

Delineating the Corporate Elite

Inquiring the Boundaries and Compositions of Interlocking
Directorate Networks

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Corporate elites occupy an illustrious place in society, if not in social debates. Many images of corporate elites prevail, ranging from extremely talented people with exceptional capacities, to a group of privileged persons who rule in conspiracy over society. Studying corporate elites is therefore inevitably a social praxis which is not without pitfalls. There is a narrow path between on the one hand *a priori* considering the corporate elite to be a small densely connected group wielding tremendous powers, and on the other providing a pedestal to the research object. Traveling this narrow path, does not require any courage or political drive, but rather being equipped with some empirically grounded theory that allow to develop an argument in the first place. This study aspires to provide such point of departure by inquiring how to adequately delineate the corporate elite. I attempt to integrate both, a theoretical and an empirical contribution into one thesis. Consequently, this thesis is somewhat longer than a regular journal article, though I have attempted to limit the theoretical digressions as much as possible. The idea for this study, stems from some critical reading of interlocking directorate research, combined with a basic understanding of graph theory. Although the initial research design is still standing, the study has gone through many theoretical revisions and empirical respecifications that followed from critical examination and profound theoretical debates with colleagues and friends. As such, this essay is the result of the efforts and insights of many to whom I owe big thanks. In the first place, I wish to thank my supervisor Dr. Eelke Heemskerk for his recommendations, his feedback, his intellectual as well as personal support and last but not least the working facilities provided. I am very grateful that I could write this thesis within the context of the CORPNET research group at the Amsterdam Institute of Social Science Research at the University of Amsterdam which provided an excellent intellectual environment for the research pursued here. I therefore would like to thank everybody who has been closely involved in the CORPNET research group: Diliara Valeeva, Frank Takes, Jan Fichtner, Javier Garcia-Bernardo, Joaska Mischke, Milan Babic and Nick Hogan, who have all provided useful feedback and were always willing to discuss relevant topics throughout the process. Also, I want to thank Professor Meindert Fennema, the second reader of this thesis, for his time made available. Furthermore, I would like to thank Professor William Carroll who fueled my enthusiasm for this type of research and Jet Steen for her feedback on correct English. I want to thank my parents Carien and Hylke, my sister Marlise and my brother and his girlfriend Peter and Vita for their ongoing support throughout my studies and the writing process. Finally, I wish to dedicate this work to my youngest brother Gertjan; that he may be honored with much greater works in the future.

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Abstract: Researchers of corporate elites typically study samples of directors and executives comprising, say 50, 100, 200 or 500 largest firms within a particular region. While these studies have revealed important patterns of corporate elite organization, the demarcating criteria of the group under study are rather arbitrary and poorly linked to the concepts that designate the group. This is problematic because decisions for demarcating the group under study likely affect empirical outcomes and thus impair a comprehensive understanding of the corporate elite, especially when they are compared over space and time. This essay advances our understanding of corporate elites, both theoretically and empirically. Theoretically I first specify the corporate elite conceptually by distinguishing between *foundational determinants* and *organizational determinants* of the corporate elite. The organizational determinants refer to those factors that bind the *elite* together regardless of the societal domain or point in time. The foundational determinants refer to the sources which *corporate* elites derive their power or elite status from in the first place – i.e. the corporations they control or possess. I argue that a meaningful demarcation of the corporate elite considers both types of determinants when deciding which group should be studied. This argument is empirically supported by two analyses. First, I demonstrate that the various conventional, often arbitrary chosen demarcations (or sampling criteria) can significantly affect empirical analyses and the conclusions drawn from it. Second, I explore alternative sampling strategies that account for both, foundational *and* organizational determinants of the corporate elite. I show that compared to conventional demarcations, our alternative strategy performs equally well at delineating a corporate elite that is connected and willing to promote its group interests. The findings enhance a more robust understanding of corporate elite organization and facilitate better comparisons of corporate elite networks over space and time.

Key words: corporate elite • interlocking directorate • networks • board of directors

I. Introduction

Corporate elites have been of pivotal interest to scholars in political sociology. Since they are in command of the big corporations, they are able to exercise considerable economic and social power over society. Those powers stand in fundamental tension with democratic rule, as their decisions affect many, but are affected by few. For that reason, much attention has been devoted to the capacities and degree of unity of the corporate elite in debates between elitists (Domhoff, 1967; Mills, 1956) and pluralists (Dahl, 1958; Rose, 1967). Later, business unity was of central concern in debates on the state between structuralists (Poulantzas, 1978) and instrumentalists (Miliband, 1973). Ever since, a vast body of research on corporate elites, or otherwise ruling classes, has developed.

Some early studies have attempted to demarcate an upper class that holds most important governing positions in society (Domhoff, 1967, 1970). Later work has focused more specifically on corporate directors and executives, and the extent to which they can exercise power over society. In work by among others Useem (1984) Carroll & Sapinski (2006) and Carroll & Beaton (2000), relations between corporate directors and either policy planning groups, university boards or government committees were recorded, which would point at structural hegemony of business. Similar research has focused on the relation between business and politics by studying political contribution patterns of CEOs and chairmen (Burris, 1987, 2001, 2005) or block holding families (Allen & Broyles, 1989). Even more scholarly attention has been paid to the ties between directors and executives or the firms they represent (by holding a position on multiple boards) and to how corporate elite networks facilitate class cohesion or integration (Bearden & Mintz, 1987; Davis, Yoo, & Baker, 2003; Johnsen & Mintz, 1989). Finally, an increasing number of scholars have compared these types of corporate elite networks over space and time and found significant cross country variations between the studied networks (David & Westerhuis, 2014; Kogut, 2012; Murray, 2006; Stokman, Ziegler, & Scott, 1985; Windolf, 2002). Longitudinal analysis indicated that network structures have remained stable for most of the twentieth century, but became much sparser since the 1990s (Carroll, 2004; David & Westerhuis, 2014; Heemskerk, 2007; Mizruchi, 1982; Schifeling & Mizruchi, 2014; Scott & Griff, 1984). Those longitudinal and comparative analyses revealed that, as Scott (1991, p. 193) has put it, “factors as the structure of the state, cultural traditions, and processes of industrialization have shaped present-day business structures.” In recent years, increasing attention has been paid to transnational network patterns and the eventual emergence of a transnational capitalist class (Cárdenas, 2015; Carroll, Carson, Fennema, Heemskerk, & Sapinski, 2010; Fennema, 1982; Heemskerk, 2013; Kentor & Jang, 2004, 2006).

While this research is seemingly consistent in its focus on elites, the studies often apply – theoretically and empirically – very different criteria for demarcating the group under study. Researchers typically focus on the directors, executives or owners of a rather arbitrary number of firms, ranging from the 20 to 1500 largest firms (and beyond). These differences make it difficult to obtain a comprehensive understanding of the corporate elite, in particular in comparative and longitudinal analysis. This essay attempts to address some of the problems that confront research on corporate elites. The problems can be summarized in two propositions:

- 1) there exists a *fundamental discrepancy* between the theoretical concepts and the empirical criteria that are applied to demarcate the group under study; and
- 2) the multifarious empirical criteria that are applied to demarcate the group under study, are often arbitrarily chosen, while they are likely to impact empirical results.

By addressing those problems, the main purpose of this essay is *to inquire whether it is possible to come up with empirical criteria that meaningfully delineate the corporate elite*. This requires, in the first place, a comprehensive theoretical understanding of what the corporate elite exactly entails – conceptually and sociologically. The theoretical traditions that most of the current research on corporate elites stems from, will be discussed in the next section. This section is followed by a discussion of existing demarcations of ‘the corporate elite’ – that is, the empirical demarcations manifested in the sampling criteria of the group under study. Here I will, in accordance with proposition 1, argue that empirical demarcation (or sampling) criteria that are applied in the field of research, are often poorly linked to the conceptual understanding of the group under study. Once this is clear, I will then elevate the analysis to the empirical level and, using actual data from Canada, examine the demarcations (sampling criteria) common to corporate elite research by assessing their impact on empirical outcomes and the conclusions that can be drawn from it. I will show, in line with

proposition 2, that studying only a particular segment of the corporate elite – i.e. only the top 100 largest firms or only listed firms – is likely to affect empirical outcomes, especially for smaller samples. These findings, together with the presumed theoretical complications and discrepancies, prompt to come up with alternative empirical demarcation criteria that connect better to our theoretical understanding of ‘the corporate elite’. These alternative demarcations and sampling criteria will be explored in the subsequent section and compared to those applied in conventional research. The essay concludes with a discussion on the implications of the results for our understanding of corporate elite organization, a general reflection on the alternative strategies for sampling and outlines for future research. The main contribution of this paper, therefore, consists in demonstrating that conventional sampling strategies have important empirical and theoretical shortcomings, and that alternative sampling strategies are available that yield a more robust understanding of the corporate elite.

II. Theorizing the Corporate Elite

The *corporate elite* is one of those groups that is widely discussed, but rarely defined. The few definitions that exist vary to a great degree which makes the concept essentially contested. The conceptual issue is further complicated in that the group which is here considered the corporate elite knows many other designations. The different designations generally originate from a different emphasis or interest, but are conceptually often of equal importance to examine.¹ To obtain a comprehensive understanding of what is meant by the corporate elite I will focus on prior theorizing and conceptual debates centered around this topic. In doing so, I will outline various determinants of whether some group or individual can be considered part of the corporate elite.

Conceptually speaking, the *corporate elite* provides two cues on what it exactly encompasses: first, that it is *corporate* and second, that it concerns an *elite*. The need for distinguishing the corporate elite from other elites, has not been self-evident in all elite theory. Although classic elite theorists, in particular Pareto (1935), distinguished between governing elites which hold office in government and non-governing elites, the emphasis was clearly on the former. Marxist accounts, on the other hand, were concerned with ruling classes, that distinguished themselves primarily in the economic instead of the political sphere. However, since at their time of writing there was no obvious sociological difference between corporate and other elites, there was little need for further conceptual distinctions. This changed over the course of the twentieth century, when the managements of corporations were no longer exclusively recruited from the owning families or upper classes and owners often retreated from management. I will discuss these developments in tandem with the theoretical reasoning about it below.

In this attempt to conceptually delineate the corporate elite, I make a central distinction between *organizational determinants* and *foundational determinants* of the corporate elite. The *foundational determinants* are about the particular sources of their power or status in a particular societal domain

¹ Some academics, for example, used very similar concepts as the corporate elite such as ‘economic’ or ‘business elites’ (Clement, 1975; Mills, 1956; Porter, 1965). Others follow more specific terms like ‘the inner circle’ as introduced by Useem (1984) or rather broaden the concept and consider those people to epitomize a ‘governing’, (Domhoff, 1967, 1970) or ‘ruling class’ (see: Carroll, Carson, et al., 2010; Schwartz, 1987). Marxist scholars first used the term of ‘finance capitalists’, as coined by Hilferding (1981 [1910]), to designate the shared directors of financial and industrial firms. Yet, since the alleged ‘managerial revolution’ (Burnham, 1941) they have struggled long to locate the corporate executives and directors within the ‘capitalist class’ (see: Bottomore, 1964; Sweezy, 1942; Zeitlin, 1974). Recently, the term or the ‘corporate community’, which denotes a certain consciousness or common belief system, has become more popular (Heemskerk, 2007; National Resources Committee, 1939). Further terms that circulate the field vary from the classic ‘old-boys network’ (Edling et al., 2012; Heemskerk, 2007), the recently more fashionable ‘1%’ (Murray & Scott, 2012), to simply ‘the powers that be’ (Domhoff, 1978).

at a certain point in time. *Organizational determinants* are certain dimensions or criteria that, irrespective of period in time or the societal domain, determine whether some individual or group can be considered as part of the (corporate) elite.² Below I will first discuss debates on what foundations constitute the *corporate* elite and how these have changed over time. Subsequently I outline debates on the organizational determinants that qualify the corporate elite truly as an *elite*.

Marxist, Managerialist and Institutional Approaches: Foundational Determinants

When empirically demarcating the corporate elite, scholars typically only consider the foundational determinants that those elites derive their power or elite status from as the most important (and often only) demarcating criterion. These foundational determinants can be many things, and depend upon the specific societal domain (i.e. corporate, political, military, cultural, intellectual) at a certain point in time. With regard to the *corporate* elite, there may be multiple foundations that are to be taken into account in order to meaningfully delineate the group. The foundations of the corporate elite have changed over time, though the extent to which this is the case, is highly debated. Below I will distinguish between three types of foundations and discuss how their importance has evolved over time. First, there are economic factors such as wealth or, in Marxist terms, ownership of the ‘means of production’, that enable a distinction between elites and non-elites or ruling and subjected classes. Second, there are also non-economic factors, that allow for further distinction which can be associated with Weber’s (2010 [1922]) concept of a *stande* or *status group*. In contrast to the *class*, a *status group* distinguishes itself by non-economic factors such as social background, race, gender and taste (although both, class and status group, often mutually reinforce one another (Bourdieu, 1984)). The concept of status group is rarely used, but a number of studies has focused on non-economic factors such as social background, race or gender to demarcate a certain elite or class (Carroll, 2004; Domhoff, 1967, 1970; Porter, 1965). Finally, there is the institutional approach that focusses not so much on people, but on the seats they occupy. This approach, mainly inspired by the work of Mills (1956), has become predominant in much of the recent work on corporate elites.

Most early sociologically relevant work on the foundations of (corporate) elites build on Marxist theory which was, in this regard, primarily concerned with the existence and composition of the ruling class. In orthodox Marxism, the ruling class distinguished itself from the subjected classes by being the owners of the ‘means of production’. Early Marxist scholars often did not feel the need to add more indicators to distinguish the ruling or capitalist class from other classes than the distribution of property, as corporations were tightly linked to upper class families who owned them and were also responsible for the day to day management.³ Yet, when, at the beginning of the twentieth century, through processes of cartelization and mergers large corporations came to dominate most industries, corporations were no longer run by persons that fitted well into orthodox Marxist definitions of the capitalist class. One of the first to recognize this was Hilferding (1981 [2010]) who, commenting on the concentration of capital and the emerging monopolies in various industries, observed that the new form of capitalism had important social consequences.

² This distinction between organizational and foundational determinants of the (corporate) elites, mirrors earlier distinctions made by Mokken & Stokman (1976) between respectively the *relational* and *substantial* aspects of power and influence. The substantial aspect of power they discuss is, similar to the foundational determinants here, about the sources of power and influence that a group or individual may possess (i.e. wealth, military skills, social background). The relational aspect, on the other hand, is about the social structure or organization in which one is or is not able to mobilize its substantial power resources. The relational aspect of power can be associated with the organizational determinants of the elite in that they both focus on the social structures that constrain or enable the formation of a certain elite which may in turn be able to exercise power (or influence) in a particular societal domain.

³ Although Marxist accounts typically focused on the economic determinants of class, Marx himself suggested that a class could only be considered one if it also engaged in a political struggle (Andrew, 1983).

Building on earlier work by Jeyl (1905), Hilferding recognized that the people in command of the big corporations were no longer exclusively their owners, but often consisted also of bankers, managers and directors of other corporations. The consequence of this, according to Hilferding (1981, p. 119), was that “a circle of people emerges who, thanks to their own capital resources or to concentrated power of outside capital which they represent (in the case of bank directors), become members of the board of directors of numerous corporations. There develops in this way a kind of personal union.” Hilferding designated this circle of people the ‘finance capitalists’ and soon gained attention from Lenin (2010 [1916]), Bukharin (1929) and many others (Sweezy, 1942; Zeitlin, 1974). The finance capitalists, in contrast to the earlier entrepreneurial capitalists, were thus no longer exclusively constituted upon their ownership of capital, but also on holding crucial positions in the actual *management* of capital.⁴

Few people disagreed that the developments described by Hilferding (1981) had profound consequences for the functioning of capitalism. What scholars did not agree on, however, was whether capitalist exploitation remained largely intact when the command of corporations was no longer (exclusively) in the hands of the capitalist owners.⁵ A number of scholars that came to be known as the ‘managerialists’, argued that a ‘managerial revolution’ (Burnham, 1941) or a ‘separation of ownership and control’ (Berle & Means, 1932) was taking place which would have rather different consequences. Burnham (1941), a former Marxist, claimed that Hilferding’s finance capitalists were only a temporary phenomenon. Like the finance capitalists had first replaced the entrepreneurial capitalists, they were soon replaced by managers mainly concerned with the technical coordination of the corporation. In similar vein Berle & Means (1932), famously reasoned that when ownership of corporations became increasingly dispersed, as was the case according to them, no shareholder would be powerful enough to enforce its will upon management. Consequently, the predatory owners were replaced with a management that would become relatively independent from the wishes of the capitalist owners, therefore less profit oriented and more benevolent. Following this reasoning, it was not or no longer possible to speak of a capitalist or ruling class that controlled the major corporations. The foundations of the corporate elite were, if there still existed any, to be found in other sources than in capitalist ownership.

In response to this argument by Berle & Means (1932) and many other managerialists (Bell, 1973; Dahrendorf, 1959; Galbraith, 1967; Rose, 1967) some Marxists have maintained that the incentive structures for management were not very different. Moreover, it was argued, that many corporate directors have themselves smaller or larger shareholdings in the corporations they govern. As such, capitalist interests still prevailed in the management of big corporations (Zeitlin, 1974). Though, at the same time, Bottomore (1964), very much inspired by Marxist literature, has advocated a definition of the elite that is not only determined by economic factors. According to Bottomore (1964, p. 81) one needs to take both into account because “top managers and the owners of property are so intimately connected as to form, in the main, a single social group”.

⁴ Hilferding’s (1981 [1910]) observations can be regarded as an extensive elaboration on some of Marx (Marx, 1906 [1865-67]) comments on the development of the credit system, the joint stock company and the separation of the owners from management. In volume 3 of *Capital*, Marx (1906, p. 456) states that “Stock companies in general, developed with the credit system, have a tendency to separate this work of management as a function more and more from the ownership of capital, whether it be self-owned or borrowed.”

⁵ According to Hilferding (1981), the development of the credit system and the transformation to finance capitalism kept the relations of production well in place and, as such, its distributional outcomes. The credit system, according to Hilferding (1981, p. 180), had “its source in socialism, but has been adapted to capitalist society; it is a fraudulent kind of socialism, modified to suit the needs of capitalism. It socializes other people’s money for use by the few.”

Similarly, Mills (1956) argued in his classic study on what he called the *power elite* that continuity, rather than change had characterized the command over the large corporations. Mills (1956, p. 147) believed, that what Burnham considered the managerial revolution, was actually no more than a “reorganization of the propertied class, along with those of higher salary, into a new corporate world of privilege and prerogative.” The consequence of this development, according to Mills (1956, p. 147), was that “the narrow industrial and profit interests of specific firms and industries and families have been translated into the broader economic and political interests of a more genuinely class type. Now the corporate seats of the rich contain all the powers and privileges inherent in the institutions of private property.” So, although the corporate elite, in Mills (1956) understanding, consists of the owning families as well as the chief executives, their power was mainly exercised through people holding important corporate positions.

By emphasizing the control over institutions (corporations) as the most important source of power, Mills (1956) approach came to be known as the ‘institutional approach’. This approach guides many demarcations and empirical studies on corporate elites. Yet, though Mills identified institutions as the most important foundations of the (corporate) elite, he put, more than Marxist or managerialists, emphasis on the degree to which the people in command of those institutions were densely connected and interlocked with one another. For Mills, the connections between the various elites were a crucial part in his argument to show that there existed a relatively cohesive and independent elite, able to exercise disproportionate power over US society. It is exactly these *relations* and the *organization* of the people in command of the big corporations, I will here argue, that form an indispensable determinant of the corporate elite.

Elite Theory and its Critics: Organizational Determinants

Along with the Marxist, managerialist and institutional approaches discussed above, much elite research is rooted in classical elite theory that is mainly associated with theorists like Mosca (1939), Pareto (1935) or Michels (1915). Classical elite theorists, together with their most important critics, were mainly concerned with the *organization* of certain elites. Hence, I will call the determinants that are derived from these debates the *organizational determinants*. I will here discuss the various debates and the determinants that emerged from them.

Classic elite theory developed partly in response to various principles in Marxism. Elite theorists criticized Marxism on two points. First, they criticized Marxism for overemphasizing the economic and downplaying the political determinants of certain elites or ruling classes. Most explicitly Mosca (1939), argued how it was the very organization of the elite, that distinguished them from non-elites. As Mosca (1939, p. 53) stated: “The power of any minority is irresistible as against each single individual in the majority, who stands alone before the totality of the organized minority. At the same time the minority is organized for the very reason that it is a minority.” Second, classic elite theory fiercely disagreed with Marxist speculations of the classless society, by defending a maxim which holds that no society would, nor could ever be without elites.⁶ For classic elite theorist the attempt was mainly to show how elites circulated due to their superior qualities (Pareto, 1935), or became organized and disorganized throughout history (Mosca, 1939). Importantly, while Pareto (1935) mainly attributed ones’ elite status to superior qualities in a particular societal domain, Mosca (1939, p. 65) acknowledged that the elite was constituted upon different sociological factors such as wealth, knowledge, religion and the prominence of certain ideas. Once some of those sources

⁶ Mosca (1939, p. 50) famously stated that “In all societies – from societies that are very meagerly developed and have barely attained the dawnings of civilization, down to the most advanced and powerful societies – two classes of people appear – a class that rules and a class that is ruled”.

of the elite status (or *foundational determinants* as they are regarded here) lost in importance, changes in the composition of the elite were likely to occur. Though, irrespective of the source of their status, it was in the end the degree of organization that, regardless of time and space, determined the elite.

Classic elite theory was criticized for various reasons. Democratic and socialist theorists have pointed at the ideological doctrine behind elite theory, which consisted mainly in an attempt to revive ancient ideas of social hierarchy that would raise obstacles to democratic reform (Friedrich, 1950; Lukács, 1962, p. 32). Pluralist scholars insisted upon the plurality of elites and the fact that the people holding the most powerful offices at a certain point in time, not necessarily form one united group. Later this idea of a plurality of elites was to become a doctrine advocated by democratic elitists like Schumpeter (1942). The most thorough critique on classic elite theory was formulated by Meisel (1958), who argued that one can only speak of an elite if the group satisfies three criteria, known as the three C's: it needs to have *group-consciousness*, *coherence* and *conspiracy*. These criteria have been interpreted to signify the importance for elites to have (1) a certain awareness among the elites that they actually belong to this group; that they are (2) cohesive or connected to each other and that (3) there is joint will to actions aimed at promoting their common interest. Meisel (1958) argued that there was no single no ruling group that satisfied all criteria and concluded that the existence of a ruling class was actually a myth.⁷

The criticisms on elite theory, perhaps even more than classic elite theory itself, add some important conceptual demarcations to whom can be considered part of the (corporate) elite. Increasing the number of criteria applied to determine the corporate elite, narrows the group to be studied down to a rather small, though certainly important group of people. Although, few elite researchers use as many criteria for determining the elite as Meisel (1958) proposes, (corporate) elite research typically goes beyond merely identifying the people in power. A vast body of research, for instance, has focused on the connectedness of corporate elites (Clement, 1975; Davis et al., 2003; Mills, 1956; Useem, 1984). Others have been more concerned with the interests that bind elites together (Burris, 2005; Zeitlin, 1974). Finally, quite a number of researchers has focused on the self-consciousness of the upper class in general or the corporate community more specifically (Chu & Davis, 2013; Domhoff, 1975; Heemskerk, 2007; Useem, 1984).

The various determinants of the (corporate) elite that follow from elite theory and its critics, allow for a comprehensive assessment of the structure, cohesiveness and, eventually, the power of the corporate elite. Recent studies have pointed at a general decline in self-consciousness or at increasing fractures within the corporate elite over the past three decades (Chu & Davis, 2013; Heemskerk, 2007; Mizruchi, 2013). Networks that connect the corporate elite have become much sparser and the people in command of the big corporations are no longer exclusively recruited from the upper classes. These trends would signify both, a change in the foundational and a change in organizational determinants.

The crucial argument to take from this section is that the corporate elite can only be adequately identified by accounting for both, the foundational and the organizational determinants. This poses an empirical challenge as it is not always easy to find indicators that tell something about cohesiveness or agency of a potential elite, let alone its self-consciousness. Regarding the foundational determinants, it is difficult to determine what qualifies as a sufficiently large

⁷ In more Marxist terms, one might argue that if only foundational determinants are taken into account, one is able to identify a *class in itself*, whereas if the group under study also satisfies the criteria outlined by Meisel (1958), one can also speak of a *class for itself*. Though, it has to be remarked that Marx himself never made such distinction (Andrew, 1983).

corporation when one has enough wealth to be considered part as a (potential) elite. In the next section I will review how existing studies dealt with these issues and discuss in what respects these are open for improvement.

III. Empirical demarcations of the Corporate Elite

In the prior section, it was argued that the corporate elite should be demarcated along both, organizational and foundational criteria. Although many of the foundational as well as organizational determinants discussed above have been of primary interest to research into corporate elites, they are often presented as the outcome of the research, rather than as the criteria used to delineate the group under study in the first place. This relates back to the *fundamental discrepancy* of proposition 1, mentioned in the introduction: While research on corporate elites often use theoretical concepts that, as I have argued, presume both types of determinants of the group under study, they often apply only one of the two types of the determinants when demarcating the group empirically. In this section I will first briefly review several existing definitions and empirical demarcations of the corporate elite and discuss to what extent they meet the criteria outlined above. I will argue that the demarcation of Useem (1979, 1984) performs best at capturing the corporate elite. Yet, as will be shown, even in Useem's (1984) study there exists a discrepancy between theory and empirics. As those shortcomings apply to much similar research as well, I will provide an overview of other demarcating (or sampling) criteria that have been applied in corporate elite research and discuss its differences and potential drawbacks. This discussion provides a basis for subsequent analyses of the effects of applying different demarcation criteria for empirical outcomes.

Existing Demarcations of the Corporate Elite

The earliest effort to empirically delineate a certain elite, or in this case the upper class, was made by Domhoff (1967), who applied no less than seven carefully selected criteria to determine upper class membership. By gathering data on which persons had been educated in private schools, ivy-league universities or were members of gentlemen's clubs and other society institutions, he identified who would meet his criteria to be considered part of the upper class. Subsequently, he showed how this upper class was overrepresented in practically all types of powerful offices in the country and, thus, concluded that the upper class was a 'governing class'. While Domhoff (1967) was most concerned with an upper class⁸, his work inspired many later empirical work that was more specifically focused on the corporate elite.

Useem (1984), for instance, introduced the concept of an 'inner circle' in a crucial study for our understanding of corporate elite behavior. The inner circle, according to Useem (1984, p. 63), is comprised of "those who serve on the boards of several large corporations" – that is, the interlocking directorates. What distinguishes the inner circle-members from other directors and executives is that their concerns do not "extend little beyond the immediate welfare of their own firms", but that they had come to "exercise a voice on behalf of the whole business community". Inner circle-members are most present in government committees and on the boards of universities, and are more involved in interest groups and charity organizations. Useem (1984) evidenced an earlier claim by Mills (1956, p. 123) that interlocking directorates were "no mere phrase", but signified "a solid feature of the facts of business life, and to a sociological anchor of the community of interest, the unification of outlook and policy, that prevails among the propertied

⁸ Following the prior discussion on classes and elites, Domhoff (1967) actually demarcated a status group in the Weberian classification, given the prominence of non-economic criteria that were applied.

class. Any detailed analysis of any major piece of business comes upon this fact, especially when the business involves politics.”

Similarly, in a study to the Canadian corporate elite, Clement (1975) acknowledges that only focusing on positional power, that is, the foundational determinants of the corporate elite, do not suffice to actually consider the group under study as the corporate elite. Resembling the arguments by Meisel (1958), Clement (1975, p. 5) considers people only in command of the largest corporations as a ‘power group’ and argues that “these conditions [of being in a powerful position] are necessary but not sufficient to also consider the elite as a social group. To demonstrate that a particular elite is also a social group requires that its structure be specified, that members of the group interact and are related to one another to say they exhibit solidarity, cohesiveness, coordination and consciousness of the kind.” Clement’s (1975) attempt can thus be understood as an attempt to discern the corporate elite within the power group that is initially exclusively demarcated by the foundational determinants.

Other studies have demarcated their group under study exclusively by focusing on positional power, here considered the foundational determinants of the corporate elite. Burris (2001), for instance, studied only the chairmen, presidents and CEOs of 1050 of the largest US corporations and their political campaign donations. The decision to include only people holding those corporate positions was motivated by prior research, which had shown that those were most politically active. Similarly, Davis, Yoo & Baker (2003, p. 314) define the corporate elite as “the directors of the several hundred largest US corporations at a given time” which, as they immediately acknowledge raises the issue of “what count as the ‘largest US corporations’”. Leaving the latter issue to be addressed below, both studies only assume that the corporate elite is constituted upon the corporate seats they occupied and disregard other foundations, let alone organizational determinants.

A related research stream has focused on families and kinship ties rather than economic or social institutions. An important study in the US-context was Lundberg’s (1937) inquiry of the powers of 74 families in his *America’s 60 Families*. Later research in this tradition by Allen & Broyles (1989) has focused on the political contribution patterns of 100 families with large block holdings in particular firms. Although, data on kinship ties is not easily gathered, scholars with various theoretical backgrounds have emphasized the importance of families (Porter, 1965; Schumpeter, 1955; Zeitlin, 1974). The empirical demarcations here are very different from the ones discussed before as it takes into account both, a foundational determinant in the form of large block holdings and an organizational determinant in the form of kinship ties. At the same time, however, the demarcation does ignore many important other foundational or organizational determinants of the corporate elite.

Each of the definitions take into account a number of important factors, while at the same time misrecognizing others. This variety of definitions may, therefore, yield several problems when the findings of different studies are compared. As Mintz (2002, p. 62) notes in an excellent discussion on classes and elites:

“The details provided by Domhoff and Useem that allow us to identify the most active segment of office holders has certainly provided nuance to the definition. Nevertheless, it does not provide us with an opportunity to explain this type of power. Is it institutional power that is lost when positions are lost and, if so, what is the role of ownership? [...] how precisely do we define which segment of the corporate elite to study? Is it the inner circle members of Useem (1984), the president, CEO, and

chairman of the board of Burriss or some other combination? Conceptually, these are not the same. And to the extent that our definition varies from study to study, it is very difficult to compare results with any confidence or to build a coherent portrait of elite behavior.”

As Mintz (2002) rightly points out, it is especially when corporate elites are compared over space and time that one encounters the most important problems which stem from the disarray of demarcations. Following Mintz (2002), the varying definitions not only lead to theoretical confusion, but have important implications for the reliability of empirical work as well. Findings from various studies are likely to be different if different demarcating criteria for a particular segment of the corporate elite would be applied. So, although the purposes of different studies on corporate elites may vary, findings will often suffer from accidental irregularities as long as scholars are not able to settle on some basic conceptual and empirical demarcating criteria. Yet, also after the comments of Mintz (2002), no comprehensive attempts have been made to align empirical demarcations with theoretical determinants such as the ones discussed in the previous section. Drawing from some of the existing work on corporate elites, I will here attempt to anchor some of the empirical demarcation criteria linked to the theoretical understanding of the corporate elite.

Inquiring the Corporate Elite: Evidence from Interlocking Directorates

If an adequate demarcation of the corporate elites takes foundational as well as organizational determinants into account, than definitions that only demarcate the corporate elite by its foundations – such as being in command of a large corporation – do not suffice to accurately capture the corporate elite. Many scholars therefore adhere to the demarcations of Useem (1984) or Clement (1975) in which connectedness of managers through interlocking directorates is a crucial factor for being considered part of the corporate elite or *inner circle*. Interlocking directorate networks have been widely studied in countries all over the world. Part of this research has mainly been concerned with interorganizational relations, in which interlocks are generally regarded as a device to manage relations between organizations and their environment (Allen, 1974, 1978; Burt, 1980; Dooley, 1969; Pennings, 1980; Pfeffer & Salancik, 1978).⁹ Yet, since board interlocks provide an indicator of the organization of the corporate elite, they can equally well embody an empirically applicable indicator of the organization within the corporate elite. Interlocks would enable directors and executives of large corporations to coordinate action, promote their common interest and develop a certain consciousness among them. In Useem’s (1984, p. 62) words: “the various connections of these managers lend them a special aura of stature, legitimacy and influence that is but faintly shared by directors of single companies, however eminent in they may be within their own company or sector”.

Yet, even if one equates the inner circle with the corporate elite, the definition is not entirely without problems. A first objection could be that Useem (1984) did not take all potential elites into account because he disregarded the owners of big corporations. A second, and perhaps more important problem to Useem’s definition is, as he himself well acknowledges, that it does not offer “a full description of the inner circle nor a precise definition of its *boundaries* or *membership*” (Useem, 1984, p. 63; emphasis added). Useem (1984) draws its finding from a sample of 196 firms in the

⁹ The interorganizational perspective, lost prominence when in the late 1970s and early 1980s, a number of scholars demonstrated that interlocking directorates that disappeared through natural causes such as the death of a director, were in most cases not reestablished (Koenig et al., 1979; Ornstein, 1984; Palmer, 1983). Since the 1990s, the perspective on interlocking directorates as interfirm ties, regained some prominence as they proved to have significant effect on the spread of business strategies (Davis & Greve, 1997). Importantly, Although, corporate elites are clearly the central subject of this paper, the findings are of relevance to interorganizational networks as well.

UK and 212 firms in the US. It remains an open question what would have happened if the samples did not comprise of about 200 firms, but of 500 or perhaps 2.000 firms. Would the results than be significantly different? Would the inner circle grow proportionally, or would it remain rather stable? And would all people serving on the boards of multiple corporations still be most likely to promote business interests when business gets involved in politics?

Here we find that the fundamental discrepancy mentioned above, also applies to Useem's (1984) study (as well as many other studies) of interlocking directorates. Useem (1984) determined his sample of directors by first looking at firm size, and focused *subsequently* on the activities of the interlockers versus that of the non-interlocking directorates. In this way, he evidenced that the interlockers of the *largest* firms were most able to exercise power over society and promote their interests. Yet, as already pointed out, the decision for examining only the directors of the circa 200 largest firms in the first place, was rather arbitrary. If the group under study would have been determined in line with the theoretical determinants and foundations outlined above, one would not only take firm size as a criterion, but also take into account the degree to which those firms and their directors are socially embedded and organized in the broader social network. Only combining both types of criteria in determining the sample of firms and their directors, can yield a theoretically meaningful demarcation of the corporate elite.

Sampling Criteria for Corporate Elite Networks

Useem's (1984) study is certainly not the only study to which the critique of sampling strategy applies. The issue of determining an adequate demarcation of the corporate elite, that is, coming up with a meaningful sample of the elites to be studied, has been addressed in a small number of studies to interlocking directorate networks. The first to recognize the potential drawbacks for limiting a sample to a particular subset corporate directors was Allen (1974, p. 396) who stated in his study to interlocking directorates that the

“type of analysis confronts sampling problems which cannot be resolved by the conventional random sample. The most satisfactory sampling design for structural analysis is a saturation sample of the entire universe or population; however, this alternative is clearly not feasible for large social structures. Nevertheless, it is possible to construct a saturation sample of a population which has been delimited in accordance with relevant theoretical criteria.”

Recently some attempts have been made to actually study the entire universe of firms and their directors (Heemskerk, Takes, Garcia-Bernardo, & Huijzer, 2016; Heemskerk & Takes, 2016), but all other studies had to delimit their samples, along with Allen (1974), using relevant theoretical criteria. As Scott (1985) states in his résumé of the discussions in the 1980s on determining a meaningful sample to analyze corporate elites and interorganizational networks: “Previous research had tended to take, say, the 50, 100 or 200 largest enterprises in terms of a particular country, where ‘largest’ was defined in terms of a specific economic variable.” After reviewing various measures of size, the authors settle on a sample of 200 industrial firms ranked by turnover, and 50 financials ranked by total assets. This type of stratified sampling was soon to become the standard in the research field, and remained to be dominant even when significant changes in the economic structure, bank mergers and concentrations of capital were recorded in the decades that followed.

With some notable exceptions (e.g. Fox & Ornstein, 1986; Scott, 1985), virtually no scholar has extensively reflected upon the criteria for sample selection after Allen (1974). Especially in recent decades, researchers doing research to corporate elite networks commonly just listed the criteria for including firms in the sample without explicit consideration. Only in the debates between

Carroll & Fennema (2002, 2006) and Kentor & Jang (2004, 2006), the issue of sample selection is extensively discussed, but in this case it is particularly focused on transnational networks (see also: Burris & Staples, 2012).¹⁰ Since today, thanks to developments in information technologies, databases with a large numbers of firms and their directors enable us to study the question of what universe of firms should be studied to draw comprehensive conclusions and meaningfully compare differences over space and time, becomes increasingly pressing.

In a great number of studies to interlocking directorates, sample sizes are often arbitrarily determined with the number of firms ranging from 20 to 1500 companies. Furthermore, additional criteria are often applied by only studying firms with a particular ownership structure or by stratifying the sample along sectoral and regional divides. The great variety of sampling criteria applied is demonstrated from table 1 in which lists existing samples and sampling criteria for some of the most often used samples from countries and regions that were extensively studied. For each sample, the table lists the year(s) and region(s) that the data cover, some of the most important studies in which the data are used, the sample size and other sampling criteria.

As table 1 indicates, practically all studies aim to study only the *largest* firms, which immediately raises the aforementioned question by Davis, Yoo & Baker (2003) of what are “the largest firms” and how we can rank them? Various measures of firm size have been applied: most studies used turnover, assets or both. In one rather exceptional case the number of employees was used (Porter, 1965). A number of studies limit their sample of firms to only stock-listed firms that are part of a particular index. In those cases, market capitalization is the relevant criterion for in- or excluding firms. Scott (1997) and Carroll (2004) found that publicly traded corporations were indeed most likely to interlock with other firms. However, by applying this criterion one might miss important (changes of the) relations between stock-listed firms and state-owned, family-owned or foreign-owned corporations. Another sampling strategy that is often employed, is to take the largest firms in each sector (Burris, 1987; Helmers, Mokken, Plijter, & Stokman, 1975; Useem, 1984). The implicit assumption here is that the corporate elite network covers all major corporations in each sector, even if large differences in the size of corporations between sectors exist. Finally, a distinction is often made between financial and industrial (or non-financial) firms to stratify a sample. Since the latter type often has higher turnover, and the former type has higher assets, (Stokman, Ziegler, et al., 1985) set a standard of limiting the sample to the 50 largest financial firms as ranked by assets and the 200 largest non-financial firms ranked by turnover. While a number of studies replicated this sampling strategy for longitudinal comparisons (Carroll, 2004; David & Westerhuis, 2014; Heemskerk, 2007; Mac Canna, Brennan, & O’Higgins, 1998), a problem that comes with this analysis is that a number of large bank mergers in some countries during the 1990s, has led to the inclusion of smaller financial firms into the sample. Such changes are likely to affect the structures over time, even if interlock patterns do not alter significantly.

To sum up the argument thus far, I have claimed that an adequate demarcation of the corporate elite takes foundational as well as organizational determinants into account. Although, many studies have examined organizational aspects of the corporate elite by, for instance, examining interlocking

¹⁰ It needs to be acknowledged that, because of time constraints or limited resources, it is very understandable that scholars limited their samples to a certain number of firms. What is less intelligible is that there has been so little reflection upon how findings could be affected by sampling criteria, despite this being widely recognized in network theory (Leskovec & Faloutsos, 2006; Wang, Shi, McFarland, & Leskovec, 2012).

Table 1: Samples and sampling criteria of studies to interlocking directorate networks

Sample year	Replicated at years	Sample size (subset)	sample sizes of replications	Region	criteria	Stratification	ranked by	Used in studies	Replications used in studies
1896	1914, 1928, 1933, 1938, 1976, 1992, 2010 ^a	211	346, 377, 405, 325, 363, 614, 252	Germany	size	200 nonfinancial, 50 financial ^b	market capitalization (assets and turnover in 1976 and 2010)	(Windolf, 2014)	(Windolf, 2002; Ziegler, Bender, & Biehler, 1985)
1904	1962, 1966, 1974, 1978, 1982, 1986, 1990, 1994, 1999, 2003, 2005, 2010 ^a	166	all 250 or higher	US	size	Largest for various sectors; in replications 200 nonfinancial, 50 financial ^b	assets	(Mizruchi, 1982; Windolf, 2002)	(Mizruchi, 1982; Schifeling & Mizruchi, 2014; Windolf, 2002)
1904	1938, 1958, 1976, 1983, 1993, 1997, 2003, 2010 ^a	250	same	UK	size	200 nonfinancial, 50 financial ^b (in 2010 only listed)	assets, (1958: various measures; 1976: turnover and assets)	(Schnyder & Wilson, 2014; Scott & Griff, 1984)	(Schnyder & Wilson, 2014; Scott & Griff, 1984, 1985)
1911	1928, 1937, 1957, 1973, 1982, 1992, 1998, 2009 ^a	250	same	Japan	size	200 nonfinancial, 50 financial ^b	assets	(Koibuchi & Okazaki, 2014)	
1911	1927, 1936	793 (500, 250)	4657 (500, 250), 4306 (500, 250)	Italy	size; listed; working capital >1 million lire		working capital	(Vasta & Baccini, 1997)	
1935	1965, 1970	250	same	US	size;	200 nonfinancial, 50 financial	assets	(Allen, 1974; Dooley, 1969; National Resources Committee, 1939)	(Allen, 1978; Dooley, 1969; Levine, 1972; Pfeffer & Salancik, 1978; U.S. House of Representatives, 1965)
1946-1976		100 (any year)		Canada	size; sector; special criteria*	70 largest any year; 20 financial any year 10 largest commercial	assets	(Carroll, 1986; Carroll, Fox, & Ornstein, 1982; Fox & Ornstein, 1986)	
1950	1972	181	113	Canada	dominance (size)		employees, turnover	(Clement, 1975; Porter, 1965)	(Clement, 1975)
1959	1979	250	251	Australia	size		assets	(Car-roll, Stening, & Stening, 1990)	
1962-1973				US	size; listed; sector			(Kono, Palmer, Friedland, & Zafonte, 1998; Mintz & Schwartz, 1985; Schwartz, 1987)	
1966	1976, 1986, 1998, 2004	30		New Zealand		Index	market capitalization	(Murray, 2006)	

1969	1972, 1996, 2006	76	84, 76, 76	The Netherlands	dominance (size)		turnover	(Helmets et al., 1975)	(Heemskerk, Mokken, & Fennema, 2012; Mokken & Stokman, 1978; Stokman, Van Der Knoop, & Wasseur, 1988)
1970		797		US	size		turnover	(Koenig, Gogel, & Sonquist, 1979; Pennings, 1980)	
1970	1976, 1996, 2006, 2013	176	176	World	size; region;	135 nonfinancial, 41 financial, distributed over eight economic regions		(Fennema, 1982)	(Fennema, 1982; Heemskerk, Fennema, & Carroll, 2016)
1975		265		Malaysia	size; listed		market capitalization	(Lim & Porpora, 1987)	
1976	1996	250	250	Canada	size	200 nonfinancial, 50 financial	turnover, assets	(Carroll, 2004)	(Carroll, 2004)
1976		250		US		200 nonfinancial, 50 financial	turnover, assets	(Bearden & Mintz, 1985; Mizruchi, 1982)	
1976	1997; 2000; 2010	250	250	UK	size	200 nonfinancial, 50 financial	turnover, assets	(Schnyder & Wilson, 2014; Scott & Griff, 1984, 1985)	
1976	1996, 2001, 2006, 2011	250	250	Netherlands	size	200 nonfinancial, 50 financial	turnover, assets	(Heemskerk, 2007; Stokman, Wasseur, & Elsas, 1985)	
1976		250		Switzerland		201 nonfinancial, 49 financial	turnover, assets	(Rusterholz, 1985)	
1976		325 (259)		Germany		aim is 200 nonfinancial, 50 financial (supplemented by 66 subsidiaries)	turnover, assets	(Ziegler, Bender, et al., 1985)	
1976		259		Austria			turnover, assets	(Ziegler, Reissner, & Bender, 1985)	
1976		237		Finland			turnover, assets	(Heiskanen & Johanson, 1985)	
1976		253		Italy		aim is 200 nonfinancial, 50 financial	turnover, assets	(Chiesi, 1985)	
1976		270		Belgium		200 nonfinancial, 50 financial, 20 holdings	turnover, assets	(Cuyvers & Meeusen, 1985)	
1976	1981, 1986	125	same	Hong Kong	size; listed	100 nonfinancial, 25 financial	market capitalization, assets	(Wong, 1996)	(Wong, 1996)
1977		250		France		200 nonfinancial, 50 financial	turnover, assets	(Swartz, 1985)	
1980		1050		US	size; sector; listed		turnover	(Burris, 2001, 2005)	
1980		57		US	size; sector; pac	Three largest in each sector with PAC in Fortune 500	turnover	(Mizruchi, 1992)	

1981		115		South Africa	size; listed	100 industrial, 5 banks, 5 property, 5 mining	assets	(Cox & Rogerson, 1985)
1981	250			Canada	size		assets	(Ornstein, 1989)
1982		1000 (443)		US	size; sector; pac	1000 including: 500 Industrials, 100 diversified service, 50 banks, 50 insurance companies, 50 diversified financial, 50 retailers, 50 transportation, 50 utilities, 100 private		(Burris, 1987)
1982	1986, 1990, 1994	648	592, 591, 634	US	size	50 commercial bank holding, 50 industrial, 25 diversified financials, 25 retailers, 25 transportations		(Davis & Mizruchi, 1999; Davis, Yoo & Baker, 2003; Mizruchi & Schilferding, 2014)
1983	1998, 2006	500	same	World	size		turnover	(Kentor & Jang, 2004) (Burris & Staples, 2012)
1986		250	same	Australia	size; listed		assets	(Alexander, Murray, & Houghton, 1994; Car-roll et al., 1990)
1990-2001		1696		Hungary				(Stark & Vedres, 2012)
1990	2000	106	108	Switzerland	size; sector; ownership	70 industrial or service, 10 finance, 10 insurance, 3 cantonal banks, 3 private banks, 3 transportation, 5 electricity, any top 20 private company	market capitalization, assets, turnover	(Heemskerck & Schnyder, 2008)
1991		250		Australia	size	200 nonfinancial, 50 financial	turnover	(Alexander et al., 1994)
1992	1998, 2004	30		Australia	size	Index	market capitalization	(Murray, 2001, 2006)
1993		190		Spain	size	100 nonfinancial the 60 banks, 30 insurance	turnover, assets	(Aguilera, 1998)
1993		616 (300)		Germany				(Windolf, 2002)
1993		520 (300)		UK				(Windolf, 2002)
1993		250		Ireland	size	200 nonfinancial, 50 financial	turnover, assets	(Mac Canna et al., 1998)
1995		300		Switzerland	size			(Windolf, 2002)
1995		300		Netherlands	size			(Windolf, 2002)
1996		200		Hong Kong	size		market capitalization	(Au, Peng, & Wang, 2000)
1996		200		Thailand	size		market capitalization	(Peng, Au, & Wang, 2001)

1996	2006	500		Europe	size	400 nonfinancials, 100 nonfinancials	turnover	(Carroll, Fennema, & Heemskerk, 2010)	(Carroll, Fennema, et al., 2010)
1996		350		World	size	Financials with >100 billion assets, nonfinancials >14 billion turnover	assets, turnover	(Carroll & Carson, 2003)	
1997		295		Singapore	size; listed		market capitalization, assets	(Ong, Wan, & Ong, 2003)	
1997		374		France				(Windolf, 2002)	
1999		625		US				(Davis et al., 2003)	
2000		177 (114)		Chile	Size; listed; nonfinancial			(Silva, Majluf, & Paredes, 2006)	
2000-2010		2454 (1500 each year)		US	size; listed; s&p list		market capitalization	(Chu & Davis, 2013; Schifeling & Mizruchi, 2014)	
2005		596		Scandinavia	size; listed; country	149 nonfinancial from Denmark; 200 from Norway; Listed on Stockholm Stock Exchange	assets; turnover; market capitalization	(Edling, Hobdari, Randøy, Stafsudd, & Thomsen, 2012)	
2005	2010	300	same as original	Europe	size; listed; ftse300		market capitalization	(Heemskerk, 2011)	(Heemskerk, 2013; Heemskerk, Daolio, & Tomassini, 2013)
2006		362		EU15	size; listed; country	4-38 firms per country (depending on economy size)	market capitalization	(Van Veen & Kratzer, 2011)	
2006-2007		129		Italy, France, Germany, Netherlands	size; listed; in mayor index; large euro economy	Indices: AEX 25; CAC 40; MIB 40; DAX 30	market capitalization	(Dudouet, Grémont, & Vion, 2012)	
2010		300		Latin America	size; listed	200 nonfinancial; 100 financial	turnover; assets	(Cárdenas, 2015)	
2013		500		Mexico, Chile, Peru, Brazil, Colombia	size	100 each country, 75 nonfinancial, 25 financial	turnover, assets	(Cárdenas, 2016)	

since interlocking directorate research has virtually exploded in recent years (Burriss, 2005), the table above is far from complete, i have rather attempted list the first several, and most well-known datasets in interlocking directorate research for each region.

a: in some replications data from other studies listed in the table were used and amended by, for instance, taking a subset, so that sampling criteria were more consistent

b: in some replications, only listed companies are included.

directorates networks, none have applied those criteria to determine which group to study in the first place. As a consequence, demarcations of the corporate elite vary to a great degree, and decisions for in- or excluding particular persons have been rather arbitrary. To the extent that sampling decisions affect empirical outcomes, the variety of criteria applied impairs a robust and comprehensive understanding of the corporate elite (Mintz, 2002). Yet, the extent to which empirical outcomes are affected by applying different sampling criteria is ultimately an empirical question that can only be answered after extensive analysis. The next sections, therefore, addresses these concerns by examining changes to corporate elite networks using data from Canada.

IV. Data and Methods

In this section I will briefly discuss the particularities of the Canadian Corporate elite and a review the most important work on corporate elites that has been conducted in Canada. Thereafter I will provide a detailed discussion of the data and methods that are used for the analyses.

The Corporate Elite in Canadian Context

The structure of the Canadian economy differs in some respects from other advanced economies. Theorists with very different sorts of backgrounds have often found difficulty in properly classifying the Canadian economy in a particular category (e.g. Levitt, 2002; Rostov, 1960). In a global context, Canada has therefore famously been characterized by Levitt (2002) as the ‘richest underdeveloped country’ in the world. In the varieties of capitalism literature, it is often placed with the liberal market economies, although ownership is much more concentrated and there are generally higher levels of coordination (Conyon & Shipilov, 2012). Though, Canada is still a relatively open economy in which much foreign capital is employed. And while it has been fiercely debated to what extent the Canadian corporate elite was very distinct from other countries, Carroll (1986) has shown that their behavior was very similar to capitalists in other countries.

Due to the multiplicity of cultures present in Canada and the various foreign influences, interlocking directorates have been commonly used to explain its social and economic structure. This tradition begins with a classic study of Porter (1965) who showed that in contrast to prevalent views of that time, also Canada knew a small group of people that held most power over society. The type research was subsequently pursued by, amongst others, Clement (1975), Fox & Ornstein (1986), Ornstein (1989), Berkowitz *et al.* (1978), Carroll (1986, 2004) and Brownlee (2005). Since Canada has substantial numbers of state-owned enterprises (SOEs), family-owned firms, cooperatives and foreign subsidiaries, the Canadian corporate network is particularly well suited for studying how the in- or exclusion of a particular types of companies affects empirical outcomes. Moreover, I was able to obtain high-quality data for Canada that is particularly well-suited for the analysis pursued here, which is not available for many other countries.

Data

There are various sorts of data required to for the type of analyses that are pursued here. In the next section I will conduct two types of analyses. The first analyses, attempt to make a comprehensive assessment of the effects of applying various existing sampling criteria on empirical results, while in the second type of analyses I explore alternative demarcations that align better with the theoretical determinants of the corporate elite. The first type of analyses requires sufficient data to replicate most of the sampling criteria applied in prior research. Yet to also account for organizational determinants, one also needs data on smaller corporations and extra-corporate institutions such as interest groups, policy-planning groups and eventually charities, university and other cultural institutions. Connections to those organizations signify the willingness for common

action and, additionally, serve as venues where the corporate elite gets connected and further enables them to exercise power over society.

Fortunately, all the required data could be obtained from *fp.infomart*, which is a database of the Canadian newspaper *The Financial Post* that contains all kinds of corporate information on the largest Canadian corporations. The data was collected in June 2016. In total, 3637 Canada-based corporations and another 167 non-Canada based corporations were identified on which information on the directors and top executives was available. In 3475 cases, there was also financial information available, so it was, in line with what is typically done in corporate elite research, possible to rank the corporations by turnover (see below). I decided *not* to rank the non-Canada based companies because, although they likely operate in Canada or are traded at the Toronto Stock Exchange, we are interested in the *Canadian* corporate elite. Using information on sector and ownership that was available from database, it was possible to classify the corporations as financial or non-financial and identify state-owned enterprises, foreign subsidiaries and family-owned firms. The database also provides information for each individual on their connections to non-corporate institutions such as charities, associations, university or college boards, government committees and cultural institutions. Using those data, I was able to identify another 693 institutions that, through shared directorships, link in to the sample of Canadian firms.

There are two potential problems to the dataset. The first relates to the question of whether the companies in the dataset are also actually the *largest* companies in Canada. Since *fp.infomart* has no clear criteria for in- or excluding a company in the database it is difficult to tell whether all companies in our sample are actually the largest ones. The best way to examine this was to use the most extensive rank of Canadian companies and their size available: the FP500 that lists the largest 500 companies in Canada (plus another 300 making a total of the top largest 800 Canadian firms). I found that 115 companies in this rank of the 800 largest firms to be missing from the sample. Those were almost exclusively subsidiaries of foreign firms such as *Walmart Canada*, *Hewlett-Packard Canada*, *General Motors Canada*, etc. Though prior research has indicated that the directors and executives of those companies are less likely to be connected into the corporate elite network, it does to some extent impede robust analysis. I will take this into account in the interpretation of the results below. Beyond the list of the 800 largest firms, no ranks are available, so we cannot say how many companies are not present in the list after the 800th largest firm. Yet, for most of the analyses that are conducted on samples larger than the largest 800 firms, the actual rank is less important.¹¹

A final issue with the data, or with corporate data in general, is that there are many intercorporate ownership structures that make it difficult to determine who is actually in control of the corporations. This relates to the question, once posed by Berkowitz et al. (1978) of what a corporation actually is. As the *fp.infomart* lists for each corporation shareholders with a > 10% ownership block, it was possible to find that a number of companies in the sample were actually wholly owned subsidiaries of other firms in the sample and often shared multiple directors and executives. In those cases, one might say that those corporations are not so much different corporations, but rather different legal entities part of the same enterprise group. If those companies would be regarded as different firms, one would find a much more clustered network and likely overestimate the number of ‘intercorporate’ links. To account for this I examined all

¹¹ Note that the ranking in this sample deviates somewhat from the FP500 rank as we found some financial statistics to be different from the ones reported in the FP500. Moreover, as discussed in the text, a number of companies is excluded and thus replaced by the highest ranked company after them.

companies that were majority owned as well as all companies who shared three or more directors or executives with other companies. If the companies were owned by a different company that was in the dataset, it was excluded. As a result, 224 companies were excluded of which 67 companies were among the largest 800 (resulting in a top 733). Furthermore, if two companies had a common owner which was not in the dataset, only the largest company was retained. In no other cases the companies were excluded.

Because of this filtering process, the dataset consists now of 3580 companies of which 3413 Canada-based. Since 162 firms had no financial statistics, there remain 3251 ranked companies on which the analyses can be conducted. In total I identified 23.536 directors and executives related to any of the corporations in the sample. They link to another 693 non-corporate institutions which are further classified in six types of institutions: foundations, universities, cultural or sports institutions, (business) councils or institutes, associations and government commissions or authorities. Finally, the dataset lists for each company information on sector and, if there is any, the > 10% block holding shareholders.

Methods and Network Properties

This data enables a comprehensive assessment of the effects of applying different demarcation criteria for empirical analysis. In the subsequent sections I will examine the effects of applying different demarcation criteria on various network properties that are commonly calculated in this type of research. As is common in most of the research on interlocking directorates, each corporation represents a node in the network while each interlocking director represents an edge connecting two or more nodes (depending on the number of positions they hold). As we are more interested in delineating the corporate elite, one might argue that it would be better to study the interpersonal network as done by, for instance, Bearden & Mintz (1987), Johnson & Mintz (1989), Carroll et al. (2010) and others. Yet, since also in those studies, not the personal characteristics, but the (size and type of) corporations they control served as the primary demarcating criterion, studying the intercorporate network is still of most relevance here.¹²

In the subsequent sections, I will report six different network properties that can be compared when various demarcation criteria are applied: density, average degree, degree assortativity, transitivity, the average local clustering coefficient and the average shortest path length. Density, a commonly reported measure in early studies on interlocking directorates can be calculated by dividing the actual number of edges through the maximum potential number of edges. Problematic to the measure, however, is that it is very sensitive to the sample size as the maximum potential number of nodes disproportionately increases with an increase in sample size (Stokman & Wasseur, 1985). For that reason, scholars have taken average degree, that is, on average the number of edges that link to a firm, as a more robust measure for comparative research.

Since the late 1990s, so-called small-world analysis has become increasingly popular in studies of interlocking directorates. Using various network properties, a small world analysis can indicate that, even in highly clustered graphs, information can still relatively easy spread through a network, because certain key relations between the various clusters exist (Watts, 1999a, 1999b). The most

¹² Note that by analyzing this type of network, the number of edges increases disproportionately with the number of directors a certain person holds (Chu & Davis, 2013). While a person holding only a position at two different firms represents only one edge, a so-called 'big linker' who holds positions at five or six companies represents respectively ten or fifteen edges. One could mitigate this by studying a bipartite network so that big-linkers have no disproportionate influence on the network measures. However, since this is quite uncommon in interlocking directorate research, I conduct the analysis on a unipartite projection of the network.

relevant measures for such analysis are, average shortest path length, average clustering and transitivity. Average shortest path length indicates on average, the number of edges one needs to follow to take the shortest path from one node to any other node in the network. The Average local clustering coefficient is the mean of the local clustering coefficients of each node in the graph. Those are calculated by dividing the actual number of edges between the neighbors of one node, by the maximum potential number of edges between the neighbors of a node. The transitivity measure is a global measure of the whole network and is calculated by dividing the number of closed triplets (sets of three fully connected nodes) by the maximum number of potential triplets in the network (any set of three indirectly, though not necessarily fully connected nodes). Both, the average local clustering coefficient and transitivity indicate how locally clustered the graph is and they can often be used interchangeably.

Finally, the degree assortativity coefficient is calculated. This is a coefficient between -1 and 1 for which a higher value indicates that nodes with a high degree are more likely to connect to other nodes with high degree and a low value that nodes with high degree rather connect to nodes with a low degree. This measure may tell something about closure or how hierarchical a graph is – how easy is it for less connected nodes to connect to highly connected nodes.

Furthermore, in section VI, I will attempt to identify the core of the network by conducting k -core decomposition. This method will be further elaborated on in that particular section. If not stated otherwise, all properties are calculated on the giant connected component of the graph. The analyses were conducted using the NetworkX 1.11 package for programming language Python (Hagberg, Schult, & Swart, 2008).

V. Determining a Sample of Corporate Elites: A Test of Assumptions

The main concern of this section are demarcation criteria that are commonly applied when determining a sample in conventional research on corporate elites. There are several decisions that I will mainly focus on here. First, I will show that a demarcation of the corporate elite doesn't require us to take owners into account as the ones with significant block holdings almost all hold a position as director or executive. Subsequently, I will focus on the issue of sample size, the proportion of financial firms in the sample and the effects on empirical analysis of in- or excluding state-owned enterprises, family-owned firms, foreign and Canadian subsidiaries. To do so, I will compare the effects of various sampling decisions on several network properties discussed in the methods section.

Ownership and Control of Canadian Corporations

As pointed out in the theory section, scholars from various research traditions have emphasized the role of the owners of corporations as important political forces. Marxist scholars called those who owned the 'means of production' the 'capitalists', while Mills (1956) named them the 'corporate rich'. Managerialists on the other hand, tempted to downplay the role of the owners and emphasized that most power had shifted to management (cf. Scott, 1997). These debates have important, though often overlooked implications for delineating the corporate elite. If owners are no longer able to impose their will upon management, only studying the top executives and directors suffices to adequately demarcate the corporate elite. However, if the owners of corporations are still strong enough to exercise considerable power over management, one might also want to include the owners in some way or another in the demarcation of the corporate elite. In this section I will show that although many firms are owned by and therefore subject to the pressures of large block-holders, those block-holders are often also represented within

management. For that reason, one misses out few important persons when only the management of large corporations is studied.

To make an accurate assessment of the role of owners and its relation to the management of corporations, I examined all institutional and family owners with a block holding of >10% and their relation to management. Compared with other (Anglo-Saxon) economies, ownership of corporations in Canada is typically much more concentrated (Conyon & Shipilov, 2012). Also in this sample, only for 31% of the firms (1109 in total) ownership was dispersed, so no owner with more than 10% of the shares could be identified. Contrarily, 20% of the companies was majority owned by either one (14%) to at most four shareholders (6%). For the largest Canadian firms (the top 733), the number of majority owned firms even exceeds the number of firms with dispersed ownership: 323 firms or 44% are majority owned, compared to 147 (20%) firms with dispersed ownership. All other firms have one or more dominant owners that do have block holdings of more than 10% of the shares, but they are not majority owned by any combination of these large block holders.

In total 151 companies are majority owned by a family or individual capitalist (instead of an institutional shareholder) and another 1141 companies have family shareholders with block holdings of at least 10%. Among the top 733 firms, there are 50 family owned firms and 164 corporations who are partly owned by family block holders of 10% or higher. Interestingly, in over 90% of the companies, the owning capitalist or a member of the owning family was also present on the board of directors. Owners were present in 141 of the 151 family owned firms and in 47 of the 50 family owned firms in the top 733. This number is somewhat lower if the family or individual capitalist do not own a majority of the shares or if the firm is not majority-owned at all. For the 895 Corporations that are either majority or minority owned by multiple families or individual capitalists, 719 firms have at least one owner represented on their boards (for the top 733 firms, owners are present on 57 of the 64 firms with multiple family block holders). If there are, next to family block holdings also large institutional block holders, only about half of the firms have members of owning families or individual capitalists present on their boards. Generally speaking, the more ownership is dispersed, the less likely it is that there are owning families on the boards of directors.

The findings regarding ownership have some important implications. First, the interests of the owners are still often well represented in corporate decision making as most families with large block holdings are also present on the board of that particular firm. In many corporations, management is not as independent as managerial theory assumes, but rather subject to the persistent presence of owners in their commanding bodies. Second, and perhaps more important here, the presence of owners on the boards of large corporations has significant consequences for delineating the corporate elite. Since most owning families or capitalists are present on the boards of corporations, one misses out few persons that may well comprise the corporate elite, when only the management of large corporations is studied. In most of the corporations, only studying their directors and top executives suffices to capture most owning families as well. This, is not self-evident and may be different at other places or at other points in time. Yet, following the results of this sample we can safely assume that only studying the managers and directors of these corporations, as will be done in the following analyses, can yield proper insights in the boundaries and composition of corporate elite networks.

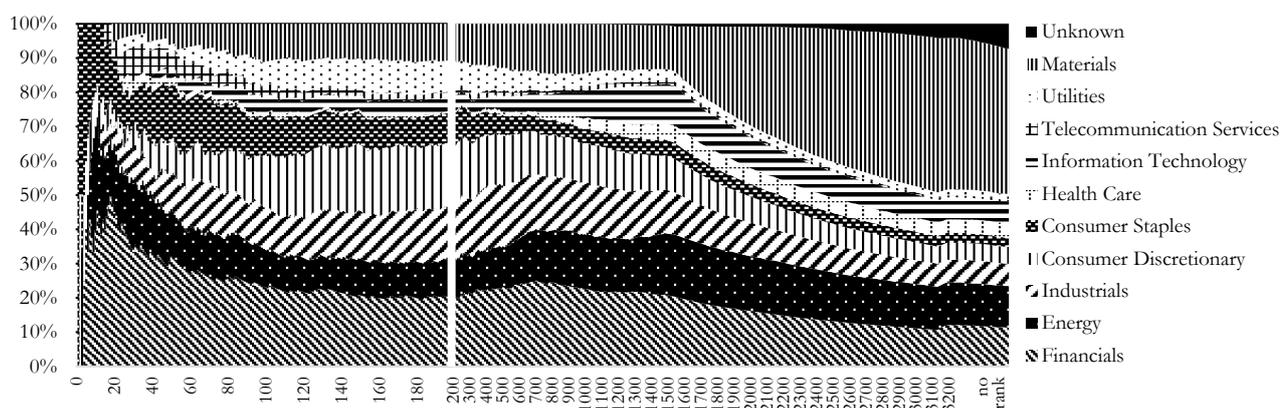
Sample Size

As has been shown in previous sections, studies to corporate elites use very different sample sizes to analyze corporate elite relations and to compare corporate elite networks over space and time. Usually the directors and executives of the largest firms are studied, but scholars have not been able to settle on what qualifies as a larger firm. I will first address the several issues that further complicate this task, before assessing the effects of sampling decisions on empirical outcomes.

As mentioned, sample size is usually determined by a firm's total revenue, total assets, market capitalization or total employees. Although all those variables are generally widely available and remain fairly stable over time, none is without problems. If one uses market capitalization, a sample needs to be limited to only stock listed companies. In this case one might miss important corporations where the corporate elite resides. The other three variables tempt to benefit firms in some sectors over others. This is particular the case for the number of employees. When it comes to total revenue or total assets, the first tends to benefit industrial (nonfinancial) companies over financial firms, while with the latter it is the other way around (see: Carroll & Fennema, 2004). If firms in the sample would be ranked by total assets, 19 of the 20 largest firms would be financial firms. For that reason, I decided to rank the firms by turnover for this analysis. Figure 1 shows the proportion of firms in each sector for different sample sizes using 2-number GICS sector codes. The largest firms are in the consumer staples sector, but when the sample increases the financial firms and later the firms in the 'consumer discretionary' sector gain more prominence. Between 100 and 1600 firms, the distribution is fairly stable. If the sample becomes larger than 1600 a lot of materials companies enter the sample. Those are mainly small mining and oil corporations that are typically stock-listed but do not have high turnover. Note that the companies after the 3251th firm are unranked.

The next issue to investigate here is to what extent decisions for a particular sample also influence the outcomes of empirical analysis. The lines in figure 2 present the magnitude of various network properties when sample size is increased from 25 to 3251. Note that the horizontal axis more compressed in the center and at the right side and that average degree and average shortest path length are scaled to the secondary axis on the right. In general, the network properties vary most if different smaller sample sizes of say, below 200 firms, are compared. Once the sample size is increased beyond this number of companies, most measures increase or decrease fairly proportional without major fluctuations. Only degree assortativity increases steeply if the sample is increased from 800 to about a thousand firms, after which it remains fairly stable as long as the sample stays under 2800 firms.

Figure 1: Proportion of firms in each sector for various sample sizes



As the results indicate, most network properties are fairly robust once a sufficiently large sample of corporations is studied. Nonetheless, when only the top segment of firms is studied, rather arbitrary decisions of sample size can significantly impact the analysis. For instance, if the 50 largest firms are studied, the average clustering coefficient in the giant component is about 0.3, transitivity slightly lower and the average shortest path length 3.01. If sample size is then increased to 100, the average clustering coefficient is about half as large and transitivity declines to just over 0.2. At the same time the average shortest path length increases by almost a third to 3.8. Yet, when the sample size is increased by another 75 firms, average clustering increases to about 0.2, while transitivity gradually decreases further to 0.18 and the average shortest path length remains fairly stable. Although it is difficult to say which sample provides the best insights in the Canadian corporate elite network, this analysis shows that each decision results in quite different conclusions on the network properties. Nevertheless, the findings generally become more robust once it is decided to study larger sets of corporations. In that sense, these findings prove more to be a problem for studies like the ones of Murray (2006), Dudouet et al. (2012) and Van Veen & Kratzer (2011), who base their findings on samples below 40 firms, than for most studies of samples comprising 250 or more firms as proposed by Stokman, Ziegler & Scott (1985).

Beside the network characteristics there are more organizational determinants of the corporate elite. One of those was the willingness for common action and attempts by the corporate elite to promote their own interest. One indicator that may signify such organization within the corporate elite, is whether they are present in at other organizations where they are able to exercise considerable power over society.

Figure 3 shows the number of relations from the directors and executives in the sample to various types of non-corporate institutions when sample size increases. The institutions were classified into six types based on their names (and some further research in case of doubt). In total 1537 interlocks with 693 of the non-corporate institutions were identified of which most connect to foundations and charities, and least to government, commissions or other authorities. Half of the relations are already identified if the sample comprises the 237 largest firms. By the time the sample consist of 500 firms, the directors of the firms in the sample interlock with 1164 non-corporate institutions. This also becomes clear from the lines in figure 3. For the interlocks with most types of non-corporate institutions, the number of interlocks first steeply increases but then the trend gradually flattens as more firms enter the sample. Once there are about 1200 companies included in the sample, almost no new directors or executives with interlocks to non-corporate institutions enter into the sample when more firms are included. This may in part be because those people are generally less 'high profile', so data on their eventual side functions is more difficult to access. Nonetheless, this data indicates that it is mostly the directors and executives that reside on the boards of the larger corporations that participate in extra-corporate activities. People in command of smaller corporations are less likely to be present at other institutions, regardless of whether these are charities, universities, cultural or government institutions.

Financial and Industrial Firms

Another sampling decision that requires further examination is the proportion of the sample that is reserved for financial corporations. As mentioned, most scholars follow the standard of one fifth of financial corporations and four fifths of nonfinancial firms. The decision for exactly those proportions, however, has never been very explicitly motivated, nor empirically tested, while changing the proportion of financial firms may well affect empirical analysis.

Figure 2: Various network properties for different sample sizes

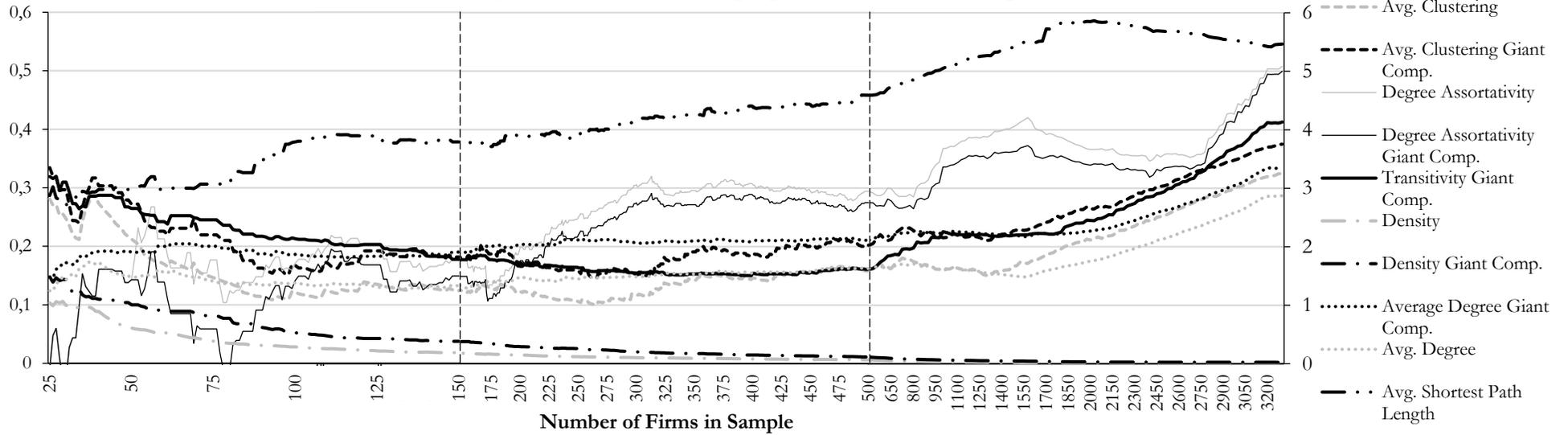
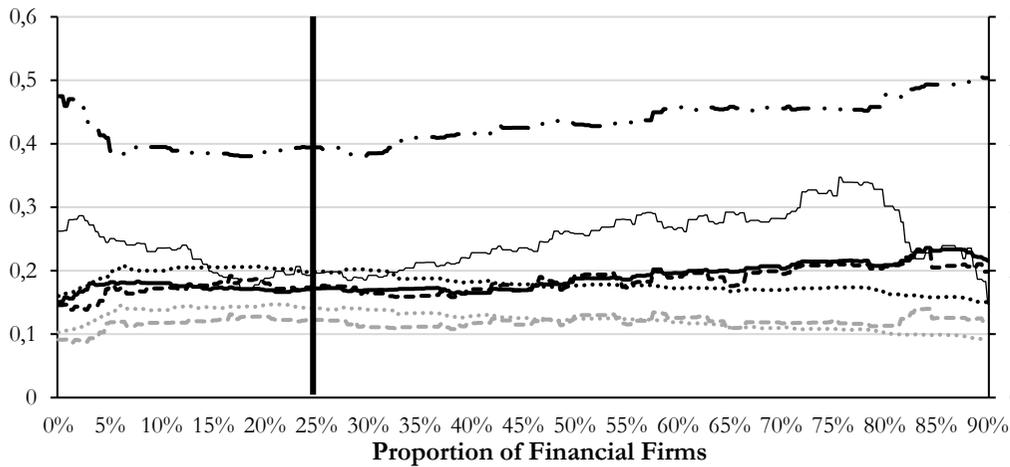


Figure 4: Various network properties for various proportions of financial firms for samples of 200 and 500 firms

4a: N=200



4b: N=500

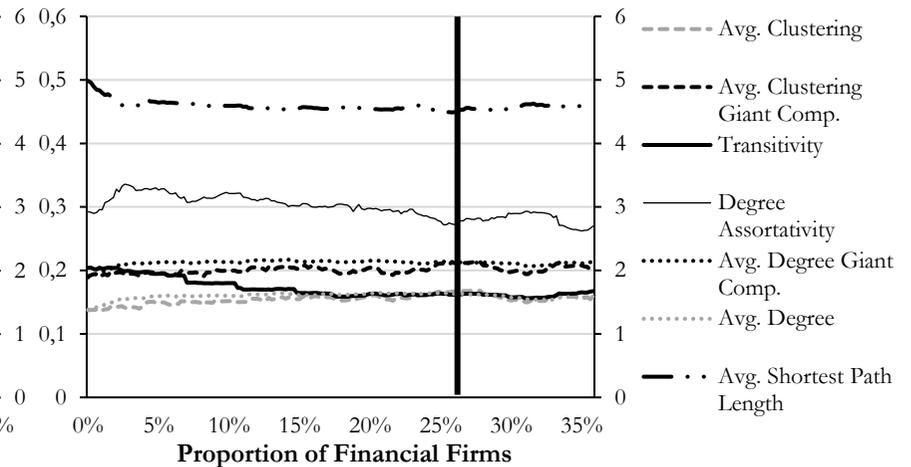


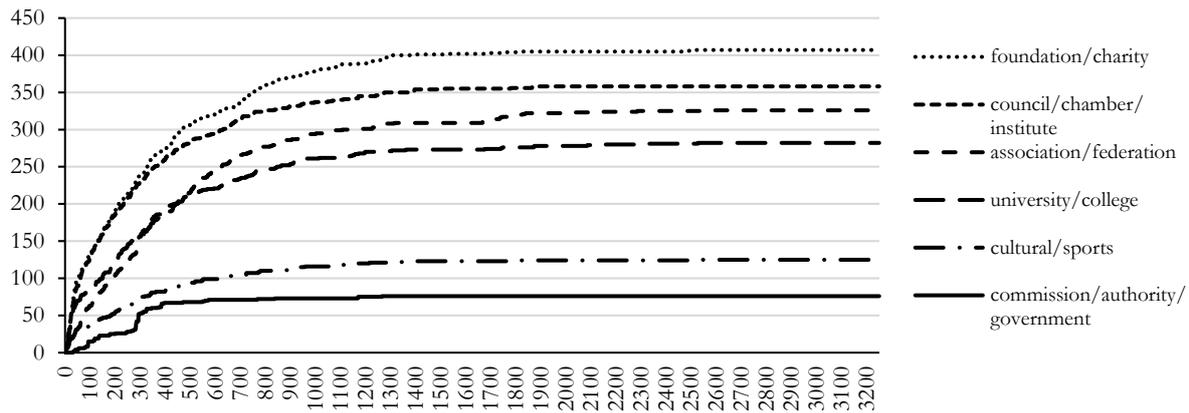
Figure 3: Interlocks between corporate and non-corporate institutions for different sample size

Figure 4 shows how various network properties change when the proportion of financial firms is increased for samples of 200 (4a) and 500 (4b) firms. Because there are only 186 financial firms in the top 800 sample, the maximum proportion of financial firms examined is 36% for the sample of 500 firms and 90% in the sample of 200 firms. If one would not reserve a particular proportion of the sample for financial firms but only look at the ranks, the proportion of financial firms would be 25% in the sample of 200 and 26% in the sample of 500 firms (see the thick black lines).

In this case, as figure shows, only in some instances the various network properties are significantly altered when a number of nonfinancial firms are substituted for financial ones. Mainly degree assortativity is sensitive to alterations in the proportion of financial firms. The other measures only show steep changes when the proportion of financial firms is decreased to below 10%. This suggests that, only when the largest financial institutions are removed from the sample and substituted for smaller industrial firms, the network characteristics change significantly. Smaller financial corporations clearly have less impact on the properties of the network when substituted with nonfinancial firms.

State-owned, Family-owned and Foreign-owned Firms

When determining samples, scholars do not only decide upon a particular number or particular types of firms, the inclusion of a firm often also depends on the inclusion of firms with a particular ownership structure. In many studies, only stock-listed firms are examined as information on those firms is more accessible. In some studies, subsidiaries of other firms or foreign firms are ignored, whereas in others they are included. Those sampling decisions may equally well impact empirical outcomes, since some types of firms may be more connected than others (Carroll, 2004; Clement, 1975; Scott, 1997).

To examine the effects of in- or excluding firms with a particular type of owner or ownership structure, figure 5 graphs the effects of excluding particular types of firms on various network properties. In each figure, the number of firms is held constant at levels of 100, 200, 500, 1000 and 2000 firms. This means, for instance, that if all state-owned owned firms are excluded, they are replaced by non-state owned firms so that the sample size remains at the same number of firms. Note that only the network properties of the giant component are reported. The percentages in brackets on the horizontal axis, indicate the proportion of firms in the sample that are in the giant component. The markers on the most left side of each figure indicate the magnitude of the various properties when no type of firm is *a priori* excluded from the sample. The other markers represent the magnitude of each network property if corporations with particular ownership characteristics are substituted for the largest firms without such characteristics (i.e. majority owned firms are substituted for non-majority owned firms that would otherwise fall out of the sample). Note that

the average shortest path length and the average degree is again plotted along the secondary axis on the right side of the graphs.

Also in this figure the results indicate that substituting firms affect network properties most if firms when sample sizes are small. When the sample size is 100, especially local clustering and degree assortativity increase or decrease significantly when some firms are substituted for others. Also, the proportion of firms in the giant component changes when firms with particular ownership characteristics are replaced by smaller firms with other ownership characteristics. If, for instance, all firms that are (majority) owned by families are substituted by smaller firms that are not family-owned, the proportion of firms in the giant component decreases from 73% to 69%, while the average clustering increases from 0.16 to 0.18 and degree assortativity decreases from 0.15 to 0.13. If, however, all institutionally owned firms (all subsidiaries) are replaced, degree assortativity decreases to about 0.08 while the average clustering coefficient increases to 0.22. The other properties remain at the same level if a number of firms with particular types of owners are substituted with other firms.

When the sample size is increased, the measures vary less if a number of firms is substituted. The largest changes are recorded when the dataset only consists of stock-listed firms (regardless of whether they are majority owned) or when either all subsidiaries (institutionally owned) or all majority-owned firms are excluded from the sample. In these samples, generally more firms are in the giant component compared to the samples in which majority owned firms are included. In most samples, substituting the majority owned firms, leads to a higher average shortest path length and degree assortativity. Average clustering and transitivity increase for the larger samples, but decrease for the smaller ones. This can in part be explained by the fact that in the larger samples, some more densely interlocked clusters of firms in the natural resources sector enter in the samples. Those are generally publicly listed and are not majority owned.¹³

Along with the findings on firm size and the proportion of financial firms, those results show how some decisions for particular sampling criteria significantly affect network properties. Decisions for a particular sample size seem to influence the network properties most, but once the sample is increased to beyond 200 or 300 firms, network properties seem more robust – that is, adding or removing a small number of firms is unlikely to change network properties significantly. The proportion of financial firms, or the in- or exclusion of firms with a particular ownership structure also influences certain network properties, but the effects are generally more limited.

VI. An Alternative Approach to Delineate the Corporate Elite

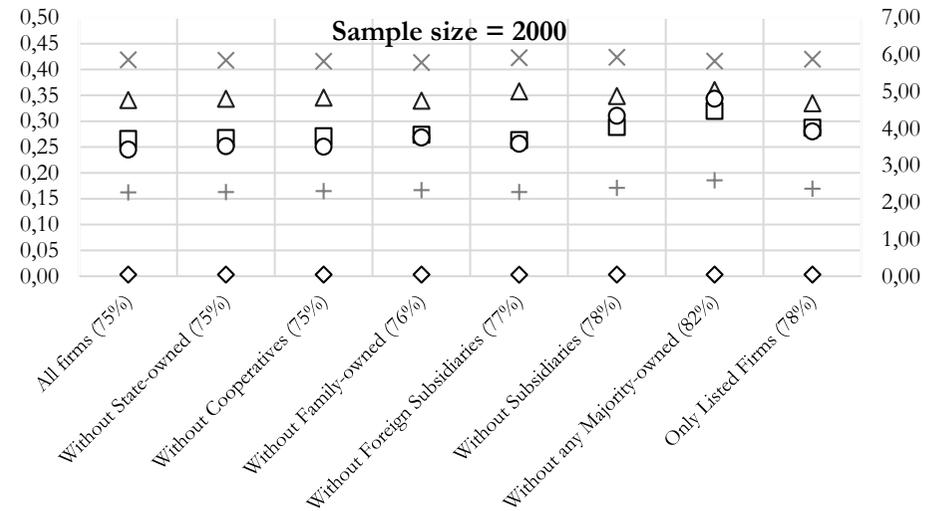
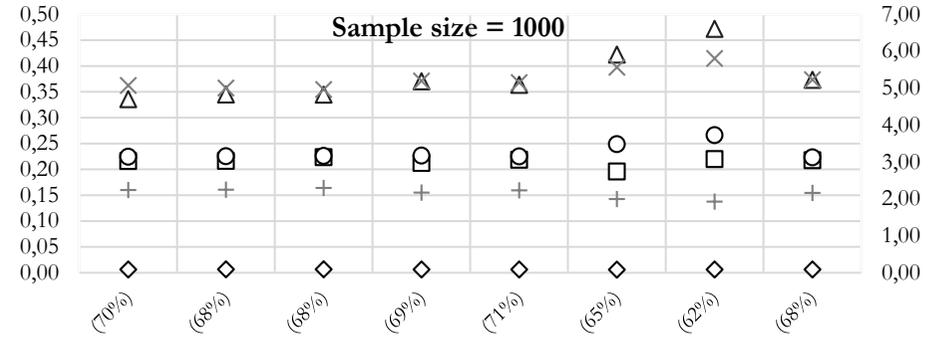
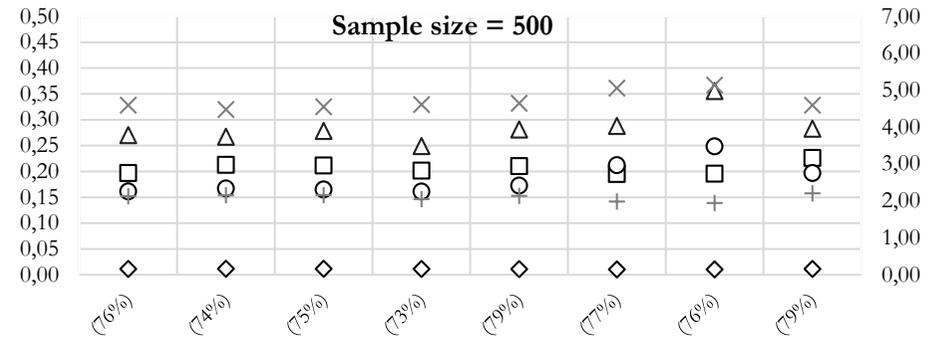
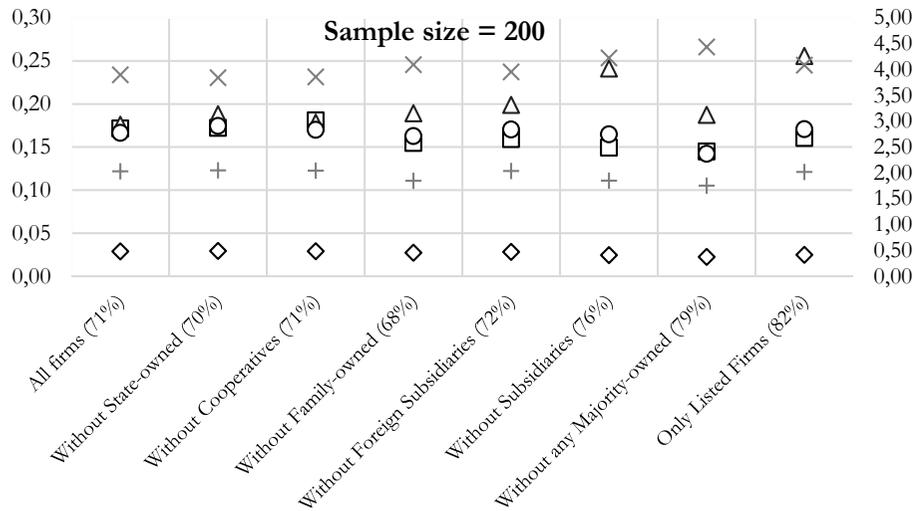
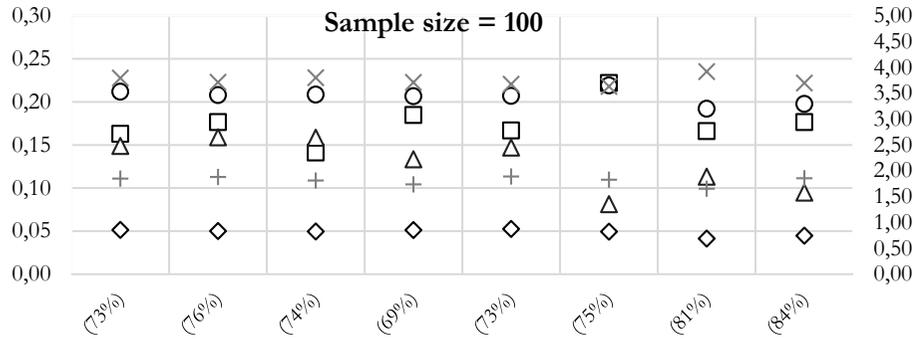
Instead of examining the robustness of existing demarcations of the corporate elite, this section attempts to establish a demarcation that aligns with the theoretical understanding of the corporate elite that has been developed in earlier sections. Prior demarcations of the corporate elite departed from the assumptions that, in the first place, the directors and executives of the largest firms needed to be studied, thereby only recognizing the foundational determinants. Yet, if we add organizational determinants, such as being connected or willing to promote the group's interests, conventional demarcating strategies may not suffice. In this section, I therefore employ a demarcating strategy that also accounts for organizational determinants and compare this strategy to conventional samples.

¹³ Recall that no data was available for a number of large foreign subsidiaries, so that they are already excluded. The effects of in- or excluding those firms may actually be larger than indicated in the graphs here.

Figure 5: Network properties of giant component if firms with particular ownership structures are excluded

For each graph, the sample sizes are held constant at the indicated levels, while firms with a different type of ownership structure are replaced (see horizontal axis at the bottom), the markers represent network properties on the giant component (see legend). Percentages on horizontal axis represent the proportion of firms in the Giant Component on which the analysis is conducted. Average Degree and Average Shortest Path Length are scaled to the secondary axis at the right.

- Avg. Clustering Giant Comp.
- Transitivity Giant Comp.
- + Avg. Degree Giant Comp.
- △ Degree Assortativity Giant Comp.
- ◇ Density Giant Comp.
- × Avg. Shortest Path Length



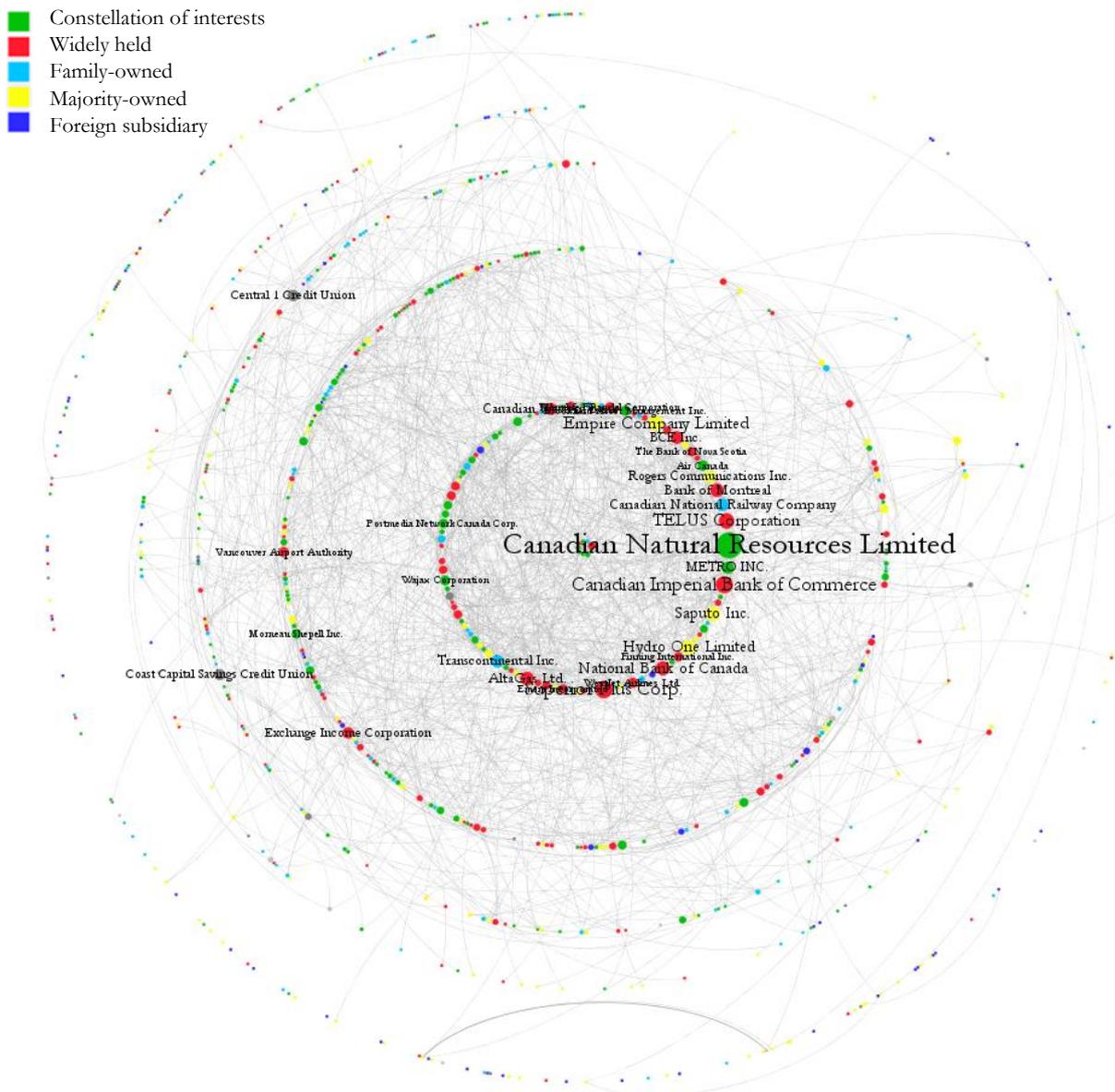
A k -core Decomposition of the Canadian Corporate Elite Network

The corporate elite, it is maintained here, consists of the people in commanding positions of the big corporations that are connected to people in similar positions so that they are able to promote their group interests. Empirically this means that the corporate elite can be demarcated by identifying the directors and executives of the most central firms in the corporate elite network they span. There exist various methods to identify the important nodes (in this case firms) or groups of nodes in network. Some methods identify the firms in the network that have most ties, are most well embedded or at short distance from other nodes, while other measures rather identify particular groups of firms that are more central than others. Because the attempt here is to determine a particular sample of firms based on the network properties, the latter type of measure is well suited for this purpose. I decided to do a k -core decomposition as this type of analysis retains, for each degeneration of the graph to a certain level of k , the nodes that are most important to uphold the network. Technically, the k -core, as the subset of nodes for a certain level of k is called, is demarcated by excluding all nodes that have less than k nodes adjacent to them. Consequently, all nodes in a particular k -core have a degree of at least k and the k -core consists of at least k nodes. A k -core decomposition, it is argued (Seidman, 1983), can be used to identify the relatively most cohesive parts of a network. Substantially, this would mean that the directors of firms in a certain k -core, are best positioned to perform the functions that the intercorporate networks allow for and are most crucial for spanning the network.

Yet, there are also some drawbacks to this analysis. Most important here, perhaps, is that particular highly clustered areas are likely to be in a k -core for high levels of k , while they not necessarily have to be very central to the network as a whole. This is important because, once the graph is degenerated to a small number of nodes, there is a chance that a densely connected local core is identified, rather than the global core that is eventually somewhat sparser. To (partly) mitigate these eventual misidentifications of nodes in the core, the following analysis excludes all firms that are not in the giant component of the k -core. Another potential drawback to the k -core decomposition is that important brokers – firms with only few, though important ties connecting different clusters – are likely to be excluded. Yet this is only part of the problem because, as will be shown, firms with high betweenness centrality are generally located in the core. Since the purpose is to compare the demarcation that follows from the k -cores with conventional demarcations, I only use the ranked top 733 largest firms.

Figure 6 shows the results for the k -core decomposition with levels of k that range to at most five. In each circle, the firms with the highest rank are plotted in the top of each circle, and the rank decreases if one follows the circle clockwise. The more the firm is move to the center or inner circles, the higher the k -core they belong to, leaving a blank space in the outer circles. The size of the nodes (and node labels) is determined by the betweenness centrality measure, that increases for each node with the number of independent shortest paths between any pair of nodes that go through each particular node. The colors signify the ownership structure of each node (see legend).

As one can see from the graph, the higher ranked companies are located in the core, while smaller ones are more likely to have a lower value of k . In the first quarter, there are only very few companies in the outer circles, and those who are, are mainly subsidiaries. As mentioned also the firms with highest betweenness centrality are also located in the center. Aside from the cluster of nine companies with $k=5$ in the center, there are 107 companies in the k -core with $k=4$ or higher and 303, 437 and 544 if k respectively equals at least 3, 2 or 1.

Figure 6: Network visualization of k-core decomposition

Yet the graph also shows that there is a quite a number of smaller firms in the k -cores at each level of k . This becomes even more clear from figure 7, which plots for each level of k how many firms in the core have a rank in the top 100, top 200, top 300 etc. The horizontal axis lists the k -value and (within brackets) the number of firms that remain in the sample at that level of k . The line in the figure indicates what proportion of the firms would remain in a sample of the same size if inclusion in that sample would have been determined by the rank. For instance, the sample of firms in the graph with a k of 3 or higher that comprises 303 firms, would overlap for 56% with a sample of 303 firms as determined by the rank. It follows that a significant proportion of firms that are actually in the core of the network would have fallen out of the analysis if only firm size determines whether a company is included in the sample. The corporate elite, thus, does not only reside on the boards of the larger firms, but they are also well connected to smaller firms in the corporate universe. Firm size is an important, but apparently not the only criterion for corporate elites to join the boards of other firms, as there are many interlocks between smaller and larger firms as well.

The demarcations of the corporate elite when using the k -cores, also yield different network properties. This can be seen from figure 8 where the network properties of the various k -cores are compared to the network properties of samples of the same number of firms determined by rank. The various properties indicate in general a higher average clustering, transitivity and average degree for the k -cores, and a lower average shortest paths and density. These findings can be explained by the fact that the firms in the k -cores are, on average, better embedded in the corporate elite networks than the firms determined by rank.¹⁴ The substantive interpretation from these results is that the firms in the samples determined by the k -core better satisfy the organizational criterion of *connectedness* than the ranked samples and, as such, more accurately capture the corporate elite. Methodologically, the k -cores provide a less arbitrary strategy of determining the corporate elite.

Figure 7: Percentage of firms with a particular rank within various k-cores

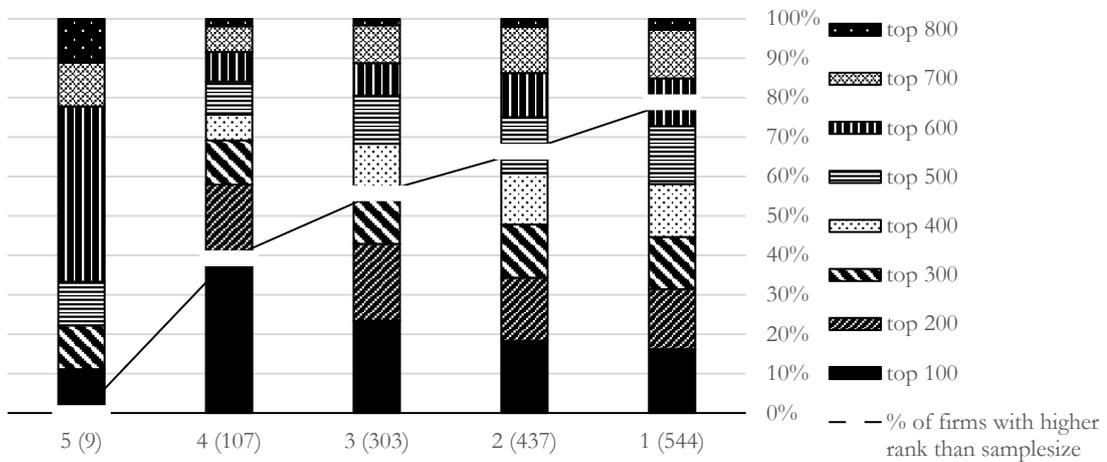
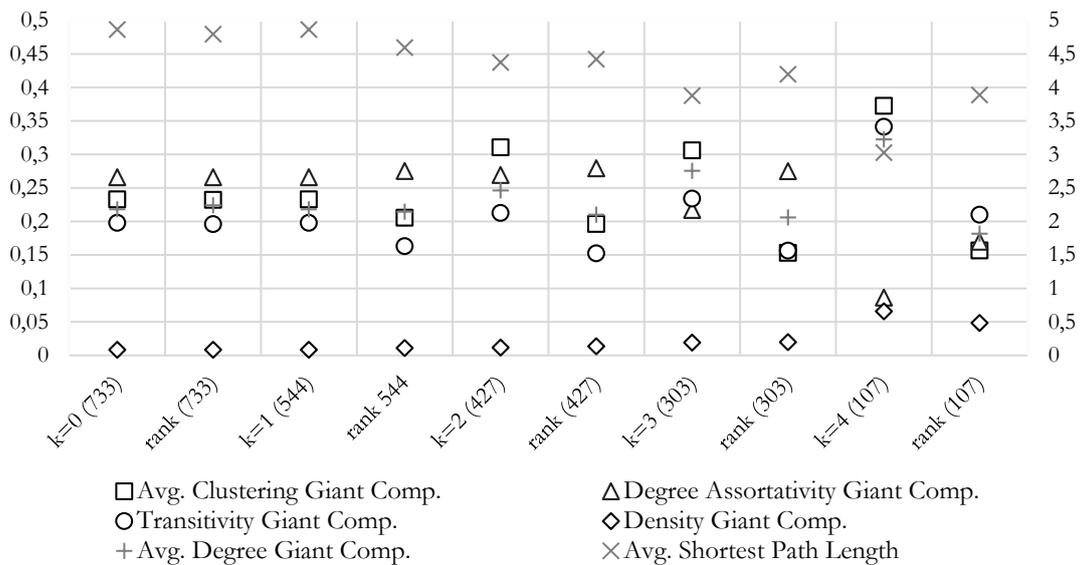


Figure 8: Network properties of k -cores and ranked samples of the same size



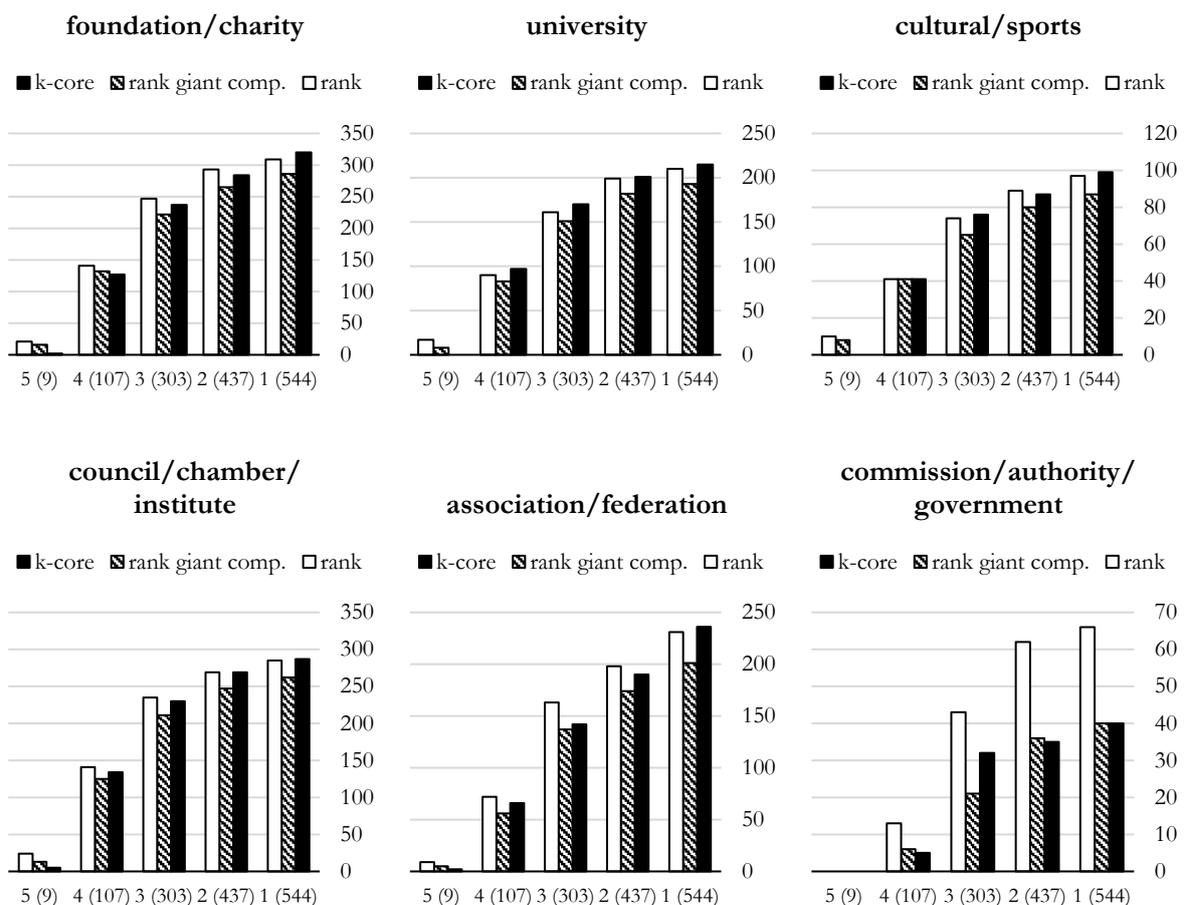
¹⁴ Since the properties are only given for the giant component, the actual number of nodes included in the analysis is lower for the ranked samples. Since the potential number of nodes is lower for the ranked samples, this also explains higher density in these samples.

The Extra-Corporate Activities of the Corporate Elite Compared

Compared to conventional samples, the demarcations of the corporate elite that followed from the k -core analysis aligned better with the theoretical presumptions that a corporate elite should also satisfy organizational determinants. Yet, the analysis thus far, only tells something about the connectedness or cohesiveness of the corporate elite, but not about other organizational determinants such as the willingness to promote the group interests or the self-consciousness. While the latter is difficult to measure, the willingness to promote the interests of the corporate elite can be assessed by examining, again, the positions of corporate elites at non-corporate institutions.

Figure 9 displays the number of positions held by the directors and executives of the firms in the various samples that follow from different demarcations. The black bars in each graph represent the number of relations to non-corporate institutions of the directors and executives in the sample that follows from the k -core. The white bars, on the other hand, represent the number of positions held by the directors and executives of firms in a sample that is determined by the rank, but which comprises the same number of firms as the k -cores. Finally, the striped bars in between the black and the white bars indicate the number of relations to non-corporate institutions of the directors and executives of firms that are in the *giant component* of the ranked sample. The non-corporate institutions were classified into six categories similar to figure 3.

Figure 9: Relations to non-corporate institutions from firms in k -cores and ranked samples



The graphs demonstrate that the differences between the k -cores and the ranked samples are rather small. Similar to the ranked sample, the number of relations to non-corporate institutions first increases steeply when levels of k decrease and the number of firms increases, but the trend gradually flattens. In most cases difference between the number of relations to non-corporate institutions between the samples are not much larger than 10 or 20. In general the ranked samples connect most to non-corporate institutions (white bars). However, once the sample becomes larger (or the level of k is at 1), the directors and executives of k -core samples have more relations to non-corporate institutions. The directors and executives in the giant component of the ranked sample have in most cases the lowest number of relations to non-corporate institutions. This is even so with regard to the government institutions, where the difference is otherwise rather large.¹⁵

This produces an ambiguous result, since the extent to which the ranked sample performs better at capturing the corporate elites that are organized to promote certain (group) interests, depends on whether one analyzes the whole ranked sample or only the giant component. In that sense, it is mainly a theoretical question of which demarcation one should apply, as the empirics do not provide a definite answer.

So, while the samples determined by the k -core yield a theoretically more meaningful demarcation of the corporate elite because it also accounts for the connectedness of the corporate elite, they do not perform worse at capturing the directors and executives that connect to non-corporate institutions than the ranked samples. The question that remains is at which level of k one should draw the boundary. Although this may depend on the particular purpose of each study, I would maintain that any firm in the k -core with $k=2$ is worth examining. This means that any firm in the network that is connected to at least two other firms which are also connected to two firms, qualifies to be in the sample. Given the results of the previous section, there remain sufficient firms in the sample for robust analysis if one follows this criterion, while most directors and executives with ties to non-corporate institutions are captured in the sample.

VII. Conclusion and Discussion

This study departed from the question whether it was possible to identify theoretically meaningful criteria that enable to empirically delineate the corporate elite. Based on an extensive discussion of prior research and debates, I argued that the corporate elite should be determined by foundational as well as organizational determinants. Prior research to corporate elites often failed to take into account both types of determinants when demarcating the group that was to be studied. For that reason, the theoretical concepts that are used in this type of research align poorly with the applied empirical demarcations and samples of corporate elites are often arbitrarily determined. This makes it difficult to obtain a comprehensive understanding of the corporate elite and impairs fruitful comparisons over space and time.

The theoretical determinants of the corporate elite were examined empirically in two ways. First, by assessing the robustness of analyses based on existing demarcations (samples) of the corporate elite, primarily in the field of interlocking directorate research. Second, by developing alternative

¹⁵ Only when it comes to the relations to commissions, authorities and government institutions the results unambiguously show more relations from the ranked sample than from the ranked sample. This adds to a claim once made by Fox & Ornstein (Fox & Ornstein, 1986:488) that “interlocking and career-switching are disproportionately concentrated at the highest levels of the corporate and state sectors.” Though, it has to be remarked that there are relatively few relations to government institutions compared to the other non-corporate institutions. Moreover, much of the difference stems from directors and executives that do interlock with government institutions, but are unconnected to the corporate network.

demarcations of the corporate elite that account for both, the organizational and foundational determinant. The first analyses indicated that network properties are significantly different if one applies different sampling criteria for the group to be studied, in particular if the sample size varies. When sample sizes are below 100 or 200 firms, the magnitude of most network properties can change substantially when the sample is increased or decreased by, say, 25 firms. The network properties of samples comprising 250 firms and beyond seem to be less sensitive to increases or decreases in sample size. In that respect, findings of studies that draw from a sample of 250 firms (e.g. Carroll, 2004; Davis et al., 2003; Heemskerk, 2007; Stokman, Ziegler, et al., 1985; Windolf, 2002) or larger, are likely to be more robust than those who limit their samples to no more than 50 firms (Dudouet et al., 2012; e.g. Murray, 2006; Van Veen & Kratzer, 2011).

Another important finding is that over half of all interlocks to non-corporate institutions were captured by the sample, once the sample size is increased above approximately 250 firms. Once the sample was over 1200 firms few new interlockers with non-corporate institutions were identified. This affirms the earlier findings by Useem (1984, p. 76) who considered the interlockers of the largest firms to be “the leading edge of business political activity”. Expanding the universe of firms beyond 1200 firms or studying the entire universe of firms as has been attempted by Heemskerk & Takes (2016) and Heemskerk et al. (2016), may reveal important patterns of corporate elite organization, but does not necessarily learn more about their mobilization outside the corporate world.

Regarding the proportion of financial firms or the in- or exclusion of firms with particular ownership characteristics, the effects of sampling decisions on the network properties are overall less significant. With regard to the financial firms, it seems that only when the largest financial firms are substituted by industrial firms, the network properties will change significantly. When the sample is limited to only stock-listed firms or state-owned enterprises, cooperatives, family owned firms, foreign subsidiaries etc. are excluded, the network properties are, again, most affected for smaller samples of firms. For larger samples, the network properties seem to be affected most if the sample is delimited to only listed companies or when *all* majority owned companies are excluded. In other instances, the changes of the network properties are rather minor.

The second set of analyses explored alternative demarcation strategies that aligned better with the theoretical determinants of the corporate elite. By conducting a k -core decomposition it was possible to distinguish the corporations that were more embedded in the core of the network from the ones that are more peripheral. As expected, most of the larger companies tended to be included in the core of the network. Firm size is, thus, an important determinant of being well embedded in the network. At the same time, many smaller companies entered into the k -cores as well. So, if a sample is delimited to a particular number of largest firms, it is likely that particular connections within the corporate elite remain unexamined and important firms at which the corporate elite resides would remain unidentified. Importantly, the alternative approach to delineate the corporate elite performed equally well, compared to conventional samples, at capturing the directors and executives that held positions at non-corporate institutions. Where to put the exact boundary may depend on the purpose of each study, but, as I suggested above, a sample of firms that are included in the k -core when the level of k is 2 seems most empirically useful and theoretically meaningful. Such sample yields sufficient firms in the sample for robust comparison (in this case 427), while it captures already most of directors with ties to non-corporate institutions.

The findings of this study have important implications for research on corporate elites. As has been demonstrated, applying different sampling criteria can lead to different images of the corporate

elite organization. The demarcation strategies examined here provide important insights in what the effects of using different samplings are on analysis. As empirical outcomes can be significantly affected by applying different sampling criteria, the findings prompt to explore other demarcating strategies. For certain, it is not always possible to draw from such a large dataset as was possible here. At the same time, one can think of other innovative ways of sampling. One such example is a 'snowball' sample, as pioneered by Carroll (n.d. forthcoming). Here one takes a sample of, say, the 100 largest firms and snowballs to the neighbor firms (the firms that the directors and executives interlock with) and the neighbors of the neighbors etc. A somewhat less innovative alternative would be to add firms to the sample (determined by rank) until a certain number of firms are in the connected component and report the number of firms that remain unconnected. The benefit of such an approach is that network properties which are more sensitive to sample size, can be more meaningfully compared, since the number of firms in the giant component is fixed.

Let me emphasize here, that empirical deviations that stem from particular sampling decisions are not easily resolved once one is more consistent in applying certain demarcation strategies. Social and economic developments may affect the social structure of corporate elite networks in such way that, what is an appropriate sampling strategy or sample size for delineating the corporate elite at one point in time, may not suffice at different moment. It is, nevertheless, important to keep track of such developments for a robust understanding of how the corporate elite is organized.

The analysis of the Canadian corporate elite network, as has been conducted here, provides but one example of a comprehensive study to corporate elites. The conceptual clarification on foundational and organizational determinants of the corporate elites may provide useful benchmarks to structure future analysis on corporate elites. The determinants identified here, could further be grounded by qualitative analysis, in particular when it comes to the self-consciousness of the corporate elite (to which more attention could have been paid). In addition, comparing the findings of this research to similar research in different countries would facilitate a more profound understanding of elite organization and the peculiarities of the Canadian network. Moreover, globalization and the emergence of many multinational corporations urge to elevate the analysis to the transnational level and to study the national networks in their transnational context. Recent developments in information technologies make increasingly large amounts of data available that enable this types of analysis. Scholars are well encouraged to draw from the findings presented here and the new instruments available to pursue this type of research in the years to come. Minding the growing concerns about corporate power and recurring interests in lobbying, elite organization and social and political inequalities, a comprehensive picture and demarcation of the corporate elite will be an indispensable device for future research, resistance and critique.

References

- Aguilera, R. V. (1998). Directorship Interlocks in Comparative Perspective: The Case of Spain. *European Sociological Review*, 14(4), 319–342.
- Alexander, M., Murray, G., & Houghton, J. (1994). Business power in Australia: The concentration of company directorship holding among the top 250 corporates. *Australian Journal of Political Science*, 29(1), 40–61. <http://doi.org/10.1080/00323269408402279>
- Allen, M. P. (1974). The structure of interorganizational elite cooptation: Interlocking corporate directorates. *American Sociological Review*, 39, 393–406.
- Allen, M. P. (1978). Economic interest groups and the corporate elite structure. *Social Science Quarterly*, 58(4), 597–615.
- Allen, M. P., & Broyles, P. (1989). Class hegemony and political finance: Presidential campaign contributions of wealthy capitalist families. *American Sociological Review*, 54(2), 275–287.
- Andrew, E. (1983). Class in Itself and Class against Capital: Karl Marx and His Classifiers. *Canadian Journal of Political Science/Revue Canadienne de Science Politique*, 16(3), 577–584.
- Au, K., Peng, M. W., & Wang, D. (2000). Interlocking Directorates, Firm Strategies, and Performance in Hong Kong: Towards a Research Agenda. *Asia Pacific Journal of Management*, 17(1), 29–47. <http://doi.org/10.1023/A:1015432819596>
- Bearden, J., & Mintz, B. (1985). Regionality and Intergration in the American Interlock Network. In F. N. Stokman, R. Ziegler, & J. Scott (Eds.), *Networks of Corporate Power: A Comparative Analysis of Ten Countries* (pp. 234–49). Cambridge: Polity Press.
- Bearden, J., & Mintz, B. (1987). The structure of class cohesion: The corporate network and its dual. In M. S. Mizruchi & M. Schwartz (Eds.), *Intercorporate Relations. The Structural Analysis of Business Relations: The structural analysis of business* (pp. 187–207). New York: Cambridge University Press.
- Bell, D. (1973). *The Coming of Post-Industrial Society: A Venture in Social Forecasting*. New York: Basic Books Inc, Publishers.
- Berkowitz, S. D., Carrington, P. J., Kotowitz, Y., & Waverman, L. (1978). The Determination of Enterprise Groupings through Combined Ownership and Directorship Ties. *Social Networks*, 1(4), 391–413.
- Berle, A. A., & Means, G. C. (1932). *The Modern Corporation and Private Property*. Harcourt, Brace & World, Inc.
- Bottomore, T. B. (1964). *Elites and Society*. C.A. Watts.
- Bourdieu, P. (1984). *Distinction: A social critique of the judgement of taste*. Cambridge, MA: Harvard University Press.
- Bourdieu, P., & de Saint Martin, M. (1978). Le patronat. *Actes de La Recherche En Sciences Sociales*, 20(20), 3–82. <http://doi.org/10.3406/arss.1978.2592>
- Brownlee, J. (2005). *Ruling Canada: Corporate Cohesion and Democracy*. Black Point, NS: Fernwood Publishing Co.
- Bukharin, N. (1929). *Imperialism and world economy, introduction by Vladimir Ilych Lenin* (Vol. 4). New York: International Publishers.
- Burnham, J. (1941). *The Managerial Revolution*. The John Day company.
- Burris, V. (1987). The Political Partisanship of American Business: A Study of Corporate Political Action. *American Sociological Review*, 52(6), 732–744.
- Burris, V. (2001). The Two Faces of Capital: Corporations and Individual Capitalists as Political Actors. *American Sociological Review*, 66(3), 361–381.
- Burris, V. (2005). Interlocking Directorates and Political Cohesion Among Corporate Elites. *American Journal of Sociology*, 111(1), 249–283.
- Burris, V., & Staples, C. L. (2012). In search of a transnational capitalist class: Alternative methods for comparing director interlocks within and between nations and regions. *International Journal of Comparative Sociology*, 53(4), 323–342. <http://doi.org/10.1177/0020715212460256>
- Burt, R. S. (1980). Coaptive Corporate Actor Networks: A Reconsideration of Interlocking

- Directorates Involving American Manufacturing. *Administrative Science Quarterly*, 25(4), 557–582. <http://doi.org/10.2307/2392281>
- Car-roll, R., Stening, B., & Stening, K. (1990). Interlocking directorships and the law in Australia. *Company and Securities Law Journal*, 8(5), 290–302.
- Cárdenas, J. (2015). Are Latin America’s corporate elites transnationally interconnected? A network analysis of interlocking directorates. *Global Networks*, 15(4), 424–445. <http://doi.org/10.1111/glob.12070>
- Cárdenas, J. (2016). Why do corporate elites form cohesive networks in some countries, and do not in others? Cross-national analysis of corporate elite networks in Latin America. *International Sociology*, 31(3), 341–63. <http://doi.org/10.1177/0268580916629965>
- Carroll, W. K. (n.d.). Canada’s carbon-capital elite: a tangled web of corporate power.
- Carroll, W. K. (1986). *Corporate Power and Canadian Capitalism*. Vancouver, BC: University of British Columbia Press.
- Carroll, W. K. (2004). *Corporate power in a globalizing world: A study in elite social organization*. Don Mills, ON: Oxford University Press.
- Carroll, W. K., & Beaton, J. (2000). Globalization, neo-liberalism, and the changing face of corporate hegemony in higher education. *Studies in Political Economy*, 62(1), 71–98.
- Carroll, W. K., Carson, C., Fennema, M., Heemskerk, E. M., & Sapinski, J. P. (2010). *The Making of a Transnational Capitalist Class: Corporate power in the twenty-first century*. New York: Zed books.
- Carroll, W. K., & Fennema, M. (2002). Is there a transnational business community? *International Sociology*, 17(3), 393–419.
- Carroll, W. K., & Fennema, M. (2004). Problems in the study of the transnational business community a reply to Kentor and Jang. *International Sociology*, 19(3), 369–378.
- Carroll, W. K., & Fennema, M. (2006). Asking the right questions: A final word on the transnational business community. *International Sociology*, 21, 607–610.
- Carroll, W. K., Fennema, M., & Heemskerk, E. M. (2010). Constituting corporate Europe: A study of elite social organization. *Antipode*, 42(4), 811–843.
- Carroll, W. K., Fox, J., & Ornstein, M. D. (1982). The network of directorate links among the largest Canadian firms. *Canadian Review of Sociology/Revue Canadienne de Sociologie*, 19(1), 44–69. <http://doi.org/10.1111/j.1755-618X.1982.tb01321.x>
- Carroll, W. K., & Sapinski, J. P. (2006). The Global Corporate Elite and the Transnational Policy-Planning Network , 1996 – 2006 A Structural Analysis. *International Sociology*, 25(4), 501–538. <http://doi.org/10.1177/0268580909351326>
- Chiesi, A. M. (1985). Property, Capital and Network Structure in Italy. In F. N. Stokman, R. Ziegler, & J. Scott (Eds.), *Networks of Corporate Power: A Comparative Analysis of Ten Countries* (pp. 199–214). Cambridge: Polity Press.
- Chu, J., & Davis, G. F. (2013). Who killed the inner circle? The collapse of the American corporate interlock network. *Unpublished, The University of Michigan*.
- Clement, W. (1975). *Canadian Corporate Elite: An Analysis of Economic Power*. Toronto: McGill-Queen’s Press-MQUP.
- Canyon, M. J., & Shipilov, A. (2012). Is There an Anglo-Saxon Model? In B. M. Kogut (Ed.), *The Small Worlds of Corporate Governance* (pp. 53–76). MIT Press.
- Cox, B. A., & Rogerson, C. M. (1985). The corporate power élite in South Africa: interlocking directorships among large enterprises. *Political Geography Quarterly*, 4(3), 219–234. [http://doi.org/10.1016/0260-9827\(85\)90012-6](http://doi.org/10.1016/0260-9827(85)90012-6)
- Cuyvers, L., & Meeusen, W. (1985). Financial Groups in the Belgian Network of Interlocking Directorships. In F. N. Stokman, R. Ziegler, & J. Scott (Eds.), *Networks of Corporate Power: A Comparative Analysis of Ten Countries* (pp. 148–65). Cambridge: Polity Press.
- Dahl, R. A. (1958). A Critique of the Ruling Elite Model. *The American Political Science Review*, 52(2), 463–469.

- Dahrendorf, R. (1959). *Class and class conflict in industrial society*. Stanford University Press.
- David, T., & Westerhuis, G. (2014). *The Power of Corporate Networks: A Comparative and Historical Perspective* (Vol. 26). Routledge.
- Davis, G. F., & Greve, H. R. (1997). Corporate elite networks and governance changes in the 1980s. *American Journal of Sociology*, 103(1), 1–37.
- Davis, G. F., Yoo, M., & Baker, W. E. (2003). The small world of the American corporate elite, 1982 – 2001. *Strategic Organization*, 1(3), 301–326.
- Domhoff, G. W. (1967). *Who Rules America?* Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Domhoff, G. W. (1970). *The Higher Circles: The Governing Class in America*. New York: Random House Inc.
- Domhoff, G. W. (1975). *The Bohemian Grove and Other Retreats*. New York: Harper & Row, Publishers.
- Domhoff, G. W. (1978). *The Powers That Be: Processes of Ruling-Class Domination in America*. New York: Random House Inc.
- Dooley, P. C. (1969). The Interlocking Directorate. *The American Economic Review*, 59(3), 314–323.
- Dudouet, F.-X., Grémont, E., & Vion, A. (2012). Transnational Business networks in the Eurozone: a focus on four major stock exchange indices. In G. Murray & J. Scott (Eds.), *Financial Elites and Transnational Business: Who Rules the World?* (pp. 124–45). Cheltenham: Edward Elgar Publishing.
- Edling, C., Hobdari, B., Randøy, T., Stafssudd, A., & Thomsen, S. (2012). Testing the “old boys’ network”: Diversity and board interlocks in Scandinavia. In B. M. Kogut (Ed.), *The Small Worlds of Corporate Governance* (pp. 183–202). Cambridge, MA: MIT Press.
- Fennema, M. (1982). *International Networks of Banks and Industry* (Vol. 2). Springer Science & Business Media.
- Fox, J., & Ornstein, M. (1986). The Canadian state and corporate elites in the post-War period. *Canadian Review of Sociology & Anthropology*, 23(4), 481–506.
- Friedrich, C. J. (1950). *The New Image of the Common Man*. Boston: Beacon Press.
- Galbraith, J. K. (1967). *The new industrial state*. Houghton, Mifflin and Company.
- Hagberg, A. A., Schult, D. A., & Swart, P. J. (2008). Exploring Network Structure, Dynamics, and Function using NetworkX. In G. Varoquaux, T. Vaught, & J. Millman (Eds.), *Proceedings of the 7th Python in Science Conference* (pp. 11–15). Pasadena, CA USA.
- Heemskerk, E. M. (2007). *The Decline of the Corporate Community: Network Dynamics of the Dutch Business Elite*. Amsterdam: Amsterdam University Press.
- Heemskerk, E. M. (2011). The social field of the European corporate elite: a network analysis of interlocking directorates among Europe’s largest corporate boards. *Global Networks*, 11(4), 440–60.
- Heemskerk, E. M. (2013). The rise of the European corporate elite: evidence from the network of interlocking directorates in 2005 and 2010. *Economy and Society*, 42(1), 74–101. <http://doi.org/10.1080/03085147.2012.686720>
- Heemskerk, E. M., Fennema, M., & Carroll, W. K. (2016). The global corporate elite after the financial crisis: evidence from the transnational network of interlocking directorates. *Global Networks*, 16(1), 68–88.
- Heemskerk, E. M., Takes, F. W., Garcia-Bernardo, J., & Huijzer, M. J. (2016). Where is the global corporate elite? A large-scale network study of local and nonlocal interlocking directorates. *Forthcoming in Sociologica*.
- Heemskerk, Daolio, F., & Tomassini, M. (2013). The community structure of the European network of interlocking directorates 2005–2010. *PLoS One*, 8(7), e68581.
- Heemskerk, Mokken, R. J., & Fennema, M. (2012). The fading of the state: Corporate–government networks in the Netherlands. *International Journal of Comparative Sociology*, 20715212458516.
- Heemskerk, & Takes, F. W. (2016). The corporate elite community structure of global capitalism. *New Political Economy*, 21(1), 90–118.

- Heiskanen, I., & Johanson, E. (1985). Finnish Interlocking Directorships: Institutional Groups and Their Evolving Integration. In F. N. Stokman, R. Ziegler, & J. Scott (Eds.), *Networks of Corporate Power: A Comparative Analysis of Ten Countries* (pp. 166–83). Cambridge: Polity Press.
- Helmers, H. M., Mokken, R. J., Plijter, R. C., & Stokman, F. N. (1975). *Graven naar Macht: Op Zoek naar de Kern van de Nederlandse Economie*. Amsterdam: Van Gennep.
- Hilferding, R. (1981). *Finance capital: A study in the latest phase of capitalist development*. (T. B. Bottomore, Ed.). London: Routledge & Kegan Paul.
- Jeidels, O. (1905). Das Verhältnis der deutschen Grossbanken zur Industrie mit besonder Berücksichtigung der Eisenindustrie. *Staats- Und Sozialwissenschaftliche Forschungen*, 24(2), 1–271.
- Johnsen, E., & Mintz, B. (1989). Organizational versus class components of director networks. In Robert Perrucci & Harry R. Potter (Eds.), *Networks of Power: Organizational Actors at the National, Corporate, and Community Levels* (pp. 57–80). New York: Aldine de Gruyter.
- Kentor, J., & Jang, Y. S. (2004). Yes , There is a (Growing) Transnational Business Community: A Study of Global Interlocking Directorates 1983-98. *International Sociology*, 19(3), 355–368.
- Kentor, J., & Jang, Y. S. (2006). Different Questions, Different Answers: A Rejoinder to Carroll and Fennema. *International Sociology*, 21(4), 602–606.
- Koenig, T., Gogel, R., & Sonquist, J. (1979). Models of the Significance of Interlocking Corporate Directorates. *American Journal of Economics and Sociology*, 38(2), 173–186.
- Kogut, B. M. (2012). *The Small Worlds of Corporate Governance*. Cambridge, MA: MIT Press.
- Koibuchi, S., & Okazaki, T. (2014). Evolution of Corporate Networks in Japan. In T. David & G. Westerhuis (Eds.), *The Power of Corporate Networks: A Comparative and Historical Perspective* (pp. 296–304). New York: Routledge.
- Kono, C., Palmer, D., Friedland, R., & Zafonte, M. (1998). Lost in space: the geography of corporate interlocking directorates. *American Journal of Sociology*, 103(4), 863–911.
- Lenin, V. I. (2010). *Imperialism: The Highest Stage of Capitalism* (Vol. 96). Penguin UK.
- Leskovec, J., & Faloutsos, C. (2006). Sampling from large graphs. *Proceedings of the 12th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, 631–636. <http://doi.org/10.1145/1150402.1150479>
- Levine, J. H. (1972). The Sphere of Influence. *American Sociological Review*, 37(1), 14–27.
- Levitt, K. (2002). *Silent Surrender: The Multinational Corporation in Canada* (Vol. 196). Toronto: McGill-Queen’s Press-MQUP.
- Lim, M. H., & Porpora, D. V. (1987). Stock ownership and interlocking directorates among malaysia’s top corporations. *The Insurgent Sociologist*, 14(2), 77–101.
- Lukács, G. (1962). *Die Zerstörung der Vernunft (Band I)*. Darmstadt und Neuwied: Hermann Luchterhand Verlag.
- Lundberg, F. (1937). *America’s 60 Families*. New York: The Vanguard Press.
- Mac Canna, L., Brennan, N., & O’Higgins, E. (1998). National Networks of Corporate Power: An Irish Perspective. *Journal of Management and Governance*, 2(4), 357–379. <http://doi.org/10.1023/A:1009972108819>
- Marx, K. (1906). *Capital: A Critique of Political Economy*. (E. Untermann, F. Engels, E. B. Aveling, & S. Moore, Eds.). Chicago: C.H. Kerr & Company.
- Meisel, J. H. (1958). The Myth of the Ruling Class: Gaetano Mosca and the “Elite.” *Ann Arbor, University of Michigan Press*.
- Michels, R. (1915). *Political parties: A sociological study of the oligarchical tendencies of modern democracy*. Hearst’s International Library Company.
- Miliband, R. (1973). *The State in Capitalist Society: The Analysis of the Western System of Power*. London: Quartet Books Limited.
- Mills, C. W. (1956). *The Power Elite, New York*. New York: Oxford University Press.
- Mintz, B. (2002). Elites and politics: The corporate elite and the capitalist class in the United States. *Research in Political Sociology*, 11, 53–77.

- Mintz, B., & Schwartz, M. (1985). *The Power Structure of American Business*. Chi: University of Chicago Press.
- Mizruchi, M. S. (1982). *The American Corporate Network, 1904–1974*. Beverly Hills: Sage Publications.
- Mizruchi, M. S. (2013). *The Fracturing of the American Corporate Elite*. Cambridge, MA: Harvard University Press.
- Mokken, R. J., & Stokman, F. N. (1976). Power and Influence as Political Phenomena. In B. Barry (Ed.), *Power & Political Theory. Some European Perspectives* (pp. 33–54). London: John Wiley.
- Mokken, R. J., & Stokman, F. N. (1978). The 1972 Intercorporate Network in The Netherlands. In H. J. Hummell (Ed.), *Mathematische Ansätze zur Analyse sozialer Macht. Sozialwissenschaftlichen Schriften 14* (pp. 221–247). Duisburg: Verlag der Sozialwissenschaftlichen Kooperative.
- Mosca, G. (1939). *The Ruling Class (Elementi di Scienza Politica)*. (A. Livingston & H. D. Kahn, Eds.). New York: McGraw-Hill Book Company.
- Murray, G. (2001). Interlocking Directorates: What do they Tell About Corporate Power in Australia. *Journal of Australian Political Economy*, (47), 3–26.
- Murray, G. (2006). *Capitalist Networks and Social Power in Australia and New Zealand*. Hampshire: Ashgate Publishing, Ltd.
- Murray, G., & Scott, J. (2012). *Financial Elites and Transnational Business: Who Rules the World?* Cheltenham: Edward Elgar Publishing.
- National Resources Committee. (1939). *The Structure of the American Economy, Part I. Basic Characteristics, Chapter IX.-The Structure of Controls*. Washington, D.C.
- Ong, C.-H., Wan, D., & Ong, K.-S. (2003). An Exploratory Study on Interlocking Directorates in Listed Firms in Singapore. *Corporate Governance*, 11(4), 322–334. <http://doi.org/10.1111/1467-8683.00330>
- Ornstein, M. (1984). Interlocking Directorates in Canada: Intercorporate or Class Alliance? *Administrative Science Quarterly*, 29(2), 210–31.
- Ornstein, M. (1989). The social organization of the Canadian capitalist class in comparative perspective. *Canadian Review of Sociology/Revue Canadienne de Sociologie*, 26(1), 151–177. <http://doi.org/10.1111/j.1755-618X.1989.tb00416.x>
- Palmer, D. (1983). Broken Ties: Interlocking Directorates and Intercorporate Coordination. *Administrative Science Quarterly*, 28(1), 40–55.
- Pareto, V. (1935). *The Mind and Society (4 Vols.)*. (A. Livingston, Ed.). New York: Harcourt, Brace.
- Peng, M. W., Au, K. Y., & Wang, D. Y. L. (2001). Interlocking Directorates as Corporate Governance in Third World Multinationals: Theory and Evidence from Thailand. *Asia Pacific Journal of Management*, 18(2), 161–181. <http://doi.org/10.1023/A:1010659722213>
- Pennings, J. M. (1980). *Interlocking Directorates*. San Francisco: Jossey-Bass Inc Pub.
- Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. Stanford University Press.
- Porter, J. (1965). *The Vertical Mosaic: An Analysis of Social Class and Power in Canada*. Toronto: Toronto University Press.
- Poulantzas, N. (1978). *State, Power, Socialism*. London: New Left Books.
- Rose, A. (1967). *The Power Structure*. New York: Oxford University Press.
- Rostov, V. (1960). *The Stages of Economic Growth: A Non-Communist Manifesto* London. Cambridge University Press.
- Rusterholz, P. (1985). The Banks in the Centre: Integration in Decentralized Switzerland. In F. N. Stokman, R. Ziegler, & J. Scott (Eds.), *Networks of Corporate Power: A Comparative Analysis of Ten Countries* (pp. 131–47). Cambridge: Polity Press.
- Schifeling, T., & Mizruchi, M. S. (2014). The Decline of the American Corporate Network, 1960–2010. In T. David & G. Westerhuis (Eds.), *The Power of Corporate Networks: A Comparative and Historical Perspective* (pp. 31–47). New York: Routledge.
- Schnyder, G., & Wilson, J. F. (2014). The Structure of Networks: The Transformation of the British Network, 1904–2010. In T. David & G. Westerhuis (Eds.), *The Power of Corporate Networks: A*

- Comparative and Historical Perspective* (pp. 48–65). New York: Routledge.
- Schumpeter, J. A. (1942). *Capitalism, Socialism and Democracy*. New York: Harper & Brothers.
- Schumpeter, J. A. (1955). *Imperialism and Social Classes: Two Essays* (Vol. 4). Ludwig von Mises Institute.
- Schwartz, M. (1987). *The Structure of Power in America*. New York: Holmes & Meier Publishers, Inc.
- Scott, J. (1985). Theoretical Framework and Research Design. In F. N. Stokman, R. Ziegler, & J. Scott (Eds.), *Networks of Corporate Power: A Comparative Analysis of Ten Countries* (pp. 1–19). Cambridge: Polity Press.
- Scott, J. (1991). Networks of Corporate Power: A Comparative Assessment. *Annual Review of Sociology*, 17(1), 181–203.
- Scott, J. (1997). *Corporate Business and Capitalist Classes*. New York: Oxford University Press.
- Scott, J., & Griff, C. (1984). *Directors of Industry. The British Corporate Network, 1904-1976*. New York: Polity Press.
- Scott, J., & Griff, C. (1985). Bank Spheres in the British Corporate Network. In F. N. Stokman, R. Ziegler, & J. Scott (Eds.), *Networks of Corporate Power: A Comparative Analysis of Ten Countries* (pp. 215–33). Cambridge: Polity Press.
- Seidman, S. B. (1983). Network structure and minimum degree. *Social Networks*, 5(3), 269–287.
- Silva, F., Majluf, N., & Paredes, R. D. (2006). Family ties, interlocking directors and performance of business groups in emerging countries: The case of Chile. *Journal of Business Research*, 59(3), 315–321. <http://doi.org/10.1016/j.jbusres.2005.09.004>
- Stark, D., & Vedres, B. (2012). Political Holes in the Economy : The Business Network of Partisan Firms in Hungary. *American Sociological Review*, (September). <http://doi.org/10.1177/0003122412453921>
- Stokman, F. N., Van Der Knoop, J., & Wasseur, F. W. (1988). Interlocks in the Netherlands: Stability and careers in the period 1960–1980. *Social Networks*, 10(2), 183–208. [http://doi.org/10.1016/0378-8733\(88\)90021-4](http://doi.org/10.1016/0378-8733(88)90021-4)
- Stokman, F. N., & Wasseur, F. W. (1985). National Networks in 1976: A Structural Comparison. In F. N. Stokman, R. Ziegler, & J. Scott (Eds.), *Networks of Corporate Power: A Comparative Analysis of Ten Countries* (pp. 20–44). Cambridge: Polity Press.
- Stokman, F. N., Wasseur, F. W., & Elsas, D. (1985). The Dutch Network: Types of Interlocks and Network Structure. In F. N. Stokman, R. Ziegler, & J. Scott (Eds.), *Networks of Corporate Power: A Comparative Analysis of Ten Countries* (pp. 112–30). Cambridge: Polity Press.
- Stokman, F. N., Ziegler, R., & Scott, J. (1985). *Networks of corporate power: A Comparative Analysis of Ten Countries*. Cambridge: Polity Press.
- Swartz, D. (1985). French Interlocking Directorships: Financial and Industrial Groups. In F. N. Stokman, R. Ziegler, & J. Scott (Eds.), *Networks of Corporate Power: A Comparative Analysis of Ten Countries* (pp. 184–98). Cambridge: Polity Press.
- Sweezy, P. M. (1942). *The Theory of Capitalist Development: Principles of Marxian Political Economy*. Monthly Review Press.
- U.S. House of Representatives, C. on the J.-A. S. (1965). *Interlocks in Corporate Management*. Washington.
- Useem, M. (1979). The Social Organization of the American Business Elite and Participation of Corporation Directors in the Governance of American Institutions. *American Sociological Review*, 44(4), 553–572.
- Useem, M. (1984). *The Inner Circle: Large Corporations and the Rise of Business Political Activity in the US and UK*. Oxford: Oxford University Press.
- Van Veen, K., & Kratzer, J. (2011). National and international interlocking directorates within Europe: corporate networks within and among fifteen European countries. *Economy and Society*, 40(1), 1–25. <http://doi.org/10.1080/03085147.2011.529376>
- Vasta, M., & Baccini, A. (1997). Banks and industry in Italy, 1911–36: new evidence using the

- interlocking directorates technique. *Financial History Review*, 4(2), 139–159. <http://doi.org/10.1017/S0968565000000937>
- Wang, D. J., Shi, X., McFarland, D. A., & Leskovec, J. (2012). Measurement error in network data: A re-classification. *Social Networks*, 34(4), 396–409. <http://doi.org/10.1016/j.socnet.2012.01.003>
- Watts, D. J. (1999a). Networks, Dynamics, and the Small-World Phenomenon. *American Journal of Sociology*, 105(2), 493–527. <http://doi.org/10.1086/210318>
- Watts, D. J. (1999b). *Small worlds: the dynamics of networks between order and randomness*. Princeton: Princeton university press.
- Weber, M., Waters, D., Waters, T., Hahnke, E., Lippke, M., Mai, D., ... Fassnacht, L. (2010). The distribution of power within the community: Classes, Stande, Parties by Max Weber. *Journal of Classical Sociology*, 10(2), 137–152. <http://doi.org/10.1177/1468795X10361546>
- Windolf, P. (2002). *Corporate networks in Europe and the United States*. Oxford University Press on Demand.
- Windolf, P. (2014). The Corporate Network in Germany. In T. David & G. Westerhuis (Eds.), *The Power of Corporate Networks: A Comparative and Historical Perspective* (pp. 66–85). New York: Routledge.
- Wong, G. (1996). Business groups in a dynamic environment: Hong Kong 1976-1986. In G. Hamilton (Ed.), *Asian Business Networks* (pp. 87–114). New York: De Gruyter.
- Zeitlin, M. (1974). Corporate Ownership and Control: The Large Corporation and the Capitalist Class. *American Journal of Sociology*, 79(5), 1073–1119.
- Ziegler, R., Bender, D., & Biehler, H. (1985). Industry and Banking in the German Corporate Network. In F. N. Stokman, R. Ziegler, & J. Scott (Eds.), *Networks of Corporate Power: A Comparative Analysis of Ten Countries* (pp. 91–111). Cambridge: Polity Press.
- Ziegler, R., Reissner, G., & Bender, D. (1985). Austria Incorporated. In F. N. Stokman, R. Ziegler, & J. Scott (Eds.), *Networks of Corporate Power: A Comparative Analysis of Ten Countries*. Cambridge: Polity Press.

