

# The nebulous nature of the firm: An empirical study of corporate group structure in 16 developed economies\*

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## Abstract

Though it is widely recognized that the stylized image of the firm as a discrete organizational actor is at odds with the global reality, there has been relatively little progress toward assembling the type of systematic evidence necessary to replace this archetype. We take a step toward filling this gap by combining insights from multiple theoretical perspectives to construct a novel set of measures of the internal cohesion of corporate groups (aka "business groups"), confederations of legally independent firms linked by multiplex economic and social ties. Corporate groups provide an ideal context for developing a more globally balanced view of economic organization because these nebulous entities challenge conceptions rooted in the unitary image of the firm, and in the American-inspired, market-based model of economic organization more generally. Using novel algorithms and techniques, we calculate the cohesion measures for a comprehensive data set including ownership and accounting information for approximately eight million European and 14 million American publicly-traded and closely-held companies. To identify structural archetypes in the data, we employ clustering analysis and a series of cross-country regression analyses. We find that corporate groups' affiliate firms exhibit varied sources of cohesion in different institutional settings, providing structure to the generalized conception of the "nebulous" firm.

**Keywords:** economic organization, comparative economic organization, corporate governance, organizational structure, theory of the firm, multidivisional forms, business groups, corporate groups

## 1 Introduction

Conceptions about economic organization have evolved greatly since Ronald Coase first contemplated the nature of the firm and its relationship to the market (1937). The image of the firm that emerged from Coase's seminal article—enshrined in the title of Oliver Williamson's *Markets and Hierarchies*—was that of a discrete organizational entity whose interactions with others occurred primarily through the price system. Coase's contemporaries reinforced this unitary image, highlighting the market-mediated separation of owners from managers and—by implication—the productive core of the modern corporation (Berle and Means, 1932), as well as the imperviousness of the firm's boundaries to the exchange of specialized resources that could only be developed internally (Penrose, 1959). This image had scarcely

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crystallized, however, when it came under assault, both by scholars who assailed the archetypes of firm and market as analytical fictions bearing little resemblance to the multiplicity of real-world structures embodying elements of both, and by those who criticized the markets and hierarchies paradigm for ignoring the social structures in which all forms of organization are necessarily embedded. Growing evidence of the persistence and success of alternative capitalist structures and practices around the world contributed to these insights as well as a more general recognition that, whatever its conceptual value, the archetype of the firm as a discrete organizational actor was at odds with the global reality.

Despite the progressive dismantling of this unitary image, there has been relatively little progress toward assembling the type of systematic evidence necessary to replace it. Though there exists widespread agreement that "hybrid" forms of economic organization are pervasive- and prominent national variants such as Japanese Keiretsu have been studied extensively- there remains a paucity of generalizable, cross-national econometric evidence with sufficient organizational detail to illuminate structural regularities in these nebulous entities. Assembling new evidence to identify such regularities is important to guide future research because, in the absence of this knowledge, the unitary image of the firm associated with the American-inspired model of market-based capitalism disproportionately shapes-and constrains-scholarly approaches to the study of economic organization.

We take a step toward filling this gap by combining insights from multiple theoretical perspectives to construct a novel set of measures of the internal cohesion of corporate groups (aka "business groups"), confederations of legally independent firms linked by multiplex economic and social ties. The measures reflect the extent to which the legally independent firms affiliated with these groups exhibit linkages or other structural attributes associated with closer coordination than would be expected among the unitary firms in the stylized market-based model. Using novel algorithms and techniques, we calculate these measures for a comprehensive data set including ownership and accounting information for approximately eight million European and 14 million American publicly-traded and closely-held companies. To identify structural archetypes in the data-which for Western Europe alone include roughly 40% of all firms-we employ clustering analysis and a series of cross-country regression analyses.

Corporate groups provide an ideal context for developing a more balanced view of economic organization because, despite these nebulous entities' apparent incompatibility with the unitary image of the firm, the market-based model beneath this image has shaped many prior accounts. For example, despite the fact that Berle and Means' "modern corporation" (1932) is now widely recognized as a stylized American archetype rather than a global ideal, many scholars continue to assess corporate groups in terms of the agency conflicts they purportedly create or allay-a practice motivated by Berle and Means' analysis in the first place. Similarly, a brief review of the evidence surrounding the common conviction that unrelated diversification is inefficient-which features prominently in many scholarly accounts of business groups-suggests that this stylized fact reflects the cultural and political influences of time and place as much as it does an objective assessment of the facts. Divergent characterizations of business groups as "avatars or anachronisms" (Granovetter, 2005), "paragons or parasites" (Khanna and Yafeh, 2007), and "red barons or robber barons" (Perotti and Gelfer, 2001) testify to the challenges of interpreting these structures using conventional constructs as well the potential for large-scale econometric analysis of these entities to yield novel insights about the nature of economic organization around the world. The relative ease of obtaining data on the individual firms comprising these entities-which are

typically unavailable for the subunits of their legally cohesive analogue, the multidivisional corporation—enhances this appeal.

We address such challenges by, first, tracing the evolution of scholarly conceptions about firms and markets. We pay particular attention to the cultural and political forces that molded these conceptions, both to locate the analysis of corporate groups within a broader conversation about economic organization, and also to demonstrate how these conceptions have shaped—and constrained—scholarly understandings of economic organization. In the empirical analysis that follows, we do not attempt to test formal hypotheses but, rather, to identify structural archetypes and illuminate promising directions for future research that moves beyond conventional constructs and classifications. In this regard, our objective mirrors that of Coase, who sought in the "Nature of the Firm" to arrive at a realistic "definition of a firm" to serve as a "foundation" for the advancement of theory.

The main finding of the empirical analysis is that corporate groups from different institutional settings exhibit different sources of cohesion. Anglo-American groups—those from Great Britain, Ireland and United States—were characterized by a higher incidence of cohesive ties such as name-sharing and director interlocks, and a lower level of industry diversification, than were their Southern European counterparts from Italy, Spain, and Greece. Anglo-American groups were also more likely to be diffusely owned and professionally managed than they were to be family-owned or managed, and their affiliates were more likely to be wholly-owned subsidiaries. In contrast, Southern European groups exhibited a lower incidence of name-sharing and director interlocks, and a higher level of business line diversification. Ties through family ownership and family management were relatively common among these groups, and subsidiary ownership was more likely to be shared with minority investors. In sum, Anglo-American groups appear to have evolved following an industrial logic of specialization and integration, whereas in Southern Europe, family appears to be the glue that binds firms together. Germanic and Northern European groups lay in between the Anglo-American and Southern European archetypes on essentially all dimensions, while French groups represented a distinct "hybrid" characterized by a relatively high incidence of family ownership (as in Southern European groups) but a relatively low incidence of family management (as in Anglo-American groups).

To our knowledge, the geographic scope of the dataset and cross-sectional comparability of the measures provide for the most comprehensive and systematic evidence to date on corporate group structures, as well as on "alternative" forms of economic organization more generally. Additionally, by demonstrating substantial heterogeneity in group structures in some of the most developed and interconnected countries in the world, we provide suggestive evidence of the persistence of different capitalist structures and systems, casting doubt on the hypothesis that external market pressures dominate local institutional forces to promote convergence to a global ideal, and also illuminating promising avenues for future research on comparative corporate governance.

## 2 Evolving Governance Conceptions

In the past several decades, conceptions about the governance of three key organizational nexuses—between firm and market, between a firm's owners and managers, and among a firm's constituent business activities—have transformed as new evidence or events prompted scholars to re-assess the received wisdom. We begin by briefly recounting this evolution, paying particular attention to the cultural and political forces that shaped it. We do so partly to locate the

study of corporate groups in a broader conversation about alternative capitalist systems and practices, which by the 1990s had sensitized mainstream scholars to the cultural and political contingency of organizational conceptions whose global validity had previously been assumed. Nevertheless, the enduring influence of the United States' market-based model has continued to shape scholarly approaches to the study of comparative economic organization in general, and to corporate groups in particular.

## 2.1 Firms, markets and hybrids

Corporate groups, traditionally referred to as "business groups" in an emerging market context, received virtually no attention from Western scholars prior to the 1970s, when researchers studying such countries first documented the presence of confederations of legally independent firms that shared multiplex economic and social ties, operated in different lines of business, and were subject to common administrative or financial control (Caves and Uesaka, 1976; Leff, 1978). It was not until the late 1990s, however, that generalized theoretical accounts began to appear in mainstream social science research journals (e.g., Ghemawat and Khanna, 1998). Heightened interest in these structures accompanied broader scholarly attention to "hybrid" organizations—structures embodying both firm- and market-like elements (Demsetz, 1988; Hennart, 1993; Zenger and Hesterly, 1997; Granovetter, 2005)—and to capitalist systems that differed from the market-based model of the United States (e.g., Gerlach, 1992; Lincoln et al., 1992).

The increased attention to hybrid organizations stood in contrast to the sharp firm-market dichotomy that had informed the study of comparative economic organization since Coase (1937) posed his paradigmatic question about the role of firms in a market economy. Coase's answer—that firms mitigate the high transaction costs of using markets to govern certain transactions—was a purposeful attempt to redress an imbalance he perceived in prevailing Western economic thought, which celebrated the price system's "unparalleled" ability to coordinate economic activities. The sharp theoretical dichotomy between firms and markets, however—and the corollary conception of the firm as an organizational actor whose external interactions occur primarily through the price system—contributed to a perception that economic activity was organized in an approximately bimodal fashion, with little middle ground between the poles of firm and market.

Oliver Williamson refined and extended Coase's insight in his development of Transaction Cost Economics (TCE) (1979) initially reinforcing the stylized dichotomy between markets and hierarchies (1975). Economists seeking to develop a mathematically formal theory of the firm offered differing incentive-based rationales for the division of economic activity between these alternatives, but they too embraced a basic dichotomy between the two, either implicitly or by arguing that joint asset ownership impairs unilateral investment incentives (Grossman and Hart, 1986; Hart and Moore, 1990).

The dichotomy began to blur in the 1980s. Sociologists examining the social structure of economic activity critiqued TCE for allegedly ignoring the social networks in which all forms of economic exchange are ultimately embedded (Granovetter, 1985), as well as for TCE's own embeddedness in the broader institutional context of U.S.-style capitalism. The global ascendance of Japanese firms bound together in dense corporate networks known as "Keiretsu" (Gerlach, 1992; Lincoln et al., 1992) bolstered these critiques and, by demonstrating that group structures might play an enduring role in an advanced capitalist economy, undermined the prevailing economic wisdom that the stylized Western firm was

the “evolutionary pinnacle... of organizational forms” (Gilson and Roe, 1993). Historical research showing that turn-of-the-century American antitrust legislation was the result of regional political conflict (Sanders, 1986) further undermined the puristic view of the 20th Century American corporation (Fligstein and Brantley, 1992; Roe, 1990).

In 1991, Williamson formally incorporated intermediate “hybrid” structures into TCE, though he characterized them as less robust than the alternatives of firm and market (Williamson, 1991). Strategic management and international business scholars also revised their prevailing view of such structures as inherently unstable or transitional (Harrigan, 1988; Hamel, 1991) in response to new empirical research demonstrating Western firms’ pervasive use of hybrids to govern activities ranging from cooperative R&D initiatives to foreign direct investment (e.g., Harrigan, 1988; Hennart, 1993; Pfeffer and Nowak, 1976; Anand and Khanna, 2000). Some scholars argued that alliance structures provided parent companies with the flexibility to “expand and acquire,” an especially valuable option in environments characterized by high uncertainty (Kogut, 1991; Kogut and Kulatilaka, 1994)

Such advances created an ideational context conducive to the systematic study of corporate groups. It was debatable, however, whether these nebulous structures could be properly understood using Western-inspired constructs such as the firm-market dichotomy or its unidimensional descendant, the firm-market continuum. Sidney Winter, for example, reputedly favored the metaphor of a football, whose “swollen middle” reflected the hybrid structures’ real-world prevalence over the “vanishing” endpoints of market and hierarchy (Hennart, 1993). By using multiple cohesion measures rooted in different conceptual perspectives in the econometric analysis below, we take a step toward overcoming this challenge.

## 2.2 Ownership, control, and agency

The second conception whose evolution has been critical to the study of corporate groups—and of economic organization more generally—involves the nexus of relations comprising a firm’s ownership and control structure. In their classic treatise, *The Modern Corporation*, Berle and Means argued that a central challenge of economic organization is mitigation of the agency conflict arising from the separation of ownership and control in the widely-held corporation (Berle and Means, 1932). Though this ownership and control structure stemmed from populist-inspired public policies backed by politically influential corporate managers—and was not an inevitable consequence of large-scale enterprise, as Berle and Means had imagined—subsequent research in managerial economics (Williamson, 1967; Baumol, 1959) and agency theory (Jensen and Meckling, 1976) solidified the Berle and Means’ image, elevating the managerial agency problem to the status of a troublesome “fact.”

This “fact’s” ascendance among academics accompanied the rise in corporate America of the “finance conception of corporate control” (Fligstein, 1987; 1995), which portrayed the firm as a portfolio of tradable assets and implied a strategy of growth through merger and acquisition. Large U.S. Corporations in the 1960s and 1970s—reacting to federal antitrust policies that deterred horizontal and vertical merger, and aided by innovations in debt financing (Davis et al., 1994: 552, 554)—bolstered the “firm-as-portfolio” image by acquiring firms in unrelated industries, thus creating an industrial landscape populated by diversified conglomerates helmed largely by finance-trained CEOs (Davis et al., 1994; Palmer et al., 1995). The “bust-up” restructuring wave of the 1980s demonstrated the financial markets’ apparent ability to discipline errant managers, returning American corporations to a “pure state” of unfettered profit

maximization (Zuckerman, 2000: 591).

To many scholars—especially agency theorists—the events of the 1980s appeared to validate the Berle and Means image. In the 1990s, however, new evidence emerged to demonstrate the contingent nature of this vision, and of popular Western beliefs about economic organization in general. The Japanese experience was again provocative: the most visible Keiretsu revolved around banks that owned large shares of a group’s affiliates and performed a similar disciplinary function to that attributed to the “market for corporate control” (Jensen and Ruback, 1983) in the United States (Gilson and Roe, 1993). Meanwhile, this “market” ground to a halt following the collapse of the corporate debt market (Gilson and Roe, 1993: 877), revealing that other sources— in this case large institutional investors, were capable of serving a similar governance function.

Such observations led Western scholars to question the generality of the Berle and Means image. During the 1990s, economic sociologists studying the United States produced historical accounts demonstrating this image’s cultural and political contingency. During this same period, financial economists—who had generally accepted the image as an article of unquestioned faith—systematically demonstrated the image’s empirical inaccuracy (La Porta et al., 1999), first by assembling evidence that the ownership of U.S. corporations was more concentrated than it had been in the 1930s (Demsetz and Lehn, 1985; Shleifer and Vishny, 1986; Holderness and Sheehan, 1988), and subsequently by demonstrating that concentrated ownership—often coupled with family or government control—typified corporate organization in many (if not most) countries around the world (Shleifer and Vishny, 1986; La Porta et al., 1999; Claessens et al., 2000; Faccio and Lang, 2002; Anderson and Reeb, 2003).

During the past decade, scholars have continued to document the cross-national variety of governance structures and the capitalist systems in which they are embedded (Morck, 2007). In addition to “family capitalism” and “shareholder capitalism” (i.e., market-based capitalism), empirical research in economics has recognized other types of capitalist systems (e.g., “state capitalism” and “bank capitalism”) and corporate organization (Morck and Steier, 2005; Thomsen and Pedersen, 2000). Moreover, the negative normative orientation of earlier work has been supplanted by more balanced assessments. In the case of family capitalism, for example, it has been recognized that the potential costs of nepotism and inheritance norms (Bertrand and Schoar, 2006) may be offset by the long-term perspective, enduring political connections, and high level of trust that family ownership can promote. Similarly, though financial economists have portrayed family firms as vehicles used by controlling shareholders to expropriate minority shareholders (Shleifer and Vishny, 1997), they have also recognized that the resultant costs need not exceed those arising from managerial “expropriation” in publicly-traded corporations (Burkart et al., 2003; Villalonga and Amit, 2006).

Despite these advances, conceptions rooted in the Berle and Means image continue to shape even relatively dispassionate economic accounts. Gilson and Roe have illustrated this point in the specific context of Japanese corporate organization arguing that the use of agency theory to understand banks’ function in Keiretsu—i.e., as a solution to the problem of monitoring management—distracts attention from banks’ central role in coordinating joint production by affiliate firms (Gilson and Roe, 1993). In much the same way, the application of culturally-embedded theories of organization in novel institutional settings likely impairs Western scholars’ ability to interpret indigenous practices and structures more generally.

## 2.3 Diversification

The third market-based conception about economic organization to have influenced scholarly accounts of corporate groups involves business line diversification. Though opinions have vacillated during the past half-century, there now exists a broad consensus among economists, strategic management scholars, and others that firms optimize their operational and financial performance by focusing on related activities rather than diversifying into unrelated ones. Financial economists take issue with unrelated diversification because, they contend, individual investors can diversify their portfolios at least as well as corporate managers can (Amihud and Lev, 1981). Practitioners of the resource-based view of the firm in the field of Strategic Management also take issue with the practice of unrelated diversification, arguing that growth through related diversification is key to sustained competitive advantage (Peteraf, 1993; Chatterji and Wernerfelt, 1991; Robins and Wiersema, 1995; Ollinger, 1994). These views are sufficiently entrenched that the high level of unrelated diversification often associated with corporate groups is arguably the trait most at odds with prevailing Western conceptions about economic organization.

Two sets of empirical studies have contributed to such views. First, studies examining the “diversification discount” have found that financial markets penalized diversified firms and diversifying acquisitions during the 1980s while rewarding de-diversification (Bhagat, Shleifer, and Vishny, 1990; Lang and Stulz, 1994; Berger and Ofek, 1995; Comment and Jarrell, 1995; Servaes, 1996; see also Mayer and Whittington, 2003). A common interpretation of these findings, often taken to support agency theory, is that shareholders in the 1980s harnessed the power of the financial markets to reassert control over opportunistic managers who had constructed inefficient corporate empires in prior decades (Zuckerman, 2000: 592). A handful of economic studies have questioned this received wisdom, however, by highlighting the retrospective nature of the supporting evidence (Matsusaka, 1993; Klein, 2001: 746), demonstrating that prior findings are the result of sample selection bias (Campa and Kedia, 2002) or data limitations, and demonstrating that diversifying acquisitions were actually value-increasing (Villalonga, 2004).

The second set of empirical studies contributing to prevailing Western conceptions about diversification contests the received wisdom from early studies in this vein that unrelated diversification leads to inferior operating performance (Matsusaka, 1993; Montgomery, 1994; Hubbard and Palia, 1999; Kaplan and Weisbach, 1992). Though these studies’ results have not been consistent enough to provoke widespread reassessment of the received wisdom, McGahan and Porter—using a superior methodology and sample in what is perhaps the culmination of this line of research—found a large positive association between diversification and operating performance, which they reconciled with conflicting results from prior studies by demonstrating that the earlier results are methodological artifacts (2002: 836-839).

The evidence reported above—combined with the fact that scholarly assessments of unrelated diversification took a “round trip” (Shleifer and Vishny, 1991: 54) over the course of several decades augurs caution in applying the received wisdom about diversification to understand or assess alternative practices. It is noteworthy in this connection that, in contrast to the new evidence on global governance practices that facilitated the revision of prevailing Western conceptions about hybrid organizations and the nexus between corporate ownership and control, systematic evidence on diversification patterns outside of the United States has been limited. The empirical analysis that we present below helps to fill that gap.

## 2.4 Business Groups

The governance conceptions that prevailed among Western scholars at the end of the 20th Century constitute the ideational backdrop against which systematic theories of business groups in emerging markets first developed. Since that time, sundry accounts, employing disparate definitions of “business group,” have variously depicted these nebulous hybrid structures as “avatars or anachronisms” (Granovetter, 2005), “paragons or parasites” (Khanna and Yafeh, 2007) and “red barons or robber barons” (Perotti and Gelfer, 2001). Positive assessments emphasize the benefits that affiliate firms enjoy as a result of their mutual ties, arguing that such ties promote information flows and strengthen contractual enforcement (Keister, 1998; Khanna and Palepu, 1999; Belenzon et al., 2012; Mahmood and Mitchell, 2004; Mahmood et al., 2012; Zhao, 2005). Negative assessments, in contrast, portray business groups as vehicles for diverting cash flows or as rent-seeking political associations (La Porta et al., 1997, 1998; Morck et al., 2005).

Though the study of group structures remains underdeveloped—lagging that of comparatively important topics by perhaps “decades” (Morck and Steier, 2005)—research has begun to coalesce around two views, the “expropriation” perspective and the “institutional voids” perspective. The former highlights mechanisms that controlling shareholders may use to expropriate minority shareholders, including “tunneling,” which refers to controlling shareholders’ diversion of funds from affiliate firms in which they hold smaller cash flow rights to those in which they hold larger rights (Johnson et al., 2000; Bertrand et al., 2002; Bae et al. 2002; Morck et al., 2005); and “pyramiding,” which refers to the arrangement of affiliate firms in a cascading ownership chain beneath an “apex firm,” the dominant shareholders of which may then control affiliates in which they hold a non-controlling direct interest (Almeida and Wolfenzon, 2006; Barca and Becht, 2001; Claessens et al., 2000).

Empirical evidence on the expropriation perspective is mixed. Though Morck et al. (2005) found general support for this view in an empirical literature review—especially in developing countries and for family-controlled groups—Khanna and Yafeh (2007) argued that many ostensibly supportive empirical findings are open to multiple interpretations. Other scholars have assailed the expropriation perspective on logical grounds, asking why minority shareholders would ever invest in entities structured to expropriate them (Khanna and Yafeh, 2007); and arguing that expropriation could be accomplished with dual class equity structures rather than the more complex organizational structures necessary for pyramiding (Bebchuk et al., 2000).

Conversely, the institutional voids perspective portrays business groups as compensating for a lack of external market-supporting institutions. This view can be traced back to Leff’s (1978) “group principle,” which holds that business groups allocate critical resources—primarily financial capital, but also intermediate goods and managerial talent—when markets for these resources function poorly. Khanna and Palepu (1997) broadened and popularized this argument, contending that business groups compensate for the absence of multiple types of intermediaries and observers to facilitate the acquisition of financial capital, technology, and managerial talent.

The institutional voids perspective suffers from a paucity of robust large-n empirical analyses, most likely due to the difficulty of obtaining appropriate data. Supportive studies include those by Khanna and Palepu (1999), who found that Chilean and Indian business groups benefitted from opportunities created by pro-market reforms due to their intermediation advantages in product and labor markets; and Belenzon and Berkovitz (2010) and Belenzon et al. (2012), who found that European corporate groups’ formation and innovative performance are due to the ability to



redeploy financial resources among affiliates. Other empirical studies have found mixed or contingent support for the institutional voids perspective (e.g., Khanna and Rivkin, 2001; Carney et al., 2011).

## 2.5 Hegemony of the Market-based Model

Despite progress toward a more globally balanced view of economic organization, the enduring influence of the market-based model continues to shape existing research approaches. The expropriation perspective for example, is agency-theoretic, differing from accounts of Western corporations mainly by identifying a different organizational nexus as the site of the primary agency problem. Yet, as discussed above, the very notion that the central challenge of economic organization is to mitigate agency conflicts stems directly from Berle and Means' image of the 20th Century American corporation, and ultimately, from the cultural and political forces that shaped their analysis.

Though the institutional voids perspective portrays group structures in a more favorable light, it reflects the imprint of the market-based model in a more insidious way. By advancing the functionalist argument that corporate groups' *raison d'être* is to compensate for the lack of U.S.-style, market-supporting institutions typical of many emerging economies, this view relegates corporate groups to transitory phenomena on the evolutionary path to market-based capitalism (e.g., Khanna and Palepu, 1999; Chang and Choi, 1988; see also Granovetter 1995: 106-108; 2005: 444-447). In this sense, idealization of the practices and principles comprising the market-based model undermines the study of comparative capitalist organization, even if it no longer precludes such research.

Though the theoretically agnostic, empirically descriptive analysis that we present below does not explicitly discriminate among competing theories or the divergent world views behind them, it still illuminates fertile terrain for future research. The primary phenomena to which convergence toward the market-based model has typically been attributed are increased cross-border competition among firms and coordination among managers (Whitley, 1998: 445-449). Together, these forces have been argued (or assumed) to encourage the replacement of "inefficient" national systems of capitalism with a globally efficient variety (Whitley, 1998: 447). Neoinstitutional scholars have made the opposite argument: that a country's prevailing "institutional logic" (Biggart and Guillén, 1999) (a.k.a. "industrial logic" (Dobbin, 1994), "business system" (Whitley, 1999), or "social system of production" (Hollingsworth and Boyer, 1997)) indelibly imprints the organizational practices employed by its inhabitants and impairs their ability to comprehend practices embedded in alternative logics (Biggart and Guillén, 1999: 726; Granovetter, 2005: 434-435).

The 16 countries represented in our empirical analysis are among the most developed and interconnected in the world. Thus, to the extent that global forces of competition and cooperation promote institutional convergence, it is among nations such as these that we would expect to most clearly observe homogenization. The opposite finding—that national imprints endure despite these sovereign states' wealth and interconnectedness—would point away from the convergence hypothesis, inviting future research that delved more deeply into the relationship between institutional and technical factors (Fligstein and Freeland, 1995: 40). Though the "Varieties of Capitalism" perspective (Dore et al., 1999; Hall and Soskice, 2001; see also O'Sullivan, 2003; Whitley, 2009)—which depicts global forces as shaping the evolution of national systems in a path-dependent manner reflecting both historical legacies and current institutional linkages (Whitley, 1998)—represents one such theory, it has developed in relative isolation from organizational and strategic management research (Kogut, 2003: 162). In the specific context of business groups, Carney et al.'s conclusion-based

on a meta-analysis of 141 studies of group performance in 28 countries that these entities serve disparate purposes in different institutional contexts—reinforces the need for a broad lens (Carney et al., 2011: 454-455). We intend the empirical analysis below to represent a step in that direction.

### 3 Cohesion: Data and Measures

As discussed above, we contribute to evolving views of economic organization by combining insights from multiple theoretical perspectives to construct a novel set of measures of the internal cohesion of corporate groups, specifically, the extent to which the legally independent firms affiliated with such groups exhibit linkages or other structural attributes associated with closer coordination than would be expected among the unitary firms in the stylized, market-based model. The data we used to calculate the measures include ownership and accounting information for approximately eight million European and 14 million American publicly-traded and closely-held companies. The data are drawn respectively from the Amadeus and Icarus databases and are mostly for fiscal year 2007. In the relatively small number of cases for which 2007 accounting data were unavailable, we used data from fiscal 2005 or 2006.

#### 3.1 Data Structure

The difficulty of defining what constitutes a “business group” for purposes of generalizable, cross-nationally valid econometric analysis can be vexing. We define a group simply as two or more legally independent firms that share an ownership tie, either directly, meaning that one firm holds a direct equity stake in another; or indirectly, meaning that one firm holds an equity stake in another through one or more intermediate firms. To be sure, even this simple criterion embodies the important assumption that ownership ties are economically or organizationally meaningful. Given the control rights associated with equity ownership in legal systems permitting private property, together with the frequent identification of ownership ties as an important source of “cohesion” in much existing research on business groups (La Porta et al., 1999; Granovetter, 2005), we judge this definition to be the most parsimonious possible.

To further bolster our confidence that the ownership ties we used to define groups were organizationally meaningful, we excluded all ties where a superordinate firm (or individual) held less than 50 percent of the voting rights in the case of a closely-held subsidiary, and less than 20 percent of the voting rights in the case of a publicly-traded subsidiary (though all reported results are robust to different plausible specifications of these thresholds). We further restricted the sample by excluding economically insignificant groups with less than \$10 million dollars in annual sales. We did not, however, exclude individual affiliates for which little or no economic activity was reported, because such firms may represent organizationally significant holding companies. Using these criteria, we identified roughly one million controlling ownership ties. We inferred group structures from these ties by using a recursive algorithm (Belenzon and Berkovitz, 2010) to construct corporate ownership chains, and then grouping together all firms controlled by the same ultimate shareholder (either a family, a financial firm, or a non-financial firm). The final sample includes 61,180 groups comprising 445,825 affiliate firms. These firms represent roughly 70 percent of all firms in the initial sample, an incidence consistent with the growing consensus that hybrid structures are widespread in developed as well as emerging-market countries.

Two data limitations warrant mention. First, though we take the boundaries of affiliate firms as fixed, the location

of these boundaries is itself a choice that may be affected by some of the same factors influencing a group's level of cohesion. Second, when comparing American groups to those from the 15 Western European countries represented in the data, it is important to recognize that the U.S. taxes inter-corporate dividends (i.e., dividends paid by a subsidiary to a parent company), but the E.U. Commission's Parent Subsidiary Directives expressly prohibits member states from taxing such dividends. It is therefore almost certainly the case that, *ceteris paribus*, a wider range of economic activity in the U.S. is organized among corporate divisions than among affiliated firms operating in a group structure (Khanna and Yafeh, 2007). In the econometric analysis, we make no causal inferences that could be confounded by these factors.

To construct the cohesion measures, we drew on multiple theoretical perspectives to identify linkages or attributes that suggest closer coordination than among the unitary firms in the stylized market-based model. Table 1 provides summary definitions for the measures, on which we elaborate below.

### **3.2 Name Similarity**

The first cohesion measure reflects the degree of name similarity among group affiliates. Names are a central source of organizational identity, creating solidarity (Glynn and Abzug, 2002) and serving as a carrier of reputation to external actors (Rao, 1994; Ingram, 1996; Ingram and Baum, 1997). Greater name similarity among a group's affiliate firms thus suggests greater cohesion.

To construct the measure of name similarity, we used a fuzzy string-matching algorithm to identify the most common name or name variant among a group's affiliates. We then calculated the ratio of sales by these affiliates to total group sales. We also explored the robustness of the results to alternative measures of name similarity (e.g., the extent to which the name of the largest affiliate was shared with other affiliates in the same group). With the exception of Ingram's (1996) study of U.S. hotel chains, we are unaware of prior studies that have sought to measure the degree of name similarity among an organization's subunits.

### **3.3 Board Interlocks**

The second cohesion measure reflects the extent of board interlocks between a group's apex firm and affiliate firms. Board interlocks serve as another source solidarity among affiliates, engendering trust and enhancing monitoring by facilitating information exchange (Davis, 1991; Gulati and Westphal, 1999). More extensive board interlocks suggest greater cohesion among affiliates.

To construct the measure of board interlocks, we used a similar approach to that employed in several prior studies (Palmer et al., 1993; Palmer et al., 1995; Haunschild and Beckman, 1998). First, we matched the names of the individual board members of each affiliate in a given group to those of the apex firm's board members. When we found at least one match, we regarded the affiliate as having a board interlock. We calculated the group-level interlock measure as the ratio of total sales by affiliates with interlocks to total group sales. To check the robustness of the measure, we tried alternative measures incorporating interlocks among the affiliates themselves as well as weights based on interlocked affiliates' share of total group sales.

### 3.4 Family Ownership

The third cohesion measure reflects family ownership. Familial bonds represent the strongest type of kinship tie (Steers et al., 1989; Bertrand and Scholar, 2006), fostering mutual trust, shared identity, and solidarity (Encarnation, 1989). Corporate groups whose controlling shareholders are family members (or a single individual) should operate more cohesively than those owned by other entities.

Following prior research in economics and finance (Shleifer and Vishny, 1986; La Porta et al., 1999; Claessens et al., 2000; Faccio and Lang, 2002; Anderson and Reeb, 2003; Villalonga and Amit, 2006, 2010), we measured family ownership using a dummy variable that takes a value of one for groups where the controlling shareholder of the apex firm was a family or individual, and zero otherwise. To be classified as controlling, a shareholder had to own at least 20 percent of the equity of the apex firm. For robustness, we also calculated measures using a 10 percent threshold and a 50 percent threshold.

Several studies of family firms during the past several years have employed more fine-grained metrics that distinguish between founding and non-founding owners (Villalonga and Amit, 2010; Anderson et al., 2012), and that also reflect family management. We consider family management using a distinct measure, discussed below.

### 3.5 Family Management

The fourth cohesion measure reflects family management, which may also promote mutual trust, common identity, and solidarity. The presence of a familial bond should also mitigate potential owner-manager agency conflicts.

We constructed the family management measure by collecting data on affiliate firms' top managers (i.e., individuals with titles such as Chief Executive Officer, Managing Director, General Manager, and Manager). On average, there were 1.7 such managers per affiliate. Next, we generated a list for each affiliate of dominant shareholders holding at least a 5% sales-weighted equity stake in the group, either directly or through a stake in the apex firm. This methodology allowed us to identify familial links—and thus possible channels of influence—between an apex firm's dominant shareholders and managers of affiliates in which these shareholders have no, or very low, equity stake. We characterized any affiliate with at least one match between its top manager and dominant shareholder lists as being family-managed. The group-level family management measure represents the ratio of sales by family-managed affiliates to total group sales. To demonstrate robustness, we also report results using a measure that classifying affiliates as family-managed only if the top managers all belong to the same family.

### 3.6 Minority Shareholders

The fifth cohesion measure reflects whether a group's affiliates are wholly-owned or, alternatively, have minority shareholders. As discussed above, agency-theoretic accounts portray groups as vehicles for the expropriation of minority shareholders. Additionally, the Property Rights view of the firm holds that shared ownership impairs unilateral investment incentives, an argument that would also apply to corporate group affiliates. Under this logic, groups whose affiliates have a lower level of minority ownership should operate in a more cohesive fashion than those with relatively diffuse ownership.

We constructed the minority ownership variable by first calculating the share of group sales by affiliate firms with

minority shareholders. Consider, for example, a group with three affiliates generating \$1 million in annual sales each, and suppose that affiliate A (the apex firm) owns 50% of the equity of affiliate B, and affiliate B owns 50% of the equity of affiliate C. In this case, one third of the sales generated by the group are made by affiliates with minority shareholders. Note that this fractional measure does not reflect whether the apex firm has minority shareholders, because it is variation in a group’s internal structure that is of interest.

The minority ownership variable used in the econometric analysis is a dummy variable that takes a value of one for groups for which the fractional measure described above exceeds zero. We used a binary indicator variable rather than a continuous fractional measure because the latter has a bimodal distribution, resulting from the fact that 60 percent of the groups in the sample had a unified ownership structure (i.e., no sales by affiliates with minority owners), while the remaining 40 percent made 16 percent of their sales through affiliates with minority owners. To demonstrate robustness, we report separate results for groups in which the apex firm has a dominant shareholder and those in which the apex firm is widely held.

### 3.7 Pyramidal Index

The sixth cohesion measure is a pyramidal index that reflects the extent to which the organization of affiliate firms more closely resembles one of two extremes: a “tall” structure, in which the apex firm holds a direct controlling stake in a single affiliate firm, which in turn holds a stake in a subordinate affiliate firm, and so on; versus a “flat” structure, in which all affiliates firms occupy a single horizontal layer immediately beneath the apex firm.

Taller structures could indicate more or less cohesion. The expropriation perspective on groups suggests that the ability of an apex firm’s dominant owners to control subordinate affiliates in which they hold no direct, controlling stake grows with the number of ownership levels separating an affiliate firm from the apex firm (Morck et al, 2005). Research on organizational design, however, suggests that hierarchical structures in which decision-making responsibility over non-routine tasks (e.g., acquisitions) is delegated to local managers result in better decisions (Aghion and Tirole, 1997).

To characterize a group’s pyramidal structure, we developed a Pyramidal Index (PI) that measures the distribution of affiliates by ownership layers. Because a pyramidal structure increases the apex firm’s span of ownership, we regard a group as taller if the share of affiliates located close to the apex firm is low. We calculated the pyramidal index as:

$$PI = \frac{2 \left( \sum_{i=1}^{NLevel} i \times Share_i - 1 \right)}{\# Affiliates - 1} \quad (1)$$

where  $NLevel$  is the maximum number of levels in the group,  $\# Affiliates$  is the number of affiliates in the group, and  $Share_i$  is the ratio of the number of group affiliates that are located at level  $i$  to the total number of affiliates in the group. PI takes a value from zero to one, with higher values implying that the group structure is more vertical.

Figure 1 illustrates the properties of PI for a hypothetical corporate group with three affiliates. The upper-left corner shows a completely horizontal group structure (i.e., a single level). PI takes a value of zero  $\left( \frac{2(1 \times \frac{3}{3} - 1)}{2} \right)$  in this case because its numerator is zero. The upper-right corner illustrates a more vertical structure because company  $C$  is subordinate to company  $B$ . PI now takes a value of  $\frac{1}{3} \left( \frac{2(1 \times \frac{2}{3} + 2 \times \frac{1}{3} - 1)}{2} \right)$ . The lower right corner shows a completely vertical group: firm  $B$  appears beneath firm  $A$ , and firm  $C$  appears beneath firm  $B$ . PI takes its highest possible value of one in this case.  $\left( \frac{2(1 \times \frac{1}{3} + 2 \times \frac{1}{3} + 3 \times \frac{1}{3} - 1)}{2} \right)$ .

Importantly, as the number of firms in a group increases, the range of values PI can take increases. For example, PI for groups with only two affiliates must be either zero (the ultimate owner directly holds shares of both companies), or one (the ultimate owner directly holds shares of one firm, which holds the second firm as a subsidiary). In the econometric analysis, we control for a group's number of affiliates. We also check the robustness of the results by separately examining groups with a similar number of affiliates.<sup>1</sup>

PI is, to our knowledge, the first variable to measure the internal structure of corporate groups. Empirical tests of the expropriation hypothesis typically compare groups or group affiliates in which controlling shareholders have different ownership stakes (e.g., Claessens et al. 1999, Claessens et al. 2000, Bertrand et al., 2002). A limitation of these studies is that they do not consider to what extent the separation between ownership and control is achieved through pyramids or other instruments (e.g., dual class equity structures) (Khanna and Yafeh, 2007). Our newly-developed PI can in principle be used to explore this issue.

### 3.8 Diversification

The final cohesion measure reflects the level of business line diversification among a group's affiliates. As discussed above, financial economists and strategic management scholars typically espouse "focus" and take a dim view of unrelated diversification. Accordingly, a lower level of business line diversification among affiliates reflects greater cohesion.

Most prior diversification research has taken the firm as the unit of analysis, and measured diversification using the number of business segments in which a firm operate (e.g., Lang and Stulz, 1994; Villalonga 2004; Campa and Kedia, 2002). Analogously, we took the group as the unit of analysis, and based the diversification measure on the number of industries to which different group members belong. In principle, one could also measure diversification within each affiliate, but we lack data to do. We discuss this issue further below.

The final diversification measure used in the analysis is a dummy variable that takes a value of one if a group's affiliates operate in at least two distinct two-digit SIC code industries. Close to 80 percent of the groups in the sample are diversified according to this measure. The results reported below are also robust to the use of a Herfindahl-Hirschman (HHI) measure of affiliate sales concentration by three-digit SIC (reported in the descriptive statistics).

### 3.9 Summary Statistics

Table 2 reports summary statistics for the cohesion measures. The average group in the data has \$4.7 billion in annual sales, \$1.3 billion in assets, and 7.3 affiliates. On average, 28% of affiliates share the same name within a group, 53% share at least one director in common with the group's apex firm, 17% have family-related managers, 35% have outside owners, and 61% operate in at least two different 2-digit SIC code industries. Most groups in the sample operate in only one country (81%), with an average country sales concentration index of 0.95. The average sales concentration by industry (at the three-digit SIC level) is 0.685.

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<sup>1</sup>In theory, the relationship between PI and the number of group affiliates is ambiguous. On the one hand, a greater number of affiliates tends to be associated with a greater number of levels, increasing the numerator. On the other hand, a greater number of affiliates also increases the denominator because the index is normalized by a group's total number of affiliates. In the data, the correlation between PI and the number of group affiliates is -0.31, and that between the asset-weighted PI measure and the number of group affiliates is -0.10, meaning that groups with more affiliates tend to be more horizontal than groups with fewer affiliates. Because the number of affiliates is also correlated with a groups' diversification level, we take extra care when comparing groups of different sizes to control for number of affiliates as well as total group assets.

Table 3 reports summary statistics at the country level. American groups account for 23% of the sample, followed by British and French groups at 15% each, German groups at 14%, Spanish groups at 9%, and Italian groups at 6%. Average group size varies substantially across countries, from a low of \$155 million for Greek groups to a high of \$16 billion for American groups.

The summary statistics reveal several notable differences in group structure. First, name sharing varies considerably by country, ranging from respective values of 0.17 and 0.19 in Italy and Spain, to 0.42 in Great Britain. The family management measure also varies greatly, ranging from respective values of 0.01 and 0.02 for Finland and Great Britain, to respective values of 0.51 and 0.54 for Ireland and Belgium.

Ownership patterns differ by country as well. Only 7% of American groups have affiliates with minority owners, versus 72.7% of French groups and 75.3% of Greek groups. The variable measuring the share of sales “owned” by minority owners (Column 5) exhibits a similar pattern. Further, only 2.5% of American groups and 3.5% of British groups are owned by families or individuals, versus 56.4% of German groups. Among the subsample of widely-owned groups, ultimate ownership by financial institutions is relatively common in Great Britain and France, at 42.7% and 67.9% of groups, respectively, whereas 82.8% of American groups and almost 95% of Dutch groups and Finnish groups are ultimately owned by a non-financial corporation.

Table 4 displays the pairwise correlations between the measures, the small magnitude of which suggests that the measures each contain distinct information. Figure 2 plots the distribution of the cohesion measures across and within countries by two-digit SIC code. With the exception of the industry diversification and PI variables, the cohesion measures vary considerably across countries, and all measures vary considerably by industry. Though these patterns raise the possibility that cross-national variation in group cohesion might be driven by differences in industry specialization, the inclusion of group and industry characteristics among the independent variables in the regressions mitigates this concern.

### 3.10 Examples

Before turning to the formal analysis, we illustrate the cohesion measures as well as some of the structural patterns they reveal by presenting data for selected groups. First consider Abbott Laboratories of the United Kingdom (Figure 3.a) and Berge y Compañía of Spain (Figure 3.b), which represent two extremes. Abbott Laboratories is very cohesive, with a clear specialization in medical instruments and drug manufacturing, concentrated ownership, and name sharing among 13 of the 17 affiliates. In contrast, Berge y Compañía’s operations span multiple industries, ranging from logistics to automobile distribution to solar energy research. Ownership concentration is quite low—only one affiliate is wholly owned by the apex firm—and the incidence of name sharing is low as well.

Groups that lie in between these extremes vary substantially. For example, United Technologies of the United States. (Figure 3.c) includes five leading firms (Hamilton Sundstrand, Otis Elevator, Carrier, Kaysail, and Pratt & Whitney Engine Services) that operate in distinct product markets and share no common names. However, ownership of the group is highly concentrated, and the level of cohesion within each of the five firms’ chain of subsidiaries is substantial. Hamilton Sundstrand’s chain, for example, includes several firms specializing in general industrial machinery (SIC 356) whose names typically include the word “Haskel.”

Telefónica of Spain (Spain, Figure 3.d) appears similar to United Technologies at first blush. Ownership concentration is high, and controlling firms frequently share parts of their name with their direct subsidiaries. However, in contrast to United Technologies’ structure—the logic of which appears to be industrial—Telefónica’s structure appears to reflect a geographic logic. Most of the affiliates share the same SIC code, indicating a high level of specialization, and affiliates in different parts of Europe have different names, including Endemol in the UK, O2 in Germany, Telefónica O2 in the Czech Republic, and Lycos in other European countries.

The Fiat group of Italy (Figure 3.e) exhibits another distinctive structure than can be characterized as “core-periphery.” While about half of the group affiliates specialize in automobile manufacturing, others operate in distinct industries with only weak ties to automobiles, such as business credit (Suquana Capital) and football (Juventus SPA). Within the automobile manufacturing portion of the group, ownership concentration is high and most affiliates share the Fiat name. In contrast, affiliates in the heterogeneous portion of the group exhibit shared ownership and do not carry the Fiat name.

Clearly, we cannot determine from these few examples whether the structural patterns they illustrate represent archetypes. For this purpose, we turn to the econometric analysis.

## 4 Cluster analysis

We performed the empirical analysis in two stages. First, we performed a cluster analysis to explore the extent to which our group measures co-appear with each other as well as with a set of country dummies reflecting the national origin of a group’s apex firm. Second, we further investigated whether the groups represented in the data exhibited distinct national or regional archetypes by separately regressing each group-level cohesion measure on the set of country dummies. This regression analysis allowed us to identify a richer variation in group structures across countries than the one obtained from the coarser cluster grouping.

The cluster analysis categorized groups on cohesion variables into two clusters using non-hierarchical clustering process (k-means) (MacQueen, 1967; Judson, 1998). This clustering algorithm combined observations with most similar attributes (closest in cohesion measure values, in our case) using an iterative process that minimizes the distance between the mean of the cluster and each observation. The process started with random centroids (average coordinates for all the points) for each cluster, and the algorithm assigned observations into the clusters based on the minimized sum of squares of distances between data and the corresponding cluster centroids. After each assignment, new centroids were calculated with new additions to the cluster, and the algorithm repeated until cluster centroids no longer changed. As cluster dimensions we used the seven group cohesion variables that are described above. We removed group size effects prior to clustering to improve precision of the clustering by regressing each variable against group’s total assets (natural log) and taking the residuals as values for clustering. In addition to the cohesion variables we also included dummies for the nationality of the group ultimate owners to learn about how the likelihood of belonging to the different groups varies by country.

Table 5 presents the results. The clustering process results separated corporate groups into groups with minority shareholders and wholly-owned groups: clusters A and B, respectively. Greater share of the groups in the cluster with minority shareholders were under family control, less pyramidal, and more diversified than groups in cluster B. Groups



in the cluster B (wholly-owned groups) were more pyramidal, displayed greater name similarity and lower degree of board independence.<sup>2</sup>

The likelihood of belonging to clusters A or B varies considerably by the nationality of the group ultimate owner. Corporate groups from Great Britain, Ireland, Finland, Netherlands, Nordic and Switzerland were much more likely to belong to cluster B (wholly-owned groups) than to cluster A, whereas groups from France, Greece, Italy and Spain were much more likely to belong to group A (partly-owned groups). For Germanic and Belgium groups we did not find a substantial tendency to belong to either cluster. For American groups, because the reported cluster analysis included information on family management and board interlocks which were mostly missing for American firms, we did not find a tendency to belong to either cluster. However, when repeating the cluster analysis without the family management and board interlocks dimensions, our results showed that American groups were substantially more likely to belong cluster B (wholly-owned groups).

## 5 Regression analysis

### 5.1 Method

To further investigate whether the groups in the data exhibited distinct national or regional archetypes, we regressed each group-level cohesion measure on a set of dummy variables reflecting the national origin of a group’s apex firm. In most cases, the national origin dummy variable represented a single country, either France, Greece, Italy, Spain, Switzerland, or the United States. For statistical and expositional reasons, we also grouped several countries together, including the United Kingdom and the Republic of Ireland in the “Anglo ” group; Germany and Austria in the “Germanic ” group; and Sweden, Denmark, Norway, and Finland in the “Nordic ” group. The Anglo group was the base category in the regressions and all results are interpreted accordingly. To account for industry- and firm-level heterogeneity, the regressions also included a set of variables reflecting a group’s share of sales in each of 97 different industries (at the two-digit SIC code level), as well as variables reflecting group sales, number of group affiliates, average age of group affiliates, and the apex firm’s share of group sales.

### 5.2 Results

Table 6 contains results for the baseline regressions. Column 1 presents results for the name similarity measure. Consistent with the descriptive statistics discussed above, within-group name similarity varied significantly across countries. Anglo groups exhibited the second-highest level of name similarity after Switzerland, as indicated by the negative coefficient estimates for all other countries. Groups from France, Italy, Spain, and Greece exhibited a relatively low level of name similarity, while American, Germanic and Nordic groups lay somewhere in between.

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<sup>2</sup>We also utilized hierarchical clustering (average linkages) to examine the consistency of these patterns (Johnson, 1967). This method determined patterns without relying on pre-determined number of clusters. This clustering algorithm used a sequential process to assign cases into sub-clusters starting with the most similar cases in terms of the distance between their means. The process started with all observations as belonging to their own sub-cluster, and then the algorithm calculated the Euclidean distance between all the pairs of these sub-clusters and combined those with the smallest distance into new larger sub-clusters. Once new sub-clusters were formed, the process repeated to pool closest sub-clusters until all observations were grouped into one large cluster. We found a clear separation of observations into two distinct clusters as the number of sub-clusters consolidated. The patterns we obtained from the hierarchical clustering process were identical to the one from the non-hierarchical clustering analysis: the two clusters resulting from the hierarchical analysis split the sample into the same groupings as the non-hierarchical clustering method. This consistency provides important robustness to the patterns we observed.

One concern in this regard is that the incentives to share names within a group may vary across industries. For example, because reputation is very important to financial firms, these firm's incentives to share names may also be especially large. As a result, the cross-national variation in name similarity discussed above might reflect cross-national variation in industry composition. We investigated this possibility in unreported regressions by distinguishing among different name categories (financial, consumer products or services, and business products or services). The general pattern of results holds. Details on the name classification methodology and the full set of results are available from the authors upon request.

Column 2 presents the results for board interlocks. Board interlocks were far more common in Anglo groups than in the rest of Europe. French, Italian, Dutch and Swiss groups had the lowest level of board interlocks, while Anglo, Nordic, and American groups had the highest interlock values. Belgium, Germanic, Greek and Spanish groups lay in between

Column 3 presents the results for family ownership, estimated using a linear probability model. They reveal a much higher probability of family ownership among groups in continental Europe than among those in the Anglo group, the Nordic group, and the United States. Germanic groups, for example, were 54 percentage points more likely to have a family or individual as a controlling shareholder than Anglo groups were—a striking difference given that the sample-wide proportion of family-held groups is 18%. Similar patterns held for French, Greek, Italian, Swiss, and Spanish groups.

Column 4 presents results for the family management measure. As with family ownership, family managers were much more prevalent in Continental Europe than elsewhere, with the highest levels in Belgium, Italy, Spain and Switzerland, and a somewhat lower level in Germanic groups. The major exception to this pattern was French groups, which—despite their high probability of being family-owned—are as unlikely to be family managed as the Anglo and American groups were.

Column 5 presents results for the minority ownership dummy variable, estimated using a linear probability model. Striking differences were evident between the Anglo and American groups, on the one hand, and those from Continental Europe, with the exception of Netherlands, on the other. Twenty four percent of American groups and 35% of Anglo groups were estimated to have minority shareholders. In contrast, over 95% of Greek groups and 90% of French groups were estimated to have minority shareholders, with Italian groups just slightly behind. The same pattern of results holds when a continuous measure reflecting the share of group sales by partly-owned affiliates was used.

Column 6 presents the results for the pyramidal index, which higher values indicating a more vertical structure. The coefficient estimates reported in the table all have a negative sign, indicating that Anglo groups had the most vertical structure. Cross-national differences were not particularly large, however. Swiss groups had the most horizontal structures, with an estimated pyramidal index value of 0.627, compared to a value of 0.678 for Anglo groups.

Column 7 presents the results for the diversification dummy variable, estimated using a linear probability model. The dummy variable takes a value of one of one for groups that operated in at least two two-digit SIC codes. The results indicate that Anglo groups were the least diversified in the sample, followed by Swiss, American, Dutch, and Belgian groups. Groups in the remaining countries exhibited substantially higher level of diversification.

### 5.3 Robustness

We ran multiple tests to assess the results' robustness to potential spurious influences, beginning with group size. Coverage of small firms (and hence groups) may vary across countries, but this is less likely to be the case for large firms. American firms' large size relative to European ones might drive some of the results, especially those for ownership concentration and diversification. We investigate this possibility in Table 7, which replicates Table 6 for groups holding at least \$1 billion in assets. The general pattern of results was robust to the exclusion of small groups, with the exception that American groups' diversification levels in the restricted sample were much lower than they were in the full sample. A possible explanation for this pattern is that large groups in the United States were more likely to be comprised of large firms, whereas large groups in Europe consisted mainly of small and medium-sized firms (possibly due to the United States' unique practice of taxing intercorporate dividends). Because the data does not allow us to observe intra-firm diversification—which is probably quite high for America's largest affiliates—the trans-Atlantic difference in average firm size resulted in a lower diversification coefficient for American groups.

Table 8 replicates Table 6 for the subsamples of domestic groups and multinational groups. All else being equal, we might expect the cross-national scope of the latter to dampen the imprint of the owner's nationality on other group attributes. The pattern of results in Table 8, however, suggests that the controlling owner's national origin persisted in both subsamples. This pattern is broadly consistent with international business research examining how multinational subsidiaries manage tension between home- and host-country institutional influences (Rosenzweig and Singh, 1991; Gooderham et al., 1999; Kostova, 1999; Kostova and Roth, 2002), as well as research on challenges faced by multinationals when entering new host countries with unfamiliar institutions (Kogut and Zander, 2000; Kriauciunas and Kale, 2006; Shinkle and Kriauciunas, 2012; Kogut, B., 1991).

Table 9 distinguishes between specialized and diversified groups. Because some resources and capabilities are industry-specific, groups in the two subsamples may differ in their level of resource-sharing among affiliates. If the level of resource-sharing is correlated with individual cohesion measures, then it is possible that the empirical patterns reported above reflected differences in group specialization patterns across countries. The only major difference revealed in Table 8, however, involves diversified groups' level of pyramidity, which differed significantly across several countries. For specialized groups, cross-national differences in pyramidity were generally insignificant.

Table 10 distinguishes between widely-held groups and those owned by a family (or individual). The expropriation perspective suggests that the latter are more likely to be configured to facilitate the expropriation of minority shareholders (Bertrand, et al., 2002; Bertrand and Schoar, 2006) . If so, then cross-national disparities in the incidence of family ownership might explain some of the country effects reported above. We found no such pattern, however. Family-owned groups in France, the Germanic countries, Spain, and the United States differed significantly from widely-held groups along several dimensions, but there is no obvious explanation for this pattern. The fact that the sample consisted only of groups from developed countries, which typically have strong shareholder protection laws to safeguard investors against expropriation, may be pertinent in this regard.

Lastly, Table 11 distinguishes between groups that grew largely through mergers and acquisitions versus groups that pursued an internal growth strategy. If internal expansion produces greater cohesion, and if acquisition activity varies systematically across countries, then the country effects reported above could be spurious. To mitigate this concern,

we compiled acquisition data for the affiliate firms in the sample for the years 1997 - 2006 from Bureau Van Dijk's Zephyr database. During this period, acquired affiliates accounted for an average of 3.6% of group sales. This figure swelled to 62% when calculated for acquiring groups only, reflecting the fact that 93.8% of the groups in the full sample reportedly made no acquisitions at all. This statistic may be an artifact of the data source, however, as the Zephyr database covers large acquisitions more thoroughly than it does small ones. With this caveat, the country effects did not differ significantly between acquisition-intensive groups and those pursuing an internal growth strategy.

## 6 Discussion

Table 12 summarizes the archetypes that emerge from the results discussed above. Anglo-American corporate groups—those from the United Kingdom, Ireland, and the United States—cohere through formal integration and industrial relatedness. They exhibit a high degree of name similarity and director interlocks, and a low level of diversification. They are more likely to be widely owned rather than family owned, and professionally managed rather than family managed. Their affiliates also tend to be wholly-owned subsidiaries. In contrast, Southern European groups—those from Italy, Spain, and Greece—exhibit low levels of name similarity and director interlocks, and a high level of business line diversification. Subsidiary ownership is also more likely to be shared with minority investors. Though these attributes suggest a lower level of cohesion than among the Anglo-American groups, Southern European groups' kinship ties—reflected in higher levels of family ownership and family management—serve as alternative sources of solidarity and trust. This observation is consistent with research contending that Southern European countries exhibit comparatively low levels of "generalized trust" and a commensurate tendency to rely on small networks of close relations (Fukuyama, 1995; Guiso et al., 2009; Bloom et al., 2012).

Germanic and Northern European groups—those from Belgium, Netherlands, Switzerland, and the Nordic countries—lie in between the Anglo-American and Southern European archetypes on essentially all dimensions. French groups, however, represented a distinct “hybrid” with a high incidence of family ownership, as in Southern European groups, but a low incidence of family management, as in Anglo-American groups.

The results suggest promising directions for future research. First, the pattern of results for the pyramidity index—that ownership structures are slightly taller in the U.K. and Ireland and roughly similar in other countries—is inconsistent with the expropriation perspective, which holds that taller pyramids facilitate controlling shareholders' expropriation of minority shareholders by increasing the apex firm's span of control. Because common-law countries such as the U.S. and the U.K. generally provide stronger legal protections for minority investors than Germanic, Scandinavian, and French civil law countries (La Porta et al., 1998), taller pyramids should be more prevalent in the latter group of countries than in the former. One topic for future research, then, is to explore alternative explanations for this key structural attribute. A possibility that we investigate in a companion paper is that taller structures facilitate decentralized decision-making, permitting affiliate managers at lower levels to leverage their expertise and make major investment decisions.

The results comport better with the institutional voids perspective. The lower level of financial market development in Southern European countries, under this view, would necessitate more intra-group lending than in the U.S. and the U.K., leading to the emergence of more diversified groups, as we observed. Similarly, corporate groups would also play a greater role in allocating management talent in Southern Europe than in the U.S. and the U.K., which have a

long history of professional management education and historically have attracted English-speaking professionals from around the world. In this connection, the case of France—where there exists a dominant managerial "cadre" (Hofstede, 1993)—is especially interesting. Members of this class attend elite French schools that provide rigorous scientific and technical training, which perhaps fosters greater aversion to nepotistic practices and may thus help to explain France's idiosyncratic organizational archetype.

More challenging to reconcile with the Institutional Voids perspective—in particular, the background assumption of institutional convergence—is the marked divergence of observed governance practices among the highly developed and interconnected countries represented in the data. By advancing the functionalist argument that group structures' *raison d'être* is to compensate for a lack of U.S.-style, market-supporting institutions, the institutional voids perspective suggests that corporate groups may be transitory phenomena on the evolutionary path to market-based capitalism (e.g., Khanna and Palepu, 1999; see also Granovetter 1995: 106-108; 2005: 444-447). The finding that substantially different national archetypes endure despite the wealth and interconnectedness of the countries we examined points away from the convergence hypothesis and invites future research that stress the embeddedness of organizational practices. These include institutional perspectives highlighting the opacity of a country's "institutional logic" (Biggart and Guillen, 1999) to external actors, as well as "varieties of capitalism" accounts highlighting the path-dependence of organizational responses to the process of internationalization (Hall and Soskice, 2001). The evidence presented in this paper is consistent with the notion that a country's organizational archetypes complement its macro-level institutions.

## 7 Conclusion

Conceptions about the nature of the firm have undergone a profound evolution in recent decades. The stark dichotomy between firms and markets that at one time prevailed has been tempered by the recognition that hybrid forms are pervasive. Additionally, multiple studies have demonstrated that ownership around the world is more concentrated, and that family management is more common, than the classic Berle and Means image of the "modern corporation" would suggest. Finally, though the academic consensus on the benefits of a narrow scope of firm activities is still firmly entrenched, recent research has begun to question the received wisdom about the "diversification discount."

We have attempted to contribute to this ongoing conversation by constructing a novel set of measures of the degree of inter-firm cohesion in corporate groups. Using novel and comprehensive data on group structure, we find substantial variation in this organizational form—and in the nebulousness of the firms that comprise it—within a relatively homogeneous set of developed countries. Investigating the key drivers of this empirical regularity is an exciting avenue for future research.

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**TABLE 1. Main Variable Definitions**

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Variable	Explanation
<i>Business Group</i>	Two or more legally independent firms tied by a controlling equity stake. For privately-owned firms, a controlling stake is defined as an ownership share of 50% or more. For publicly-trade firms, a controlling stake is defined as an ownership share of 20% or more.
<i>Name similarity</i>	The sales-weighted ratio of (1) the number of affiliates whose name includes the most common name in a group, to (2) the total number of affiliates in the group.
<i>Board interlocks</i>	The sales-weighted ratio of (1) affiliates that share at least one director with a group's apex firm, to (2) the total number of affiliates in the group.
<i>Family ownership</i>	A dummy variable that takes a value of one for groups where the ultimate owner is a family or individual, and zero otherwise (i.e., for publicly-traded groups).
<i>Family management</i>	The sales-weighted ratio of (1) affiliates that have a family-related manager, and (2) the total number of affiliates in the group.
<i>Dummy for minority owners</i>	A dummy variable that takes a value of one for groups that have outside owners, and zero for groups in which all affiliates are wholly owned.
<i>Share of partly-owned affiliates</i>	The sales-weighted ratio of (1) affiliates with minority owners, to (2) total number of group affiliates.
<i>Pyramidal index</i>	A measure of the vertical structure of a business group. A higher index value implies that a larger fraction of group affiliates are located further away from the apex firm.
<i>Industry diversification</i>	A dummy variable that receives the value of one for groups with affiliates that operate in at least two different two-digit SIC code industries, and zero for groups where all affiliates operate in the same two-digit SIC code industry.
<i>Industry concentration index</i>	Ratio of (1) the HHI sales concentration index, to (2) the number of different three-digit industry SIC industries in which group affiliates operate.
<i>Dummy for domestic groups</i>	A dummy variable that takes a value of one for groups that operate in a single country, and zero for groups whose affiliates operate in at least two countries.
<i>Country concentration index</i>	Ratio of (1) the HHI sales concentration index, to (2) the number of different countries in which group affiliates operate.
<i>Group sales</i>	Total affiliate sales within a group.
<i>Number of affiliates</i>	Total number of affiliates that belong to a group.
<i>Average affiliates age</i>	Average age of group affiliates in 2007.
<i>Apex firm's sales share</i>	The ratio between sales by apex firms and total group sales.

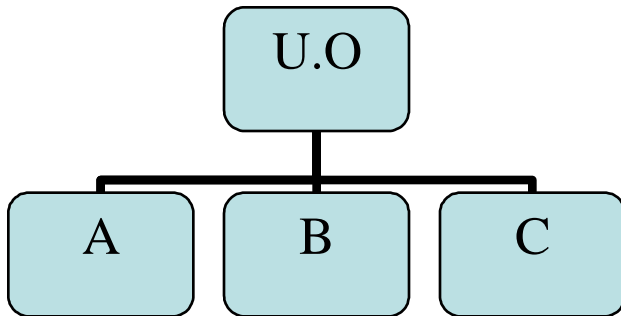
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# Figure 1: Pyramidal Index (PI)

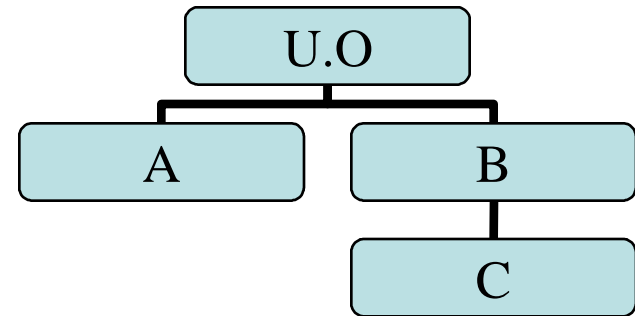
$$PI = \frac{2 \times \left( \sum_{i=1}^{Nlevel} i \times share_i - 1 \right)}{\# Aff - 1}$$

*Examples:*

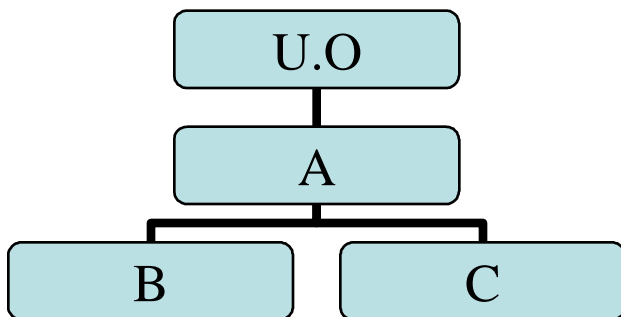
$PI=0$



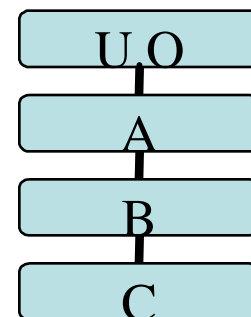
$PI=1/3$



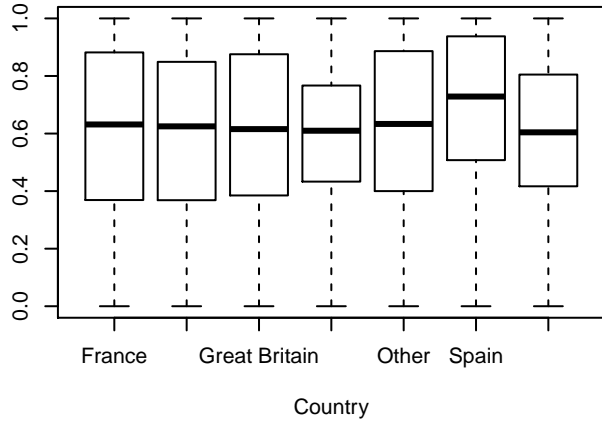
$PI=2/3$



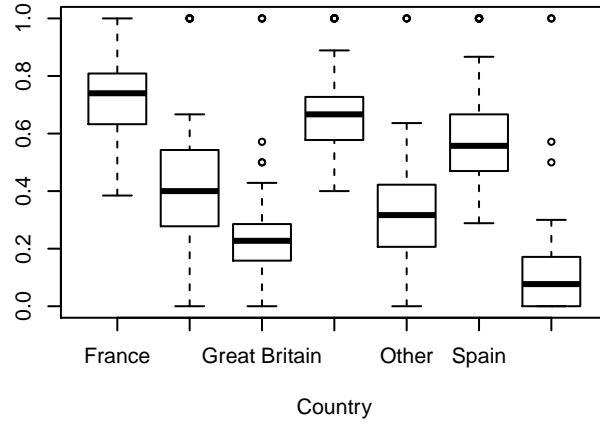
$PI=1$



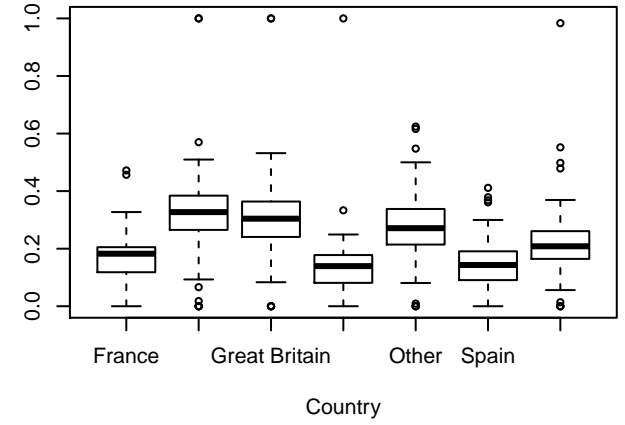
**Industry Diversification**



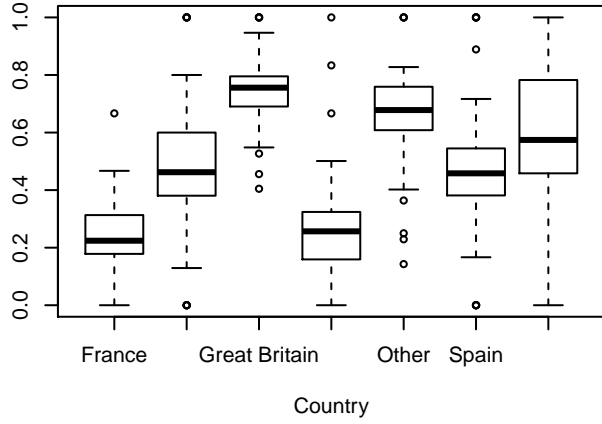
**Minority Shareholders**



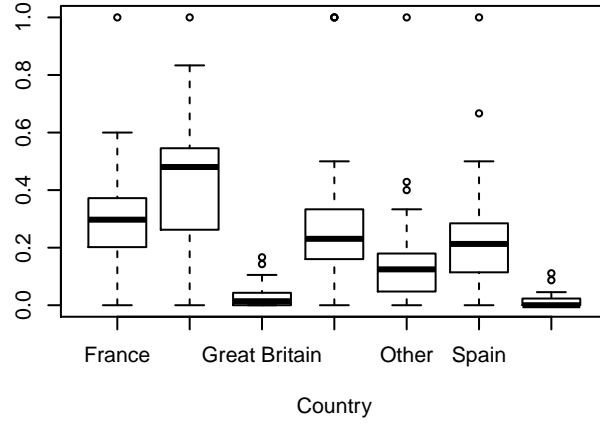
**Group Common Name**



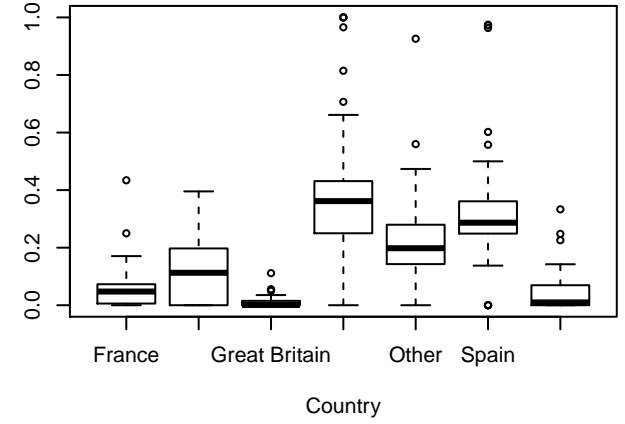
**Board Interlocks**



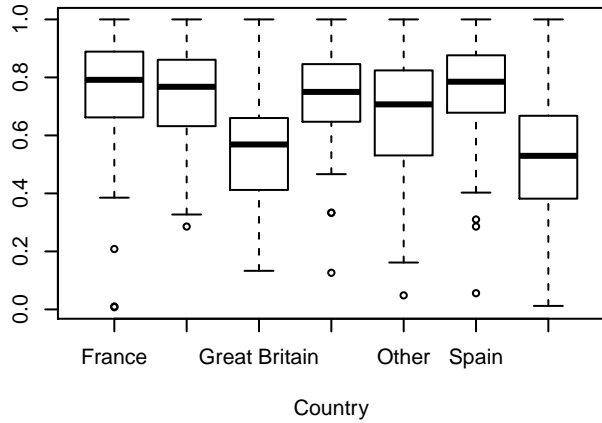
**Family-Held Groups**



**Family Related Managers**



**Pyramidal Structure**



**Figure 2**

**TABLE 2. Summary Statistics**

Variable	# Groups	Mean	Std. Dev.	Distribution		
				10 <sup>th</sup>	50 <sup>th</sup>	90 <sup>th</sup>
<i>Name similarity</i>	61,180	0.283	0.373	0	0	1
<i>Board interlocks</i>	36,142	0.526	0.394	0	0.5	1
<i>Dummy for family ownership</i>	61,180	0.180	0.384	0	0	1
<i>Family management</i>	44,449	0.174	0.347	0	0	0.976
<i>Dummy for minority owners</i>	61,180	0.354	0.478	0	0	1
<i>Share of partly-owned affiliates</i>	61,180	0.061	0.137	0	0	0.263
<i>Pyramidal index</i>	61,180	0.678	0.317	0.217	0.667	1
<i>Dummy for industry diversification</i>	61,180	0.609	0.488	0	1	1
<i>Industry concentration index (HHI)</i>	61,180	0.768	0.239	0.430	0.865	1
<i>Dummy for domestic groups</i>	61,180	0.812	0.390	0	1	1
<i>Country concentration index (HHI)</i>	61,180	0.949	0.140	0.792	0.865	1
<i>Average affiliate age</i>	61,180	22	16.9	6	17	42
<i>Share sales by apex firm</i>	61,180	0.464	0.356	0	0.500	0.979
<i>Group sales (millions, \$)</i>	61,180	4,694	140,054	19	39	577
<i>Group assets (millions, \$)</i>	61,180	1,252	34,951	0	19	384
<i>Number of affiliates per group</i>	61,180	7.3	25.5	2	3	11

**TABLE 3. Group Characteristics by Country of Ownership**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
							Ultimate Owner type (%)		
National origin	Number of groups	Average group sales (mm, \$)	Name similarity	Family management	% with minority owners	% sales by partly-owned affiliates	Family	Financial institution	Industrial corporation
Austria	241	973	0.39	0.16	50.2	6.9	32.0	2.3	65.8
Belgium	1,961	423	0.23	0.54	45.9	4.5	2.1	46.0	51.8
Denmark	945	598	0.41	0.06	25.5	3.4	19.8	17.4	62.8
Finland	742	1,032	0.32	0.01	38.9	2.7	1.6	4.1	94.3
France	8,990	1,751	0.19	0.05	72.7	17.8	26.6	67.9	5.5
Germany	8,388	1,473	0.27	0.19	36.1	5.5	56.4	14.5	29.2
Great Britain	9,303	1,454	0.42	0.02	25.1	5.3	3.5	42.7	53.7
Greece	451	155	0.15	0.10	75.2	9.2	53.7	7.7	38.6
Ireland	166	546	0.32	0.51	20.6	3.1	32.5	2.4	65.1
Italy	3,768	568	0.17	0.34	62.8	7.6	25.7	30.7	43.7
Netherlands	1,561	2,381	0.33	0.12	19.1	2.3	2.4	4.3	93.3
Norway	1,096	4,719	0.24	0.14	44.3	7.3	25.2	1.7	73.1
Spain	5,451	544	0.19	0.29	50.9	6.5	22.4	24.4	53.2
Sweden	3,195	1,042	0.32	0.33	22.5	2.1	0.9	27.3	71.8
Switzerland	776	3,323	0.46	0.33	25.1	2.7	11.7	0.9	87.3
United States	14,146	15,770	0.31	0.06	7.2	0.9	2.5	14.7	82.8
All Countries	61,180	4,694	0.28	0.17	35.4	6.1	0.18	0.18	0.73

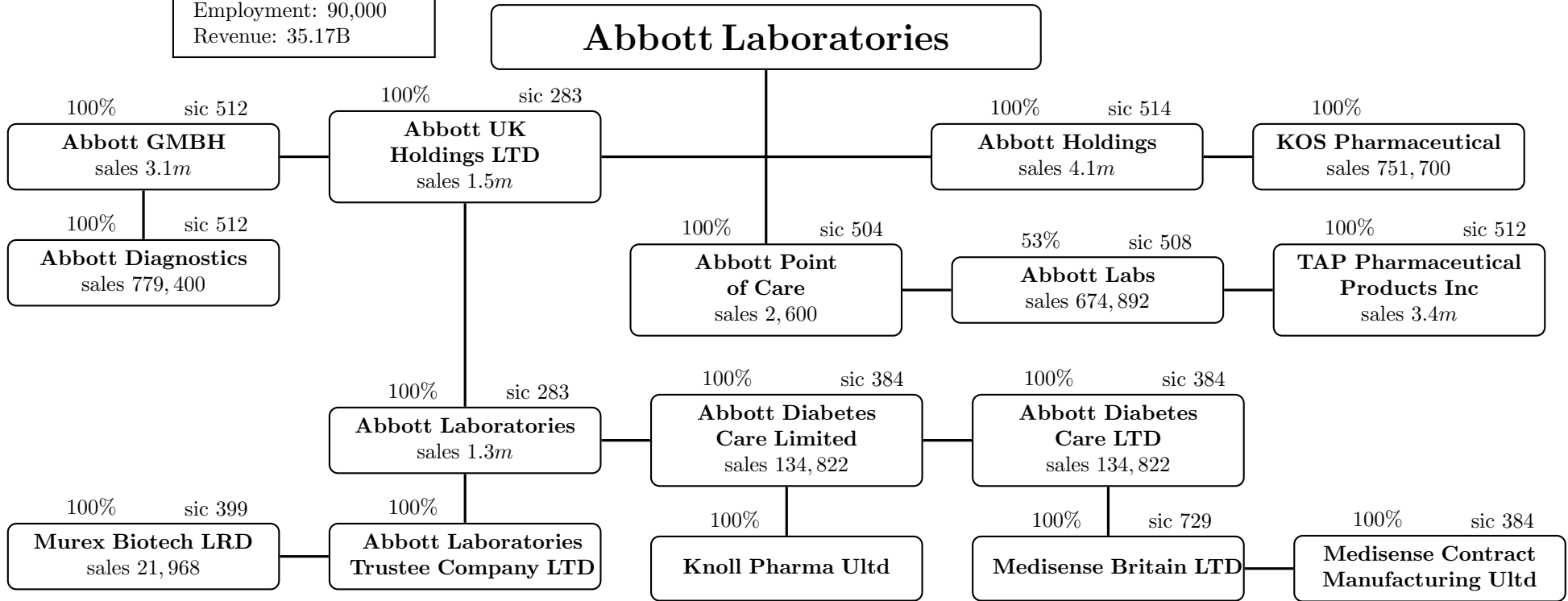


**TABLE 4. Correlation Matrix for Group Variables**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>Name similarity</i>	<i>Board interlocks</i>	<i>Family management</i>	<i>Minority owners</i>	<i>Pyramidal index</i>	<i>Industry concentration index (HHI)</i>	<i>Number of affiliates</i>	<i>Group sales</i>
<i>Name similarity</i>	1							
<i>Board interlocks</i>	0.099	1						
<i>Family management</i>	-0.084	-0.005	1					
<i>Minority owners</i>	-0.048	-0.043	-0.038	1				
<i>Pyramidal index</i>	-0.289	-0.119	0.122	-0.010	1			
<i>Industry concentration index (HHI)</i>	-0.162	-0.096	0.020	-0.011	0.435	1		
<i>Number of affiliates</i>	0.162	0.003	-0.056	-0.024	-0.331	-0.170	1	
<i>Group sales</i>	0.021	-0.004	-0.006	-0.008	-0.043	-0.035	0.388	1

**Figure 3.a**

**Abbott Laboratories**  
 USA  
 Drug Manufacturer  
 Affiliates: 67  
 Ownership Levels: 3  
 Employment: 90,000  
 Revenue: 35.17B

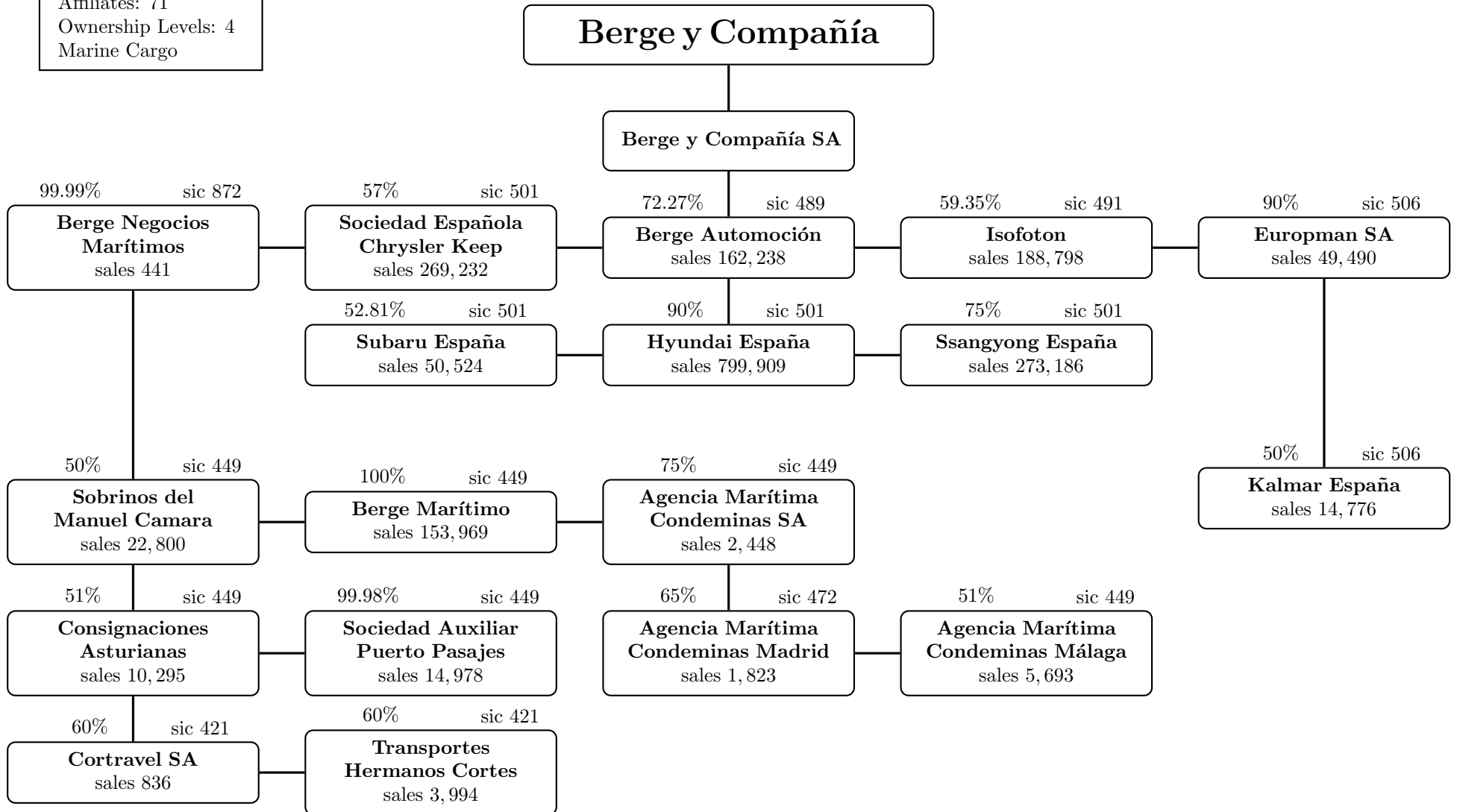


Note: As of 2007. Representative sample. Units in thousands of dollars.  
 Horizontal lines: same level. Vertical lines: top owns bottom

**Berge y Compañía**

Spain  
Marine Cargo  
Affiliates: 71  
Ownership Levels: 4  
Marine Cargo

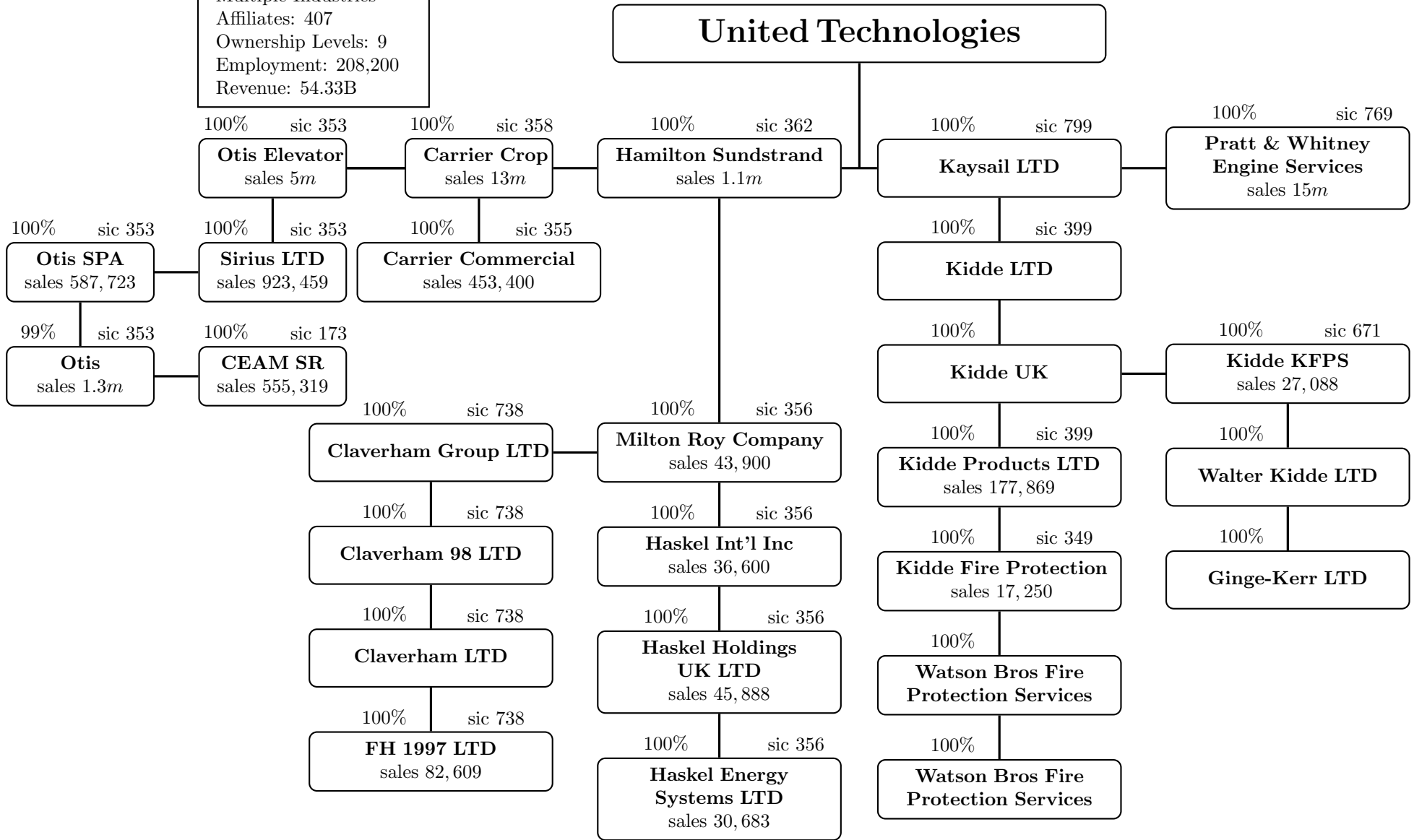
**Figure 3.b**



Note: As of 2007. Representative sample. Units in thousands of dollars.  
Horizontal lines: same level. Vertical lines: top owns bottom

Figure 3.c

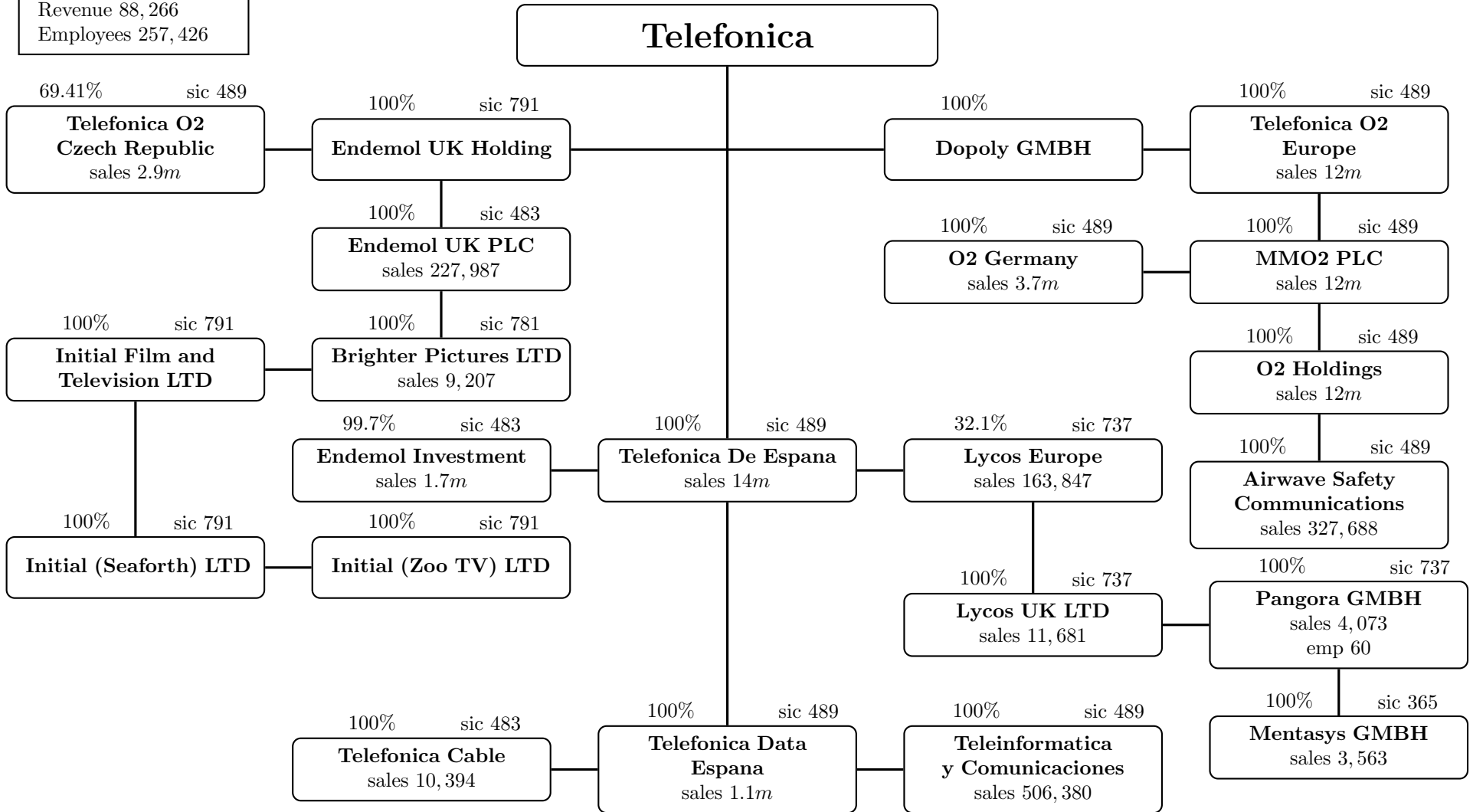
**United Technologies**  
 USA  
 Multiple Industries  
 Affiliates: 407  
 Ownership Levels: 9  
 Employment: 208,200  
 Revenue: 54.33B



Note: As of 2007. Representative sample. Units in thousands of dollars.  
 Horizontal lines: same level. Vertical lines: top owns bottom

Figure 3.d

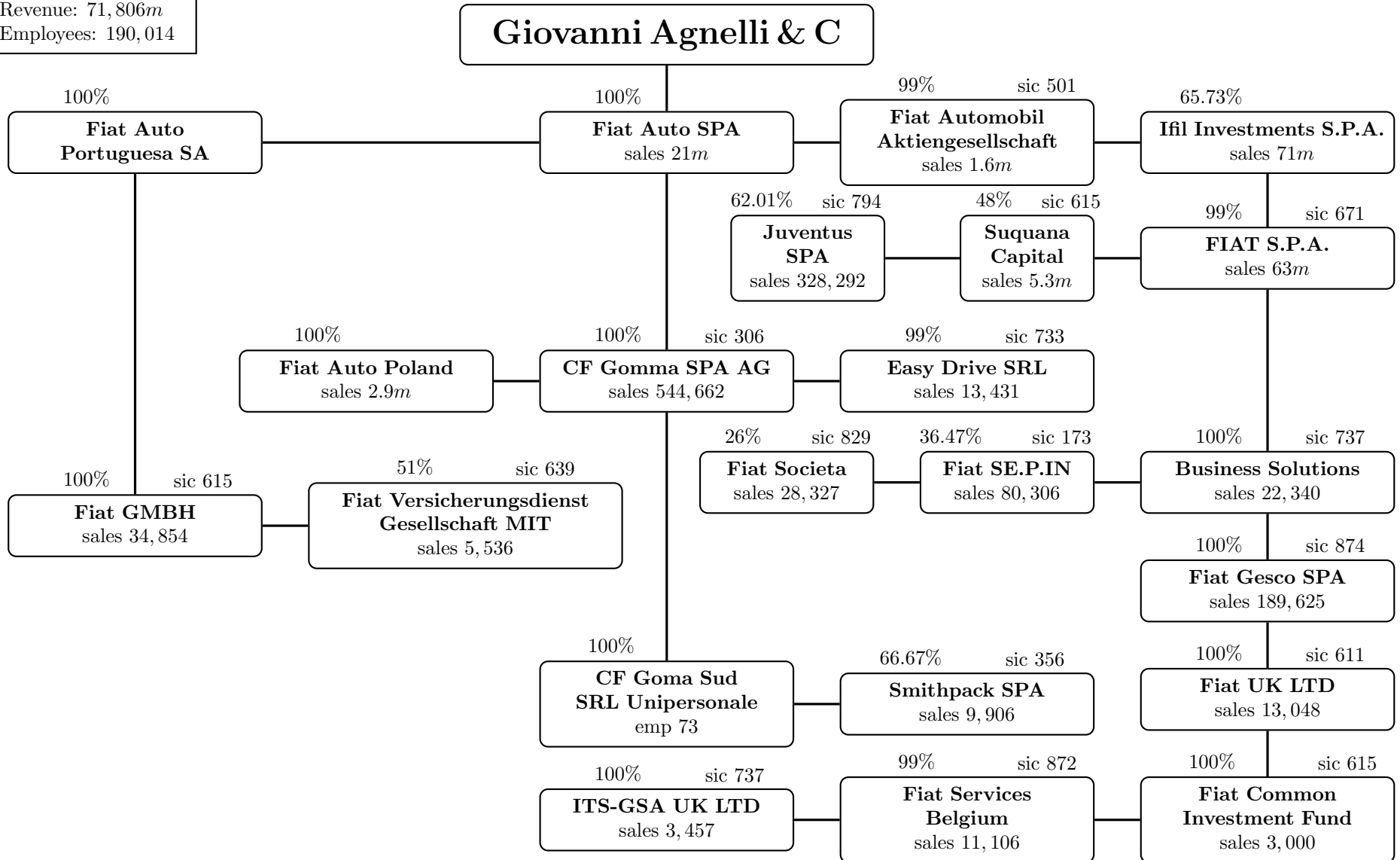
**Telefonica SA**  
 Spain  
 Foreign Telecom  
 Affiliates: 147  
 Ownership Levels: 11  
 Revenue 88,266  
 Employees 257,426



Note: As of 2007. Representative sample. Units in thousands of dollars.  
 Horizontal lines: same level. Vertical lines: top owns bottom

Figure 3.e

**Fiat**  
 Italy  
 Auto Manufacturer  
 Affiliates: 310  
 Ownership Levels: 9  
 Revenue: 71,806m  
 Employees: 190,014



Note: As of 2007. Representative sample. Units in thousands of dollars.

Horizontal lines: same level. Vertical lines: top owns bottom.

**TABLE 5. Non-Hierarchical Cluster Analysis (k-means)**

Variables:	%Δ: A - B		Cluster A		Cluster B		
	Mean	N	Mean	Std. Dev.	N	Mean	Std. Dev.
<u>Group cohesion variable:</u>							
<i>Name similarity</i>	-13.2	13,375	0.287	0.347	17,095	0.325	0.386
<i>Board interlocks</i>	-18.0	13,375	0.479	0.385	17,095	0.565	0.389
<i>Dummy for family ownership</i>	58.5	13,375	0.258	0.438	17,095	0.107	0.309
<i>Family management</i>	12.4	13,375	0.194	0.353	17,095	0.170	0.349
<i>Dummy for minority owners</i>	100.0	13,375	1	0	17,095	0	0
<i>Pyramidal index</i>	-18.9	13,375	0.556	0.322	17,095	0.661	0.313
<i>Dummy for industry diversification</i>	16.9	13,375	0.763	0.425	17,095	0.634	0.482
<u>Country dummies:</u>							
<i>Dummy for Great Britain and Ireland</i>	-121.6	13,375	0.153	0.360	17,095	0.339	0.473
<i>Dummy for Germanic</i>	-3.2	13,375	0.095	0.293	17,095	0.098	0.298
<i>Dummy for Belgium</i>	5.6	13,375	0.054	0.226	17,095	0.051	0.221
<i>Dummy for Finland</i>	-19.0	13,375	0.021	0.144	17,095	0.025	0.156
<i>Dummy for France</i>	77.6	13,375	0.237	0.425	17,095	0.053	0.224
<i>Dummy for Greece</i>	100.0	13,375	0.001	0.027	17,095	0.000	0.011
<i>Dummy for Italy</i>	54.3	13,375	0.140	0.347	17,095	0.064	0.245
<i>Dummy for Netherlands</i>	-54.5	13,375	0.011	0.104	17,095	0.017	0.131
<i>Dummy for Nordic</i>	-104.0	13,375	0.101	0.301	17,095	0.206	0.405
<i>Dummy for Spain</i>	27.0	13,375	0.152	0.360	17,095	0.111	0.314
<i>Dummy for Switzerland</i>	-44.4	13,375	0.009	0.096	17,095	0.013	0.116
<i>Dummy for United States</i>	19.2	13,375	0.026	0.159	17,095	0.021	0.144

Notes: This table presents sample averages for cohesion variables and country dummies in clusters obtained from non-hierarchical cluster analysis (k-means).

**TABLE 6. Cohesion Measures by Country**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	<i>Name similarity</i>	<i>Board interlocks</i>	<i>Family ownership</i>	<i>Family management</i>	<i>Minority owners</i>	<i>Pyramidal index</i>	<i>Dummy for diversification</i>
<i>Dummy for Belgium</i>	-0.093** (0.006)	-0.235** (0.017)	0.004 (0.015)	0.490** (0.009)	0.286** (0.019)	-0.028 (0.013)	0.097** (0.022)
<i>Dummy for France</i>	-0.142** (0.006)	-0.440** (0.013)	0.255** (0.015)	0.011 (0.008)	0.549** (0.017)	-0.030* (0.012)	0.164** (0.023)
<i>Dummy for Germanic</i>	-0.056** (0.007)	-0.219** (0.016)	0.543** (0.012)	0.148** (0.007)	0.206** (0.022)	-0.019 (0.016)	0.160** (0.018)
<i>Dummy for Greece</i>	-0.169** (0.005)	-0.195** (0.010)	0.483** (0.004)	0.074** (0.009)	0.608** (0.024)	-0.022 (0.016)	0.230** (0.009)
<i>Dummy for Italy</i>	-0.162** (0.004)	-0.433** (0.013)	0.226** (0.006)	0.296** (0.007)	0.463** (0.021)	-0.036* (0.014)	0.177** (0.011)
<i>Dummy for Netherlands</i>	-0.017 (0.008)	-0.498** (0.019)	0.041 (0.027)	0.090** (0.003)	0.016 (0.020)	-0.029 (0.014)	0.079** (0.023)
<i>Dummy for Nordic</i>	-0.042** (0.005)	-0.039** (0.013)	0.070** (0.012)	0.181** (0.004)	0.095** (0.013)	-0.025* (0.009)	0.171** (0.016)
<i>Dummy for Spain</i>	-0.135** (0.009)	-0.251** (0.017)	0.209** (0.013)	0.249** (0.006)	0.352** (0.019)	-0.009 (0.014)	0.217** (0.020)
<i>Dummy for Switzerland</i>	0.074** (0.008)	-0.380** (0.020)	0.093** (0.007)	0.275** (0.010)	0.042** (0.016)	-0.051** (0.009)	0.037 (0.021)
<i>Dummy for United States</i>	-0.068** (0.005)	-0.055* (0.021)	-0.007 (0.013)	0.049** (0.012)	-0.111** (0.016)	-0.034* (0.013)	0.060* (0.021)
<i>Constant</i>	0.122** (0.029)	0.965** (0.104)	0.096 (0.092)	-0.030 (0.059)	0.056 (0.037)	0.933** (0.049)	0.784** (0.130)
<i>ln(Group Sales)</i>	0.010* (0.004)	-0.019* (0.009)	-0.015 (0.011)	-0.005 (0.005)	-0.008 (0.006)	0.023** (0.005)	-0.048** (0.015)
<i>ln(No. of Affiliates)</i>	0.118** (0.013)	0.020 (0.025)	0.043* (0.020)	-0.004 (0.003)	0.142** (0.030)	-0.373** (0.023)	0.286** (0.031)
<i>ln(Average Affiliates Age)</i>	-0.021** (0.006)	0.015 (0.008)	-0.007 (0.007)	0.042* (0.015)	0.007 (0.006)	0.005* (0.002)	0.017 (0.013)
<i>Apex Firm's Sales Share</i>	0.014 (0.016)	-0.174** (0.042)	0.144* (0.065)	0.025 (0.014)	-0.012 (0.014)	-0.006 (0.006)	0.014 (0.065)
Sample average value of cohesion measure:	0.283	0.526	0.180	0.174	0.354	0.678	0.609
$R^2$	0.139	0.234	0.249	0.158	0.269	0.785	0.191
<i>Observations</i>	61,180	36,142	61,180	44,449	61,180	61,180	61,180

*Notes:* This table presents OLS estimates of the effect of the group ultimate owner nationality on measures of group cohesion. Dummy for Anglo (Great Britain and Ireland) is the base. All regressions include a set of industry sales share variables for the share of group sales in 97 two-digit SIC code industries. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. \*\* significant at 1%; \* significant at 5%.



**TABLE 7. Robustness Check: Groups with Above \$1 Billion in Assets**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	<i>Name similarity</i>	<i>Board interlocks</i>	<i>Family ownership</i>	<i>Family management</i>	<i>Minority owners</i>	<i>Pyramidal index</i>	<i>Dummy for diversification</i>
<i>Dummy for Belgium</i>	-0.102** (0.008)	-0.062** (0.008)	0.075** (0.007)	0.421** (0.009)	0.424** (0.016)	-0.031** (0.009)	0.086** (0.026)
<i>Dummy for France</i>	-0.153** (0.005)	-0.214** (0.016)	0.161** (0.006)	0.010 (0.007)	0.561** (0.010)	-0.036** (0.005)	-0.009 (0.004)
<i>Dummy for Germanic</i>	-0.107** (0.007)	-0.079** (0.008)	0.251** (0.010)	0.085** (0.010)	0.442** (0.019)	-0.068** (0.011)	0.060** (0.017)
<i>Dummy for Greece</i>	-0.188** (0.013)	-	0.238** (0.010)	-0.001 (0.026)	0.506** (0.015)	-0.066** (0.012)	0.104* (0.037)
<i>Dummy for Italy</i>	-0.231** (0.008)	-0.150** (0.016)	0.082** (0.011)	0.173** (0.009)	0.584** (0.014)	-0.101** (0.012)	0.130** (0.024)
<i>Dummy for Netherlands</i>	-0.061** (0.009)	-0.347** (0.016)	0.036** (0.009)	0.042** (0.008)	0.306** (0.020)	-0.061** (0.012)	0.006 (0.012)
<i>Dummy for Nordic</i>	-0.014* (0.006)	-0.074** (0.007)	0.031** (0.007)	0.045** (0.008)	0.301** (0.013)	-0.082** (0.009)	0.047** (0.010)
<i>Dummy for Spain</i>	-0.179** (0.013)	0.020 (0.015)	0.204** (0.008)	0.415** (0.012)	0.609** (0.015)	-0.044** (0.012)	0.133** (0.023)
<i>Dummy for Switzerland</i>	0.001 (0.011)	-0.294** (0.015)	0.055** (0.012)	0.272** (0.016)	0.376** (0.018)	-0.105** (0.006)	0.085** (0.015)
<i>Dummy for United States</i>	-0.145** (0.007)	0.080* (0.031)	0.042** (0.010)	0.035** (0.007)	0.036** (0.018)	-0.103** (0.010)	-0.138** (0.035)
<i>Constant</i>	0.233 (0.141)	0.452 (0.327)	-0.083 (0.042)	-0.165 (0.126)	-0.306 (0.160)	0.658** (0.057)	1.226** (0.074)
<i>ln(Group Sales )</i>	0.013** (0.002)	-0.007 (0.010)	-0.006** (0.002)	0.005 (0.003)	0.007 (0.005)	0.015** (0.003)	-0.022** (0.006)
<i>ln(No. of Affiliates )</i>	0.089** (0.010)	0.010 (0.009)	0.008 (0.006)	-0.005 (0.006)	0.123** (0.013)	-0.185** (0.009)	0.112** (0.013)
<i>ln(Average Affiliates Age )</i>	-0.026 (0.024)	-0.024 (0.017)	0.003 (0.005)	0.022 (0.014)	0.039** (0.010)	0.002 (0.004)	0.023 (0.012)
<i>Apex Firm's Sales Share</i>	0.059** (0.015)	0.002 (0.047)	0.054** (0.019)	-0.008 (0.018)	-0.132** (0.025)	-0.041** (0.013)	-0.288** (0.099)
Sample average value of cohesion measure:	0.531	0.464	0.075	0.112	0.250	0.250	0.724
$R^2$	0.273	0.190	0.098	0.279	0.391	0.720	0.357
<i>Observations</i>	3,386	1,673	3,386	2,391	3,386	3,386	3,386

*Notes:* This table examines the robustness of the results for excluding groups with less than \$1 billion in assets. Dummy for Anglo (Great Britain and Ireland) is the base. All regressions include a set of industry sales share variables for the share of group sales in 97 two-digit SIC code industries. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. \*\* significant at 1%; \* significant at 5%.

**TABLE 8. Robustness Check: Domestic vs. Multinational Groups**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Panel A: Domestic groups							Panel B: Multinational groups						
Dependent variable:	<i>Name similarity</i>	<i>Board interlocks</i>	<i>Family owner</i>	<i>Family manager</i>	<i>Minority owners</i>	<i>Pyramida l index</i>	<i>Diversifi-cation</i>	<i>Name similarity</i>	<i>Board interlocks</i>	<i>Family owner</i>	<i>Family manager</i>	<i>Minority owners</i>	<i>Pyramida l index</i>	<i>Diversifi-cation</i>
<i>Dummy for Belgium</i>	-0.130** (0.006)	-0.218** (0.021)	0.041 (0.020)	0.527** (0.011)	0.269** (0.025)	-0.045 (0.021)	0.089* (0.032)	-0.007 (0.014)	-0.126** (0.020)	-0.205** (0.017)	0.347** (0.009)	0.278** (0.022)	0.011 (0.019)	0.001 (0.008)
<i>Dummy for France</i>	-0.148** (0.006)	-0.466** (0.014)	0.287** (0.019)	0.012 (0.010)	0.554** (0.022)	-0.050* (0.018)	0.190** (0.030)	-0.093** (0.009)	-0.221** (0.012)	0.101** (0.007)	0.009 (0.004)	0.420** (0.013)	-0.014 (0.010)	0.054** (0.004)
<i>Dummy for Germanic</i>	-0.076** (0.008)	-0.193** (0.020)	0.603** (0.016)	0.163** (0.007)	0.192** (0.028)	0.034 (0.024)	0.161** (0.026)	-0.012 (0.015)	-0.144** (0.022)	0.241** (0.017)	0.073** (0.010)	0.196** (0.025)	0.019 (0.023)	0.040** (0.014)
<i>Dummy for Greece</i>	-0.156** (0.005)	0.253** (0.046)	0.530** (0.004)	-0.004 (0.010)	0.607** (0.032)	-0.028 (0.025)	0.262** (0.011)	-0.192** (0.013)	-0.041** (0.014)	0.186** (0.015)	0.001 (0.015)	0.495** (0.018)	-0.115** (0.012)	0.069** (0.010)
<i>Dummy for Italy</i>	-0.183** (0.006)	-0.466** (0.014)	0.272** (0.009)	0.305** (0.007)	0.459** (0.027)	-0.042 (0.021)	0.178** (0.018)	-0.092** (0.010)	-0.212** (0.019)	-0.027 (0.016)	0.242** (0.008)	0.411** (0.023)	-0.029 (0.020)	0.070** (0.011)
<i>Dummy for Netherlands</i>	-0.031 (0.015)	-0.571** (0.033)	0.078 (0.040)	0.105** (0.005)	-0.045 (0.035)	-0.019 (0.029)	0.007 (0.039)	0.001 (0.011)	-0.303** (0.012)	-0.170** (0.012)	0.031** (0.007)	0.055* (0.020)	-0.061** (0.014)	0.030** (0.008)
<i>Dummy for Nordic</i>	-0.059** (0.007)	0.009 (0.017)	0.096** (0.017)	0.212** (0.006)	0.066** (0.021)	-0.034 (0.018)	0.186** (0.024)	0.008 (0.009)	-0.031* (0.013)	-0.104** (0.010)	0.069** (0.005)	0.114** (0.015)	-0.044** (0.011)	0.029** (0.007)
<i>Dummy for Spain</i>	-0.139** (0.009)	-0.255** (0.019)	0.244** (0.017)	0.254** (0.007)	0.338** (0.025)	-0.029 (0.020)	0.247** (0.027)	-0.071** (0.010)	-0.166** (0.016)	0.023 (0.013)	0.260** (0.008)	0.372** (0.019)	0.014 (0.017)	0.071** (0.010)
<i>Dummy for Switzerland</i>	-0.007 (0.010)	-0.342** (0.021)	0.139** (0.010)	0.309** (0.013)	0.006 (0.025)	-0.058** (0.019)	-0.141** (0.028)	0.115** (0.016)	-0.242** (0.024)	-0.116** (0.014)	0.203** (0.012)	0.030 (0.018)	-0.019 (0.018)	0.019** (0.009)
<i>Dummy for United States</i>	-0.062** (0.005)	0.040** (0.012)	0.024 (0.013)	0.047** (0.008)	-0.147** (0.023)	-0.034 (0.020)	0.084** (0.020)	-0.084** (0.010)	0.077** (0.009)	-0.193** (0.011)	-0.012* (0.004)	-0.017 (0.009)	-0.069** (0.014)	-0.068* (0.027)
<i>Constant</i>	0.122** (0.032)	0.823** (0.138)	0.024 (0.106)	-0.021 (0.090)	0.107* (0.044)	1.114** (0.058)	0.708** (0.179)	0.036 (0.090)	0.862** (0.087)	0.312** (0.103)	0.001 (0.040)	0.153* (0.061)	0.716** (0.054)	1.054** (0.071)
Sample average value of cohesion measure:	0.248	0.552	0.177	0.178	0.335	0.733	0.559	0.436	0.437	0.195	0.160	0.439	0.439	0.824
$R^2$	0.131	0.273	0.279	0.170	0.292	0.812	0.181	0.089	0.163	0.188	0.139	0.193	0.694	0.179
<i>Observations</i>	49,708	28,158	49,708	33,806	49,708	49,708	49,708	11,472	7,984	11,472	10,643	11,472	11,472	11,472

*Notes:* This table examines the robustness of the results for splitting the sample by domestic and multinational groups. Group are classified as domestic if all affiliates are incorporated in a single country. Groups are classified as multinationals if affiliates are incorporated in at least two countries. Dummy for Anglo (Great Britain and Ireland) is the base. All regressions include controls for group sales, number of affiliates, average affiliate age, share of group sales by apex firm, and a set of industry sales share variables for the share of group sales in 97 two-digit SIC code industries. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. \*\* significant at 1%; \* significant at 5%.

**TABLE 9. Robustness Check: Specialized vs. Diversified groups**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Panel A: Specialized groups						Panel B: Diversified groups					
Dependent variable:	<i>Name similarity</i>	<i>Board interlocks</i>	<i>Family owner</i>	<i>Family manager</i>	<i>Minority owners</i>	<i>Pyramidal index</i>	<i>Name similarity</i>	<i>Board interlocks</i>	<i>Family owner</i>	<i>Family manager</i>	<i>Minority owners</i>	<i>Pyramidal index</i>
<i>Dummy for Belgium</i>	-0.101** (0.010)	-0.250** (0.014)	0.026 (0.013)	0.513** (0.011)	0.174** (0.013)	-0.011 (0.009)	-0.089** (0.006)	-0.223** (0.018)	-0.013 (0.016)	0.472** (0.009)	0.351** (0.020)	-0.040* (0.017)
<i>Dummy for France</i>	-0.136** (0.012)	-0.478** (0.011)	0.227** (0.018)	-0.001 (0.012)	0.441** (0.013)	-0.001 (0.010)	-0.151** (0.005)	-0.428** (0.016)	0.263** (0.015)	0.012 (0.008)	0.598** (0.020)	-0.039* (0.015)
<i>Dummy for Germanic</i>	-0.047** (0.010)	-0.220** (0.015)	0.560** (0.014)	0.159** (0.007)	0.087** (0.014)	0.004 (0.012)	-0.066** (0.008)	-0.218** (0.020)	0.528** (0.011)	0.140** (0.009)	0.270** (0.023)	-0.027 (0.020)
<i>Dummy for Greece</i>	-0.111** (0.010)	0.081** (0.018)	0.458** (0.007)	0.147** (0.019)	0.490** (0.016)	0.005 (0.012)	-0.207** (0.007)	-0.222** (0.009)	0.489** (0.007)	0.059** (0.006)	0.663** (0.024)	-0.032 (0.021)
<i>Dummy for Italy</i>	-0.153** (0.009)	-0.466** (0.006)	0.249** (0.006)	0.335** (0.008)	0.325** (0.015)	0.001 (0.012)	-0.172** (0.007)	-0.419** (0.019)	0.208** (0.008)	0.271** (0.008)	0.533** (0.021)	-0.053** (0.018)
<i>Dummy for Netherlands</i>	-0.028* (0.013)	-0.539** (0.025)	0.070 (0.036)	0.096** (0.005)	-0.070** (0.017)	0.001 (0.011)	-0.002 (0.007)	-0.488** (0.016)	0.021 (0.017)	0.084** (0.005)	0.057** (0.019)	-0.060** (0.015)
<i>Dummy for Nordic</i>	-0.060** (0.007)	-0.037* (0.015)	0.113** (0.017)	0.175** (0.007)	-0.002 (0.009)	-0.014* (0.006)	-0.043** (0.007)	-0.046** (0.014)	0.044** (0.010)	0.179** (0.005)	0.140** (0.017)	-0.024 (0.013)
<i>Dummy for Spain</i>	-0.106** (0.012)	-0.263** (0.013)	0.231** (0.016)	0.223** (0.007)	0.236** (0.011)	0.005 (0.010)	-0.158** (0.009)	-0.250** (0.023)	0.190** (0.013)	0.260** (0.008)	0.405** (0.021)	-0.007 (0.019)
<i>Dummy for Switzerland</i>	-0.009 (0.009)	-0.333** (0.016)	0.110** (0.008)	0.351** (0.009)	-0.058** (0.011)	-0.026** (0.008)	0.119** (0.010)	-0.395** (0.023)	0.086** (0.007)	0.239** (0.012)	0.104** (0.018)	-0.068** (0.011)
<i>Dummy for United States</i>	-0.045** (0.006)	0.013 (0.025)	0.012 (0.018)	0.052* (0.021)	-0.155** (0.012)	-0.008 (0.007)	-0.088** (0.006)	-0.075** (0.016)	-0.027** (0.009)	0.048** (0.010)	-0.086** (0.015)	-0.037* (0.015)
<i>Constant</i>	0.060 (0.040)	0.990 (0.107)	0.008 (0.092)	0.030 (0.071)	0.079 (0.040)	1.166** (0.018)	0.164** (0.028)	0.934** (0.117)	0.143 (0.088)	-0.057 (0.063)	0.053 (0.053)	0.823** (0.039)
Sample average value of cohesion measure:	0.229	0.506	0.157	0.174	0.265	0.817	0.318	0.526	0.196	0.170	0.412	0.589
$R^2$	0.104	0.273	0.278	0.171	0.218	0.819	0.151	0.219	0.239	0.155	0.281	0.757
<i>Observations</i>	23,941	12,239	23,941	15,088	23,941	23,941	37,239	23,903	37,239	29,361	37,239	37,239

*Notes:* This table examines the robustness of the results for splitting the sample by specialized and diversified groups. Groups are classified as specialized if all affiliates operate in a single two-digit SIC code industry. Groups are classified as diversified if affiliates operate in at least two-digit SIC code industries. Dummy for Anglo (Great Britain and Ireland) is the base. All regressions include controls for group sales, number of affiliates, average affiliate age, share of group sales by apex firm, and a set of industry sales share variables for the share of group sales in 97 two-digit SIC code industries. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. \*\* significant at 1%; \* significant at 5%.

**TABLE 10. Robustness Check: Family vs. Widely-Owned Groups**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Panel A: Family-owned groups						Panel B: Widely-owned groups					
Dependent variable:	<i>Name similarity</i>	<i>Board interlocks</i>	<i>Family manager</i>	<i>Minority owners</i>	<i>Pyramida l index</i>	<i>Diversifi-cation</i>	<i>Name similarity</i>	<i>Board interlocks</i>	<i>Family manager</i>	<i>Minority owners</i>	<i>Pyramida l index</i>	<i>Diversifi-cation</i>
<i>Dummy for Belgium</i>	-0.045** (0.009)	-0.094** (0.010)	0.285** (0.011)	0.017 (0.011)	-0.017* (0.007)	0.063 (0.015)	-0.093** (0.006)	-0.247** (0.015)	0.498** (0.009)	0.288 (0.018)	-0.025 (0.013)	0.100** (0.023)
<i>Dummy for France</i>	-0.074** (0.011)	-0.310** (0.008)	-0.100** (0.015)	0.452** (0.023)	-0.020 (0.012)	0.086** (0.016)	-0.151** (0.007)	-0.447** (0.012)	0.017 (0.008)	0.513** (0.016)	-0.026* (0.012)	0.152** (0.031)
<i>Dummy for Germanic</i>	-0.013 (0.018)	-0.037** (0.012)	0.062** (0.019)	0.061 (0.033)	-0.012 (0.019)	0.042** (0.032)	-0.061** (0.007)	-0.256** (0.011)	0.116** (0.005)	0.158** (0.019)	-0.025 (0.014)	0.146** (0.020)
<i>Dummy for Greece</i>	-0.148** (0.019)	0.017 (0.027)	-0.107** (0.016)	0.459** (0.034)	-0.004 (0.017)	0.154** (0.028)	-0.140** (0.004)	-0.297** (0.006)	0.116** (0.011)	0.579** (0.023)	-0.042** (0.014)	0.179** (0.007)
<i>Dummy for Italy</i>	-0.121** (0.015)	-0.272** (0.014)	0.209** (0.017)	0.362 (0.027)	-0.035* (0.014)	0.052** (0.023)	-0.161** (0.004)	-0.447** (0.009)	0.293** (0.007)	0.435** (0.020)	-0.031* (0.013)	0.182** (0.013)
<i>Dummy for Netherlands</i>	-0.017* (0.006)	-0.304** (0.017)	-0.002 (0.006)	0.008 (0.006)	-0.084** (0.004)	0.110 (0.008)	-0.016 (0.010)	-0.509** (0.017)	0.095** (0.003)	0.005 (0.017)	0.025 (0.013)	0.080** (0.028)
<i>Dummy for Nordic</i>	-0.061** (0.009)	-0.005 (0.010)	0.012 (0.013)	0.095** (0.018)	-0.022 (0.012)	-0.035 (0.025)	-0.038** (0.005)	-0.041** (0.010)	0.192** (0.004)	0.079** (0.012)	-0.022* (0.009)	0.182** (0.017)
<i>Dummy for Spain</i>	-0.084** (0.019)	-0.035* (0.012)	0.101** (0.017)	0.272** (0.028)	-0.004 (0.018)	0.110** (0.030)	-0.138** (0.009)	-0.280** (0.015)	0.265** (0.006)	0.322** (0.018)	-0.006 (0.013)	0.215** (0.022)
<i>Dummy for Switzerland</i>	0.096** (0.015)	-0.164** (0.032)	0.185** (0.016)	-0.007 (0.030)	-0.053** (0.011)	-0.044 (0.027)	0.076** (0.007)	-0.399** (0.014)	0.278** (0.013)	0.028 (0.015)	-0.048** (0.008)	0.035 (0.022)
<i>Dummy for United States</i>	-0.039 (0.022)	0.029 (0.022)	-0.065** (0.018)	-0.099** (0.010)	-0.057** (0.016)	-0.279** (0.028)	-0.069** (0.003)	-0.053* (0.021)	0.055** (0.012)	0.110** (0.018)	-0.030* (0.012)	0.069** (0.022)
<i>Constant</i>	-0.002 (0.060)	0.736** (0.236)	0.058 (0.092)	0.257** (0.078)	0.987** (0.098)	0.865** (0.136)	0.136** (0.028)	0.971** (0.099)	-0.037 (0.058)	0.042 (0.029)	0.927** (0.050)	0.776** (0.132)
Sample average value of cohesion measure:	0.248	0.436	0.202	0.354	0.713	0.660	0.146	0.549	0.165	0.309	0.670	0.597
$R^2$	0.103	0.166	0.087	0.190	0.819	0.193	0.147	0.251	0.187	0.265	0.782	0.194
<i>Observations</i>	11,034	7,183	9,936	11,034	11,034	11,034	50,146	28,959	34,513	50,146	50,146	50,146

*Notes:* This table examines the robustness of the results for splitting the sample by family-owned and widely-owned groups. Dummy for Anglo (Great Britain and Ireland) is the base. All regressions include controls for group sales, number of affiliates, average affiliate age, share of group sales by apex firm, and a set of industry sales share variables for the share of group sales in 97 two-digit SIC code industries. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. \*\* significant at 1%; \* significant at 5%.

**TABLE 11. Robustness Check: Organic vs. Acquisition-Oriented Groups**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Panel A: Organic groups							Panel B: Acquiring groups						
Dependent variable:	<i>Name similarity</i>	<i>Board interlocks</i>	<i>Family owner</i>	<i>Family manager</i>	<i>Minority owners</i>	<i>Pyramida l index</i>	<i>Diversifi-cation</i>	<i>Name similarity</i>	<i>Board interlocks</i>	<i>Family owner</i>	<i>Family manager</i>	<i>Minority owners</i>	<i>Pyramida l index</i>	<i>Diversifi-cation</i>
<i>Dummy for Belgium</i>	-0.095** (0.006)	-0.232** (0.017)	0.004 (0.015)	0.004 (0.015)	0.288** (0.018)	-0.027 (0.014)	0.096** (0.022)	-0.049** (0.010)	-0.284** (0.021)	0.015 (0.011)	0.015 (0.011)	0.205** (0.019)	-0.048** (0.008)	0.148** (0.012)
<i>Dummy for France</i>	-0.142** (0.005)	-0.445** (0.013)	0.258** (0.015)	0.258** (0.015)	0.550** (0.017)	-0.030* (0.012)	0.170** (0.023)	-0.146** (0.012)	-0.370** (0.010)	0.198** (0.008)	0.198** (0.008)	0.447** (0.016)	-0.018* (0.007)	0.087** (0.016)
<i>Dummy for Germanic</i>	-0.057** (0.006)	-0.220** (0.016)	0.555** (0.012)	0.555** (0.012)	0.203** (0.021)	0.019 (0.016)	0.163** (0.018)	-0.040** (0.014)	-0.266** (0.020)	0.233** (0.013)	0.233** (0.013)	0.204** (0.027)	-0.036** (0.011)	0.160** (0.010)
<i>Dummy for Greece</i>	-0.173** (0.005)	0.221** (0.009)	0.484** (0.003)	0.484** (0.003)	0.618** (0.024)	-0.023 (0.017)	0.225** (0.009)	-0.135** (0.014)	-0.178** (0.056)	0.482** (0.015)	0.482** (0.015)	0.584** (0.024)	-0.011 (0.013)	0.236** (0.012)
<i>Dummy for Italy</i>	-0.163** (0.004)	-0.438** (0.012)	0.229** (0.006)	0.229** (0.006)	0.461** (0.020)	-0.035* (0.014)	0.180** (0.012)	-0.142** (0.009)	-0.408** (0.018)	0.115 (0.014)	0.115** (0.014)	0.387** (0.024)	-0.060** (0.012)	0.160** (0.007)
<i>Dummy for Netherlands</i>	-0.015 (0.008)	-0.501** (0.019)	0.041 (0.027)	0.041 (0.027)	0.013 (0.020)	-0.030 (0.014)	0.082** (0.024)	-0.053* (0.020)	-0.499** (0.027)	0.019** (0.023)	0.019 (0.023)	0.033 (0.018)	-0.021 (0.012)	0.061** (0.019)
<i>Dummy for Nordic</i>	-0.043** (0.005)	-0.031* (0.013)	0.072** (0.012)	0.072** (0.012)	0.091** (0.013)	-0.023* (0.009)	0.174** (0.017)	-0.031* (0.011)	-0.164** (0.014)	0.045** (0.007)	0.045** (0.007)	0.136** (0.015)	-0.051** (0.008)	0.134** (0.012)
<i>Dummy for Spain</i>	-0.134** (0.008)	-0.253** (0.017)	0.210** (0.013)	0.210** (0.013)	0.346** (0.019)	-0.009 (0.014)	0.221** (0.020)	-0.144** (0.015)	-0.255** (0.019)	0.186 (0.015)	0.186** (0.015)	0.429** (0.018)	0.002 (0.012)	0.171** (0.013)
<i>Dummy for Switzerland</i>	0.079** (0.008)	-0.388** (0.020)	0.091** (0.007)	0.091** (0.007)	0.028 (0.016)	-0.052** (0.009)	0.037** (0.021)	0.001 (0.015)	-0.310** (0.024)	0.098** (0.008)	0.098** (0.008)	0.208** (0.015)	-0.036** (0.007)	0.066** (0.017)
<i>Dummy for United States</i>	-0.066** (0.004)	-0.062** (0.021)	-0.010 (0.013)	-0.010 (0.013)	-0.119** (0.016)	-0.033 (0.013)	0.064** (0.020)	-0.116** (0.011)	0.041 (0.032)	0.026* (0.012)	0.026* (0.012)	-0.039* (0.019)	-0.031* (0.012)	0.006 (0.037)
<i>Constant</i>	0.123** (0.032)	0.959** (0.104)	0.098 (0.092)	0.098 (0.092)	0.063 (0.037)	0.927** (0.046)	0.780** (0.131)	0.076 (0.082)	0.878** (0.080)	-0.040 (0.049)	-0.040 (0.049)	-0.175* (0.064)	1.062** (0.094)	0.887** (0.157)
Sample average value of cohesion measure:	0.281	0.530	0.185	0.177	0.360	0.681	0.608	0.313	0.475	0.100	0.117	0.265	0.629	0.616
$R^2$	0.140	0.239	0.256	0.256	0.271	0.785	0.190	0.149	0.230	0.138	0.138	0.250	0.788	0.236
<i>Observations</i>	57,594	33,941	57,594	57,594	57,594	57,594	57,594	3,586	2,201	3,586	3,586	3,586	3,586	3,586

*Notes:* This table examines the robustness of the results for splitting the sample by domestic and multinational groups. Group are classified as domestic if all affiliates are incorporated in a single country. Groups are classified as multinationals if affiliates are incorporated in at least two countries. Dummy for Anglo (Great Britain and Ireland) is the base. All regressions include controls for group sales, number of affiliates, average affiliate age, share of group sales by apex firm, and a set of industry sales share variables for the share of group sales in 97 two-digit SIC code industries. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. \*\* significant at 1%; \* significant at 5%.

**TABLE 12. Summary of main results**

<i>National origin</i>	<i>Name similarity</i>	<i>Board interlocks</i>	<i>Family ownership</i>	<i>Family management</i>	<i>Minority owners</i>	<i>Pyramidal index</i>	<i>Dummy for diversification</i>
Anglo-American	High	High	Low	Low	Low	High	Low
French	Low	Low	High	Low	High	Low	High
Germanic	Medium	Medium	High	Medium	Medium	Medium	Medium
Northern Europe	Medium	Low	Low	Medium	Medium	Medium	Medium
Switzerland	High	Low	Medium	Medium	Low	Low	Low
Southern Europe	Low	Low	High	High	High	Low	High

*Note:* Anglo-American includes British, Irish, and American groups; Northern Europe includes Belgium, Netherlands, Switzerland, and the Nordic countries; and Southern Europe includes Spain, Italy, and Greece.