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Who Generates Cohesion? A Comparative Analysis of Business Networks in Latin America

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Tesis de Maestría en Economía de

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“¿Quién cohesiona? Un análisis comparado de las redes de firmas en América Latina”

Resumen

Esta tesis aplica un análisis de redes sociales al estudio de firmas utilizando datos de juntas de directores de empresas latinoamericanas. El trabajo realiza tres contribuciones. Primero, introduce una herramienta metodológica nueva que permite capturar la interconexión entre diferentes firmas para obtener métricas sobre el nivel de cohesión de las comunidades de negocios en los distintitos países. Contrasta estas métricas con diferentes hipótesis de la literatura sobre política empresarial y, a) encuentra una correlación negativa entre la cohesión de las elites y la recaudación fiscal, y b) no encuentra una relación entre el nivel de cohesión y derechos de propiedad. Segundo, presenta nueva evidencia que indica que tras más de dos décadas de liberalización financiera –en contra de argumentos sobre globalización y convergencia en modelos de gobernanza corporativa- el tipo de control de las firmas sigue estando definido a nivel nacional. Tercero, explora los actores más relevantes que caracterizan los regímenes de gobernanza corporativa en Chile y Brasil: grupos empresariales y administradores de fondos de inversión, respectivamente. La tesis teoriza sobre las características más distintivas de los administradores de fondos de inversión, actores nodales en la comunidad de negocios en Brasil y novedosos para la literatura. También explora los vínculos de los directores más conectados en cada uno de estos dos países con partidos políticos y asociaciones empresarias.

Palabras clave: Redes sociales, economía política, firmas, América Latina

“Who Generates Cohesion? A Comparative Analysis of Business Networks in Latin America”

Abstract

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The main contributions are threefold. First, it introduces a novel methodological tool that can provide useful metrics about how firms are interconnected, in particular measuring the cohesiveness of national business communities. Interestingly, these country-level metrics are benchmarked with hypotheses from the literature on business politics in Latin America and two preliminary correlations indicating a negative relationship between elite cohesion and tax revenues as well as a lack of association between business cohesion and formal property rights are presented. Second, it provides new evidence indicating that even after more than two decades of financial liberalization and contrary to arguments about globalization and convergence, corporate control is still distinctively defined at the national level. Third, it explores the most salient actors that characterize governance regimes in Chile and Brazil: respectively, business groups and investment managers. Asset managers, as those prevalent in the Brazilian network are an under-theorized actor; this paper therefore advances in a description of the distinctive characteristics of this novel corporate governance player. It also explores and contrast each country's most connected director's links with both business associations and political parties.

Keywords: Social networks, political economy, business, Latin America

Códigos JEL: M16, N26, N86, P48, P51

WHO GENERATES COHESION? A COMPARATIVE ANALYSIS OF BUSINESS NETWORKS IN LATIN AMERICA †

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October 9, 2019

Abstract

Within a comparative political economy framework, this thesis applies social network analysis to the study of business in Latin America using data from firm's board of directors membership. The main contributions are threefold. First, it introduces a novel methodological tool that can provide useful metrics about how firms are interconnected, in particular measuring the cohesiveness of national business communities. Interestingly, these country-level metrics are benchmarked with hypotheses from the literature on business politics in Latin America and two preliminary correlations indicating a negative relationship between elite cohesion and tax revenues as well as a lack of association between business cohesion and formal property rights are presented. Second, it provides new evidence indicating that even after more than two decades of financial liberalization and contrary to arguments about globalization and convergence, corporate control is still distinctively defined at the national level. Third, it explores the most salient actors that characterize governance regimes in Chile and Brazil: respectively, business groups and investment managers. Asset managers, as those prevalent in the Brazilian network are an under-theorized actor; this paper therefore advances in a description of the distinctive characteristics of this novel corporate governance player. It also explores and contrast each country's most connected director's links with both business associations and political parties.

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1. Introduction

The prominence of business as a key economic and political actor throughout Latin America contrasts with its absence from the region's research agenda. This void exists not only in the case of political science, but it is widespread to other related disciplines. It has been argued that this gap in the literature responds, at least in part, to methodological reasons. Outside of the US, the costs of acquiring systematic information on business are high, at least compared with other topics (Schneider, 2014). In this paper I make a first attempt to grasp this open agenda by exploring the potential of network analysis. Within a comparative political economy framework I intend to apply social network analysis to the study of big business in Latin America using firm's board of directors membership data.

In order to advance in a broad agenda about democracy and development, and leaving aside for a moment the study of institutions and going beyond median-voter preferences, further efforts should be devoted to the study of those real individuals and organization's preferences, incentives and resources. New data can be incorporated to illustrate and test hypotheses about the specificity of capitalism in the region, its variation across countries and on the political and economic implications of distinct corporate governance arrangements (Schneider, 2013; Lazzarini, 2011; Musacchio and Lazzarini, 2014). Business elite composition and its political and economic ties are typically studied in a qualitative fashion. In this paper I contribute to the emergent literature on the political economy of business in Latin America through exploratory research that provides a more comparable methodology.

In order to build corporate networks I will focus on interlocking directories. Interlocking directorates refer to the common practice of a member of a certain company's board of directors to also serve on another company's board. Even if this is only one of several possible inter-firm linkages, it has become one of the primary indicators of firms non-market interactions, widely used in studies about the US business. Unlike other affiliation networks, interlocks create strong ties: regular board meetings ensure repeated face-to-face contact between board members and secure effective communication between linked firms. It has been shown that interlocked networks serve as a mechanism for the diffusion of information and practices across firms as well as a device for promoting elite cohesion, facilitating collective action (Mizruchi, 1996; Davis, 1996). Although in the US its occurrence appears to have been decreasing in the last decade (Chu and Davis, 2013; Mizruchi, 2013), the flourishing industry of information providers about board membership ties and company's relationships (e.g. BoardEx) indicates that this is an interesting phenomenon not only for scholars, but also for policy makers and investors.

Even though board interlocks have been extensively studied in the US and other central economies, not much work has been done in Latin America. Corporate governance regimes across Latin America are indeed different from those in the US: the separation between ownership and control is not as clear-cut as in the US, professional management is less autonomous and ownership is not as atomized. But still, interlocked directories are ubiquitous. Mapping economic elites into a network will enhance our understanding of these key actors that characterize corporate governance regimes, defined broadly as to include the social organization of firms and their relationship with their environment composed for example by competitors, financiers, suppliers, regulators, political parties, business associations and more generally the state and civil society (Fligstein and Feeland, 1995). Besides showing interesting variation in the overall structure of these networks, this methodology also serves as a motivating guide into qualitative work. I explore the profiles of the individuals forming these networks and present a more granular approach that will allow us to identify the type of actors behind these structures. In concordance with the literature on corporate governance in Latin America (Schneider, 2008), business groups characterized by diversified holdings, vertical ownership structures and family control appear to be deeply embedded in Latin American business communities. But, motivated by the Brazilian case, I argue that investment firms are also a relevant and distinct key emerging actor shaping business communities and governance regimes.

This paper's main contributions are threefold. First, it introduces a novel methodological tool that can provide useful metrics about how firms are interconnected, in particular measuring the cohesiveness of national business communities. Country-level metrics are then benchmarked with hypothesis from the literature on business politics in Latin America, and two preliminary correlations indicating a negative relationship between elite cohesion and tax revenues, and a lack of association between business cohesion and formal property rights institutions are presented. Second, it provides new evidence indicating that even after more than two decades of financial liberalization and contrary to arguments about globalization and convergence, corporate control is still distinctively defined at the national level. Third, considering the networks as objects rather than as measurement devices, it explores the most salient actors that characterize governance regimes in Chile and Brazil: respectively, business groups and investment managers. Asset managers, as those prevalent in the Brazilian network are an under-theorized actor; this paper therefore advances in a description of the distinctive characteristics of this novel corporate governance player. It also explores and contrast each country's most connected director's links with both business associations and political parties.

I begin by providing a broad framework on work done on interlocked directories and corporate governance and then review some hypothesis about how capitalism is organized in Latin America. Section 3 introduces the data and methodology used. In Section 4, I analyse the different networks: Section 4.1 presents some cross-country comparisons and tests for two hypothesis using network-level metrics that serve as an example of the cross-sectional applicability of the tool I am presenting. Then, Section 4.2 explores the international connections between board members across Latin America. Section 4.3 goes into the more detailed case studies focused in Brazil and Chile. In Section 4.4, I make an across time analysis in order to provide evidence regarding the Argentinian case. I finish by presenting preliminary conclusions and stating some open questions that could motivate a possible research agenda on corporate governance and economic elites in Latin America using board composition data.

2. Motivation & Literature Review

In the extensive literature on board interlocks developed primarily by economic sociologists and organizational theorists, there is an agreement that these crossed appointments are hardly ever random events but rather conscious and strategic decisions. Their significance is not always completely clear, since motivations most likely vary in a by-case and context-specific basis. As argued by Mizruchi (1996) who provides the seminal review on the extensive work done on this topic, several mechanisms have been considered to be behind the formation of interlocks, distinguishing different types of mechanisms of inter-organizational influence. Critics of big business have often argued board interlocks tie together competitors, restricting competition and enhancing collusion. Others have thought of board ties as mechanisms through which firms co-opt various sources of environmental uncertainty, associating them with inter-firm resource dependency, in particular with sources of financing, buyers and suppliers. Board of directors also perform an important function regarding the external reputation of firms, and director's appointments may respond to firm's legitimacy concerns. Moreover, interlocks can also reflect individual's rather than organizational strategies, who seek board appointments as part of their professional career advancement. Most importantly, is has been generally argued shared directors represent social ties between business elites, contributing to overall social cohesion. Exploring the composition of interlocked boards becomes key to better understand and identify economic elites. Even considering the difficulties to empirically distinguish between these mechanisms, and the fact that several of them are likely to be simultaneously in play, most empirical research appears to favour the last social embeddedness interpretation. At least in the US, rather than mapping buyer, suppliers and financial strategic relationships emphasized by resource dependence theories of the firm, interlocks appear to indicate the overall embeddedness of corporate governance relations in social and economic elites. Instead of being the visible signs of some sort of collusive elite conspiracy, interlocks are better thought as more mundane conduits of information(Davis, 1996).

Beyond the disputes around the causes of interlocks, it has been argued firm's social embeddedness have consequences on corporate behaviour. Even though results from empirical analysis are many times causally ambiguous given the difficulty to tackle identification issues through network analysis, it is clear that director appointments patterns affect firm's decision making. Interlocks are seen as conduits of information flows, enhancing communication across firms, affecting through this mechanism firm's strategies over different domains (Haunschild and Beckman, 1998). They are also thought to reduce collective action problems: repeated interaction enhances trust and facilitates coordination. Beyond relating them to a variety of overall performance metrics, interlocks have been associated with more specific behaviours. For example, as facilitating the unity necessary for effective political action through campaign contributions and lobbying (Barnes, 2012; Mizruchi, 1989; Vogus and Davis, 2004), as well as to the common adoption of certain business practices and corporate strategies (e.g M&A growth, golden parachute packages, poison-pill anti-takeover defences, etc.) (Mizruchi, 1996; Patnam, 2011; Fracassi, 2015). Moreover, in a different and more recent political economy literature, board memberships and interlocks are also widely analysed and used as an indicator of the firm's political connections. In this framework, political connections functions are generally limited to enhancing firm's rent-seeking behaviour, for example, increasing their capacity to extract subsidized credit from state-related banks (Faccio, 2006; Khwaja and Mian, 2005; Fisman, 2001; González and Prem, 2015).

I could only identify a few papers dealing with interlocked directories in Latin America. I found two within country comparisons, discussing the Chilean (Silva, Majluf, and Paredes, 2006) and Brazilian (Santos, Da Silveira, and Barros, 2009) cases that relate some centrality metric from a network with a firm's financial performance. They reach contrasting results: the former finds a positive effect of social ties on performance, especially when concentration of voting rights is low. In the later, evidence points to a negative effect of interlocking in a firm's value. Using tools from network analysis, Lazzarini (2011) makes a compelling description of Brazilian corporate network that will be later integrated into a larger cross country comparison -that includes Chile- that argues for national network's resilience to common globalization and market liberalization trends (Brookfield, Chang, Drori, Ellis, Lazzarini, Bernath Bardina, and Siegel, 2012). As far as I am aware, mine is one of the first comparative attempt to evaluate board interlocks across Latin America. Using a distinct firm selection strategy, Cárdenas (2016) argues about the relevance of encompassing business associations and free trade regimes causing interlocks. My objective in this paper is not to explain the causes of interlocks, nor the consequences of network centrality and embeddedness on financial performance. Instead, I identify and compare across countries the key political economic actors behind interlocks and measure overall elite cohesion in order to advance on the testing of several hypothesis.

In line with the literature on interlocks, studying board ties is informative of corporate governance models and the organizational dimension of the economy (Kogut, 2012). Institutional explanations for governance regimes often trace back their ultimate determinants to the origins of national legal systems (La Porta, Lopez-de Silanes, Shleifer, and Vishny, 1997), and crucially for our discipline, to politics. It is argued that different socio-economic coalitions operating under certain institutional regimes are more prone to motivate dispersed ownership or block shareholding arrangements(Roe, 2003; Gourevitch and Shinn, 2005). Different corporate governance schemes are associated with alternative sources of external finance (banks vs. capital markets), distinct arrangements between markets and hierarchy (the limits of the firm), and with the level of coordination and competition between firms. The varieties of capitalism (VoC) literature, a recurrent framework used in comparative political economy, places the firm at the center of the analysis (Hall and Soskice, 2001) and identifies corporate governance as one of the key distinctive spheres where agents solve their coordination problems. Furthermore, distinct corporate governance arrangements are complemented by particular industrial relations and innovation regimes, and generate distinctive patterns of inter-firm coordination and competition, affecting substantively important outcomes such as labour productivity, innovation and income inequality.

Concisely, relevant political and economic variables have been identified as both causes and consequences of corporate governance regimes. Hypotheses are based on the coordination at the corporate level, cross-shareholdings and interconnections between firms; network relationships are implicit or explicit in most causal explanations in this literature. For example in Culpepper (2005) comparative research on corporate institutional reform, it is argued that the key determinant of reform is the behaviour of the actors at the center of the business network in France, who only due to their nodal position can signal acceptance to new rules and trigger change. For the case of Japan, Witt (2006) explains the slow change of its business system in the midst of a long crisis through the formal and informal non-market ties between actors that make of Japan a network economy (Lincoln and Gerlach, 2004). In both this cases corporate networks are key for explaining institutional change. More generally, as argued by Culpepper (2010), at least for the low salience and highly technical domains as the ones in which business have more intense interests, the explanatory emphasis accounting for observed diverging outcomes should not focus on variations in government partisanship or in the relative strength of different interest groups coalitions but rather on the preferences of managerial organizations. In these "quiet politics" domains, business appears to have a decisive advantage, in general achieving their preferred outcome. Since business almost always "wins", the emphasis should not be in their relative capacity to influence the electoral and legislative channels, but on explaining the origin and diffusion of their preferences. Therefore, in order to apprehend this agenda it seems natural to compare board composition, roles and its relation with ownership structures using network analysis: the board room is the natural locus when thinking about corporate governance and the role of firms in the social and political arena. Exploiting micro-level data mapping interlocked directories appears then to be a good first step in order to apprehend corporate governance regimes, identify main nodal actors, their resources and preferences.

Inscribed in this comparative capitalisms literature, it has been argued that Latin America has a distinct and enduring type of capitalism with traits common to most countries (Schneider, 2013). A "hierarchical" variety of capitalism characterized by the pervasiveness of two types of private organizations, multinational companies (MNC) and diversified business groups, seems to prevail across Latin America. Both of these actors appear to be complement each other, simultaneously shaping and adapting to an environment of low skills and segmented labor markets. By identifying these two key actors, the literature also engages in a broader discussion about the theoretical pros and cons of business groups (Granovetter, 1995; Bertrand, Mehta, and Mullainathan, 2002; Morck, Wolfenzon, and Yeung, 2005; Khanna and Yafeh,

2007) and MNC (Cohen et al., 2007). Using a network analysis framework, I show that within this general regional model there is still significant cross country variation. I aim to explore and describe this variation through cross country comparisons that track alternative regimes to their societal basis. Furthermore, besides business groups and MNCs, I will explore the centrality of investment firms, an understudied actor that my research presents as a key player in Brazil.

3. Data & Methods

The empirical part of the project began by collecting raw data on the name of each individual that serves in the board of directors of every company whose shares are listed as primary stocks in one of the selected markets [1]. The source for this data is Capital IQ, Mc Graw Hill's financial information service. Using a unique data source for all countries makes me confident on its homogeneity and comparability. I further double-checked the accuracy of this information by randomly reviewing some names directly from corporate and regulators websites. Overall, I registered over $7,000$ name-firms entries. The quality of the database is overall very good although it is probably not updated in real-time and there may be some minor attrition, i.e. companies for which I do not have the name of some or all of its directors; but these are mainly not firms in the "organizational" sense but rather public investment vehicles dependent of other financial institution (typically banks or asset managers). The direction of the potential bias arising from attrition of either firms or directors is quite clear; those more salient individuals who occupy a place in more than one board are more likely to appear in the database. The eventually missing directors would not add any relevant information for our analysis; results would be basically the same. Similarly, imperfect updating of the database should be less of an issue given long tenure and stickiness of board memberships.

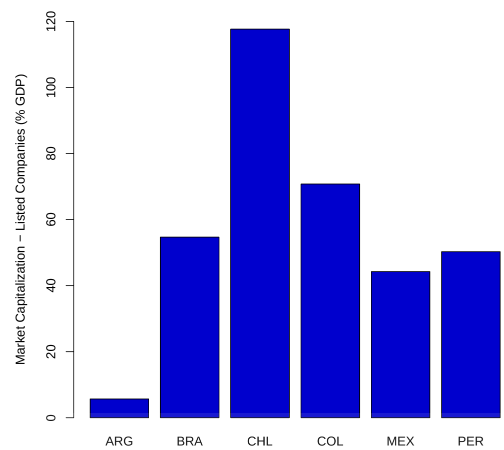
I gathered data for all companies participating in the domestic stock markets of all big Latin America countries: Mexico, Colombia, Peru, Brazil, Argentina and Chile. I excluded Venezuela because despite its relatively large economy it has a very small capital market (I could only register 13 firms). Other smaller countries in the region typically lack a significant stock exchange market.

[1] These are the companies that will be referred as "public"; meaning companies whose stocks are publicly traded, not those that are state-owned.

The fact that our sample is limited to public companies deserves some comments. The phenomenon of board interlocks is thought to be idiosyncratic of public companies; moreover, when thinking about economic elites and corporate governance the object of study are typically large -not small or medium- companies as the ones publicly listed. These two reasons support the choice of limiting firms in my sample to the universe of listed companies. It is true that companies that list themselves in domestic exchange markets are not a random sample of a country's firms, even if one restricts the universe to that of large companies: firms certainly self-select into capital markets given their capital structure preferences and requirements. As observed in Figure 1[2], there is variation in the deepness and development of capital markets in the region. But excluding the Argentinian case which I will approach in Section 4.4, and whose market capitalization figure underestimates the relevance of the companies listed given the low valuation multiples proper of a country in default, most of the other countries have relevant and comparable capital markets where we can find a good sample of their most important firms. Even if business groups are usually not listed at the holding level, in general at least one of their subsidiaries is public and therefore included in our analysis. Foreign owned multinational corporations (MNCs) are most likely under-represented, but again many of them float a minority share of their equity in domestic markets, and therefore are part of the analysis. Overall, listed companies operate in the most varied range of industries and economic activities, and exhibit various ownership patterns, granting broadness and generalizability to the sample. Then, with the caveats made above and leaving the door open for further data collection efforts, I am confident the set of firms and directors I have is a reliable sample of big business in each country.

[2]The source of the data is the World Bank - World Development Indicators

Figure 1: Capital Markets



I will use standard vocabulary from the networks literature, and define terms when I think is appropriate, basically following Jackson (2008). Each firm is a vertex or node, the basic constitutive unit that makes up networks. Each firm has a board of directors that varies in size, in general from 5 to 10 individuals. I register a link (also referred as an edge) between two firms when there is at least one common individual sitting in the board of the two companies. If such individual exists I compute a 1 in the entry corresponding to their dyadic relationship, otherwise I register a 0. Doing this for every possible combination of firms, an adjacency matrix is constructed, an $n \times n$ square and symmetric matrix G, where $g_{i,j}$ represents the relation between firm i and firm j, and n stands for the total number of nodes (firms in this case). This matrix is the basic computational input from where I can then perform all calculations using R's igraph package.

To compute a link between two firms there should be a full match of the complete name(s) and surname(s) of the individual sitting on each board. I double-checked spelling and only introduced changes when there was an obvious mistake or a capital letter issue. An alternative would be to code links not at the individual level -full match of name and surname - but to only take into account the surname. Besides treating family members as the same "individual", this could also be confusing and introduce a non-homogeneous bias across countries. For example, arising from different cultural traditions, in Chile every individual is known by its two -paternal and maternal- surnames; in Argentina people generally register only the paternal one. I briefly explore the difference between networks arising from using individuals names with that generated using just family surnames for the case of Chile in Section 4.3.2; in all other cases I stick with the more stringent individual level match.

Since links between firms are necessarily reciprocal, the kinds of connections described above are better represented as undirected graphs; consent is needed to establish and maintain the relationship. In more formal terms $g_{i,j} = g_{j,i}$, we therefore have a symmetric adjacency matrix. This seems appropriate since in most cases there is no clear hierarchy in the relationship between firms so that links could be considered directed. True, there are many cases in which a firm is partially owned by another company in the sample, or have common parents, but this is not the norm. For other purposes, such as mapping ownership networks and pyramidal structures, directed graphs are certainly a better option and should be further explored. This is a likely extension of this research although at this stage and in order to enhance the comparability between countries, I didn't pursue. Data about ownership is not as straightforward as that on board appointments; ownership structures are often pyramidal and the investment vehicles used, many times off-shore shell companies, makes the ultimate corporate owners intractable. Beyond disclosure regulations, investment structures also vary across countries according to idiosyncratic legal and taxing schemes. In any case, board interlocks are likely to reflect common ownership patterns as well as other more informal ties, and therefore are appropriate indicators of overall inter-firm links.

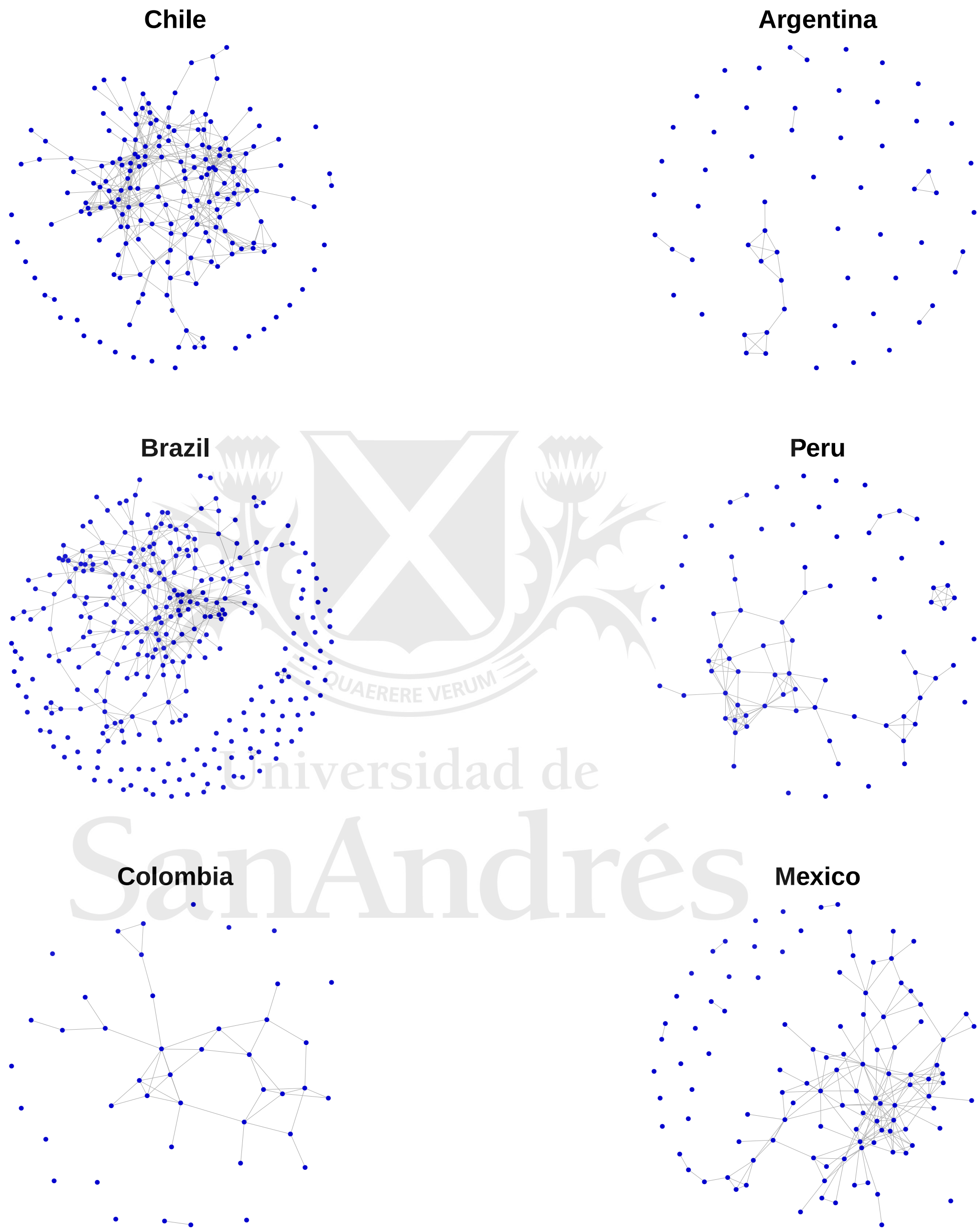
4. Analysis

4.1 Cross-country Comparison

Figure 2 shows the six different country-level networks. These include all nodes, even vertices of degree zero, those isolated firms not sharing a director with any other (at least public) firm in that market. The placement of the vertices when drawing the graph is random, the specific location in the network and particular distance between two adjacent nodes is meaningless (not of course the length of possible paths connecting two separate nodes, measured as the number of steps required to connect them through other connected nodes)[3]. From simply observing the graphs, it is clear that there is wide variation across countries in the structure of their business networks I plan to explore.

[3]In this and all other graphs I use standard Fruchterman-Reingold algorithm.

Figure 2: Complete Networks



There are many possible metrics that describe the structure of networks. Depending on the question of interest, different metrics will probably be more or less useful; there is no unique aggregate statistic that can summarize all aspects of the network's topology. Table 1 includes some of those I find most relevant. The total number of nodes is registered in the first column. Besides giving a sense of the size of each market, when comparing empirical networks it is always important to be mindful of the number of nodes composing them. Some metrics are size dependent, meaning that they will exhibit a non linear change as the size of the network grows. For example, as I will explain below for the case of network's density, when adding an extra node to certain network, the total set of possible links increases more than proportionally[4]. The largest networks in terms of size are those corresponding to Brazil and Chile; in the other extreme, Colombia and Argentina are the smallest ones. Beneath the polar Argentina vs. Chile comparison, there is no clear relation with the market capitalization to GDP ratio from Figure 1. I discuss the Argentinian case in Section 4.4, when evaluating how the loose pattern of ties between the country's firms changed through time.

The second column shows the average degree at the network level; the degree of a node refers to the number of connections it has to other nodes in the graph. The average Chilean firm, for example, has directors connecting her with more than five other firms. Argentinian's have less than one tie, and firms listed in the rest of the countries are typically linked with around three other companies. Then, in the third column, the *densities* of the networks are compared. Density refers to the ratio between the number of actual edges (links) and the total number of possible edges or, equivalently, the unconditional probability that any two nodes -firms in this case- share a director[5]. As previously explained, this metric "penalizes" larger networks, and that is why bigger networks have lower scores even if they exhibit high average degree scores. This penalization makes sense: as the network gets bigger the number of possible links increases; by only looking at average degrees this size issue wouldn't be captured. Using density therefore normalizes and makes networks comparable across countries, although possibly over-penalizing larger networks.

Table 1: Comparison between networks

	Nodes	Degree (Avg.)	Density	Max. Comp (%)	Diameter	Max. Clique	Clustering
Chile	191	5.435	0.029	86.9	9	8	0.393
Argentina	61	0.852	0.014	18.0	6	4	0.158
Brazil	304	2.961	0.010	67.1	13	8	0.295
Peru	79	2.835	0.036	58.2	11	8	0.318
Colombia	43	2.233	0.053	67.4	7	5	0.228
Mexico	109	3.688	0.034	76.1	10	7	0.329

[4]The total amount of possible "dyadic" links is $\frac{n\times(n-1)}{2}$; where n is the number of nodes.

[5]It can be calculated as the average degree, showed in column 2, divided by $n-1$.

The fourth column in Table 1 shows the ratio between the largest *component* of the network and the total amount of nodes. Component refers to those connected sub-graphs, that is, all nodes that could be reached by some path within a particular subset of the network. It is clear from Figure 2 that Chile has the largest connected sub-graph as a proportion of the whole network; 166 from a total of 191 nodes, or 86.9% of the total, are reachable and interconnected by at least some "friends of friends" type of path. The impressively inclusive Chilean network again contrasts with the Argentinian case where only 18.0% of firms are connected through an either direct or indirect link. Related to this component metric, the *diameter* of a network is defined as the longest of all the calculated shortest paths in a network. From the multiple possible paths connecting all firms, the diameter represents the shortest distance between the two most distant nodes in the network. If the network is not complete[6], that is, if there are isolated non reachable nodes with directors not serving in any other listed firm, as in all of our cases, the diameter is taken over its largest component. Again, the case of Chile is notoriously interesting: it has the largest component as a proportion of the total network, but a relatively small diameter, suggesting a high density of connections. The maximum path distance that separates any two nodes of the 166 firms that conform it's largest subcomponent is of only 9 steps; the longest friends of friends type of chain that connects any two firms is relatively short. Low average paths connecting the different nodes in the main component and high clustering coefficients are the two defining characteristics of "small worlds", a well-studied and ubiquitous trait of graphs that appear to abound in both the natural and social sciences, representing the most varied type of phenomenona ranging, for example, from social movement's structure and congress to anatomical connections in the brain (Watts and Strogatz, 1998; Watts, 1999; Cho and Fowler, 2010). In contrast, Brazil's biggest subcomponent, of similar size than the Chilean one, is much less densely interconnected and has a diameter of 13. The number of interlocked directors the two most distant firms in Brazil have to go through in order to reach each other is substantially larger than in the Chilean case. As I explore in more detail below, this difference between Chile and Brazil is likely to arise from the type of actors behind the network's structure.

The sixth column compares the number of firms that conforms the biggest clique in each graph. *Clique* is defined as a completely connected sub-network within a given network; that is, within a clique every two distinct nodes are always adjacent (connected with distance $= 1$). As I will later discuss in the Chilean case, cliques are indicative of business groups: given

[6]If complete, the biggest component includes all -100%- of the nodes of the network

their common ownership companies from the same group are most likely to form one. Take the simplest case in which there are 3 firms A,B and C: these three firms will form a clique if firm A and B, B and C, and A and C have common directors. As the number of firms increases, the possible pairwise combinations and therefore the required number of links needed in order for these firms to form a clique rises more than proportionally. Brazil, Chile and Peru maximum cliques sum up to 8 completely connects firms[7]. Finally, and intimately related with the previous metric, I present a *clustering coefficient* that measures the degree to which firms in a network tend to cluster together. Also referred to as *transitivity*, it calculates the probability that the adjacent vertices of any determined vertex are also connected between them. Just to clarify its relation with the previous statistic, if taken over a clique, this metric should always be equal to one. In line with the other metrics described, Chilean firms also appear to have the highest clustering coefficients, and Argentina the lowest.

Interestingly, this clustering coefficient can be easily benchmarked against random graphs generated through simulations. For each country, I simulated $10,000$ Erdős-Rényi random networks of the same size and the same density (or equivalently, the same number of edges) that that country's network and calculated the mean clustering coefficient across simulations. In this way I obtained a clustering benchmark for each of the empirical networks. The ratios between the empirical clustering coefficients and it's random benchmarks are between 6 and 58, showing firm clustering and board interlocks are by no means random outcomes.

As briefly introduced in Section 2, repeated interaction generated by interlocks allows for fluent information exchange across firms, reducing information asymmetries, enhancing reciprocity and allowing for the development of credible and trustful relationships, all factors than strengthen business cohesion. Interlocked networks are therefore natural indicators of economic elite cohesion: indeed, the set of metrics arising from the networks I have just described confirm the usual characterization of the relative strength and cohesion of business elites in each of these countries. For example, Chile exhibits a vigorous and tightly cohesive business community, while Argentina is an example of fragmentation (Durand, Silva, et al., 1998; Schneider, 2004, 2013; Fairfield, 2010, 2015a; Etchemendy, 2011; Jones and Lluch, 2015).

[7]Requiring $\frac{8 \times 7}{2} = 28$ links in order to bridge all possible combinations.

Cohesion is certainly a key resource behind business instrumental power, enhancing its capacity to form and sustain a united front and engage in collective action, increasing its societal leverage, as described by Fairfield (2015b,a). Variation in business power has been used to explain outcomes such as taxation (Fairfield, 2015a) and liberalizations patterns (Etchemendy, 2011). Instead of only relying on the strength of business organizations (Fairfield, 2015a), market share indicators of concentration (Etchemendy, 2011) or secondary case-study literature, the metrics just presented can complement these qualitative measurements and operationalization choices, facilitating comparisons across countries, time or economic sectors. Moreover, since interlocks span firms into government, political parties, business associations and other civil society organizations, they are a more encompassing indicator of the multiple dimensions -portfolio investments (Schneider and Coen, 2010)- that bridge business and politics. In line with Culpepper (2010) quiet politics argument, by creating tight business communities and besides just endowing business with additional power resources, interlocks can also help align and mold preferences, favoring agreement and consensus across firms managers and owners.

I will now test for two different hypothesis arising from the literature on Latin American business politics using density as an indicator for business cohesion, first as an independent and then as a dependent variable. As just mentioned, business cohesion and taxation have been negatively associated. Fairfield (2015a) main argument is about the negative relationship between business power driven by elite cohesion and overall tax revenue; Flores-Macías (2014) shows how Colombian cohesive elites can shape, rather than hinder, tax policy. In order to provide some evidence on the validity and usefulness of this measure of elite cohesion and going beyond the Chile vs. Argentina polar example, in Figure 3 I plot tax revenues (as a % of GDP)[8] against each country's network density indicator. Indeed, the relationship is negative and appears to fit quite well our 6 observations[9]. Even if many caveats could be made regarding the validity of the measurements, the size of our sample and the absence of other covariates, I believe this rough empirical exercise is a good example of some of the potential uses of network-level metrics in order to provide a systematic measure of business cohesion. Even if the analysis by no means provides evidence on causal relations, it is at least a good reason to further pursue research on business cohesion.

Moreover, the Chilean and Argentinian cases appear to provide rough evidence against the

[8]The data comes from OECD/ECLAC/CIAT/IDB (2015).

[9]The linear fit recovers more than 70% of the total variance and the coefficient is statistically different from zero at the 10% level, what is quite remarkable given $n = 6$.

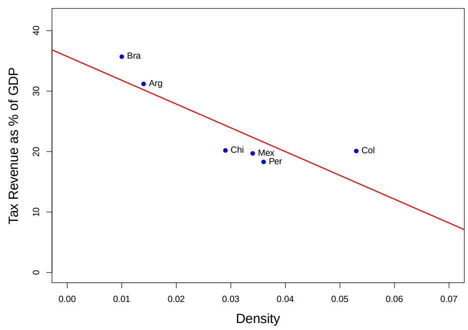


Figure 3: Tax Revenue

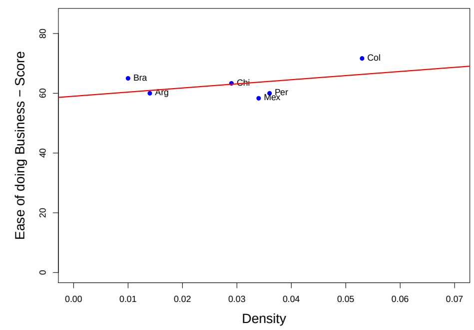


Figure 4: Ease of Doing Business

hypothesis that interlocks would be more common in contexts of weak institutions and low levels of development of capital markets acting to substitute formal monitoring and compliance enforcement (Musacchio and Read, 2002). If social embeddedness is in fact an informal substitute mechanism of enforcing property rights, as argued for example by Post (2014) and Markus (2015), we would expect a negative relationship between network density, our measure of embeddedness, and formal protection of property rights. Chile is well known as a country where property and minority's shareholders rights are well respected and at the same time it appears to have a dense business network. The opposite would describe the case of Argentina. These two observations strongly contradict the institutionalist hypothesis just stated. I repeat the same exercise as above, but instead of tax revenue, I use data from the Ease of Doing Business - World Bank project, a summary measure that includes conventional indicators of formal property rights protections. As it can be observed in Figure 4, there is no clear relationship between each country's network density and their overall ease of doing business score[10]; if any, the relationship appears to be positive. Again, even if results should be taken with caution, they provide preliminary evidence against the implications of the purely institutionalist law and finance literature and atomistic approaches to governance that neglect the social embeddedness dimension of corporate governance; as well as against those arguing about the informal societal mechanisms of property rights protection.

In sum, when evaluating the relative ordering of country-level business cohesion, results obtained by comparing networks are in line with what is broadly accepted in the literature. Moreover, motivated by the business politics literature, I provided some cross-country com-

[10]Results are basically the same if instead of the DTF summary score I use the protection to minority shareholders score, that is built into the summary score I use.

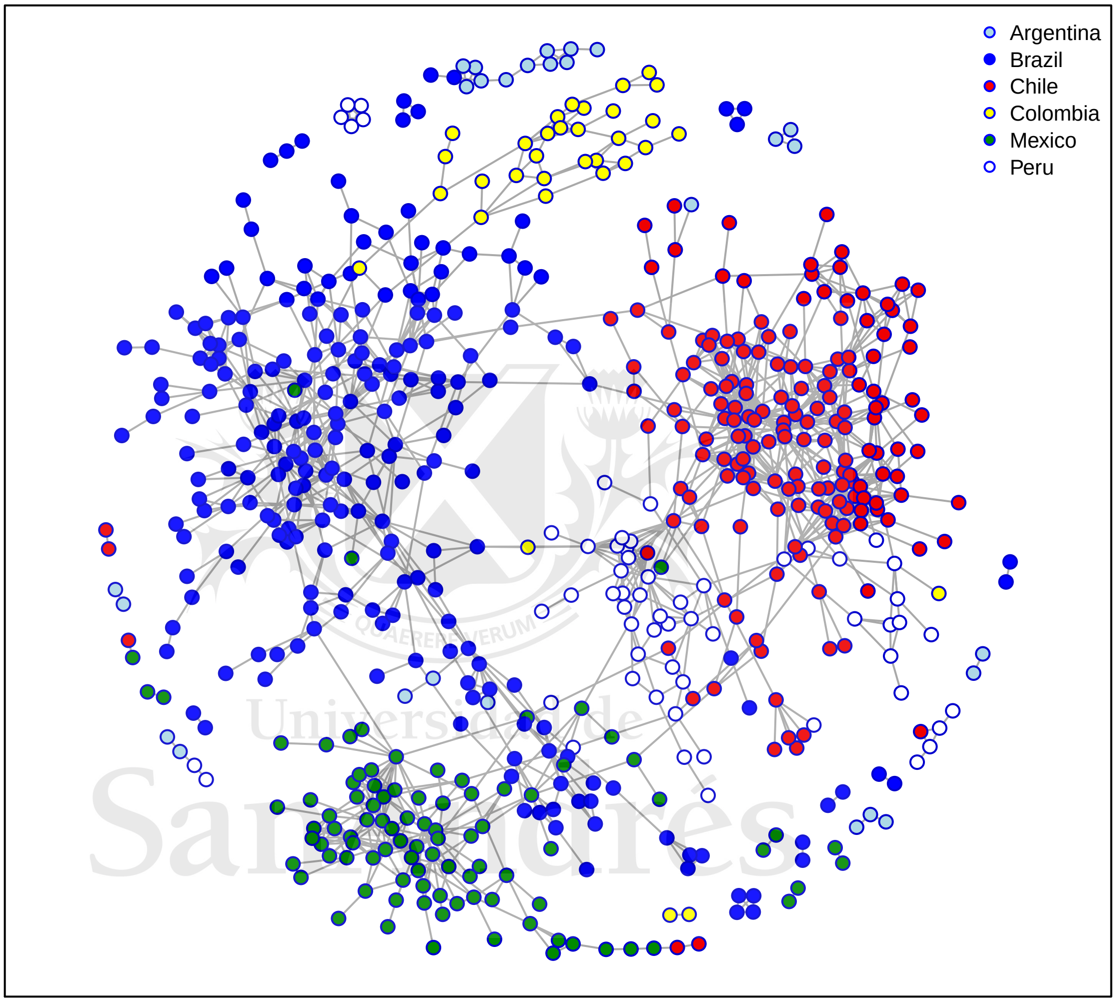
parison in order to illustrate the merits of the proposed measure. Importantly, this methodology can be adapted in order to provide inter-sectoral comparisons as well as tracking cohesion's evolution through time. In any case, the richness of these networks goes beyond the metrics we can obtain from them and can also motivate further qualitative inquiries. In order to further explore the governance system we must go beyond aggregate measures and understand which actors are generating cohesion. As already discussed, different types of business actors will shape different governance regimes, that in turn, affect several of the political and economic outcomes we care about. This is what I do in section 4.3. But before diving into the cases, in the next section I evaluate if the assumption that the country is the correct level of analysis when thinking about business elites is correct.

4.2 Latin American Transnational Network

Following extensive liberalization and growth in international capital flows, a general trend towards increasingly transnational ownership patterns is observed in Latin America as well as across the globe. Moreover, corporate governance institutional best practices have been widely diffused and assimilated by emerging economies. Varieties of capitalism critics argue that by focusing exclusively at the national level, this approach misses important international dynamics. A similar objection can be made on the framework presented above, that indeed, implicitly assumes that the national level is the most relevant level of analysis in order to better understand how firms are organized and interact. Then, before diving into the two national cases comparison, it seems reasonable to test for the appropriateness of this level-of-analysis assumption. For this, I aggregate all companies in my sample into a big Latin American network and evaluate the extent to which firms listed in one market cluster together or rather, if by focusing in a by-country basis I am missing a key transnational -in this case just regional- dynamic (Kogut, Colomer, Ahmadjian, Alexander, Belinky, Bernath Bardina, Brookfield, Chang, Conyon, Corrado, et al., 2012; Cardenas, 2015).

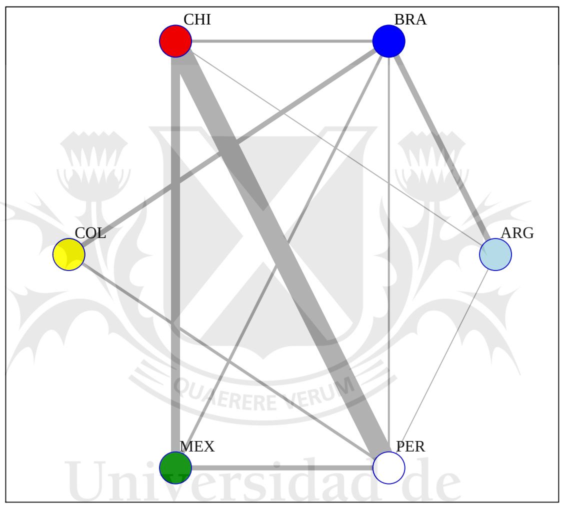
In Figure 5 I plot all firms with degree over zero. Firms listed in different countries are distinguished by color. A giant component can be observed. It connects 543 firms from a total of 787 (69% of all firms) and includes firms from all six countries under analysis. As I mentioned before, the position of each node in the graph follows a random algorithm that does not take into account the country status of each firm. Given this random layout, it is quite notable that even if the network is by construction regional and that indeed it connects firms from every country, its structure is largely determined by the much higher within-country density and clustering. The regional network seems to be mostly structured by national governance dynamics (Fligstein and Feeland, 1995), in particular those of the biggest countries. It can be clearly observed that the areas with higher density correspond to the Brazilian and Chilean cases that I will discuss in greater detail in Section 4.3. International ties appear to be a minority; I only found 57 cross-border links, representing less than 5% of the total number of links. Governance structures appear to be ultimately under the control of local elites and national states, indicating both possible indigenous and distinctive forms of organizing capitalism and the absence of a complete global market for corporate control. Flows of capital together with the importance of external investors have indeed increased; nevertheless, the effective control and power over firms still seems to be held to a large extent by the strongly domestically embedded actors reflected in these networks. This finding are in line, for example, with evidence about the robustness to globalization exhibited by the German ownership network, as showed in Stark and Vedres (2006); or with work that shows the effective integration into domestic business networks of foreign companies in post-Soviet Hungry (Kogut and Walker, 2001). Moreover, this confirms recent work in the region, that using a different criteria to select firms and countries, achieve similar results (Cardenas, 2015).

Figure 5: Latin America - By Firm



Even though focusing the analysis at the national level seems appropriate, I will briefly explore some characteristics of Latin American firm's international ties. In order to illustrate the links between countries that can hardly be observed from the firm-level network in Figure 5, in Figure 6, I plot a very simple network in which each node represents a country. To represent links between countries I use a weighted matrix[11] in which the width of the edges connecting the nodes are proportional to the absolute amount of directors that serve in companies listed in both markets. Some patterns emerge: in line with trade alignments, there is some evidence of tighter Pacific connections, particularly strong is the one between Chile and Peru (even if, surprisingly, there is no direct ties between Chile and Colombia); and Brazil, the biggest country of the region, is the only one with ties to all other five countries, though rather weak ones.

Figure 6: Latin America - By Country



Interestingly, the typical profile of those board members who act as international connectors can be distinguished from the type of board members that generate cohesion in the country levels networks. Except for some groups that operate both in Chile and Peru, for example Brescia group, business groups do not appear to be as prevalent as in national contexts. Most ties are across MNCs that have operations across these countries and who sit regional level managers in their boards. Many of them work for European companies that expanded into Latin America during the nineties by actively participating in each country's privatization processes. In the infrastructure and utilities sector we find managers of Spanish Telefónica, Endesa and Gas Natural Fenosa, Italian Enel and French GDF Suez in the boards of different of their subsidiaries across the region. In the banking sector we also find across-country links through

[11] Instead of binary $1/0$, the adjacency matrix of a weighted graph sums the total number of links between each pair of nodes

Spanish Santander and BBVA, as well as Scotiabank. American MNCs also contribute to the regional network, for example through Walgreens and Walmart's affiliates, Sempra Energy's utilities companies and Delta Airlines participation in regional carriers. There is also some evidence regarding interlocked "multilatinas" such as FEMSA and Lan-Tam. Moreover, there are some cases of asset managers and private equity funds as the ones I will discuss for the Brazilian case in Section 4.3, that operate throughout the region and appoint directors in companies in different countries. In any case, most of these managers that span national boundaries seem to be related to MNCs based either in Europe or the US who usually follow a corporate career path within those organizations, and are typically much less social and politically attached to domestic circles than the directors I will review in the next section when analysing the Brazilian and Chilean cases. Even if they don't appear as prevalent in the interlocked networks, this analysis reminds us about the relevance that MNCs have in the region. Moreover, their economic importance contrasts with the smaller scholarly attention they have received, in particular compared to business groups, suggesting a possible future line of research.

Overall, even if MNCs are most likely under-represented in the sample and international links are restricted to Latin America, these findings indicate corporate governance regimes are up to a large extent a domestic phenomena, supporting the nationally-defined unit of analysis of this paper. Globalization and common external pressures appear to be decisively mediated by country-specific institutions resulting in alternative national corporate governance regimes.

4.3 Case Studies

In Section 4.1 I presented a country-level analysis that broadly compared network's macro structure. Then I argued in favour of the distinctiveness of national governance regimes. In this section I take a more granular approach, identifying and classifying the individuals behind the links that structure country-level networks. Paying close attention to the professional identity of connectors I will compare the Chilean and Brazilian cases. These two countries are broadly comparable in the size of their networks and the relative level of development of its capital markets. They nevertheless exhibit an interesting contrast regarding the professional profile of these individual-connectors, indicating interesting variation on the most relevant type of actors that characterize the corporate governance regime in each economy. Concisely, while in Chile director's career paths linked to the most traditional business groups prevail, in Brazil, I find top executives from different asset management firms and investment funds at the core of it's network. The latter is an understudied actor in the region, with characteristics that distinguish it from both business groups and MNCs, actors whose prevalence is argued that make distinctive the Latin American scene (Schneider, 2013).

In order to grasp the identity of connectors, I tracked the professional career path of the most connected board members in Chile and Brazil. I obtained short biographies from Bloomberg and Capital IQ that I occasionally complemented with information from other local sources such as newspapers and specialized web pages. I focused on those directors who had appointments in 4 or more boards, amounting to approximately 40 individuals in each country. For further research, a more systematic coding of the profiles of all individual board members should be attempted; even some text analysis techniques could be applied. Moreover, a similar analysis can be done, instead of on individuals, focused on most connected companies; so far, insights from both approaches appear to be similar.

4.3.1 Brazil

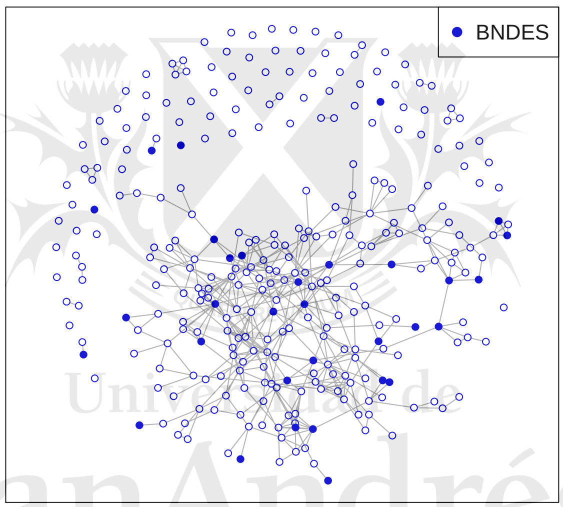
There are three main features of the Brazilian network that are worth highlighting in this brief case study. First, the centrality of firms in which BNDES -Brazil's developmental bank- has an equity stake. Second, the core role played by outsiders independent directors with a political but not clearly partisan background. Third and most interestingly, the relevant role investment and private equity funds managers have giving cohesion to the network (Lazzarini, 2011).

In line with the literature on Brazilian political economy, I find evidence in the Brazilian network about the distinctive role of the state, operating mainly through its national development bank, the BNDES (Musacchio and Lazzarini, 2014). With equity participation that ranges between 5% and 30% and always holding a minority stake, BNDES has through BNDESPAR[12] investments in over 30 companies listed in Bovespa. Interestingly, BNDES partners with the most varied class of investors, including state owned enterprises, pension funds but also with local groups, investment funds and foreign companies (Lazzarini, 2011). As shown in Figure 7 these companies are dispersed all over the network, they don't cluster into a tight clique as traditional business group, like for example the Chilean group found in Figure 8. Moreover, the firms in which BNDES participates have degree and in particular betweenness[13] centrality scores above the average of the network, providing further evidence that these

[12]BNDES's subsidiary that serves as it's equity investments holding.
[13]Another indicator of a node centrality of a network that penalizes redundant links.

firms contribute more than proportionally to the overall connectivity of the network. This dispersed location in part follows BNDES's board appointment policy. Even if in most cases the stakes BNDES control allows it to directly appoint one or more directors, in order to enhance market transparency and promote independent directors, BNDES is mandated to vote for non-affiliated directors together with other non-controlling shareholders. Then, through the support of some semi-public independent figures as the ones I describe below, BNDES appears to have an important role contributing to the cohesion of Brazilian business community. [14]

Figure 7: BNDES Equity Investments



As introduced above, I do find some well-connected directors that have semi-public profiles characterized by being former minister or secretaries, currently consultants, with close connections with both the public and private sector, in general with some bias and expertise in big infrastructure or energy. The most salient example is that on Maílson da Nóbrega, Sarney's former finance minister, consultant and present in 7 different boards. Closer to the energy sector and also among the top connectors I find José Luiz Alquéres, former secretary of energy and BNDES director and currently a multi-purpose consultant. Notably, even if there

[14]It is important to remark BNDES not always behaved as a passive institutional investor, but in some cases it also actively interfered with management; for example, in the case of the removal of Vale's CEO in 2009 (Musacchio and Lazzarini, 2014)

are various directors with hybrid career paths that combine public service and private sector experience, at least in this preliminary review I could not find evidence of systematic organic partisan connections. This is in line with the low institutionalization of the Brazilian party system, and as I will show below, contrasts with the Chilean case. Together with party's fluidity, the weakness of Brazilian business associations (Schneider, 2004) leave an open space that grants this figures a more relevant role, brokering information across firms and decisively shaping business preferences and influencing public opinion.

As expected, I also find among the top connectors officers of some of the major local corporations, for example, both members of the controlling family and top managers of Itaú group rank high in the ranking of most connected directors. Even if they are not as excluding protagonists as in Chile, business groups are still important participants in the Brazilian business community.

Most interestingly, when reviewing this ranking, top managers from investment firms and private equity funds appear in top positions. GP Investments and Tarpoon, two big Brazilian investment funds, are the clearest examples of this kind of firms. Both of their top managers, Antonio Bonchristiano and Pedro de Andrade Faria, can be found in multiple boards, the same as several other senior officers of these asset management firms. This type of profile was present in around half of the individuals reviewed, and clearly differs from the professional identities and career paths that could be expected to characterize hierarchical capitalism (Schneider, 2013). They are qualitatively distinct from both directors linked to family-owned business groups as the ones prevalent in Chile, and from managers tied to MNC headquarters as the ones mentioned in Section 4.2 when I described the profiles of cross-national interlocks. Even if a more complete theorization of this understudied type of governance actors is required in order to understand their systemic significance and the complementaries they may have with other spheres of the political economic regime I will describe some traits these profiles share. Similar to other business related service providers such as consulting and law firms, they are organized as partnerships. Instead of focusing on a minority stake in the largest corporations of each countries, in general this investors have a controlling share in mid-size companies. Their investment horizon is much longer than that of a traditional asset manager but shorter that the one strategic investors or business groups in general exhibit. They are certainly distinguished by their financial expertise, most of these managers have previous experience in banking, and their value preposition includes the fine-tuning of firm's capital structure, which usually results in increased financial leverage or debt restructuring. But they also typically pursue operational changes in the portfolio companies they control and have a hands-on activist approach to management. Importantly, they exhibit a multi-level embeddedness as they are simultaneously closely related to both international investors and to the local business community. In order to secure financing for their ventures they hold distinctive ties with international investors, functioning as brokers of external funds into the country. Ties with international finance are fostered, particularly for younger generations, by career paths that include studying and working experiences outside their home countries, mostly in the US. At the same time, in order to secure the best deal flows, these managers are also tightly integrated into the local business communities. Rather than investment-bank brokered deals, which are the norm in the most formal and institutionalized US environment, self-sourced proprietary rather than competitive opportunities appear to be much more relevant in Latin America.

This is a relatively new type of actor, their business model was only displayed in the region after the late 90's and early 2000's. How it compares to this same class of investor in the US, where it is much more extended (Appelbaum and Batt, 2014) is an open question that may inspire future research. The importance of this kind of investors is consistent with observed flows of portfolio and private equity finance, in which Brazil stands-out from the rest of Latin American countries, even after taking into account the size of it's economy (see for example LAVCA (2013)). Conversely, in the more institutionalized and entrenched Chilean environment, this type of investors are not as important; the prevalence of business groups crowd-out the opportunities this type of firms would pursue. In line with these observations, the Brazilian stock market may not have an overall abnormally high market capitalization, but it exhibits a high turnover ratio that indicates the relatively high liquidity of the market, which provides a secure exit for fund's investments. As I discuss below, these characteristics of the stock market contrast sharply with the Chilean high market capitalization but low turnover case.

Finally, I think an appropriate way of wrapping up this case study is by briefly acknowledging Eike Batista's now in disgrace emporium, members of which we find in multiple boards. Head of a conglomerate of several firms in the oil and gas, mining and logistics industries that are publicly listed in Bovespa, who was once the richest person in Brazil exemplifies several dimensions that characterize Brazilian recent developments. The success and failure of this group illustrates many of the elements that conformed the idiosyncratic blend of Brazilian capitalism. First, all of the companies of the group were concentrated in the natural resources and big infrastructure sectors in particular in offshore oiling, iron ore mining and in the provision of different services related to these activities. These sectors were arguably the drivers of Brazilian high growth past decade. Second, Batista had tight connections with Brazilian developmental establishment centred at Petrobras and Vale. His father is a former minister of mining and energy and president of the then state-owned Vale do Rio Doce. Moreover, he poached most of his top and middle managers from both these emblematic companies. Third, his ventures were generously supported by state-owned BNDES, both with subsidized loans and with equity finance through BNDESPAR. Fourth and last, he obtained additional debt financing from both domestic and external private investors, which allowed him to increase his leverage, amplifying the boom and boost cycle and eventually driving him to bankruptcy.

4.3.2 Chile

From Figure 1 it is clear that the market capitalization of Chilean stocks in relation to its GDP is high; this is true even when compared with countries outside the region. But contrary to what occurs in Brazil, where the liquidity of the market is relatively high, when one observes stock turnover Chile ranks very low. The value of shares traded divided by their market capitalization was in 2014 of only 10.9%[15] indicating shares don't change owners as frequently but are entrenched in the hands of long-term shareholders. This is a consequence of the dominant position business groups have in the Chilean economy: even if their companies are indeed public, the free float (outstanding shares available to the public for trade) is in general quite small. As already discussed in Section 4.1, the prevalence of business groups is also evident from analysing some network-level metrics, such as a the high clustering coefficient and relatively short paths connecting companies.

As expected, when analysing the career paths of top connectors most of them are either members of the families that control the country's major business groups or managers with close ties to these groups. After going through the professional vita's of the 50 most connected individuals it is evident that business groups are the most salient actors. It is also quite notable the strong family ties that exist among the Chilean business community, that appear to go beyond the family-based model of control that characterizes their business groups. Actually, if the networks is built matching only surnames, the average degree and the density of the new

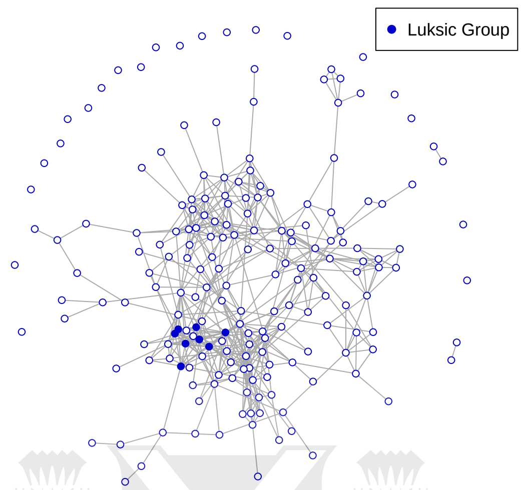
[15] Against, for example, 69.6% in Brazil.

network roughly doubles. Interestingly, the overall reach of this network, it's diameter and the size of it's largest clique changes comparatively little, indicating most of the additional ties are to a large extent redundant (Burt, 1995). In sum, it is clear that business groups are deeply embedded in the local society, exhibiting tight social cohesion and long-lasting relationships that grants them with a comparative advantage to operate in their country, both economically and politically. This advantage was evidenced, for example, in the difficulties large multinationals such as Walmart and Home Depot had entering a market controlled by large Chilean retail groups.

It is true that the interlocked directories measure may overestimate business groups' level of connectedness; if firms belonging to a same group were aggregated into a single holding company we wouldn't count all the links internal to the group and their connectedness will certainly decrease. Nevertheless firms belonging to the same business groups are completely separated organizations operating in distinct markets and in general exhibiting different shareholder structures. Understanding who serves in each board and what are the patterns of their relationships is then still relevant and interesting, even if they reflect, in part, ownership ties. Moreover, it is clear from just observing the network that relationships go beyond endogamic within-group links. Just as an example, in Figure 8 I show the Chilean network and color in blue the firms controlled by the Luksic group, the paradigmatic case of the widely diversified family-controlled Latin-American business group. This group firms operate in the most diverse sectors, including mining, banking, manufacturing, beverages and international shipping. Indeed, it can be seen that these commonly held companies cluster together forming a tight clique[16]. But it is also clear that this is not an isolated clique, but rather part of an encompassing and dense web of relationships that include non-affiliated external companies and connects an overwhelming majority of Chilean public companies.

[16]Remember, the layout of the network is random

Figure 8: Chile - Business Group Example



If we want to somehow "control" for ownership relationships, an alternative is to focus on companies that are subsidiaries of a foreign company (or whose majority is controlled by a foreign company) but that nevertheless float part of their shares in this stock markets. An ideal design would track the pattern of board membership and corporate governance relations of the same global company, performing a similar set of tasks across different countries. Even if this is difficult given that there are not many MNC who list subsidiaries in several countries[17], it could be good enough to compare board composition and governance characteristics of foreign subsidiaries across countries. If differences are found, we could be even more confident that they arise from the distinct national corporate environments and not from other spurious firm's characteristics.

Besides overall cohesion signalled by the small world characteristic of the Chilean business community, clear evidence of the other key sources of instrumental power of Chilean economic elites as argued by Fairfield (2015a) can be found in the network. When going through the biography's of top connectors clear evidence of both systematic partisan linkages, in particular with conservative parties, and of participation in peak-level business associations can be found, the latter being the organizational pre-requisites of the formal/informal process

[17] With the interesting exception of some banks.

of consultation that characterizes Chilean policy-making. As argued above, this characteristic is not only relevant in order to understand their relative power vis-a-vis other societal actors but perhaps even most importantly when thinking about preference formation and consensus across business elites.

Consistent with Chile's tradition of business participation in politics, we find several partisan linkages between top connectors. The most salient example is that of Hernán Büchi Buc, finance minister during the last period of Pinochet's dictatorship, former presidential candidate for the right-wing coalition, founder of the conservative think tank *Fundación Libertad y Progreso* and active political figure, who sits in 8 different boards. There are several other well connected individuals with ties to the right coalition in the sample I reviewed, several of them former government officials during Pinochet's regime and even the dictator's former son-in-law, pointing out the endurance and low turnover of at least Chilean business elites (González and Prem, 2015). Interestingly, these connections are not exclusively to right-wing parties, but there is some evidence showing some ties with the Concertación, the center-left coalition that ruled in all but one of the electoral terms since the advent of democracy in 1990. In any case, from the sample of the vitae's of the top 50 most connected directors I reviewed, it is more than clear the tight relationship between business elites and the political right in Chile as described elsewhere. Moreover, among the most connected individuals several participants in business organizations such as SOFOFA and Chile's Construction Chamber, both constitutive of CPC, Chilean strong and encompassing peak-level business association can also be found (Schneider, 2004; Fairfield, 2015a). All these are the organizations that characterize the more institutionalized participation of business in policy-making. In sum, Chile is perhaps the clearest example of how board interlocks may span business influence into various arenas including political parties, business organizations as well as other civil society entities, such as think tanks and universities. Board appointments are carefully made in order to create and reproduce these embedding and fluid ties, overall conforming what appears to be a well integrated, cohesive and powerful business community.

4.4 Interlocking Across Time - Argentina

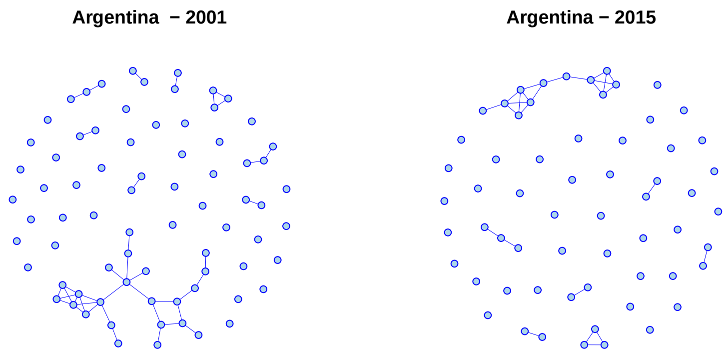
Up to this point I have relied in cross-section "comparative-static" type of comparisons. As already suggested, time is an obvious candidate to track variation that could be used as either a dependent or independent variable to advance in causal arguments. While during the last decade the well-studied US corporate network appears to have significantly diminished its historically high level of connectivity (Chu and Davis, 2013; Mizruchi, 2013), there is evidence in favour of the resilience of the Brazilian and Chilean networks to structural events such as the economic reforms and economic liberalization implemented in these countries during the nineties (Brookfield, Chang, Drori, Ellis, Lazzarini, Bernath Bardina, and Siegel, 2012; Lazzarini, 2011), as well as in other countries outside the region (Stark and Vedres, 2006; Kogut and Walker, 2001). Liberalization and continued flow of foreign capital, rather than atomizing governance and ownership ties, actually increased network's density and interconnectedness. As I already showed, globalization and the entrance of foreign capital were crucially intermediated by local actors.

I have already briefly described the Argentinian network: its very low level of connectedness hardly grants it a social network status. When compared to its regional neighbours, its metrics make it a "negative" outlier. These results are aligned with claims about the low cohesiveness of its business community after a history of macroeconomic and institutional volatility (Jones and Lluch, 2015) and the historical absence of a pro-business political party (Gibson, 1996). But alternatively, it could also be argued this trait is, instead of a permanent and structural condition, a consequence of more than a decade of Kirchner's neo-statist and populist government that did not include big business into their ruling societal coalition. Moreover, following the $2001/2$ sovereign default, international financial relations were never fully regularized. Coupled with the 2008 nationalization that eliminated private pension funds, who were key players in the exchange market, a persistent decline of the already quite shallow Buenos Aires stock market was observed.

In order to evaluate how permanent was this low -close to non-existent- level of connectedness I collected the names of each of the directors of companies listed in the Buenos Aires market around 2001. Unfortunately no database exists for historical data. I therefore downloaded companies memorandums from the stock market's web-page[18], created the database manually and repeated the procedure described in Section 3. In Figure 9 both networks are compared visually; some key metrics are compared in Table 9.

[18]https://www.bolsar.com

Figure 9: Comparison across time - Argentina



Neither of these graphs are close to comparable with the high density "small world" networks observed in the other countries. Even if a decrease in connectivity may be observed, there is no evidence suggesting a structural break occurring between 2001 and 2015. As shown in Table 2, the mean degree of the 2001 network is 1.06, not far from the 0.85 metric observed in 2015 and well below the one observed in the other country's networks. Densities are the same each year: 0.014. Overall, this result supports the hypothesis that low connectedness is a more structural and permanent feature of Argentinian elites rather than the consequence of a decade of a populist government and the decline in the importance of domestic capital markets. A longer-term perspective or an alternative place to search for evidence about business cohesion, would be useful in order to reconcile these findings with what has been argued were powerful industrial groups during the pre-stabilization ISI period (Etchemendy, 2011).

Table 2: Comparison across time - Argentina

	Arg - 2001	Arg- 2015
Vertices	75	61
Degree (Avg.)	1.067	0.852
Density	0.014	0.014
Max. Component (%)	0.293	0.180
Diameter	8	6
Max. Clique	4	4
Clustering	0.100	0.158

Interestingly, I do observe some variation in the profile of board connectors. In 2001 most connectors came from recently privatized utilities companies, usually controlled by foreign investors, or some local and no-longer existing business group (Guillen, 2000; Fracchia, Mesquita, and Quiroga, 2010). In 2015, top connectors were government officials representing the stakes under state's control seized after the 2008 nationalization of pension funds, what would indicate fragmentation is actually even higher than the one expressed by the summary metrics. Rather than cohesion, these appointments have generated an additional battle-field between government and business, introducing distrust into the board rooms. In contrast to other countries, we couldn't find in these boards public figures alien to the business community and there is no evidence of partisan linkages systematically connecting economic elites and parties. Interestingly, I could identify several individual directors that remained in place during both periods, signalling the slow turnover of board membership; this is in line with claims about the stickiness of board interlocks and network structures, providing further validity to the cross-sectional approach presented in this paper.

5. Conclusion & Further Research

In this paper I presented exploratory research on board interlocks using tools from network analysis, hopefully convincing readers about the relevance of corporate governance and business as a research topic, as well as the potential of network analysis as a method suitable for advancing our understanding of Latin American political economy.

As I demonstrated throughout the paper, network analysis applied to board interlocks can be used to describe connections between business elites. This method can provide systematic and comparable measures of business cohesion as well as help identify and map business groups and other type of corporate actors. In turn, as I illustrated with two examples, these metrics can be used as inputs for hypothesis testing: in line with Fairfield (2015a) I do find a clear negative correlation between business cohesion and overall taxation levels. I didn't find evidence to support hypotheses about the substitutive relationship between societal links and the enforcement of formal institutions (Post, 2014; Amengual, 2016), suggesting instead that these two dimensions can complement each other. After showing the nationally-delimited arena is still the most relevant level of analysis when thinking about corporate governance, I presented a more granular exploration of how capitalism is organized in Latin America. Going beyond overall network-level metrics I classified directors according to their professional affiliations in order to identify the most important types of business actors behind each national business community. Conforming to the literature, the saliency of business groups was evident, in particular in Chile; but most importantly I showed evidence about the relevance of investment funds. This is a fairly new type of corporate actor, whose presence exceeds Brazil; the implications of its distinctive characteristics for sure deserve further scholarly attention. More generally, both business groups and investment funds appear to be deeply embedded in domestic social networks, but also exhibit strong ties with international investors. Then, it could be interesting to explore further the consequences of this arguably different type of brokerage function that intermediates domestic and international capital into the local economies.

The type of analysis presented is scalable beyond cross-country comparisons, and it can also be used to uncover interesting patterns of variation across economic sectors or through time. Clearly, a big challenge of the network analysis approach I presented is going beyond description and advancing into more causal frameworks. I believe there is ample room for design-based research to leverage on the structures generated by interlocks, for example, by identifying political connections in the board-room as well by tracing spillover effects through the networks. While working with public companies, the availability of high-frequency stock prices should be further exploited; this is a source of data largely unexplored by political science that I believe is potentially valuable and can help test different hypothesis regarding, for example, the reaction of investors to political decisions or the heterogeneous political sensitivity of different types of firms. Moreover, data collection efforts should go beyond public companies and also include other closed-capital private firms, generating a broader and more complete map of each country's business sector (Cárdenas, 2016). As well, by using historical data, broader societal trends can be evaluated by tracking changes in business connectivity through time. More ambitiously, massive amounts of data could be collected in order to apply more sophisticated model-intensive approaches to network analysis.

In any case, I also believe research on board appointments should go beyond quantitative measurements of interlocks obtained through network analysis: in order to capture and apprehend the full richness of board political dynamics and inter-firm ties, more qualitative approaches should be followed, for example, interviewing directors, systematically evaluating their career paths and exploring other type of linkages outside the boardroom. Rather than treating these networks as mere measurement devices they should be considered as objects of study that can serve as motivators for qualitative research, for example, contributing to case selection, or providing evidence on the saliency of certain type of business actor that is worth exploring.

Beyond methodological distinctions, further efforts should be devoted to better understand both the causes and -perhaps even more importantly- the consequences of different models of corporate governance and business organization. Regarding the causes, and after accounting for international and structural factors, I believe there is still ample room to explore the role of the state in generating alternative models of corporate governance. The state impacts the organization of business not only through alternative models of privatizations or by directly partnering with the private sector as a majority or minority equity holder. Other more subtle, but not necessarily less consequential, ways the state shapes business should be explored: in particular regulations around pension system regimes, insurance markets, and financial systems in general.

In terms of the consequences of alternative models of business organizations, corporate networks should not be considered as uniformly negative, as simply reproducing social hierarchy and fostering rent-seeking by cementing distributive coalitions, undermining both democracy and economic efficiency (Haggard, Maxfield, and Schneider, 1997). Research efforts should not be reduced to unveiling the various instruments that grant economic elites power and societal leverage, but should also center on the process of business preferences formation. There seems to be limited cases and policy areas in which preferences can be linearly deducted from straightforward material interest given an actor's functional role in the economy. There is no reason to think that business will always share common interests; over many relevant policy areas business interest are at best undetermined. Corporate networks, by facilitating information exchange, reciprocity and trust, and by spanning business into the broader society, can help overcome fragmentation and bargain consensus over a broad range of topics. Then, by paying closer attention to the embedded nature of the a priori undetermined and moldable business preferences, we can contribute to deepen our understanding about the conditions in which collaborative and positive relationships between business and the state can emerge, eventually driving to enhanced growth and development.

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