

Corporate Control around the World

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ABSTRACT

We study corporate control tracing controlling shareholders for thousands of listed firms from 127 countries over 2004 to 2012. Government and family control is pervasive in civil-law countries. Blocks are commonplace, but less so in common-law countries. These patterns apply to large, medium, and small firms. In contrast, the development-control nexus is heterogeneous; strong for large but absent for small firms. Control correlates strongly with shareholder protection, the stringency of employment contracts and unions power. Conversely, the correlations with creditor rights, legal formalism, and entry regulation appear weak. These patterns support both legal origin and political theories of financial development.

UNDERSTANDING THE DETERMINANTS AND consequences of the various types of corporate control is of first-order importance in corporate finance (La Porta, Lopez-de Silanes, and Shleifer (1999), Tirole (2006)). Although most theory distinguishes between widely held corporations with dispersed ownership and firms in which a dominant shareholder exerts control (Shleifer and Vishny (1997)), corporate structures are complex (Laeven and Levine (2008)). For instance, equity blocks can be found in most widely held corporations (Edmans and Holderness (2017)). In addition, pyramids that allow shareholders to influence decisions over their cash flow rights and cross-holdings of equity in business groups are widespread (Dyck and Zingales (2004)). Ownership and control are often obscured by companies that incorporate offshore centers (Zucman (2015)). Following the influential contribution of La Porta, Lopez-de Silanes, and Shleifer (1999), a voluminous literature studies ownership concentration and corporate control across countries, with particular emphasis given to the role of investor protection rights and legal origin. To date, however, the literature has yet to reach a consensus even on the basic correlations, as researchers face a number of empirical challenges. Understanding the determinants and

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consequences of the various types of corporate control is of first-order importance in corporate finance (La Porta, Lopez-de Silanes, and Shleifer (1999), Tirole (2006)). Although most theory distinguishes between widely held corporations with dispersed ownership and firms in which a dominant shareholder exerts control (Shleifer and Vishny (1997)), corporate structures are complex (Laeven and Levine (2008)). For instance, equity blocks can be found in most widely held corporations (Edmans and Holderness (2017)). In addition, pyramids that allow shareholders to influence decisions over their cash flow rights and cross-holdings of equity in business groups are widespread (Dyck and Zingales (2004)). Ownership and control are often obscured by companies that incorporate in offshore centers (Zucman (2015)). Following the influential contribution of La Porta, Lopez-de Silanes, and Shleifer (1999), a voluminous literature studies ownership concentration and corporate control across countries, with particular emphasis given to the role of investor protection rights and legal origin. To date, however, the literature has yet to reach a consensus even on the basic correlations, as researchers face a number of empirical challenges.

The first challenge relates to sample size and composition. In particular, because it is hard to identify control from a myriad of complex corporate ownership structures, comparative studies typically work with samples covering large firms in a few countries. La Porta et al. (1999) examine the association between legal origin and control for the 20 largest listed firms in 27 advanced economies. Extending the analysis, Claessens, Djankov, and Lang (2000) study the association between legal origin/institutions and ownership for 2,980 firms in nine East Asian countries, Faccio and Lang (2002) look across 5,232 firms in 13 Western European countries, and Lins (2003) works with 1,433 firms in 18 emerging markets. However, even when Holderness (2016a, 2016b) reassesses the La Porta et al. (1999) results merging these data, he only works with approximately 8,000 firms in 32 countries.

Heterogeneity is the second main challenge. The size distribution of listed firms is highly skewed. In 2012, for instance, the average market capitalization in our sample is 10 times larger than the median. Very large, medium, and small listed firms differ along numerous dimensions (see Gabaix (2009, 2016)) and control patterns are likely to vary widely (Tirole (2006), Holderness (2016b)).

Third, researchers face measurement challenges. It is difficult to identify controlling shareholders from a complex network of equity holdings and or to identify control in firms with multiple large shareholders. The patterns may depend, for instance, on the cutoff that researchers use to identify control (e.g., Holderness (2009)). In addition, while many researchers work with databases on cash flow, looking at voting rights is conceptually more appealing. Prior studies also show that institutional proxies suffer from measurement error (e.g., Glaeser et al. (2004)).

In this paper, we make progress on each of these fronts. We first provide a comprehensive description of corporate control for a wide sample of countries and listed firms. Relying on numerous sources (e.g., regulatory filings, company reports, government publications), we augment Bureau van Dijk's (BvD) ORBIS database on corporate ownership to identify ultimate controlling

shareholders from the complex structures of corporate holdings. We apply both a simple cutoff approach that identifies as controlled those firms in which a shareholder (state, family, other) has more than 20% of the voting rights and an alternative game-theoretic method based on the Shapley-Shubik (1954) voting power index to construct measures of corporate control for 42,720 listed firms from 127 countries over the period 2004 to 2012.¹ Given the wide use of equity blocks, we distinguish between three types of firms: widely held corporations, widely held corporations with one or more equity block(s) (defined as voting rights in excess of 5%), and controlled firms with a dominant shareholder. We split controlled firms into state-controlled, family-controlled, and controlled by other listed or private firms. We provide an anatomy of corporate control using these newly compiled data. The descriptive analysis reveals large differences in corporate control around the world, a result that is consistent with earlier studies that work with smaller and less representative samples. We further show that corporate control patterns are persistent, as the 2007 to 2010 financial crisis did not affect them much.

Second, we reexamine the “reduced-form” correlation between corporate control (and ownership concentration) and legal origin. The large sample is useful, as most previous studies consider smaller firm samples with limited country coverage. The large sample is also helpful in examining heterogeneity with respect to firm size and age, characteristics that may affect control and in turn be affected by the institutional environment (Foley and Greenwood (2010), Franks et al. (2012)).² The cross-country analysis reveals the following results:

- (i) There are large differences in corporate control across legal families. The share of controlled firms is highest among French civil-law countries, followed by German and then Scandinavian civil-law countries. The share of controlled firms is lowest in common-law countries. The patterns are similar when we look at ownership concentration. These results, which do not reflect differences in continent, industry, or level of development, support the early results of the literature (e.g., La Porta et al. (1999)) using a considerably broader sample of firms and countries.
- (ii) Equity blocks are common, present in more than 80% of noncontrolled firms. This pattern applies across all regions. It also holds in both civil-law and common-law countries, although the share of widely held firms with blocks is highest in French civil-law and lowest in common-law countries.

¹ The Shapley-Shubik (1954) method is useful for measuring control in firms with multiple large shareholders and in firms with dispersed ownership and blocks. It also allows one to examine the precision of the cutoff-based approach employed in extant literature.

² Franks et al. (2012) study corporate control across 4,654 nonfinancial firms in the United Kingdom, France, Germany, and Italy. They find that as firms mature, ownership gets more dispersed in the United Kingdom, whereas in Italy, Germany, and France family control is higher for older firms. Foley and Greenwood (2010) document a similar pattern of ownership diffusion in countries with strong investor protection in a sample of 2,700 firms in 34 countries.

- (iii) The significant cross-country correlation between corporate control and legal origin applies for large, medium, and small listed firms, as well as for young and old firms. These results add to the law and finance literature, addressing concerns that the link between investor protection and ownership dispersion reflects size and age (Holderness (2016b)).
- (iv) Dispersed ownership correlates with GDP per capita. However, this correlation is not particularly strong. Moreover, it masks sizeable heterogeneity. The negative correlation between income and corporate control is significant only in the sample of above-median-size firms; it is especially strong for large corporations (top 10% of global market cap firms). The correlation is zero in the sample of small and medium-sized public companies. This novel finding echoes the results of Hsieh and Klenow (2014), who show that productivity differences between Mexico, India, and the United States are pronounced for (very) large firms and muted for small firms. Hsieh and Klenow (2014) argue that this result reflects the inability of medium-sized firms to expand in emerging markets due to financial frictions. Our results are in line with their conjecture. At the same time, our finding suggests that exploring heterogeneity by employing large firm and country samples can yield new insights.

Third, we examine the correlation between corporate control and institutional characteristics that legal origin theories emphasize in a simple, unified framework,³ employing multiple proxies for institutional quality to account for measurement error. Although the cross-country associations are not well suited to advance causality, they shed light on the characteristics of the institutional environment that relate to corporate structure. The analysis reveals that:

- (v) Shareholder protection rights, namely, corporate law provisions allowing shareholders to take legal action against managers who abuse their position, are systematically linked to dispersed ownership. This result is consistent with the idea of the law and finance literature that corporate control substitutes for weak shareholder protection (La Porta et al. (1997, 1999)).

³ For example, La Porta, Lopez-de Silanes, and Shleifer (1999) focus on investor protection, Djankov et al. (2008b) look at shareholder rights, La Porta, Lopez-de Silanes, and Shleifer (2006) examine securities legislation, and Mueller and Philippon (2011) connect family control to labor market institutions. These (and other) studies examine the role of one (few) institution(s) in different country and firm samples.

Likewise, researchers have used firm-level data across countries to construct proxies for different aspects of ownership and control, such as private benefits of control (Dyck and Zingales (2004)), the prevalence of business groups (Khanna and Yafeh (2007)), and state ownership of banks (Djankov et al. (2002)). Masulis, Pham, and Zein (2011) construct measures of family-controlled business groups in a larger sample of around 28,000 firms from 45 countries in 2002 and relate their prevalence to various country and firm characteristics such as pyramid structures and cross-holdings. See also Almeida et al. (2011) for a comprehensive study of Korean business groups (*chaebols*).

- (vi) The correlation between control and creditor rights is small and statistically insignificant. This result reaffirms the finding of La Porta, Lopez-de Silanes, and Shleifer (1999, 2006) that shareholders' rather than creditors' rights matter for corporate control.
- (vii) Legal formalism, as captured by various measures of the time needed to resolve disputes via courts, is weakly related to corporate control and ownership concentration, a result that challenges Djankov et al. (2008b), who consider a smaller sample.
- (viii) Entry barriers have low correlation with corporate control and ownership concentration.
- (ix) There is a strong correlation between corporate control and labor regulation. In countries with a high percentage of controlled firms, labor legislation imposes restrictions on overtime and firings and union membership and power are relatively high. These results are consistent with political theories of corporate control that emphasize the role of post-Great Depression and World War II welfare-state policies in finance (Roe (2000, 2006), Rajan and Zingales (2003, 2004)). These theories stress the effect that labor laws have on the interaction between controlling shareholders (families and the state), workers, and outside investors. In the Pagano and Volpin (2005) setting, controlling shareholders and corporate insiders collaborate with employers at the expense of minority-outside shareholders in countries with stringent labor legislation.

In sum, our large sample findings support both legal origin theories of corporate control (e.g., La Porta et al. (1998), Glaeser and Shleifer (2002)) and political theories of corporate control (Roe (2000), Rajan and Zingales (2003, 2004), Pagano and Volpin (2005)). In line with the law and finance literature, corporate control is systematically linked to a country's legal origin and the extent of minority shareholders protection. In line with political theories, economic development, as reflected by GDP per capita, is also a strong correlate of control, although only for the (very) large firms that tend to be the most productive. Labor market (welfare state) legislation is also a strong correlate of corporate control, suggesting that linkages between finance and labor markets likely reflect the political equilibrium.

The paper is organized as follows. In Section I, we discuss the data on corporate ownership and we describe both the 20% cutoff and the Shapley-Shubik (1954) method for identifying control. Section II presents the main patterns of corporate control around the world. Section III reports results on the associations between corporate control and legal origin. Section IV reports results from the heterogeneity analysis. In Section V, we examine the correlations between control and investor protection, legal formalism, product, and labor market regulations. In Section VI, we conclude and discuss directions for future work.⁴

⁴ In Internet Appendix A, we provide an overview of corporate control for the G7 economies and the BRICs (Brazil, Russia, India, and China) over 2004 to 2012. This appendix analysis

I. Data and Methodology

In this section, we first discuss the ownership data. We then give an overview of the main types of shareholders. Finally, we discuss the construction of the corporate control proxies.

A. Ownership Data

Our objective is to construct proxies for corporate control for the largest possible sample of publicly traded firms across the globe. We start with BvD ORBIS database that includes ownership information, year of incorporation, year of initial public offering, and some accounting data for 46,699 publicly traded firms from 134 countries over the period 2004 to 2012. (Although data are available as of the 1990s, coverage is limited prior to 2004.) BvD collects ownership data from firms' reports, stock exchange releases, company websites, press news, private correspondence, and agencies that themselves collect information on firm performance and ownership (e.g., ICAP in Greece, InfoCredit in Cyprus, etc.).

BvD reports voting rights, rather than cash flow rights, taking into account dual shares, "golden shares," and other special shares types.⁵ The BvD databases are therefore suitable for identifying control (see also Franks et al. (2012), Kalemli-Ozcan et al. (2015), Massa and Zaldokas (2016)). Mergers and acquisitions are included when completed. If an acquisition occurs in stages, BvD data measure voting rights owned to date.⁶

We match the BvD data to Datastream (Thompson Reuters) and Compustat (North America and Global) to obtain information on firms' market capitalization, industry classification, and stock exchange. Many researchers have used the ORBIS database (e.g., Masulis, Pham, and Zein (2011), Franks et al. (2012)), but this database suffers from inconsistencies and errors (e.g., double

relates to a somewhat distinct strand of the literature that studies the dynamics of control and ownership concentration using many firms over time in specific countries (see Morck et al. (2005) for a collection of case studies). Aganin and Volpin (2005), Morck et al. (2005), and Murphy (2005) give historical narratives of the evolution of ownership, control, and corporate governance in Italy, Canada, and France, respectively. Franks, Mayer, and Renneboog (2001) study the control of German corporations. Franks, Mayer, and Rossi (2009) and Franks, Mayer, and Miyajima (2014) study the evolution of ownership in the United Kingdom and Japan over the 20th century. Kandel et al. (2019) provide a thorough historical analysis in the United States. Chernykh (2008) discusses the obscure ownership of Russian listed firms. The Internet Appendix is available in the online version of this article on *The Journal of Finance* website.

⁵ The BvD User Guide (2013) states "*The Ownership Database intends to track control relationships rather than patrimonial relationships. This is why, when there are two categories of shares split into Voting/Nonvoting shares, the percentages that are recorded are those attached to the category voting shares.*" Our manual checks indicate that the classification is appropriate (ENI (Italy), Portugal Telecom (before 2007), GDF Suez (France), and INPEX (Japan)).

⁶ In discussion with BvD, they explained that when an acquisition occurs in stages, their data reflect actual voting rights owned to date. For example, if company A buys 100% of company B in two stages of 50% each year, then at the end of the first year the data will show 50% voting rights for firm A, and in the second year the voting rights will be 100%.

entries), and information is missing for many companies (see also Kalemli-Ozcan et al. (2015)).

We manually check the data and add information on control for firms with incomplete coverage. We assemble ownership information for 10,857 (10,146) listed corporations (with market capitalization information) whose ultimate controlling shareholder could not be traced from the BvD databases by gathering information from close to 7,000 nonlisted firms using (i) financial data providers such as Bloomberg, Dun & Bradstreet, Google Finance, Credit Risk Monitor, and Forbes, (ii) governmental publications, (iii) reports from regulatory agencies, and (iv) country-specific news websites.⁷ Internet Appendix B provides examples of the manually collected information.

A challenging task is identifying members of the same family and aggregating their voting rights, as they typically vote together. Using manual checks and applying name-matching algorithms, we partition the 63,839 different individual private shareholders into 20,334 families.⁸ We assign all sovereign wealth funds to the government category.⁹

After merging the databases and manually “cleaning” the data as described above, our full sample contains 42,720 publicly traded firms from 127 countries over the period 2004 to 2012.¹⁰ Our analyses employ three subsamples based on this sample.

A.1. Post-Crisis Sample (2012)

The 2012 sample, the year with the widest single-year coverage, includes 27,913 publicly traded firms from 126 countries.¹¹ We drop firms from 34 countries and financial “offshore” centers that are not covered in Datastream and countries with just one firm.¹² This leaves us with 27,539 listed firms in 92 countries. To have representative coverage in each country, we further require

⁷ Although we aimed for a representative coverage in the manual checks, it proved “easier” to obtain ultimate control information from relatively larger companies in developed and middle-income countries.

⁸ When family members hold voting shares in the same company at the same date, we aggregate their voting rights and assign them to the family representative shareholder. In the aggregation we face a trade-off. On the one hand, we may aggregate voting rights of family members who are in dispute. On the other hand, by not aggregating voting rights of family members, we may misclassify family-controlled firms.

⁹ BvD often classifies sovereign wealth funds as government controlled. For example, the Qatar Investment Authority and the Abu Dhabi Investment Authority are classified as government controlled agencies. This is not always the case, however. For example, BvD does not classify Temasek and Mubadala, the sovereign investment vehicles of Singapore and Abu Dhabi as government controlled.

¹⁰ Compared to the initial sample of 134 countries, we lose 36 firms in Bolivia, El Salvador, Fiji, Guatemala, Honduras, Iran, and Syria. We lose 3,943 firms from other countries because of missing market capitalization.

¹¹ Compared to the initial data set, we lose listed firms from Togo.

¹² Specifically, we drop firms from Barbados, Anguilla, Bahamas, Bermuda, Cayman Islands, Curacao, Gibraltar, Isle of Man, Jersey, Liechtenstein, Virgin Islands and Rwanda, for which we have just one firm, and firms from Palestine. Countries dropped due to missing market capitalization for firms include Belize, Benin, Cambodia, Cameroon, Faroe Islands, Gabon, Gambia, Georgia,

that we have at least 20% of the incorporated listed firms and at least 50% of the total market capitalization in a country, as reported in Datastream. This step results in the loss of 100 firms from seven countries with thin equity markets.¹³ The 2012 sample therefore consists of 26,843 firms in 85 countries. These countries represent approximately 95.2% of global GDP and 85% of the global population. This sample accounts for approximately 89% of the total value of market equity in the world sample of Datastream and 83% of global market capitalization based on the World Bank's estimates.

Internet Appendix Table [IA.BI](#), Panel A, provides details on coverage for the 2012 sample. The sample includes industrial, emerging, and underdeveloped countries in all parts of the world. The average (median) coverage in terms of market capitalization across the 85 countries is 83.1% (85.7%), since we miss data on small firms (mostly in the United States, Canada, and Japan), the mean (median) coverage in terms of number of listed firms is 64.4% (65.5%). Coverage is almost perfect for 40 countries, for which our data include more than three-fourths of listed firms and coverage in terms of market capitalization exceeds 75% (e.g., Turkey, New Zealand, France, Poland, Italy, Spain, Argentina). For 26 countries coverage is high. We have more than half of listed firms and market capitalization exceeds 75% coverage (e.g., Sweden, Germany, Hong Kong, South Africa, Malaysia, Colombia). In 19 countries, coverage in terms of capitalization is high (average/median around 70%) but we have less than half of the listed firms. Examples include the United States where coverage in terms of market capitalization is 86.5% but coverage of listed firms is 41% as we miss over-the-counter (OTC)-traded firms. In India and South Korea, coverage in terms of market cap is high (92.8% and 83.7%, respectively), but the number of firms is around 40%.

A.2. Pre-Crisis Sample (2007)

We also work with the 2007 sample, the year with the widest coverage before the global financial crisis. We again drop offshore financial centers and tiny countries with no coverage in Datastream, and we require at least 20% of the number of listed firms and 50% of the total market capitalization. This leaves us with 25,976 firms in 74 countries (Kazakhstan is the only country included in the 2007 sample but not in the 2012 sample). The mean (median) coverage in terms of the number of firms is 66% (72%), while in terms of market capitalization the cross-country average (median) is 84% (87%). Internet Appendix Table [IA.BI](#) summarizes details on coverage for the 2007 sample.¹⁴ The 74 sample countries account for roughly 95% of global GDP and 77% of the global

Jamaica, Kyrgyzstan, Liberia, Macao, Malawi, Marshall Islands, Monaco, Mongolia, Niger, Panama, Senegal, Trinidad and Tobago, and Sudan.

¹³ We lose firms in Ecuador, Iraq, Kazakhstan, Mauritius, Tanzania, Vietnam, and Zimbabwe.

¹⁴ Compared to the 2012 sample, we lose firms in Bangladesh, Bosnia, Botswana, Ivory Coast, Ghana, Israel, the Former Yugoslav Republic of Macedonia, Montenegro, Namibia, Serbia, Nigeria, Sri Lanka, Tunisia, Uganda, and Zambia.

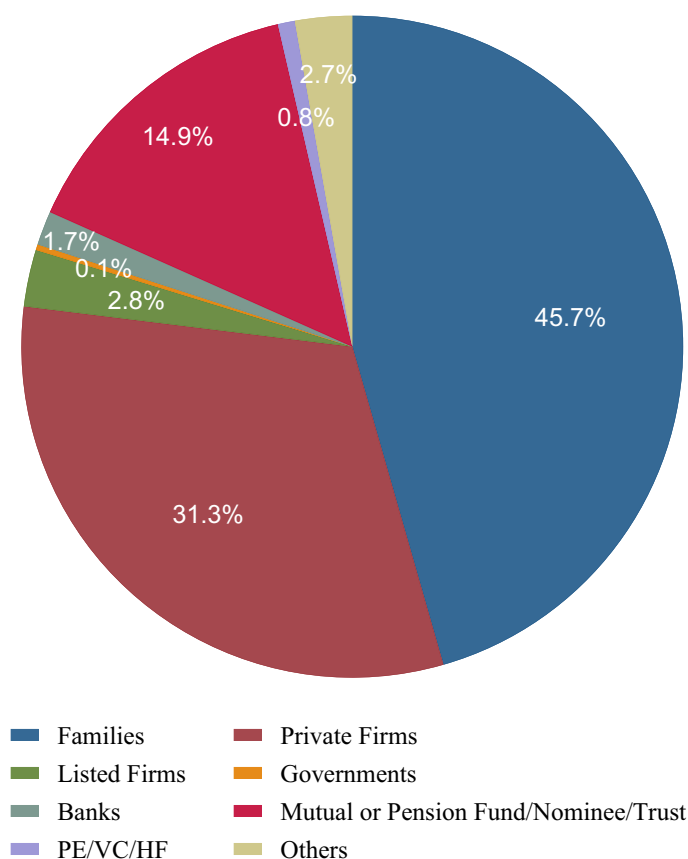


Figure 1. Distribution of shareholders of listed corporations around the world by type in 2012. This figure shows the distribution of shareholders in 2012 using Bureau van Dijk's categorization. The sample comprises 80,607 unique shareholders of 26,843 listed firms in 85 countries. The shareholders are classified into (i) individuals or families; (ii) privately held firms; (iii) publicly listed firms; (iv) mutual funds, pension funds, nomineeism, and trusts; (v) banks; (vi) private equity (PE), venture capital (VC), and hedge funds (HFs); (vii) governments, state agencies, and municipalities; and (viii) other, which include insurance corporations, foundations, and employees/managers/directors. (Color figure can be viewed at wileyonlinelibrary.com)

population in 2007. Coverage is around 84% of the total value of global market equity in Datastream and 77% of the World Bank's estimates.

A.3. Pooled Sample (2004 to 2012)

We additionally estimate specifications pooling all firm observations over the period 2004 to 2012. Doing so allows us to employ a considerably larger data set that includes 42,720 unique firms from 127 countries. The pooled cross-country mean (median) coverage in terms of the number of listed firms is 68% (74%) while in terms of market capitalization it is 82% (91%).

B. Types of Corporate Shareholders

Figure 1 shows the distribution of unique shareholder types using the BvD classification for 2012 (Internet Appendix Figures [IA.B1](#) and [IA.B2](#)

provide the analogues for 2007 and 2004 to 2012). These listed firms are held by 80,607 unique shareholders. The types of shareholders, as classified by BvD, are (i) 36,823 private individuals or families (45.7%);¹⁵ (ii) 25,210 privately held firms excluding banks, mutual funds, pension funds, and nominee/trust/trustees (31.3%);¹⁶ (iii) 2,295 publicly listed firms excluding banks, mutual funds, pension funds, and nominee/trust/trustees (2.85%);¹⁷ (iv) 12,007 mutual funds, pension funds, nominees, and trusts/trustees (14.9%);¹⁸ (v) 1,343 banks (1.7%);¹⁹ (vi) 655 private equity (PE) firms, venture capital (VC) firms, and hedge funds (HF) (0.8%);²⁰ (vii) 75 governments, public authorities, and regional states (0.1%);²¹ and (viii) 2,199 others that include foundations, insurance companies, employees/managers/directors, and “unnamed aggregate shareholders” (2.7%).²²

C. Identifying Control

C.1. Twenty Percent Cutoff-Based

Identifying control is challenging as corporate law (with respect to managerial power, shareholder rights, civil procedure) differs around the world.²³ Moreover, ownership structures can be complex, involving cross-holdings,

¹⁵ For example, Ma Huateng is the founder and main shareholder of Tencent Inc, William Gates is the key shareholder of Microsoft, and Murray Edwards is the main shareholder of Canadian Natural Resources.

¹⁶ For example, Rio Tinto International Holdings, a private firm, is a key shareholder of Turquoise Hill Resources, a Canadian mineral exploration and development company. Similarly, Kar-Tess Holding, a Luxembourg-based private company, is a shareholder of Coca-Cola Hellenic Bottling Company, and Ramsbury Invest AB, a privately held Swedish company is a shareholder of H&M.

¹⁷ For example, Anheuser-Busch InBev, a multinational beverage company headquartered in Belgium is a shareholder of Companhia de Bebidas das Américas (Ambev), the Brazilian brewing company, and A.P. Moller–Maersk, a Danish publicly listed conglomerate, is a major shareholder of Danske Bank.

¹⁸ For example, Aberdeen Asset Management PLC is a shareholder of QBE Insurance Group Limited, The Vanguard Group, an American investment management company and a large provider of mutual funds, is a shareholder of Exxon Mobil, and BlackRock is a shareholder of HSBC Holdings.

¹⁹ For example, the Commonwealth Bank of Australia is a shareholder of Qantas Airways, JPMorgan Chase & Co. is a shareholder of Total S.A., and Bank of Tokyo-Mitsubishi is a shareholder of Honda Motor Co.

²⁰ For example, HF sponsor Paulson & Co. is a shareholder of Wells Fargo, venture capital firm Sequoia Capital is a shareholder of LinkedIn, and KKR is a major shareholder of the Legrand group.

²¹ For example, the government of Argentina is a shareholder of Yacimientos Petrolíferos Fiscales, the government of China holds a large stake in PetroChina Company, and the government of India is a major shareholder of Coal India.

²² For example, Teachers Insurance and Annuity Association of America, a trade association that provides life insurance and retirement annuities for people who work in the academic, research, medical, and cultural fields, is a shareholder of Alexandria Real Estate Equities, a company that provides office/laboratory and tech office space for lease.

²³ In Internet Appendix B, we provide more details on the absolute voting rights and the relative voting power control identification approaches as well as examples.

pyramids, and intermediate firms. Most previous studies abstract from these issues and apply voting-rights cutoffs to identify controlled corporations. La Porta et al. (1999), for example, identify a firm as controlled if a shareholder (bank, individual, state, other firm) holds more than 20% of the voting rights of the firm. Lins, Volpin, and Wagner (2013) employ a 25% cutoff, while Laeven and Levine (2008) use 10%.

Using voting-rights cutoffs is transparent and straightforward to implement. Like La Porta et al. (1999), we identify controlled firms as those in which a shareholder (individual, family, state, another firm) has voting rights over 20%. Compared to earlier work, however, our approach is distinct in two respects. First, through the manual checks, we aggregate the voting rights of all firms that a single individual (or family) uses to exercise control. For example, we cumulate the voting rights of all firms that Igor Zyuzin used to control Mechel, and in Moët Hennessy–Louis Vuitton (LVMH) we cumulate the voting shares of all firms related to Bernard Arnault. Second, we aggregate the voting rights of all family members. In Fiat and BMW, for example, we cumulate the shares of all of the Agnellis and Quandts (see Internet Appendix Figures IA.B3 to IA.B7).

The above procedure yields a rough split between controlled and widely held corporations. In 2012, 12,432 out of 26,843 listed firms (46.3%) have a shareholder (e.g., state, family, individual, institutional investor) with voting rights in excess of 20%. In 2007, 12,557 out of 25,976 firms (48.3%) have a shareholder (e.g., family, individual, state, institutional investor) with voting rights exceeding 20%.

C.2. Shapley-Shubik Power Index

Using simple cutoffs does not account for the distribution of voting rights. First, if ownership is dispersed (and held by passive investors), then a shareholder may obtain control with a stake that is below the 20% cutoff. For example, Onex Corporation, the Canadian investment firm, is controlled by Gerald Schwartz, who owns about 13% of the firm, as other shareholders hold much smaller stakes. Another example is Carrefour, which according to most accounts is controlled by Blue Capital, which holds just 16.4% of the firm. Second, even large equity stakes (below 50%) may not result in control if other shareholders also hold large stakes. For example, in Novatek, Russia's largest independent natural gas producer, there are four large shareholders (Leonid Michelson with around 28%, Volga Group with 23%, Total with 16% and Gazprom with 9.4%) and hence no single shareholder can independently control the firm. In EVRAZ, one of Russia's largest steel and mining companies, two shareholders hold voting rights over 20% (R. Abramovich with 30.99% and A. Abramov with 21.55%), while there are three other significant shareholders (A. Frolov with 10.76%, G. Kozovoy with 5.69%, and A. Vagin with 5.63%).

To account for such cases, we apply a control identification algorithm based on the weighted voting games literature pioneered by Shapley and Shubik (1954) and Banzhaf (1965). This literature uses relative (rather than absolute)

voting-power cutoffs that take into account the full distribution of shareholders' shares. In Internet Appendix B, we provide details on the computation of the Shapley-Shubik measures that have not been widely used by the corporate finance literature. (Important exceptions include Rydqvist (1987, 1992); Robinson and White (1990), Rajan and Zingales (2004).) The Shapley-Shubik algorithm delivers an almost equal split between controlled and widely held corporations. In 2012, 13,717 out of 26,843 listed firms (51.1%) have a controlling shareholder, while in 2007, 13,384 out of 25,976 firms (51.5%) have a controlling entity.

C.3. Comparison

We compare the classification using the two approaches, to gauge how well the simple, transparent cutoff rule that the literature has used so far fares against the more elaborate, computationally challenging Shapley-Shubik (1954) measure. In 2012 (26,843 firms), the two approaches yield the same classification in 90.4% of the cases; 43.9% of firms are classified as controlled and 46.5% as widely held. The two methods produce different classifications for the remaining 9.6% of firms. In particular, 636 firms are classified as controlled by the simple rule (as some shareholder holds more than 20%), but as noncontrolled by the Shapley-Shubik algorithm, due to the presence of competing shareholders with considerable voting power. Another 7.2% of the sample firms are classified as widely held by the cutoff rule (because no shareholder holds more than 20%), but as controlled by the Shapley-Shubik algorithm as ownership is dispersed and there is a substantial block shareholder.

Internet Appendix Table IA.BII reports the country classification under the two methods. In countries with dispersed ownership (e.g., New Zealand, Australia, and the United Kingdom), the Shapley-Shubik (1954) method indicates that some firms are controlled even though the largest shareholder holds less than 20%. For a few countries (e.g., Botswana, Spain, Lebanon, and Hungary) the share of controlled firms is larger with the cutoff rule, but the differences are small. The firm (country) level correlation between the absolute and relative voting rights power measures is 0.80 (0.9) (see Internet Appendix Tables IA.BVII and IA.BVIII).

II. Patterns

A. Corporate Control around the World

We aim to provide the most complete-to-date characterization of control of publicly traded corporations around the world. To do so, we first classify firms as either widely held or controlled. We next split widely held firms into those with a blockholder (ownership exceeding 5%) and those without any block ownership.²⁴ Controlled firms are similarly split into the following mutually exclusive

²⁴ Blockholders may be passive or more actively engaged in corporate decisions. This may be related to their type, the legal system, and the power of other shareholders. As we do not have

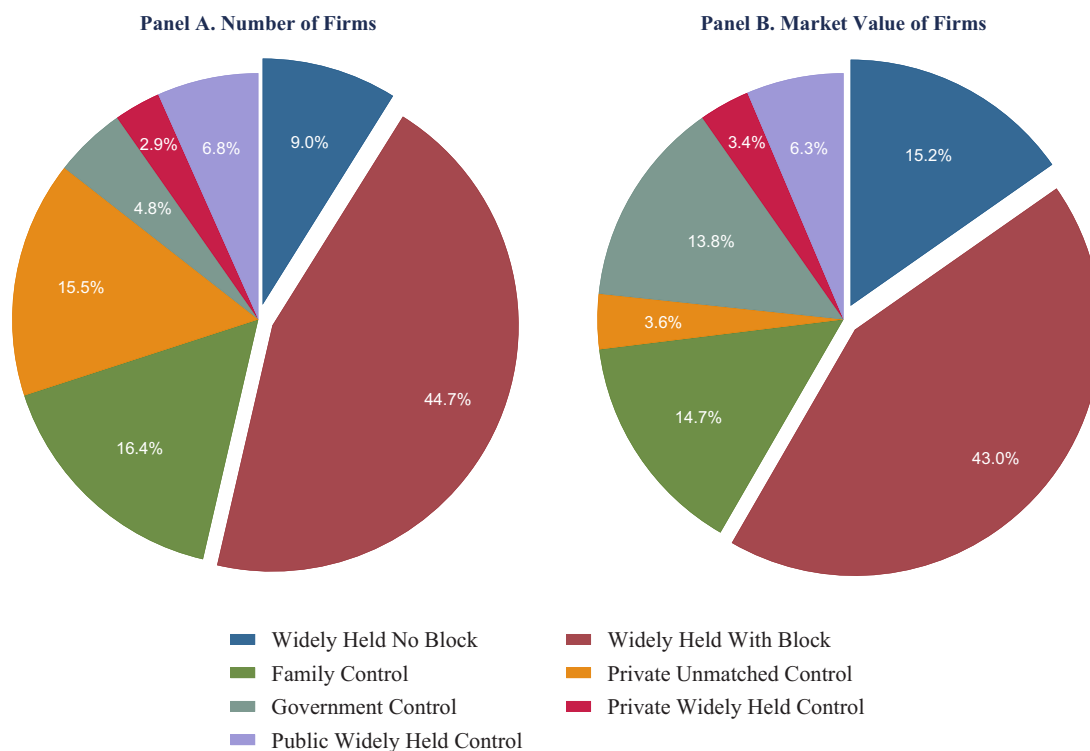


Figure 2. Type of controlling shareholder entities of listed corporations around the world. This figure shows the distribution of controlling shareholders in the 2012 sample, which comprises 26,843 firms in 85 countries with a total market capitalization of 41,542 billion USD. Panel A depicts the unweighted distribution; Panel B depicts the distribution after weighting firms by market capitalization. Identification of controlled corporations is based on the 20% absolute voting rights cutoff. Listed firms fall into the following categories, based on whether they have a controlling shareholder: (i) widely held firms, without any block (5% of firm's voting rights), (ii) widely held firms with at least one equity block (voting rights over 5% but below 20%), (iii) firms controlled by families or individuals firms, (iv) government-controlled firms, (v) firms controlled by private (nonlisted) firms, and (vi) firms controlled by listed widely held corporations firms, and (vii) firms controlled by private widely held corporations. The [Appendix](#) provides detailed definitions. Internet Appendix B provides examples for all categories. (Color figure can be viewed at [wileyonlinelibrary.com](#))

categories reflecting the dominant shareholder's type: (i) family/individual, (ii) private firms for which we could not trace the controlling shareholder, (iii) government, including municipalities and state agencies, (iv) private widely held firms (multiple shareholders where none is substantial enough to control), and (v) widely held listed firms.

Figure 2 summarizes the patterns of corporate control in 2012 using arithmetic (Panel A) and market-cap value-weighted (Panel B) measures. (Internet Appendix Figure [IA.B8](#) shows that the patterns in 2007 are similar.) As the two identification approaches yield similar classifications, we present results only for the 20% cutoff rule. (Internet Appendix B contains results based on

much information on blockholders' voting, we leave to future research a more in-depth examination of their role.

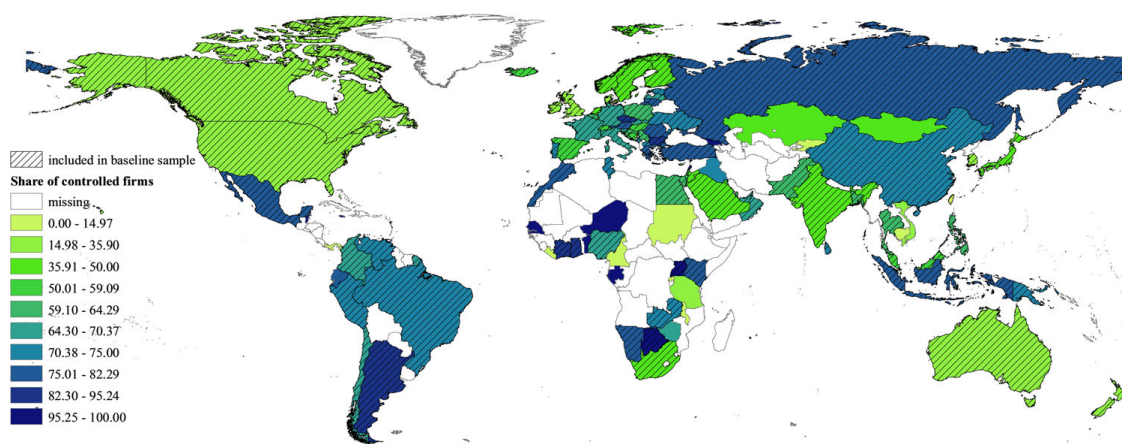


Figure 3. Corporate control around the world, 2012. This figure depicts the extent of corporate control around the world in 2012. The sample comprises 26,843 listed firms in 85 countries. Table I reports the country means. (Color figure can be viewed at wileyonlinelibrary.com)

the Shapley and Shubik (1954) approach.) As can be seen, 45% of listed firms in 2012 are classified as widely held corporations. However, most widely held firms have a blockholder, a pattern that is consistent with studies documenting that blocks are prevalent even in countries with strong investor protection such as the United States (Holderness (2009)) and Japan (Franks, Mayer, and Miyajima (2014)). The share of widely held corporations without a blockholder is less than 10%, but since such corporations are typically large, their market capitalization share is 15.2%. The government controls around 4.8% of firms but these firms account for 13.8% of total market capitalization as the state typically controls large utilities and banks. The share of family control is 16.4%. The share of unmatched private firms is 14.7% but these firms tend to be small and thus they account for only 3.6% in market capitalization. Widely held private firms control about 2.9% of firms. Widely held public firms control about 6.8% of the sample firms.

Table I reports detailed statistics on corporate control in 2012 by country based on the 20% cutoff rule.²⁵ Figure 3 provides a map of corporate control that illustrates the considerable heterogeneity in corporate control around the world. The cross-country mean is 0.63 (median 0.65), which is larger than the corresponding firm-level mean of 0.46, as the sample contains a large number of firms from countries with a low share of corporate control (the United States, Canada, the United Kingdom). At one extreme, the Berle and Means (1932) type of corporation with many small shareholders is almost absent in Africa (more than 75% of the firms are controlled in Uganda, the Ivory Coast,

²⁵ Internet Appendix Table IA.B.III reports the corresponding statistics for corporate control in 2007. Internet Appendix Figures IA.B.11 to IA.B.13 illustrate the variation in corporate control in 2007. Internet Appendix Table IA.B.IV reports the shares of control when we use the Shapley-Shubik (1954) approach. Internet Appendix Tables IA.B.V and IA.B.VI report summary statistics for all variables at the firm and the country levels. Internet Appendix Tables IA.B.VII and IA.B.VIII report the corresponding correlation matrices.

Table I
Corporate Control and Ownership Concentration around the World in 2012

This table reports the number of firms, the C1, C3, and C5 ownership concentration measures (reflecting the voting rights of the one, three, and five largest shareholders), the share of controlled firms, the share of controlled firms by type (family-controlled, government-controlled, controlled by a private firm with an unmatched ultimate owner, controlled by a widely held private firm, controlled by a widely held public firm), the share of widely held firms with at least one block (stake > 5%), and the share of widely held corporations without any block. The sample comprises 26,843 firms in 85 countries in 2012. Identification of controlled corporations is based on the 20% absolute voting-rights cutoff. The table also reports the cross-country average, median, and standard deviation.

Ownership Concentration													Corporate Control				
Percentage of Listed Firms Controlled by																	

(Continued)

Table 1—Continued

	Ownership Concentration				Corporate Control							
					Percentage of Listed Firms Controlled by							
	Firms	Mean C1	Mean C3	Mean C5	All Cont-rolled	State	Families/Individuals	Private Firms (Unmatched)	Widely Held Private Firms	Widely Held Public Firms	Widely Held Blockholder	Widely Held No Blockholder
Denmark	156	32	44.1	46.5	35.9	0.6	7.1	17.3	5.8	5.1	55.8	8.3
Egypt	87	41.9	52.6	55.7	62.1	12.6	11.5	25.3	6.9	5.7	29.9	8
Estonia	15	43.8	63.2	71.3	73.3	0	40	33.3	0	0	26.7	0
Finland	113	24.3	36.8	42.1	36.3	7.1	8.8	15	0.9	4.4	53.1	10.6
France	788	46.4	60.2	63.3	68	2.9	29.2	24.9	5.8	5.2	29.8	2.2
Germany	722	45.3	56.8	59.1	68.7	3.6	26.2	25.3	6.4	7.2	28.5	2.8
Ghana	14	51.9	63.1	66.6	92.9	28.6	7.1	7.1	7.1	42.9	7.1	0
Greece	229	44.2	57.1	58.6	76.4	3.1	51.5	12.7	1.3	7.9	22.3	1.3
Hong Kong	694	37.9	49.2	51.6	59.1	4.3	20.6	30.3	1.2	2.7	36.7	4.2
Hungary	39	38	61.9	66.6	59	7.7	20.5	25.6	0	5.1	41	0
Iceland	19	42.6	56.9	60.8	52.6	5.3	10.5	26.3	10.5	0	42.1	5.3
India	1,478	27.3	35.7	38.4	47.2	5.6	21	13.6	0.9	6.1	40	12.8
Indonesia	250	51	63.4	65	78.4	8.8	11.6	42.4	2.8	12.8	19.2	2.4
Ireland	65	23.3	36.3	41	26.2	1.5	7.7	13.8	1.5	1.5	61.5	12.3
Israel	457	39.9	50.8	53	61.9	0.7	31.7	16.8	2.6	10.1	30.4	7.7
Italy	266	44	58.8	63.1	69.5	3.8	36.1	22.9	2.3	4.5	25.6	4.9
Ivory Coast	14	68	72.9	72.9	92.9	0	7.1	21.4	28.6	35.7	7.1	0
Japan	1,452	28	32.5	34.1	47.3	1.4	4.2	7.9	2.1	31.7	43.5	9.2
Jordan	119	31.5	46.1	51.5	48.7	2.5	24.4	10.1	0.8	10.9	43.7	7.6
Kenya	19	44.6	53.8	55.6	78.9	10.5	5.3	5.3	15.8	42.1	15.8	5.3
Korea	817	21	24.1	24.4	35.6	1.2	17.4	5	1.1	10.9	49.9	14.4
Kuwait	155	32.1	43.8	45.9	52.9	11.6	9.7	13.5	5.2	12.9	46.5	0.6
Latvia	27	46	75.4	80.3	70.4	0	33.3	33.3	0	3.7	29.6	0
Lebanon	6	49.8	68.7	74.1	100	0	66.7	16.7	0	16.7	0	0
Lithuania	34	59.2	73.3	78.2	76.5	5.9	20.6	41.2	0	8.8	20.6	2.9

(Continued)

Table I—Continued

	Ownership Concentration					Corporate Control							
						Percentage of Listed Firms Controlled by							
	Firms	Mean C1	Mean C3	Mean C5	All Cont-rolled	State	Families/ Individuals	Private Firms (Unmatched)	Widely Held Private Firms	Widely Held Public Firms	Widely Held Blockholder	Widely Held No Blockholder	
Luxembourg	44	36.7	48	49.9	59.1	4.5	27.3	13.6	11.4	2.3	34.1	6.8	
Macedonia	8	48.2	53.2	53.3	75	0	0	37.5	12.5	25	12.5	12.5	
Malaysia	528	33.3	46.2	51	54.7	5.9	16.1	26.7	0.8	5.3	40.2	5.1	
Malta	17	47.4	58.3	60.2	88.2	5.9	5.9	35.3	35.3	5.9	5.9	5.9	
Mexico	52	46.8	52.1	53.3	80.8	0	32.7	23.1	11.5	13.5	15.4	3.8	
Montenegro	161	53.6	68.7	71.3	71.4	5.6	28	32.9	4.3	0.6	17.4	11.2	
Morocco	58	57.8	84.1	88.7	77.6	1.7	19	41.4	8.6	6.9	22.4	0	
Namibia	5	53.4	58	58.9	80	0	20	0	0	60	20	0	
The Netherlands	133	34.6	48.2	54.4	46.6	2.3	10.5	21.1	6	6.8	51.9	1.5	
New Zealand	100	30.5	43.6	48.6	28	5	5	8	4	6	64	8	
Nigeria	38	43.2	48.4	49.2	68.4	2.6	13.2	18.4	7.9	26.3	31.6	0	
Norway	201	32.4	47.7	53.1	41.3	5	13.4	16.9	4	2	54.2	4.5	
Oman	41	28.5	38.8	40.9	65.9	24.4	22	12.2	2.4	4.9	31.7	2.4	
Pakistan	102	41.9	51.8	53.9	61.8	5.9	9.8	11.8	4.9	29.4	21.6	16.7	
Papua New Guinea	4	38.5	41.3	41.4	75	25	0	0	25	25	25	0	
Peru	129	52.4	70.4	73.7	74.4	1.6	27.1	34.1	0.8	10.9	24.8	0.8	
Philippines	57	47.8	60.8	64.2	61.4	5.3	21.1	17.5	1.8	15.8	33.3	5.3	
Poland	713	44.7	62.8	66.4	64.1	3.1	30.7	24.5	1.4	4.3	34.9	1	
Portugal	54	45.5	66.7	73.4	72.2	5.6	40.7	18.5	3.7	3.7	25.9	1.9	
Qatar	28	32.5	37.9	38.9	64.3	46.4	7.1	7.1	3.6	0	25	10.7	
Romania	152	59	72.3	73.9	75.7	8.6	21.1	34.2	2.6	9.2	19.1	5.3	
Russia	436	53.1	70.7	73.5	78.4	26.6	16.7	25.9	5.3	3.9	20.2	1.4	
Saudi Arabia	119	28.4	40.8	43.3	48.7	12.6	11.8	14.3	5	5	49.6	1.7	
Serbia	106	43.7	53.3	55.7	61.3	12.3	13.2	31.1	2.8	1.9	24.5	14.2	

(Continued)

Table I—Continued

Ownership Concentration										Corporate Control					
Firms	Mean C1	Mean C3	Mean C5	All Controlled	State	Families/ Individuals	Percentage of Listed Firms Controlled by				Widely Held Public Firms	Widely Held Blockholder	Widely Held No Blockholder	Widely Held No Blockholder	Widely Held No Blockholder
							Private Firms (Unmatched)	Widely Held Private Firms	Widely Held Public Firms	Widely Held Blockholder	Widely Held No Blockholder	Widely Held No Blockholder	Widely Held No Blockholder	Widely Held No Blockholder	Widely Held No Blockholder
Singapore	511	30.1	36.9	38.7	48.5	19	17.2	1.4	5.1	34.8	16.6	16.6	16.6	16.6	16.6
Slovakia	41	49.8	68.2	71.5	68.3	7.3	41.5	2.4	12.2	29.3	2.4	2.4	2.4	2.4	2.4
Slovenia	54	34.2	51	57.3	64.8	7.4	22.2	3.7	1.9	22.2	13	13	13	13	13
South Africa	206	30.1	40.8	44.2	38.3	6.8	12.1	4.9	14.1	52.4	9.2	9.2	9.2	9.2	9.2
Spain	182	39.6	57.4	64.7	51.1	22	12.1	5.5	7.7	47.3	1.6	1.6	1.6	1.6	1.6
Sri Lanka	74	46	52.4	54.5	74.3	8.1	14.9	1.4	41.9	24.3	1.4	1.4	1.4	1.4	1.4
Sweden	337	28.7	37.7	40.8	42.7	13.4	19.3	3.6	5.3	47.8	9.5	9.5	9.5	9.5	9.5
Switzerland	276	37.9	49.4	53.3	51.4	19.9	14.5	5.4	4.7	42.4	6.2	6.2	6.2	6.2	6.2
Taiwan	962	12.3	18.7	21.6	15	2.2	3.8	0.8	7.5	47.2	37.8	37.8	37.8	37.8	37.8
Thailand	126	37	45.2	47	64.3	17.5	7.9	1.6	19.8	28.6	7.1	7.1	7.1	7.1	7.1
Tunisia	32	41.4	55.7	57.7	75	9.4	21.9	12.5	18.8	21.9	3.1	3.1	3.1	3.1	3.1
Turkey	296	50.1	63.3	64.5	76.7	29.1	29.1	7.1	8.8	22	1.4	1.4	1.4	1.4	1.4
Uganda	4	67.8	67.8	67.8	100	0	0	0	50	0	0	0	0	0	0
Ukraine	102	55.5	74.1	78.8	73.5	18.6	40.2	2	1	26.5	0	0	0	0	0
United Arab Emirates	94	36.9	51.6	55.1	68.1	19.1	7.4	2.1	2.1	31.9	0	0	0	0	0
United Kingdom	1,347	19.5	31.9	37.1	20.6	10.1	5.7	1.2	2.7	66.3	13.1	13.1	13.1	13.1	13.1
United States	4,461	21.4	30.5	33.9	28.4	16.2	6.2	3.4	2.4	57	14.6	14.6	14.6	14.6	14.6
Venezuela	14	40.5	47.1	48.8	71.4	14.3	21.4	0	0	21.4	7.1	7.1	7.1	7.1	7.1
Zambia	12	48.2	51	51.1	75	33.3	0	8.3	25	16.7	8.3	8.3	8.3	8.3	8.3
Country-Level Summary Statistics															
Mean	41.3	53.1	56	63.1	8.7	17.4	19.8	5.7	31.5	5.3	5.3	5.3	5.3	5.3	5.3
Median	42.6	52.6	55.6	65.9	5.3	16.7	18.4	3.6	29.3	4.2	4.2	4.2	4.2	4.2	4.2
SD	11.5	13.1	13.4	19.1	10.5	11.7	11.4	7.6	16.4	5.8	5.8	5.8	5.8	5.8	5.8

Ghana, Namibia, Botswana, and Kenya) and Eastern Europe (more than 75% of the firms have a controlling shareholder in the Czech Republic, Bulgaria, Lithuania, Romania, and Russia). At the other extreme, the share of listed controlled firms is low (below 30%) in New Zealand, Canada, the United States, the United Kingdom, Ireland, Australia, and Taiwan. There is also nonnegligible variation within regions. For instance, in Western Europe, the share of controlled firms ranges from around 80% in Austria, Malta, and Greece to around 20% in the United Kingdom and Ireland, with Spain and Switzerland in the middle at 50%. In Asia, corporate control ranges from 78% in Indonesia to around 20% to 30% in Australia and Taiwan and around 47% in India.

A.1. Family Firms

Figure 4, Panel A, shows the extent of family-controlled firms around the world in 2012. The cross-country mean (median) is 17.5% (16.7%). When we add firms controlled by unidentified private owners, as most of these firms are likely controlled by families/individuals (Faccio and Lang (2002), Masulis, Pham, and Zein (2011)), the cross-country average (median) doubles. Family control is pervasive in countries with strong family ties, such as Greece, Italy, Portugal, Argentina, and Lebanon (Alesina and Giuliano (2014)). There are few family-controlled listed corporations in Taiwan, Ireland, and Australia.

A.2. State-Controlled Firms

Figure 4, Panel B, depicts the extent of state control around the world in 2012. Government control is close to zero (less than 1%) in 18 countries (e.g., the United States, Canada, Latvia, Estonia) whereas it exceeds 20% in 11 countries, mostly in Africa (e.g., Uganda, Ghana) and the Arab world (Oman, Qatar, UAE), as well as in Russia and China.

B. Ownership Concentration around the World

Although our focus is on corporate control, we also calculate ownership concentration statistics by summing the voting rights of the one, three, and five largest shareholders (C1, C3, and C5). Construction of these measures follows prior literature (e.g., La Porta et al. (1999), Faccio and Lang (2002)), although in contrast to previous work, we sum the voting rights of all family members (treating them as one representative shareholder). Table I reports the C1, C3, and C5 ownership concentration index for all 85 countries in 2012. (Internet Appendix Table IA.BIII reports the values for 2007 and Internet Appendix Figures IA.B14 to IA.B15 give the global mapping). On average, the single largest shareholder (family) holds 31.5% of the equity of publicly traded corporations and the largest three (five) shareholders (families) jointly control 41.7% (44.6%) of a firm's voting rights. The cross-country averages are larger, at 41.3%, 53.1%, and 56%, respectively, as the sample is tilted toward countries with relatively low concentration. Ownership concentration that

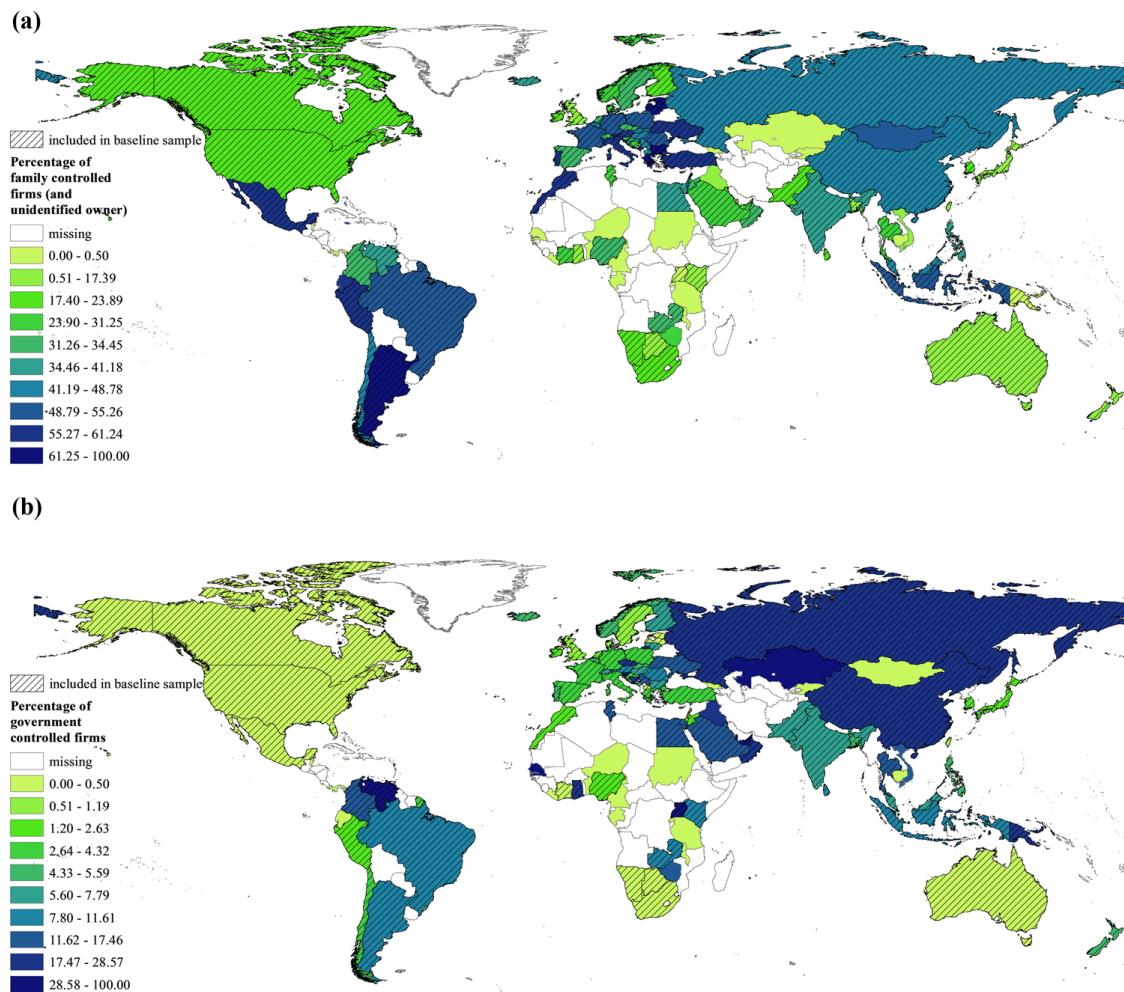


Figure 4. (Panel A) Corporate control by families and individuals around the world, 2012. This panel depicts the extent of corporate control by families/individuals and private non-listed firms with an unidentified controlling shareholder in 2012. The sample comprises 26,843 listed firms in 85 countries in 2012. Table I gives the country means. **(Panel B) Corporate control by governmental entities around the world, 2012.** This panel depicts the extent of corporate control by government entities (national/federal government, states, municipalities, and governmental agencies) in 2012. The sample comprises 26,843 listed firms in 85 countries in 2012. Table I reports the country means. (Color figure can be viewed at wileyonlinelibrary.com)

correlates strongly with corporate control (correlations exceeding 0.8) is highest in Africa and Eastern Europe and lowest in Taiwan, Canada, the United States, the United Kingdom, Australia, and South Korea.

C. Trends in Ownership Concentration and Corporate Control

We next examine the evolution of ownership concentration and corporate control over the period 2004 to 2012. This is a brief period to study dynamics; yet, as it includes the U.S. financial meltdown of 2007 to 2009, the subsequent global recession, and the euro crisis, it allows us to examine the impact of large

economic shocks on corporate structure. In Figure 5, Panels A and B, we plot the evolution of C3 and the share of controlled firms. Since ORBIS coverage changes over time, we plot the concentration index and the corporate control share for a balanced sample of 9,957 firms in 70 countries. The capitalization of these firms in 2012 (2007) is \$41,542 (\$49,193) billion, approximately 74% of the total market cap of our sample in the two years. We find that concentration and control are persistent, although there are some changes. As we show in Internet Appendix B, this pattern of stability is present across both advanced economies and to a lesser extent middle-income countries.

The stable share of controlled firms may be due to ownership not changing for any firm over time or to changes in control canceling out (i.e., widely held corporations becoming controlled while at the same time controlled firms become widely held). To examine this question we employ the sample of 9,957 firms for which we have information throughout the 2004 to 2012 period as well as a larger sample of 15,930 firms for which we have information for both 2012 and 2007.

C.1. 2004 to 2012 Comparison

For the sample of 9,957 firms covering the full sample period, 1,967 firms have the same controlling owner throughout the period (e.g., the Chinese government controlled Petrochina and the Porsche-Piech family controlled Volkswagen), and another 4,412 firms remain widely held throughout the period 2004 to 2012 (e.g., Exxon Mobil, General Electric, Rio Tinto), so 64% of firms do not experience a change in corporate control. Of the remaining firms, 607 firms have a controlling owner throughout the sample period but experience a change in the controlling entity. For example, Banco Patagonia (Argentina) was controlled by the Stuart Milne brothers until 2010, when Banco do Brasil bought the controlling stake, and Bashneft (Russia) was controlled by Ural Rakhimov until mid-2009, when control passed to Vladimir Petrovich. The classification of the remaining 2,971 firms changes from widely held to having a controlling shareholder or vice versa.

C.2. 2007 and 2012 Comparison

For the 15,930 firms for which we have information in both 2007 and 2012, 3,829 firms have the same controlling shareholder/owner in 2007 and 2012, 1,461 (9%) remain controlled but observe a change in controlling shareholder, 7,502 (47%) are classified as widely held in 2007 and 2012, and 3,138 (20%) change classification from widely held to controlled or vice versa.

III. Legal Origin and Corporate Control

In this section, we report results on the relation between corporate control and legal origin. First, we begin by discussing our empirical specification. Next, we report main results using probit and hierarchical analysis. In the

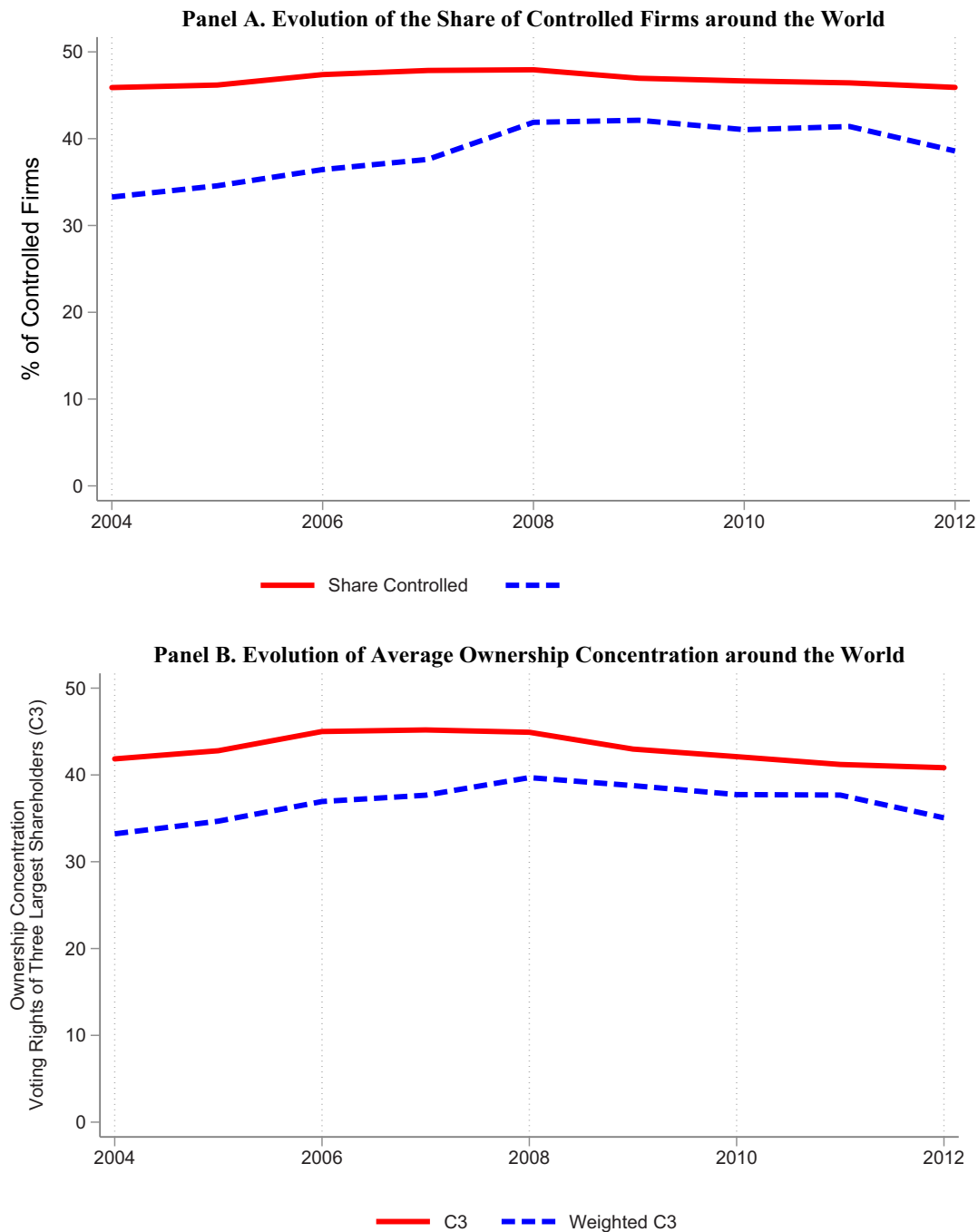


Figure 5. Evolution of corporate control and ownership concentration around the world, 2004 to 2012. This figure shows the evolution of the share of controlled firms (Panel A) and ownership concentration (Panel B) over the period 2004 to 2012. The balanced panel covers 9,957 firms incorporated in 70 countries. The panels plot simple-arithmetic means and market capitalization weighted averages. A firm is classified as controlled if an individual/family, a private firm with an unmatched ultimate owner, the government, a widely held private firm, or a widely held public firm hold more than 20% of the firm's voting rights. The C3 ownership concentration index captures the voting rights of the three largest shareholders, where we treat family members as one representative shareholder with aggregated voting rights. (Color figure can be viewed at wileyonlinelibrary.com)

third subsection, we report results on the association between ownership concentration and legal origin. Finally, we conduct sensitivity checks.

A. Empirical Specification

To provide evidence on the cross-sectional association (in 2012 and 2007) between corporate control and legal origin, we start with the following specification:

$$y_{i,c} = \phi \{ LO'_c \Phi + X'_{i,c} \Gamma + Z' \Psi + a_s + a_r + \varepsilon_{i,s,c} \}. \quad (1)$$

The dependent variable, $y_{i,c}$, is an indicator equal to 1 if firm i in country c is controlled (by an individual/family, a private firm for which we could not identify the ultimate shareholder, the government, or a widely held private/public firm) and 0 if the firm is widely held (with or without a block). Because the dependent variable is binary, we estimate probit models with maximum likelihood, so ϕ denotes the standard normal.

The key explanatory variables capture a country's legal origin (LO_c). We include French, German, and Scandinavian civil-law legal origin indicator variables, using common-law legal origin as the omitted category.²⁶ Regional (continental) constants are given by a_r .²⁷ In several specifications, we include the log of per capita GDP (Z') that we take as a summary measure of a country's economic, institutional, and financial development. A number of specifications also include sector constants, a_s (based on two-digit SIC codes). The vector $X'_{i,c}$ contains firm-level controls. Following Holderness (2016a, 2016b), we control for firm age (log number of years since incorporation) and size (log market capitalization).

We also run specifications pooling observations over the period 2004 to 2012, as this maximizes coverage (42,720 firms in 127 countries). The pooled specification is

$$y_{i,c,t} = \phi \{ LO'_c \Phi + X'_{i,c,t} \Gamma + Z'_{c,t} \Psi + a_s + a_r + a_t + \varepsilon_{i,s,c,t} \}. \quad (2)$$

Here, the dependent variable denotes control of firm i in country c in year t , a_t are year constants, and the control variables (GDP per capita, firm age, and capitalization) are time-varying.

Before reporting the results, it is important to stress that legal origin may affect corporate control through multiple channels, such as investor protection, court efficiency, product market regulation, and labor laws (see La Porta, Lopez-de Silanes, and Shleifer (2008)). The coefficients on the legal origin indicators

²⁶ We do not include a Socialist law indicator, as by the mid-2000s Eastern European and Asian countries aligned with the Soviet Union had changed their legal systems (La Porta, Lopez-de Silanes, and Shleifer (2006)).

²⁷ The World Bank assigns countries to the following regions: Sub-Saharan Africa, Middle East and North Africa, East Asia and the Pacific, Western Europe, Eastern Europe and Central Asia, and the Americas that includes North America (the United States and Canada), Latin America, and the Caribbean.

capture the “reduced-form” relationship between legal family/tradition and corporate control. We also stress that although most countries’ legal system was shaped hundreds of years ago, imposed by colonial powers, the estimates do not reflect causal relationships. Colonization was not random, and the identity of colonial powers may affect long-run development via mechanisms other than legal origin. country’s legal tradition is related to hard-to-account-for features relevant to corporate control. Roe (2006) stresses the role of considerable differences in war-related damages during the 20th century between common-law and civil-law countries, while Damaška (1986) and other legal scholars emphasize differences in the role of government. Since the legal origin indicators (and GDP per capita) take the same value for all firms in a country, we cluster standard errors at the country level (Moulton (1990)).

B. Baseline Estimates

B.1. Probit Estimates

Table II reports the baseline results. Since probit coefficients are not readily interpretable, the table presents average marginal effects, which capture the difference in the likelihood that the company is controlled across legal families. Panel A reports results for specifications in which we use the 20% cutoff to identify control, while Panel B reports analogous results when we use the Shapley-Shubik (1954) algorithm to identify control.

Column (1) reports unconditional estimates. The test of means suggests that the share of controlled firms, as identified by the cutoff rule, is 33.5 percentage points higher in French civil-law countries as compared to common-law countries. The estimate when we use the Shapley-Shubik (1954) approach is somewhat smaller, at 0.28. Both coefficients are highly significant. Compared to common-law countries, the share of controlled firms is roughly 18 (14) percentage points higher in German civil-law countries with the 20% cutoff rule (Shapley-Shubik algorithm). Differences in corporate control between common-law and Scandinavian civil-law countries are muted.

In column (2) we control for (log) GDP per capita, which enters with a significantly negative coefficient. The estimates on the French and German legal origin variables are not affected much. The coefficient on the French civil-law indicator is positive and highly significant in both panels; the likelihood of listed firms having a controlling shareholder, as compared to being widely held, is 25 to 30 percentage points higher for countries whose legal system is based on the Napoleonic civil codes, as compared to (mostly) British colonies that have a common-law system. The German civil-law and the Scandinavian civil-law dummy variables enter with positive and significant estimates; the probability of a listed firm having a controlling shareholder is 11 to 15 percentage points higher in German civil-law and 8 to 10 percentage points higher in Scandinavian civil-law countries.

In column (3), we add continental fixed effects. The regional constants are significant (coefficients not shown), as widely held corporations are less

Table II
Corporate Control and Legal Origin, Probit (ML) Estimates

This table reports firm-level probit (maximum likelihood) estimates (average marginal effects). The dependent variable is an indicator that takes the value of 1 if a firm is controlled (by either an individual/family, a private firm with an unmatched ultimate owner, the government, a widely held private firm, or a widely held public firm) and 0 if the firm is widely held (with or without a block). The key explanatory variables are legal origin indicator variables that take the value of 1 for French civil-law, German civil-law, and Scandinavian civil-law countries, respectively, with common-law legal origin serving as the omitted category. Panel A reports estimates when we use the 20% voting-rights cutoff rule to identify controlled corporations. Panel B reports estimates when we use the Shapley-Shubik (1954) relative voting power approach to identify controlled corporations. The specifications in columns (1) to (5) are estimated on the 2012 sample, the specifications in columns (6) and (7) are estimated on the 2007 sample, and the specifications in columns (8) and (9) are estimated on the pooled 2004 to 2012 sample that maximizes coverage (42,720 firms). The specifications in columns (3) to (9) include continental fixed effects (constants not reported) following the World Bank's regional classification. The specifications in columns (4), (5), (7), and (9) include industry fixed effects (constants not reported). The specifications in columns (2) to (9) control for the logarithm of GDP per capita in a given year. The specifications in columns (4), (7), and (9) include as controls log firm age and log market capitalization. The Appendix gives detailed variable definitions and sources. Heteroskedasticity-adjusted standard errors clustered at the country level are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Absolute (20%) Voting-Rights Cutoff of Corporate Control									
2012 Sample					2007 Sample		2004 to 2012 Sample		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
French legal origin	0.3368*** (0.0369)	0.2995*** (0.0302)	0.2549*** (0.0537)	0.2328*** (0.0574)	0.2326*** (0.0533)	0.2615*** (0.0588)	0.2325*** (0.0586)	0.2569*** (0.0576)	0.2375*** (0.0577)
German legal origin	0.1781*** (0.0754)	0.1518*** (0.0626)	0.1265 (0.0770)	0.1194 (0.0753)	0.1200* (0.0713)	0.1620*** (0.0746)	0.1488*** (0.0706)	0.1552*** (0.0751)	0.1458*** (0.0716)
Scandinavian legal origin	0.0524 (0.0402)	0.1084*** (0.0330)	0.0674 (0.0840)	0.0650 (0.0855)	0.0568 (0.0829)	0.0993 (0.0770)	0.0901 (0.0748)	0.0826 (0.0804)	0.0783 (0.0777)
Log market capitalization				0.0119 (0.0090)			0.0007 (0.0068)	0.0069 (0.0078)	
Log age				-0.0000 (0.0121)			0.0141 (0.0105)		0.0058 (0.0107)
Log GDP per capita		-0.0667*** (0.0155)	-0.0607*** (0.0208)	-0.0580*** (0.0197)	-0.0546*** (0.0196)	-0.0412*** (0.0199)	-0.0365* (0.0198)	-0.0512*** (0.0197)	-0.0459*** (0.0194)
Regional fixed effects	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Continued

Table II—Continued

Panel A: Absolute (20%) Voting-Rights Cutoff of Corporate Control								
2012 Sample			2007 Sample			2004 to 2012 Sample		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Industry fixed effects	No	No	Yes	Yes	No	Yes	No	Yes
Year fixed effects	No	No	No	No	No	No	Yes	Yes
Pseudo R^2	0.05	0.07	0.09	0.09	0.06	0.08	0.06	0.08
Observations	26,843	26,843	21,743	26,835	25,976	23,538	225,082	197,087
Countries	85	85	85	85	74	74	127	122
Panel B: Relative (Shapley-Shubik) Voting-Rights Cutoff of Corporate Control								
2012 Sample			2007 Sample			2004 to 2012 Sample		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
French legal origin	0.2829*** (0.0400)	0.2518*** (0.0337)	0.2182*** (0.0540)	0.2128*** (0.0582)	0.2037*** (0.0538)	0.2468*** (0.0573)	0.2278*** (0.0578)	0.2393*** (0.0559)
German legal origin	0.1369* (0.0750)	0.1147* (0.0644)	0.0914 (0.0782)	0.0970 (0.0787)	0.0913 (0.0733)	0.1439** (0.0680)	0.1422** (0.0657)	0.1376* (0.0711)
Scandinavian legal origin	0.0376 (0.0394)	0.0835** (0.0337)	0.0591 (0.0827)	0.0641 (0.0839)	0.0525 (0.0816)	0.1037 (0.0722)	0.1002 (0.0721)	0.0865 (0.0736)
Log market capitalization				0.0043 (0.0104)			−0.0068 (0.0066)	−0.0017 (0.0083)
Log age				−0.0022 (0.0122)		0.0096 (0.0100)		0.0036 (0.0102)
Log GDP per capita		−0.0559*** (0.0158)	−0.0476** (0.0200)	−0.0458** (0.0204)	−0.0417** (0.0195)	−0.0399** (0.0192)	−0.0366* (0.0196)	−0.0451** (0.0194)
Regional fixed effects	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	No	No	No	Yes	Yes	No	No	Yes
Year fixed effects	No	No	No	No	No	No	No	Yes
Pseudo R^2	0.03	0.04	0.05	0.07	0.06	0.05	0.06	0.06
Observations	26,843	26,843	26,843	21,743	26,835	25,976	23,538	197,087
Countries	85	85	85	85	85	74	127	122

frequent in Sub-Saharan Africa, Eastern Europe, and Central Asia (Figure 3). The coefficient on the French legal origin indicator retains significance (0.25 in Panel A and 0.22 in Panel B). The estimates on the German and Scandinavian legal origin indicators decrease somewhat, and their standard errors increase, rendering the coefficients insignificant. This is due to the limited within-region variation for some legal families. There are no Scandinavian civil-law countries outside Western Europe and there are no common-law countries in Eastern Europe and Central Asia. Differences between common-law and civil-law countries (when we pool French, German, and Scandinavian civil-law countries) are considerable in Sub-Saharan Africa, East Asia and the Pacific, and the Americas.

In column (4), we add industry constants as well as log firm age and log market capitalization. Adding sectoral fixed effects is a priori necessary, as there are differences in ownership structure across sectors (e.g., Faccio and Lang (2002)). Size and age may be related to a country's legal tradition and stage of economic development (Holderness (2016a)). Both variables enter with coefficients that are small and statistically indistinguishable from zero. The insignificance suggests that as firms mature, ownership does not mechanically get more dispersed (see also Claessens, Djankov, and Lang (2000), Franks et al. (2012)). The average marginal effects on the legal origin indicators retain their magnitudes. Since the sample decreases when we condition on firm age that is an insignificant correlate of control, in column (5) we omit it. Conditional on the relevant regional features, industry characteristics, and GDP, the likelihood of a firm having a controlling owner is 20 to 23 percentage points higher in French civil-law countries as compared to common-law countries.

In columns (6) and (7), we examine the association between control and legal origin in 2007. The likelihood (average marginal effect) that a listed firm is controlled is 23 percentage points higher in French civil-law countries, as compared to common-law countries. The likelihood of controlled firms is approximately 15 percentage points higher in German civil law countries. Corporate control is also higher in Scandinavian civil-law countries, though the coefficient (0.09 to 0.10) does not pass standard significance levels. These results imply that the global financial crisis did not affect the association between corporate control and legal origin.

In columns (8) and (9), we report pooled sample cross-sectional estimates (based on equation (2)), which maximizes firm and country coverage. Conditional on industry and regional differences, as well as log GDP per capita, we find that the share of controlled firms is, on average, 26, 15, and 8 percentage points higher in countries of French, German, and Scandinavian civil-law tradition, respectively, as compared to common-law countries.

A couple of examples illustrate the above results. The fraction of controlled firms in Malaysia, a common-law country, is 0.55, while the corresponding share in Indonesia, a Dutch colony with a French civil-law system is 0.78. The share of controlled firms in Cyprus (0.40), a former British colony, is almost half of the analogous share in Greece (0.76), a French civil-law country. And

the share of controlled firms in common-law Nigeria is 0.68, while in French civil-law Ivory Coast it is 0.93.

In sum, the results in Table II show that in our large sample of firms and countries, the cross-country correlations between corporate control and legal origin are similar using the 20% cutoff rule and the more elaborate Shapley-Shubik (1954) power index. These results suggest that previous studies that rely on simple cutoff rules are quite accurate, at least when the sample size is large.

B.2. Hierarchical Analysis

In most widely held firms, there is at least one block shareholder. For example, Bill Gates holds a significant stake in Microsoft, Blackrock and Fidelity hold blocks in Apple, and Berkshire Hathaway holds a large stake in IBM. In Europe, Groupe Bruxelles Lambert holds a block of Total and the Kuwait Investment Corporation holds 5.7% of the voting rights of Daimler. Block shareholders can exert some control (see Edmans and Holderness (2017)). It is therefore important (if not commonly done) to account for blocks in the empirical analysis as they are widespread and hence the results may depend on how one classifies firms with dispersed ownership but sizable blocks (Holderness (2009)).

We construct an ordered index (0,1,2) that accommodates heterogeneity on the degree of corporate control and estimate hierarchical model specifications that are designed to study such phenomena (Wooldridge (2002), Green (2011)). More specifically, we first set the trichotomous index to zero for widely held firms without a block (all shareholders hold less than 5% of voting rights), one for widely held firms with at least one block (over 5%), and two for controlled firms.²⁸ We then estimate ordered probit models (with maximum likelihood) that associate the ordered index with legal origin.

Table III reports ordered probit coefficients (not average marginal effects as in the other tables) using the 20% cutoff rule in Panel A and the Shapley-Shubik approach in Panel B. The results are as follows. First, in most specifications the threshold parameters are statistically different from zero and each other, suggesting that the ordered model fits the data better than the binary model. Second, the French legal origin indicator enters with a positive and highly significant estimate. Third, the coefficients on the German and Scandinavian civil-law dummies are positive but not always significant. Fourth, log GDP per capita enters with a significantly negative coefficient. Fifth, size and age do not systematically correlate with control. In Figure 6, Panel A, we plot the estimated likelihoods (average marginal effects) of the three outcomes for each legal family using the specification with the rich set of controls in the 2004 to

²⁸ Although different blockholders may take a more passive or active role in corporate affairs, we do not distinguish between blockholder type (e.g., individual/family, pension, mutual fund, or HF), as we do not have precise information on their strategy. Moreover, blockholders' rights, as specified in corporate law and securities legislation, differ across countries.

Table III
Corporate Control and Legal Origin, Ordered Probit (ML) Estimates

This table reports firm-level (ordered) probit (maximum likelihood) coefficients. The dependent variable is an ordered index of corporate control. The trichotomous index that serves as the dependent variable takes the value of 0 for widely held firms without a block (all shareholders/families hold less than 5% of the firm's voting rights), one for widely held firms with at least one block (in excess of 5%), and two for firms with a controlling shareholder (of any type). The key explanatory variables are legal origin indicator variables that take the value of 1 for French civil-law, German civil-law, and Scandinavian civil-law countries, respectively, with common-law legal origin serving as the omitted category. Panel A reports estimates when we use the 20% voting-rights cutoff rule to identify controlled corporations. Panel B reports estimates when we use the Shapley-Shubik (1954) relative voting power approach to identify controlled corporations. The specifications in columns (1) to (5) are estimated on the 2012 sample, the specifications in columns (6) and (7) are estimated on the 2007 sample, and the specifications in columns (8) and (9) are estimated on the pooled 2004 to 2012 sample that maximizes coverage (42,720 firms). The specifications in columns (3) to (9) include continental fixed effects (constants not reported) following the World Bank's regional classification. The specifications in columns (4), (5), (7), and (9) include industry fixed effects using two-digit SIC classifications (85 sectors, constants not reported). The pooled specifications in columns (8) and (9) also include year fixed effects (constants not reported). The specifications in columns (2) to (9) control for the logarithm of GDP per capita in a given year. The specifications in columns (4), (7), and (9) include as controls log firm age and log market capitalization. The Appendix gives detailed variable definitions and sources. Heteroskedasticity-adjusted standard errors clustered at the country level are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Absolute (20%) Voting-Rights Cutoff of Corporate Control									
	2012 Sample			2007 Sample			2004 to 2012 Sample		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
French legal origin	0.8335*** (0.1053)	0.7672*** (0.0873)	0.6380*** (0.1489)	0.6057*** (0.1590)	0.6056*** (0.1460)	0.6833*** (0.1393)	0.6225*** (0.1433)	0.6574*** (0.1436)	0.6254*** (0.1481)
German legal origin	0.3214 (0.2199)	0.2709 (0.2012)	0.2015 (0.2264)	0.2113 (0.2184)	0.2120 (0.2075)	0.3696** (0.1804)	0.3384* (0.1739)	0.3240* (0.1905)	0.3138* (0.1880)
Scandinavian legal origin	0.1257 (0.0884)	0.2294*** (0.0839)	0.1181 (0.2154)	0.1205 (0.2161)	0.1092 (0.2093)	0.2245 (0.1680)	0.2117 (0.1693)	0.1960 (0.1871)	0.1964 (0.1856)
Log market capitalization				0.0287 (0.0224)			0.0050 (0.0152)		0.0158 (0.0186)
Log age				-0.0113 (0.0346)			0.0332 (0.0281)		0.0106 (0.0295)
Log GDP per capita		-0.1306*** (0.0452)	-0.1157** (0.0516)	-0.1154** (0.0510)	-0.1048** (0.0505)	-0.0785* (0.0444)	-0.0748 (0.0475)	-0.1061** (0.0469)	-0.1011** (0.0509)
Cutoff 1	-1.1605*** (0.0796)	-2.5090*** (0.4869)	-2.3568*** (0.5037)	-2.1626*** (0.5064)	-2.2699*** (0.5008)	-2.1082*** (0.3946)	-2.1540*** (0.4547)	-2.2231*** (0.4291)	-2.1533*** (0.4994)

Continued

Table III—Continued

Panel A: Absolute (20%) Voting-Rights Cutoff of Corporate Control								
2012 Sample			2007 Sample			2004 to 2012 Sample		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Cutoff 2	0.3238 ^{***} (0.1017)	-1.0141 ^{**} (0.4694)	-0.8537 [*] (0.5088)	-0.6633 (0.5199)	-0.7461 (0.5027)	-0.4548 (0.3852)	-0.4566 (0.4465)	-0.7078 (0.4310)
Regional fixed effects	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	No	No	No	Yes	Yes	No	Yes	Yes
Year fixed effects	No	No	No	No	No	No	No	Yes
Pseudo R^2	0.03	0.04	0.05	0.06	0.06	0.05	0.06	0.06
Observations	26,843	26,843	26,843	21,751	26,843	25,976	23,546	197,115
Countries	85	85	85	85	85	74	74	122
Panel B: Relative (Shapley-Shubik) Voting-Rights Cutoff of Corporate Control								
2012 Sample			2007 Sample			2004 to 2012 Sample		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
French legal origin	0.7047 ^{***} (0.1050)	0.6483 ^{***} (0.0909)	0.5437 ^{***} (0.1424)	0.5447 ^{***} (0.1538)	0.5242 ^{***} (0.1399)	0.6386 ^{***} (0.1323)	0.5989 ^{***} (0.1374)	0.6055 ^{***} (0.1357)
German legal origin	0.2416 (0.2124)	0.1991 (0.1966)	0.1330 (0.2202)	0.1663 (0.2176)	0.1537 (0.2029)	0.3282 ^{**} (0.1623)	0.3209 ^{**} (0.1587)	0.2854 (0.1786)
Scandinavian legal origin	0.0992 (0.0904)	0.1843 ^{**} (0.0902)	0.1052 (0.2055)	0.1220 (0.2059)	0.1033 (0.1989)	0.2337 (0.1510)	0.2314 (0.1558)	0.2032 (0.1719)
Log market capitalization				0.0146 (0.0246)			-0.0104 (0.0144)	-0.0006 (0.0189)
Log age				-0.0143 (0.0336)			0.0239 (0.0266)	0.0064 (0.0279)
Log GDP per capita				-0.0906 [*] (0.0516)	-0.0775 (0.0487)	-0.0755 [*] (0.0434)	-0.0750 (0.0466)	-0.0933 ^{**} (0.0449)
Cutoff 1	-1.1899 ^{***} (0.0860)	-2.3023 ^{***} (0.4621)	-2.1093 ^{***} (0.4731)	-2.0150 ^{***} (0.5113)	-2.0881 ^{***} (0.4838)	-2.1046 ^{***} (0.3952)	-2.2906 ^{***} (0.4488)	-2.1566 ^{***} (0.4913)
Cutoff 2	0.1565 (0.0961)	-0.9496 ^{**} (0.4537)	-0.7504 (0.4831)	-0.6438 (0.5238)	-0.7124 (0.4865)	-0.5508 (0.3895)	-0.6893 (0.4406)	-0.7130 (0.4955)
Regional fixed effects	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	No	No	No	Yes	Yes	No	Yes	Yes
Year fixed effects	No	No	No	No	No	No	No	Yes
Pseudo R^2	0.02	0.03	0.03	0.05	0.04	0.04	0.05	0.05
Observations	26,843	26,843	26,843	21,751	26,843	25,976	23,546	197,115
Countries	85	85	85	85	85	74	74	122

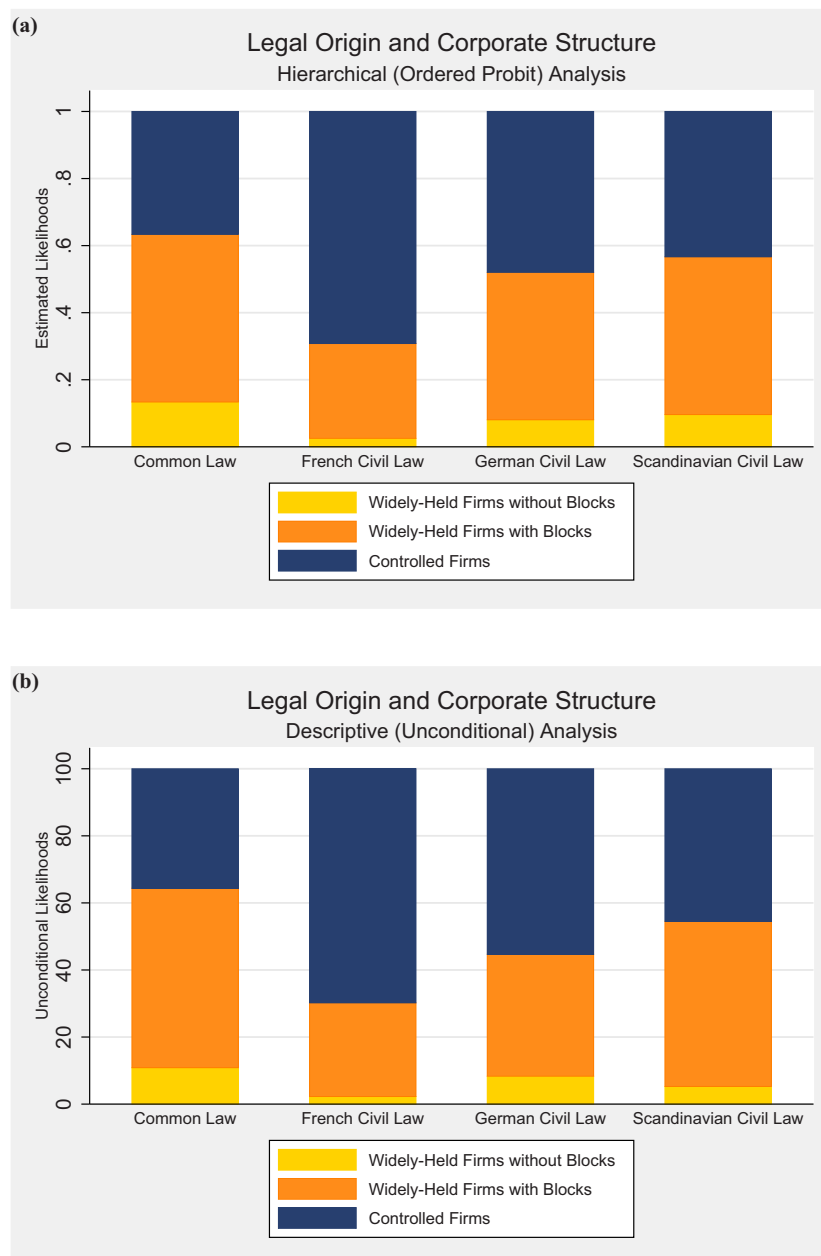


Figure 6. Legal origin and corporate structure—conditional and unconditional likelihoods. Panel A shows the estimated likelihoods of the three main categories of corporate control (widely held firms without blocks, widely held firms with block(s), and controlled firms) from an ordered probit maximum likelihood specification that links corporate control with legal origin over the period 2004 to 2012. The ordered probit (reported in column (8) of Table III, Panel A) associates a trichotomous index that takes the value of 0 for widely held firms without a block, one for widely held firms with at least one block (over 5%), and two for firms with a controlling shareholder (of any type) with legal origin indicators that take the value of 1 for French civil-law, German civil-law, and Scandinavian civil-law countries, with common-law legal origin serving as the omitted category. The specification also includes year fixed effects, industry fixed effects, and the logarithm of GDP per capita. Panel B shows unconditional likelihoods of the three main corporate control categories across common-law, French civil-law, Scandinavian civil-law, and German civil-law countries. (Color figure can be viewed at wileyonlinelibrary.com)

2012 sample (column (8)), as this allows us to visualize at which margin legal origin operates. For comparability, Figure 6, Panel B, plots the unconditional likelihoods. The marginal effects in Panel A imply that conditional on regional characteristics and the level of development, the likelihood that a key shareholder will control a listed firm in a French civil-law country is 66.4%, similar to the unconditional likelihood of 66.8%. The regression estimates further imply that in French civil-law countries 31% of listed firms will be widely held with a block shareholder and only 2.8% of listed firms will have dispersed ownership without any block shareholder. These estimates are close to the simple means. Turning to the common-law countries, the estimates imply that 10% of listed firms will be widely held without a block and 57.5% of listed firms will be widely held with a block. These estimates are close to their unconditional values (12.5% and 53%, respectively).

C. Ownership Concentration

Table IV reports OLS estimates associating ownership concentration with legal origin. The unconditional specification in (1) shows that, compared to common-law countries, the voting-rights share of the three largest shareholders is 25 percentage points higher in French legal origin countries. Ownership concentration is 6 to 7 percentage points higher in German and Scandinavian civil-law countries. The legal origin indicators explain 10% of the total variance in ownership concentration. This is far from negligible, as country fixed effects explain 25% of the variability, and thus legal origin explains 40% of the variance captured by all country-level characteristics.

Figure 7, Panels A and B, illustrates the differences in ownership concentration between common-law and French civil-law countries in 2012 using the *C3* measure and the *C5* measure, respectively. The panels provide overlapping histograms of ownership concentration for common-law countries (13,986 firms in 28 countries) and French civil-law countries (4,516 firms in 33 countries). Ownership concentration in French civil-law countries is tilted to the right of the common-law distribution. The median *C3* in common-law countries is 29.01%, while in French civil-law countries it is 62.17%. The 25th percentile of the distribution of *C3* in common-law countries is 13.84%, while in French civil-law it is 42.98%. The 75th percentile of *C3* in common-law countries is 51.96% and in French civil-law countries it is 81.79%.

The estimate on the French civil-law indicator is not affected by the inclusion of log GDP per capita, industry fixed effects, and the firm controls. It declines somewhat when we add the regional constants. Conditional on GDP, industry, and unobservable regional characteristics, the voting rights of the three largest shareholders are 15 percentage points higher in French civil-law countries, as compared to common-law countries. A couple of examples illustrate these results. The average value of the *C3* index for the 14 publicly traded firms in Ghana, a former British colony with a common-law system, is 63.1%, while the *C3* for the 14 firms incorporated in neighboring Ivory Coast, a French civil-law country, is 72.9%. (GDP per capita is similar in the two countries, at

Table IV
Ownership Concentration and Legal Origin, OLS Estimates

This table reports firm-level OLS estimates. The dependent variable is the C3 index of ownership concentration that reflects the voting rights held by the three largest shareholders (treating family members as one representative shareholder with aggregated voting rights). The key explanatory variables are legal origin indicator variables that take the value of 1 for French civil-law, German civil-law, and Scandinavian civil-law countries, respectively, with common-law legal origin serving as the omitted category. The specifications in columns (1) to (5) are estimated on the 2012 sample, the specifications in columns (6) and (7) are estimated on the 2007 sample, and the specifications in columns (8) and (9) are estimated on the pooled 2004 to 2012 sample that maximizes coverage (42,720 firms). The specifications in columns (3) to (9) include continental fixed effects (constants not reported) following the World Bank's regional classification. The specifications in columns (4), (5), (7), and (9) include industry fixed effects using two-digit SIC classifications (85 sectors, constants not reported). The pooled specifications in columns (8) and (9) also include year fixed effects (constants not reported). The specifications in columns (2) to (9) control for the logarithm of GDP per capita in a given year. The specifications in columns (4), (7), and (9) include as controls log firm age and log market capitalization. The [Appendix](#) gives detailed variable definitions and sources. Heteroskedasticity-adjusted standard errors clustered at the country level are reported in parentheses below the estimates. ^{***}, ^{**}, and ^{*} indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	2012 Sample			2007 Sample			2004–2012 Sample		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
French legal origin	0.2534 ^{***} (0.0245)	0.2373 ^{***} (0.0249)	0.1591 ^{***} (0.0377)	0.1523 ^{***} (0.0396)	0.1497 ^{***} (0.0368)	0.1628 ^{***} (0.0308)	0.1444 ^{***} (0.0313)	0.1594 ^{***} (0.0344)	0.1482 ^{***} (0.0347)
German legal origin	0.0734 (0.0536)	0.0616 (0.0514)	0.0226 (0.0478)	0.0212 (0.0475)	0.0242 (0.0455)	0.0384 (0.0399)	0.0280 (0.0393)	0.0373 (0.0419)	0.0318 (0.0423)
Scandinavian legal origin	0.0644 ^{**} (0.0305)	0.0890 ^{***} (0.0317)	0.0143 (0.0584)	0.0161 (0.0533)	0.0131 (0.0544)	0.0341 (0.0425)	0.0276 (0.0424)	0.0326 (0.0494)	0.0298 (0.0475)
Log market capitalization				0.0074 (0.0048)			−0.0003 (0.0032)		0.0053 (0.0040)
Log age				−0.0037 (0.0080)			0.0136 [*] (0.0074)		0.0064 (0.0078)
Log GDP per capita		−0.0302 ^{**} (0.0143)	−0.0287 ^{**} (0.0145)	−0.0239 [*] (0.0137)	−0.0251 [*] (0.0142)	−0.0106 (0.0125)	−0.0092 (0.0139)	−0.0223 [*] (0.0126)	−0.0192 (0.0137)
Regional fixed effects	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	No	No	No	Yes	Yes	No	Yes	No	Yes
Year fixed effects	No	No	No	No	No	No	No	Yes	Yes
R ²	0.10	0.12	0.16	0.20	0.18	0.14	0.16	0.14	0.17
Observations	26,843	26,843	26,843	21,751	26,843	25,976	23,546	225,082	197,115
Countries	85	85	85	85	85	74	74	127	122

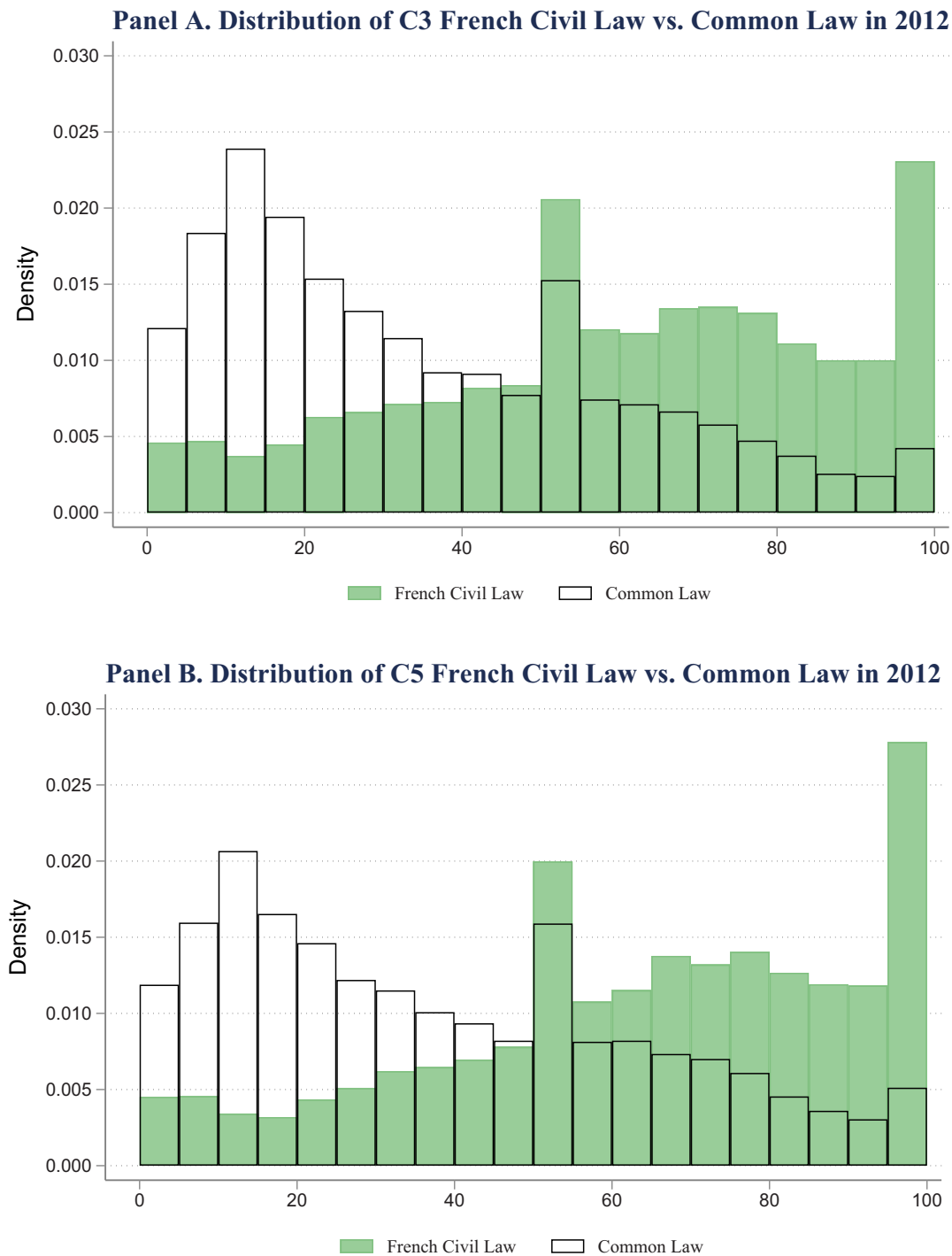


Figure 7. Ownership concentration across common-law and French civil-law countries. The histograms show the distribution of the C3 (Panel A) and the C5 (Panel B) ownership concentration measures for common-law and French civil-law countries in 2012. The sample includes 4,516 firms in 33 French civil-law countries and 13,986 firms in 28 common-law countries. The C3 (C5) ownership concentration measures reflect the voting rights of the three (five) largest shareholders, where we treat family members as one representative shareholder with aggregated voting rights. Table I reports the country means. (Color figure can be viewed at wileyonlinelibrary.com)

approximately 1,500 USD, as is total market capitalization, around 2 billion USD). In East Asia, the average $C3$ in French civil-law Indonesia is 63.4%, while in common-law Thailand it is 45.2%.

D. Sensitivity Analysis

Above we show that cross-country correlations are quite stable over time, across methods to identify control, and with or without the inclusion of firm controls. In Internet Appendix B, we report results of additional sensitivity checks (see Internet Appendix Tables IA.BIX to IA.BXVII). First, we examine whether the patterns are similar using alternative estimation techniques (linear probability models, logits, and multinomial logits) and alternative measures of ownership concentration. We find that our results are not sensitive to the choice of estimation method or measure of ownership concentration. Second, we examine whether some regions drive the documented patterns. We find that differences between civil-law and common-law countries are economically sizable in Western Europe, Sub-Saharan Africa, and the Americas. Differences are also present in Asia and the Pacific, although the estimates are not statistically significant. In the Middle East and North Africa, there are no major differences in control across civil-law and common-law countries. Third, we examine whether specific countries drive our results. When we drop the United States, which comprises around 15% to 18% of the firm sample, the main patterns remain intact. When we drop the top three countries in terms of the number of observations (the United States, Canada, and China), which reduces the sample by roughly 30%, we continue to find that corporate control is significantly higher in French civil-law countries.²⁹ Fourth, we examine whether the results hold when we average control (or ownership concentration) across firms in each country and run cross-country regressions. We find that results are similar, albeit a bit more imprecise.

IV. Heterogeneity

The size distribution of publicly traded firms is highly skewed (see Gabaix (2009, 2016) and the references therein). In our sample, the mean market capitalization is 1.55 billion USD, while the median is 10 times lower at 0.15 billion USD. Given such skewness, merely controlling for market capitalization may be inadequate. At the same time, the relationship between corporate control and legal origin may differ for small, medium, and large firms. Part of Holderness's (2016a, b critique of La Porta et al. (1999) relates to the unequal distribution of listed firms. In this section, we use the richness of the newly compiled data to explore heterogeneity across firm size and age.

Table V reports the results. Panel A presents probit average marginal effects for the 20% cutoff rule. Panel B presents OLS estimates for ownership

²⁹ We also run specifications dropping even more countries with many firm observations. Although the sample drops by more than 40%, we still find that ownership concentration in French

Table V
Heterogeneous Effects

This table explores heterogeneity with respect to firm size and firm age based on the 2012 sample. Panel A reports firm-level probit model (maximum likelihood) estimates (average marginal effects). The dependent variable is an indicator that takes the value of 1 if a firm is controlled (by an individual/family, a private firm with an unmatched ultimate owner, the government, a widely held private firm, or a widely held public firm) and 0 when the firm is widely held (with or without a block). Controlled firms are those in which a shareholder (e.g., state, individual, family, other firm) holds more of 20% of the firm's voting rights. Panel B reports firm-level OLS estimates. The dependent variable is the C3 index of ownership concentration, which captures the voting rights held by the three largest shareholders (treating family members as one representative shareholder with aggregated voting rights). The key explanatory variables are legal-origin indicator variables that take the value of 1 for French civil-law, German civil-law, and Scandinavian civil-law countries, respectively, with common-law legal origin serving as the omitted category. In columns (1), (2), and (3), we drop the largest firms in terms of market capitalization, using the global top 1%, 5%, and 10% cutoff, respectively. In columns (4) and (5), we focus on small and large firms using as the cutoff the (world-sample) median value of firm market capitalization. In columns (6) and (7), we restrict estimation to large firms in terms of market capitalization using the top 10% and top 5% global market capitalization cutoff, respectively. In columns (8) and (9), we focus on relatively young and relatively old firms using as the cutoff the (world-sample) median firm age (years since incorporation), which is 22 years. In all specifications, we control for the logarithm of GDP per capita in 2012. All specifications include regional fixed effects (constants not reported) following the World Bank's regional classification, industry fixed effects, using two-digit SIC classifications (85 sectors, constants not reported), and firm-level controls for size (log market capitalization) and age (log number of years since incorporation). The Appendix gives detailed variable definitions and sources. Heteroskedasticity-adjusted standard errors clustered at the country level are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Corporate Control and Legal Origin

Sample	Excl. Top 1% (1)	Excl. Top 5% (2)	Excl. Top 10% (3)	Small (4)	Large (5)	Top 10% (6)	Top 5% (7)	Young (8)	Old (9)
French legal origin	0.2283*** (0.0580)	0.2273*** (0.0592)	0.2259*** (0.0598)	0.2321*** (0.0687)	0.1816** (0.0571)	0.1757** (0.0657)	0.2002*** (0.0538)	0.2119*** (0.0568)	0.2409*** (0.0594)
German legal origin	0.1177 (0.0753)	0.1165 (0.0757)	0.1126 (0.0758)	0.0963 (0.0931)	0.0913 (0.0638)	0.1005 (0.0776)	0.0776 (0.0756)	0.1352 (0.0763)	0.0849 (0.0705)
Scandinavian legal origin	0.0583 (0.0866)	0.0523 (0.0879)	0.0447 (0.0881)	0.0258 (0.0908)	0.0768 (0.0948)	0.1750 (0.1060)	0.2422* (0.1143)	0.0879 (0.0803)	0.0273 (0.0861)
Log market capitalization	0.0132 (0.0089)	0.0146 (0.0093)	0.0157 (0.0091)	0.0017 (0.0070)	0.0056 (0.0113)	-0.0098 (0.0152)	-0.0317 (0.0241)	0.0183* (0.0083)	0.0039 (0.0094)
Log age	0.0012 (0.0120)	0.0036 (0.0120)	0.0053 (0.0117)	0.0206* (0.0091)	-0.0041 (0.0135)	-0.0145 (0.0135)	-0.0265 (0.0177)	-0.0008 (0.0179)	0.0126 (0.0198)

Continued

Table II—Continued

Panel A: Corporate Control and Legal Origin									
Sample	Excl. Top 1% (1)	Excl. Top 5% (2)	Excl. Top 10% (3)	Small (4)	Large (5)	Top 10% (6)	Top 5% (7)	Young (8)	Old (9)
Log GDP per capita	−0.0576** (0.0196)	−0.0544** (0.0193)	−0.0502** (0.0190)	−0.0152 (0.0148)	−0.1001*** (0.0197)	−0.1496*** (0.0293)	−0.1446*** (0.0281)	−0.0532* (0.0254)	−0.0520*** (0.0138)
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.09	0.09	0.09	0.09	0.12	0.20	0.24	0.11	0.10
Observations	21,522	20,645	19,562	10,894	10,841	2,154	1,076	11,000	10,737
Countries	85	85	85	83	85	78	78	83	84
Panel B: Ownership Concentration and Legal Origin									
Sample	Excl. Top 1% (1)	Excl. Top 5% (2)	Excl. Top 10% (3)	Small (4)	Large (5)	Top 10% (6)	Top 5% (7)	Young (8)	Old (9)
French legal origin	0.1501*** (0.0399)	0.1493*** (0.0404)	0.1490*** (0.0409)	0.1536*** (0.0452)	0.1296*** (0.0399)	0.1190*** (0.0409)	0.1507*** (0.0422)	0.1447*** (0.0388)	0.1549*** (0.0405)
German legal origin	0.0202 (0.0475)	0.0198 (0.0475)	0.0177 (0.0468)	0.0255 (0.0532)	−0.0161 (0.0461)	−0.0084 (0.0587)	−0.0323 (0.0591)	0.0390 (0.0468)	−0.0101 (0.0491)
Scandinavian legal origin	0.0115 (0.0590)	0.0094 (0.0597)	0.0048 (0.0599)	−0.0089 (0.0595)	0.0278 (0.0665)	0.0630 (0.0700)	0.0966 (0.0584)	0.0308 (0.0520)	−0.0074 (0.0613)
Log market capitalization	0.0083* (0.0046)	0.0101** (0.0047)	0.0114** (0.0047)	0.0053 (0.0040)	−0.0025 (0.0063)	−0.0106 (0.0079)	−0.0101 (0.0140)	0.0108** (0.0041)	0.0020 (0.0050)
Log age	−0.0030 (0.0080)	−0.0018 (0.0080)	−0.0013 (0.0076)	0.0039 (0.0073)	−0.0044 (0.0097)	−0.0047 (0.0119)	−0.0099 (0.0114)	−0.0228*** (0.0084)	0.0168 (0.0127)
Log GDP per capita	−0.0235* (0.0137)	−0.0222 (0.0135)	−0.0203 (0.0129)	−0.0051 (0.0095)	−0.0424** (0.0163)	−0.0603*** (0.0224)	−0.0563** (0.0238)	−0.0226 (0.0156)	−0.0193 (0.0127)
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.2	0.2	0.2	0.24	0.19	0.27	0.33	0.22	0.21
Observations	21,530	20,654	19,571	10,905	10,846	2,180	1,097	11,006	10,745
Countries	85	85	85	83	85	78	78	83	84

concentration. Both panels are based on the 2012 sample; Internet Appendix Tables [IA.BXVIII](#) and [IA.BXIX](#) report analogous estimates based on the 2007 and 2004 to 2012 sample. In column (1), we drop the top 1% of firms with capitalization exceeding 30 billion USD, while in columns (2) and (3) we drop firms in the top 5% and top 10% in terms of market capitalization (7.4 and 3 billion USD), respectively. The specifications shed light on whether the association between control and legal origin is driven by very large corporations. We find that this is not the case. The French legal origin indicator continues to enter with a stable (0.23 in the corporate control model and 0.15 in the ownership concentration model) and statistically significant coefficient. The estimates on the German and Scandinavian civil-law indicators are similar to the full-sample estimates, though they do not pass standard significance levels.

In columns (4) and (5), we split the sample using the median value of firm market capitalization. The French civil-law indicator is highly significant in both samples. This result adds to the law and finance literature, as it demonstrates that the “reduced-form” link between corporate control and legal origin holds across both big and small listed corporations.

The regressions also reveal an additional result. The negative association between log GDP per capita and corporate control is particularly strong for large firms; the coefficient on log output per capita in the large-firm sample is -0.1 and highly significant. In contrast, log GDP per capita enters with an estimate that is close to zero and statistically insignificant in the small-firm sample. A similar pattern applies for ownership concentration. This result, while new in the corporate finance literature, echoes Hsieh and Klenow ([2014](#)), who study plant-level productivity across firms’ life cycle in Mexico, India, and the United States, and find that differences are strong for large plants and in late stages of firms’ life cycle. Our results add to these findings by showing that economic development relates to the corporate structure of large firms that tend to be the most productive (e.g., Syverson ([2011](#))).

In columns (6) and (7), we restrict attention to large firms using the top 10% and top 5%, respectively, of firms based on market capitalization. The French legal origin indicator enters with a significantly positive coefficient that is quite similar to the full-sample estimate. The coefficient on log GDP per capita increases in absolute value (-0.15 in Panel A and -0.06 in Panel B), implying that the positive relationship between economic development and widely held corporations is particularly strong for very large firms.

In columns (8) and (9), we estimate separately the specifications for “young” and “old” firms, using the median firm age (22 years). Examining heterogeneity across firm age is useful, as earlier studies by Franks et al. ([2012](#)), Foley and Greenwood ([2010](#)), and Holderness ([2016a](#), [2016b](#)) document that in some countries only older firms manage to raise outside equity. The positive marginal effect of the French civil-law legal origin is present and similar in magnitude in both subsamples, which shows again that the negative GDP-control association

civil-law countries is higher. However, the estimates are imprecise and do not always pass standard significance thresholds.

applies to both young and old firms. Taken together, the evidence in Section V suggests that the reduced-form link between corporate control and legal origin is quite strong.

V. Institutional Correlates of Corporate Control

The law and finance literature (La Porta et al. (1997, 1998)) stresses the role of minority shareholders' rights against expropriation by company insiders in shaping corporate control. Legal origin is related to other institutional and regulatory features of capital, product, and labor markets (e.g., Djankov et al. (2002, 2003), Botero et al. (2004)). For instance, as La Porta, Lopez-de Silanes, and Shleifer (2006) observe, in its "strong form" common law promotes dispute resolution with little state involvement or regulation. In contrast, civil law is "policy implementing," that is, "a strategy of social control" over markets that depends on professional judges who interpret rather than create law and a government that actively intervenes in markets (Beck, Demirgüç-Kunt, and Levine (2003)). Legal scholars also stress the connection between civil law and an "interventionist" state that tightly regulates capital, labor, and product markets (Bebchuk and Roe (1999), Roe (2000, 2006)).

In this section, we examine the association between corporate control (and ownership concentration) and (i) proxies for investor protection, (ii) court efficiency, (iii) red tape in entering a market, and (iv) various aspects of labor market regulation.³⁰ Cross-country correlations do not identify causal effects, as endogeneity may arise due to, for example, omitted variables, related to trust, social values, and religion (e.g., Guiso, Sapienza, and Zingales (2004, 2006, 2011), Stulz and Williamson (2003)), reverse causation, from a high share of widely held firms to sound investor protection (Rajan and Zingales (2003)), and errors-in-variables, related to measures of institutional capacity (e.g., the World Bank has revised its methodology in measuring legal quality, barriers to entry, capital, product, and labor market institutions multiple times). However, the cross-country associations are useful in assessing the strength of the correlation of these factors with corporate control.

Figure 8 summarizes results of the correlational analysis for the pooled 2004 to 2012 sample. In particular, the graph plots the *univariate* correlation between corporate control and institutional proxies for investor protection, quality of the courts, barriers to entry, and labor market regulation. The dots correspond to point estimates (bold red dots denote statistically significant correlations) and the horizontal lines depict 95% confidence intervals (based on standard errors clustered at the country level). In the remainder of this section, we discuss these correlations in more detail.³¹

³⁰ Internet Appendix Table IA.BXXIII shows that legal origin correlates significantly with proxies for investor protection rights, legal quality, barriers to entry, and labor market regulations. Internet Appendix Tables IA.BXX to IA.BXXII report summary and descriptive statistics. Internet Appendix Tables IA.BXXIV to IABXXXI report sensitivity checks.

³¹ In Internet Appendix B, we provide analogous figures for the 2012 and 2007 samples. We also provide similar graphics for ownership concentration.

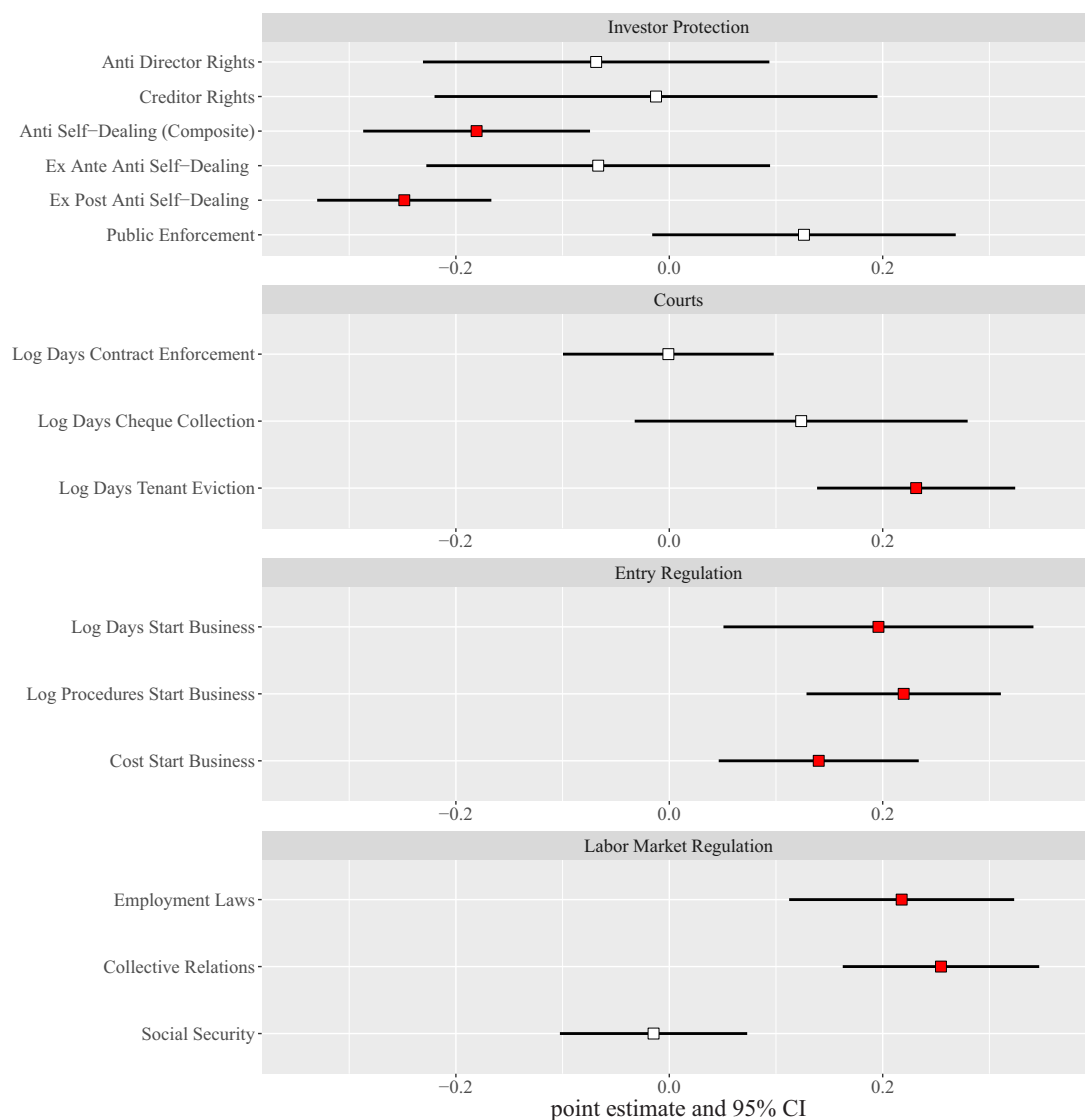


Figure 8. Corporate control and institutions—univariate correlations, 2004 to 2012. The figure shows the univariate correlation of various country-level institutional characteristics with the binary corporate control index for the 2004 to 2012 sample; the control index equals 1 if a firm is controlled (by an individual/family, a private firm with an unmatched ultimate owner, the government, a widely held private firm, or a widely held public firm) and 0 if the firm is widely held (with or without a block). For each characteristic listed on the vertical axis, the dot represents the value of the simple correlation of the variable with corporate control. The horizontal bars show the 95% confidence interval based on standard errors clustered at the country level. Red dots indicate statistically significant correlations at the 95% confidence level; white dots indicate statistically insignificant correlations. There are four broad institutional categories: (i) Investor protection variables, which includes measures of creditors' and shareholders' rights, (ii) court efficiency variables that capture the days needed to complete simple disputes in courts, (iii) barriers to entry variables, which measure the days, procedures, and associated cost of starting a business, and (iv) labor market regulation variables that include employment protection legislation, collective action clauses, and social security acts. The [Appendix](#) provides detailed variable definitions and sources. Internet Appendix B reports summary statistics and the values for each country. (Color figure can be viewed at [wileyonlinelibrary.com](#))

A. *Investor Protection*

We first examine the association between corporate control and investor protection, the mechanism emphasized by the law and finance literature as explaining the “reduced-form” correlation between control and legal origin. Table VI reports results, conditioning on industry fixed effects, regional constants, and GDP per capita, for the 2012, 2007, and 2004 to 2012 samples. For brevity, we report results using the 20% cutoff rule.

In columns (1), (4), and (7), we proxy for investor protection using a 0 to 6 shareholder protection index and 0 to 4 creditor rights index. The measures come from Djankov, McLiesh, and Shleifer (2007), and Djankov et al. (2008a) who expand, correct, and update the original indicators of La Porta et al. (1997, 1998). We include the two measures jointly, as their correlation is weak (0.26). We find no systematic association between corporate control and creditor rights. The average marginal effect on the antidirectors rights index is negative, but the coefficient does not pass standard significance thresholds. The results are similar for ownership concentration.

In columns (2), (5), and (8), we associate corporate control with the Djankov et al. (2008b) anti-self-dealing index that quantifies minority shareholders’ rights against self-dealing transactions of corporate insiders. This composite index captures ex ante and ex post private enforcement mechanisms available to minority shareholders to check self-dealing activities of managers and controlling shareholders. Ex ante mechanisms include requirements for the approval of disinterested shareholders, disclosure mandates, and independent reviews by auditors or financial experts. Ex post mechanisms include disclosure in periodic filings, access to evidence, and the ease with which managers and controlling shareholders can sue in the event of misconduct. Following Djankov et al. (2008b), we include an index of the public enforcement of shareholders’ rights. The anti-self-dealing index enters with a negative coefficient that is significant in the 2007 and 2004 to 2012 samples. Stronger legal protection from minority shareholders from self-dealing transactions by company insiders is therefore associated with a higher likelihood that a firm is widely held. The public enforcement index is insignificant, which suggests that imprisonment and hefty fines are not much related to control.

In columns (3), (6), and (9), we include both anti-self-dealing measures in the regression as their correlation is 0.15. The ex post anti-self-dealing index enters with a negative and highly significant estimate, in both ordered probit estimation and OLS with ownership concentration. The average marginal effect in 2012 implies that a one-standard-deviation increase in minority shareholders protections against insiders’ self-dealing activities is associated with a 7.5-percentage point higher likelihood that the listed firm will be widely held as compared to controlled.

Table VI
Corporate Control and Investor Protection, Probit (ML) Estimates

This table reports firm-level probit (maximum likelihood) estimates (average marginal effects) associating corporate control with measures of investor protection rights. The dependent variable is an indicator that takes the value of 1 if a firm is controlled (by an individual/family, a private firm with an unmatched ultimate owner, the government, a widely held private firm, or a widely held public firm) and 0 if the firm is widely held (with or without a block). For the identification of controlled corporations, we use the 20% voting-rights cutoff. The key explanatory variables are proxies for shareholder and creditor protection rights. The revised antidirectors rights index, which ranges from 0 to 6, captures the protection of minority shareholders in corporate decision making, including the right to vote. A score of 1 is assigned for each of the following rights that apply: (i) vote by mail, (ii) obstacles to the actual exercise of the right to vote (i.e., the requirement that shares be deposited before the shareholders' meeting), (iii) minority representation on the board of directors through cumulative voting or proportional representation, (iv) an oppressed minority mechanism to seek redress in the case of expropriation, (v) pre-emptive rights to subscribe to new securities issued by the company, and (vi) the right to call a special shareholders' meeting. The ex ante private control of self-dealing index, which ranges from 0 to 1, captures (i) disclosures by the buyer and the seller, and (ii) whether a positive independent review of the transaction is required, as well as whether the transaction must be approved by disinterested shareholders. The ex post private control of self-dealing index, which ranges from 0 to 1, captures (i) posttransaction legal provisions to hold the buyer and seller liable for bad faith, (ii) the ability of shareholders to sue or rescind the transaction, (iii) the ability of shareholders to access evidence on the transaction, and (iv) disclosure of evidence in periodic filings. The composite anti-self-dealing index is the average of the ex ante and ex post private control of self-dealing measures, which range from 0 to 1. The public enforcement index, which ranges from 0 to 1, captures disclosure requirements for self-dealing transactions by managers and controlling shareholders. All variables come from Djankov et al. (2008b). The creditor rights index ranges from 0 to 4. A score of 1 is assigned for each of the following rights of secured lenders defined in laws and regulations: (i) there are restrictions, such as creditor consent or minimum dividends, for a debtor to file for reorganization, (ii) secured creditors are able to seize their collateral after the reorganization petition is approved (i.e., there is no automatic stay or asset freeze), (iii) secured creditors are paid first out of the proceeds of liquidating a bankrupt firm, as opposed to other creditors such as the government or workers, and (iv) management does not retain administration of the property pending the resolution of the reorganization. The index comes from Djankov, McLiesh, and Shleifer (2007), who extend, revise, and update the original index compiled by La Porta et al. (1997, 1998). In all regressions we use the mean value over the period 1978 to 2003. The specifications in columns (1) to (3) are estimated on the 2012 sample, the specifications in columns (4) to (6) are estimated on the 2007 sample, and the specifications in columns (7) to (9) are estimated on the pooled 2004 to 2012 sample that maximizes coverage (42,720 firms). All specifications include continental fixed effects (constants not reported) following the World Bank's regional classification, industry fixed effects using two-digit SIC classifications (85 sectors, constants not reported), and the logarithm of GDP per capita. The pooled specifications in columns (7) to (9) also include year fixed effects (constants not reported). The Appendix gives detailed variable definitions and sources. Heteroskedasticity-adjusted standard errors clustered at the country level are reported in parentheses below the estimates. ^{***}, ^{**}, and ^{*} indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Sample	2012			2007			2004 to 2012		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Antidirector rights index	-0.0328 (0.0208)			-0.0095 (0.0283)			-0.0225 (0.0259)		

Continued

Table III—Continued

Sample	2012			2007			2004 to 2012		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Creditors rights	−0.0219 (0.0403)			−0.0363 (0.0398)			−0.0272 (0.0416)		
Anti-self-dealing index		−0.1619 (0.1606)			−0.2886** (0.1135)			−0.2622** (0.1231)	
Public enforcement		0.0345 (0.0495)			0.0796 (0.0506)			0.0683 (0.0495)	
Ex ante private self-dealing			0.0191 (0.0980)			−0.1279 (0.0883)			−0.0768 (0.0917)
Ex post private self-dealing			−0.3528*** (0.1320)			−0.2356* (0.1379)			−0.3080** (0.1400)
Log GDP per capita	−0.0605** (0.0264)	−0.0637* (0.0346)	−0.0543** (0.0253)	−0.0475 (0.0287)	−0.0490 (0.0306)	−0.0435 (0.0288)	−0.0531* (0.0276)	−0.0548* (0.0323)	−0.0455* (0.0268)
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	No	No	No	No	No	No	Yes	Yes	Yes
R ²	0.08	0.07	0.08	0.06	0.07	0.07	0.06	0.07	0.07
Observations	25,688	25,751	25,751	25,383	25,460	25,460	215,941	216,581	216,581
Countries	62	64	64	59	61	61	67	69	69

B. Courts

Legal origin is also related to the efficiency of the court system. For instance, Djankov et al. (2003) show that differences in court formalism across legal families on courts' formalism affects financial development. In Table VII, we associate corporate control (in columns (1) to (6)) and ownership concentration (in (7) to (9)) with the logarithm of the number of days it takes to resolve a simple dispute via the court system (from Djankov, McLiesh, and Shleifer (2007)). Columns (1) to (3) report probit average marginal effects with the control indicator as the outcome variable, columns (4) to (6) report ordered probit coefficients with the trichotomous index of control, and columns (7) to (9) report OLS estimates with the C3 concentration index as the dependent variable. The results point to a weak association, as the coefficient on the legal formalism proxy is small. Moreover, while in some specifications, the coefficient on the legal formalism proxy does pass significance levels, it turns insignificant when we identify control using the Shapley-Shubik (1954) method (Internet Appendix Table IA.BXXVI). Given the somewhat inconclusive patterns, we also employ alternative measures of court efficiency from Djankov et al. (2003), namely the number of days it takes to evict a tenant for nonpayment and the number of days it takes to collect a bounced cheque. We find mostly insignificant and unstable cross-country correlations (see also Figure 8). Thus, corporate control and ownership concentration are not influenced by legal formalism to a significant degree.

C. Entry Regulation

Product market regulations that impede entry and protect incumbents may affect corporate control through various mechanisms (Tirole (1988, 2006)). For example, firms in oligopolistic markets, that are shielded from competition by entrants may be able to finance projects via retained earnings and as a result depend less on external sources of financing. Such firms are therefore much more likely to be controlled by families/individuals. Similarly, state control may be higher in countries where governments are more likely to "intervene" in product markets governments (Roe (2006)). In countries with concentrated ownership, corporate owners can lobby for more protectionist policies.

In Table VIII, we associate corporate control with three proxies for barriers to entry, namely, the log of the number of days and the log of the number of administrative procedures needed to start a business and the associated cost, as a share of GDP per capita. We use the measures compiled by the World Bank, as they cover more countries than the original Djankov et al. (2002) data. For brevity, we report probit average marginal effects; in Internet Appendix B, we repeat results using ownership concentration and the trichotomous index of control. The coefficients on the log of the number of days and the cost of starting a new business are small and statistically indistinguishable from zero. There is some link between corporate control and the log of the number of procedures to start a new business, but the implied effect is small.

Table VII
Corporate Control and Legal (Courts) Formalism

This table associates corporate control and ownership concentration with an index of court (legal) formalism. Columns (1) to (3) report firm-level probit (maximum likelihood) estimates (average marginal effects). The dependent variable is an indicator that takes the value of 1 if a firm is controlled (by an individual/family, a private firm with an unmatched ultimate owner, the government, a widely held private firm, or a widely held public firm) and 0 if the firm is widely held (with or without a block). For the identification of controlled corporations, we use the 20% voting-rights cutoff. Columns (4) to (6) report firm-level ordered probit (maximum likelihood) coefficients. The dependent variable is an ordered index of corporate control. The trichotomous index takes the value of 0 for widely held firms without a block (all shareholders/families hold less than 5% of the firm's voting rights), one for widely held firms with at least one block (in excess of 5%), and two for firms with a controlling shareholder (of any type). Columns (7) to (9) report firm-level OLS estimates. The dependent variable is the C3 index of ownership concentration, which reflects the voting rights held by the three largest shareholders (treating family members as one representative shareholder with aggregated voting rights). The main explanatory variable (log days contract enforcement) describes the number of calendar days to enforce a contract of unpaid debt worth 50% of the country's GDP per capita as of January 2003. The variable comes from Djankov, McLiesh, and Shleifer (2007). The specifications in columns (1), (4), and (7) are estimated on the 2012 sample, the specifications in columns (2), (5), and (8) are estimated on the 2007 sample, and the specifications in columns (3), (6), and (9) are estimated on the pooled 2004 to 2012 sample that maximizes coverage (42,720 firms). All specifications include continental fixed effects (constants not reported) following the World Bank's regional classification, industry fixed effects using two-digit SIC classifications (85 sectors, constants not reported), and the logarithm of GDP per capita. The pooled specifications in the 2004 to 2012 sample also include year fixed effects (constants not reported). The Appendix gives detailed variable definitions and sources. Heteroskedasticity-adjusted standard errors clustered at the country-level are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Sample	Corporate Control			Ordered Index of Corporate Control			C3		
	2012 (1)	2007 (2)	2004 to 2012 (3)	2012 (4)	2007 (5)	2004 to 2012 (6)	2012 (7)	2007 (8)	2004 to 2012 (9)
Log days contract enforcement	-0.0424 (0.0436)	-0.1029* (0.0578)	-0.0899* (0.0521)	-0.0950 (0.1145)	-0.2560* (0.1399)	-0.2182* (0.1256)	-0.0079 (0.0283)	-0.0477 (0.0291)	-0.0372 (0.0287)
Log GDP per capita	-0.0852** (0.0336)	-0.0974*** (0.0343)	-0.0959*** (0.0333)	-0.1808** (0.0864)	-0.2260*** (0.0871)	-0.2224*** (0.0849)	-0.0409* (0.0220)	-0.0448** (0.0224)	-0.0477*** (0.0203)
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	No	No	Yes	No	No	Yes	No	No	Yes
R ²	0.07	0.06	0.06	0.04	0.05	0.05	0.15	0.13	0.14
Observations	26,336	25,729	220,046	26,344	25,737	220,072	26,344	25,737	220,072
Countries	76	67	94	76	67	94	76	67	94

Table VIII
Corporate Control and Entry Market Regulation, Profit (ML) Estimates

This table reports firm-level probit (maximum likelihood) estimates (average marginal effects) associating corporate control with proxies for entry regulation. The dependent variable is an indicator that takes the value of 1 if a firm is controlled (by an individual/family, a private firm with an unmatched ultimate owner, the government, a widely held private firm, or a widely held public firm) and 0 when the firm is widely held (with or without a block). For the identification of controlled corporations, we use the 20% voting-rights cutoff. The key explanatory variables capture red tape and barriers to entry in 2006. They reflect (i) the log of the number of calendar days required, or common in practice, for an entrepreneur to start up and formally operate an industrial or commercial business, (ii) the log of the number of administrative procedures required by an entrepreneur to start and formally operate a business, and (iii) the direct costs (as a fraction of GDP per capita) to start up and formally operate a business. These variables are retrieved from the World Bank's Doing Business database and are based on Djankov et al. (2002). The specifications in columns (1) to (3) are estimated on the 2012 sample, the specifications in columns (4) to (6) are estimated on the 2007 sample, and the specifications in columns (7) to (9) are estimated on the pooled 2004 to 2012 sample that maximizes coverage (42,720 firms). All specifications include continental fixed effects (constants not reported) following the World Bank's regional classification, industry fixed effects using two-digit SIC classifications (85 sectors, constants not reported), and the logarithm of GDP per capita. The pooled specifications in columns (7) to (9) also include year fixed effects (constants not reported). The Appendix gives detailed variable definitions and sources. Heteroskedasticity-adjusted standard errors clustered at the country level are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Sample	2012			2007			2004 to 2012		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Log days start business	0.0318 (0.0380)			0.0247 (0.0479)			0.0283 (0.0452)		
Log procedures to start business		0.1215** (0.0520)			0.1219** (0.0485)			0.1280*** (0.0465)	
Cost start business			0.0004 (0.0017)			0.0016 (0.0020)			0.0010 (0.0017)
Log GDP per capita	-0.0521 (0.0388)	-0.0510* (0.0270)	-0.0655* (0.0375)	-0.0433 (0.0405)	-0.0362 (0.0248)	-0.0433 (0.0364)	-0.0467 (0.0387)	-0.0421* (0.0244)	-0.0522 (0.0355)
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	No	No	No	No	No	No	Yes	Yes	Yes
R ²	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06
Observations	26,476	26,476	26,476	25,787	25,787	25,787	220,957	220,957	220,957
Countries	79	79	79	69	69	69	106	106	106

Table IX
Corporate Control/Ownership Concentration and Labor Market Regulation

This table associates corporate control and ownership concentration with proxies for labor market regulation. Columns (1) to (3) report firm-level probit estimates (average marginal effects). The dependent variable is an indicator that takes the value of 1 if a firm is controlled and 0 if the firm is widely held (with or without a block). For the identification of controlled corporations, we use the 20% voting-rights cutoff. Columns (4) to (6) report firm-level ordered probit coefficients. The dependent variable is an ordered index of corporate control. The trichotomous index takes the value of 0 for widely held firms without a block (all shareholders/families hold less than 5% of voting rights), one for widely held firms with at least one block (in excess of 5%), and two for firms with a controlling shareholder (of any type). Columns (7) to (9) report firm-level OLS estimates. The dependent variable is the C3 index of ownership concentration, which captures the voting rights of the three largest shareholders (treating family members as one representative shareholder with aggregated voting rights). The employment laws index, which ranges from 0 to 1, captures the following aspects of labor market legislation: (i) alternative employment contracts, (ii) cost of increasing hours worked, (iii) cost of firing workers, and (iv) dismissal procedures. The collective relations index, which ranges from 0 to 1, captures labor union power and collective disputes. The social security index, which ranges from 0 to 1, measures social security benefits. It is the average of (i) old age, disability, and death benefits, (ii) sickness and health benefits, and (iii) unemployment benefits. All variables have come from Botero et al. (2004). The specifications in columns (1), (4), and (7) are estimated on the 2012 sample. The specifications in columns (2), (5), and (8) are estimated on the 2007 sample, and the specifications in columns (3), (6), and (9) are estimated on the pooled 2004 to 2012 sample that maximizes coverage (42,720 firms). All specifications include continental fixed effects (constants not reported), industry fixed effects (constants not reported), and the logarithm of GDP per capita. The 2004 to 2012 sample specifications also include year fixed effects (constants not reported). The Appendix gives detailed variable definitions and sources. Heteroskedasticity-adjusted standard errors and clustered at the country level are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Sample	Corporate Control			Ordered Index of Corporate Control			C3		
	2012 (1)	2007 (2)	2004 to 2012 (3)	2012 (4)	2007 (5)	2004 to 2012 (6)	2012 (7)	2007 (8)	2004 to 2012 (9)
Employment laws	0.0484 (0.1692)	-0.0583 (0.1487)	-0.0178 (0.1630)	0.0627 (0.4919)	-0.0134 (0.3841)	0.1107 (0.4332)	0.0905 (0.1226)	0.0415 (0.1165)	0.0883 (0.1163)
Collective relations	0.5449*** (0.1751)	0.7625*** (0.1427)	0.6959*** (0.1539)	1.4145*** (0.5299)	1.8238*** (0.3893)	1.6220*** (0.4387)	0.2676** (0.1250)	0.3360*** (0.1029)	0.2974*** (0.1070)
Social security	0.0306 (0.2509)	0.0004 (0.1784)	0.0437 (0.2113)	0.1148 (0.6738)	0.1456 (0.4016)	0.2148 (0.5135)	0.0086 (0.1409)	0.0231 (0.0879)	0.0452 (0.1029)
Log GDP per capita	-0.0775* (0.0431)	-0.0735* (0.0373)	-0.0788** (0.0389)	-0.1793 (0.1108)	-0.1739* (0.0916)	-0.1849* (0.0986)	-0.0373 (0.0246)	-0.0296 (0.0204)	-0.0370* (0.0209)
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	No	No	Yes	No	No	Yes	No	Yes	Yes
R ²	0.08	0.09	0.09	0.06	0.07	0.06	0.17	0.16	0.16
Observations	25,760	25,411	216,489	25,768	25,418	216,518	25,768	25,418	216,518
Countries	65	61	77	65	61	77	65	61	77

D. Labor Market Regulation

We next examine the correlation between corporate control and labor market institutions. Corporate control and welfare state policies have co-evolved, reinforcing each other since the Great Depression and the World Wars (Rajan and Zingales (2003, 2004)). Mueller and Philippon (2011) argue that family firms can more easily sidestep stringent labor regulations. Roe (2006) argues that laws that make it expensive to fire workers and regulations that promote the existence of unions prevent ownership diffusion. Pagano and Volpin (2005) develop a model in which large private benefits of control nudge controlling shareholders to collaborate with employees by offering long-term contracts and other benefits in exchange for “effective protection” from hostile takeovers. Labor market regulation could affect corporate structure by raising the cost of bankruptcy, and in turn reducing the use of external finance (Simintzi, Vig, and Volpin (2014)).

In Table IX, we associate corporate control and concentration with the three labor market regulation measures of Botero et al. (2004): (i) an “employment laws” index that captures the existence and cost of nonstandard employment contract(s), overtime pay costs, dismissal procedures, and firing costs, (ii) a “collective relations” index that reflects the statutory power of unions and the protection of workers via collective dispute resolution mechanisms, and (iii) a “social security” index that measures the level and duration of unemployment, health, old-age, disability, and death benefits.

We find a significantly positive correlation between control and the collective relations index. In countries where unions are powerful, a large fraction of workers are unionized, and where there are strong collective dispute resolution mechanisms, listed corporations are more likely to be controlled by families/individuals or the state, as compared to being widely held. The estimate in the 2012 sample implies that a 0.20-point increase in the collective actions index, which corresponds to the mean difference between common-law countries (0.29) and civil-law countries (0.50), increases the likelihood that the firm has a controlling owner by 12 percentage points. There is no systematic association between corporate control and social security legislation. Finally, while control is unconditionally related to the collective relations index (Figure 8), the correlation becomes insignificant when we control for log GDP per capita.

VI. Conclusion

Employing a large number of sources and conducting manual checks for thousands of firms, we extend the ORBIS database of corporate ownership and construct a new data set on corporate control around the world. Our database covers 42,720 listed firms from 127 countries between 2004 and 2012. Using absolute cutoff-based and relative voting-rights power measures, we classify firms as controlled, widely held, or widely held without a controlling shareholder but with equity blocks.

Our analysis then proceeds in three steps. First, we provide an anatomy of corporate control around the world. We show that family control is pervasive across industrial, developing, and frontier economies. State ownership is far from negligible, especially in terms of market capitalization, as in many countries (e.g., Russia, China, Brazil, India) the government holds controlling stakes in large firms.

Second, we examine the association between corporate control (and ownership concentration) and legal origin. We show that ownership is more concentrated and control by families and the government is more pervasive in French civil-law and to a lesser extent German civil-law countries. These patterns are present in large, medium, and small listed firms. Moreover, while equity blocks in widely held firms are common, they are more pervasive in French civil-law countries. Our analysis also uncovers a new result: the negative correlation between development and corporate control is present only in the sample of large corporations; it is absent in below-median market capitalization firms, while it is strong in the global sample of very large firms. This heterogeneity suggests that financial frictions associated with low GDP per capita, may prevent firms from raising equity and growing (Rajan and Zingales (2004), Hsieh and Klenow (2014)).

Third, we associate corporate control with institutional characteristics related to legal origin. We find that provisions that protect minority shareholders from self-dealing activities of dominant shareholders are significant correlates of corporate control. This result supports one of the key insights of the law and finance literature on the substitutability of control and weak shareholder protection (La Porta, Lopez-de Silanes, and Shleifer (2006)) in the widest sample of firms and countries to date. Corporate control is unrelated to creditors' rights protection and is weakly related to court efficiency. Labor market institutions correlate strongly with corporate control, suggesting spillovers from labor to capital markets and vice versa. Ownership concentration and the prevalence of controlled firms are higher in countries with strong employment protection laws and strong unions. These results are in line with the historical co-evolution of the welfare state, family control, and direct government intervention in the economy (Rajan and Zingales (2004), Roe (2006)). The results are also consistent with political economy theories of corporate control modeling the alliances between controlling shareholders and employees at the expense of minority shareholders (e.g., Pagano and Volpin (2005)).

We view this paper as a first step in reassessing fundamental questions in corporate finance, related to the determinants and consequences of corporate ownership. Our analysis abstracts from the exact role of blockholders on corporate affairs; blockholders may be passive or exert an active role, depending on the country's institutions, the distribution of equity holdings, and the blockholder's type (mutual fund, insurance, HF, state, family). Future work should put blockholding under the microscope. Future research should also try to "unbundle" family firms, distinguishing between established multigenerational family firms and new family firms, and should examine

the international dimension of corporate control, for example, by looking at country-pair factors or investigating the role of tax havens.

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Appendix: Data Appendix

A. Firm-Level Variables

A.1. Corporate Control

Controlled (20% Cutoff): A binary (0, 1) variable that indicates corporate control based on the absolute 20% voting-rights cutoff. The variable equals 1 if a firm has a shareholder (or a group of shareholders controlled by the same ultimate owner) with direct voting rights in excess of 20%, and 0 otherwise. The voting rights of all family members are aggregated. If more than one shareholder holds voting rights in excess of 20%, we classify the largest shareholder as the controlling shareholder. In the case in which two or more unrelated shareholders (i.e., not family members and not corporate shareholders controlled by the same ultimate owner) hold exactly the same proportion of voting rights and each exceeds 20%, we classify the firm as widely held (and the binary variable equals 0). Sources: Bureau van Dijk augmented by multiple sources; please see data description in Internet Appendix [B](#).

Controlled (Shapley-Shubik): A binary (0, 1) variable that indicates corporate control based on the Shapley-Shubik (1954) relative voting power method. The variable equals 1 if a firm has a shareholder (or a group of shareholders controlled by the same ultimate owner) with Shapley-Shubik (1954) voting power index in excess of 0.75, and 0 otherwise. We treat family members as one shareholder with aggregated voting rights. Please see Internet Appendix [B](#) for details on the computation of the Shapley-Shubik (1954) power index. Sources: Bureau van Dijk augmented by multiple sources; please see data description in Internet Appendix [B](#).

Ordered Control Index: A trichotomous (0,1,2) index of control that accounts for equity blocks in widely held corporations. The variable takes the value of 0 for widely held firms without a block (all shareholders/families hold less than 5% of the firm's voting rights), one for widely held firms with at least one block (in excess of 5% of the firm's voting rights), and two for firms with a controlling shareholder (of any type). There are two vintages of this variable. The first is based on identification of corporate control using the absolute 20% voting-rights cutoff method. The second is based on identification of corporate control using the Shapley-Shubik (1954) relative voting power method. Sources: Bureau van Dijk augmented by multiple sources; please see data description in Internet Appendix [B](#).

Types of Corporate Control (Family/Individual, State, Widely Held Private Firm, Widely Held Public Firm, Unmatched Private Firm): Five binary (0, 1)

variables that equal 1 if the firm is ultimately controlled by the corresponding type of controlling shareholder and 0 otherwise. There are two vintages of each of the five dummy variables. The first is based on identification of corporate control using the absolute 20% voting-rights cutoff method. The second is based on identification of corporate control using the Shapley-Shubik (1954) relative voting power method. Sources: Bureau van Dijk augmented by multiple sources; please see data description in Internet Appendix B.

Ownership Stake of Controlling Shareholder: For controlled firms only, the voting rights of the controlling shareholder. Source: Bureau van Dijk (see data description in Internet Appendix B).

A.2. Ownership Concentration

- C1: Index of ownership concentration. The percentage of voting rights held by the largest shareholder. We treat family members as one shareholder with aggregated voting rights. Source: Bureau van Dijk.
- C3: Index of ownership concentration. The percentage of voting rights held by the three largest shareholders. We treat family members as one shareholder with aggregated voting rights. Source: Bureau van Dijk.
- C5: Index of ownership concentration. The percentage of voting rights held by the five largest shareholders. We treat family members as one shareholder with aggregated voting rights. Source: Bureau van Dijk.

A.3. Control Variables

Firm Age: Number of years between the year of firm incorporation and the current year. Source: Bureau van Dijk and Datastream.

Firm Size: Market capitalization in current USD million in a given year. Source: Datastream.

B. Country-Level Variables

B.1. Legal Origin and Main Controls

English Common-Law, French Civil-Law, German Civil-Law, and Scandinavian Civil-Law Legal Origin: Indicator variables that equal 1 if a country's legal origin is English common law or the respective civil-law family, and 0 otherwise. Source: La Porta, Lopez-de Silanes, and Shleifer (2008) and La Porta et al. (1999).

GDP Per Capita: Gross Domestic Product per capita in current USD. Source: World Bank, World Development Indicators.

Geographic Region: Indicator variables that identify the geographic region in which the firm is located (based on its country of incorporation). There are six regions: Asia and Pacific, Western Europe & Northern Europe, Eastern Europe & Central Asia, North and Latin America and the Caribbean, Middle East & North Africa, and Sub-Saharan Africa. The regional classification follows

the World Bank, but we aggregate North America with Latin America and the Caribbean.

Industry: Indicator variables that identify the main industry in which each firm operates. Each firm is assigned to one of 85 two-digit SIC sectors (including one for missing data). Sources: Bureau Van Dijk and Datastream.

B.2. Investor Protection

Creditor Rights Index: An index, which ranges from 0 to 4, that captures the strength of creditors' rights as specified in securities and corporate law legislation. A score of one is assigned for each of the following rights of secured lenders that is defined in laws and regulations: (i) there are restrictions, such as creditor consent or minimum dividends, for a debtor to file for reorganization, (ii) secured creditors are able to seize their collateral after the reorganization petition is approved (i.e., there is no automatic stay or asset freeze), (iii) secured creditors are paid first out of the proceeds of liquidating a bankrupt firm, as opposed to other creditors such as the government or employees, and (iv) management does not retain administration of the property pending the resolution of the reorganization. We use the mean value over the period 1978 to 2003. Source: Djankov et al. ((2008a), who extend, revise, and update the original index compiled by La Porta et al. (1997, 1998).

Revised Antidirectors Rights Index: An index, which ranges from 0 to 6, that captures the protection of minority shareholders in corporate decision making, including the right to vote. A score of 1 is assigned for each of the following rights: (i) vote by mail, (ii) obstacles to the actual exercise of the right to vote (i.e., the law does not require or permit companies to require that shares be deposited before the shareholders' meeting), (iii) minority representation on the board of directors through cumulative voting or proportional representation, (iv) an oppressed minority mechanism to seek redress in the case of expropriation, (v) preemptive rights to subscribe to new securities issued by the company, and (vi) the right to call a special shareholders' meeting. Source: Djankov et al. (2008b).

Ex Ante Anti-Self-Dealing Index: An index, which ranges from 0 to 1, that captures (i) disclosures by the buyer and the seller, and (ii) whether a positive independent review of the transaction is required and whether the transaction must be approved by disinterested shareholders. Source: Djankov et al. (2008b), who extend, revise, and update the original index compiled by La Porta et al. (1997, 1998).

Ex Post Anti-Self-Dealing Index: An index, which ranges from 0 to 1, that captures (i) posttransaction legal provisions to hold the buyer and seller liable for bad faith, (ii) the ability of shareholders to sue or rescind the transaction, (iii) the ability of shareholders to access evidence on the transaction, and (iv) disclosure of evidence in periodic filings. Source: Djankov et al. (2008b).

Composite Anti-Self-Dealing Index: A composite variable, which ranges from 0 to 1, that is the average of the ex ante and the ex post private control for self-dealing measures. Source: Djankov et al. (2008b).

Public Enforcement Index: An index, which ranges from 0 to 1, that captures fines and prison terms regarding disclosure and approval of self-dealing transactions by managers and controlling shareholders. One-quarter point is added for each of the following sanctions: (i) fines for the approving body, (ii) jail sentences for the approving body, (iii) fines, and (iv) jail sentence. Source: Djankov et al. (2008b).

B.3. Courts (Legal Formalism)

Days Contract Enforcement: The number of calendar days to enforce a contract of unpaid debt worth 50% of the country's GDP per capita as of January 2003. Source: Djankov, McLiesh, and Shleifer (2007).

Legal Formalism—Days to Collect a Bounced Cheque: The number of calendar days (total duration) to collect a bounced cheque through the court system. Source: Djankov et al. (2003).

Legal Formalism—Days to Evict a Tenant: The number of calendar days (total duration) to evict a tenant for nonpayment of rent through the court system. Source: Djankov et al. (2003).

B.4. Entry Regulation

Days to Start Business: The number of calendar days required, or common in practice, for an entrepreneur to start and formally operate an industrial or commercial business. Source: World Bank's Doing Business (Starting a Business) database, which is based on Djankov et al. (2002).

Procedures to Start Business: The number of administrative procedures required by an entrepreneur to start and operate a business. Source: World Bank's Doing Business (Starting a Business) database, which is based on Djankov et al. (2002).

Cost to Start Business: The direct costs (as a fraction of GDP per capita) to start up and formally operate a business. Source: World Bank's Doing Business (Starting a Business) database, which is based on Djankov et al. (2002).

B.5. Labor Market Regulation

Employment Laws Index: An index, which ranges from 0 to 1, that is the average of the following aspects of labor market legislation: (i) alternative employment contracts, (ii) cost of increasing hours worked (iii) cost of firing workers, and (iv) dismissal procedures. Source: Botero et al. (2004).

Collective Relations Index: An index, which ranges from 0 to 1, that captures the average of the following aspects of collective relations laws: (i) Labor union power and (ii) collective disputes. Source: Botero et al. (2004).

Social Security Index: An index, which ranges from 0 to 1, that captures social security benefits. It is the average of (i) old age, disability and death benefits, (ii) Sickness and health benefits, and (iii) unemployment benefits. Source: Botero et al. (2004).

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Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website:

Appendix A: Internet Appendix.

Appendix B: Internet Appendix.

Replication code.