

An asset partitioning perspective on corporate groups

Sharon Belenzon

Fuqua School of Business, Duke University, sharon.belenzon@duke.edu

Honggi Lee

Peter T. Paul College of Business and Economics, University of New Hampshire, honggi.lee@unh.edu

Andrea Pataconi

Norwich Business School, University of East Anglia a.pataconi@uea.ac.uk

Abstract

This paper develops an asset partitioning perspective on corporate groups. Asset partitioning refers to the process of dividing assets under common control into separate, legally independent entities. Thus, when a group incorporates a previously unincorporated business unit, its assets are more finely partitioned. We highlight several important costs and benefits of finer asset partitioning. Benefits include risk compartmentalization, greater internal transparency, greater autonomy at the subsidiary level, and learning about individual assets. Costs include stunted resource redeployment and lower headquarters monitoring. Using data from sixteen countries from around the world, we demonstrate the practical relevance of our perspective, and contrast its predictions with those of other leading perspectives on corporate groups.

Key words: Theory of the firm, limited liability, asset partitioning, decentralization.

1. Introduction

Economists and management scholars typically ignore the legal organization of the firm. Economists tend to conceptualize the firm as a “legal fiction”, whose only function is to serve as a nexus of contracts among individuals (Alchian and Demsetz, 1972; Jensen and Meckling, 1976). In this conception, contracting within the firm (e.g., the employment relationship) or between a firm and external entities (e.g., labor outsourcing) is fundamentally identical; thus, “it makes little or no sense to try to distinguish those things which are ‘inside’ the firm (or any other organization) from those things that are ‘outside’ of it” (Jensen and Meckling, 1976).¹ Management scholars similarly treat the legal organization of the firm as largely irrelevant to their subject: “[T]he legal structure [of the multinational firm] is designed, in accordance with government regulations, for cash-flow and tax purposes; it seldom reflects the way in which the enterprise is managed” (Stopford and Wells Jr, 1972).

In this paper, we challenge these views. We argue that the legal organization of the firm has important implications for strategic decision making. By choosing the appropriate legal organization, managers can create value for shareholders and foster innovation and growth.

Legal organization refers to organizational arrangements that determine how shareholders contract with other parties, such as business partners, employees and customers (Bethel and Liebeskind, 1998). An aspect of legal organization is the choice of entity type: sole proprietorship, ordinary partnership, limited liability partnership, company, etc. Another aspect, which is the focus of this paper, is how shareholders partition their assets into separate legal entities (Hansmann and Kraakman, 2000a,b). Shareholders often do not hold all their assets in a single legal entity; instead, they create collections of legally independent entities linked together via ownership ties. These structures, known as corporate or business groups, are extremely common around the world (La Porta et al., 1999; Belenzon et al., 2013).

Building on prior work in organizational law (Hansmann and Kraakman, 2000a,b) and strategy (Bethel and Liebeskind, 1998; Manikandan and Ramachandran, 2015; Belenzon et al., 2019), we develop an asset partitioning perspective on corporate groups. We conceptualize asset partitioning as a process of periodically drawing and redrawing firm boundaries, to maximize total group value.

A key distinction we draw is between finer and coarser asset partitioning. Consider an unincorporated business unit within a firm. If the management of the firm incorporates the unit, a new legal boundary is created, and the unit becomes a legally independent entity. In 2016, for instance,

¹ For instance, Alchian and Demsetz (1972) argue that “[t]he firm [...] has no power of fiat, no authority, no disciplinary action any different in the slightest degree from ordinary market contracting between any two people”. Jensen and Meckling (1976) extend this reasoning to all contractual relationships where the firm is one of the parties, not just the employer-employee relationship.

the self-driving car division of X (formerly Google X) was spun off, and Waymo became a legally independent subsidiary of the Alphabet group. This is an example of finer asset partitioning: the assets controlled by Alphabet were more finely partitioned into a greater number of legally independent entities.² However, two or more group affiliates could also merge together. For instance, in 2018 Google and Nest combined their operations, with Nest becoming part of Google. In this case, the restructuring resulted in coarser asset partitioning.³

This paper identifies several costs and benefits of finer asset partitioning. Benefits of finer asset partitioning include risk compartmentalization, greater internal transparency, greater autonomy at the subsidiary level, and learning about individual assets. Costs include stunted resource re-deployment and lower headquarters monitoring.⁴ Firm boundaries are set to balance these costs and benefits. By achieving a good fit between legal organization and the external environment (Lawrence and Lorsch, 1967; Ghoshal and Nohria, 1989; Nohria and Ghoshal, 1997), managers can mitigate risks and create value for shareholders.

We demonstrate the usefulness of the framework by focusing on two key benefits of finer asset partitioning: risk compartmentalization (Hansmann and Kraakman, 2000a; Bethel and Liebeskind, 1998) and greater subsidiary autonomy (Manikandan and Ramachandran, 2015; Belenzon et al., 2019). Risk compartmentalization refers to the ability of groups to compartmentalize their liabilities, thus preventing risks from spreading from one firm to another. We argue that the benefits of risk compartmentalization and subsidiary autonomy are contingent on the strictness of national limited liability laws. In virtually every jurisdiction, limited liability is the default rule of law for corporations; however, there are exceptions, especially when the owner of a corporation is another corporation. Under some circumstances, courts can “pierce the corporate veil” and make the whole group liable for the debts of one of its subsidiaries. Legal scholars refer to this possibility as “enterprise liability”, where “enterprise” refers to the “unified economic group of corporations” (i.e., the corporate group) and “entity” refers to the “single, legal form of the corporation” (i.e., the individual firm, or subsidiary) (Dearborn, 2009).⁵ Importantly, countries differ considerably in

² In this paper, we use the terms “firm”, “corporation” and “company” interchangeably. Group affiliates are the legally independent entities (typically firms) constituting a group. Group affiliates located at the top of a group’s pyramid are called headquarters. All the other affiliates are called subsidiaries.

³ Acquisitions and divestitures are conceptually distinct from asset partitioning. Acquisitions and divestitures imply a change in the total amount of assets under common control. Asset partitioning is concerned with how a *given* amount of assets under common control is divided into separate legal entities. Note also that, as discussed in Section 2.2 below, not all redrawing of firm boundaries result in either finer or coarser asset partitioning.

⁴ In our discussion, we ignore issues of taxation and tax avoidance. These issues are important for profitability, but they typically do not influence how the group operates.

⁵ This terminology is not universally agreed upon. Some legal scholars (e.g., Bainbridge and Henderson (2016)) use the term “enterprise liability” narrowly to refer only to the case when sister companies are held liable (a “horizontal” form of liability, or veil piercing), thus distinguishing these cases from the traditional (i.e., “vertical”) notion of

the propensity of their courts to apply enterprise liability. Some countries (e.g., Germany) view subsidiaries as an integral part of the group that controls them, while others (e.g., Great Britain) emphasize the legal independence of each individual subsidiary (and hence tend to grant limited liability to parent and sister companies).

We examine how enterprise liability affects firm boundaries, internal organization, and corporate group growth. We argue that weaker enterprise liability (i.e., stronger limited liability protection for parent and sister companies) tends to encourage groups to partition more finely their assets and to grant their affiliates more decision-making autonomy. Indeed, when enterprise liability is weak, risks are better compartmentalized and, if the consequences of bad decisions do not spill over to other units, headquarters can more confidently delegate decision-making authority to subsidiary managers. Because risks are better compartmentalized, finer asset partitioning also tends to encourage investment, innovation, and growth.

To test our hypotheses, we use data from sixteen countries in Europe, the Americas, and Asia. In collaboration with scholars at Duke University School of Law, we constructed a novel country-level measure of enterprise liability.⁶ Countries are ranked on a scale between 0 and 5 according to the propensity of their courts to apply enterprise liability and thus “pierce the corporate veil” (PCV) in cases involving group affiliates. In line with conventional wisdom, Germany has the highest PCV (or enterprise liability) score of 3.93, and Great Britain has the lowest PCV score of 1.3.

Our estimation sample consists of a panel of 939,679 corporate groups. On average, groups in our sample have controlling stakes in 2 subsidiaries, with a standard deviation of 9 across sixteen countries over years 2002 through 2014. (Our sample consists of a “corporate group” with at least one subsidiary.) We also use data on subsidiary autonomy from the World Management Survey (WMS) (Bloom and Van Reenen, 2007). The WMS sample contains around 1,790 subsidiaries across ten countries.

We present three main findings. First, conditional on group size and various country controls, including legal origin dummies, we show that corporate groups in low-PCV countries (where enterprise liability is weak) tend to organize their economic activity using more subsidiaries than groups in high-PCV countries. Assets are also partitioned more finely especially in industries where downside risk is high, further supporting the risk compartmentalization mechanism.

Second, using WMS data we show that subsidiaries are granted more autonomy, especially in making capital investment decisions, when they operate in low-PCV countries than when they

liability involving a company and its owners. In this paper, we follow the majority of commentators and use the term enterprise liability to encompass both notions of liability (horizontal and vertical) in the context of corporate groups. See Bainbridge and Henderson (2016) and Dearborn (2009) for more on these issues.

⁶ The full report detailing how the measure is constructed is provided in Supplementary Appendix A.

operate in high-PCV countries. This means that weak enterprise liability goes hand-in-hand with greater decentralization.

Finally, we present evidence consistent with the view that asset partitioning, by compartmentalizing risks, can spur investment and growth. The findings show that doubling the number of subsidiaries, holding assets fixed, is associated with 25 percentage point increase in investment and 30 percentage point increase in the growth rate for revenues.

This paper makes several contributions to strategy and organization theory. Most importantly, we develop a novel framework—the asset partitioning view—to understand the implications of legal organization for strategic decision making. Asset partitioning is an important, but largely underappreciated instrument to foster decentralization in organizations. We argue that asset partitioning brings with it specific costs and benefits, and explain when it creates shareholder value. We illustrate the practical relevance of the theory using several real-world examples.

The asset partitioning view also improves our understanding of the nature and functions of corporate groups. Groups are typically conceptualized as either a device to magnify the control of dominant shareholders (e.g., Bebchuk et al. (2000); Bertrand et al. (2002); Baek et al. (2006) or as a mechanism to redeploy internal resources when external markets function poorly (e.g., Leff (1978); Capron et al. (1998); Belenzon and Berkovitz (2010); Belenzon et al. (2013); Lieberman et al. (2017)). While useful, however, these perspectives cannot satisfactorily explain the variety of group structures that we observe in reality. In particular, they cannot explain the existence and widespread diffusion of wholly- or almost wholly-owned groups (Manikandan and Ramachandran, 2015; Belenzon et al., 2019). As we will see, the asset partitioning view can explain why these structures are so common.

The asset partitioning view also yields predictions that are sometimes very different from those of other leading perspectives. Both the control magnifying and institutional voids perspectives suggest that groups should whither away in countries where legal and economic institutions are highly developed. In particular, groups should be quite uncommon in Great Britain, where protections for minority shareholders are strong and external markets are highly developed. The asset partitioning view, by contrast, suggests that Great Britain's stronger limited liability protections for corporate parents (i.e., weaker enterprise liability) should encourage finer asset partitioning and corporate group formation. Our evidence strongly supports the asset partitioning view. Overall, this paper suggests that risk compartmentalization (as opposed to agency problems or resource redeployment) is a more important factor in explaining the emergence of corporate groups than generally acknowledged.

2. Theoretical Framework

2.1. Existing Perspectives on Corporate Groups

Corporate groups are collections of legally independent entities (typically firms) under common control (Khanna and Yafeh, 2007; Belenzon et al., 2013; Kandel et al., 2019). Groups are generally organized in pyramidal structures whereby an ultimate shareholder (a family, a widely-held corporation, or the state) controls several units through parent-subsidiary chains. Because many large corporations own subsidiaries, a very large fraction of economic activity around the world takes place in corporate groups.

The two leading explanations for the existence of corporate groups are the “control-magnifying” and the “institutional voids” perspectives. The control magnifying view holds that group structures are created by powerful owners to extend their control over distant subsidiaries. By creating tall pyramids powerful owners can enjoy control rights far in excess of their cash-flow rights (Bebchuk et al., 2000). Consider for instance a family that owns 51% of firm A, which owns 51% of firm B. Through this “stock pyramid”, the family can fully control firm B while owning only about 25% of its stock. If the family created an even taller pyramid, it could magnify its control over bottom-level subsidiaries even further. The chief concern with these pyramidal structures is that they may engender agency problems. In particular, dominant shareholders may take actions that enrich themselves at the expense of minority shareholders (La Porta et al., 1999; Bertrand et al., 2002; Morck et al., 2005).

The institutional voids perspective holds instead that groups perform a useful allocative role. According to this view, group headquarters allocate scarce resources—financial capital, technology, human resources, and so on—to subsidiaries that need them (Leff (1978); Stein (1997); Capron et al. (1998); Belenzon and Berkovitz (2010); Lieberman et al. (2017)). This function is particularly valuable when external markets and legal institutions are underdeveloped because in those situations standalone firms may not be able to obtain the resources they need (Keister, 1998; Khanna and Palepu, 1999; Mahmood and Mitchell, 2004; Belenzon et al., 2013).

While both theories are useful to understand why corporate groups exist, they cannot explain the variety of group structures we observe in reality. Take Google for instance. In October 2015, Google restructured its operations as the Alphabet group. A single multidivisional firm (the former Google) was partitioned into a number of legally independent entities (Google, Nest, Calico, X, etc.) under holding company Alphabet Inc. The control-magnifying view cannot explain why the Alphabet group was created. Alphabet Inc. wholly owns all its subsidiaries, so control magnification was not an issue there.

Resource redeployment is also not a plausible explanation for the creation of the Alphabet group. While there is clearly a lot of resource redeployment inside Alphabet, the same was true for Google

and its internal units before 2015. In general, it is not obvious what advantages a group structure would provide, *relative to a multidivisional corporate form*. If anything, resource redeployment should be easier among the divisions of a large, diversified firm than among the subsidiaries of a group.⁷ Furthermore, the U.S. can hardly be described as a country where external markets and institutions are underdeveloped, necessitating groups to step in to fill these “institutional voids”.

Importantly, the Alphabet’s case is far from unique. Wholly-owned groups are very common around the world, especially in developed countries. Using comprehensive data, Belenzon et al. (2019) show that many large groups in Western Europe are wholly- or almost wholly-owned. Even in Italy and Spain, a majority of large groups is wholly-owned. Wholly-owned groups are especially prevalent in the U.S. because of New Deal regulations that greatly discouraged partial ownership of subsidiaries (Kandel et al., 2019). In short, the control-magnifying and institutional voids perspectives cannot satisfactorily explain the widespread diffusion of wholly-owned groups in developed countries.

2.2. The asset partitioning view

To address these limitations and to better understand the reasons for the formation of many groups such as Alphabet, this paper develops a novel perspective on corporate groups. Just like existing theories, our perspective conceptualizes corporate groups as collections of legally independent entities under common control. But unlike existing theories emphasizing the element of common control, we emphasize the legal independence of group affiliates. The different emphasis naturally leads to a different choice of a comparison group. While the control-magnifying view and the institutional voids perspective both compare group affiliates to standalone firms (to emphasize the costs and benefits of common control, such as expropriation of minority shareholders or resource redeployment), the asset partitioning view compares group affiliates to the (unincorporated) divisions of large conglomerates. In both a group or a conglomerate business units are under common control; however, only in a corporate group the units are legally independent.

Consider a collection of assets under common control (these assets could include both physical and human assets, as well as intellectual property). Asset partitioning refers to the different ways in which these assets could be divided into legally independent units. For instance, the same set of assets could be divided into multiple legally independent entities (e.g., Alphabet), or could be assembled as a single firm with multiple unincorporated divisions (the pre-2015 Google). The first case corresponds to finer asset partitioning (because there are multiple legally independent units), the second to coarser asset partitioning (because there are fewer).

⁷ Indeed, Alphabet was created at least in part to mitigate investors’ concerns about *excessive* resource redeployment from Google’s core business (internet search and advertising) to the new ventures (the “moonshots”). This suggests that internal redeployment is actually easier in a multidivisional corporation where investors cannot observe resource reallocation.

Not all types of asset partitioning can neatly be classified as either coarser or finer partitioning. Keeping the number of legally independent entities constant, assets could be reshuffled among units. Consider for instance the restructuring in 2015 of Li Ka-shing's empire.⁸ This restructuring largely involved two companies: Cheung Kong (Holdings) Ltd. and Hutchison Whampoa Ltd. Before the restructuring, both companies had property and non-property holdings. After the restructuring, the real estate holdings of the two original companies were combined into a single company, Cheung Kong Property Holdings Ltd., while most of the other holdings (energy, ports, telecommunications, and retail holdings) were combined into CK Hutchison Holdings Ltd. Because the group's assets were still divided between two companies, the restructuring did not result in finer (or coarser) asset partitioning. Nevertheless, the restructuring arguably simplified the group's structure, as the property holdings were aggregated into a specialized unit. As we will see, this "simpler" structure is also a typical outcome of finer asset partitioning, because through finer partitioning conglomerates can be broken up, and some of their divisions can become specialized units.

Anecdotal evidence suggests that asset partitioning can create shareholder value. Alphabet/Google restructuring was well-received by investors. Class A shares rose 4.10% (GOOGL), and Class C shares rose 4.27% (GOOG), the day following the announcement.⁹ The restructuring of Li Ka-shing was also well-received by investors, who appreciated the simpler structure. Shares in Cheung Kong (Holdings) Ltd. increased by approximately 15% on the first day of trading following the restructuring announcement (from HK\$ 124.80 on Fri 9 Jan 2015 to HK\$ 143.20 on Mon 12 Jan 2015); shares in Hutchison Whampoa Ltd. increased by approximately 12.6% (from HK\$ 87.40 to HK\$ 98.35).

These examples suggest that asset partitioning can create shareholder value. To understand how, we discuss next some key benefits of finer asset partitioning, as well as its costs.

2.2.1. Benefits of (finer) asset partitioning

Risk compartmentalization. By dividing a common pool of assets into several legally independent entities, asset partitioning allows groups to compartmentalize liabilities, thus preventing risks from spreading across units. We distinguish three channels through which risk compartmentalization can create shareholder value.

The first channel is limited liability. As a general default rule of law, the contracts entered into by a firm are bonded by the assets owned by that firm. Thus, parent or sister companies are, in principle at least, shielded from the losses incurred by another group member (Hansmann and Kraakman, 2000a,b; Bethel and Liebeskind, 1998). Bloomberg reports that an advantage of

⁸ See, for instance, *The Economist*, Jan 17th 2015, "Li Ka-shing. Superman sheds his concubines".

⁹ <https://www.nasdaq.com/articles/what-googles-alphabet-means-investors-and-wall-street-2015-08-13>

Google/Alphabet's new structure is that it "helps keep potential challenges in one business from spreading to another [...] By separating them, it allows the parent company to limit the exposure of the various obligations of the LLCs".¹⁰ By contrast, a multidivisional firm would be liable for the losses incurred by each of its (unincorporated) divisions.¹¹

By compartmentalizing risks along divisional or geographical lines, asset partitioning can also reduce creditor information costs and the group's overall cost of capital (Hansmann and Kraakman, 2000a,b; Hansmann and Squire, 2016). Through finer asset partitioning, large multidivisional firms can be broken up and some of their divisions can become specialized units. This allows creditors to invest only in these specific units, without having to invest in the whole group. This can bring down creditors' information acquisition and monitoring costs, ultimately reducing the group's overall cost of capital. Note that these benefits also stem from limited liability and entity shielding.¹² Creditors can safely specialize in certain units (without having to worry about liabilities in other segments of the group), because they know that risks will not spread across subsidiaries.

¹⁰ See <https://www.bloomberg.com/news/articles/2017-09-01/alphabet-wraps-up-reorganization-with-a-new-company-called-xxvi>. Other examples include Manville, a global leader in the manufacture of asbestos-containing products, which separately incorporated its non-asbestos operations in the aftermath of an asbestos litigation (Roe (1986)). Philip Morris CEO Hamish Maxwell similarly admitted to analysts that he formed a holding company "to better insulate each business from obligations and liabilities incurred in unrelated activities" (Roe, 1986, p.5). Schlissel et al. (2002) also highlight the increasingly common phenomenon of multi-tiered groups owning nuclear power plants in the U.S. They note that, "[o]ver the last ten years, the ownership of an increasing number of nuclear power plants has been transferred to a relatively small number of very large corporations. These large corporations have adopted business structures that create separate limited liability subsidiaries for each nuclear plant, and in a number of instances, separate operating and ownership entities that provide additional liability buffers between the nuclear plant and its ultimate owners". They argue that one goal of these structures is to "provide a financial shield for the parent/owner if an accident, equipment failure, safety upgrade, or unusual maintenance need at one particular plant creates a large, unanticipated cost".

¹¹ The distinction between voluntary and involuntary creditors is important here. Voluntary creditors, also known as contractual creditors, are those who enter a contractual relationship with the firm. Banks and other institutional lenders are examples of voluntary creditors. So are employees and some consumers. In general, limited liability does not externalize the risk of business failure to voluntary creditors but rather facilitates a bargain between the firm and the creditor. Voluntary creditors agree to bear some of the risk in exchange for higher rate of returns. In principle at least, they are fully compensated by a higher interest rate, which reflects the additional risk of limited liability.

Involuntary creditors, on the other hand, are those who did not enter a contractual relationship with the firm. Hence, they are not compensated for the additional risk that they incur under limited liability. The paradigmatic example for involuntary creditors are tort creditors (e.g., the victims of industrial accidents). Other important involuntary creditors are environmental creditors and tax authorities, but in effect every creditor who is not in a practical position to negotiate credit terms can be regarded as an involuntary creditor. These creditors are not compensated for the risk of default that incorporation brings about. The loss is simply externalized.

Risk compartmentalization is much more valuable to group owners when creditors are involuntary than when they are voluntary. First, as noted above, voluntary creditors are at least in part compensated for the risk of default that incorporation brings about through higher interest rates. Second, voluntary creditors can also demand parent companies and their subsidiaries to guarantee each other's major outside debts (through intra-group guarantees), thereby imposing "veil-piercing by contract" (Squire, 2011: 615). These considerations suggest that, empirically, finer asset partitioning should be especially valuable in situations when tort liabilities (and hence involuntary creditors) are potentially very significant (relative to other types of liabilities).

¹² Entity shielding refers to rules that protect a firm's assets from the personal creditors of the owners (Hansmann et al., 2005). It is effectively the converse of limited liability, since limited liability protects the assets of the firm's owners from the claims of the firm's creditors.

The reorganization of Li Ka-shing’s empire, while strictly speaking not an example of finer asset partitioning, did simplify the group structure along divisional lines. After the reorganization, investors with a preference for pure-play property investments were able to buy shares in Cheung Kong Property Holdings Ltd., without having to buy also shares in other companies. This appears to have reduced the group’s diversification discount, thus benefiting the group’s shareholders.

A third channel through which risk compartmentalization can create shareholder value is by insulating group affiliates from adverse reputational spillovers. Reputation is one of the firm’s most valuable assets, and managers go to great lengths to protect the good name of their firms. By creating multiple independent legal entities, reputational spillovers among group members can be reduced, especially if different affiliates are given different names (Belenzon et al., 2017).

For an illustration of the potential benefits of this “reputational compartmentalization”, consider the self-driving car division at Google. Anthony Lewandowski, one of unit’s co-founders, noted that, while “Google was very supportive of the idea, [...] they absolutely did not want their name associated with it [...] They were worried about a Google engineer building a car that crashes and kills someone”.¹³ By placing the project first inside Alphabet’s moonshot subsidiary X, and then by creating a new, legally independent subsidiary, Waymo, Alphabet arguably reduced the potential for adverse reputational spillovers that may have arisen if a “Google car” (instead of a Waymo car) had killed somebody. We suggest that, by mitigating the reputational risks of bold bets, asset partitioning can boost investment, innovation and growth.¹⁴

Greater autonomy at the subsidiary level. Asset partitioning also provides benefits to the organization in terms of greater autonomy and higher-powered incentives at the subsidiary level. Because headquarters are protected from unlimited losses, asset partitioning tends to promote decentralized decision-making and the use of local information. Incorporation also provides subsidiary managers with the flexibility and the legal instruments required to make important decisions such as raising debt, selling equity and writing contracts with third parties. The presence of a separate board with fiduciary duty to the affiliated firm affords subsidiary managers greater sense of autonomy and control over resources (Lan and Heracleous, 2010; Manikandan and Ramachandran, 2015). Better performance information at the subsidiary level allow headquarters to strengthen the link between managerial compensation and performance. This, in turn, should increase managerial initiative and motivation.

¹³ See The Guardian (19 Aug 2016), <https://www.theguardian.com/technology/2016/aug/19/self-driving-car-anthony-levandowski-uber-otto-google>

¹⁴ The drawback of reputational compartmentalization is that positive reputational spillovers are also reduced. We return to this issue later, when we discuss the costs of finer asset partitioning.

Google’s co-founder Larry Page argues that decentralization was a major goal in Google’s restructuring. As he puts it: “Fundamentally, we believe this [restructuring] allows us more management scale, as we can run things independently that aren’t very related [...] Alphabet is about businesses prospering through strong leaders and independence”.¹⁵ The New York Times summarized Google’s motives as follows: “Google Goal in Restructuring as Alphabet: Autonomy”.¹⁶

Greater internal transparency. Another benefit of asset partitioning is that it can improve internal transparency and quality of financial information. This is because performance is typically more accurately and reliably measured for subsidiaries than for unincorporated business units. Unlike business units, where financial information is managed by internal bookkeeping (that bears no legal liability), financial information by subsidiaries is usually audited by external accounting firms, which are liable for any inaccurate measurement of financial performance. Second, investors’ ability to evaluate each of the group affiliates’ operating performance is likely to improve given that the complexity of the original organization is reduced and transactions between affiliates are more accurately recorded. Gilson (2001) finds a substantial increase in analyst coverage and earnings forecast accuracy in the three years following a spinoff or an equity carve-out. Huson and MacKinnon (2003) show that analysts revise their earnings forecasts upward in response to a spinoff. This evidence suggests that asset partitioning increases transparency, reduces informational asymmetries, and potentially increases shareholder value. Internal transparency was another reason why Google reorganized as Alphabet. Alphabet committed to implement segment reporting, with Google financials being provided separately than those for the rest of Alphabet businesses as a whole.¹⁷ This move was praised by investors, “anticipating that it will provide clarity and transparency to revenue drivers of Google’s core business”.^{18 19}

Learning about asset values. Finer asset partitioning allows managers and investors to learn more fine-grained information pertaining specific assets. When assets are pooled together, financial markets only provide information about the joint value of the assets, not their individual values.

¹⁵ See <https://abc.xyz/>.

¹⁶ See <https://www.nytimes.com/2015/08/12/technology/autonomy-seen-as-goal-of-restructured-google.html>.

¹⁷ See <https://abc.xyz/>.

¹⁸ See <https://www.nasdaq.com/articles/what-googles-alphabet-means-investors-and-wall-street-2015-08-13>

¹⁹ We stress, however, that all Alphabet subsidiaries are wholly-owned by Alphabet; therefore, there is no formal restriction limiting Alphabet’s controlling shareholders’ ability to cross-subsidize different business units. Despite this caveat, the greater internal transparency through the use of formal accounting and oversight by a Wall Street CFO arguably reassured investors that the internal allocation of funds would be value-based and not be driven solely by the discretion of Page and Brin. Based on this logic, Google’s reorganization is a step toward making business units less dependent on one another. This strategic move unlocked value because it alleviated, to some extent, investors’ concerns around inefficient use of Google’s assets and eliminated negative synergies between business units.

Partitioning assets enables top management to get separate signals regarding the quality of specific units. Such signals are particularly important when top management must make investment decisions in each asset. In these cases, investments may have to be tailored to the value or potential of each asset. Economists have long emphasized the informational content of asset prices. Prices matter because they provide accurate signals for resource allocation (Fama and Miller, 1972; Bond et al., 2012). Finer asset partitioning, by providing more fine-grained information, has the potential to improve investment decisions, thereby increasing shareholder value.

Finer asset partitioning also allows headquarters to more easily divest assets in the future, because investors are better informed about the specific value of each assets and because partitioning facilitates tradeability through bundled assignability (Ayotte and Hansmann, 2013). As a consequence, finer assets partitioning gives corporate groups greater ability to identify valuable opportunities, and greater flexibility to overcome situations where strong business units subsidize weak business units. Such situations have been shown by many researchers to be highly detrimental to multidivisional firms (Chang and Hong, 2000; Shin and Park, 1999). Hence, under finer asset partitioning, “negative synergies” between business units can be eliminated and greater value can be unlocked.

2.2.2. Costs of asset partitioning

Finer asset partitioning, despite creating several benefits, also imposes significant costs. These costs arise because “walls” are created between asset pools controlled by the same ultimate owners. These walls may impede actions that increase group value. We highlight two types of costs associated with finer asset partitioning: reduced synergies (such as stunted resource redeployment) and reduced headquarters monitoring.

Stunted resource redeployment. As discussed above, several benefits of asset partitioning stem from limited liability. To benefit from limited liability, however, the parent must respect formalities and not inappropriately interfere with the management of the subsidiary. If subsidiary managers cannot demonstrate that they are autonomous from headquarters, as evidenced for instance by the subsidiary having separate board meetings and electing separate officers, courts may be inclined to view the independence of the subsidiary as a legal fiction. As such, they could make the parent accountable for the liabilities of the subsidiary. Thus, to preserve the benefits of limited liability, headquarters may refrain from intervening in subsidiary’s matters. This may discourage resource sharing, which is widely regarded to be a fundamental advantage of corporate groups (Khanna and Yafeh, 2007).

The risk of stunted resource redeployment is especially salient in partly-owned groups where headquarters do not fully own all their subsidiaries (Bethel and Liebeskind, 1998). In partly-owned

groups, shareholders in one affiliate may oppose resource redeployment to another affiliate because they are not significant shareholders in the other affiliate and hence do not significantly benefit from resource redeployment. These conflicts of interests between the shareholders of different group affiliates cannot arise in wholly-owned groups, because in wholly-owned groups all subsidiaries are owned by the same shareholders (the headquarters' owners)

The recent merger between Google and Nest can be understood as an attempt to remove “walls” between these two Alphabet units and facilitate resource sharing. According to industry observers, the merger will make it easier to integrate Google’s artificial intelligence technology into new Nest products and offer bundled packages. It will also allow new Nest devices to become an access point for the Google Assistant. As Google’s hardware chief Rick Osterloh notes, “All of Google’s investments in machine learning and AI, they can very clearly benefit Nest products. It just makes sense to be developing them together”.²⁰ Coarser asset partitioning (reversing finer asset partitioning) clearly appears to have the potential to boost resource sharing between these two Alphabet units.

Another potential benefit of the merger between Google and Nest is reputational. As part of Google, Nest (now renamed Google Nest) will most likely enjoy greater brand recognition. This type of positive reputational spillovers have long been discussed in the marketing literature under names such as “umbrella branding” (Loken and John, 1993; Erdem, 1998). Earlier we noted that finer asset partitioning, especially when combined with different names for each subsidiary, may reduce or prevent negative reputational spillovers. The flip side is that positive reputational spillovers may be reduced as well.

Reduced headquarters monitoring. Because of limited liability, headquarters bear lower risks when their subsidiaries fail. As a consequence, headquarters’ incentives to carefully monitor subsidiary managers are also reduced (Aghion and Tirole, 1997; Ayotte, 2017). Headquarters monitoring may also be reduced or constrained because subsidiary managers (with CEO titles) feel they are entitled to more discretion and autonomy than divisional managers. Overall, finer asset partitioning tends to promote decentralization and autonomy in organizations. The flip side is that headquarters monitoring and oversight will also decrease.

To summarize, asset partitioning brings with it costs and benefits. When a group incorporates a division or sets up a new subsidiary, it enjoys the benefits of risk compartmentalization, greater autonomy, greater internal transparency, and learning about asset values. On the other hand, the ability and incentives of headquarters to engage in resource redeployment and monitoring are diminished. Granting a unit legal independence can be effective to bolster decentralization and

²⁰ See <https://www.cnet.com/news/google-and-nest-reunite-in-push-to-add-ai-to-every-gadget/>

autonomy within a large organization; however, synergies among units may become more difficult to achieve.²¹

3. Asset partitioning and enterprise liability

Existing perspectives on corporate groups suggest important causal links between the preponderance of different organizational forms and national legal institutions. The control-magnifying view, for instance, suggests that groups should be more common in countries where minority shareholder protections are weak, because in those countries powerful owners can more easily take advantage of minority shareholders. The institutional voids perspective suggests instead that groups should be more common in countries where contractual enforcement is weak, because internal redeployment then becomes a more important substitute for missing external markets.

The asset partitioning view also conceptualizes groups as “hybrid” organizational forms, the prevalence of which is contingent on national legal institutions. However, while existing theories emphasize minority shareholder protections or contractual enforcement, the asset partitioning view highlights limited liability as a key feature of legal independent entities such as group subsidiaries.

Limited liability is important from an economic standpoint because it reassures investors that their losses will be limited to the amount they have invested in a company. Because downward risk is bounded, limited liability encourages entrepreneurship, the formation of large firms, the separation of ownership and control and the development of liquid capital markets. However, limited liability may also encourage moral hazard and excessive risk taking, because the costs of failed economic enterprise are partly externalized to other stakeholders.

Because limited liability creates not just benefits but also social costs, virtually every country allows for exceptions to the general default rule of limited liability. The most notable exception is the doctrine of piercing the corporate veil.

3.1. Piercing the Corporate Veil (PCV)

Piercing the corporate veil (PCV) is a provision that allows courts to disregard the default limited liability and separate legal personality of the firm and to impose the debts of the firm on its owners. In general, modern corporate law recognizes a ‘veil’ separating the firm’s assets and the owners’ personal assets. But, when a plaintiff prevails in a PCV claim, the court effectively ‘pierces’ the corporate veil by imposing the firm’s debts on its owners.

In general, the PCV doctrine is vague and discretionary. Litigants, both plaintiffs/creditors and defendants/stock owners, cannot rely on uniform tests to predict how courts will treat their case,

²¹ To some extent, the benefits of asset partitioning may also be achieved through other means. Reputational compartmentalization, for instance, could also be achieved by introducing different brands, without having to create new subsidiaries. Nevertheless, setting up new companies with independent CEOs and boards may provide additional insulation in the eyes of the courts, the press, and the public.

mainly because veil piercing is an amorphous concept seeking to capture types of owner-corporation relationships that are illegitimate and thus warrant veil piercing. Typically, PCV laws are intended to eliminate the protection of limited liability in cases where owners abuse the rationales of incorporation. In translating this abstract purpose into concrete guidelines, both courts and legislatures have struggled to formulate clear rules defining when the veil should be pierced. Rather, they created general frameworks where a long list of variables may be factored in under a two- or three-stage analysis.

For example, a test applied by some U.S. courts consists of two stages of analysis. The plaintiff must demonstrate, first, a lack of separation between ownership and management, to the extent that owner completely dominates corporate policy and, second, commitment of fraud or wrong by the owner that proximately causes plaintiff's injury. A problem is that to apply this analysis courts consider an unspecified number of factors. Among the main factors are: (1) undercapitalization of the firm; (2) commingling of corporate and personal assets; (3) asset stripping/transfer of assets; (4) disregard for corporate formalities; (5) owner's control or domination over management issues; and (6) fraud or misrepresentation of business operations. In some countries courts require demonstration of wrongdoing, fundamentally unfair conduct, fraud, or use of the separate personality principle for unlawful goals as prerequisites in veil piercing suits.

3.2. Enterprise Liability Around the World

The benefits of limited liability extend not only to situations where the owner of a firm is an individual or a group of individuals, but also to situations when the owner is another corporation (i.e., when the firm belongs to a group). However, when the owner of a firm is another company, the rationale for granting limited liability to owners is weaker.

One reason is that the parent company's individual shareholders are already protected by limited liability. Thus, it is not clear what social benefits protecting these shareholders twice (at the parent and at the subsidiary's level) would bring. Furthermore, unlike most individual investors, parent companies typically exert very real control over the operations of their subsidiaries. Thus, granting parent companies limited liability may simply deresponsibilize them (Blumberg, 1985; Strasser, 2004).

Because of these reasons, piercing of the corporate veil is much more common when the owner of a company is another company than when the owners are individual investors. Legal scholars refer to situations when a court makes a parent company (or more generally the whole group) liable for the debts of one of its subsidiaries as "enterprise liability". Enterprise liability is in some sense the 'opposite' of limited liability. If a parent company enjoys limited liability, it is not liable for the debts of its subsidiaries. By contrast, with enterprise liability, the parent (or the whole group) is liable.

Interestingly, countries differ considerably in their propensity to apply enterprise liability. This heterogeneity can be ascribed to two broad sets of factors.

First, countries differ in their social, cultural, and institutional norms. Distributing risk between different stakeholders (e.g., owners versus involuntary creditors) is ultimately a matter of economic and social priorities, and countries may reach different conclusions regarding the proper allocation of risk, or the desirability of different social goals (e.g., efficiency versus fairness). These differences are likely to be reflected in limited liability laws. In Great Britain, for example, PCV is in essence a very restrictive tool aimed to achieve fairness and to discipline the market. As such, it is invoked mostly as a sanction against fraudulent behavior. In the Netherlands, however, PCV is used primarily to protect tort creditors from externalization of risk. Thus, it is invoked more prominently in tort cases than in non-tort cases.

The second set of factors affecting countries' propensity to pierce the corporate veil relates to the extent to which groups are perceived as a single economic entity. Comparative examination of PCV across countries reveals two polar views regarding enterprise liability. At one end of the spectrum lies the legalistic British approach, by which the parent and the subsidiary are considered to be two distinct entities that deserve no special treatment compared to any other owner and corporation. British courts have shown reluctance to ignore legal separation even when plaintiffs demonstrate that a parent and its wholly-owned subsidiary acted as a single economic enterprise and the parent sets the broad business policy of the subsidiary. At the other extreme of the spectrum is the German approach. The German law on Konzernrecht (controlled companies) provides the most developed statutory scheme applying what the literature refers to as the "enterprise approach" or "single economic unit approach". In various cases when a subsidiary is proven to be completely dominated by the parent or subordinated to the parent's interests, the law on Konzernrecht provides tools aimed at limiting intra-group dealings and at holding the parent liable for the losses incurred by the subsidiary.²²

In-between these two extremes, there are several intermediate cases. Italy, France, Netherlands, and Argentina follow variants of the enterprise approach (albeit, with a narrower legal framework than in Germany) and as a result provide somewhat easier paths to enterprise liability. In Australia, courts have recognized a general principle under which "in certain circumstances a corporate group is operating in such a manner as to make each individual entity indistinguishable, and therefore

²² In essence, the German law creates a trade-off between two key features of corporate groups. On the one hand, the controlling owner is entitled to give binding instructions to the subsidiary even when the instructions might not be in the subsidiary's best interest. On the other hand, to compensate for the additional risk that the subsidiary and its stakeholders bear, the law provides instruments that hold the parent company liable for losses incurred by the subsidiary. Specifically, the law imposes additional regulations to protect creditors. Among the duties imposed on the parent are the duty to make the execution and termination of controlling agreement available to creditors and the responsibility to maintain money reserves to compensate for potential losses incurred by the subsidiary.

it is proper to pierce the corporate veil to treat the parent company as liable for the acts of the subsidiary” (Ramsay and Noakes, 2001).

The United States, Japan, China, Sweden, and Belgium contain no special rules governing corporate groups. Courts consider parent-subsidary veil piercing under the general framework used for other cases, with no reference to an overarching enterprise theory imposing special legal regime. Nonetheless, the case law seems to draw on some additional policy considerations uniquely applicable in the parent-subsidary context. For instance, U.S. courts developed some guidelines uniquely designed to deal with affiliated corporations. Courts in all states commonly agree that the mere full ownership of stocks by the parent is not a dispositive fact, nor is common identity of the parent’s and the subsidiary’s officers and directors. Furthermore, demonstration of control over the subsidiary’s affairs that is consistent with norms of corporate behavior, such as delineating general policies and performance monitoring, will not satisfy the control requirement for veil piercing. However, when the parent seems to control day-to-day operations and managerial decision-making and when the subsidiary abandons common corporate practices while being fully operated by the parent, courts will be more inclined to pierce the veil. Other factors considered by courts in corporate group cases are unfair intra-group transactions, excessive dividends, wrongful conduct in the performance of contracts (e.g., when the parent depletes the subsidiary’s assets to the point that it cannot satisfactorily perform its contract obligations) and commingling or shuffling of assets.²³ Overall, these efforts have attempted to provide a middle ground between the German Konzernrecht theory and the British legalistic approach.

3.3. Empirical Predictions

The asset partitioning perspective provides clear predictions regarding how enterprise liability affects firm boundaries, internal organization, and corporate group investment and growth.²⁴

The benefits from risk compartmentalization are lower in countries where courts are more likely to apply the doctrine of enterprise liability (i.e., when enterprise liability is strong). If courts hold the whole group liable for the debts of one of its subsidiaries, risks cannot effectively be compartmentalized and losses in one unit will spread to other units. The incentives for groups to more finely partition their assets will therefore be reduced.

Conversely, in countries where courts are less likely to apply the doctrine of enterprise liability (i.e., when enterprise liability is weak), groups have stronger incentives to partition their assets

²³ Another relevant factor is misrepresentation of corporate structure. Misrepresentation arises when a creditor believes it was dealing with a wealthy parent rather than a thinly capitalized subsidiary. Misrepresentation becomes an issue especially when the parent takes an active role in it.

²⁴ In the Supplementary Appendix B, we provide an economic model where these predictions are formally derived. The model is an extension of Aghion and Tirole (1997), the main difference being that we allow for varying degrees of limited liability protection across units/projects. See also Ayotte (2017) for a related analysis.

more finely. By incorporating business units as legally independent subsidiaries, they can prevent losses in one unit from spreading to other units. These benefits are largest when very significant losses are possible; that is, when catastrophic, bankruptcy-inducing events can occur. Thus, we suggest the following.

Hypothesis 1. *(Firm boundaries) Corporate groups partition their assets more finely in countries where enterprise liability is weak. This relationship is stronger for groups that operate in industries with significant downward risk.*

In countries where courts are less likely to apply the doctrine of enterprise liability, groups are also more likely to grant their subsidiaries more decision-making autonomy. If courts do not hold the whole group liable for the debts of one of its subsidiaries, risks are better compartmentalized and groups can enjoy the benefits of decentralized decision-making without having to worry about the consequences of bad subsidiary decisions spilling over to other units. Thus, we expect that, in countries where enterprise liability is weak, groups will decentralize their operations more and will delegate more decision-making authority to subsidiary managers.

Hypothesis 2. *(Internal organization) Corporate groups grant their subsidiaries more decision-making autonomy in countries where enterprise liability is weak.*

In countries where courts are less likely to apply the doctrine of enterprise liability, groups can also invest more and grow faster. By setting up new subsidiaries, liability risks are reduced through better compartmentalization. As a consequence, headquarters can more confidently invest in risky new projects, such as self-driving cars or nuclear plants. This is the traditional argument in favor of limited liability: By limiting the amount of money that investors can lose when starting a new business, limited liability laws (or, conversely, weaker enterprise liability) can spur entrepreneurship, innovation, and growth.

An additional mechanism is suggested by Manikandan and Ramachandran (2015). By fostering subsidiary autonomy, weak enterprise liability may also foster group affiliates' ability to sense and seize growth opportunities. Indeed, Manikandan and Ramachandran argue greater subsidiary autonomy (relative to the autonomy granted to divisional managers) is a chief benefit of multi-entity organizations.

Both these arguments lead to the following prediction.

Hypothesis 3. *(Corporate group growth) Corporate groups invest more and grow faster in countries where enterprise liability is weak.*

We conclude with a remark about social welfare. It may appear that the arguments above imply that society is always better when limited liability laws are strengthened (or, conversely, when the doctrine of enterprise liability is weakened). This is not the case. Weak enterprise liability spurs investment and growth by allowing headquarters to walk away from a subsidiary’s debt obligations. However, the risks of failed economic enterprise are not eliminated, but rather shifted from investors to other stakeholders (e.g., debt holders). Society may also want to protect these other stakeholders. Moreover, limited liability protections may be abused, for instance if owners engage in excessive risk taking or fraud. In general, the design of limited liability laws requires societies to compromise between legitimate interests. How this should be done is a question that economists and lawyers are actively debating.

4. Data

Our sample consists of 939,679 corporate groups across sixteen countries over years 2002 through 2014.²⁵ On average, groups in our sample have controlling stakes (50%) in 2 subsidiaries with a standard deviation of 8.9. We perform our main analysis at the group-industry-country-year level (our key results are generally not sensitive to the unit of analysis level). The final estimation sample includes 3,122,026 observations.

To build our sample, we use historical publications (yearly snapshots) of Bureau Van Dijk’s Orbis database and construct evolving ownership links between corporate headquarters and their subsidiaries.²⁶ For each headquarter, we retain all of the subsidiaries where the headquarter has more than a 50% ownership stake according to Orbis’s “direct” and “total” ownership share fields.²⁷

To explore the relationship between enterprise liability and asset partitioning, we use data from the World Management Survey (WMS). WMS provides survey measures of autonomy corporate parents grant their subsidiaries (Bloom and Van Reenen, 2007). Subsidiaries in WMS are matched to subsidiaries in our sample to arrive at 1,752 firm-year observations covering ten countries across the Americas, Asia, and Europe.²⁸

²⁵ France, Germany, Great Britain, Italy, Sweden, and United States, the countries with the greatest presence in our sample, account for 22% (699,162), 24% (735,513), 14% (449,112), 9% (289,198), 10% (308,941), and 7% (206,768) of the sample, respectively.

²⁶ We identify corporate headquarters using the ultimate owner field in the Orbis database and identify all their subsidiaries using the ultimate owner field associated with the subsidiaries.

²⁷ The sample captures various types of ultimate owners. The most prevalent types are industrial companies (ownership type of “C”) at 42%, individuals or families (ownership type of “I”) at 32%, financial institutions (ownership type of “B” and “F”) at 9%.

²⁸ The survey items we obtain from WMS are: 1) aggregate measure of autonomy based on the questions, “To hire a full-time permanent shop floor worker what agreement would your plant need from CHQ?”, “How much of sales and marketing is carried out at the plant level (rather than at CHQ)?”, and “Where are decisions taken on new product introductions - at the plant, at the CHQ or at both?” (WMS measure: central); 2) measure of investment autonomy based on “What is the largest capital investment your plant could make without prior authorization from

4.1. Piercing The Corporate Veil (PCV) Score

To create proxies for enterprise liability, in collaboration with scholars at Duke University School of Law, we evaluated relevant legal provisions across sixteen countries in the Americas, Asia, and Europe. We analyzed an exception to the default limited liability rule - the piercing the corporate veil (PCV) - that courts use to hold corporate headquarters liable for the debts incurred by their subsidiaries. Countries were scored on a scale of zero to five according to how inclined their courts are to pierce the corporate veil in cases involving corporate groups, with a higher score indicating stronger inclination to pierce the veil. A higher PCV score implies stronger enterprise liability for corporate headquarters.²⁹

We evaluated five distinct criteria that either implicitly or explicitly affect intra-group veil piercing and weighted the criteria according to their importance.^{30,31} Table 1 presents the breakdown of the scores that we assign to each country based on the five criteria as well as the overall PCV scores. (Supplementary Appendix A further provides details of the comparative analysis performed across the sample countries to arrive at both the overall and the score breakdown across the criteria.)

First, we examined the extent to which each country applies the “enterprise” (or “economic unity”) approach in cases involving corporate groups. Application of this legal concept is the most important criterion in determining the probability of corporate veil piercing, because it shows how likely courts are to treat subsidiaries and their corporate parents as a single legal entity and thus to hold parents liable for the losses of their subsidiaries. As shown in Column 1, Germany has the highest score on this dimension, and Great Britain along with China, Japan, and Sweden have the lowest score. That is, courts in Germany are more inclined than those in Great Britain to treat subsidiaries as an integral part of their parent firms.

corporate headquarter?” (WMS measure: central5); 3) measure of product introduction autonomy based on “Where are decisions taken on new product introductions - at the plant, at the CHQ or at both?” (WMS: central7); 4) measure of sales and marketing autonomy based on “How much of sales and marketing is carried out at the plant level (rather than at CHQ)?” (WMS: central6); and 5) measure of hiring autonomy based on “To hire a full-time permanent shop floor worker what agreement would your plant need from CHQ?” (WMS: central4). We also use indirect measures of autonomy based on “Number of levels in the firm between the shop floor and the CEO.” (WMS: levels2ceo) and “Is CHQ on the site being interviewed?” (WMS measure: onsite).

²⁹ In multinational groups, jurisdictional problems arise from the separation between parent firms and subsidiaries. Claimants may argue that a case is better heard in the home country of the parent rather than in the host country of the subsidiary. We chose to focus on the PCV score of the country of the subsidiary because in a number of cases in the US and the UK courts rejected claimants’ attempts to bring proceedings in the home country of the parent, to prevent “forum shopping” (Muchlinski, 2010).

³⁰ We examine these five criteria rather than the PCV law directly because the law on PCV is often ambiguous, vague, or subject to judicial discretion. Moreover, in some jurisdictions (e.g., China), the legal concept of PCV is fairly new and still developing and so data on PCV are limited. Lastly, data on actual enterprise liability rulings are available only for select countries.

³¹ As a robustness test, we recalculate the overall PCV score after dropping each of the five criteria as well as by weighting them equally.

The second most important criterion is the number and diversity of factors that courts are willing to consider when deciding whether to pierce the corporate veil. The more factors that courts are willing to consider, the more likely that the courts will hold parent firms liable for the losses of their subsidiaries. Column 2 shows that Great Britain, Sweden, and Denmark have the lowest scores, and China and the United States have the highest scores on this dimension. Factors that courts might consider in relation to this criterion include under-capitalization, commingling of corporate and personal affairs, disregard for corporate formalities, fraud or misrepresentation, unfair or unjust conduct, extent of owner's control over subsidiaries, dysfunctional management, and assumption of risk by creditors.

Third and fourth, some countries limit corporate veil piercing only to bankruptcy and/or fraud cases while other countries are open to piercing the corporate veil in other cases as well. Thus, we examine whether countries are willing to hold a corporate parent liable in cases outside of bankruptcy and fraud and assign separate scores for these two criteria. Columns 3 and 4 show that courts in Australia, Canada, China, Great Britain, Japan, South Korea, and Switzerland are all willing to pierce the corporate veil in cases outside of bankruptcy while German courts are most likely to exercise corporate veil piercing in cases outside of fraud.

Last, we looked at the available empirical evidence on the inclination of courts to pierce the corporate veil. Actual case data reveal that Australia has the lowest corporate veil piercing rate of 33%. China has the highest corporate veil piercing rate of 61%. Column 5 shows scores across countries. The scores range from -5 to 5 with 0 indicating that data were not available.

Column 6 presents the overall PCV scores for each of the sixteen countries in our sample, weighted by the importance of each criterion. Germany has the highest overall score of 3.93, reflecting its high willingness to hold a corporate parent liable for the debts of its subsidiaries, and Great Britain has the lowest overall PCV score of 1.3, reflecting its legalistic regulatory style.

[Insert Table 1 here]

In Supplementary Appendix A, we provide a description of our cross-country measures of enterprise liability and the data sources used to construct them.

4.2. Moderating Factors

To better understand the mechanisms driving the relationship between enterprise liability and asset partitioning, we explore several factors that may moderate this relationship. We discuss these moderating factors below.

Industry downside risk. In industries where firms face a substantial downside risk protection against potential losses incurred by subsidiaries should be especially valuable to headquarters. Accordingly, we expect that the relationship between enterprise liability (PCV) and asset partitioning

to be stronger in industries where firms are more likely to face substantial downside risk (see also Hypothesis 1 above). To test this hypothesis, we construct a measure that captures the level of industry downside risk faced by group subsidiaries. We construct our measure of downside risk as the share of firms in an industry that experience an annual drop of at least 50% in revenues.³² On average, 3% of our sample subsidiaries experience a yearly revenue drop of at least 50% (90th percentile of 9.5%).

Corruption. A factor that is likely to increase the cost of asset partitioning is the level of corruption in the regions where a subsidiary operates. Monitoring costs should be higher in more corrupt regions raising the costs of asset partitioning. We obtain data on corruption from the Eurobarometer, a collection of surveys conducted for the European Commission. Our measure of regional corruption is the share of respondents who totally agreed or tended to agree that there is corruption in regional institution.³³

Managerial experience. Monitoring costs should be bigger for inexperienced subsidiary managers. We use the age of executives and senior managers in corporate groups from Orbis to construct a measure of the yearly average age of the subsidiary managers for our sample groups. The average age of subsidiary managers is 50.8 ranging from 40.3 (10th percentile) to 61.2 (90th percentile).

Knowledge complexity. The costs of asset partitioning should be higher when the knowledge base of a firm is more complex and requires greater coordination. As we noted in Section 2.2.2, asset partitioning raises coordination cost and therefore should be less prevalent in more complex environments. We measure complexity using patent data. We combine patent numbers and assignee identifiers from Kogan et al. (2017) with industry codes (3-digit SIC's) from Compustat and with Cooperative Patent Classification (CPC) codes from PatentsView.org. We construct a measure of average generality of patents (a proxy for knowledge complexity) produced by firms in each industry (3-digit industry) for each year, where generality of a patent is calculated as 1 minus Herfindahl–Hirschman Index (HHI) based on CPC classes of the patents that the focal patent cites (Trajtenberg et al., 1997).³⁴ As an alternative measure, we compute the average number of technology classes (i.e., CPC subclasses) that a patent is assigned to within each industry and year. A higher value indicates a more complex knowledge base of an industry's invention for a given year.³⁵

³² We experiment with different reasonable threshold and with other types of financial assets (i.e., net income, cash, and current assets). Our results are not sensitive to these changes.

³³ On average, the share of respondents who perceived that there is corruption in regional institutions was 78%, with shares ranging from 66% at the 10th percentile to 89% at the 90th percentile.

³⁴ Average generality is 0.33, ranging from 0.12 (10th percentile) to 0.53 (90th percentile).

³⁵ On average, a patent is assigned to 2.1 CPC subclasses, with the number of CPC subclass assignments ranging from 1 at the 10th percentile and 3 at the 90th percentile.

4.2.1. Headquarters' Control

To further explore the relationship between enterprise liability and asset partitioning, we examine how the level of headquarters' control over subsidiaries moderates the relationship. We construct the following measures of headquarters' control: (i) share of managers in subsidiaries that are related through family ties to the group's controlling shareholders, (ii) share of subsidiaries with a board member who is also on the board of the corporate parent, (iii) share of wholly-owned subsidiaries, and (iv) share of subsidiaries having similar names as their corporate parent. We expect a stronger relationship between PCV and number of subsidiaries for more independent subsidiaries.

Family managers. When a manager of a subsidiary is related to the group's controlling shareholders, interactions between the subsidiary and headquarters are less likely to be arms-length and close integration is more likely, rendering enterprise liability protection less salient. To test this hypothesis, we collect names of shareholders in corporate groups along with executive and senior manager names of subsidiaries from Orbis. We match the last names of the managers to the last names of the shareholders and calculate (at the group-country-industry-year level) the fraction of subsidiaries whose executives and senior managers include a family member of the shareholders (owning at least 5% of stocks).³⁶

Board interlocks. Sharing board members between the parent and its subsidiaries is often indicative of a high level of control that the parent has over its subsidiaries. When board member overlap is high between a subsidiary and its corporate parent, enterprise liability protection should be less effective and less prevalent. To test this prediction, for each corporate group and year, we extract the names of the board members for the subsidiaries and their corporate parent from Orbis. We then compute (at the group-country-industry-year level) the fraction of the subsidiaries a board member who is also a board member of the corporate parent.³⁷

Wholly-owned subsidiaries. When a corporate parent wholly owns its subsidiary its level of control should be higher than in the case of partly-owned affiliates. Consequently, enterprise liability protection should be less salient for wholly owned subsidiaries relative to partly owned ones. To explore this hypothesis, for each corporate parent we compute the fraction of its subsidiaries that are wholly owned. We identify parent-subsidiary pairs where the parent has 100% ownership stake

³⁶ Average share of subsidiaries managed by a family manager is 14% ranging from from 0% (10th percentile) to 100% (90th percentile).

³⁷ On average, 54% of a subsidiary's board members are also on the board of the corporate parent ranging from 0% (10th percentile) to 100% (90th percentile).

in the subsidiary and calculate the share of subsidiaries that are wholly owned by the parent firm at the corporate parent-subsidiary country-industry level for each sample year.³⁸

Parent-subsidiary name sharing. Some subsidiaries have similar names as their corporate parent. Name sharing should lead to weaker subsidiary independence due to potential reputation spillovers that would justify strong headquarters' monitoring. Weaker subsidiary independence then makes enterprise liability protection less salient. To test this prediction, we extract the names of subsidiaries and their corporate parents and compute the share of subsidiaries at the group-country-industry-year level.³⁹⁴⁰

4.3. Descriptive statistics

Table 2 presents summary statistics for the main variables used in our analysis. (See Supplementary Appendix C for variable definitions.) On average, corporate groups in a given industry within a country control 1.45 subsidiaries (a standard deviation of 3.84). Through these subsidiaries, corporate groups generate around 78 million US dollars in revenues and control around 300 million US dollars in assets.⁴¹

[Insert Table 2 here]

Figure 1 plots the relationship between country PCV score and average number of subsidiaries per one million US dollars in revenues. Hypothesis 1 states that a corporate parent should incorporate its subsidiaries when enterprise liability is weaker (a lower PCV score). The raw data strongly supports this prediction: subsidiaries are more prevalent in countries where courts are less willing to pierce the corporate veil (that is, where enterprise liability is weaker). The correlation between PCV scores and number of subsidiaries is -0.53. In Great Britain, for instance, where enterprise liability is the weakest, the average number of subsidiaries per one million US dollars is 22, whereas in Germany, where the enterprise liability is the strongest, the average number of subsidiaries per one million US dollars is only 1.6.

[Insert Figure 1 here]

³⁸ On average, 45% of the subsidiaries are wholly owned, with the share ranging from 0% (10th percentile) to 100% (90th percentile).

³⁹ We also check robustness of our results using share of subsidiaries that share exactly the same name as the corporate parent, and the results are consistent with our main finding.

⁴⁰ On average, 28% of the subsidiaries operate under the same or partially same name as their corporate parent, with the share ranging from 0% (10th percentile) to 100% (90th percentiles).

⁴¹ Across all industries and countries in a given year, corporate groups generate around 108 million USD (a standard deviation of 2.6 billion USD). Our sample groups in France, Germany, the Great Britain, Italy, Sweden, and United States generate 38, 70, 108, 36, 20, 190 million USD in revenues and control 107, 155, 528, 85, 49, and 573 million USD in assets, respectively.

Figure 2a-f present the relationship between PCV score and subsidiary autonomy measures obtained from the World Management Survey. Because limited liability protects corporate parents against the losses incurred by their subsidiaries, we expect stronger enterprise liability (higher PCV score) to be associated with weaker subsidiary autonomy. The general pattern of results is consistent with our prediction. Figure 2b, for instance, shows that as PCV score increases, capital investment autonomy decreases. In Great Britain, where the PCV score is the lowest at 1.3, the maximum capital investment that a plant can make without prior authorization from the corporate parent, normalized as $\log(\text{max capital investment} / \text{number of employees})$, is 2.7. In Germany, where the PCV score is the highest at 3.93, it is around 1.9. The same pattern holds for marketing and sales autonomy, product introduction autonomy, and hiring autonomy.

[Insert Figure 2 here]

5. Main Econometric Specifications

We turn next to an econometric investigation of our three hypotheses. To test Hypothesis 1, that a corporate parent is more likely to incorporate its business units when enterprise liability is weak, we estimate the following specification:

$$\ln(\text{Subs})_{ijct} = \beta_0 + \beta_1 \text{PCV}_c + \ln(\text{Rev})_{ijct} + \mathbf{Z}'_{ct} \gamma + \eta_i + \mu_j + \tau_t + \epsilon_{ijct}$$

Subs_{ijct} is number of subsidiaries in corporate group i in three-digit SIC j in country c for year t . PCV_c is the PCV score of the country c where the subsidiaries operate. Rev_{ijct} is total group revenue,⁴² and \mathbf{Z} is a vector of country-level controls, including GDP, level of stock market development, unemployment rate, and strength of employment protection legislation (these have been used in previous studies as country-level determinants of group affiliation).⁴³ η_i , μ_j and τ_t are complete sets of dummies for corporate groups, three-digit SIC codes, and years. ϵ_{ijct} is an iid error term. The coefficient of interest is β_1 . Consistent with Hypothesis 1, we expect $\beta_1 < 0$.

To test Hypothesis 2, that a corporate parent is more likely to grant greater decision-making autonomy to its subsidiaries in countries where enterprise liability is weak, we estimate the following specification:

$$\ln(\text{Autonomy})_{st} = \beta_0 + \beta_1 \text{PCV}_c + \ln(\text{Rev})_{it} + \mathbf{Z}'_{ct} \gamma + \mu_j + \tau_t + \epsilon_{it}$$

⁴² We use revenues instead of total assets because the coverage of balance sheet items including assets is more sparse, especially for German and American firms. At any rate, in unreported regressions we find that using total assets instead of revenues to proxy for group size produces qualitatively similar results to our main findings.

⁴³ GDP and unemployment rate are from the World Bank. Strength of employment protection legislation is from OECD. Stock market development is defined as the ratio of the total stock market capitalization to GDP.

Autonomy is the level of autonomy subsidiary s is granted by its corporate parent taken from WMS. The coefficient of interest is β_1 , and consistent with Hypothesis 2, we expect $\beta_1 < 0$ (except for “headquarters presence on site” for which we expect $\beta_1 > 0$).

Finally, we explore Hypothesis 3, that weaker enterprise liability leads to greater asset partitioning and in turn corporate group investment and growth.⁴⁴ To test this prediction, we estimate the following specification:

$$Growth_{ijct} = \beta_0 + \beta_1 \ln(Subs)_{ijct} + \ln(Rev)_{ijct-1} + \mathbf{Z}'_{ct}\gamma + \eta_i + \mu_j + \tau_t + \epsilon_{ijct}$$

Growth is the percent change in total assets or revenues for corporate group i operating in industry j within country c over year $t-1$ to t . The coefficient of interest is β_1 and we expect $\beta_1 > 0$. We estimate the equivalent specification for investment measured as annual change in fixed assets.

6. Econometric Results

We turn to present the econometric results for the relationship between enterprise liability with asset partitioning, autonomy and corporate group investment and growth.

6.1. Asset Partitioning and Enterprise Liability

Hypothesis 1 states that corporate groups partition their assets more finely in countries with weak enterprise liability. We test this prediction by examining the relationship between PCV score and number of subsidiaries, controlling for size. Table 3 presents the results.

Columns 1 and 2 present between- and within-group estimates, respectively. Consistent with the raw data (Figure 1) groups that operate in countries with stronger enterprise liability partition their assets less finely. Estimates from Column 2 indicate that moving from Great Britain (weakest enterprise liability) to Germany (strongest enterprise liability) leads to around 16% decline in number of subsidiaries for a fixed group size (evaluated at the sample mean).⁴⁵

Columns 3-8 show that the negative relationship between number of subsidiaries and PCV score is robust across different specifications and subsamples. Column 3 includes a complete set of dummies for group-industry pairs, which raises the effect of PCV close to 32%.⁴⁶ Columns 4-8 present results for different sub-samples with similar pattern of results.

⁴⁴ We acknowledge that a link between weaker enterprise liability and greater corporate group investment and growth may also arise through greater subsidiary autonomy. The discussion leading to Hypothesis 3 highlights that specific channel as well. However, the main theoretical argument is undoubtedly that, by setting up new subsidiaries, liability risks are reduced through better compartmentalization. This is the traditional argument in favor of limited liability: Limits to the amount of money that investors can lose when starting a new business can spur investment and growth. More importantly, empirically we do not have enough data to properly test this idea.

⁴⁵ $0.16 = 0.06 \times 2.63$ where 0.06 is the percent change in the number of subsidiaries per unit change in PCV score and 2.63 is the difference in PCV score between Great Britain and Germany.

⁴⁶ $0.32 = 0.12 \times 2.63$, where 0.12 is the percent change in the number of subsidiaries per unit change in PCV score, and 2.63 is the difference in PCV score between Great Britain and Germany.

Columns 9-10 test the second part of Hypothesis 1, that the relationship between enterprise liability and asset partitioning is stronger in industries with a high downside risk. To test this prediction, we interact PCV score with a dummy variable taking a value of 1 for corporate groups operating in industries in the top quartile of the industry downside risk distribution and 0 otherwise. As predicted, the estimates from Column 9 indicate that the relationship between enterprise liability and asset partitioning is 20% stronger (statistically significant at the 5% level) for corporate groups operating in industries where downside risk is high.⁴⁷ Column 10 includes a complete set of country dummies to control for time-invariant country characteristics that might influence asset partitioning. The finding that the subsidiaries-PCV relationship is stronger for groups operating in industries with a high downside risk remains.

[Insert Table 3 here]

6.2. Subsidiary Autonomy

Hypothesis 2 predicts that corporate headquarters are more likely to make their subsidiaries more independent in countries where enterprise liability is weak. To test this prediction, Table 4 presents results on the relationship between PCV score and subsidiary autonomy.

Column 1 shows that PCV score has a negative and statistically significant (at the 5% level) relationship with autonomy score (based on subsidiary autonomy around hiring, sales and marketing, and product introduction). Notably, Column 2 shows that subsidiaries operating in countries with greater enterprise liability (higher PCV score) have lower autonomy in making capital investments. The results indicate that an average subsidiary in Great Britain can invest 220 thousand USD more without prior authorization from corporate headquarters than a comparable German subsidiary.⁴⁸

The remaining Columns show that a higher PCV score is associated with lower levels of autonomy in the areas of product introduction (Column 3), sales and marketing (Column 4), and hiring (Column 5). A higher PCV score is also associated with fewer hierarchical levels from the shop floor worker to the CEO (Column 6) and a higher probability of a HQ manager being on site at the subsidiary (Column 7). These results are consistent with the view that subsidiaries operating in countries with greater enterprise liability have less autonomy.

[Insert Table 4 here]

⁴⁷ We also performed robustness tests using measures of industry downside risk based on net income, cash, and current assets and based on a threshold of 30% drop. The results are consistent with the findings presented above.

⁴⁸ $220,294 = 62046 \times 1.35 \times 2.63$, where 62046 is the sample mean of investment amount, 1.35 is the percent increase in investment amount per unit decline in PCV score, and 2.63 is the difference in PCV score between Germany and Great Britain.

6.3. Additional Moderating Factors

Next, we explore additional factors that may influence the costs of asset partitioning (i.e., regional corruption, managerial experience, and knowledge complexity), as well as group characteristics associated with headquarters' control over its subsidiaries (i.e., family managers, board interlocks, wholly owned subsidiaries, and parent-subsidiary name sharing).

Costs of asset partitioning. We conjecture that high regional corruption will lead to agency problems and increase the costs of setting up independent subsidiaries; inexperienced managers will raise the costs of delegation; and knowledge complexity will increase coordination costs across subsidiaries. We expect the effects of enterprise liability on asset partitioning to be comparatively muted when these costs are higher. Intuitively, when these costs are high, subsidiaries will be tightly controlled by headquarters. Thus, regardless of the degree of enterprise liability in a country, headquarters will be held responsible for the obligations of their subsidiaries, either legally, reputationally, or through private means (e.g., intra-group guarantees).

Columns 1-3 of Table 5 present results for regional corruption, managerial experience, and knowledge complexity, respectively. For regional corruption, we interact PCV score with a dummy variable taking a value of 1 for subsidiaries operating in regions where at least 75% of survey respondents agreed or somewhat agreed that there is corruption in regional institutions; for managerial experience, a dummy variable taking a value of 1 for corporate groups whose managers in the bottom quartile of the manager age distribution of the complete sample of subsidiary managers and 0 otherwise; and for knowledge complexity, we interact PCV score with a dummy variable taking a value of 1 for corporate groups operating in industries in the top quartile with respect to the average generality of patents produced, and 0 otherwise.

As expected, the results show that the relationship between enterprise liability and asset partitioning is weaker (statistically significant at 5% level) for subsidiaries operating in high-corruption region (column 1), for subsidiaries with low managerial experience (column 2), and for subsidiaries operating in complex knowledge industries (column 3). However, the economic magnitude of the effect is small (less than 10% of the PCV level effect) for corruption and managerial experience (less than 10% of the level PCV effect) and modest for knowledge complexity.⁴⁹

[Insert Table 5 here]

Headquarters' control. We expect the relationship between enterprise liability and asset partitioning to be weaker when our measures of headquarters' control are stronger. The intuition is

⁴⁹ As a robustness test, we also tested the relationship using an alternative measure of knowledge complexity, i.e., the average number of technology classes (i.e., CPC subclasses) that a patent is assigned to within each industry and year. The results are consistent with our main findings.

the same as the one discussed above. When measures of headquarters' control are strong, headquarters will be held responsible for the obligations of their subsidiaries, regardless of the degree of enterprise liability in a country. Thus, effects of enterprise liability will be comparatively muted.

Columns 1-4 of Table 6 present results for family managers, board interlocks, wholly owned subsidiaries, and parent-subsidiary name sharing, respectively. For family manager, we interact the PCV score with a dummy variable taking a value of 1 for corporate groups with at least 50% of subsidiaries managed by family managers and 0 otherwise; for board interlocks, we interact the PCV score with a dummy variable taking a value of 1 for corporate groups with at least 50% of subsidiaries with a board member who is also on the corporate parent's board and 0 otherwise; for wholly owned subsidiaries, we interact the PCV score with a dummy variable taking a value of 1 for a corporate group with at least 50% of wholly-owned subsidiaries and 0 otherwise; and for parent-subsidiary name sharing, we interact the PCV score with a dummy variable taking a value of 1 for a corporate group with at least 50% of subsidiaries using the same or partially same name as the corporate group and 0 otherwise.

As expected, the results show that the relationship between enterprise liability and asset partitioning is weaker (statistically significant at 5% level) when a higher share of subsidiaries are managed by family managers (column 1), when there is a high level board interlocks between the subsidiaries and headquarters (column 2), when a high share of subsidiaries are wholly owned (column 3), and when a high share of subsidiaries share a name with headquarters (column 4). Taken together, the results suggest that headquarters' control over subsidiaries plays an important role in moderating the relationship between enterprise liability and asset partitioning.

[Insert Table 6 here]

6.4. Corporate Group Investment and Growth

Finally, we explore the implications of asset partitioning for investment and revenue growth. Hypothesis 3 states that weaker enterprise liability encourages corporate groups to invest more and grow faster. We explore the main channel that is likely to give rise to this effect: the one stemming from the creation of new subsidiaries (asset partitioning) and risk compartmentalization. The main analysis is performed at the corporate group-country-industry level. We also examine the relationship at the corporate group-country level. Table 7 presents the estimation results.

Column 1 presents the results for the relationship between asset partitioning and investment. Consistent with Hypothesis 3, doubling of the number of subsidiaries is associated with a 25 percentage point increase (statistically significant at the 5% level) in investment. Columns 2-3 explore how this relationship varies across dynamic and competitive industries, respectively. A dynamic industry is defined as high-technology industries from Hall and Vopel (1997) and

Saxenian (1994) and a highly competitive industry is defined as an industry in the top half of the industry profit margin distribution across all industries.⁵⁰ Corporate groups operating in dynamic and competitive industries tend to increase their investments by around 17% and 9% more than those in non-dynamic and less competitive industries, respectively.⁵¹

Column 4 presents 2SLS results at the corporate group-country level, with number of subsidiaries instrumented by the interaction of PCV and industry downside risk. While PCV score or industry downside risk can independently influence corporate group growth, our identifying assumption is that their interaction should influence outcomes only through subsidiaries. The 2SLS estimate implies that doubling of the number of subsidiaries is associated with about 32 percentage point increase (statistically significant at the 5% level) in investment (compared to 25 percentage point increase based on the OLS estimate from Column 1).⁵²

Columns 5 through 8 present the equivalent analysis for revenue growth. Column 5 shows that asset partitioning is positively related to growth – doubling of the number of subsidiaries holding size fixed is associated with a 31 percentage point increase in growth. Columns 6 and 7 show that this relationship is stronger in dynamic and competitive industries. Column 8 presents that 2SLS results. Based on the IV estimate, doubling of the number of subsidiaries holding size constant leads to a 52 percentage point increase in growth.⁵³

[Insert Table 7 here]

6.5. Robustness Tests

To mitigate concerns about the validity of the PCV scores and the methodological approaches used in this study, we carried out several robustness tests. The results are available in Supplementary Appendix D (Tables D2, D3 and D4). Here we provide a brief discussion of the tests we carried out.

⁵⁰ Dynamic industries are defined based on SIC codes 357 (computers), 36 (electrical equipment), 37 (transportation equipment), 38 (instruments), 481 (telephone communication services), and 737 (software and data processing).

⁵¹ The relative increase in investment for firms in dynamic industries is: $0.173 = 0.043/0.249$, where 0.043 is the differential increase in investment for firms in dynamic industries and 0.249 is the increase in investment for firms in non-dynamic industries. The relative increase in investment for firms in competitive industries is: $0.089 = 0.022/0.247$, where 0.022 is the differential increase in investment for firms in competitive industries and 0.247 is the increase in investment for firms in less competitive industries.

⁵² The first stage results (reported in Supplementary Appendix Table D1) show a statistically significant, positive relationship between the number of subsidiaries and the instrument (i.e., interaction between subsidiary country's PCV score and industry downside risk) with the Cragg-Donald Wald F-statistic of 255 and Kleibergen-Paap rk Wald F-statistic 138.

⁵³ The first stage results (reported in Supplementary Appendix Table D1) show a statistically significant, positive relationship between the number of subsidiaries and the instrument (i.e., interaction between subsidiary country's PCV score and industry downside risk) with the Cragg-Donald Wald F-statistic of 904 and Kleibergen-Paap rk Wald F-statistic 479.

To construct the PCV scores, we combined evaluations of five distinct criteria, weighted by the importance of each criterion. A key concern relates to the robustness of our findings to alternative weights of the criteria. To address this concern, we took several steps. First, we recalculated the PVC scores by omitting any of the five criteria used to derive them (Table D2, columns 1-5). For instance, in column 1 we excluded the criterion “enterprise approach” when calculating the PCV scores. Second, we recalculated the PCV scores after assigning equal weights to all the five criteria (Table D2, column 6). Third, we used principal component analysis to test the robustness of our results (Table D3). The overall pattern of results is robust: corporate groups are more likely to incorporate their units when enterprise liability is weak.

Table D4 presents additional robustness tests for sample selection, econometric specification, and measurement. One concern is that our analysis focuses on subsidiaries that are majority owned by their corporate parents. This is reasonable because affiliates in corporate groups are generally assumed to be controlled (and not just minority owned) by their parents. However, limited liability regulations may have different effects for units that are majority versus minority owned. To address this concern, we reexamined the asset partitioning-enterprise liability relationship after including all the subsidiaries of each corporate group in our sample (including those where the corporate parent has less than a 50% ownership share). The results are consistent with our main findings: moving from Great Britain (with lowest PCV score) to Germany (with highest PCV score) is associated with 5% drop in the number of subsidiaries (Table D4, column 1).

Another concern is that corporate group size may not be adequately captured by $\ln(\text{Revenues})$. To mitigate this concern, we replaced $\ln(\text{Revenues})$ with Revenues and Revenues^2 in Table D4, column 2, and with decile dummies for revenues in Table D4, column 3. Our qualitative results remain unchanged.

Finally, we show that our main results are robust to estimating our main specifications using Poisson and Negative Binomial, where the dependent variable is number of subsidiaries (Table D4, columns 4-5).

7. Discussion and Concluding Remarks

The asset partitioning view provides a novel perspective on corporate groups. Existing theories of the nature and functions of corporate groups largely focus on one aspect of group affiliation - the control exerted by ultimate shareholders over the affiliates of a group. The control-magnifying view, for instance, argues that tall pyramids are created by powerful owners to increase their voting power over distant subsidiaries. The institutional voids perspective holds that common ownership of a group of firms can facilitate efficient resource sharing. While these theories differ significantly in their assessments of corporate groups - the first describing groups as “parasites”, the second

describing them as “paragons” (Khanna and Yafeh, 2007) - both highlight common control as the fundamental feature of corporate groups.

In contrast to these perspectives, the asset partitioning view starts from the observation that the subsidiaries of a group, unlike the unincorporated divisions of a conglomerate, are legally independent entities. Thus, rather than the element of common control, the asset partitioning view puts the emphasis on the legal independence or “separateness” of the group’s affiliates.

From this simple observation, many important implications follow. Most obviously, legal independence implies that group subsidiaries enjoy, at least in principle, the benefits of limited liability and entity shielding. Hansmann and Kraakman (2000a,b) were the first to introduce the view of asset partitioning; they also highlighted different ways in which limited liability and entity shielding can benefit the affiliates of a group (see also Hansmann and Squire (2016)).

Strategy scholars have largely ignored the issue of the legal independence of group affiliates. Bethel and Liebeskind (1998) is a notable exception. They note that, in choosing whether to incorporate a business unit, firms face a trade-off between the benefits of limited liability and the costs of stunted resource redeployment. Manikandan and Ramachandran (2015) argue that the group’s multi-entity organizational form enables group affiliates to better sense and seize growth opportunities. They highlight the greater autonomy of the group affiliates (relative to unincorporated divisions) as an important source of these superior capabilities. Masten (1988) provides an analysis of the firm from a legal standpoint. This work, however, largely focuses on the distinction between the employment relationship within the firm and market contracting (see also Williamson (1975)).

A key contribution of this paper is to provide a more comprehensive framework of the costs and benefits of asset partitioning. Specifically, we highlight risk compartmentalization, greater internal transparency, greater autonomy at the subsidiary level, and learning about individual assets as key benefits of more finely subdividing assets under common control into separate, legally independent entities. Drawbacks of finer asset partitioning include stunted resource redeployment and lower headquarters monitoring.

We argue that ultimate owners must balance these costs and benefits to maximize the total value of the assets under their purview. This way, an appropriate legal organization for the group can be selected. Here we emphasize two issues.

First, the appropriate legal organization depends on the strategy that the group is trying to implement (i.e., “structure follows strategy” (Chandler, 1962)). For instance, an important goal for the group may be to integrate technologies more tightly across a variety of products and companies. In this case, coarser asset partitioning may be desirable, as the merger between Alphabet subsidiaries Nest and Google illustrates. On the other hand, new technologies may expose the

group to significant financial liabilities or reputational risks. In this case, finer asset partitioning may be required, as exemplified by the Waymo spin-off.

Second, an appropriate legal organization depends on the characteristics of the environment where units of the group operate. That is, the “right” way to organize a group (or a company) is contingent on external institutional factors (Lawrence and Lorsch, 1967; Ghoshal and Nohria, 1989; Nohria and Ghoshal, 1997). We highlight the strictness of national limited liability laws as a key institutional factor. By achieving a good fit between legal organization and external legal institutions, managers can mitigate risks, bolster innovation, and create value for shareholders.

We demonstrate the usefulness of our framework by empirically examining how the strictness of national limited liability laws affects firm boundaries, internal organization and corporate group growth. Our evidence provides strong support for the asset partitioning perspective, even when its predictions differ significantly from those of existing theories. For instance, we show that in Great Britain groups partition their assets quite finely, compared to groups in several other countries (e.g., Germany, China or Argentina). This is inconsistent with the control-magnifying and the institutional voids perspectives, which suggest that in countries where market institutions work well and protections for minority shareholders are strong, corporate groups should wither away.

Moreover, by showing that both firm boundaries (i.e., asset partitioning) and internal organization (i.e., managerial autonomy at the subsidiary level) vary systematically with features of national legal institutions, our research provides further validation for the contingency view of organizational structure.

The asset partitioning view also advances our understanding of why so many large enterprises are organized as wholly- or almost wholly-owned corporate groups. The control-magnifying view cannot explain the widespread diffusion of wholly-owned groups because it assumes that group structures are created to separate ownership and control. In wholly-owned groups, however, such separation by definition does not exist.

The institutional voids perspective provides a rationale for the existence of corporate groups by emphasizing the benefits of intra-group resource sharing (e.g., Leff (1978); Capron et al. (1998); Belenzon and Berkovitz (2010); Lieberman et al. (2017)). However, as noted also by Manikandan and Ramachandran (2015), the same benefits could be achieved by organizing a wholly-owned group as a single multidivisional firm (e.g., the Alphabet group versus Google before October 2015). Clearly, to explain why sometimes assets are partitioned among subsidiaries, while sometimes a single multidivisional corporate form is selected, more theorizing is needed. The asset partitioning view provides such theorizing.

The asset partitioning view suggests that wholly-owned groups can be quite efficient organizational forms. Their multi-entity structure protects headquarters and their ultimate owners from

liability risks. The risks of stunted resource redeployment are also to a significant extent mitigated because the frictions to resource sharing created by conflicts of interests among shareholders are largely absent (Bethel and Liebeskind, 1998). In partly-owned groups, in fact, shareholders in one affiliate may oppose resource redeployment to another affiliate if they are not significant shareholders in the other affiliate. In wholly-owned groups, however, this situation cannot arise, because all affiliates are wholly-owned by headquarters and its shareholders.

To conclude, the asset partitioning view provides a novel perspective on corporate groups rooted in organizational law (Hansmann and Kraakman, 2000a,b) and strategy research (Bethel and Liebeskind, 1998; Manikandan and Ramachandran, 2015; Belenzon et al., 2019). Instead of emphasizing the element of common control, this perspective emphasizes the legal independence or separateness of group affiliates. We argue that asset partitioning is a largely underappreciated instrument to foster decentralization in organizations, which brings with it specific costs and benefits. By choosing a legal organization wisely, owners and managers can create value and foster innovation and growth. We hope that our contribution will spur further research in strategy on legal organization.

References

- Aghion P, Tirole J (1997) Formal and real authority in organizations. *Journal of Political Economy* 105(1):1–29.
- Alchian AA, Demsetz H (1972) Production, information costs, and economic organization. *American Economic Review* 62(5):777–795.
- Ayotte K (2017) Subsidiary legal entities and innovation. *Review of Corporate Finance Studies* 6(1):39–67.
- Ayotte K, Hansmann H (2013) Legal entities as transferable bundles of contracts. *Michigan Law Review* 111(5):715–758.
- Baek JS, Kang JK, Lee I (2006) Business groups and tunneling: Evidence from private securities offerings by korean chaebols. *Journal of Finance* 61(5):2415–2449.
- Bainbridge SM, Henderson MT (2016) *Limited liability: a legal and economic analysis* (Cheltenham, United Kingdom: Edward Elgar Publishing).
- Bebchuk LA, Kraakman R, Triantis G (2000) Stock pyramids, cross-ownership, and dual class equity: the mechanisms and agency costs of separating control from cash-flow rights. *Concentrated Corporate Ownership*, 295–318 (University of Chicago Press).
- Belenzon S, Berkovitz T (2010) Innovation in business groups. *Management Science* 56(3):519–535.
- Belenzon S, Berkovitz T, Rios LA (2013) Capital markets and firm organization: How financial development shapes european corporate groups. *Management Science* 59(6):1326–1343.
- Belenzon S, Chatterji AK, Daley B (2017) Eponymous entrepreneurs. *American Economic Review* 107(6):1638–55.
- Belenzon S, Hashai N, Pataconi A (2019) The architecture of attention: Group structure and subsidiary autonomy. *Strategic Management Journal* 40(10):1610–1643.
- Bertrand M, Mehta P, Mullainathan S (2002) Ferreting out tunneling: An application to indian business groups. *Quarterly Journal of Economics* 117(1):121–148.
- Bethel JE, Liebeskind JP (1998) Diversification and the legal organization of the firm. *Organization Science* 9(1):49–67.
- Bloom N, Van Reenen J (2007) Measuring and explaining management practices across firms and countries. *Quarterly Journal of Economics* 122(4):1351–1408.
- Blumberg PI (1985) Limited liability and corporate groups. *Journal of Corporate Law* 11:573.
- Bond P, Edmans A, Goldstein I (2012) The real effects of financial markets. *Annual Review of Financial Economics* 4(1):339–360.
- Capron L, Dussauge P, Mitchell W (1998) Resource redeployment following horizontal acquisitions in europe and north america, 1988–1992. *Strategic Management Journal* 19(7):631–661.

- Chandler AD (1962) *Strategy and Structure: Chapters in the History of the American Industrial Enterprise* (Cambridge, MA: MIT Press).
- Chang SJ, Hong J (2000) Economic performance of group-affiliated companies in korea: Intragroup resource sharing and internal business transactions. *Academy of Management Journal* 43(3):429–448.
- Dearborn M (2009) Enterprise liability: Reviewing and revitalizing liability for corporate groups. *California Law Review* 97:195.
- Erdem T (1998) An empirical analysis of umbrella branding. *Journal of Marketing Research* 35(3):339–351.
- Fama EF, Miller MH (1972) *The theory of finance* (New York, NY: Holt Rinehart & Winston).
- Ghoshal S, Nohria N (1989) Internal differentiation within multinational corporations. *Strategic Management Journal* 10(4):323–337.
- Gilson RJ (2001) Globalizing corporate governance: Convergence of form or function. *American Journal of Comparative Law* 49(2):329–358.
- Hall BH, Vopel K (1997) Innovation, market share, and market value. *NBER Working paper* .
- Hansmann H, Kraakman R (2000a) The end of history for corporate law. *Georgetown Law Journal* 89:439.
- Hansmann H, Kraakman R (2000b) Organizational law as asset partitioning. *European Economic Review* 44(4-6):807–817.
- Hansmann H, Kraakman R, Squire R (2005) Law and the rise of the firm. *Harvard Law Review* 119:1335.
- Hansmann H, Squire R (2016) External and internal asset partitioning. *The Oxford Handbook of Corporate Law and Governance*.
- Huson MR, MacKinnon G (2003) Corporate spinoffs and information asymmetry between investors. *Journal of Corporate Finance* 9(4):481–503.
- Jensen MC, Meckling WH (1976) Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3(4):305–360.
- Kandel E, Kosenko K, Morck R, Yafeh Y (2019) The great pyramids of america: A revised history of us business groups, corporate ownership, and regulation, 1926–1950. *Strategic Management Journal* 40(5):781–808.
- Keister LA (1998) Engineering growth: Business group structure and firm performance in china’s transition economy. *American Journal of Sociology* 104(2):404–440.
- Khanna T, Palepu K (1999) Policy shocks, market intermediaries, and corporate strategy: The evolution of business groups in chile and india. *Journal of Economics & Management Strategy* 8(2):271–310.
- Khanna T, Yafeh Y (2007) Business groups in emerging markets: Paragons or parasites? *Journal of Economic Literature* 45(2):331–372.
- Kogan L, Papanikolaou D, Seru A, Stoffman N (2017) Technological innovation, resource allocation, and growth. *Quarterly Journal of Economics* 132(2):665–712.

-
- La Porta R, Lopez-de Silanes F, Shleifer A (1999) Corporate ownership around the world. *Journal of Finance* 54(2):471–517.
- Lan LL, Heracleous L (2010) Rethinking agency theory: The view from law. *Academy of Management Review* 35(2):294–314.
- Lawrence PR, Lorsch JW (1967) Differentiation and integration in complex organizations. *Administrative Science Quarterly* 1–47.
- Leff NH (1978) Industrial organization and entrepreneurship in the developing countries: The economic groups. *Economic Development and Cultural Change* 26(4):661–675.
- Lieberman MB, Lee GK, Folta TB (2017) Entry, exit, and the potential for resource redeployment. *Strategic Management Journal* 38(3):526–544.
- Loken B, John DR (1993) Diluting brand beliefs: when do brand extensions have a negative impact? *Journal of Marketing* 57(3):71–84.
- Mahmood IP, Mitchell W (2004) Two faces: Effects of business groups on innovation in emerging economies. *Management Science* 50(10):1348–1365.
- Manikandan K, Ramachandran J (2015) Beyond institutional voids: Business groups, incomplete markets, and organizational form. *Strategic Management Journal* 36(4):598–617.
- Masten SE (1988) A legal basis for the firm. *Journal of Law, Economics, & Organization* 4(1):181–198.
- Morck R, Wolfenzon D, Yeung B (2005) Corporate governance, economic entrenchment, and growth. *Journal of Economic Literature* 43(3):655–720.
- Muchlinski P (2010) Limited liability and multinational enterprises: a case for reform? *Cambridge Journal of Economics* 34(5):915–928.
- Nohria N, Ghoshal S (1997) *The differentiated network: Organizing multinational corporations for value creation* (San Francisco, California: Jossey-Bass Publishers).
- Ramsay I, Noakes DB (2001) Piercing the corporate veil in australia. *SSRN 299488* .
- Roe MJ (1986) Corporate strategic reaction to mass tort. *Virginia Law Review* 72:1–59.
- Saxenian A (1994) *Regional Advantage: Culture and Competition in Silicon Valley and Route 128* (Cambridge, MA: Harvard University Press).
- Schlissel D, Peterson P, Biewald B, Economics SE (2002) *Financial Insecurity: The Increasing Use of Limited Liability Companies and Multi-Tiered Holding Companies to Own Nuclear Power Plants* (Cambridge, MA: Synapse Energy Economics).
- Shin HH, Park YS (1999) Financing constraints and internal capital markets: Evidence from koreanchaebols'. *Journal of Corporate Finance* 5(2):169–191.
- Stein JC (1997) Internal capital markets and the competition for corporate resources. *Journal of Finance* 52(1):111–133.

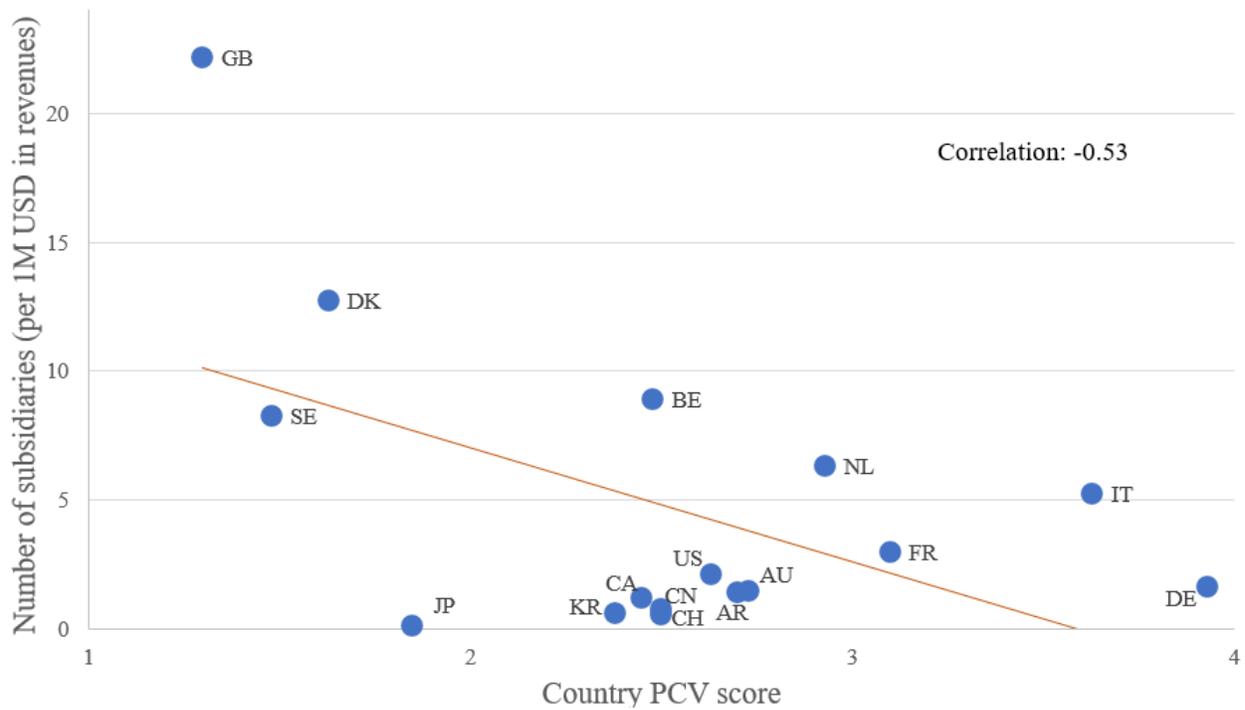
Stopford JM, Wells Jr LT (1972) *Managing the multinational enterprise: Organization of the firm and ownership of the subsidiary* (London, United Kingdom: Longman).

Strasser KA (2004) Piercing the veil in corporate groups. *Connecticut Law Review* 37:637.

Trajtenberg M, Henderson R, Jaffe A (1997) University versus corporate patents: A window on the basicness of invention. *Economics of Innovation and New Technology* 5(1):19–50.

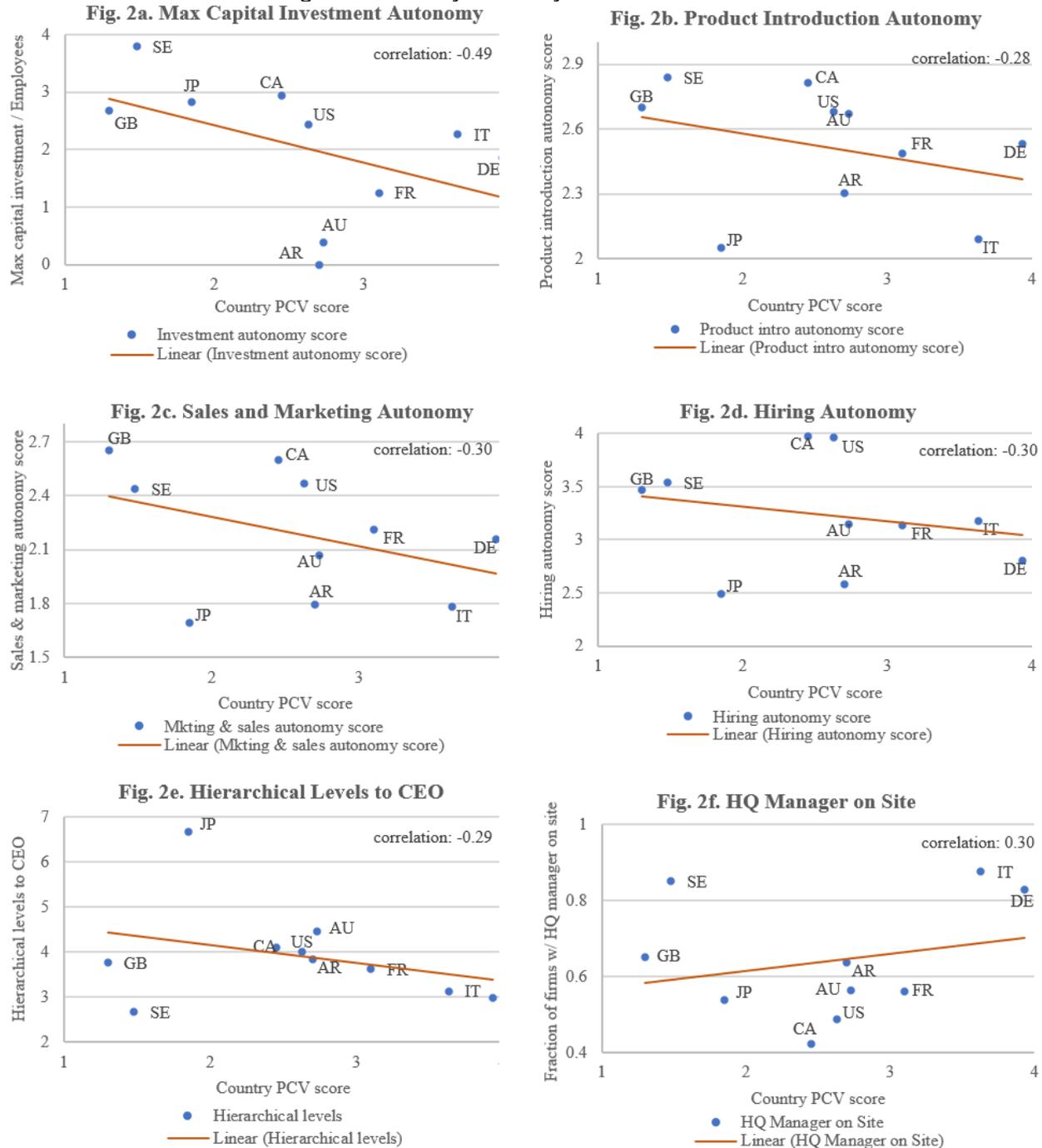
Williamson OE (1975) *Markets and hierarchies: analysis and antitrust implications: a study in the economics of internal organization* (New York, NY: Free Press).

Figure 1: Number of Subsidiaries and PCV Score



Notes: The figure presents the extent to which asset partitioning (number of subsidiaries per 1M USD in revenues) varies with enterprise liability (PCV score). A high PCV score indicates a higher likelihood that a corporate parent will be liable for the mistakes of its subsidiaries.

Figure 2: Subsidiary Autonomy Measures and PCV Score



Notes: The figures present how subsidiary autonomy (measures from the WMS) varies with enterprise liability (PCV score). Capital investment autonomy is the maximum amount of capital that subsidiaries can decide to invest without prior authorization from the corporate headquarter. Max capital investment is normalized as $\log(\text{max capital investment}/\text{number of employees})$. Product introduction autonomy is the extent to which production introduction decisions are made at subsidiaries. Sales marketing autonomy is the amount of sales marketing conducted by subsidiaries, compared to CHQ. Hiring autonomy measures the degree of autonomy that subsidiaries have in hiring new full-time employees. Hierarchical levels to CEO is the number of hierarchical layers between the shop floor workers at a subsidiary to the CEO. HQ manager on site is the presence of an HQ manager in the subsidiary being interviewed.

Table 1 PCV Scores

	(1)	(2)	(3)	(4)	(5)	(6)
	Application of enterprise / economic unity approach	Number and diversity of factors considered	Veil piercing outside of bankruptcy cases	Veil piercing in the absence of fraud or misconduct	Empirical Data	Final Score
Score Range	(0 to 5)	(0 to 5)	(0 to 5)	(0 to 5)	(-5 to 5)	
Score Weight	0.45	0.25	0.1	0.15	0.05	
Argentina	3.5	2.5	2	2	0	2.70
Australia	2.5	3.5	5	2	-1.5	2.73
Belgium	2	3.5	1	4	0	2.48
Canada	2	3	5	2	0	2.45
China	1	4	5	3	2	2.50
Denmark	2.5	1	1	1	0	1.63
France	4	3	1	3	0	3.10
Germany	5	3	2.5	4.5	0	3.93
Great Britain	1	1	5	1	-1	1.30
Italy	4	3.5	3.5	4	0	3.63
Japan	1	3	5	1	0	1.85
Netherlands	3	3.5	2.5	3	0	2.93
South Korea	1.5	3	5	3	0	2.38
Sweden	1	1	4	2.5	0	1.48
Switzerland	2.5	2	5	2.5	0	2.50
United States	2	4	4	2.5	-1	2.63

Notes: The table presents “piercing the corporate veil” (PCV) scores. The scores presented in this table are based on the evaluation of the likelihood of intra-group veil piercing in each of countries listed. The higher the final score, the more likely that courts will pierce the corporate veil to hold the corporate group liable for the debts of the subsidiaries. The final scores are based on five criteria, for which separate scores are assigned and aggregated. Application of enterprise / economic unity approach measures the extent to which courts will consider a corporate group as a single enterprise. The number and diversity of factors considered for relief from general veil piercing claims indicate the variety of factors that courts are willing to consider to hold the corporate group liable. Availability of veil piercing outside of bankruptcy cases and availability of veil piercing in the absence of fraudulent behavior or misconduct assess whether courts limit themselves to some specific types of cases with respect to pierce the corporate veil. The empirical part of the score assess the likelihood of courts to pierce the corporate veil based on the available empirical data.

Table 2 Summary Statistics of Main Variables

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	No. Obs	Mean	Std. Dev.	Distribution		
				10th	50th	90th
Parent-sub country-industry-year level						
Number of subsidiaries	3,122,026	1.45	3.84	1.00	1.00	2.00
Revenues (in mil)	3,122,026	77.9	1,267	0.10	2.51	59.3
Assets (in mil)	2,615,435	301	12,933	0.17	2.30	61.3
Board member interlock	580,237	0.54	0.50	0.00	1.00	1.00
Parent-sub name sharing	2,243,470	0.28	0.38	0.00	0.00	1.00
Share of family managers	449,288	0.14	0.33	0.00	0.00	1.00
Share of wholly-owned subs	2,702,307	0.45	0.49	0.00	0.00	1.00
Group-year level						
Managerial experience	662,627	50.8	8.5	40.3	50.6	61.2
Industry-year level						
Industry downside risk	2,891	0.03	0.08	0.00	0.00	0.10
Knowledge complexity	1,051	0.33	0.165	0.122	0.326	0.532
Country level						
PCV score	16	2.51	0.71	1.48	2.50	3.63
Region (NUTS2) level						
Corruption	119	0.78	0.09	0.66	0.79	0.89

Notes: The table presents summary statistics for the main variables used in the analysis. The sample includes corporate groups at the country-industry (3-digit SIC) pair level for each year from 2002 to 2014. See Supplementary Appendix C for variable definitions.

Table 3 Asset Partitioning and Enterprise Liability

Dependent variable:	ln(Number of Subsidiaries)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Baseline	Group FE	Group-ind. FE	Single-ind. grps	Multi-ind. grps	\$100M assets	Widely-held grps	Grp-entry-ind. level	Ind. Down. Risk	
Country PCV score	-0.011 (0.001)	-0.060 (0.003)	-0.114 (0.005)	-0.022 (0.007)	-0.062 (0.003)	-0.100 (0.010)	-0.061 (0.003)	-0.061 (0.004)	-0.049 (0.003)	
Country PCV score x Dummy for high industry downside risk									-0.010 (0.001)	-0.009 (0.001)
Dummy for high industry downside risk									0.027 (0.002)	0.027 (0.002)
ln(Country GDP)		0.063 (0.002)	0.127 (0.003)	0.020 (0.004)	0.068 (0.002)	0.160 (0.008)	0.067 (0.002)		0.063 (0.002)	
ln(Country unemployment rate)		-0.001 (0.002)	0.012 (0.002)	-0.000 (0.001)	-0.011 (0.003)	0.021 (0.012)	0.008 (0.002)		0.009 (0.002)	
Country EPL		-0.053 (0.008)	-0.055 (0.014)	-0.082 (0.016)	-0.035 (0.008)	-0.048 (0.026)	-0.048 (0.008)		-0.080 (0.009)	
Country stock market development		-0.019 (0.004)	-0.027 (0.007)	-0.009 (0.009)	-0.015 (0.004)	0.071 (0.018)	-0.022 (0.004)		-0.007 (0.004)	
ln(Group-sub country-industry revenues)	0.023 (0.000)	0.028 (0.000)	0.026 (0.000)	0.007 (0.000)	0.032 (0.000)	0.038 (0.001)	0.028 (0.000)	0.086 (0.001)	0.031 (0.000)	0.031 (0.000)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Three-digit SIC dummies	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Corporate group dummies	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country dummies	No	No	No	No	No	No	No	No	No	Yes
Group-industry dummies	No	No	Yes	No	No	No	No	No	No	No
Observations	3,122,024	2,702,307	2,451,603	1,230,168	1,423,652	177,205	1,980,705	689,073	2,061,774	2,061,774
R-squared	0.11	0.46	0.76	0.85	0.39	0.56	0.46	0.51	0.49	0.49

Notes: The table presents the relationship between enterprise liability (PCV score) and asset partitioning (number of subsidiaries). The sample contains corporate groups at the country-industry-year level for years 2002 through 2014 across sixteen countries. Country EPL is the strength of country's employment protection law. Country stock market development measures the ratio of total stock market capitalization to GDP. Dummy for high industry downside risk is a dummy variable taking a value of 1 for corporate groups operating in industries in the top quartile of industry downside risk distribution and 0 otherwise. All columns include legal origin dummies indicating the legal origin (English, French, German, or Scandinavian) from which each country's commercial laws are derived. Standard errors are robust to heteroskedasticity and clustered at the corporate group-subsidary country-industry level.

Table 4 Subsidiary Autonomy and Enterprise Liability

Dependent Variable:	Aggregate	ln(Invest. Amount)	Product Introduction	Sales & Marketing	Hiring	Levels to CEO	HQ on Site
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Country PCV score	-0.142 (0.039)	-0.856 (0.157)	-0.086 (0.052)	-0.180 (0.056)	-0.269 (0.047)	-0.096 (0.052)	0.076 (0.015)
ln(Group revenues)	-0.004 (0.006)	0.037 (0.021)	0.002 (0.008)	-0.003 (0.008)	-0.002 (0.007)	0.054 (0.006)	-0.006 (0.002)
ln(Country GDP)	0.056 (0.037)	0.138 (0.129)	-0.057 (0.050)	0.050 (0.053)	0.153 (0.047)	0.387 (0.045)	-0.127 (0.015)
ln(Country unemployment rate)	-0.165 (0.196)	1.629 (0.786)	-0.144 (0.263)	-0.248 (0.287)	0.048 (0.246)	-0.515 (0.265)	-0.074 (0.081)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Three-digit SIC dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,752	1,601	1,588	1,616	1,746	1,573	1,788
R-squared	0.096	0.113	0.088	0.098	0.121	0.242	0.171

Notes: The table presents the relationship between enterprise liability and the level of autonomy granted to subsidiaries at the subsidiary-year level. The sample includes subsidiaries from the World Management Survey (WMS) matched to our sample firms. Aggregate autonomy is the average of scores from the following three questions: “To hire a full-time permanent shop floor worker what agreement would your plant need from CHQ?”, “How much of sales and marketing is carried out at the plant level (rather than at CHQ)?”, and “Where are decisions taken on new product introductions - at the plant, at the CHQ or at both?” Investment autonomy is the amount of capital investment that a subsidiary can make without prior authorization of the corporate headquarters. Product introduction autonomy is the extent to which production introduction decisions are made at subsidiaries. Sales marketing autonomy is the amount of sales marketing conducted by subsidiaries. Hiring autonomy measures the degree of autonomy that subsidiaries have in hiring new fully-time employees. Levels to CEO is the number of hierarchical layers between the shop floor workers at a subsidiary to the CEO. HQ on site is a dummy variable taking a value of 1 if a manager from the corporate headquarters was present at the subsidiary being interviewed. Standard errors are robust to arbitrary heteroskedasticity.

Table 5 Additional Moderating Factors: Costs of Asset Partitioning

Dependent variable: ln(Number of Subsidiaries)			
	(1)	(2)	(3)
	Corrupt- ion	Manager experience	Knowledge complexity
Country PCV score	-0.167 (0.050)	-0.058 (0.003)	-0.043 (0.007)
Country PCV score x Dummy for high corruption	0.012 (0.005)		
Dummy for inexperienced managers		0.004 (0.002)	
Dummy for complex knowledge base			0.006 (0.001)
Dummy for high corruption	-0.045 (0.014)		
Dummy for inexperienced managers		-0.019 (0.004)	
Dummy for complex knowledge base			-0.016 (0.004)
ln(Regional GDP)	-0.013 (0.002)		
ln(Country GDP)	0.127 (0.024)	0.072 (0.002)	0.066 (0.004)
ln(Country unemployment rate)	-0.107 (0.006)	-0.011 (0.004)	0.080 (0.006)
Country EPL	0.254 (0.071)	-0.033 (0.009)	-0.126 (0.015)
Country stock market development	-0.072 (0.057)	-0.012 (0.004)	0.061 (0.011)
ln(Group-sub country-industry revenues)	0.039 (0.001)	0.037 (0.000)	0.071 (0.001)
Year dummies	Yes	Yes	Yes
Three-digit SIC dummies	Yes	Yes	Yes
Corporate group fixed effects	Yes	Yes	Yes
Observations	654,442	1,087,444	476,044
R-squared	0.53	0.41	0.56

Notes: The table examines how the relationship between enterprise liability and asset partitioning is moderated by factors that are related to asset partitioning costs. The sample consists of corporate groups at the country-industry-year level for years 2002 through 2014 across sixteen countries. Dummy for high corruption takes a value of 1 for groups operating in regions (NUTS2) where at least 75% of survey respondents either completely agreed or tended to agree that there is corruption in regional institution. Dummy for inexperienced managers takes a value of 1 for groups with managers in the bottom quartile of the sample manager age distribution. Dummy for complex knowledge base takes a value of 1 for groups operating in industries with knowledge complexity value in the top quartile (measured as the average generality of patents). All columns include legal origin dummies indicating the legal origin (English, French, German, or Scandinavian) from which each country's commercial laws are derived. Standard errors are clustered at the group-country-industry level.

Table 6 Additional Moderating Factors: Headquarters Control

Dependent variable:	ln(Number of Subsidiaries)			
	(1)	(2)	(3)	(4)
	Family manager	Board member	Whole ownership	Parent-sub name
Country PCV score	-0.065 (0.006)	-0.069 (0.005)	-0.078 (0.003)	-0.069 (0.003)
Country PCV score x				
Dummy for high share of family managers	0.007 (0.002)			
Dummy for high board member interlock		0.007 (0.002)		
Dummy for high share of wholly-owned subsidiaries			0.041 (0.001)	
Dummy for high share of subsidiaries using parent's name				0.019 (0.001)
Dummy for high share of family managers	-0.014 (0.005)			
Dummy for high board member interlock		-0.011 (0.006)		
Dummy for high share of wholly-owned subsidiaries			-0.107 (0.004)	
Dummy for high share of subsidiaries using parent's name				-0.085 (0.004)
ln(Country GDP)	0.100 (0.005)	0.072 (0.004)	0.064 (0.002)	0.065 (0.002)
ln(Country unemployment rate)	0.003 (0.006)	0.019 (0.004)	0.000 (0.002)	0.003 (0.002)
Country EPL	0.080 (0.020)	-0.094 (0.014)	-0.050 (0.008)	-0.048 (0.008)
Country stock market development	0.003 (0.009)	-0.018 (0.007)	-0.014 (0.004)	-0.018 (0.004)
ln(Group-sub country-industry revenues)	0.055 (0.001)	0.041 (0.001)	0.028 (0.000)	0.030 (0.000)
Year dummies	Yes	Yes	Yes	Yes
Three-digit SIC dummies	Yes	Yes	Yes	Yes
Corporate group dummies	Yes	Yes	Yes	Yes
Observations	449,288	580,237	2,702,307	2,243,470
R-squared	0.54	0.50	0.46	0.45

Notes: The table presents how the relationship between enterprise liability and asset partitioning is moderated by group factors related to a headquarters' control over its subsidiaries. The sample consists of corporate groups at the country-industry-year level for years 2002 through 2014 across sixteen countries. Dummy for high share of family managers takes a value of 1 for groups with more than 50% of subsidiaries managed by a family manager. Dummy for high board member interlock takes a value of 1 for groups with more than 50% of subsidiaries with at least one board member who serves also on the board of the corporate parent. Dummy for high share of wholly-owned subsidiaries takes a value of 1 for groups with more than 50% of subsidiaries that are wholly owned. Dummy for high share of subsidiaries using parent's name takes a value of 1 for groups with more than 50% of subsidiaries taking the same or partially same name as its corporate parent. All columns include legal origin dummies indicating the legal origin (English, French, German, or Scandinavian) from which each country's commercial laws are derived. Standard errors are clustered at the group-country-industry level.

Table 7 Corporate Group Investment and Growth

Dependent variable:	Investment Growth (%)				Revenue Growth (%)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Baseline	Industry dynamism	Industry competition	2SLS 2nd stage: Instrumenting ln(Num. subs.)	Baseline	Industry dynamism	Industry competition	2SLS 2nd stage: Instrumenting ln(Num. subs.)
ln(Number of subsidiaries)	0.252 (0.003)	0.249 (0.003)	0.247 (0.003)	0.316 (0.147)	0.314 (0.003)	0.311 (0.003)	0.307 (0.004)	0.516 (0.075)
ln(Number of subsidiaries) x Dummy for a dynamic industry		0.043 (0.010)				0.049 (0.009)		
Dummy for a highly competitive industry			0.022 (0.005)				0.023 (0.005)	
Dummy for a highly competitive industry			-0.026 (0.004)				-0.032 (0.004)	
Country PCV score				-0.065 (0.027)				-0.129 (0.017)
Industry downside risk				-2.924 (0.089)				-2.530 (0.077)
ln(Country GDP)	0.006 (0.003)	0.006 (0.003)	0.006 (0.003)	-0.150 (0.033)	0.004 (0.003)	0.004 (0.003)	0.007 (0.003)	-0.037 (0.020)
ln(Country unemployment rate)	0.009 (0.005)	0.008 (0.005)	0.013 (0.005)	0.033 (0.010)	-0.033 (0.004)	-0.033 (0.004)	-0.105 (0.008)	-0.105 (0.008)
Country EPL	-0.071 (0.041)	-0.067 (0.041)	-0.108 (0.044)	0.662 (0.086)	-0.175 (0.038)	-0.168 (0.038)	-0.211 (0.042)	0.873 (0.094)
Country stock market development	-0.018 (0.007)	-0.019 (0.007)	-0.028 (0.008)	-0.299 (0.019)	-0.008 (0.006)	-0.008 (0.006)	-0.013 (0.006)	-0.179 (0.014)
ln(Group-sub country-industry revenues) _{t-1}	-0.028 (0.000)	-0.028 (0.000)	-0.028 (0.000)	-0.071 (0.005)	-0.098 (0.001)	-0.098 (0.001)	-0.096 (0.001)	-0.222 (0.006)
Cragg-Donald F-stat	-	-	-	255.2	-	-	-	903.5
Kleibergen-Paap F-stat	-	-	-	137.9	-	-	-	478.9
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Three-digit SIC dummies	Yes	Yes	Yes	-	Yes	Yes	Yes	-
Corporate group dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,101,722	1,101,722	1,070,451	534,154	1,200,409	1,200,409	1,121,556	606,091
R-squared	0.23	0.23	0.23	0.33	0.25	0.25	0.26	0.39

Notes: The table presents the relationship between asset partitioning and corporate group growth in investment and revenues. Annual growth in investment is $(assets_t - assets_{t-1})/assets_{t-1}$, and Annual growth in revenues is $(revenue_t - revenue_{t-1})/revenue_{t-1}$. A dynamic industry is defined using 2- and 3-digit SIC codes (i.e., 357, 36, 37, 38, 481, and 737, which previous studies have defined as high-technology industries). A highly competitive industry is defined as those in the top half of the industry-wide profit margin distribution across all industries. The instrumental variable regressions are run at the group-country-year level, and the number of subsidiaries is instrumented with subsidiary country PCV score interacted with the average industry downside risk within each country. All columns include legal origin dummies indicating the legal origin (English, French, German, or Scandinavian) from which each country's commercial laws are derived. Standard errors are robust to heteroskedasticity and clustered at the corporate group-subsidary country-industry level for OLS regressions and at the corporate group level for 2SLS regressions.

Supplementary Appendix A Corporate Veil Piercing

To construct PCV scores, we collaborated with legal scholars at Duke University School of Law. Together, we began reviewing notable legal references, particularly corporate law textbooks, the Westlaw database, and highly cited law review articles. These references provided the necessary theoretical background and led us to the relevant laws and US court decisions on limited liability and piercing the corporate veil cases. We then used Westlaw's Keycite and LexisNexis's Shepard, an Internet-based citation tool, to verify that the identified legal precedents were not overturned and were still considered to be “good law”. Lastly, we focused on legal writings dealing specifically with enterprise liability.¹ For comparative analysis, we began with prominent secondary references and supplemented references with several comparative law review articles.² In jurisdictions that follow the civil law traditions (e.g., Germany, Italy and China), the analysis primarily examined the governing statutory law, which has the final authority on intra-group veil piercing cases, whereas in jurisdictions that follow the common law tradition (e.g., Great Britain and Canada), the analysis focused on recent case law.

1. PCV scores

Table E1 presents the overall scores and a rank order of countries according to our qualitative analysis on how readily the courts within each country might pierce the corporate veil (PCV) in a lawsuit involving corporate group limited liability. The overall score ranges from 0 to 5, with a higher value indicating a stronger tendency of courts to pierce the corporate veil. According to our assessment, Germany has the highest PCV score (3.93) reflecting its unique attitude of considering a subsidiary an integral part of the corporation that controls it. At the other extreme of the PCV score is Great Britain (1.30), which places more emphasis on the legal boundary between a subsidiary and its corporate parent.

Table A1. Overall “PCV” scores and a rank order of countries according their “PCV” scores

Rank	Country	Overall score
1	Germany	3.93
2	Italy	3.63
3	France	3.10
4	Netherlands	2.93
5	Australia	2.73
6	Argentina	2.70
7	The U.S.	2.63
8	China	2.50
-	Switzerland	2.50
10	Belgium	2.48
11	Canada	2.45
12	South Korea	2.38
13	Japan	1.85
14	Denmark	1.63
15	Sweden	1.48
16	Great Britain	1.30

Table E2 presents individual scores for five criteria examined to derive the overall PCV scores. Each criterion is given a weight according to its importance in determining how readily courts might pierce the corporate veil in a corporate

¹ E.g., the conceptual analysis by Philip L. Blumberg, Stephen B. Presser, and Kurt A. Strasser and the empirical analysis by Robert B. Thompson and Peter B. Oh (Blumberg, 1985; Oh, 2010; Oh, 2013; Strasser, 2004; Thompson, 1990)

² E.g., Navarro Lezcano and Maria José's “Piercing the corporate veil in Latin American jurisprudence: a comparison with the Anglo-American method” (Lezcano, 2015)

liability lawsuit. The first criterion we assessed is the extent to which a legal system of a country applies the “enterprise approach” (also known as the “economic unity approach”). This criterion was assigned the highest weight as its application is based on the premise that a corporate parent and its subsidiaries constitute a single entity and thus directly contradicts limited liability provisions.

Second, we account for the various legal provisions that courts might consider in holding the corporate parent and individual owners liable for the losses of the firms they own. The number of avenues available to the plaintiff for a relief indicates how inclined the courts are to hold the corporate parent and owners liable for the mistakes of the firms they own.

We also assessed the extent to which corporate veil piercing is closely tied to bankruptcy or fraudulent cases. Bankruptcy and fraudulent behaviors often are procedural evidential barriers to holding owners liable for losses of the firms they own and bear special importance to the assessment of the strength of limited liability provisions. For this reason, we single them out from the second criterion.

Finally, we looked at the fraction of corporate liability cases in which the corporate veil was pierced in existing empirical studies. Because this evidence is limited to few countries and results are difficult to compare, it is assigned the least weight.

Table A2. Individual scores for five criteria examined to derive the overall PCV scores

Country	Criterion	Application of enterprise approach	Factors considered in veil piercing cases	Veil piercing outside of bankruptcy cases	Veil piercing outside of fraudulent behaviors	Empirical data	Final Score
Possible Score		0-5	0-5	0-5	0-5	(-5)-5	
Weight		0.45	0.25	0.1	0.15	0.05	
Argentina		3.5	2.5	2	2	0	2.70
Australia		2.5	3.5	5	2	-1.5	2.73
Belgium		2	3.5	1	4	0	2.48
Canada		2	3	5	2	0	2.45
China		1	4	5	3	2	2.50
Denmark		2.5	1	1	1	0	1.63
France		4	3	1	3	0	3.10
Germany		5	3	2.5	4.5	0	3.93
Great Britain		1	1	5	1	-1	1.30
Italy		4	3.5	3.5	4	0	3.63
Japan		1	3	5	1	0	1.85
Netherlands		3	3.5	2.5	3	0	2.93
South Korea		1.5	3	5	3	0	2.38
Sweden		1	1	4	2.5	0	1.48
Switzerland		2.5	2	5	2.5	0	2.50
United States		2	4	4	2.5	-1	2.63

2. PCV by country

The following sections provide detailed analyses of countries based on the five criteria used to derive our PCV scores. The sections are organized by country and by criterion for each of the countries.

a. Argentina

1) Application of enterprise / economic unity approach

Argentinian law regulates corporate groups based on the economic unity approach (the *unidad juridica* theory). It provides that under certain circumstances the law will look at the parent and its subsidiary as one economic enterprise.³

Argentinian jurisprudence recognizes three situations that warrant intra-group veil piercing under the economic unity theory: when the enterprise engages in fraudulent behavior, when the subsidiary is merely an agent or instrumentality of its parent, and when a member of the corporate group engages in commercial conduct that harms the entire enterprise and worsens its state of bankruptcy. In such cases, creditors may seek relief by bringing claims against the corporate parent as an extension of bankruptcy.⁴

2) Variety of factors considered by in veil piercing cases

Argentinian law views the corporate veil piercing doctrine as a remedy for the violation of Art. 2 of the Corporations Act, which provides that a corporation is a “technical means” through which individuals may attain their lawful goals. Argentinian courts pierce the veil when incorporation was conducted to achieve unlawful goals and to abuse the right of incorporation.

Art. 54 of the Business Corporations Act 1972 provides that “the liabilities of a corporation used to seek a purpose beyond the corporate goals, as a mere instrument to defraud the law, the public policy or the good faith, or to frustrate rights of third persons, will be imputed directly to its shareholders or to the controlling persons who facilitated such activities”.⁵ Argentinian courts have invoked this statutory tool most often when the corporation was involved in an illegal act that constitutes fraud, abuse of rights, and acts against morality and decency.⁶

Fraud is a central concept in veil piercing cases. The law provides three situations in which incorporation or a particular business conduct may facilitate fraud and thus justify veil piercing. First is the concept *Dolus (Deceit)*. In the context of incorporation, Dolus is invoked when the owners use the company’s form as a shelter to evade contractual obligations or to prejudice third parties, for example when the company is incorporated to perform legal actions which the owner is not allowed to pursue.⁷ Second, a company with a single owner is considered under Argentinian law fictitious and will not warrant limited liability.⁸ Third type of conduct is *Actio Pauliana (Fraudulent Conveyance)*, i.e. a fraudulent transfer to third parties in order to avoid debt. An *Actio Pauliana* claim is useful when the owners of a company in financial difficulties have provided capital in the form of secured loans in order to gain better standing as a creditor in case of bankruptcy.⁹

³ Claudia M. Pardinias, *The Enigma of the Legal Liability of Transnational Corporations*, 14 Suffolk Transnt'l L. J. 405 (1991); Stephen B. Presser, *Piercing the Corporate Veil* (Thomson Reuters 2017).

⁴ Presser, 2017, at §5:2; Juan M. Dobson, *Lifting the Veil in Four Countries: The Law of Argentina, England, France and the United States*, 35 INT. COMP. L. QUARTERLY 839, 859 (1986); Pardinias, 1991, at 427-32. The Unidad Juridica theory was first introduced in the Parke Davis case (1973). In *Parke Davis* the Argentinian Supreme Court invalidated royalty payments made by an Argentinian subsidiary to its Detroit based parent upon finding that the subsidiary lacked independence to take the decision. In another decision handed down in 1973, *Frigorifico Swift de la Plata*, the court found a parent and sister companies liable for the debts of the subsidiary under the same rationale. *Frigorifico Swift de la Plata*, involved Deltec International Ltd., a Canadian corporation, and Swift, the largest Argentinian meatpacking company, which Deltec had acquired. When Swift faced financial difficulties Deltec negotiated with its creditors and provided cash advances, hoping to prevent Swift from going bankrupt. When the efforts failed and Swift filed for bankruptcy, Deltec and some of its other subsidiaries brought debt claims. The court denied their claims and extended bankruptcy proceedings on Deltec and the subsidiaries, finding that the entire group formed a single economic unit. The case went up the appellate chain and ultimately affirmed at the Supreme Court.

⁵ Jose Maria Lezcano Navaro, *Piercing the Corporate Veil in Latin American Jurisprudence: A comparison with the Anglo-American method*, 116 (2015).

⁶ Navaro, 2015, at 119-20.

⁷ Dobson, 1986, at 844

⁸ Dobson, 1986,, at 841-43.

⁹ Dobson, 1986, at 845; Pardinias, 1991, at 426-27.

When veil piercing is sought in bankruptcy proceedings, Argentinian bankruptcy law allows courts to extend bankruptcy of the company to its owner when the owner demonstrated abusive control of the company. An example of an abusive conduct is owners promoting their personal interests with the company assets at the expense of the company's own interests.¹⁰

3) Availability of veil piercing outside of bankruptcy cases

Argentinian courts invoke veil piercing most often in bankruptcy cases. Nonetheless, fraud cases may be brought outside of bankruptcy cases.

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

As described above, fraudulent behavior is a central factor in intra-group veil piercing claims according to current case law.¹¹

b. Australia

1) Application of enterprise / economic unity approach

Australian courts have recognized a general principle under which the courts may hold the parent company liable for the acts of its subsidiary when individual entities within a corporate group is indistinguishable.¹² *Bluecorp Pty Ltd (in liq) v ANZ Executors and Trustee Co. Ltd.* (1995) 18 ACSR 566 provides important factors considered by the courts in corporate veil piercing cases. Among them are relationship between corporate entities, corporate parent's control over its subsidiaries, participation in a common enterprise, use of the corporate form for fraud, and a deliberate attempt to shield the corporate parent from an existing legal obligation.

The mere exercise of control over a subsidiary by the corporate parent is insufficient to pierce the corporate veil. Furthermore, when a creditor and a subsidiary consensually enter into a contractual relationship, courts tend to respect their mutual agreement.¹³

Sec. 588V of the Australian Corporations Act provides a cause of action for imposition of liability on a corporate parent for debts of an insolvent subsidiary when the subsidiary trades while it is insolvent and certain other conditions are satisfied.

2) Variety of factors considered by in veil piercing cases

Corporate debts can potentially be imposed on shareholders under the common law and also under 588V of the Corporations Act 2001. Notwithstanding the lack of a coherent and principled veil piercing analysis under Australian law, courts have recognized a number of discrete factors that may lead to piercing of the corporate veil.¹⁴ These factors can be grouped into the following broad categories: (1) agency (where the shareholder has such a degree of dominance that the company acts as an agent of the shareholder in the sense that the company has no separate existence from the shareholder); (2) Fraud (where the company is established by the shareholder for a fraudulent purpose); (3) Avoiding an existing legal obligation (where the company is established to enable the shareholder to avoid an existing legal obligation); and (4) unfairness/justice grounds (when veil piercing is necessary to achieve a just result).¹⁵

3) Availability of veil piercing outside of bankruptcy cases

¹⁰ The Insolvency Act of 1972 (revised in the Insolvency Reform Act of 1983). *See also*, Dobson, 1986, at 852-57.

¹¹ Dobson, 1986, at 840.

¹² Ian Ramsay & David Noakes *Piercing the Corporate Veil in Australia* (2002) (Available at SSRN: <http://ssrn.com/abstract=299488>)

¹³ In *Briggs v James Hardie & Co Pty Ltd* (1989) 16 NSWLR 549, a former employee of a subsidiary who was allegedly poisoned with asbestos brought legal action against the parent claiming that the parent had exercised complete dominion and control over its direct employer. The court (Rogers AJA) dismissed this argument as "entirely too simplistic," noting that "every holding company has the potential and, more often than not, in fact, does, exercise complete control over a subsidiary". Under this rationale, using control as the benchmark for veil piercing would be equivalent to removing the veil altogether. *See further* in Helen Anderson, *Piercing the veil on corporate groups in Australia: the case for reform*, 33 MELBOURNE U. L. REV., 333, 353 (2009).

¹⁴ *Briggs v James Hardie & Co Pty*, (1989) 16 NSWLR 549 (Rogers J.) ("there is no common, unifying principle, which underlies the occasional decision of the courts to pierce the corporate veil"); *Commissioner of Land Tax v Theosophical Foundation Pty Ltd.* (1966) 67 SR (NSW) 70 Herron J. ("[t]he cases merely provide instances in which courts have on the facts refused to be bound by the form or fact of incorporation when justice requires the substance or reality to be investigated")

¹⁵ Ramsay & Noakes, 2002.

Bankruptcy is not a prerequisite to commence veil piercing proceedings.

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

Although not considered to be a prerequisite, misconduct and fraudulent behavior are central factors in veil piercing claims. For example, in order to prevail in a veil-piercing claim, the plaintiff may need to show that the defendant sought to use the corporate structure to deny the plaintiff some pre-existing legal right.¹⁶

5) Empirical data¹⁷

General piercing rate is around 39% of total claims (104 cases examined). Piercing rates differ according to the identity of the controller of the company whose veil is sought to be pierced. When human shareholders stand behind the company, courts pierce the corporate veil in about 42.5% of cases. When a parent company is behind the corporate veil, courts are less inclined to pierce (about 32.5%). Group enterprise arguments prevail in only 24% of the cases.

c. **Belgium**

1) Application of enterprise / economic unity approach

Belgian law follows the entity theory.¹⁸ A Belgian court may impose liability on the corporate directors for continuation of loss making activities.¹⁹ In the event of a bankruptcy, any person who exercised “effective management powers” with respect to the company may incur personal liability if it is established that a clear and gross negligence has contributed to the bankruptcy. The choice of the phrase “any person” extends the possible application of the provision to parent companies. However, the plaintiff must show that the parent suppressed the autonomy of the subsidiary's management and has effectively imposed its own decisions on the subsidiary.²⁰ The Companies Code further provides that directors can be held liable for the increase in company debts from the date when the shareholders should have been convened to deliberate on the liquidation of the company if its net assets fall below 50 per cent of the issued share capital (and again in case the net assets fall below 25 per cent of the issued share capital).²¹

2) Variety of factors considered by in veil piercing cases

Belgium regulates shareholders' liability through statutory provisions that apply exceptions and limitations to the general limited liability rule, and through judge-made doctrines dealing with veil piercing in the context of bankruptcy laws. Art. 456(4) and 229(5) of the Belgian Company Code mandate the imposition of liability on a founder of a company with limited liability when the company files for bankruptcy within three years of its incorporation and its initial capital was manifestly inadequate for the conduct of its operations in the regular course of business during the first two years.²²

Art. 646 provides that collection of all shares of a stock company by one shareholder entails, if not remedied within one year, a joint liability of that shareholder for the company's debts.²³

The judge made 'Extension of Bankruptcy' doctrine provides that when an individual demonstrates a complete control of a corporation and uses the control to conduct business activities behind the curtain of the corporation, the individual shareholder may be declared bankrupt and become liable for the insolvency of the corporation.²⁴

¹⁶ John Kluver, *Entity vs Enterprise Liability: Issues for Australia*, 37 CONN. L. REV. 765, 766 (2005).

¹⁷ The data presented here is based on Ramsay and Noakes, 2002.

¹⁸ Belgian Company Code, articles 210 and 438. *See also*, Karen Vandekerckhove, *Piercing the Corporate Veil*, 28 (2007).

¹⁹ Belgian Company's Code, Art. 530; Art. 265.

²⁰ Vandekerckhove, 2007, at 319. Nevertheless, Belgian courts demonstrate restraint in intervening in intra group transactions. In a 2003 case, the Antwerp court of Appeals held that a parent company can validly pursue its own interests through an investment policy at odds with the entire group interests.

²¹ Belgian Companies Code, Art. 633.

²² Vandekerckhove, 2007, at 30-31, 113-118. Founders' liability requires neither causal link between the undercapitalization and the bankruptcy nor a fault on behalf of the founder.

²³ Vandekerckhove, 2007, at 30-31

²⁴ Vandekerckhove, 2007, at 29-30. Courts have applied the doctrine *inter alia* when found that the bankrupt company constitutes merely a screen or a straw-man for the operations of the master ('maitre de l'affaire') and when the bankrupt company was a 'dummy company'; namely, a mere instrument in the hands of the master. *See* Organization for Economic Cooperation and Development (OECD), *Responsibility of Parent Companies for their Subsidiaries*, 50 (1980).

Courts have also held owners liable in cases of material undercapitalization, tort claims, disregard for corporate formalities and when a company was administrated as a mere branch of its parent company.²⁵

The Belgian Tax Code holds shareholders of companies liable for corporate tax debts. Shareholders owning at least 1/3 of the shares may be held liable for tax debts of the company in case of a transfer of at least 75% of the shares within one year.²⁶

3) Availability of veil piercing outside of bankruptcy cases

Most statutory and judge-made law requires bankruptcy as a prerequisite to hold the shareholders liable to the obligations of their subsidiaries.²⁷ Liability for reunion of all shares under the control of one shareholder, as prescribed under Art. 646 of the Belgian Company Code, seems to be a narrow exception allowing veil piercing outside bankruptcy proceedings.

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

Statutory law does not include requirement of fraud or intentional misconduct. On the contrary, the invocation of the judge-made abuse of rights doctrine or imposition of liability under tort law may include in some cases considerations of shareholder misconduct.²⁸

d. Canada

1) Application of enterprise / economic unity approach

Following its British heritage, Canadian law generally adheres to the entity theory. The dominant view in the case law is that intra-group veil piercing appears to be possible if it is established that a parent company had exercised complete domination and control over the affairs and activities of the subsidiary, and the subsidiary is being used to shield an improper conduct.²⁹ A less widely held approach relaxes the requirement for impropriety in specific cases.³⁰

2) Variety of factors considered by in veil piercing cases

Canadian courts commonly adhere to a two-pronged analysis mandating both domination (to the level that the controlled corporation has no independent function) and the use of that domination to conceal egregious wrongdoing. Under this view, the courts disregard the separate legal personality of a corporate entity only when it is completely dominated and controlled and is used as a shield for a fraudulent or improper conduct. Specific factors that may amount to impropriety are thin capitalization, failure to maintain adequately separate records for different entities, overlap between affiliated entities with respect to access to funds, corporate function, employees, directors etc., and an attempt to avoid pre-existing legal obligations through an incorporation of a company.³¹ In a handful of cases,

²⁵ Vandekerckhove, 2007, at 32-33; 118-24. Undercapitalization claims can be pursued as a tort claim under Art. 1382 of the civil Code. Plaintiffs are required to show that founders could not reasonably assume that their contribution constitutes sufficient amount of capital for the operation of the business. Another cause of action might be abuse of rights, under which the plaintiff claim is required to demonstrate that the owners have exceeded the normal exercise of the right of separate legal personality or the right of limited liability. Courts frequently avoid piercing the veil based on undercapitalization alone, but rather ask for additional indications of shareholders' misconduct. In one case, a court considered an abuse of legal rights claim in circumstances when shareholders authorize transfer of the loss-making part of their company's activities to a new company they incorporated without providing sufficient capitalization. The court held that the separation between the two entities did not correspond to reality because both companies were in effect dependent departments of the same entity.

²⁶ Art. 441 of the Belgian Tax Code.

²⁷ The statutory rules concerning founder's liability for undercapitalization (Art. 456(4) and 229(5) of the Belgian Company Code) are triggered by commencement of bankruptcy proceedings upon the company. The judicial doctrine of Extension of Bankruptcy and abuse of rights claims are more equipped to deal with bankruptcy situations.

²⁸ For example, *see* Art. 1382 of the Civil Code (establishes tort liability for undercapitalization).

²⁹ 642947 Ontario Ltd. v. Fleischer, 2001, 56 O.R. (3d) 417, Ont. C.A. at para. 68. For critical accounts of court decisions applying a more liberal approach for corporate groups *see* Mohamed F. Khimji and Christopher C. Nicholls, Corporate Veil Piercing and Allocation of Liability: Diagnosis and Prognosis, 30(2) Banking & Finance Law Review, 211, note 132 and accompanying text (2015).

³⁰ Manley Inc. v. Fallis, 1977 CarswellOnt 56, 2 B.L.R. 277, 38 C.P.R. (2d) 74, [1977] O.J. No. 1080 (Ont. C.A.)

³¹ Khimji & Nicholls, 2015, at 232-33.

courts have argued that impropriety is not a prerequisite to piercing the corporate veil, specifically when the court finds it necessary to prevent a flagrantly unjust result.³²

3) Availability of veil piercing outside of bankruptcy cases

Bankruptcy is not a prerequisite to commence veil piercing proceedings.

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

Veil piercing is often granted when false representations are made or a fraudulent or other objectionable, illegal or improper activity is undertaken. As noted, in a few cases courts have settled for the showing of owner's dominance and have waived the requirement of impropriety when it is necessary to achieve justice.³³

e. China

1) Application of enterprise / economic unity approach

China adheres to the entity theory. Courts seem to apply the same standards of veil piercing for corporate groups as they do for other types of companies.

2) Variety of factors considered by in veil piercing cases

The central provision of the Chinese veil piercing law³⁴ is contained in Article 20(3) of the Company Law,³⁵ which mandates three accumulative requirements for veil piercing: (1) *misconduct*: a conduct that amounts to an abuse of the separate legal personality (e.g., undercapitalization). It is uncertain whether the provision requires fraudulent behavior (like in some other countries, France for example). From a textual perspective, the law does not appear to require proof of fraud; (2) *intent*: the abusive behavior was intended to evade the debt payment; and (3) *consequence*: the abuse caused serious damage to the creditors' interests.³⁶

Article 64 of the Company Law sets out further rules under which the shareholder of a one-person limited liability company bears joint liabilities for the debts of his company when he is unable to prove that the property of the company is independent from his own.³⁷ The provision adds two important elements to the veil piercing doctrine which applies to a single shareholder companies. First, it introduces the commingling of assets as a valid consideration; second, this provision in effect shifts the burden of proof from the plaintiff creditor to the defendant shareholder of a one-member company, making it much easier to substantiate a veil piercing argument.

3) Availability of veil piercing outside of bankruptcy cases

Bankruptcy is not a prerequisite to commence veil piercing proceedings.³⁸

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

³² Thomas G. Heintzman, Q.C. & Brandon Kain, *Through the Looking Glass: Recent Developments in Piercing the Corporate Veil*, 28 B.F.L.R. 525, 539-40 (2013).

³³ Khimji & Nicholls, 2015.

³⁴ Veil piercing is a new concept in Chinese law. In 2006, China had gone through a massive legal reform by introducing a new company law. Until then, veil piercing had no statutory authority, and the concept was rarely used by some enterprising Chinese judges in selected provincial courts and under extremely narrow circumstances. In the 2006 overhaul, much of the previous Company Law was revised or eliminated, with many new provisions added. This development was much anticipated by Chinese and foreigners alike, as China's previous corporate law was unable to keep pace with its fast growing economy. One of the highlights of the new Company Law is its formal establishment of the concept of "piercing the corporate veil" in Chinese law (Mark Wu, *Piercing China's Corporate Veil: Open Questions from the New Company Law*, 117 YALE L.J. 328, 329 (2007)).

³⁵ Art. 20(3) reads "Where any of the shareholders of a company evades the payment of its debts by abusing the independent status of juridical persons or the shareholder's limited liabilities, and thus seriously damages the interests of any creditors, it shall bear joint liabilities for the debts of the company."

³⁶ Hui Huang, *Piercing the Corporate Veil in China: Where Is It Now and Where Is It Heading*, 60 AM. J. COMP. L. 743, 746 (2012).

³⁷ Art. 64 reads "If the shareholder of a one-person limited liability company is unable to prove that the property of the one-person limited liability company is independent from his own property, he shall bear joint liabilities for the debts of the company."

³⁸ The presence of bankruptcy in a veil piercing action is required under neither Art. 20(3) nor Art. 64 of the Company Law.

Article 20(3) of the Company Law requires the demonstration of a misconduct by the owner. It has yet to be settled whether the requirement amounts to a fraudulent behavior.³⁹ Fraud or improper conducts are the most successful grounds for corporate veil piercing in Chinese courts (62.50% piercing rate when invoked).

5) Empirical data⁴⁰

A survey conducted between 2006 and 2010 reports the corporate veil piercing rate of 63%. In 2006, courts pierced the veil in 53% of the cases examined; in 2008 the rate was increased to 62% and in 2010 the rate soared to a captivating 83% (note, however, that the study in 2010 recorded only 12 cases). Chinese courts' decision to pierce the corporate veil appears to have been influenced by the number of shareholders involved: the piercing rate declined as the number of shareholders increased. The veil was pierced in all cases involving one-member companies. The largest group of cases involved companies with two shareholders but showed a lower rate of piercing (75%). The lowest rate was found for companies with three to five shareholders (about 42%). None of the target companies had six or more shareholders. This suggests that small companies are more susceptible to veil piercing. The study examined 18 corporate group cases, and, in 11 of the cases, courts have decided to pierce the veil (61% rate). When the target shareholder was a parent company, the veil was pierced in 6 out of 7 cases; when the target shareholder was a sibling company, the veil was pierced 4 out of 10 cases; and in the only case when the target company was a subsidiary, the court granted the plaintiff's request to pierce the veil.

f. **Denmark**

1) Application of enterprise / economic unity approach

Danish law does not include direct reference to enterprise or a single economic unit approach. The Danish corporate veil piercing jurisprudence has been developed almost exclusively in the parent-subsidiary context, but the presumption of limited liability applies to corporate groups as well as any other limited liability company.

2) Variety of factors considered by in veil piercing cases

Limited liability is a statutory right (codified under § 1.2 of the Danish Companies Act) applicable to shareholders in private and public Danish companies.⁴¹ Courts have relied on three legal constructions to disregard limited liability and hold shareholders liable, these are PCV ("*hæftelsesgennembrud*"), identification (aka in Denmark, mixing of assets) and tort law principles, under which parent corporations that exercise complete control over their subsidiaries have a fiduciary duties toward the subsidiaries.⁴²

³⁹ Huang, 2012, at 746.

⁴⁰ Huang, 2012, at 748-54.

⁴¹ Danish law recognizes several corporation organizations that feature limited liability. These are public limited liability companies "*aktieselskaber*" (A/S), private limited liability companies "*anpartsselskaber*" (ApS), cooperative organizations with limited liability (A.m.b.a) as well as limited liability companies (S.m.b.a). Limited partnerships (K/S) (*in Danish: kommanditselskab*) and Partner companies (P/S) (*in Danish: partnerselskab*) are a hybrid between the personal liability companies and the limited liability companies. Here, there are general partners (*kommanditist*) and limited partners (*komplementar*). These types of business organizations are regulated differently but share the principle of limited liability with the limited liability companies.

⁴² The Satair case, U.1997.364H.

Danish courts have considered the following factors in PCV cases: (1) owner's control/dominance, when involving mismanagement; (2) assets stripping; (3) incorporation as a shell company⁴³; (4) incorporation with the sole purpose of circumventing legal obligations⁴⁴; (5) asset mixing⁴⁵; and (6) undercapitalization⁴⁶.

3) Availability of veil piercing outside of bankruptcy cases

Under Danish law, bankruptcy is not a prerequisite to commence veil piercing proceedings or any of the other doctrines that allow imposition of liability on the parent. However, the entire Danish PCV case law has been developed in cases of insolvency. Consequently, plaintiffs are most likely to prevail when the original debtor is insolvent.

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

Most Danish PCV case law is grounded in tort law principles. Courts have more often than not reasoned their decision to impose liability by referring to the defendant's gross negligence or intent to commit fraud or circumvent the law. Sec. 363 of the Danish Companies Act provides that "a shareholder is liable for any loss inflicted intentionally or with gross negligence on the company, the other shareholders or any third party".

g. France

1) Application of enterprise / economic unity approach

French law generally follows the entity theory but has several exceptions that follow the enterprise approach in the context of corporate group limited liability. French courts have applied the doctrine of economic unity as a variant of the doctrine of appearance. These situations arise typically in cases of misrepresentation where a creditor is misled to believe that he is dealing with an entity other than the real corporation. For instance, in a parent-subsidiary context, a parent company might appear to contract with a good faith third party, but it is actually the subsidiary who signs the contract.⁴⁷ Two or more entities may be regarded as an economic unity when multiple entities reasonably appear to form an economic unit.

French courts may also impose liability on the corporate parent when the assets and affairs of the parent and those of its subsidiary have been so closely intertwined so that the latter is can be considered a mere instrumentality of the former. At the same time, courts recognize that usual group organization and functioning, such as cash flow advances, cannot establish abnormal financial relations required for imposition of liability on the corporate parent.⁴⁸ Ultimately, both the doctrine of appearance and the commingling of assets and affairs require something more than mere economic

⁴³ In *Frigor* (U.1980.806V), the High Court held that when a subsidiary has no actual economic rationale and is only used to avoid certain obligations of the parent company, the latter can be held liable. It is of importance to note that in the instant case the creditors were employees of the subsidiary, a class of creditors that generally enjoys increased legal protection. See Krüger Andersen, K2, 2010, at 538, Hansen & Krenchel, DS1, 2010, at 114f and U.2001.100H, section 2.4.1.1.

⁴⁴ *Frigor* (U.1980.806V). The Court found that the subsidiary had not had any real content since its balance only contained the salary to workforce which was matched by a corresponding payment by the parent company. The subsidiary met the legal requirements to management, financial statements, etc., but had not been independently registered for VAT. The Board of Directors of the subsidiary had never engaged in real decision-making and had not influenced lending of capital to the parent company or any subsequent decisions. Thus, in reality the parent company's board of directors made the decisions. In addition, the company was structured to avoid employee representation on the board of directors of the parent company and the subsidiary constituted only an intermediary for the payment of wages.

⁴⁵ The Midfynsfestival case, U.1997.1642H.

⁴⁶ The Midfynsfestival case, U.1997.164. The Danish Supreme court emphasized that the two companies were not regarded as two separate entities to the public and that the companies' finances were mixed together. In addition, the company structure was organized in a way that profit was kept in R and the risk was mostly allocated in F, which was heavily undercapitalized.

⁴⁷ Vandekerckhove, 2007, at 441-42 (arguing that French courts invoke the doctrine of appearance when the corporations in a group create the impression that they are one entity); Presser, 2017, § 5:7. (noting that lack of distinctive features among the group members (e.g., same address, similar names, overlapping business activities) may mislead third parties acting in good faith).

⁴⁸ Vandekerckhove, 2007, at 437-38 (suggesting that only an entire commingling of all group assets may trigger identification of the members as one single unit); Karl Hofstetter, *Parent Responsibility for Subsidiary Corporations: Evaluating European Trends*, 39 INT'L & COMP. L. Q. 577 (1990); Presser, 2017, § 5:7..

unity to pierce the corporate veil. That “something more” might well include findings of misrepresentation or abnormal financial relations.⁴⁹

Additionally, under the Bankruptcy law, French courts have found that when a parent corporation has a predominant influence over its subsidiary and exercises a de facto authority over its directors, the parent may be considered a de facto director of its subsidiary. This construction enables creditors of an insolvent subsidiary to seek relief from the corporate parent. Furthermore, the law provides a possibility to declare the de facto director (the corporate parent) of a bankrupt subsidiary also bankrupt.⁵⁰

French law further applies specific statutory rules for shared liability in specific bodies of law such as competition, labor relations, and environmental law. Some French courts have invoked the economic unity theory independently from the instruments cited above. Under this approach, when the financial and economic features of the group members are intermingled, they are treated as one legal entity. However, this approach has been widely criticized and was never accepted by the Supreme Court.⁵¹

2) Variety of factors considered by in veil piercing cases

The Bankruptcy Statute and a variety of less frequently invoked court doctrines such as doctrine of appearance (“*théorie de l'apparence*”) and Paulienne action (“*actio pauliana*”) provide most of the PCV regulation under French law.

French bankruptcy law provides several grounds for shareholder liability claims: (1) “asset insufficiency”, which applies directly to managers and implicitly to controlling shareholders in companies where separation between ownership and management is absent; (2) cessation of payments to creditors due to actions or inactions of the managers per Art. 652-1, which mandates the court to hold de-facto or de-jure manager liable; (3) incorporation of a fictitious company;⁵² (4) comingling of assets of the owners and the corporation.⁵³

The doctrine of appearance is invoked typically in cases of misrepresentation, where a creditor is misled to believe that he is dealing with an entity other than the real corporation.⁵⁴ Paulienne action (“*actio pauliana*”) enables creditors to challenge a debtor’s fraudulent transfer of assets to a third party for additional claims.⁵⁵

3) Availability of veil piercing outside of bankruptcy cases

Bankruptcy proceedings are the only settings in which veil piercing is available under French law. Even when claims are made under the fictitious corporation doctrine, veil piercing is available exclusively in bankruptcy cases. The only exception to this rule is when the doctrine of appearance is invoked to impose liability on the corporate parent.

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

Article L 652-1 of the French Commercial Code on bankruptcy requires the manager or the director to have engaged in a misconduct to impose liability on them. The provision accommodates mostly claims against shareholders in small, closed corporations with practically no separation between ownership and management.

⁴⁹ In the *Metaleurope* case (2005), the French Supreme Court contemplated on a parent’s liability for the subsidiary’s environmental law violations. The Court held that identification between members of a group will be examined based on two criteria. First, mingling of assets among the group members to the extent that a professional accountant would not be able to tell which debt whose is. Second, findings of abnormal financial relations between the group members (e.g., transfer of funds without consideration), which exceed usual group dealings. The Court’s refusal to extend bankruptcy proceedings of the subsidiary to the parent demonstrates flexible approach to the term “abnormal financial relations” in the parent-subsidiary context. *See*, Presser, 2017, § 5:7.; Vandekerckhove, (2007), at 438.

⁵⁰ Art. L 651-2 of the French Commercial Code (“Where the judicial liquidation proceedings of a legal entity reveals an excess of liabilities over assets, the court may, in instances where management fault has contributed to the excess of liabilities over assets, decide that the debts of the legal entity will be borne, in whole or in part, by all or some of the de jure or de facto managers, or by some of them who have contributed to the management fault. If there are several managers, the court may, by way of a reasoned ruling, declare that they are liable in solidarity”.)

⁵¹ Art. L 651-2 of the French Commercial Code.

⁵² Vandekerckhove, (2007) at 434-35.

⁵³ Presser, 2017, § 5:5-7..

⁵⁴ Presser, 2017, § 5:6-7..

⁵⁵ Larry Catá Backer, Comparative corporate law: United States, European Union, China, and Japan: cases and materials 1073 (2002); Presser, 2017, § 5:5-6..

The fictitious corporation doctrine, under which French courts may impose liability on shareholders, is most often invoked in situations where the incorporation of the entity is aimed to withdraw assets from creditors' reach and for fraudulent purposes.⁵⁶

h. Germany

1) Application of enterprise / economic unity approach

The Stock Corporation Act (Aktiengesetz) provides special provisions regulating intra-group liability. The law defines Konzern as “controlling and one or more controlled enterprises [that] are subject to the common direction of the controlling enterprise”. If enterprises are parties to a control agreement or if one enterprise has been integrated into the other, such enterprises are considered to be subject to common management. In other words, the controlling and controlled entities are presumed to constitute a Konzern (group).⁵⁷

The law on Konzernrecht (“controlled companies”) provides that a corporate parent may be liable for the obligations of its controlled subsidiaries either through express agreement or when the corporate parent had a complete control over its subsidiary to the detriment of the subsidiary (*de-facto Konzern*). In essence, the law promotes a trade-off between two unique features of intra-group relations. On the one hand, the corporate parent is entitled to give binding instructions to the subsidiary even when they are not in the interest of the subsidiary. On the other hand, to compensate for the additional risk that the subsidiary and its stakeholders bear, the law provides ways to hold the corporate parent liable for the losses incurred by its subsidiary. Specifically, the law imposes an additional regulation for the protection of creditors. For example, among the duties imposed on the corporate parent are the duty to make the execution and termination of controlling agreement available to creditors and the responsibility to maintain money reserves to compensate for losses incurred by the subsidiary.⁵⁸

Unlike in the case of public corporations, the law governing private companies (GH) has been developed through judicially made doctrines and thus is not regulated through the Stock Corporation Act. In 2001, the Federal Supreme Court’s decision on *Bremer Vulkan* substantially limited the application of the enterprise theory to private companies by abandoning the application of Konzern law for a *qualified de facto Konzern*, in which subsidiaries are controlled by the corporate parent without a controlling agreement between them. The Supreme Court held that liability of a private corporate parent is to be determined according to the “existence destroying encroachments” concept, under which a corporate parent removes assets from its subsidiary without guaranteeing the latter of sufficient assets to satisfy its liabilities.⁵⁹

2) Variety of factors considered by in veil piercing cases

Germany applies the doctrine of *Durchgriffshaftung* to impose corporate liability on owners outside of the context of Konzern law that controls corporate groups.⁶⁰ The underlying justification for shareholder liability is the abuse by the owners of the legal personality principle. Creditors are protected in four different situations that generally coincide with American case law: commingling of assets (the ownership of the shareholder and the company is indistinguishable); failure to follow corporate formalities (most commonly when the failure to follow formalities makes a company's identity unclear to creditors); undercapitalization; and total domination of a company by another.⁶¹

3) Availability of veil piercing outside of bankruptcy cases

German courts invoke veil piercing most often in bankruptcy cases. Nonetheless, there is no statutory or judicially prescribed prerequisite for bankruptcy.

⁵⁶ Presser, 2017, § 5:6.

⁵⁷ Art. 16-19 of the Stock Corporation Act (Aktiengesetz).

⁵⁸ German law regulates various forms of corporate. The Aktiengesetz distinguishes between (1) domination based on agreements (a contractual Konzern, Art. 291-310), (2) de facto domination (Art. 311-318), and (3) integrated entities (Art. 319-327). Additionally, there is the concept of qualified (centralized) de facto domination which has no statutory basis and was developed by German court, in the context of a dominated private companies (GH). For detailed analysis on the law on Konzerns see Carsten Altig, *Piercing the Corporate Veil in American and German Law - Liability of Individuals and Entities: A Comparative View*, 2 TULSA J. COMP. & INTL. L. 187, 233-40 (1995); Sandra K. Miller, *Piercing the Corporate Veil Among Affiliated Companies in the European Community and in the U.S.: A Comparative Analysis of U.S., German, and U.K. Veil piercing Approaches*, 36 AM. BUS. L.J. 73, 99-108 (1998).

⁵⁹ Vandekerckhove, 2007, at 54-60.

⁶⁰ Vandekerckhove, 2007, at 62-65.

⁶¹ Vandekerckhove, 2007, at 63-64; Altig, (1995), at 201; 207-210; 214-218.

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

German law does not require showing of a fraudulent intention to establish shareholder liability. However, more recent legal cases suggest that corporate veil piercing is enforced mostly when the corporate parent exercises a control over its subsidiary in an abusive manner and against the interest of the subsidiary.⁶²

i. Great Britain

1) Application of enterprise / economic unity approach

The UK strictly adheres to the entity theory under which each corporation in the group is a separate juridical entity with its own rights and duties distinct from those of its shareholders.⁶³ In the past some court decisions had relied on a single economic unit theory as an independent basis for imposing liability on the parent.⁶⁴ The theory was considered and rejected on the merits of *Adams v Cape Industries Plc.* (1990), a leading authority in Britain until 2013,⁶⁵ and was officially overruled in the seminal *Prest* decision.

2) Variety of factors considered by in veil piercing cases

UK courts have taken a minimalist approach to corporate veil piercing, even questioning whether the doctrine has ever existed in British law.⁶⁶ In *Prest v Petrodel* (2013), the Supreme Court handed down what is emerging as the seminal decision in PCV in British law. While making clear that veil piercing is available, the Court introduced two guiding principles that have circumvented the availability of the doctrine.⁶⁷ First is the evasion principle. *Prest* provides that “the principle that the court may be justified in piercing the corporate veil if a company’s separate legal personality is being abused for the purpose of some relevant wrongdoing is well established in the authorities. [...] I think that the recognition of a limited power to pierce the corporate veil in carefully defined circumstances is necessary if the law is not to be disarmed in the face of abuse⁶⁸. Abuse, the Court followed, may arise only when the incorporation had been made or used for deliberately evading a legal obligation or liability: “[t]hese considerations reflect the broader principle that the corporate veil may be pierced only to prevent the abuse of corporate legal personality. It may be an abuse of the separate legal personality of a company to use it to evade the law or to frustrate its enforcement”⁶⁹ The second guiding principle provides that veil piercing will be considered only as a remedy of last resort, when all other avenues for relief have been exhausted.

In an effort to define the scope of the doctrine, Lord Sumption noted: “I conclude that there is a limited principle of English law which applies when a person is under an existing legal obligation or liability or subject to an existing legal restriction which he deliberately evades or whose enforcement he deliberately frustrates by interposing a

⁶² For example, in the ITT case the Supreme Court held that a controlling shareholder bears a special duty to conduct its affairs with the subsidiary in corporate good faith. When the duty is breached, the parent may be held liable. Vandekerckhove, 2007, at 54.

⁶³ *Bank of Tokyo v. Karoon*, [1986] 3 WLR 414 (refusing to treat a parent and its subsidiary as one single economic unit despite the claim they were functioning as one economic enterprise. The court held that “counsel suggested beguilingly that it would be technical for us to distinguish between parent and subsidiary company in this context; economically, he said, they were one. But we are concerned not with economics but with law. The distinction between the two is, in law, fundamental and cannot here be bridged”). In *Adams v. Cape Indus.* 2 WLR. 657 (C.A.1990)), the court denied a claim to lift the corporate veil in a group of companies engaged in mining operations. Although it was found that the group had operated as a single integrated mining division with the parent setting the broad business policy of the subsidiaries, the court held that a parent and subsidiary should not be regarded as one enterprise because of the single integrated nature of the business.

⁶⁴ Consider two examples. In *DHN Food distributions Ltd v. Tower Hamlets London Borough Council* [1976] WLR 852 a parent company distributed the operation of a business between two wholly owned subsidiaries, one of them held the title of the land in which a warehouse used for the business was located. The land was compulsorily acquired by the council, but no compensation was paid as the council claimed that the owner of the land (the subsidiary) did not have an interest in the business. The court agreed with the plaintiff that in these circumstances the council should have treated the business as one economic unit and consequently ordered the veil to be lifted. *Woofson v. Strathclyde Regional Council* 1978 SC (HL) 90 presented similar facts. An individual held the majority of shares in two companies where one company owned the property and another operated the enterprise. Once again, the council compulsorily acquired the land without paying compensations. This time however, the court refused to consider the companies as one single economic unit, and rejected the precedential value of *DHN Food distribution*.

⁶⁵ *Adams v Cape Industries Plc.* [1990] Ch 433.

⁶⁶ *VTB Capital Plc v Nutritek International Corp and others* [2013] UKSC 5.

⁶⁷ See, Alexander Schall, *The New Law of Piercing the Corporate Veil in the UK*, ECFR 2016, 549–574, at 550.

⁶⁸ *Prest v Petrodel Resources Ltd.* [2013] UKSC, at ¶ 27 (Lord Sumption).

⁶⁹ *Prest v Petrodel Resources Ltd.* [2013] UKSC, at ¶ 34.

company under his control. The court may then pierce the corporate veil for the purpose, and only for the purpose, of depriving the company or its controller of the advantage that they would otherwise have obtained by the company's separate legal personality."⁷⁰

3) Availability of veil piercing outside of bankruptcy cases

Bankruptcy is not a prerequisite to commence veil piercing proceedings. However, under the rule of last resort, courts may refuse to pierce the corporate veil when other avenues for relief are available.

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

The corporate veil is pierced only in extreme cases of misconduct including those that involve fraud.

5) Empirical data

Average piercing rate is around 47% of the total claims (290 cases from 1859 to 1998).⁷¹ Critically, many decisions that granted veil piercing can no longer stand as good law after *Prest*.

j. Netherlands

1) Application of enterprise / economic unity approach

The Netherlands regulates affiliated corporations primarily through the doctrine of identification, under which the law considers affiliated corporations as one legal person in various situations. Other constructions for imposition of parent liability are liability as de facto director and rules concerning asset transfers. However, unlike in Germany, the default regime between affiliated corporations relies on the entity theory. In general, parents will not be held liable when the subsidiary' management have given its full consent to acts carried out by the parent.

The identification doctrine allows courts to treat the parent and subsidiary as one entity when some factors are found to be present. Courts identify affiliated corporations in situation such as parent dominance, intensive involvement in the management of the controlled corporation, commingling of assets and intermingling in corporate formalities (e.g., identity in addresses, letterhead and directors/shareholders). Moreover, courts examine whether treating the corporations separate would lead to consequences contrary to good faith. The Dutch Supreme Court has traditionally treated the identification doctrine with restraint, while the lower courts have applied it more frequently.⁷² It will usually take a combination of factors to trigger corporate veil piercing. A mere commingling of assets among corporate group entities or even some indications of economic unity are not enough to justify veil piercing in most cases.⁷³

Dutch law does not recognize specific rules limiting intra-group asset transfers. The general policy is that as long as a subsidiary may draw benefits from the group relationship in the long term, and so long as a transaction is in the

⁷⁰ *Prest v Petrodel Resources Ltd.* [2013] UKSC, at ¶ 35. Earlier cases have mentioned additional factors to be considered, such as commingling of assets and disregard to corporate formalities, although it is not clear to what extent they still constitute good law after *Prest*. For example, in *Creasey v. Breachwood Motors Ltd.* [1993] BCLC 480, a general manager brought an action against his employer, Breachwood Welwyn Ltd., for wrongful dismissal. After the claim was filed all of the defendant's assets and business activity were transferred into a new corporation, Breachwood Motors Ltd. The plaintiff then moved to enforce the judgment against the new corporation. In lifting the veil and imposing the debt on Breachwood Motors Ltd., the court held that the shareholders and directors demonstrated total disregard of their duties. The court further held that the new corporate form cannot be used to avoid the old entity's legal obligations.

⁷¹ Charles Mitchell, *Lifting the Corporate Veil in the English Courts: An Empirical Study*, 3 COMPANY FIN. & INSOLVENCY L. REV. 15 (1999).

⁷² The *Bato's Erf* Case provides an example of the narrow approach taken by the Supreme Court in comparison to lower courts. The case involved a company that transferred its operations to a wholly owned subsidiary to avoid liability for soil pollution. The court of appeals found that both companies were closely intermingled and identified them in order to impose liability on the parent. On an appeal before the Supreme Court the decision was reversed. The court held that the mere showing of control on behalf of the parent should not identify the acts of the subsidiary with the parent. Vandekerckhove, (2007), at 424.

⁷³ See generally, Vandekerckhove, (2007) at 410-411. For instance, in the *Koenrades* case a Dutch court identified a group of affiliated companies with their sole (natural person) shareholder for debts to an employee after it was held that the owner abused the legal personality of its companies. The plaintiff was successful in showing that the shareholder intentionally caused one of his companies to go bankrupt for the sole purpose of thwarting the execution of a monetary judgment against it.

interests of the group, the dealing is valid. However, shareholders may incur liability in extreme cases where acts conducted by the parent endanger the existence of the subsidiary.⁷⁴

Imposition of liability as de facto director is regulated under Art. 2:138, 248(7) of the Dutch Civil Code. The law provides for liability of de facto directors in cases of gross mismanagement that has important contribution to the bankruptcy of the subsidiary. A parent corporation may be considered de facto director when it has had a direct influence over the subsidiary's management and when in reality the subsidiary's management has been set aside. When the parent imposes its own will (actively engages in management functions) while ignoring the subsidiary's formal management, it may be responsible for a part or all of the subsidiary's debts in bankruptcy proceedings.⁷⁵

2) Variety of factors considered by in veil piercing cases

Dutch law applies corporate veil piercing for remedial purposes in tort cases. Under Dutch law, a tort consists of an act or omission that violates rights of another person or is contrary to a legal obligation, good morals or expected prudence between persons in society.⁷⁶ To pierce the veil, a court would review whether (1) the owner of a corporation knew or should have known that his act or omission would harm the creditors of the corporation; (2) the degree of involvement / control that the owner exercised in the management was substantial.⁷⁷ Among the factors courts have considered in establishing the owner's liability are continuation of loss making activities, selective payment practices, unjustified refusal to pay creditors, unjust dividend policy, and frustration of creditors' security rights.⁷⁸

3) Availability of veil piercing outside of bankruptcy cases

Courts pierce corporate veil typically in bankruptcy cases. The doctrine of identification may be applied in cases not involving bankruptcy.⁷⁹

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

Dutch law does not require fraudulent behavior or other intentional shareholder misconduct to hold shareholders liable. However, in most veil piercing cases, acts or omissions that prejudice creditors seem to be a key factor in imposing corporate debts on shareholders.⁸⁰

The doctrine of identification views some kind of misconduct (e.g., abuse of rights, fraudulent intent or wrongful creation of false representations) as a necessary condition (albeit not sufficient) for identifying the controlled entity and the shareholder.⁸¹

k. *Italy*

1) Application of enterprise / economic unity approach

Italian law regulates corporate groups differently from independent entities. Art. 2497 of the Company Law prescribes a rule under which the corporate parent is held liable for mistakes of its subsidiary if the parent causes damages to the integrity of the subsidiary's assets. Furthermore, other stakeholders of the corporate group (e.g., sister subsidiary, the parent's shareholders) that benefit from the parent's control over its subsidiary and participates in a harmful activity may also be held liable.

⁷⁴ Vandekerckhove, 2007, at 207.

⁷⁵ Vandekerckhove, 2007, at 331-32. Vandekerckhove points however, that "a normal central management in corporate groups, characterized by an overall coordination of central financing and a definition of policies on the longer term does not amount to quasi management."

⁷⁶ Article 2:5 of the Dutch Civil Code.

⁷⁷ *Osby-Pannan A/B v. Las Verkoopmaatschappij BV*, NJ 1982 no. 443, Supreme Court (Hoge Raad). Quoted in Vandekerckhove, 2007, at 33-35.

⁷⁸ Vandekerckhove, 2007, at 33-35

⁷⁹ Vandekerckhove, 2007, at 37-38.

⁸⁰ In the aftermath of *Osby*, a flow of judgments established the notion that parent corporations bear responsibility to take into account the interests of their subsidiaries' creditors. In order to pierce the veil, a court would review whether (1) the parent knew or should have known that its act or omission would harm the creditors; (2) the degree of involvement/control that the parent exercised in the management of the subsidiary. Vandekerckhove, (2007), at 34-35.

⁸¹ Vandekerckhove, 2007, at 433.

Art. 2325 and 2462 also provide that single-owner companies⁸², which constitute the majority of the subsidiaries, must meet certain capital formalities in order to qualify for limited liability.

2) Variety of factors considered by in veil piercing cases

Italian law considers several veil piercing criteria for both public and private limited liability corporations. Main reasons for corporate veil piercing include a disregard for corporate formalities and commingling of assets.⁸³ The de-facto Director doctrine is invoked in bankruptcy cases most often when shareholders disregard corporate structure and formalities, interfere directly with management, and commingle personal and corporate assets.⁸⁴

Additionally, Company Law 2003 (Civil Code Art. 2476) mandates that shareholders and directors who intentionally decide or authorize activities that damage their company may incur joint liability for debts incurred by their company.

Bankruptcy Law 2006 (Art. 147) also regulates the joint liability of members of unlimited partnerships. It further imposes liability on “shadow or secret partners” who act in the capacity of a partner without formally being introduced as one. Italian jurists argue that this construction may be extended to a “tyrant” or a dominating shareholder who commingles personal and corporate assets.

Finally, Italian courts are more inclined to pierce the corporate veil when a limited liability company is incorporated solely to dodge legal obligations assumed by the corporate parent (e.g. non-compete obligation).⁸⁵

3) Availability of veil piercing outside of bankruptcy cases

Bankruptcy is not a prerequisite to commence veil piercing proceedings, but it is required for actions brought under Art. 147 of the Bankruptcy law and is a relevant factor in proceedings taken under Art. 2467 of the Companies Law.

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

Italian law does not require a fraudulent intent to hold shareholders liable for the obligations of their subsidiaries. At the same time, intent to commit wrongdoing is a factor considered under Art. 2476 of the Companies Law, which is applicable to private limited liability companies. This rule holds shareholders and directors jointly liable for the debts incurred by their company if they intentionally authorize actions that are damaging to the company. However, under the governing law of corporate groups, neither intent nor fraudulent behavior is required to establish liability.

1. Japan

1) Application of enterprise / economic unity approach

Japan adheres to the entity theory. Courts seem to apply the same standards of veil piercing for corporate groups as they do in other cases.⁸⁶

2) Variety of factors considered by in veil piercing cases

The emergence of the piercing the veil doctrine in Japanese law came in 1969 when the Supreme Court held that “where the legal personality of [a company] is nothing more than a mere shell, or where it is misused in order to avoid the application of legislation...it will be necessary to pierce the corporate veil.”⁸⁷

The general test for veil piercing requires demonstration of a total control by the owner and an additional factor, such as commingling of assets, repeated overlap of business transactions or activities, failure to follow corporate formalities, inadequate capitalization, lack of a separate identity between corporation and individual,

⁸² Italian Companies law sets out two main types of incorporated entities: the Società per Azioni (SPA), a company limited by shares, and the Società a Responsabilità Limitata (SRL), a company limited by ‘quotas’.

⁸³ See generally, Marco Speranzin, Piercing the Corporate Veil in Italian Company and Banking Law (2008). http://www.academia.edu/10285563/Piercing_the_corporate_veil_in_Italian_company_and_banking_law.

⁸⁴ See, e.g., Cass. 23 aprile 2003, n. 6478 (Italian High Court).

⁸⁵ Speranzin, 2008.

⁸⁶ The Sendai District Court held in 1970 that the instrumentality theory may be applied more easily upon corporate groups than individual shareholders when the parent parents possess the right to control the assets of subsidiaries. In another case, 111 employees of an insolvent subsidiary brought a claim seeking to pierce the veil of the parent in order to collect their salaries. The court ruled in their favor, finding that the subsidiary's officers had been seconded from the parent, the business of the two firms had often been intermingled and the parent firm had made all significant (and even many minor) business and personnel decisions for the subsidiary. J. MARK RAMSEYER AND MINORA NAKAZATO, JAPANESE LAW: AN ECONOMIC APPROACH, 117 (1999)

⁸⁷ Presser, 2017, § 5:10.

misrepresentation of the real entity dealing with the plaintiff, or an incorporation to avoid a legal duty.⁸⁸ Impropriety and fraud are central factors in veil piercing claims.⁸⁹ The application of the PCV doctrine is generally confined to closely held corporations.

3) Availability of veil piercing outside of bankruptcy cases

Bankruptcy is not a prerequisite to commence veil piercing proceedings.

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

Subjective intent to commit wrongdoing is typically required to establish veil piercing claims. Bad motives of the shareholder seem to play a critical role in the determination of corporate veil piercing.⁹⁰

m. South Korea

1) Application of enterprise / economic unity approach

South Korea's economy is predominantly structured around corporate groups called *Chaebol* groups. *Chaebol* groups are family-controlled global conglomerates with a highly centralized management structure.⁹¹ In most cases, companies operating under the same group are intertwined by either cross-company shareholding or intra-group loans.⁹²

Korean law, nonetheless, features hardly any rules governing parent-subsidary relations, particularly regarding creditors and minority shareholders. Art. 412(5) of the Korean Commercial Code prescribes rules allowing a statutory audit of the subsidiary's business but only under very specific conditions. There are also few restrictions on subsidiary's granting credit to its controlling company as long as the subsidiary is publicly listed⁹³ and on dealings that may benefit the parent or other affiliates at the expense of the subsidiary's other shareholders.⁹⁴

Other than the particular provision in the Commercial Code, Korean case law strictly recognizes the legal separation between wholly owned subsidiaries and their owners. For example, in one case, a wholly owned subsidiary approved resolutions in a shareholders meeting that never took place. The court decided that such resolutions would be upheld as long as the owner kept written minutes regardless of whether the meeting actually took place.⁹⁵

Korean courts apply the Shadow Director doctrine on controlling companies in corporate groups and controlling family members. Under Korean law, a parent will not be rendered the shadow director of its subsidiary merely because of its capacity to impose common policies on the subsidiary⁹⁶ but may incur liability for having issued wrongful instructions to the subsidiary.⁹⁷ As of 2011, no parent was held shadow director by Korean courts, the main reason is the evidentiary hurdle to prove the influence of the parent.⁹⁸

2) Variety of factors considered by in veil piercing cases

⁸⁸ Presser, 2017, § 5:10.

⁸⁹ Larry Catá Backer, Comparative corporate law: United States, European Union, China, and Japan: cases and materials, at 1,114 (2002). In that vein, Presser cites the Japanese Supreme Court decision of October 26, 1973 to support the view that "subjective intent is key. The Court held that there was an abuse which justified piercing the veil because the intent of establishing the particular corporation was to avoid the liabilities of a prior corporation. Instances that may constitute such an abuse of the corporate form, the court explained, include avoidance of debt, inadequate capitalization, unfair labor practices and violations of non-competition agreements." Presser, 2017, § 5:10.

⁹⁰ Backer, 2002, 1,114; Presser, 2017, § 5:10..

⁹¹ As of 2011, 62 corporate groups were responsible for more than 52% of Korea's national turnover. See Hyeok-Joon Rho, *Corporate Groups in Korea*, in GERMAN AND ASIAN PERSPECTIVES ON COMPANY LAW 307, 308 (HOLGER FLEISCHER ET. AL. EDS., 2015).

⁹² Jack B. Jacobs, *The Utility of the "Piercing The Corporate Veil" Doctrine In American and South Korean Corporate Law: An Essay* (unpublished manuscript), at *1.

⁹³ Art. 542-9 of the Korean Commercial Code.

⁹⁴ Art 398 of the Korean Commercial Code requires such dealings to qualify as "fair trade" and be approved by two thirds majority of the board.

⁹⁵ Supreme Court, 11 June 1993 Da 8702 (quoted in Rho, 2015, at 318).

⁹⁶ Rho, 2015, at 329-30.

⁹⁷ Rho, 2015, at 330.

⁹⁸ Rho, 2015, at 330.

Korean corporate law is based on the entity approach, according to which every corporation is a distinct legal entity having its own assets and liabilities. The Commercial Code mandates the corporate entity (Art. 171 provides that a company “shall be a juristic person”) and provides limited liability to its owners (Art. 331).⁹⁹

Veil piercing law has been created and developed in a number of court decisions beginning in the late 1970s. To date, a principle doctrine setting the conditions for corporate veil piercing (“the denial of corporate status” as referred by Korean judges) cannot be extracted from the case law.

The case law includes instances in which the corporate veil was pierced when the controlling shareholder completely dominated the business and the management. Comingling of assets, abuse of the corporate entity (e.g., incorporating a wholly owned foreign subsidiary merely to insulate from liability¹⁰⁰), and disregard for corporate formalities (e.g., failure to hold board of director meetings or to maintain an operating office¹⁰¹) were also invoked to justify decisions to pierce the corporate veil.

Controlling shareholders may also be held liable for company’s obligations under the Shadow Director doctrine. Art. 401-2 of the Commercial Code provides that a person who uses its influence to direct another officer in the company (e.g., director, president, vice-president etc.) and to conduct the company’s business may be held liable for the company’s acts.

3) Availability of veil piercing outside of bankruptcy cases

Bankruptcy is not a prerequisite to commence veil piercing proceedings.

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

Korean law does not require a fraudulent intent to establish shareholder liability. Abuse of the corporate entity, which in most cases will involve some level of subjective intent has played a role in veil piercing case law.

n. Sweden

1) Application of enterprise / economic unity approach

No specific findings were available for application of different veil piercing policy on corporate groups. Courts seem to apply the general standards of veil piercing in all cases.¹⁰²

2) Variety of factors considered by in veil piercing cases

Swedish law has recognized veil piercing in a restrictive manner. To complement the protection of creditors, Swedish law further provides specific statutory schemes for creditor protection outside of the context of ex-post shareholder liability.¹⁰³

Piercing the corporate veil doctrine seems to follow a totality of the circumstances analysis, focusing mostly on undercapitalization, dependency (dominance), and impropriety (unfair or inequitable conduct).¹⁰⁴ In addition, imposition of liability on shareholders usually requires causality (between the damage and the ground for piercing the veil), and good faith on behalf of the plaintiff.¹⁰⁵

⁹⁹ South Korea’s legal system is based mostly on statutory laws created by the legislative branch (in the legal community this approach is commonly known as the civil law tradition, in contrast to the common law tradition under which the law is developed by judicial decisions).

¹⁰⁰ Judgment of November 22, 1988, 87-Daka-1671.

¹⁰¹ Judgment of January 19, 2001, 97-DA-21604.

¹⁰² Swedish Supreme Court Decision NJA 1947 s. 647.

¹⁰³ Richard Ramberg, *Piercing the Corporate Veil: Comparing the United States with Sweden*, 17 NEW ENG. J. INT’L & COMP. L. 159. (2011)

¹⁰⁴ The impropriety test provides that when the defendant’s conduct is fraudulent or in violation of a statutory or other positive legal duty, or a dishonest and unjust act in contravention of plaintiff’s legal rights, veil piercing may be warranted. Ramberg, 2011, at 182.

¹⁰⁵ Ramberg, 2011, at 182.

There is a general support for the claim that undercapitalization is absolutely required (but not sufficient) in order to pierce the corporate veil (NJA 1947 s. 647).¹⁰⁶ Even scholars who do not share this view consider undercapitalization a fundamental factor determining corporate veil piercing.¹⁰⁷

3) Availability of veil piercing outside of bankruptcy cases

Bankruptcy is not mandatory in veil piercing claims. Nonetheless, bankruptcy does seem to become a factor within the Mandatory Creditor Protection Rules. If the company has entered into liquidation or bankruptcy proceedings, the liquidator/trustee may prosecute on the company's behalf. If a refund cannot be made in full, shareholders (and others) may be deemed liable pursuant under 17 Ch. 7 § ABL for the remaining amount if they knew of or were grossly negligent with regard to the transfer.

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

The common three-prong analysis includes the impropriety requirement, under which the plaintiff must show unfair or inequitable conduct. When the defendant's conduct is fraudulent or in violation of a statutory or other positive legal duty, or dishonest and unjust in contravention of plaintiff's legal rights, veil piercing may be warranted. While this factor is not imperative for veil piercing, it is central to the Swedish veil piercing doctrine.¹⁰⁸

o. Switzerland

1) Application of enterprise / economic unity approach

Swiss law does not include a codified provision regulating the relationship between a corporate parent and its subsidiaries. General PCV conventions apply to corporate groups as they do to all other owner-corporation relations.

Under Swiss law, additional legal doctrines may be invoked in order to impose liability on the parent. A legal entity that decides on matters that ought to be subject to the approval of a board of directors and thus preponderantly influence the decision-making in the subsidiary, may be considered as the "de facto corporate body".¹⁰⁹ Therefore, if the subsidiary is unable to repay the debt, the creditors may file a suit against the management and also the de facto corporate body. The only exception is when the de facto corporate body provides a proof that the damages were not preventable.¹¹⁰

The concept of inspiration of trust is not codified but is a judicial convention. Generally, it describes a situation in which the parent implicitly suggests to the creditor that it will become liable for the debts of the subsidiary if the subsidiary is not able to pay. The doctrine folds five cumulative elements, which has been interpreted rather strictly by Swiss courts¹¹¹: (1) a lack of an agreement to establish liability between the parties (parent, subsidiary, and creditor); (2) a trust relationship was inspired by the parent; (3) the creditor undertook an investment due to the trust inspired; (4) the trust was violated; (5) a consequential damage occurred as a result of the violation of the trust.

2) Variety of factors considered by in veil piercing cases

Swiss PCV doctrine is a judicial convention derived from Art. 2 of Swiss Civil Code. The courts apply a two- (or three-) prong test to determine the applicability of the PCV doctrine. First, the shareholder / defendant must control

¹⁰⁶ *NJA 1947 s. 647* was a Supreme Court case in which the court held the parents of a subsidiary formed for regulating certain activities connected with power production personally liable for the debts of the subsidiary. In *NJA 1947*, a city and four companies who all owned power plants next to a stream, formed a company together with the purpose of acquiring a pond and regulating it to the advantage of the power plants. A neighboring land owner who incurred damages from the pond brought legal action against the parent after he had learned that the subsidiary does have sufficient capital. The court held the shareholders personally liable, stating that the company had been a joint body of execution for managing the water conservation and that it had no independent business. Commentators emphasized that the company's inadequate capitalization in relation to the operation it was formed to carry out was central to the court's holding. Considering this, and "other circumstances," the shareholders were held personally liable. *See further*, Ramberg, 2011, at 178-80.

¹⁰⁷ Ramberg argues that undercapitalization is viewed more narrowly in Sweden than in the U.S. The Swedish scholars' use of expressions such as "clearly insufficient" or "obviously insufficient," resonates a more restrictive view of undercapitalization than what is applied in the United States. The traditional view of adequate capitalization in the United States is the amount of capital necessary to cover reasonably foreseeable risks of the business. Consequently, any capitalization insufficient to cover the reasonably foreseeable risks of the business is relevant, without it being clearly or obviously insufficient. Ramberg, 2011, at 181.

¹⁰⁸ Ramberg, 2011.

¹⁰⁹ BGE 132 III 523. *See also* Bsk-OR-Gericke/Waller Art. 754 N 5.

¹¹⁰ Bsk-OR-Gericke/Waller Art. 754 N 5.

¹¹¹ BGE 120 II 331. *See also* Sethe, Konzernrecht, 2009, 7 f.

the relevant legal entity.¹¹² Second, the person must have acted maliciously.¹¹³ Third, the plaintiff must prove consequent injury.¹¹⁴

Furthermore, courts may pierce the corporate veil in cases of abuse of rights. Art. 2(1-2) of the Swiss Civil Code stipulates that rights should be exercised in good faith. A shareholder acting in bad faith abuses his legal right and may be held liable from the debts of the corporation.¹¹⁵

3) Availability of veil piercing outside of bankruptcy cases

Bankruptcy is not a prerequisite to commence corporate veil piercing proceedings, or any other doctrines that allow imposition of liability on the parent.

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

Malicious act is a prerequisite in veil piercing claims according to current case law. Nonetheless, in the intra-group context, the de facto corporate body may be triggered even without specific intent of fraud / malice by the parent.

*p. The United States*¹¹⁶

1) Application of enterprise / economic unity approach

Setting aside a limited number of cases considering affiliated companies as single-business enterprises, American courts adhere to the entity approach which considers each member of a corporate group as a single distinct legal entity with liability limited to the undertakings of other group members.¹¹⁷

In a limited number of states such as Louisiana and Texas (until 2008), courts have applied an enterprise approach as an independent basis for ignoring limited liability.¹¹⁸ Louisiana courts, in particular, treat affiliated corporations as a single business enterprise if the level of control reaches a certain threshold, regardless of whether the parent abused the corporate form. In other states, courts have made a reference to the concept of single business enterprise but used the concept as another factor within a broader corporate veil piercing analysis. Thus, the courts still required a proof of some form of abusive conduct by the parent to pierce the corporate veil. For example, in North Carolina, courts consider under the general veil piercing analysis the “[e]xcessive fragmentation of a single enterprise into separate corporations.”¹¹⁹

¹¹² BGer 5A_498/2007 E. 2.2. See also Kobierski, *Der Durchgriff im Gesellschafts- und Steuerrecht*, 2012, 111; Sethe, *Konzernrecht*, 2009, 6 et seq.; Koller, Schnyder & Druey, *Das schweizerische Obligationenrecht*, Zürich 2000, § 65 N 18 et seq.

¹¹³ Sethe, *Konzernrecht*, 2009, 7; Koller, Schnyder & Druey, *Das schweizerische Obligationenrecht*, Zürich 2000, § 60 N 47

¹¹⁴ Dennler, *Durchgriff im Konzern*, 32; Sethe, *Konzernrecht*, 2009, 7.

¹¹⁵ *Swiss Civil Code*, Art. 2 (2).

¹¹⁶ In the US, courts apply the PCV doctrine on both Federal and State levels. This summary of American law covers rules common to most states laws, with some emphasis on Delaware and New-York’s laws, which govern most of the publicly traded companies in the US. In addition, a reference is made to federal jurisprudence on PCV. Federal PCV law is applied when a particular federal statute or policy is involved in a case.

¹¹⁷ Phillip I. Blumberg, *Accountability of Multinational Corporations: The Barriers Presented by Concepts of the Corporate Juridical Entity*, 24 HASTINGS INT’L & COMP. L. REV. 297, 302-03 (2000) (arguing that courts have never paused to consider whether the doctrine of limited liability should be extended to shield parent corporations from the debts of their subsidiaries. Rather, they automatically “applied concepts and policies designed to separate investors from liability for the risks of the business to protect as well each of the upper-tier companies of the enterprise from liability for the debts incurred by their lower-tier subsidiaries in conducting the common business of the group”).

¹¹⁸ In *Grayson v. R.B. Ammon and Associates, Inc.*, the Court of Appeals of Louisiana held that when clear and convincing evidence demonstrates the existence of a single business enterprise, courts can pierce the veil between the entities forming the enterprise. *Grayson v. R.B. Ammon and Associates, Inc.*, 778 So. 2d 1, 15 (La. App. 1st Cir. 2000), writ denied, 782 So. 2d 1026 (La. 2001), and writ denied, 782 So. 2d 1027 (La. 2001). In the mid 80’s, Texas courts advanced a theory by which plaintiffs were allowed to pierce the veil of affiliated corporations which have “integrated their assets to achieve a common business purpose (Paramount Petroleum Corp. v. Taylor Rental Center, 712 S.W.2d 534 (1986)).” However, in 2008 the Supreme Court abrogated the theory, saying it was inconsistent with Texas veil-piercing laws (see *SSP Partners v. Gladstrong Investments (USA) Corp.*, 275 S.W.3d 444, 455 (Tex. 2008)). Following the *SSP Partners* decision, a party seeking to impose parent’s liability must show (i) that the persons or entities upon whom a claimant seeks to impose liability are alter egos of the debtor, and (ii) that the corporate fiction was used for illegitimate purposes, i.e., to perpetrate fraud. See *Tryco Enters., Inc. v. Robinson*, 390 S.W.3d 497 (Tex.App.– Houston 2012, pet. dismiss’d).

¹¹⁹ See, *Glenn v. Wagner*, 329 S.E.2d 326, 331 (N.C. 1985).

In other jurisdictions, courts consider parent-subsidary cases under the general corporate veil piercing framework, with no reference to an overarching enterprise theory.¹²⁰ Nonetheless, unique features of corporate groups are considered under the general framework.¹²¹ While full ownership of stocks by the parent is not a dispositive fact, nor is common identity of the parent's and the subsidiary's officers and directors,¹²² when abusive practices are also present, courts will be more inclined to pierce the veil between the parent and the subsidiary. Important factors considered by the courts are control of day-to-day operations and managerial decision-making. Misrepresentation of the corporate structure may also warrant intra-group veil piercing.¹²³ Other factors considered by courts in corporate group veil piercing cases are unfair intra-enterprise transactions, excessive dividends, wrongful conduct in the performance of contracts (e.g., when the parent depletes the subsidiary's assets to the point that the subsidiary cannot satisfactorily perform its contract obligations), and commingling or shuffling of assets.¹²⁴

2) Variety of factors considered by in veil piercing cases

Both Federal and state courts apply an array of standards, tests, and theories in adjudicating veil piercing claims. There are essentially two leading frameworks: the alter-ego theory and the instrumentality theory. The alter-ego framework contains three steps for concluding that liability should be imposed on the owner: “(1) Control, not mere majority or complete stock control, but complete domination, not only of finances but of policy and business practice in respect to the transaction attacked so that the corporate entity as to this transaction had at the time no separate mind, will or existence of its own; and (2) Such control must have been used by the defendant to commit fraud or wrong, to perpetrate the violation of a statutory or other positive legal duty, or dishonest and unjust act in contravention of plaintiff's legal rights; and (3) The aforesaid control and breach of duty must proximately cause the injury or unjust loss complained of.”¹²⁵ The instrumentality framework includes a two-part analysis: (1) that there be such unity of interest and ownership that the separate personalities of the corporation and the individual [shareholders] no longer exist [and the corporate entity is a mere instrumentality for advancing the personal interests of the owner]; and (2) that, if the acts are treated as those of the corporation alone, an inequitable result will follow.¹²⁶

Most US courts follow a two/three prong analysis based on either of these theories or a combination of them. A widely accepted synthesis was offered in an influential book by Frederick J. Powell in 1931. The Powell test, while formulated to address parent-subsidary relationship, influenced many US jurisdictions and has been adopted regularly by courts in general veil piercing cases. It contain three prongs: “(1) the ‘alter ego,’ or ‘mere instrumentality’ test,

¹²⁰ See, e.g., *Mesler v. Bragg Management Co.*, 39 Cal. 3d 290, 216 Cal. Rptr. 443, 702 P.2d 601 (1985). See also Miller, (1998), at 86 (claiming that as a general rule the business risk of multi intra-firm incorporation is limited on an entity-by-entity basis.)

¹²¹ *Berkey v. Third Ave. Ry. Co.*, 155 N.E. 58 (N.Y. 1926).

¹²² For example, in *United States v. Bestfoods*, 524 U.S. 51, 61-62, (1998) the U.S. Supreme Court discussed parent corporations' liability for environmental problems caused by their subsidiaries under the Comprehensive Environmental Response, Compensation and Liability Act. The court rejected the notion that parents should incur liability for violations made by their subsidiaries merely for having “actual control” of the subsidiary. It further noted that “it is hornbook law that the exercise of the ‘control’ which stock ownership gives to the stockholders ... will not create liability beyond the assets of the subsidiary. That ‘control’ includes the election of directors, the making of by-laws ... and the doing of all other acts incident to the legal status of stockholders. Nor will a duplication of some or all of the directors or executive officers be fatal”. Ultimately, the court held that liability will be imposed only under the narrow circumstances when the parent could be viewed as operating a subsidiary's facility.

¹²³ *Quarles v. Fuqua Indus., Inc.*, 504 F.2d 1358, 1364 (10th Cir. 1974) (establishing a standard of domination of day to business decisions to pierce the veil between a parent and its subsidiary). Example of such level of domination was present in *McKinney v. Gannett Co.* (817 F.2d 659 (10th Cir. 1987)). In *McKinney*, a publisher of a newspaper brought action against the parent of the direct owner of the newspaper for alleged breach of employment contract. The Court of Appeals for the 10th Circuit ruled in favor of the publisher by holding that dominion in this case was virtually complete and was moreover used for improper purposes. It was found, inter alia, that in addition to complete stock ownership, the parent controlled the subsidiary's board of directors, treated the subsidiary as a division with little operating control, that all revenues were paid to the parent, all expenditures were approved by the parent, and that the parent had in fact directly negotiated, drafted, and breached the employment contract at issue although it was signed by the subsidiary.

¹²⁴ *FMC Finance Corp. v. Murphree* (632 F.2d 413, 423 (5th Cir. 1980) (“[w]hen the shareholder or affiliate, however, engages in conduct likely to create in the creditor the reasonable expectation that he is extending credit to an economic entity larger than the corporation he actually contracted with, and the creditor reasonably relies to his detriment on his reasonable belief concerning who or what he was dealing with, then the corporate veil can be pierced”). See also Kurt A. Strasser, *Piercing the Veil in Corporate Groups*, 37 CONN. L. REV. 637, 652-54 (2005).

¹²⁵ *Consumer's Co-op. of Walworth County v. Olsen*, 419 N.W.2d 211, 217-218 (Wis. 1988).

¹²⁶ *Consumer's Co-op.*, 419 N.W.2d 211, at 217-218 (footnote 5). Also see, *Fontana Builders, Inc. v. Assurance Co. of Am.*, 882 N.W.2d 398, 414 (Wis. 2016), reconsideration denied (Sept. 12, 2016).

requiring that the subsidiary be completely under the control and domination of the parent, (2) the ‘fraud or wrong’ or ‘injustice’ test, requiring that the defendant parent’s conduct in using the subsidiary have been somehow unjust, fraudulent, or wrongful towards the plaintiff, and (3) the ‘unjust loss or injury’ test requiring that the plaintiff actually have suffered some harm as a result of the conduct of the defendant parent.”¹²⁷

In considering the different tests, courts weigh a wide range of factors. Among them are (1) undercapitalization; (2) commingling of corporate and personal affairs; (3) disregard for corporate formalities; (4) fraud/misrepresentation; (5) unfair/unjust conduct; (6) owner control/dominance; (7) Dysfunctional management; (8) whether incorporation was made to avoid legal duties or debts of other entities; and (9) assumption of risk by creditor.¹²⁸

3) Availability of veil piercing outside of bankruptcy cases

Bankruptcy is not a prerequisite, but bankruptcy and insolvency are relevant factors under the general court’s analysis.¹²⁹ Some courts, nonetheless, employ an “exhaustion rule” under which creditors may not recover from the parent or its stockholders until they have exhausted their legal remedy against corporation, unless they show that such remedy was impossible or would have been useless. Use of the “exhaustion rule” is more common in federal courts in New York and Washington, D.C.¹³⁰

4) Availability of veil piercing in the absence of fraudulent behavior or misconduct

Most state courts insist on a proof of some form of abuse or wrong committed by the owner before piercing the corporate veil. Under the common two/three prong analyses veil piercing is frequently associated with intentional acts of fraud. Nonetheless, other misleading conducts could trigger veil piercing as well.¹³¹ While some states such as Delaware and Maryland strictly require a showing of a fraudulent behavior, other states that opt for a more liberal approach such as Tennessee and Oregon settle for milder forms of misconduct.

5) Empirical data¹³²

Corporate veil piercing rates range from 35% to 49% of the total claim, but the rates and the number of cases examined vary across studies. Average veil piercing rate for corporate groups is 20%, and the U.S. has seen the largest number of veil piercing cases.

3. Bibliography

Primary sources

Adams v. Cape Indus. 2 W.L.R. 657 (C.A.1990)
Aluminum Co of Canada v Toronto (1944) 3 DLR 609
Berkey v. Third Ave. Ry. Co., 155 N.E. 58 (N.Y. 1926)
Bluecorp Pty Ltd (in liq) v ANZ Executors and Trustee Co Ltd (1995) 18 ACSR 566
Briggs v James Hardie & Co Pty, (1989) 16 NSWLR 549
Chatterley v. Omnico 485 P.2d 667 (Utah 1971)

¹²⁷ Presser, 2017, § 1:6.

¹²⁸ For a discussion of the different factors see, John H. Matheson, *Why Courts Pierce: An Empirical Study of Piercing the Corporate Veil*, 7 BERKELEY BUS. L.J. 1 (2010) (provides empirical examination of the piercing factors); Vandekerckhove, 2007, at 82 (citing Powell’s “laundry list” of factors to be examined by courts in veil piercing cases); Cathy S. Krendl & James R. Krendl, *Piercing the Corporate Veil: Focusing the Inquiry*, 55 DENVER L.J. 1, 52-55 (1978) (citing factors considered by courts).

¹²⁹ Strasser, 2005, at 654-55 (justifying intra-group veil piercing in circumstances when the parent depletes the subsidiary from assets thus causing it to become insolvent).

¹³⁰ See, e.g., Eskimo Pie Corp. v. Whitelawn Dairies, Inc., 266 F. Supp. 79, 82 (S.D.N.Y. 1967); Vuitch v. Furr, 482 A.2d 811, 819 (D.C. 1984).

¹³¹ Blumberg, 2004; Miller, 1998.

¹³² A number of studies, published in recent decades, engaged in empirical analysis of veil piercing in US courts. The data provided in this table is based upon the following scholarship: John H. Matheson, *Why Courts Pierce: An Empirical Study of Piercing the Corporate Veil*, 7 BERKELEY BUS. L.J. 1 (2010); Robert B. Thompson, *Piercing the Corporate Veil: An Empirical Study*, 76 CORNELL L. REV., 1036 (1991); C. Hodge & Andrew B. Sachs, Empirical Study, *Piercing the Mist: Bringing the Thompson Study into the 1990s*, 43 WAKE FOREST L. REV. 341 (2008); Peter B. Oh, *Veil-Piercing*, 89 TEXAS L. REV. 81 (2010); John H. Matheson, *The Modern Law of Corporate Groups: An Empirical Study of Piercing the Corporate Veil in the Parent-Subsidiary Context*, 87 N.C. L. REV. 1091, 1093-95 (2009).

Code de commerce (2010) (France)
 Code des sociétés (updated ver. May 7, 2012) (Belgium)
 Commissioner of Land Tax v Theosophical Foundation Pty Ltd. (1966) 67 SR (NSW) 70
 Companies Law of the People's Republic of China (2014)
 Conseil de la Santé (Montréal) v City of Montréal (1994) 3 SCR 29
 Creasy v. Breachwood Motors, Ltd., (1993] BCLC
 Eagle Air, Inc. v. Corroon & Black Dawson & Co. 648 P.2d 1000 (Alaska 1982)
 FMC Finance Corp. v. Murphree, 632 F.2d 413 (5th Cir. 1980)
 German Stock Corporation Act (Aktiengesetz)
 In Re Polly 2 All E.R. 433 (1996)
 Kinney Shoe Corp. v. Polan, 939 F.2d 209 (4th Cir. 1991)
 Laya v. Erin Homes Inc., 352 S.E.2d 93 (W.Va. 1986)
 Le Car GmbH v Dusty Roads Holdings Ltd., 22 Carswel INS 138 (S.C. 2004)
 Lowendahl v. Balt. & Ohio R.R., 287 N.Y.S. 62, 272 N.Y. 360 (1936)
 M. Germain, V. Magnier, Traite de droit commercial-Les societes commerciales, L.G.D.J. (2009)
 McKinney v. Gannett Co., 817 F.2d 659 (10th Cir. 1987)
 Merchandise Transport Ltd. v. British Transport Commission, 2 Q.B. 173 (1962)
 NJA 1947 s. 647 (Sweden)
 Ontario Ltd. v. Fleischer, 56 O.R.3d 417 (Ont. C.A. 2001)
 Prest v Petrodel Resources Ltd., UKSC 34 (2013)
 Re A Company Ltd., 205 BCLC 333 (C.A. 1985)
 Salomon v. Salomon & Co., A.C. 22 (1897)
 Sea-Land Services Inc. v. Pepper Source, 941 F.2d 519 (7th Cir. 1991)
 Sharrment Pty Ltd. V. Official Trustee in Bankruptcy, 82 ALR 530 (1988)
 Smith, Stone and Knight Ltd. V. Birmingham Corporation, 4 All ER 116 (1939)
 United States v. Milwaukee Refrigerator Transit Co., 142 F. 247, 249 (C.C.E.D. Wis. 1905)
 Walkovszky v. Carlton, 18 N.Y.2d 414 (N.Y. 1966)
 Dutch Civil Code, Book 2 (Holland)
 Osby-Pannan A/B v. Las Verkoopmaatschappij BV, no.443 (N.J. Supreme Court 1982)

Secondary sources

Alting, C. (1995) Piercing the corporate veil in American and German law - Liability of individuals and entities: A comparative view, *Tulsa Journal of Comparative and International Law*, 2:187.
 Anderson, H. (2009) Piercing the veil on corporate groups in Australia: The case for reform, *Melbourne University Law Review*, 33:333.
 Backer, L.C., (2002) *Comparative corporate law: United States, European Union, China, and Japan: cases and materials*, Durham, NC: Carolina Academic Press.
 Ballantine, H.W. (1925) Separate entity of parent and subsidiary corporations, *California Law Review*, 14.
 Ballantine, H.W. (1946) *Ballantine on corporations*, Chicago, IL: Callaghan & Co.
 Blumberg, P.L. (1985) Limited liability and corporate groups, *Journal of Corporation Law*, 11:573.
 Blumberg, P.L. (2004) The transformation of modern corporation Law: The law of corporate groups, *Connecticut Law Review*, 37:605.
 Cataldo, B.F. (1953) Limited liability with one-man companies and subsidiary corporations, *Law and Contemporary Problems*, 18(4):473-504.
 Cheng, T.K. (2011) The corporate veil doctrine revisited: A comparative study of the English and the U.S. corporate veil doctrines, *Boston College International and Comparative Law Review*, 34:329.
 Clarke, R.C. (1986) *Corporate law*, Boston, MA: Little, Brown and Company.
 Dobson, J.M. (1986) Lifting the veil in four countries: The law of Argentina, England, France and the United States, *International and Comparative Law Quarterly*, 35:839.
 Douglas, W.O., Shanks, C.M. (1929) Insulation from liability through subsidiary corporations, *Yale Law Journal*, 39:193
 Easterbrook, F.H., Fischel D.R. (1985) Limited liability and the corporation, *The University of Chicago Law Review*, 52(89).
 Fu, T. (1993) Legal person in China, *American Journal of Comparative Law*, 41:261.

- Hargovan, A., Harris, J. (2007) Piercing the corporate veil in Canada: A comparative analysis. *Company Lawyer*, 28(2):58-62.
- Hargovan, A., Harris, J. (2011) Cutting the Gordian knot of corporate law: revisiting veil Piercing in corporate groups, *Australian Journal of Corporate Law*, 26:39.
- Heintzman, T.G., Kain, B. (2013) Through the looking glass: Recent developments in piercing the corporate veil, *Banking and Finance Law Review*, 28:525.
- Hodge, L.C., Sachs, A.B. (2008) Empirical study, piercing the mist: Bringing the Thompson study into the 1990s, *Wake Forest Law Review*, 43:341.
- Hofstetter, K. (1990) Parent responsibility for subsidiary corporations: Evaluating European trends, *International and Comparative Law Quarterly*, 39(3):577.
- Horton, R.A. (1966) Liability of corporation for torts of subsidiary, *American Law Reports*, 7:1343.
- Huang, H. (2012) Piercing the corporate veil in China: Where is it now and where is it heading, *American Journal of Comparative Law*, 60:743.
- Landers, J.M. (1975) A unified approach to parent, subsidiary, and affiliate questions in bankruptcy, *The University of Chicago Law Review*, 42: 589.
- Lezcano, Jose Maria (2015) Piercing the corporate veil in Latin American jurisprudence: A comparison with the Anglo-American method: Routledge
- Liability of a corporation for acts of a subsidiary or affiliate (1958), *Harvard Law Review*, 71:1122.
- Matheson, J.H. (2008) The modern law of corporate groups: An empirical study of piercing the corporate veil in the parent-subsidiary context. *North Carolina Law Review*, 87:1091.
- Matheson, J.H. (2010) Why courts pierce: An empirical study of piercing the corporate veil, *Berkeley Business Law Journal*, 7:1.
- Miller, S.K. (1998) Piercing the corporate veil among affiliated companies in the European community and in the U.S.: A comparative analysis of U.S., German, and U.K. veil piercing approaches, *American Business Law Journal*, 36:73.
- OECD (1980) Responsibility of Parent Companies for their Subsidiaries.
- Oh, P.B. (2010) Veil-piercing, *Texas Law Review*, 89:81.
- Oh, P.B. (2013) Veil-piercing unbound, *Boston University Law Review*, 93:89.
- Pardinas, C.M. (1991) The enigma of the legal liability of transnational corporations, *Suffolk Transnational Law Journal*, 14:405
- Posner, R.A. (1975) The rights of creditors of affiliated corporations, *The University of Chicago Law Review*, 43: 499.
- Presser, S.B. (2015) Piercing the corporate veil - Database (Westlaw), *Thomson Reuters*.
- Ramberg, R. (2011) Piercing the corporate veil: Comparing the United States with Sweden, *New England Journal of International and Comparative Law*, 17:159.
- Ramsay, I.M., Noakes, D.B. (2001) Piercing the corporate veil in Australia, *Company and Securities Law Journal*, 19:250.
- Ramsayer, J.M., Nakazato, M. (1999) *Japanese law: An economic approach*, Chicago, IL: University of Chicago Press.
- Schall, A. (2016) The new law of piercing the corporate veil in the UK, *European Company and Financial Law Review*, 13(4): 549.
- Schwartz, J.A. (2008) Piercing the corporate veil of an alien parent for jurisdictional purposes: A proposal for a standard that comports with due process, *California Law Review* 96: 731.
- Shishido, Z. (2014) *Enterprise law: contracts, markets, and laws in the US and Japan*, Northampton, MA: Edward Elgar Publishing, Inc.
- Siems, M.M., Cabrelli, D. (2013) *Comparative company law: A case-based approach*, Portland, OR: Hart Publishing.
- Squire, R. (2011) Strategic liability in the corporate group, *The University of Chicago Law Review*, 78:605.
- Strasser, K.A. (2005) Piercing the veil in corporate groups, *Connecticut Law Review*. 37:637-641.
- Thompson, R.B. (1991) Piercing the corporate veil: An empirical study, *Cornell Law Review*, 76:1036.
- Vandekerckhove K. (2007) *Piercing the corporate veil*. The Netherlands: Kluwer Law International.
- Wu, M. (2007) Piercing China's corporate veil: Open questions from the new company law, *Yale Law Journal*, 117:328.

Supplementary Appendix B: Formal Model

In this Appendix, we develop a simple model to inform our empirical analysis. In the model, headquarters located in a ‘core’ unit must decide whether to invest in a safe or risky project. The core unit produces large, certain profits $\Pi_{Core} > 0$. The safe project consists of further investment in the core unit and yields profits R with certainty. The risky project involves the creation of a new experimental unit which can produce positive profits but can also yield losses. In the Alphabet group, the core unit would be Google (the search engine) and the experimental unit could be Verily (biotechnology and medical instruments) or Waymo (self-driving cars). Our goal is to understand how enterprise liability—the extent to which headquarters is insulated from losses in the experimental unit—affects project choice as well as the legal form and autonomy of the experimental unit.

The model has three stages.

1. **Project choice.** In stage 1, headquarters chooses between the safe and the risky project. If headquarters chooses the safe project, then it gets $\Pi_{Core} + R$ and the game ends. If headquarters chooses the risky project, then the experimental unit is created.
2. **Legal form.** In stage 2, headquarters chooses a legal form for the experimental unit. Headquarters can set up the new unit as an unincorporated division of the core unit, or can incorporate the unit. If the unit is incorporated, then it becomes a wholly-owned subsidiary of the core unit. Incorporation involves a fixed cost $K > 0$. This may include costs of complying with the law (e.g., legal costs, external auditing), additional taxes, the cost of hiring new directors, and so on.¹ The advantage of incorporation is that a legally independent subsidiary may benefit from limited liability. Because the experimental unit is owned by the core unit, these benefits are more likely to accrue when enterprise liability is weak.
3. **Implementation.** In stage 3, the experimental unit must select a course of action. This stage follows closely Aghion and Tirole’s (1997) model of formal and real authority in organizations.² First, both headquarters and the experimental unit’s manager gather information about the payoff consequences of different actions. Then the manager makes a recommendation to headquarters,

¹Less direct incorporation costs may include the fact that a manager with a CEO title may demand higher pay, or the fact that resource redeployment from one unit to another may be hindered when units are legally independent.

²There are many models of authority and delegation in organization, including Alonso, Dessein and Matouschek (2008), Alonso and Matouschek (2008), Baker, Gibbons and Murphy (1999), Dessein (2002) and Melumad, Mookherjee and Reichelstein (1995). We use Aghion and Tirole (1997) to capture the simple idea that headquarters is likely to monitor more, and grant a manager less discretion, when the consequences of bad managerial decisions are more serious.

which headquarters can either accept or reject. If the recommendation is rejected, then headquarters selects a course of action, which the experimental unit must implement. We interpret the probability that headquarters rejects the manager's recommendation as an inverse measure of the experimental unit's autonomy.

Below we describe the model in greater detail and solve the game backwards starting from stage 3.

Implementation. In stage 3, the experimental unit must implement one of $n + 1$ actions, indexed by $i = 0, 1, \dots, n$, $n \geq 3$. Each action i is associated with a pair (V_i, v_i) , where V_i is the payoff that accrues to headquarters and v_i is the payoff or private benefit that accrues to the manager if action i is selected. Action 0 yields a known payoff $(0, 0)$ to headquarters and the manager and can therefore be interpreted as 'doing nothing'. The consequences of actions $i = 1, \dots, n$ appear identical ex ante to headquarters and the manager and can only be discovered by exerting information gathering effort. Ex ante, the players only know that, with probability α , two of these actions yield (B, b) and $(-L, 0)$ and the $n - 2$ other actions yield $(-M, -m)$. With probability $1 - \alpha$, however, two actions yield $(B, 0)$ and $(-L, b)$ and the $n - 2$ other actions yield $(-M, -m)$. B, b, L, M, m are all strictly positive. We assume that n, M and m are 'large enough' that, with no additional information about the consequences of these actions, both headquarters and the manager prefer action 0 to randomly picking one of the other actions.

The parameter α can be interpreted as a measure of congruence between the preferences of headquarters and those of the manager. Suppose in fact that the manager perfectly knew the consequences of selecting each of the possible actions $i = 0, 1, \dots, n$. Then, with probability α , the manager would select the action yielding (B, b) , which is also the headquarters' preferred action. However, with probability $1 - \alpha$, he would select the action yielding $(-L, b)$, which would give headquarters a negative payoff.

By gathering information, the headquarters and the manager can learn the consequences associated with actions. Let e be the information gathering effort exerted by the manager, and E the information gathering effort exerted by headquarters. The cost of effort is $\frac{1}{2}ce^2$ for the manager and $\frac{1}{2}CE^2$ for headquarters. By exerting effort e , we assume that the manager learns the payoffs associated with all the actions with probability e , and with probability $1 - e$ he learns nothing. Similarly, by exerting effort E , headquarters learns the payoffs associated with all the actions with probability E and, with probability $1 - E$, it learns nothing. These probabilities are independent.

We adopt an incomplete contracting approach (Grossman and Hart, 1986) and assume that actions cannot be described and contracted on ex ante. Players interact as follows. First, the manager and headquarters simultaneously and non-cooperatively choose effort levels e and E . Then the manager proposes a

course of action. Headquarters can reject the manager's proposal and pick a different action, which is then implemented. Aghion and Tirole (1997) refer to this case as 'integration' or 'P-formal authority'. Headquarters always retains the formal authority to select an action, but the manager can enjoy real authority because headquarters is uninformed. Because of the timing, we can interpret the manager's proposal as an 'initiative' originating from the experimental unit, and the headquarters' information gathering and evaluation as 'monitoring'.

Let $\alpha B - (1 - \alpha) L \geq 0$ and suppose that, when indifferent between two actions, players always pick the one that maximizes the utility of the other player. Given these assumptions, headquarters' expected payoff from the experimental unit is

$$\Pi_{Exp} = EB + (1 - E) e[\alpha B - (1 - \alpha) L] - \frac{1}{2}CE^2 \quad (1)$$

and the manager' expected payoff is

$$U_{Exp} = E\alpha b + (1 - E) eb - \frac{1}{2}ce^2. \quad (2)$$

To obtain (1) and (2), note that, if headquarters is informed (which occurs with probability E), then it will always select the action yielding B (and αb in expectation to the manager). However, if headquarters is uninformed and the manager is informed (which occurs with probability $(1 - E) e$), the manager will recommend the project that yields b to himself and $\alpha B - (1 - \alpha) L$ in expectation to headquarters. Of course, headquarters can reject this recommendation and obtain 0 by selecting project 0. However, because we assumed that $\alpha B - (1 - \alpha) L \geq 0$, headquarters will always optimally rubber-stamp the manager's recommendation if uninformed. Finally, if both headquarters and the manager are uninformed, project 0 yielding 0 to both will be selected.

In equilibrium, headquarters maximizes (1) with respect to E , and the manager maximizes (2) with respect to e . Assuming interior solutions, this yields

$$e^* = \frac{b}{c}(1 - E^*) = \frac{b}{c} \left(1 - \frac{B - \frac{b}{c}[\alpha B - (1 - \alpha) L]}{C - \frac{b}{c}[\alpha B - (1 - \alpha) L]} \right) \quad (3)$$

and

$$E^* = \frac{B - \frac{b}{c}[\alpha B - (1 - \alpha) L]}{C - \frac{b}{c}[\alpha B - (1 - \alpha) L]}. \quad (4)$$

Intuitively, an increase in headquarters' monitoring E^* reduces managerial initiative because headquarters is better informed and less likely to simply rubber-stamp the manager's proposal (that is, the manager has less real authority). From the point of view of headquarters, reducing monitoring has the advantage of encouraging managerial initiative, but comes at the cost of loss of control.

The probability that a manager's proposal is rejected, conditional on being made, is $E(1 - \alpha)$. Thus, it is natural to interpret $E(1 - \alpha)$ as an inverse measure of managerial autonomy. The smaller $E(1 - \alpha)$ is, the greater the autonomy of the experimental unit from headquarters. Because e^* and E^* are inversely related, in equilibrium greater autonomy will be positively related to greater managerial initiative.

Legal form. In stage 2, headquarters chooses a legal form for the experimental unit. If the experimental unit is incorporated, then it becomes a subsidiary of the core unit. Because the organization's assets are divided into two distinct firms, we refer to this case as asset partitioning. Alternatively, the experimental unit remains an unincorporated internal division of the core firm. We explore the potential of asset partitioning to compartmentalize and mitigate downward risk.

The cost of incorporating the unit is $K > 0$. The advantage is that headquarters may enjoy limited liability protection if the subsidiary makes losses. The magnitude of this advantage depends on the strength of enterprise liability; that is, the propensity of courts to hold the whole group liable for the obligations of one of its subsidiaries.

Let L denote the expected losses incurred by headquarters if the 'bad' action is selected, and \bar{L} the maximum losses. Let $\Pi_{Exp}^*(L)$ be headquarters' expected payoff from the experimental unit when e and E are chosen optimally and expected losses are L . That is, $\Pi_{Exp}^*(L)$ is equal to (1) with (E^*, e^*) replacing (E, e) .

If the experimental unit is not incorporated and the bad action is selected, then headquarters incurs the full losses \bar{L} . This is because the profits of the core business are large enough to cover these losses: $\Pi_{Core} \geq \bar{L}$. Thus, headquarters' expected payoff from the unit is $\Pi_{Exp}^*(\bar{L})$, since $L = \bar{L}$.

If however the experimental unit is incorporated, losses may be externalized. The extent to which headquarters is shielded from losses depends on the propensity of courts to pierce the corporate veil. Let $\theta \in [0, 1]$ be the probability that courts pierce the corporate veil. Thus, a higher θ means stronger enterprise liability or, equivalently, weaker limited liability protection for headquarters. If the experimental unit is incorporated, then with probability θ the losses L are paid in full by headquarters; however, with probability $1 - \theta$, headquarters pays 0. Thus, the expected payoff that accrues to headquarters when running an incorporated experimental unit is $\Pi_{Exp}^*(\theta\bar{L}) - K$, since $L = \theta\bar{L}$.

Headquarters incorporate the experimental unit if the cost of incorporation K is lower than or equal to the expected gains from greater limited liability protection:

$$K \leq \Pi_{Exp}^*(\theta\bar{L}) - \Pi_{Exp}^*(\bar{L}). \quad (5)$$

Note that headquarters' profits when the experimental unit is incorporated decrease with the strength of

enterprise liability: $d\Pi_{Exp}^*(\theta\bar{L})/d\theta < 0$.³ We assume that K is low enough this condition holds for some θ . Thus, there exists a threshold $\theta^T \in (0, 1)$ such that, for all $\theta \leq \theta^T$, headquarters incorporates the experimental unit, and for all $\theta > \theta^T$, headquarters does not incorporate the experimental unit.

Project choice. In stage 1, headquarters invests either in a safe project yielding profit R or in a risky project (the experimental unit). We have that, if $\theta \leq \theta^T$, headquarters chooses the experimental unit if

$$\Pi_{Exp}^*(\theta\bar{L}) - K \geq R. \quad (6)$$

If $\theta > \theta^T$, headquarters chooses the experimental unit if

$$\Pi_{Exp}^*(\bar{L}) \geq R. \quad (7)$$

Unsurprisingly, weaker enterprise liability (lower θ) increases headquarters' incentives to invest in the risky project. Note that, as θ declines, a new subsidiary is more likely to be created (equation (6) is more likely to hold), because incorporation allows headquarters to reap the benefits of limited liability. Group profits also tend to increase, since $\Pi_{Exp}^*(\theta\bar{L}) - K \geq R$. Thus, weaker enterprise liability shifts corporate group behavior towards more risky projects, more subsidiaries (greater asset partitioning), and greater expected profits (because losses are to some extent externalized).

0.1 Empirical predictions of the model

We are now ready to state the main empirical predictions of the model.

Hypothesis 1 (Firm boundaries). Weaker enterprise liability promotes asset partitioning. Units are more likely to be incorporated when θ is low.

This follows immediately from equation (5).

Hypothesis 2 (Internal organization). Weaker enterprise liability promotes decentralization. Subsidiary managers enjoy greater autonomy from headquarters when θ is low.

³To see this, totally differentiate $\Pi_{Exp}^*(\theta\bar{L})$ with respect to θ . Note that

$$\frac{d\Pi_{Exp}^*(\theta\bar{L})}{d\theta} = \underbrace{\frac{\partial\Pi_{Exp}^*(\theta\bar{L})}{\partial E^*}}_{=0} \frac{\partial E^*}{\partial\theta} + \underbrace{\frac{\partial\Pi_{Exp}^*(\theta\bar{L})}{\partial e^*}}_{>0} \underbrace{\frac{\partial e^*}{\partial\theta}}_{<0} + \underbrace{\frac{\partial\Pi_{Exp}^*(\theta\bar{L})}{\partial\theta}}_{<0} < 0.$$

$\frac{\partial\Pi_{Exp}^*(\theta\bar{L})}{\partial E^*} = 0$ follows from the first order conditions. $\frac{\partial\Pi_{Exp}^*(\theta\bar{L})}{\partial e^*} > 0$ and $\frac{\partial\Pi_{Exp}^*(\theta\bar{L})}{\partial\theta} < 0$ follow from inspection of (1). $\frac{\partial e^*}{\partial\theta} < 0$ follows from inspection of (3).

From (3) and (4), it is clear that headquarters monitors more, and the manager displays less initiative, when potential losses L are larger: $\frac{\partial E^*}{\partial L} > 0$ and $\frac{\partial e^*}{\partial L} < 0$. This also implies that managers enjoy greater autonomy from headquarters when the experimental unit is incorporated ($L = \theta\bar{L}$) and enterprise liability is weak (lower θ), since $\frac{\partial(-E^*(1-\alpha))}{\partial(-\theta)} > 0$. Intuitively, when enterprise liability is weak, headquarters are not likely to be held liable for their subsidiaries' losses, and monitoring is reduced. Subsidiary managers enjoy greater real authority.

Hypothesis 3 (Corporate group growth). Weaker enterprise liability encourages riskier investment, the creation of new subsidiaries, and spurs corporate group growth.

This follows from equation (6). As θ decreases, new subsidiaries are more likely to be created, the riskiness of the investment increases, but corporate group profits also increase (from R to $\Pi_{Exp}^*(\theta\bar{L}) - K$).

References

- [1] Aghion P, Tirole J. 1997. Formal and real authority in organizations. *Journal of Political Economy*, **105**(1):1–29.
- [2] Grossman SJ, Hart OD. 1986. The costs and benefits of ownership: A theory of vertical and lateral integration. *Journal of political economy* **94**(4): 691–719.

Supplementary Appendix C Variable Definitions

Table C1: Variable Definitions

Variable	Definition	Source
PCV score	A country-level measure of enterprise liability based on evaluation of legal provisions across sixteen countries in Americas, Asia, and Europe. It is a composite measure based on scores (0-5) assigned to i) application of enterprise approach, ii) factors considered in veil piercing cases, iii) veil piercing outside of bankruptcy cases, iv) veil piercing outside of fraudulent behaviors, and v) empirical data on veil piercing. The weights assigned to the five criteria for evaluation are 0.45, 0.25, 0.1, 0.15, and 0.05, respectively, and the weights reflect the importance of each criterion in determining enterprise liability.	Legal references, corporate law textbooks, Westlaw database, law review article, Westlaw's Keycite and LexisNexis's Shepard
Industry downside risk	An industry-level measure of downside risk computed as the share of firms operating in a given industry (3-digit SIC) that experience more than 50% drop in revenues in a given year.	Standard & Poor's CRSP / Compustat
Corruption	A measure of regional corruption reflecting the share of survey respondents who totally agreed or tended to agree that there is corruption in regional institutions.	Eurobarometer, NUTS2 classification for EU countries, cross-sectional data for 2008
Managerial experience	Computed as the annual average age of executives and senior managers of group subsidiaries.	Orbis historical publication, annual data

Table C2: Variable Definitions (Continued)

Variable	Definition	Source
Knowledge complexity	A patent-based measure of complexity of firms' knowledge computed as the average generality of patents produced by firms in each industry (3-digit industry) for each year, where generality of a patent is calculated as 1 minus Herfindahl–Hirschman Index (HHI) based on CPC classes of the patents that the focal patent cites.	Standard & Poor's CRSP / Compustat, Kogan et al. (2017), PatentsView.org
Family managers	The share of corporate group's subsidiaries that are managed by a family member of a corporate group's shareholder. A family manager is identified by matching the last names of the top and senior managers of each subsidiary to the last names of the corporate group's shareholders who own at least 5% of headquarters stocks.	Orbis historical publication, annual data
Board member interlock	The share of corporate group's subsidiaries with a board member who is also a board member of the corporate parent.	Orbis historical publication, annual data
Wholly-owned subsidiaries	The share of corporate group's subsidiaries that are wholly owned by the corporate parent.	Orbis historical publication, annual data
Parent-subsidiary name sharing	The share of corporate group's subsidiaries that operate under the same or, partially the same, name as the corporate parent.	Orbis historical publication, annual data

Supplementary Appendix D Additional Tables

Table D1: First-stage Results for 2SLS Analysis
for Corporate Group Investment and Growth

Dependent variable:	ln(Numb. subsidiaries)	
	(1)	(2)
	Investment	Growth
PCV score x Industry downside risk	0.341 (0.029)	0.623 (0.028)
Country PCV score	-0.183 (0.021)	-0.213 (0.012)
Industry downside risk	0.004 (0.048)	-0.213 (0.046)
ln(Country GDP)	0.219 (0.012)	0.249 (0.008)
ln(Country unemployment rate)	0.046 (0.007)	0.030 (0.006)
Country EPL	0.050 (0.151)	0.276 (0.121)
Country stock market development	0.082 (0.032)	-0.003 (0.016)
ln(Group-sub country-industry revenues) _{t-1}	0.036 (0.001)	0.079 (0.002)
Cragg-Donald F-stat	255.2	903.5
Kleibergen-Paap F-stat	137.9	478.9
Legal origin dummies	Yes	Yes
F-statistic	140.1	158.3
Year dummies	Yes	Yes
Corporate group dummies	Yes	Yes
Observations	534,154	606,091
R-squared	0.75	0.75

Notes: The table presents the first-stage results for the instrumental variable regressions presented in Table 7. Legal origin dummies indicate the legal families (English, French, German, and Scandinavian) from which the country's commercial laws are derived. Standard errors are robust to heteroskedasticity and clustered at the corporate group-subsubsidiary country-industry (3-digit SIC) level.

Table D2: Alternative Measures of PCV Score

Dependent variable:	ln(Number of subsidiaries)					
	(1)	(2)	(3)	(4)	(5)	(6)
	Excl. enterp. / econ. unity	Excl. divers. of factors	Excl. bankrupt. case	Excl. fraud. case	Excl. empir. data	Equally weighted
Country PCV score	-0.108 (0.005)	-0.063 (0.003)	-0.052 (0.003)	-0.071 (0.003)	-0.060 (0.003)	-0.093 (0.003)
ln(Country GDP)	0.052 (0.002)	0.058 (0.002)	0.063 (0.002)	0.066 (0.002)	0.064 (0.002)	0.055 (0.002)
ln(Country unemployment rate)	0.001 (0.002)	-0.005 (0.002)	-0.002 (0.002)	-0.002 (0.002)	-0.001 (0.002)	0.003 (0.002)
Country EPL	-0.137 (0.008)	-0.020 (0.008)	-0.038 (0.008)	-0.056 (0.008)	-0.052 (0.008)	-0.109 (0.008)
Country stock market development	-0.020 (0.004)	-0.011 (0.004)	-0.014 (0.004)	-0.016 (0.004)	-0.019 (0.004)	-0.026 (0.004)
ln(Group-sub country-industry revenues)	0.028 (0.000)	0.028 (0.000)	0.028 (0.000)	0.028 (0.000)	0.028 (0.000)	0.028 (0.000)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Three-digit SIC dummies	Yes	Yes	Yes	Yes	Yes	Yes
Corporate group dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,702,307	2,702,307	2,702,307	2,702,307	2,702,307	2,702,307
R-squared	0.46	0.46	0.46	0.46	0.46	0.46

Notes: The table presents the relationship between enterprise liability and asset partitioning. The sample consists of corporate groups at the country-industry-year level for years 2002 through 2014 and across sixteen countries. PCV scores are recalculated after dropping each of the five criteria (columns 1-5) and also after dropping the weights used for the criteria (column 6). All columns include legal origin dummies indicating the legal origin (English, French, German, or Scandinavian) from which each country's commercial laws are derived. Standard errors are robust to heteroskedasticity and clustered at the corporate group-subsidary country-industry level.

Table D3: Principal Components of PCV score

Dependent variable:	ln(Number of subsidiaries)	
	(1)	(2)
	Principal components 1-3	Principal components 1-4
Principal component 1	-0.013 (0.002)	-0.017 (0.002)
Principal component 2	-0.031 (0.002)	-0.032 (0.002)
Principal component 3	-0.016 (0.004)	-0.007 (0.004)
Principal component 4		-0.015 (0.002)
ln(Country GDP)	0.051 (0.002)	0.048 (0.002)
ln(Country unemployment rate)	0.001 (0.002)	0.002 (0.002)
Country EPL	-0.141 (0.011)	-0.118 (0.011)
Country stock market development	-0.019 (0.004)	-0.021 (0.004)
ln(Group-sub country-industry revenues)	0.028 (0.000)	0.028 (0.000)
Year dummies	Yes	Yes
Three-digit SIC dummies	Yes	Yes
Corporate group dummies	Yes	Yes
Observations	2,702,307	2,702,307
R-squared	0.46	0.46

Notes: The table presents the relationship between enterprise liability and asset partitioning. The sample consists of corporate groups at the country-industry-year level for years 2002 through 2014 across sixteen countries. Principal components 1-4 are latent variables derived from the scores of the five criteria underlying the Country PCV score. The Kaiser rule is followed, and thus eigenvalue of 1 is set as the threshold in selecting relevant principal components. All columns include legal origin dummies indicating the legal origin (English, French, German, or Scandinavian) from which each country's commercial laws are derived. Standard errors are robust to heteroskedasticity and clustered at the corporate group-subsidary country-industry level.

Table D4: Other Robustness Tests

Dependent variable:	ln(Number of subsidiaries)			Number of subsidiaries	
	All	Revenue	Rev. decile	Poisson	Neg.
	subs.	polynom.	dummies		binomial
	(1)	(2)	(3)	(4)	(5)
Country PCV score	-0.019 (0.002)	-0.060 (0.003)	-0.052 (0.003)	-0.080 (0.006)	-0.081 (0.006)
ln(Country GDP)	0.078 (0.001)	0.058 (0.002)	0.062 (0.002)	0.101 (0.005)	0.094 (0.004)
ln(Country unemployment rate)	0.023 (0.002)	-0.017 (0.002)	0.011 (0.002)	-0.051 (0.009)	-0.058 (0.008)
Country EPL	-0.100 (0.006)	-0.076 (0.009)	-0.071 (0.009)	0.016 (0.020)	-0.023 (0.016)
Country stock market development	-0.017 (0.003)	-0.026 (0.004)	-0.023 (0.004)	-0.017 (0.007)	-0.023 (0.006)
ln(Group-sub country-industry revenues)	0.031 (0.000)			0.107 (0.002)	0.093 (0.001)
Group-sub country-industry revenues		0.000 (0.000)			
Group-sub country-industry revenues ²		-0.000 (0.000)			
Revenue decile dummies	No	No	Yes	No	No
Year dummies	Yes	Yes	Yes	Yes	Yes
Three-digit SIC dummies	Yes	Yes	Yes	Yes	Yes
Corporate group dummies	Yes	No	No	No	No
Observations	4,906,668	3,134,701	3,134,701	3,122,026	3,122,026
R-squared	0.43	0.46	0.49	-	-

Notes: The table presents the relationship between enterprise liability and asset partitioning using alternative samples, controls, and empirical methods. The sample consists of corporate groups at the country-industry-year level for years 2002 through 2014 across sixteen countries. Column 1 includes all subsidiaries of the corporate parent in our sample regardless of corporate parent's ownership stakes. Columns 2 and 3 include a sales polynomial and sales deciles, respectively. Columns 4 and 5 present results based on Poisson and negative binomial regressions. All columns include legal origin dummies indicating the legal origin (English, French, German, or Scandinavian) from which each country's commercial laws are derived. Standard errors are robust to heteroskedasticity and clustered at the corporate group-subsubsidiary country-industry (3-digit SIC) level.