of the sectors of the firms within the same business groups is related to the strength of IgI, as predicted in Hypothesis 3.

Figure 2 – The relationship among IgI strength, business correlation, and ownership concentration

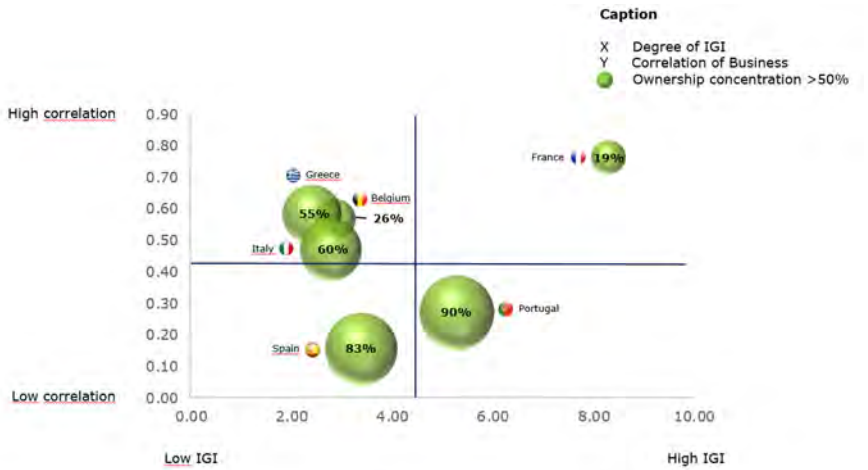


Figure 2 synthesizes the relationship among the variables IgI strength (x-axis), business correlation (y-axis), and ownership concentration (circle diameter), for each country. In the first quadrant of the matrix, countries with companies with a high degree of IgI and high business correlation are displayed. In the second quadrant, countries with companies with a low degree of IgI and high business correlation are displayed. The third and the fourth quadrants show countries with companies with a low level of IgI and low business correlation and a high level of IgI and low business correlation, respectively.

Figure 2 synthetizes the relationship among the variables IgI strength (x-axis), business correlation (y-axis), and ownership concentration (circle diameter), for each country. In the first quadrant of the matrix, where countries with companies that have a high degree of IgI and high business correlation are displayed, there is France, which is associated with a low ownership concentration (i.e. a high separation between ownership and control). In the second quadrant, where countries with companies with low degree of IgI and high business correlation are displayed, Italy, Greece and Belgium, Italy and Greece have a level of ownership concentration higher than 50%, while the

value for Belgium is 26%. In the third quadrant, where countries with companies that have a low level of IgI and low business correlation are positioned, Spain is displayed, with a high level of ownership concentration (83%). Finally, in the fourth quadrant, associated with a high level of IgI and low business correlation, there is Portugal, which has a value of ownership concentration equal to 90%. The analysis confirms that the higher the separation between ownership and control, the lower the strength of the IgI (Hypothesis 4a). At the same time the matrix highlights that in those groups with high separation between ownership and control, the high business correlation is related to a higher strength of the IgI less than in groups with low separation, as predicted by Hypothesis 4b.

According to Persakis and Iatridis (2017), the level of investor protection in the countries of our sample is, from the highest to the lowest, the following: France (131.76), Belgium (131.75), Spain (112.05), Italy (107.23), Portugal (95.96) and Greece (71.80). According to hypothesis 4c, the level of investor protection may affect the IgI, due to the agency problems.

Our analysis confirms hypothesis 4c. In France, where the risk of expropriation is the lowest due to the higher minority shareholders protection, the elevated business correlation that suggests increasing the IgI in order to achieve the system effect of the group is less compensated by the separation between ownership and control (in France it is the highest) than an incentive to use IgI as an instrument of expropriation (Figure 2). Indeed, in that country the high IgI may be interpreted by minority shareholders more as a beneficial instrument.

5. Discussion and conclusion

In order to better understand why listed affiliated-group companies are (or are not) interlocked, the contingency theory was used to establish a theoretical framework (Figure 1), which identifies some factors that may be related to the strength of the IgI, and allows us to better explain the IgI phenomenon and the controversial results of empirical studies that analyze the link between IgI and financial performance.

First of all, our data show that group affiliation is widespread in some European countries, and pyramids characterize countries with both strong and weak shareholder protection, partially contrasting studies that find this form of group mainly in countries with lower protection (La Porta et al., 1999). Thus, the presence of more than one listed company within the same business group is frequent, and scholars should take into consideration this

aspect when studying the performance of listed companies, since normally they are treated as independent entities (Di Carlo and Ranalli, 2020). However, some companies are not only under common control but also under common direction because the elevated business correlations among affiliated-group companies suggest managing the group as if it were a single economic entity.

Data underline the importance of studying the type of ownership, revealing that in the State-controlled groups the IgI is absolutely less relevant than in family groups and coalitions. This is partially in contradiction with the studies on business groups that consider interlocking as a tool for the reduction of transaction costs and monitoring of the possible opportunistic behavior of the management (Mizruchi, 1996). On the other hand, this is in line with agency theory according to which in the State-controlled groups the interest of the principal (politicians that represents the citizens) may be less aligned with the interest of the business group and therefore the incentive to manage the group as a system and to monitor the management of the listed subsidiaries is lower than in the case of family groups. Thus, for groups controlled by the State a regulation that better separates the interests of politicians from those of the management of the group may foster positive IgI, especially where there is the possibility of achieving the synergy of the group (e.g. in business groups with related businesses).

Since a high separation between ownership and control within the affiliated listed companies is negatively perceived by minority shareholders, given the high risk of appropriation of private benefits, companies may try to contrast this perception by signaling a low level of IgI, which in turn might mitigate that risk, but reduces the positive effect of IgI. Indeed, this effect appears stronger in countries with weaker investors' protection. Moreover, they can appoint more independent directors within the subsidiaries' boards, favoring the appointment of directors by minorities.

The ownership type is related to the board of directors in affiliated-listed subsidiaries and to board independence, because of the agency problems associated with these companies compared to the stand-alone listed companies.

A regulation that reduces the possibility of extracting private benefits of control may foster positive IgI that are beneficial for the business group performance, especially where there is a high correlation among the businesses of the affiliated listed companies and thus a higher possibility of achieving the system effect of the group. Increasing the disclosure on transactions within the business group (e.g. tunneling transactions) may mitigate the risk that IgI are used to extract private benefits. Indeed, studies have shown that the lower the probability that minority shareholders are able to measure the

private benefits of control, the higher the probability of extraction (Dyck and Zingales, 2004).

Scholars normally measure the interlocking directorate as the fraction of directors that serve on more corporate boards, without considering whether these boards belong to the same group, and the role of the interlocked directors. Directors who sit on many boards present a conflict of commitment having less time to dedicate to the roles that are recognized by the corporate governance literature, i.e., the control, service, strategy roles (Hung, 1998; Zahra and Pearce, 1989) and the mediating role (Van Ees et al., 2009); thus, it could have negative impacts on board and firm performance. Hallocks (1997) provides evidence of a lack of oversight and monitoring by busy directors. Fich and Shivdasani (2006) show that firms with busy directors have a negative impact on corporate governance, lower market-to-book ratio and sensitivity of CEO turnover to firm performance. Ferris et al. (2003), focusing on the monitoring role of the directors, find no evidence of a negative association between the number of board memberships held by directors and firm performance. All these mentioned studies consider the interlocked companies as if they were independent from each other (i.e. they do not belong to the same group).

However, the problem of busy directors within the business group is more relaxed, or at least should receive a different interpretation. Indeed, especially in groups strongly integrated and where the holding centralizes the decision-making power, directors of subsidiaries can be considered as the directors of a single economic entity. Board members normally have just a legal role in these companies (Leksell and Lindgren, 1982), since the law prescribes obligations on the board of directors for each legal entity. An integrated group may find it convenient to conduct the business using a plurality of legal entities for the separation of legal liabilities, fiscal savings, financial opportunities, etc. (Di Carlo et al., 2016). In this regard, Rommens et al. (2007) find that while interlocking directorates are negatively related to the profitability of stand-alone companies, they do not affect the profitability of group companies.

Even if subsidiaries' directors serve an integrated group, they have to safeguard the interests of minority shareholders of their affiliated-listed group companies. The presence of minority shareholders that characterize the affiliated-listed group companies can make the IgI phenomenon different from that of groups that do not have listed companies, since the presence of minority shareholders asks for an internal and external regulation that has an effect on the board composition.

For instance, the Italian civil code (article 2497) provides a liability of holding companies when they exercise the direction activity in the interest of the group, thus damaging the interest of stakeholders of their subsidiaries (directed legal entities). Subsidiaries' directors are held responsible if they are not able to demonstrate the compensatory advantages that the damaged subsidiaries receive because of belonging to the group (Di Carlo, 2014).

Moreover, a recommendation should be to increase the effectiveness of the monitoring role of independent directors over the interlocked intra-group directors. In Italy, the Regulation containing the implementing rules of the Consolidated Act on Finance (art. 37), provides that for listed subsidiaries managed and coordinated by the parent, a board of directors consisting mostly of independent directors is required. In addition, those who hold the office of director in the company that exercises management and coordination activities (normally the parent company) or in listed companies controlled by that company, cannot be qualified as independent directors.

This last point is of particular importance, and it is justified by the fact that the interest that the independent directors must safeguard is not only that of the subsidiary in which they exercise their role but (in the hypothesis of management and coordination by the parent) also that of the parent that directs and coordinates its subsidiaries in the interest of the group. That regulation forces the governance of the subsidiaries to appoint external independent directors that may increase both the effectiveness of their monitoring role and the negative effect of the perception of minority stakeholders that IgI is an instrument for the extraction of private benefits.

The phenomenon of busy directors should be totally reinterpreted if they hold multiple directorships within the group, since the positive effect of interlocking connected to the monitoring role could prevail on the negative effect. Indeed, in groups where several listed companies are present, the motivations that lead the directors of the holding company to sit (or not sit) on the subsidiaries' boards seem to be more aligned with agency theory than with the resource dependence theory in countries with high investor protection, while this may be the opposite where the protection is lower.

Corporate governance codes issued by Stock Exchanges may provide different recommendations for IgI. Especially in countries with high investor protection, the limits provided for number of seats on listed boards should be lower for IgI compared to external interlocks. This is in line with the French corporate governance code for listed companies (2018, article 18), according to which "directors should devote the necessary time and attention to their duties. An executive officer should not hold more than two other directorships in listed corporations, including foreign corporations, outside of his or

her group. The…limit does not apply to directorships held by an executive officer in subsidiaries and holdings, held alone or together with others, of companies whose main activity is to acquire and manage such holdings".

Future studies may distinguish the effect of busy directorships on firm performances by separating that of the intra-group from the external-group interlock.

This study presents some limitations. The analysis is cross-country, but it only considers one year; therefore, it could be extended in time span in order to verify the robustness of our findings. In addition, the measure of business correlation we adopted provides information on whether firms are in the same industry but does not capture if they are horizontally or vertically integrated; thus more sophisticated measures could be considered.

The present study is characterized by a descriptive approach of the IgI phenomenon. Further development might attempt to observe the role played by ownership type, business correlation among companies, and the separation between ownership and control within these companies using different methodological approaches with respect to SNA, such as conducting observational studies based on natural experiment (Fattobene et al., 2018).

Moreover, it might be considered useful to study the link between IgI and companies' performance, considering that alternative ownership characteristics moderate the relationship between group affiliation, IgI and group performance. Finally, as shown in our theoretical framework, other variables such as the separation between control and management and the legal regulation on the holding activities could be related to the strength of IgI, deserving therefore to be empirically analyzed.

References

Aganin A. and Volpin P. (2003), History of corporate ownership in Italy, ECGI Working Paper Series in Finance, 17.

Aguilera R. V., Filatotchev I., Gospel H. and Jackson G. (2008), An organizational approach to comparative corporate governance: Costs, contingencies, and complementarity, *Organization Science*, 19(3), pp. 475-492.

Almeida H. and Wolfenzon D. (2006), A theory of pyramidal ownership and family business groups, *Journal of Finance*, 61, pp. 2637-2680.

Attig N. and Morck R. (2005), Boards and corporate governance in a typical country, Working Paper, University of Alberta.

Bianchi M. and Bianco M. (2006), Italian corporate governance in the last 15 years: From pyramids to coalitions, ECGI Finance Working Paper, 144.

Boardman A. and Vining A. (1989), Ownership and performance in competitive environments: a comparison of the performance of private, mixed and state-owned enterprises, *Journal of Law and Economics*, 32(1), pp. 1-32.

Buchuk D., Larrain B., Muñoz F. and Urzúa F. (2014), The internal capital markets of business groups: Evidence from intra-group loans, *Journal of Financial Economics*, 112(2), pp. 190-212.

Chang S. J. (2003), Ownership structure, expropriation, and performance of group-affiliated companies in Korea, *Academy of Management Journal*, 46, pp. 238-253.

Chang S. J. and Hong J. (2002), How much do business groups matter in Korea, *Strategic Management Journal*, 23, pp. 265-274.

Cheung Y. L., Rau P. R. and Stouraitis A. (2006), Tunneling, propping, and expropriation: Evidence from connected party transactions in Hong Kong, *Journal of Financial economics*, 82(2), pp. 343-386.

Claessens S. and Fan J. P. H. (2002), Corporate governance in Asia: A survey, *International Review of Finance*, 3(2), pp. 71-103.

Claessens S., Djankov S. and Lang L. H. P. (2000), The separation of ownership and control in East Asian corporations, *Journal of Financial Economics*, 58, pp. 81-112.

Claessens S., Djankov S., Fan J. P. H. and Lang L. H. P. (2002), Disentangling the Incentive and Entrenchment Effects of Large Shareholdings, *Journal of Finance*, 57(6), pp. 2741-2771.

Claessens S., Fan J. P. H. and Lang L. H. P. (2006), The benefits and costs of group affiliation: evidence from East Asia, *Emerging Market Review*, 7, pp. 1-26.

Coase R. (1960), The problem of social cost, *Journal of Law and Economics*, 3.

Croci E. and Grassi R. (2013), The economic effect of interlocking directorates in Italy: New evidence using centrality measures, *Computational and Mathematical Organization Theory*, 20(1), pp. 89-112.

De Alessi L. (1980), The economics of property rights: A review of the evidence, *Research in Law and Economics*, 2(1) (R. Zerbe ed.).

De B. (2003), The incidence, performance effects of interlocking directorates in emerging market business groups: evidence from India, Working Paper, Indira Gandhi Institute of Development Research.

Dharwadkar R., George G. and Brandes P. (2000), Privatization in emerging economies: An agency theory perspective, *Academy of Management Review*, 25, pp. 650-669.

Di Carlo E., Fortuna F. and Testarmata S. (2016), Boundaries of the business model within business groups, Journal of Management and Governance, 20(2), pp. 321-362

Di Carlo E. (2014), Pyramids and the separation between direction and control of non-financial Italian family companies, *Journal of Management and Governance*, 18(3), pp. 835-872.

Di Carlo E. and Ranalli F. (2020), Interpreting corporate performance and governance of listed subsidiaries, in S. Dell'Atti, M. Manzaneque, & S. Hundal (Eds.),

Board of directors: A review of practices and empirical research, pp. 145-166,(Sumy, Ukraine: Virtus Interpress).
Di Pietra R., Grambovas C. A., Raonic I. and Riccaboni A. (2008), The effects of board size and 'busy' directors on the market value of Italian companies, *Journal of Management and Governance*, 12(1), pp. 73-91.
Djankov S., La Porta R., Lopez-de-Silanes F. and Shleifer A. (2008), The law and economics of self-dealing, *Journal of Financial Economics*, 88, pp. 430-465.
Drago C., Millo F., Ricciuti R. and Santella P. (2015), Corporate governance reforms, interlocking directorship and company performance in Italy, International Review of Law and Economics, 41(C), pp. 38-49.
Dyck A. and Zingales L. (2004), Private benefits of control: An international comparison. *Journal of Finance*, 59(2), pp. 537-600.
Eckel C. and Vining A. (1985), Elements of a theory of mixed enterprise, *Scottish Journal of Political Economy*, 32(1), pp. 82-94.
Enriques L. and Volpin P. (2007), Corporate Governance Reforms in Continental Europe, *Journal of Economic Perspectives*, 21, pp. 117-140.
Faccio M. and Lang L. H. P. (2002), The ultimate ownership of Western European corporations, *Journal of Financial Economics*, 65, pp. 365-395.
Faccio M., Lang L. and Young L. (2001), Dividends and expropriation, *American Economic Review*, 91, pp. 54-78.
Fattobene L., Caiffa M. and Di Carlo E. (2018), Interlocking directorship across Italian listed companies: evidence from a natural experiment, *Journal of Management and Governance*, doi: 10.1007/s10997-017-9392-6.
Ferris S. P., Jagannathan M. and Pritchard A. C. (2003), Too Busy to mind the business? Monitoring by directors with multiple board appointments, *Journal of Finance*, 58, pp. 1087-1111.
Fich E. and Shivdasani A. (2006), Are busy boards effective monitors?, *The Journal of Finance*, 61, pp. 624-689.
Fligstein N. and Brantley P. (1992), Bank control, owner control, or organizational dynamics: Who controls the large modern corporation?, *American Journal of Sociology*, 98, pp. 280-307.
Franks J. and Mayer C. (1997), Corporate ownership and control in the UK, Germany, and France, *Journal of Applied Corporate Finance*, 9(4), pp. 30-45.
French corporate governance codes (2018).
Friedman E., Johnson S. and Mitton T. (2003), Propping and tunnelling, *Journal of Comparative Economics*, 31(4), pp. 732-750.
Geletkanycz M. A. and Boyd B. K. (2011), CEO outside directorship and firm performance: A reconciliation of agency and embeddedness views, *Academy of Management Journal*, 54, pp. 335-352.
Gianfrate G. M. (2007), What do shareholders' coalitions really want? Evidence from Italian voting trusts, *Corporate Governance: An International Review*, 15(2), pp. 122-132.
Gomes A. (2000), Going public without governance: managerial reputation effects, *Journal of Finance*, 55, pp. 615-646.

Goto A. (1982), Business groups in market economy, *European Economic Review*, 19, pp. 53-70.

Hallock K. F. (1997), Reciprocally interlocking boards of directors and executive compensation, *The Journal of Financial and Quantitative Analysis*, 32(3), pp. 331-344.

Haunschild R. and Beckman C. M. (1998), When do interlocks matter? Alternate sources of information, interlock influence, *Administrative Science Quarterly*, 43, pp. 815-844.

Hendry J. (2002), The principal's other problems: Honest incompetence and the specification of objectives, *Academy of Management Review*, 27, pp. 98-113.

Hillman A. J. and Dalziel T. (2003), Boards of directors and firm performance: Integrating agency and resource dependence perspectives, *Academy of Management Review*, 28(3), pp. 383-396.

Horton J., Millo Y. and Serafeim G. (2012), Resources or Power? Implications of Social Networks on Compensation and Firm Performance, *Journal of Business Finance & Accounting*, 39(3-4), pp. 399-426.

Hung H. (1998), A typology of the theories of the roles of governing boards, *Corporate Governance: An International Review*, 6, pp. 101-111.

Jensen M. C. and Meckling W. (1976), Theory of the firm: Managerial behavior, agency costs, and capital structure, *Journal of Financial Economics*, 3, pp. 305-360.

Jiang Y. and Peng M. W. (2011), Principal-principal conflicts during crisis, *Asia Pacific Journal of Management*, 28(4), pp. 683-695.

Kaczmarek S. P., Kimino S. and Pye A. J. (2012), Interlocking directorships and firm performance in the highly regulated sectors: The moderating impact of board diversity, *Journal of Management and Governance*, doi: 10.1007/s10997-012-9228-3.

Khanna T. and Palepu K. (2000), Is group affiliation profitable in emerging markets? An analysis of diversified Indian business groups, *Journal of Finance*, 55(2), pp. 867-891.

Khanna T. and Palepu K. (1999), Emerging market business groups, foreign investors and corporate governance, NBER Working Paper, 6955.

Khanna T. and Rivkin J. W. (2000), *Ties that bind business groups: Evidence from an emerging economy*, Mimeo, (Cambridge, MA: Harvard University).

Khanna T. and Rivkin J. W. (2006), Interorganizational ties and business group boundaries: Evidence from an emerging economy, *Organization Science*, 17(3), pp. 333-352.

Khanna T. and Yafeh Y. (2007), Business groups in emerging markets: paragons or parasites?, *Journal of Economic Literature*, 45, pp. 331-372.

Kiel G. C. and Nicholson G. J. (2006), Multiple directorships and corporate performance in Australian listed companies, *Corporate Governance: An International Review*, 14(6), pp. 530-546.

Kim B., Prescott J. E. and Kim S. M. (2005), Differentiated governance of foreign subsidiaries in transnational corporations: An agency theory perspective, *Journal of International Management*, 11(1), pp. 43-66.

Koenig T. and Gogel R. (1981), Interlocking corporate directorships as a social network, *American Journal of Economics and Sociology*, 40, pp. 37-50.

Koenig T., Gogel R. and Sonquist J. (1979), Models of the significance of interlocking corporate directorates, *American Journal of Economics, Sociology*, 38, pp. 173-186.

Koslowski P. (2009), The ethics of corporate governance: A continental European perspective, *International Journal of Law and Management*, 51(1), pp. 27-34.

La Porta R., Lopez-de-Silanes F. and Shleifer A. (1999), Corporate ownership around the world, *Journal of Finance*, 54(2), pp. 471-517.

La Porta R., Lopez-de-Silanes F., Shleifer A. and Vishny R. (2002), Investor protection and corporate valuation, *The Journal of Finance*, 57(3), pp. 1147-1170.

Leff N. (1978), Industrial organization and entrepreneurship in the developing countries: The economic groups, *Economic Development and Cultural Changes*, 26, pp. 661-675.

Leksell L. and Lindgren U. (1982), The board of directors in foreign subsidiaries, *Journal of International Business Studies*, 13(1), pp. 27-38.

Loderer C. and Peyer U. (2002), Board overlap, seat accumulation and share prices, *European Financial Management*, 8, pp. 165-192.

Mace M. (1971), *Directors: Myth and Reality* (Boston: Graduate School of Business Administration, Harvard University).

Maman D. (2000), Who accumulates directorships of big business firms in Israel: Organizational structure, social capital and human capital, *Human Relations*, 53(5), pp. 603-629.

McNulty T. and Pettigrew A. (1999), Strategists on the board, *Organization Studies*, 20, pp. 47-74.

Meeusen W. and Cuyvers L. (1985), The interaction between interlocking directorships, the economic behaviour of companies, in Stokman F. N., Ziegler R., Scott J. (Eds.), *Networks of corporate power: a comparative analysis of ten countries* (Oxford: Polity Press).

Melis A. and Zattoni A. (2017), *A primer on corporate governance: Italy* (New York: Business Expert Press).

Mitchell J. C. (1969), *Social networks in urban situations* (Manchester: Manchester University Press).

Mizruchi M. S. (1996), What do interlocks do? An analysis, critique, and assessment of re-search on interlocking directorates, *Annual Review of Sociology*, 22, pp. 271-298.

Morck R. (2005), How to eliminate pyramidal business groups: The double taxation of inter-corporate dividends and other incisive uses of tax policy, *Tax Policy and the Economy*, 19, pp. 135-179.

Morck R. and Yeung B. (2003), Agency problems in large family business groups, *Entrepreneurship: Theory and Practice*, 27, pp. 367-84.

Moscariello N., Pizzo M., Govorun D. and Kostyuk A. (2019), Independent minority directors and firm value in a principal-principal agency setting: evidence from Italy. *Journal of Management and Governance*, 23(1), pp. 165-194.

Nenova T. (2000), The value of corporate votes and control benefits: A cross country analysis, Working Paper, Harvard University.

Ong C., Wan D. and Ong K. (2003), An exploratory study on Interlocking Directorates in Listed Firms in Singapore, *Corporate Governance: An International Review*, 11(4), pp. 322-334.

Orrù M., Hamilton G. G. and Suzuki M. (1989), Patterns of inter-firm control in Japanese business, *Organization Studies*, 10, pp. 549-574.

Palmer D. (1983), Broken ties: Interlocking directorates and intercorporate coordination, *Administrative Science Quarterly*, 28(1), pp. 40-55.

Pargendler M., Musacchio A. and Lazzarini S. (2013), In strange company: The puzzle of private investment in state-controlled firms, Working Paper #13-071, Harvard Business School.

Persakis A. and Iatridis G. E. (2017), The joint effect of investor protection, IFRS and earnings quality on cost of capital: An international study, *Journal of International Financial Markets, Institutions and Money*, 46, pp. 1-29.

Pfeffer J. (1972), Size and composition of corporate boards of directors, *Administrative Science Quarterly*, 17, pp. 218-228.

Pfeffer J. and Salancik G. R. (1978), *The external control of organizations: A resource dependence perspective* (New York, NY: Harper & Row).

Phan P. H., Lee S. H. and Lau S. C. (2003), The performance impact of interlocking directorates: The case of Singapore, *Journal of Managerial Issues*, 15, pp. 338-352.

Rommens A., Cuyvers L. and Deloof M. (2007*), Interlocking directorates and business groups: Belgian evidence*, -- http://hdl.handle.net/10067/6635801511 62165141.

Roth K. and O'donnell S. (1996), Foreign subsidiary compensation strategy: An agency theory perspective, *Academy of management Journal*, 39(3), pp. 678-703.

Schoorman F. D., Bazerman M. H. and Atkin R. S. (1981), Interlocking directorates: A strategy for reducing environmental uncertainty, *Academy of Management Review*, 6, pp. 243-251.

Schulze W., Lubatkin M., Dina R. and Buchholtz A. (2001), Agency relationship in family firms: Theory and evidence, *Organizaton Science*, 12(2), pp. 99-116.

Shan Y. G. (2013), Can internal governance mechanisms prevent asset appropriation? Examination of Type I tunneling in China, *Corporate Governance: An International Review*, 21 (3), pp. 225-241.

Shropshire C. (2010), The role of the interlocking director and board receptivity in the diffusion of practices, *Academy of Management Review*, 35, pp. 246-264.

Silva F., Majluf N. and Paredes R. D. (2006), Family ties, interlocking directorates, performance of business groups in emerging countries: The case of Chile, *Journal of Business Research*, 59, pp. 315-321.

Singh M., Nejadmalayeri A. and Mathur I. (2007), Performance impact of business group affiliation: An analysis of the diversification-performance link in a developing economy, *Journal of Business Research*, 60(4), pp. 339-347.

Van Ees H., Gabrielsson J. and Huse M. (2009), Toward a behavioural theory of boards and governance, *Corporate Governance: An International Review*, 17, pp. 307-319.

Vining A. R., Boardman A. E. and Moore M. A. (2014), The theory and evidence pertaining to local government mixed enterprises, *Annals of Public and Cooperative Economics*, 85(1), pp. 53-86.

Volpin P. F. (2002), Governance with poor investor protection: Evidence from top executive turnover in Italy, *Journal of Financial Economics*, 64(1), pp. 61-90.

Wasserman S. and Faust K. (1994), *Social network analysis: Methods and applications* (New York: Cambridge University Press).

Weimer J. and Pape J. (1999), A taxonomy of systems of corporate governance, *Corporate Governance: An International Review*, 7(2), pp. 152-166.

Williamson O. (1985), *The economic institutions of capitalism: Firms, markets, relational contracting* (New York, Free Press).

Wolfenzon D. (1999), A theory of pyramidal structures, Working Paper, Harvard University.

Yeo H. Y., Pochet C. and Alcouffe A. (2003), CEO Reciprocal Interlocks in French Corporations, *Journal of Management and Governance*, 7(1), pp. 87-108.

You D., Bruton G. and Lu Y. (2005), Understanding business group performance in an emerging economy: Acquiring resources and capabilities in order to prosper, *Journal of Management Studies*, 42, pp. 183-206.

Young M. N., Peng M. W., Ahlstrom D., Bruton G. D. and Jiang Y. (2008), Corporate governance in emerging economies: A review of the principal-principal perspective, *Journal of Management Studies*, 45(1), pp. 196-220.

Zahra S. A. and Pearce J. A. (1989), Boards of directors and corporate financial performance: A review and integrative model, *Journal of Management*, 15, pp. 91-334.

Zingales L. (1994), The value of the voting right: A study of the Milan Stock Exchange experience, *Review of Financial Studies*, 7, pp. 125-148.

Zona F., Gomez-Mejia L. R. and Withers M. C. (2018). Board interlocks and firm performance: Toward a combined agency-resource dependence perspective. *Journal of Management*, 44(2), pp. 589-618.