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CORPORATE CONTROL AROUND THE WORLD

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ABSTRACT

We provide an autopsy of the patterns of corporate control and ownership concentration in a dataset covering more than 40,000 listed firms from 127 countries over 2004 2012. Employing a plethora of original and secondary sources, big data techniques, and applying the Shapley-Shubik algorithm to quantify shareholder's voting power we trace ultimate controlling shareholders from the complex, pyramidal, and often obscure corporate structures. First, we show that there are large differences in the type of corporate control (widely held firms with and without significant equity blocks, firms controlled by families, governments, and other public-private firms) across and within continents. Corporate structures appear persistent as the recent global financial crisis did not affect them much. Second, we examine the role of legal traditions on corporate control. There are economically large differences on corporate structure across legal families, with the share of controlled (widely-held) firms being the highest (lowest) in French civil-law countries, followed by German and then Scandinavian civil law countries. State ownership and control by individual/families via complex corporate structures is pervasive in civil-law countries. And while equity blocks are commonplace across widely-held firms all around the world and across all legal families, the share of widely-held firms with large blocks is the highest in French civil-law countries. Moreover, ownership concentration is considerably higher in French civil-law (and to a lesser extent in German civil-law) countries as compared to common-law countries. These patterns apply to very large, big, medium-sized and small listed firms and are not driven by regional differences, the level of economic development, or industrial structure, suggesting that legal origin has sizable long-lasting consequences on corporate structure. Third, as legal origin may affect corporate control via multiple channels, we examine the role of some likely mechanisms. We find that shareholder protection rights against self-dealing activities of insiders correlate strongly with corporate control and ownership concentration. Legal formalism and creditor's rights do not seem to play a role. Yet, the "reduced-form" link between legal origin and corporate control (and ownership concentration) is also driven by entry and labour market regulation.

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An online appendix is available at http://www.nber.org/data-appendix/w23010

1 Introduction

Understanding the driving forces and consequences of the various types of corporate control are core inquiries of corporate finance (La Porta, Lopez-de-Silanes, and Shleifer, 1999; Tirole, 2010). While most theory distinguishes between widely–held corporations, where ownership is dispersed and no single shareholder dominates corporate decisions, and controlled firms where a dominant-influential shareholder or family exerts control (Shleifer and Vishny, 1997), the structures of corporate ownership and control are more complex (Laeven and Levine, 2008).[1] Pyramids that allow shareholders to influence corporate decisions in excess of their cash-flow rights (Dyck and Zingales, 2004) and cross-holdings of equity in business groups, such as the *keiretsu* in Japan and the Korean *chaebols*, are pervasive. At the same time, corporate control is typically hidden behind holding companies incorporated in financial off-shore centers (Zucman, 2015). A binary distinction between controlled and widely-held firms may be too coarse, as in many widely-held corporations some individuals/families or institutional investors hold equity blocks and may thus have considerable power (Edmans and Holderness, 2016). And often there are shareholders who form coalitions with smaller investors in an effort to exert corporate control (Bennedsen and Wolfenzon, 2000).

Following the influential contribution of La Porta, Lopez-de-Silanes, and Shleifer (1999), a voluminous literature in corporate finance has tried to document the patterns of ownership concentration and control across countries or in a single country over time. The literature (discussed below) then searched for the main correlates of corporate ownership and examined the role of investor protection and legal quality (see La Porta et al. (2006)). However, there are many open issues.

First, stands measurement. It is inherently hard to identify ultimate shareholders from the complex network of equity holdings and to assess their role in corporate affairs. For this reason previous research has either focused on a relatively small number of (typically large) firms and countries (e.g., La Porta *et al.* 1999; Claessens, Djankov, and Lang, 2000; Faccio and Lang, 2002), or has used larger firm samples in a single economy (e.g., Franks, Mayer, and Rossi, 2009, on British corporations) or a handful of countries (Franks, Mayer, Volpin, and Wagner, 2012).

Second, is heterogeneity. The size distribution of firms is highly skewed; even when one examines typically large publicly traded firms, differences in size are enormous (see Gabaix (1999)). And theory and case-study evidence point out that corporate control patterns and their determinants may differ systematically across very large, big, medium, and relatively small listed corporations (Holderness (2016a,b)).

A third issue regards mechanisms. The literature is far from reaching a consensus on the role of investor protection rights, courts, product and labour market regulation on corporate control and ownership concentration. Isolating the role of each feature is challenging, as it is always hard quantifying these institutional features, the sample of countries is limited, and because legal aspect features correlate strongly with the regulation of product and labour markets (La Porta, Lopez-de-Silanes, and Shleifer (2006)).

[1] Almeida and Wolfenzon (2006) and Burkart, Panunzi, and Shleifer (2003) are notable exceptions.

1.1 Results Preview

In this paper we try to advance on these fronts. Our first contribution is to provide a comprehensive description of ownership patterns and corporate control for the widest-possible sample of countries and listed firms. Employing big data techniques, extensive manual checks, and relying on a plethora of data sources (e.g., regulatory filings, company reports, government publications, private data providers), we augment and correct Bureau van Dijk's ORBIS's database on corporate ownership in an effort to identify ultimate controlling shareholders from the complex and often esoteric structures of corporate holdings. We then apply a game-theoretic algorithm based on the Shapley-Shubik power index and identify ultimate controlling shareholders for more that $40,000$ listed firms from 127 countries both before and after the recent world financial crisis ($2004-2012$). Our corporate control identification algorithm improves over previous works who have applied *ad hoc* voting rights cutoffs to classify firms as controlled (and widely held). The algorithm for example is especially useful for measuring control in firms where we observe multiple individuals/families and other entities (institutional investors, government) holding large equity blocks, a common phenomenon (Laeven and Levine, 2007). Using the newly-compiled database we provide a broad overview of the patterns of corporate control around the world. We distinguish between three types of firms, widely-held corporations without any block shareholder, widely-held corporations (without a controlling shareholder) but with one or multiple block equity stakes, and controlled firms with a dominant controlling shareholder. We also split controlled firms based on the type of dominant shareholder to state-controlled (national governments, municipalities and state agencies), family-controlled (where a single individual or family exert power), and controlled by other (listed or private) firms. There are large differences on corporate control around the world, both across and within continents. Corporate structure patterns appear persistent, as the $2007-2009$ global financial crisis did not alter it much.

Second, given the literature's emphasis we re-examine the "reduced-form" link between legal origin and corporate control. Given the large differences on firm size across countries and the potential of differential effects of the legal system on corporate control, we examine in detail heterogeneity, as there have been concerns on the robustness of previous works that used samples of large firms in a small number of countries. The cross-country analysis uncovers the following.

1. There are economically large differences in corporate control across legal families, with the share of controlled firms being the highest in French civil-law countries, followed by German and then Scandinavian civil law countries. The share of controlled firms is the lowest in common law countries. The results are similar when we look at ownership concentration that is the highest in French civil-law countries and the lowest in common-law countries.

2. Equity blocks are commonplace across the world. While we observe blocks in the majority of widely-held corporations in both civil-law and common-law countries, the share of widely-held firms with large blocks is the highest in French civil-law countries.

3. The link between corporate control (or corporate ownership) and legal origin patterns apply for very large, big, medium, and small listed firms and for relatively younger and older firms. These patterns are not driven by regional differences, the level of economic development, or industrial structure.

4. There is a strong link between dispersed ownership and GDP p.c., but *only* in the sample of large and very large listed corporations. For small and medium sized public companies, there is no systematic association between corporate control and economic development.

5. When we jointly associate the type of controlling shareholder (family/individuals, private firms, government, private or public widely-held firms) with legal origin, we find that the legal tradition matters crucially for state-control and family-control. The share of family and state controlled firms is systematically higher in countries whose corporate law is centered around the Napoleonic civil code and to a lesser extent on the German civil code, as compared to common-law countries.

Third, we try to shed light on the "reduced form" association between corporate control and legal origin examining the likely channels. Building on legal origin theories (Glaeser and Shleifer (2002)) and empirical findings (summarized in La Porta, *et al.* (2006)), we associate corporate control (and ownership concentration) with proxies of investor protection, legal formalism, entry barriers and red tape, and labour market regulation. The cross-country analysis shows that:

6. Shareholder protection rights, especially corporate law rules allowing the ex-post suing of managers who exploit their position for self-dealing, are systematically linked to dispersed ownership and absence of a controlling shareholder. Yet, legal origin's impact on corporate control seems to operate via additional channels.

7. Legal formalism, as reflected on various measures of the time needed to resolve simple disputes via courts, is not much related to the patterns of corporate control and ownership concentration.

8. There is some link between proxy measures of entry barriers to corporate control (and ownership concentration), suggesting that the reduced-form correlation also reflects developments in product markets (Glaeser and Shleifer, 2002).

9. There is a systematic association between corporate control and ownership concentration with labour market regulation, a result supportive to Pagano and Volpin (2006) theory.

1.2 Related Literature

Our paper is mostly related to the voluminous empirical literature on international corporate ownership and control (see Shleifer and Vishny, 1997, for a survey).[2] The first genre of studies constructed cross-

[2]The theoretical work on the separation of ownership and control is also large, including Jensen and Meckling (1976), Grossman and Hart (1980), Burkart, Gromb, and Panuzzi (1997), Shleifer and Vishny (1986, 1996), among many others (see Tirole, 2010, for a textbook treatment).

country measures of ownership concentration and corporate control and then associates these measures with proxies of legal protection of investors and legal origin.[3] La Porta, Lopez-de-Silanes, and Shleifer (1999) construct measures of corporate control for the 20 largest publicly-traded firms in 27 advanced economies. They then show that the share of widely-held corporations is quite small around the world; this is especially the case in civil-law countries where shareholder protection appears weaker compared to common-law countries. Claessens, Djankov, and Lang (2000) examine ownership and control across 2,980 firms in 9 East Asian countries. They also show that few firms appear to be widely held; family control typically exercised via pyramids and cross-holdings is pervasive and the share of widely-held firms in (relatively) high only in Japan. Lins (2003) constructs measures of ownership type for 1,433 firms in 18 emerging markets and also documents that pyramid structures that allow insiders to exert control in excess of their voting rights are common practice. Faccio and Lang (2002) examine ownership structure in a sample of 5,232 big and medium-sized corporations in Western Europe (Austria, Belgium, Finland, France, Germany, Ireland, Italy, Norway, Portugal, Spain, Sweden, Switzerland, and the U.K.). They find that the prevalence of widely-held firms is larger in common-law Ireland and the United Kingdom and to a lesser extent in Scandinavian countries, as compared to continental European countries. Franks, Mayer, Volpin, and Wagner (2012) study the impact on the type of corporate control of firm age, size, and legal system in panel of 4,654 non-financial firms in four countries (UK, France, Germany and Italy) and a large cross-section of 27,684 firms in 27 European countries. They find that as firms mature, ownership gets more dispersed in the UK, as compared Italy, Germany, and France, where -if anything- family control is higher for older as compared to younger firms. A similar pattern emerges from the wider sample, with family firms getting widely-held as they mature only in countries with strong investor protection and liquid capital markets. Foley and Greenwood (2010) document a similar pattern of ownership diffusion after the IPO in countries with strong investor protection in a sample of 2,700 firms in 34 countries over $1995-2006$.[4] Yet, Holderness (2016a,b), working on a sample of 8,076 firms in 32 countries, argues that the link between ownership concentration and various proxies of legal protection of investors and legal origin is weak and statistically insignificant.

A second genre of the literature consists of case-studies using refined data covering many firms over many years in specific countries.[5] Franks and Mayer (2001) study ownership and control of German corporations, documenting high levels of concentration and pervasive family control. Franks, Mayer, and Rossi (2009) study the evolution of ownership in the United Kingdom over the twentieth century and document a high degree of ownership dispersion throughout the period, even during times with weak

[3] In the same vein researchers have used firm-level data across countries to construct proxies of specific aspects of ownership and control, related to private benefits of control (Dyck and Zingales, 2004), the prevalence of business groups (Khana and Yafeh, 2007), state ownership and control of banks (La Porta, Lopez-de-Silanes, and Shleifer, 2002).

[4] 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 then relate their prevalence to country and firm characteristics, such as pyramid structure, cross-holdings, etc.

[5] Morck *et al.* (2005) provide a collection of many country case studies on corporate ownership and governance.

legal protection of outside investors (see also Franks, Mayer, and Renneboog, 2001). Franks, Mayer, and Miyajima (2014) study the evolution of corporate ownership in Japan throughout the 20th century, documenting a relatively dispersed ownership structure that appears quite stable after WWII. Holderness (2009) provides an analysis of ownership concentration in the United States focusing on a random sample of 375 listed firms. He shows that in more than 90% of these firms there is at least one block-holding shareholder with voting rights in excess of 5% (mean/median 26% and 17%). Kandel, Kosenko, Morck and Yafeh (2015) provide a thorough historical analysis on corporate ownership and control in the United States, showing how the business group ownership structure and pyramids that were predominant in the 19th and early 20th century steadily declined, especially after legal and regulatory changes. Aganin and Volpin (2005), Morck *et al.* (2005) and Murphy (2005) give illustrative historical narratives of the evolution of ownership, control, and corporate governance in Italy, Canada and France, respectively. Looking outside advanced economies, Chernykh (2008) provides a thorough analysis of the complex and obscure ownership structure of Russian listed firms, while Khanna and Palepu (2005) discuss ownership concentration and corporate control in India.

While conceptually we apply a cross-country approach, our paper stands in the middle of these two genres of the empirical literature. We aim to provide the most comprehensive to-date cross-country analysis of ownership concentration and corporate control using a database from the largest possible sample of countries. In this regard, we use a plethora of data sources and Big Data techniques to construct a database of ultimate control for around $40,000$ publicly-traded firms from 127 countries over the period $2004-2012$. We are thus able to compare ownership concentration and the type of corporate control (widely-held firms with or without a block, controlled firms with a dominant controlling shareholder) across advanced, developing, frontier, and even underdeveloped countries before and after the global financial crisis of $2007-2010$. Our sample in 2012 reflects around 90% of global GDP, population, and total market capitalization. Working with the widest possible sample is key, so as to uncover the basic raw correlations between ownership concentration and corporate control and legal origin (our main focus), economic development, and other likely determinants (investor protection rights, entry regulation, legal formalism, and labour market regulation). The large sample allows examining heterogeneity across very large, big, medium-sized and smaller listed firms, something key as theory suggests that the link between legal quality and concentration may be heterogeneous (Tirole, 2010) and because the size distribution of firms is highly skewed (e.g., Gabaix, 2009), making cross-country comparisons tricky. Moreover in the appendix we provide an autopsy of corporate control for G-7 countries and the BRICs and discus how our estimates compare with previous country-specific studies.

Our key contribution to this research is to document the key data patterns and re-examine the link between corporate control and legal origin in the widest possible sample of countries and listed firms; we are also doing the very best to minimize error and detect corporate control from the quite complex structure of corporate ownership networks. We also search for heterogeneous effects, something ex ante important

as the size distribution of listed firms in very skewed and because it is theoretically plausible that the link between corporate control and legal origin to differ for large and small firms. In this regard, we do find the economic development is associated to dispersed ownership and widely-held corporations, but only when one looks at big and very large firms. Another contribution to this literature is to show that the strong and significant reduced-form relationship between corporate control and legal origin does not solely operate via investor protection; it also reflects developments in product and labour markets that differ greatly across legal families. Labour protection and entry regulation is associated with more concentrated ownership and a higher likelihood of controlled (by the state or families) listed corporations.

Our findings of economically considerable differences in ownership concentration, the fraction of firms with a significant controlling shareholder, prevalence of family firms, and government control across legal families contributes to the law and finance literature that stresses the legacy of legal origin (see for an overview La Porta, Lopez-de-Silanes, and Shleifer, 2008).[6] The law and finance literature provides evidence of differences across legal families, mostly between common-law countries and French civil-law countries, in various aspects of economic, financial, and institutional efficiency; for example, investor protection rights (La Porta, Lopez-de-Silanes, and Shleifer, 1997, 1998), legal formalism (Djankov, La Porta, Lopez-de-Silanes, and Shleifer, 2003), stock market development (La Porta *et al.* 1997 and Djankov, La Porta, Lopez-de-Silanes, and Shleifer, 2008), private credit (Djankov, McLiesh, and Shleifer, 2007), bankruptcy (Djankov, Hart, McLiesh, and Shleifer, 2008), regulation of entry (Djankov, La Porta, Lopez-de-Silanes, and Shleifer, 2004) and labour markets (Botero *et al.* 2002).[7] We contribute to this line of research -that focuses on historical legacies- by providing robust evidence that legal origin is systematically related to the patterns of corporate control around the world, in particular ownership concentration, family control, and state control. We also show that differences in corporate control across legal families are sizable both when we look at very large, big, medium-sized, and even small listed firms. We also examine the likely mechanisms behind the strong reduced-form relationship between corporate control and legal origin. Our cross-country regression analysis shows that investor protection, in particular legal rights protecting shareholder's against self-dealing actions of controlling shareholders and managers, matters crucially. Moreover, we detect a strong link between ownership concentration and controlled (by the state or families/individuals) firms with measures of labour market regulation and entry barriers. In contrast there is no systematic link between legal formalism with neither corporate control nor ownership concentration.[8]

[6] Glaeser and Shleifer (2002) provide a simple model of the historical forces in England and France in the late Medieval era that shapped differences across legal families. Beck, Demirguc-Kunt, and Levine (2003) provide a synposis of the key differences of leagl families on the role and function of judges, legal system's adaptability, codification, etc.

[7] Burkart, Panunzi and Shleifer (2003), Almeida and Wolfenzon (2006), and Shleifer and Wolfenzon (2002) develop theoretical models linking legal system's quality and adaptability to various aspects of corporate finance.

[8] Our work also relates to the literature examining the origins of business groups (e.g., Khana and Yafeh, 2007) and family firms (e.g., Masulis, Pham, and Zein, 2011).

Structure The paper is structured as follows. In the next Section we discuss the data on corporate ownership and detail our algorithm in identifying corporate control. Section 3 presents the main data patterns on corporate control around the world. Section 4 gives results associating corporate control with legal origin. Section 5 reports "reduced-form" form estimates associating ownership concentration with legal origin. In Section 6 we examine the link between corporate control (and ownership concentration) and investor protection, courts' quality, and product and labour market regulations. In the last section we summarize offering some directions for future work.

2 Data

In this Section we present the ownership data and give details on the samples of our analysis. Then we discuss the algorithm in constructing proxies of corporate control and provide company examples.

2.1 Ownership Data

Our objective is to get data on corporate ownership and construct proxies of corporate control for the maximum possible sample of publicly traded firms across the globe. We start with Bureau Van Dijk's ORBIS and OSIRIS databases that report ownership information, year of incorporation, year of initial public offering (IPO) and some accounting data for around $50,000$ publicly-traded $(46,699)$ firms over the period $2004-2012$ from 134 countries.[9] [While data is available since the late $1990s$, coverage improves considerably after 2003.]. Bureau van Dijk (BvD) collects ownership data from firms' annual reports, stock exchange releases, company web-sites, press news, and private correspondence.[10] BvD also collects data from country-specific private agencies that themselves collect statistics on firm performance and ownership**.** (e.g., ICAP in Greece, InfoCredit in Cyprus, etc.).

We match the BvD ownership data to Datastream (Thompson Reuters) and Compustat (North America and Global) to get information on firms' market capitalization, industry classification, stock exchange. In the process, we manually corrected many errors.[11] While the ORBIS database is considered of high-quality and has thus been employed by researchers in corporate ownership and international finance (e.g. Franks, Mayer, Volpin, and Wagner, 2012; Masulis, Pham, and Zein, 2011), there are inconsistencies and errors (e.g., double entries); and there is missing information and gaps for many companies (see also

[9] ORBIS contains information on millions of privately-held firms (see Kalemli-Ozcan et al. (2015) for a detailed description and quality assessment). In this paper we focus on listed firms only.

[10] Bureau van Dijk describes its collection of ownership data as follows: "*For US listed companies, ownership information is systematically collected from the Free Edgar File which includes all companies filing proxy statements. These links cover all known shareholders (corporations or individuals) with an ownership percentage of 5% or more, as well as the ownership of directors and executive officers (with no lower ownership percentage limitation). Data is gathered tracking lower levels percentages owned by corporations. This is done by querying the NASDAQ web-site under the entry "Beneficial Owner" which is associated to the display of a company. (This covers all companies listed in the US stock exchanges, not only those listed on the NASDAQ).*"

[11] For example some firms are reported twice in a year; there are double entries on key shareholders; and there are many mis-classifications of government agencies and investors from financial services.

Kalemli-Ozcan, *et al.* 2015). We double-checked the data and added information on ownership for firms with incomplete coverage with manual checks and textual analysis. We added data on ownership for more than 13,000 of the 46,699 firms in ORBIS using: (*i*) Financial data providers, such as Bloomberg, Dun & Bradstreet, Google Finance, Credit Risk Monitor and Forbes. (*ii*) Governmental publications to identify state ownership and control[12]. (*iii*) Reports from regulatory agencies. (*iv*) We also went over many country-specific news websites and company reports.[13] The key challenge was getting ownership data for private firms that hold considerable equity stakes in publicly-traded firms. This was challenging, as ownership structures are complex and because often those private firms are incorporated in small "off-shore" centers (e.g., Cayman Islands, Bermuda, British Virgin Islands). We assembled detailed ownership information for 13,275 listed corporations, whose ultimate controlling shareholder was not recorded in the Bureau van Dijk databases.[14]

[12] For example in Sweden we went over the detailed reports of the Ministry of Finance on State-owned companies (TeliaSonera: http://www.government.se/contentassets/2e0ac8a0b3f648be9a8f5b0e5fdfd72e/annual-report-state-owned-companies-2013;) In Norway we went over the annual State Ownership reports of the Ministry of Trade and Industry (Yara International, Source: https://www.regjeringen.no/globalassets/upload/nhd/statenseierberetning)./pdf/engelsk/the_state_ownership_report_2012.pdf

[13] For example from company reports, we found that the Liberty Media Corporation is controlled by John C. Malone (Source: http://ir.libertymedia.com/secfiling.cfm?filingID=1104659-11-68199&CIK=1507934;) and that the key controller of Comcast Corporation is Brian L. Roberts (Source: http://www.cmcsa.com/secfiling.cfm?filingID=950159).-04-860]

[14] For these publicly-traded corporations, we had to check ownership information for about 9,500 private firms. Some examples of manually identified ultimate owners of large listed firms are:

(1) China Aoyuan Property, which is incorporated in the Cayman Islands, is one of the largest property developers in Hong Kong. Its largest shareholder is Ace Rise Profits, a limited liability company incorporated in the British Virgin Islands (BVI), which in turn is owned by Guo Zi. (Source: Announcement in Hong Kong Exchanges and Clearing Limited: The General Disclosure under rule 13.18 of the listing rules, published by China Aoyuan Property Group Limited in August 2011).

(2) "Global Brands SA", which owns Domino's Pizza franchises in Switzerland, Luxembourg and Liechtenstein, largest shareholder is the Luxemburg firm Belvia, owned by Alexandre Gaydamak, the son of Russian-Israeli tycoon Arcadi Gaydamak. (Source: Regulatory News Service, London Stock Exchange, published in Reuters in February 2008.)

(3) Schroders, a large asset management firm is controlled by Bruno Schroder via two Bermuda-incorporated private firms (Flavida and Fervida) and two trustee-firms (Vincitas Limited and Veritas Limited). [We got this information from Schroders Annual Reports; 2013 Annual Report, pages $65-66$.]

(4) Norilsk Nickel, world's leading nickel and palladium producer and one of the largest copper producer is ultimately owned by two key individuals: Vladimir Potanin, who owns indirectly 30% via two Cypriot private firms and Oleg Deripaska who owns just over 25% via his controlled firm RUSAL; until 2008 Notlisk was also indirectly owned by Michael Prokhorov via his controlled firm Onexim, and his share was bought then by Deripaska. (Sources: 1. Forbes, 9 Jun 2015; 2. Financial Times Report September 9, 2013; 3. 2012 Annual Report, page 191. 4. Interros International Investments Website)

(5) Ceylon Hotels Corporation PLC is a Sri Lanka-based hotel service company. It is controlled by the Galle Face Hotels group from Sri Lanka. This group is ultimately controlled by Sanjiv Gardiner and Family. (Source: Shalini Perera, Corporate ownership and Control: Corporate Governance and Economic Development in Sri Lanka, 2011, Page 175).

(6) PT Modernland Realty Tbk is an integrated property developer in Indonesia (listed in the Jakarta stock-exchange) with some exposure also to the hospitality and commercial property industry. It is owned through various private holding companies; a large stake (29.75%) is owned by the private firm AA Land Pte Ltd which is incorporated in Singapore. This firm was discovered to be ultimately owned by the Honoris family from Indonesia.(Source: Moodys, announcement from Global Credit Research - 31 Mar 2014).

(7) Zhongsheng Group Holdings Limited is a multinational automotive retail and services company headquartered in Beijing and listed on the Hong Kong Stock Exchange. The firms is controlled by many private firms that are mostly incorpoarted in the British Virgin Islands. Blue Natural Development Ltd., Light Yield Ltd., Vest Sun Ltd., Mountain Bright Limited; RBC Trustees (CI) Limited, and Vintage Star Limited hold roughly two thirds of the group's shares. Ownership structure is quite complex as besides its direct equity stakes, Light Yield and Vest Sun control of the Zhongsheng Group goes also via shares in Blue Natural Development. In all of these firms Mr. Huang Yi and Mr. Li Guoqiang appear as directors or key shareholders or trustees. These two individuals control around $60\% - 65\%$of Zhongsheng Group Holdings (Source: 1. Zhongsheng Group Holdings Limited annual report 2012, pages 30-31. 2. Zhongsheng Group Holdings Limited: Announcement on increase in

Another laborious task was identifying members of the same family, so as to aggregate their voting rights and to construct measures of corporate control taking into account all family members. Using manual checks and applying strict name matching (and text parsing) algorithms, we managed to partition the 63,839 different individual private shareholders into 20,334 unique families.[15]

2.2 Samples

After the merging of the databases, data improvements and data "cleaning" (e.g., removing firms with missing market value), we obtain a sample of 42,720 unique publicly traded firms from 127 countries over the period $2004 - 2012$.[16]

Baseline Dataset (2012) We estimate the baseline specifications linking corporate ownership concentration and the type of corporate control to legal origin and other country characteristics in 2012, the year with the best and widest coverage of countries. The 2012 sample includes 27,913 publicly-traded firms in 126 countries.[17] We drop firms from 34 small countries and financial "off-shore" centers that

shareholding of the company by controlling shareholders from October 2012.)

(8) Canadian Spirit Resources Inc., ("CSRI") is a Canadian public company focused on the exploration and production of natural gas in the Montney Formation of Northeast British Columbia. It is controlled by a private company Elmag Investments Ic, which is owned by Luigi Liberatore. (Source: CNW Group - which is owned by PR Newswire.)

(9) Playtech Plc is a gambling software development company listed on the London Stock Exchange. ORBIS indiactes that Playtech is controlled by the private company Brickington Trading Limited. This company was manually examined and discovered to be a wholly-owned subsidiary of a trust of which Mr. Teddy Sagi, a London-based Israeli businessman, is the ultimate beneficiary.(Sources: 1. London Stock Exchange, RNS Number : 2785J, 2 April 2015, report on Playtech PLC. 2. Reuters; 3. Morningstar; 4. The Telegraph)

(10) Dongwon Industries Co is South Korea's largest fishing company and owner of StarKist Tuna. Using BvD data we identifiied that it is controlled by a private holding Korean company, Dongwon Enterprise Co. We have manually discovered that Dongwon Enterprise Co. Ltd. was ultimately controlled by its founder, the Korean Jae-Cheol Kim. (Sources: 1. Credit Risk Monitor. 2. Ungson G.R, Steers R. M. and Seung-Ho P, Korean Enterprise: The Quest for Globalization, 1997. Pages 186-187. 3 Bloomberg Business.)

[15] In addition to name matching algorithms we used external sources of shareholdings data to enhance our matching. These sources include: lists of mandatory reports on interested parties (shareholders) that are family members which are reported by the firms directly to the stock exchange and the Securities Authority, company annual reports, Dun and Bradstreet, media reports and google search engine. We then replaced identified family members of the same family in the ownership data using only one representative shareholder for each family. If two or more matched family members held voting shares in the same company at the same date we aggregated their voting rights and assigned them to the family representative shareholder. In the aggregating the voting rights of family members we face a trade-off between two potential misclassifications: First, we may aggregate voting rights of family members who are actually in dispute, and may vote in opposite direction in crucial strategic decisions (e.g. appointing a CEO). This would influence our classification if the family is severely divided into smaller blocks of agreement that determine votes outcomes anymore (and thus cannot exercise control), as opposed to partisan family members who do not have much influence on aggregate voting power (and do not affect the control of the family). Thus, we may mistakenly classify a firm as family controlled, in which the divided/disputed family does not exercise actual control. On the other hand, by not aggregating voting rights of family members we may misclassify true family controlled firms as widely held because family shareholders eventually will vote in the same direction in crucial strategic matters.

[16] Compared to the initial sample of 134 countries, we lose 7 countries where we do not have data on the market capitalization of any firm in any of the years $2004 - 2012$. In particular, we lose in total 36 firms in Bolivia, El Salvador, Fiji, Guatemala, Honduras, and Iran. In addition, we lose 3,943 firms from other countries, for which we do not have data on market capitalization in any year.

[17] Compared to the initial dataset we lose listed firms from Togo.

are not covered in Datastream or with just one firm (in 2012).[18] This leaves us with 27,539 listed firms in 92 countries in 2012. To have representative coverage in each country, we require having 20% of the number of incorporated firms to the total number of listed firms in each country and 50% of the total market capitalization. The sample drops slightly, as we lose 100 firms from 7 countries with thin equity markets.[19] So our baseline sample consists of 26,843 firms in 85 countries. These 85 countries represent (in 2012) approximately 95.2% of global GDP and 85% percent of global population. In terms of market capitalization our sample reflects approximately 89% of the total value of market equity in the world sample of Datastream (and approximately 83% of market capitalization when we use World Bank's estimates).

Appendix Table 1*A* reports the country sample and provides details on coverage. The sample includes industrial, emerging, and under-developed countries. The average (median) coverage in terms of market capitalization across the 85 countries is 83% (85%); as we miss data on small firms (mostly in the United States, Canada and Japan that are mostly traded over-the-counter markets), the mean (median) coverage in terms of number of listed firms is lower at 64.5% (66%).[20] Coverage is almost perfect for 40 countries, as our data includes 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, and Argentina). For 26 countries coverage is high, as we have more than half of the listed firms and market capitalization exceeds 75% (e.g., Sweden, Germany, Hong Kong, South Africa, Malaysia, Colombia). The 2012 sample also includes firms in 19 countries, where coverage in terms of market capitalization is high (average/median around 70%), but we have less than half of the total number of listed firms. Examples include the United States where coverage in terms of market capitalization is 86.5%, but as we miss OTC-traded firms, coverage in terms of listed firms is 41%. Likewise in India and South Korea coverage in terms of market capitalization is high (92.8% and 83.7%), but in terms of the number of publicly-listed firms coverage is around 40% (39.3% and 44.3%, respectively).

Pre-Crisis Dataset (2007) We also estimate specifications in 2007, the year with the widest coverage before the global financial crisis. Again we drop off-shore financial centers and tiny countries (with no coverage from Datastream and where we have just one firm) and require to have at least 20% of the number of incorporated firms to the total number of firms and 50% of the market capitalization. This leaves us with 25,976 firms in 74 countries (Kazakhstan is the only country that is included in the baseline

[18] See Appendix Table 1. Specifically: (1) We drop firms from (financial centers), Barbados, Anguilla, Bahamas, Bermuda, Cayman Islands, Curacao, Gibraltar, Isle of Man, Jersey, Liechtenstein, Virgin Islands and Rwanda, where we have just one firm and in Palestine. (2). Data on market capitalization are missing for firms in 21 countries, namely Belize, Benin, Cambodia, Cameroon, Faroe Islands, Gabon, Gambia, Georgia, Jamaica, Kyrgyzstan, Liberia, Macao, Malawi, Marshall Islands, Monaco, Mongolia, Niger, Panama, Senegal, Sudan, Trinidad and Tobago.

[19] We lose Ecuador, Iraq, Kazakhstan, Mauritius, Tanzania, Vietnam and Zimbabwe. Since we have assembled ownership data for firms in these countries, for robustness we also report empirical specifications that include all firms, even from those countries.

[20] In Canada we do not have much coverage of the Toronto Stock Exchange Venture that includes early-stage typically small firms. In the United States we mostly miss ownership information for small capitalization stocks that Datastream classifies as traded in OTC markets.

sample of 2007 and not in the baseline sample of 85 countries of 2012). The mean (median) coverage in terms of number of listed firms is 66% (72%), while in terms of market capitalization the cross-country average (median) is 84% (87%). Appendix Table $1B$ gives details on coverage by country.[21] The number of common firms in the 2007 and 2012 sample is 15,930.

2004-2012 Sample ($2004-2012$) We also estimate specifications pooling all firm observations in $2004-2012$. This leaves us with 42,720 unique firms in 127 countries. The pooled cross-country mean (median) coverage in terms of number of listed firms is 68% (74%), while in terms of market capitalization the pooled cross-country average (median) is 82% (91%).

2.3 Control Algorithm

2.3.1 Previous Works

Identifying control across publicly traded firms is challenging as corporate law (on managerial power, shareholder rights, civil procedure, etc.) differs considerably around the world (La Porta *et al.* 1998, 2006). And ownership structures are complex, as there are cross-holdings of shares, pyramids, and shareholders may control firms via holdings of various intermediate firms (below we present some examples).

Most previous works have abstracted from the technicalities of identifying the controlling shareholder(s) using voting-rights cutoffs to identify controlled corporations. La Porta *et al.* (1999) identify firms as controlled if a shareholder (bank, individual, family, state, other private or publicly-traded firm) holds more than 20% of the equity. Lins, Volpin, and Wagner (2013) employ a 25% stake, while Holderness (2009) a 5% cutoff. Using voting-rights cutoffs is a natural first-step, as it simplifies the analysis. However, it has no formal justification and it does not take into account the distribution of equity holdings in a given firm. In addition firms operate in countries with different legal regimes and traditions, different corporate cultures, and having quite heterogenous legacies. Moreover, this simple rule-of-thumb may lead to erroneous classification (Edwards and Weichenrieder, 2009).

First, if ownership is very dispersed (and held by passive investors, such as mutual and pension funds) then a shareholder may obtain corporate control with a relatively small stake. For example, Onex Corporation, the Canadian investment firm is controlled by Gerald Schwartz, who owns about 13% of the shares, as other shareholders hold much smaller stakes. Another example is Carrefour, which is controlled by Blue Capital[22] holding about 16.4% of the votes.

Second, even large equity stakes (that are however below 50%) may not yield corporate control if other shareholder(s) also hold large stakes. This is quite common. For example, in Novatek, Russia's largest independent natural gas producer, there are four large shareholders [Leonid Michelson with around

[21] Compared to the 2012 country 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, Zambia.

[22] Blue Capital key shareholders are (*i*) 50% of its stock is held by Blue Partners Sàrl, a company controlled by Colony Capital LLC. (*ii*) 50% of its equity is controlled by Cervinia SA, a company controlled by Groupe Arnault SAS. [Source: Carrefour, Annual Financial Report, 2012.]

28% of the equity, Volga Group with 23% of the equity, Total SA with 16% and Gazprom with 9.4%] and no shareholder can independently control the firm. Another example is EVRAZ Plc, one of the largest Russian steel and mining companies, in which there are five large shareholders [Roman Abramovich with 30.99% of the equity, Alexander Abramov with 21.55%, Alexander Frolov with 10.76%, Gennady Kozovoy with 5.69%, and Alexander Vagin with 5.63%]; again no shareholder can independently control the firm.

Third, shareholders may use multiple (holding or other type) firms to exercise control and thus applying a simple cutoff (that is based on direct equity shares) may yield misleading classifications. For example, Igor Vladimirovich Zyuzin indirectly controls Mechel through three separate firms [Claridge Holding (24.5%), Delewave Holding (23.3%), and Bellasis Holding (11.6%)]. Another example is the Quandt family which controls BMW through three separate private firms [Susanne Klatten GMBH & Co. KG für Automobilwerte (12.6%), Stefan Quandt GMBH & Co. KG für Automobilwerte (17.4%), and Johanna Quandt GMBH & Co. KG für Automobilwerte (16.3%)].

2.3.2 Procedure

Our control identification algorithm is based on the weighted voting games literature pioneered by Shapley and Shubik (1954) and Banzhaf (1955) that instead of absolute voting *rights* cutoffs uses relative voting *power* cutoffs (Aminadav *et al.* (2011)). For each firm we estimate the voting power of every shareholder with the Shapley-Shubik power index. This index is calculated for the shareholders of the firm as a player-set in a weighted majority game with weights equal to their proportion of voting rights. The Shapley-Shubik index - normalized to range from 0 to 1-[23] reflects the extent to which a shareholder can affect the outcome of a collective decision by casting his/her vote, given the distribution of other shareholders' voting rights (Felsenthal and Machover, 1998). For the calculation of this index, it is assumed that shareholders join a coalition in a particular order. A pivotal shareholder for a given ordering is the shareholder whose joining turns a losing coalition into a winning one. Denoting with n the number shareholders in a specific firm and with piv_s the number of orderings in which shareholder s is pivotal, the Shapley-Shubik power index of shareholder s is $SS - Index_s = \frac{piv_s}{n!}$. A firm is controlled if there exists a shareholder whose voting power (Shapley-Shubik power index) is greater or equal to the predetermined threshold[24]. Otherwise, the firm is classified as "widely held". The Shapley-Shubik approach has been applied widely in many fields, as it allows the measurement of control to be extended to cases in which the majority threshold rule (more than 50% of voting rights) is not applicable.

We twist the Shapley-Shubik algorithm to account for the possibility that principal shareholders in the same corporation may themselves be controlled by a common ultimate owner. It is reasonable to assume that in this situation the two (or more) direct shareholders will act in unison, as they are controlled by the

[23] A 0 means that the coalition has no effect on the outcome, while 1 indicates that the coalition always determines the outcome. The sum of the voting powers (values of the Shapley-Schubik index) of all shareholders in each firm is 1.

[24] Since the Shapley-Schubik power index of all shareholders in each firm sums to 1, any threshold above 0.5 yields uniqueness of the controlling shareholder. The higher the threshold, the more demanding the condition on the voting power that a shareholder needs in order to be identified as a controller.

same ultimate owner. Therefore, we extend the Shapley-Shubik power index to incorporate the possible implications of the firm as being embedded in a complex network of ownership. That is, an individual's or a group's capacity for control must be a function of the distribution of direct ownership and the existence of concerts, groups of shareholders controlled by the same ultimate owner. So we aggregate the voting rights of shareholders belonging to a "concert" effectively treating them as if they were one blockholder[25]. Then we calculate the Shapley-Shubik power index for the "adjusted" shareholders of the firm - the concerts, and the individual shareholders who are not members of any concert. Consider, for example, a publicly traded firm X with 3 direct shareholders, each holding 30% of the firm's voting rights (with the remaining 10% being a free float): firm A, firm B, and individual C. If we examine firm X in isolation, we could safely say that no shareholder exerts control[26]. But, suppose that there individual/family (or firm) D controls firms A and firm B (by holding all of the voting rights). Then firms A and B form a concert of shareholders in X. For the calculation of the Shapley-Shubik power index we aggregate firm A's and firm B's voting rights $\frac{3}{10} + \frac{3}{10} = \frac{6}{10}$ and assign them to a blockholder, $Concert_{A,B}$. So now we treat firm X as if it had only 2 main shareholders: the original individual C with $\frac{3}{10}$ of the voting rights, and the $Concert_{A,B}$ with $\frac{6}{10}$. We would say that $Concert_{A,B}$ and individual/family D controls firm X.

Our algorithm works as follows. First, we set the key parameters; the majority quota needed to pass a corporate vote to 50% and the Shapley-Shubik power control threshold to 75%. Second, for each firm-year we calculate the Shapley-Shubik power index. We need to solve some non-trivial computational issues, since for n shareholders there are $n!$ permutations to consider. Things are even more complicated as there are multiple layers of ownership that require repeated calculation of the power index over the entire sample[27]. These challenging computational issues - which are commonplace in large and complex networks (Battiston *et al.*, 2010)- could explain why they have not been widely used in corporate finance. We use the effective randomized method for approximating power indices recently developed by Bachrach *et al.* (2010) that performs well in terms of running time, accuracy, and confidence. Third, once the Shapley-Shubik power index of each shareholder is calculated, we identify controlling shareholders. We classify a firm as controlled if there exists a shareholder whose Shapley-Shubik power index in that firm passes the 75% threshold. Subsequently, for each controlled firm we identify the ultimate owner by searching up the direct control chains. The ultimate owner is defined as a single non-controlled shareholder that controls the firm. Fourth, we account for the fact that firms themselves are quite often shareholders of other firms. After identifying the ultimate owners, if a firm has two or more shareholders that are directly or indirectly

[25] If the ultimate owner of the concert is also a direct shareholder of the firm, then its direct voting rights in the firm are added to the voting rights of the concert. So if A, B, and U are direct shareholders of X, and if U ultimately controls A and B, then the voting rights of this concert of shareholders in firm X equals the sum of the direct voting rights of A, B, and U.

[26] The voting power (Shapley-Schubik power index) of each shareholder of X equals $\frac{1}{3}$.

[27] Consider again the example discussed above focusing on firm X and its shareholders A,B, and C, where firm A and firm B are in turn held by shareholder D. In order to identify that $Concert_{A,B}$ controls firm X we needed first to identify that D controls firm A and that D controls firm B. Since there are two layers (the first layer is the ownership of D in A and in B; and the second layer is the ownership of A,B, and C in X), we needed to run the entire calculation of the Shapley-Shubik power index twice before finding all the possible control relations.

controlled by the same ultimate owner, we group these shareholders into a concert block whose voting rights equals to the sum of the voting rights of its members. The grouping of their shareholders into concerts changes the balance of power within firms and may shift the status of a widely held firm to controlled, if the concert has high enough voting power. This solution is the set of all relations, where each firm is linked to its direct controlling concert (or one controlling shareholder) and to its ultimate owner.

2.3.3 Firm Ownership Examples

We now illustrate our procedure in identifying corporate control using five large corporations as examples.

Fiat (Italy)

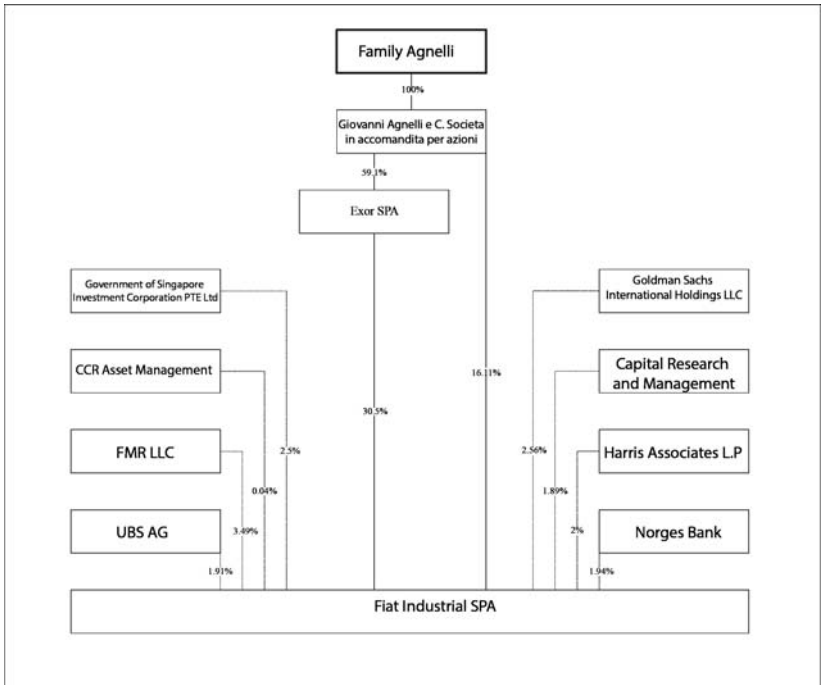


Figure 1*a*; **Fiat Industrial**

Figure 1*a* shows the 2012 ownership structure of *Fiat Industrial*. *Exor SpA* is the largest shareholder holding 30.5% of voting rights; but this is not enough voting power to be considered a controller according to the Shapley-Schubik power index, because *Giovanni Agnelli e C. S.a.p.az*, the second largest shareholder, holds 16.1% of the votes, and other shareholders such as *FMR* (holding 3.49%) and *Goldman Sachs International Holdings* (holding 2.56%) have enough voting power to form a solid opposition to *Exor*. However, further examination shows that *Exor SpA* is, in fact, controlled by *Giovanni Agnelli e C. S.a.p.az* that holds 59.1% of its shares. [Other significant shareholders with 5% blocks in Exor are MacKenzie Investments and Bestinver Gestion]. *Giovanni Agnelli e C. S.a.p.az* is a private holding company founded by Gianni Agnelli and is owned by members of the his family. Thus, we classify Fiat Industrial as family controlled by the Agnelli family, who controls 46.61% of the votes in Fiat Industrial (30.5% via *Exor SpA* and 16.11% via *Giovanni Agnelli e C. S.a.p.az*).

Fiat is a good example illustrating our methodology in aggregating the voting rights of family members. The biggest shareholders of *Giovanni Agnelli e C. S.a.p.az*, that holds directly 16.1% of Fiat's equity and indirectly via *Exor* a further 30.5% are: (i) Dicembre, a private company which is owned exclusively by John Elkann and by Marella Agnelli his grandmother and wife of former Fiat Chairman Gianni Agnelli holds 36.74% of voting rights. (ii) Maria Sole Agnelli Teodorani, Giovanni Agnelli's granddaughter, holds 12.83%. (iii) 11.46% of voting rights are held by the heirs of Umberto Agnelli (Gianni Agnelli's youngest brother). (iv) 8, 83% is held by the heirs of Giovanni Nasi, Fiat's founder's Giovanni Agnelli grandson (from his daughter Aniceta who married Carlo Nasi). (v) 8, 08% is held by the heirs of Laura Nasi Camerana. (vi) 6, 87% is held by Clara Nasi Ferrero de Gubernatis Ventimiglia. (vi) 5, 62% is held by the heirs of Susanna Agnelli Rattazzi. (vii) 3, 36% is held by the heirs of Emanuele Nasi. (viiI) Clara Agnelli Nuvoletti holds 0.30%. (ix) 0, 05% is held Cristiana Agnelli.

After identifying all key shareholders in the firms that held Fiat's stock, we aggregate the voting rights of all members of the Agnelli family. There are two companies in which some members of the Agnelli family appear as shareholders. In Dicembre s.s. we see that John Elkann and Marella Agnelli are the sole shareholders; aggregating their votes we get that Dicembre is owned exclusively by the "Agnelli Family". Likewise in Giovanni Agnelli e C. S.a.p.az, we aggregate the voting rights of all members of the Agnelli family. The aggregated family voting rights are 57.4%. As a result, the Giovanni Agnelli e C. S.a.p.az has two shareholders, "Agnelli Family" with a 57.4% voting stake and Dicembre s.s. with 36.74% voting rights. Before applying the control algorithm, the two shareholders "Agnelli Family" and Dicembre s.s. are considered as separate and independent shareholders. Whereas after running the control algorithm Dicembre s.s. is identified as ultimately controlled by the same shareholder - "Agnelli Family". Thus Fiat is classified as a family firm, owned and controlled by the Agnelli family.

BMW (Germany) Figure 1*b* presents the 2012 ownership structure of *Bayerische Motoren Werke* (BMW), a German vehicles, motorcycle, and engine manufacturing company. This company appears to be widely held, as no owner has enough votes (exceeding 20% or 10% or 5%) to control the firm. When examining the Shapley-Shubik power index, voting power appears relatively uniform among the three largest owners, *Susanne Klatten GMBH* (Gesellschaft mit beschränkter Haftung, company with limited liability), *Stefan Quandt GMBH*, and *Johanna Quandt GMBH*. Each of these limited liability companies is solely controlled by one individual, Susanne Klatten, Stefan Quandt and Johanna Quandt, respectively. These individuals are close family members, as Johanna Quandt was the mother of Susanne Klatten and Stefan Quandt. Therefore, once we aggregate their voting rights, the Quandt family holds 46.3% of BMW votes. Using the Shapley-Shubik power index test for control while also observing that the next largest shareholder is Allianz with 1.18% stake we classify BMW as family controlled, and the Quandt family as the ultimate owner of BMW.

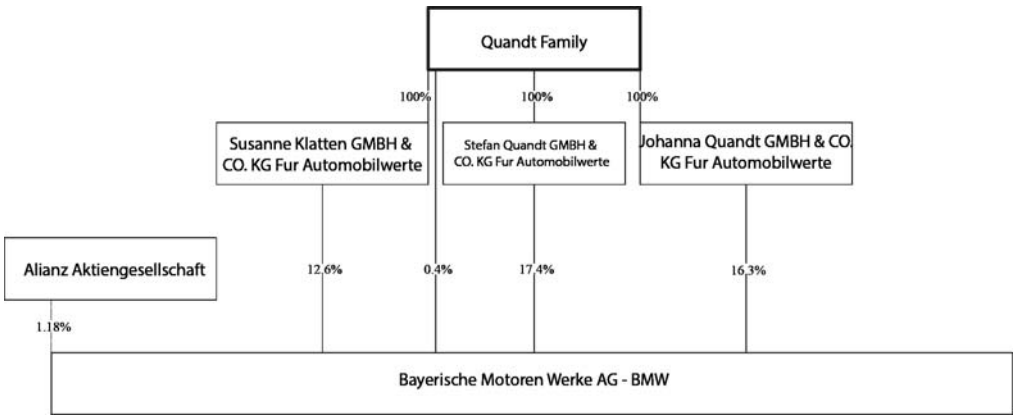


Figure 1*b*; **BMW**

LVMH (France)

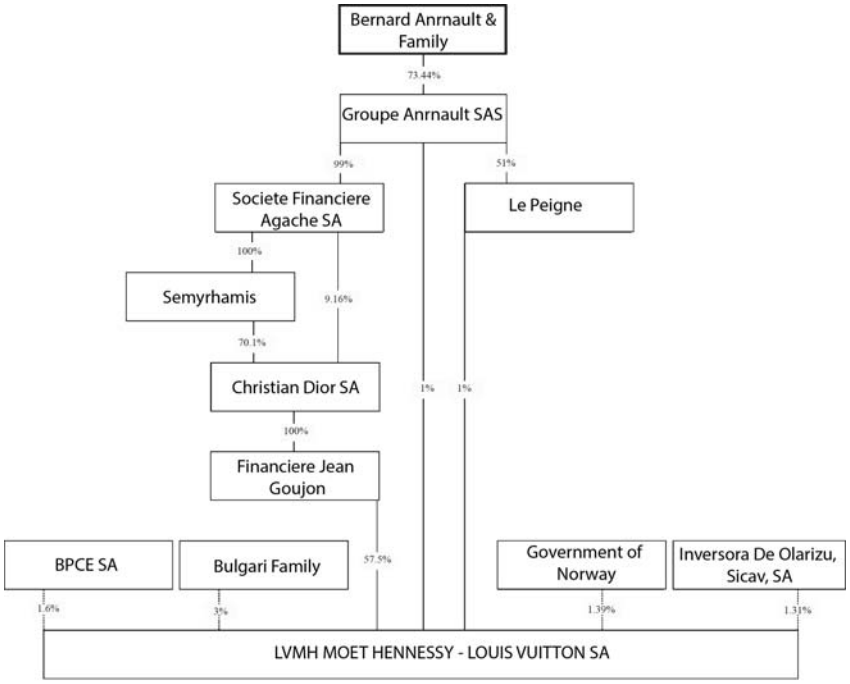


Figure 1*c*; **LVMH**

Figure 1*c* depicts the 2012 ownership structure for *Louis Vuitton Moët Hennessy* (LVMH), a French multinational luxury goods conglomerate (e.g. champagne Moët & Chandon, fashion house Louis Vuitton, wine producer Château d'Yquem, etc.). This company is controlled by *Financiere Jean Goujon*, a company whose sole purpose is to hold LVMH shares; this firm holds a 57.5% stake in LVMH. A closer examination reveals that *Financiere Jean Goujon* is a 100% controlled subsidiary of *Christian Dior*, a French luxury goods company. In turn, Christian Dior is controlled by *Semyrhamis*, an entity whose main purpose is to hold *Christian Dior* shares and which in turn is a 100% controlled subsidiary of *Financiere Agache*, a French company whose principal business is the ownership of interests in companies active in the retailing

business and the luxury products and wine and spirits sectors. *Financiere Agache* also holds a direct 9.16% stake in *Christian Dior*. *Financiere Agache* is a 99% controlled subsidiary of the private company *Groupe Arnault SAS*, which is the holding company of the French businessman Bernard Arnault and his Family. *Groupe Arnault SAS* also controls 51% of the firm *Le Peigne*, a wealth-management firm which according to various press reports manages money for Arnault and his family, and which holds 1% of the shares of LVMH. In sum, LVMH is controlled by Bernard Arnault and his Family, which indirectly holds about 61.5% stake; 57.5% via *Financiere Jean Goujon*, 2% via *Financiere Agache*, 1% via *Groupe Arnault SAS* and 1% via *Le Peigne*.

Mechel (Russia)

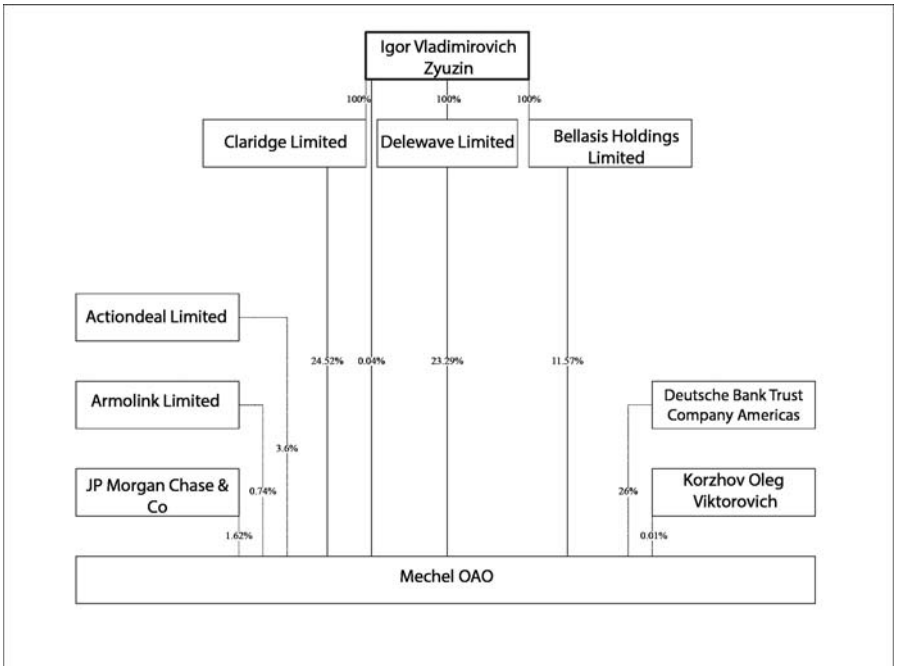


Figure 1*d*; **Mechel**

Figure 1*d* presents the 2012 ownership structure of *Mechel OAO*, one of Russia's leading mining and metals companies, comprising producers of coal, iron ore, and steel. At first glance, *Mechel* seems to be widely held, as voting power appears to be more or less equally distributed among the largest corporate shareholders; (1) Claridge Limited (with 24% stake) a Cyprus-incorporated limited liability company; (2) Dalewave Limited (with 23.29% stake), also incorporated in Cyprus; (3) Bellasis Holdings Limited (with 11.57% stake), which is also incorporated in Cyprus; (4). *Deutsche Bank Trust Company Americas* (with 26% stake) which is a subsidiary of *Deutsche Bank AG*. However, closer examination reveals that Claridge Limited, Dalewave Limited and Bellasis Holdings Limited are all 100% controlled by the Russian businessmen Igor Vladimirovich Zyuzin. Therefore we classify Mechel as family controlled.

Schroders (United Kingdom)

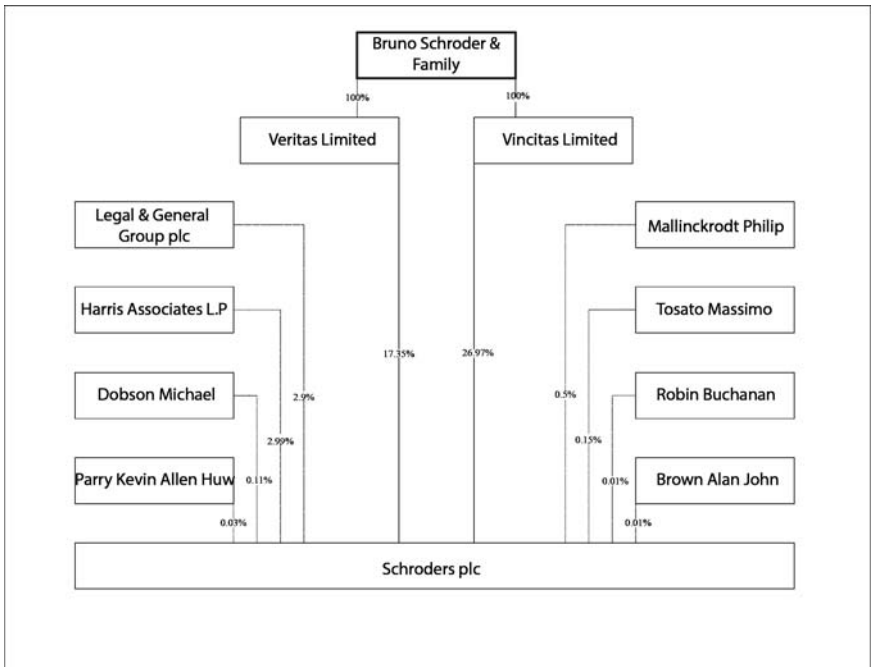


Figure 1*e*; **Schroders**

Figure 1*e* shows the 2012 ownership structure for Schroders Plc, a UK multinational asset management company, that is a constituent of the FTSE 100 Index. Voting power is concentrated in the hands of the largest corporate shareholders, Vincitas and Veritas, two Bermuda-incorporated firms holding 26.97% and 17.35% of Schroders equity. A closer examination reveals that both legal entities are controlled by the British banker Bruno Schroder and his family. Therefore, we will classify Schroders Plc as a family controlled firm, and Bruno Schroder's family as the ultimate owner.

3 Sample Characteristics and Descriptive Patterns

3.1 Main Types of Corporate Ownership

Figure 2*a* reports the distribution of ownership by shareholder type for the baseline sample in 2012 that covers 26,843 publicly-traded firms from 85 countries. These listed firms are held by 80,607 unique shareholders (since we focus on ownership we just examine direct owners). The key types of shareholders are: (*i*) 36,823 single private individuals or families (45.7%);[28] (*ii*) 19,101 privately held ("Industrial") firms that are neither banks nor financial companies (e.g., mutual funds, hedge funds) nor institutional investors (23.7%);[29] (*iii*) 1,959 publicly listed ("Industrial") firms that are neither banks nor institutional

[28] For example, Ma Huateng, is the founder, president, chief executive officer and main shareholder of Tencent Inc. William Gates III is the key shareholder of Microsoft Corporation. N. Murray Edwards is the key shareholder of Canadian Natural Resources Ltd.

[29] For example, Rio Tinto International Holdings, a private firm, is a key shraeholder of Turquoise Hill Resources, a Canadian mineral exploration and development company. Kar-Tess Holding, a Luxembourg based private company, is a direct share-

investors nor financial companies (2.4%);[30] (*iv*) 12,007 institutional investors, mostly mutual and pension funds, nominees, and trusts/trustees (14.9%);[31] (*v*) 1,343 non-state-controlled banks (1.7%);[32] (*vi*) 655 private equity (PE) firms, venture capital (VC) firms, and hedge funds (HF) (0.8%);[33] (*vii*) 75 governments, public authorities, and regional states (0.1%);[34] and (*viii*) 8,644 with an unclassified type (10.7%).[35] In Figure 2*b* we also tabulate the controlling shareholders in 2007. This sample covers 25,976 public firms from 74 countries. We identified 83,198 unique shareholders in the 2007 sample.

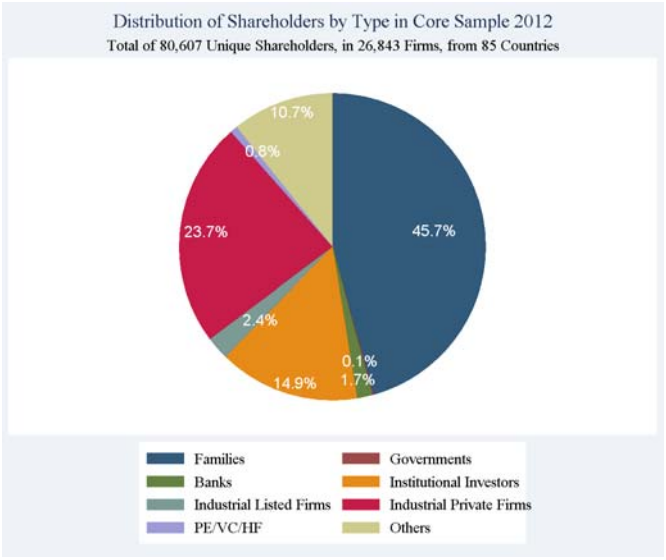


Figure 2a; Shareholders Type in 2012

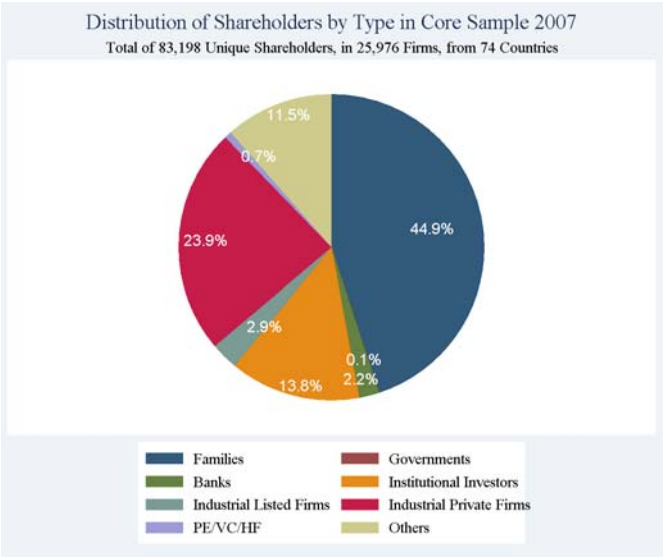


Figure 2b; Shareholders Type in 2007

holder (23%) of Coca Cola Hellenic Bottling Company. Ramsbury Invest AB, a privately held Swedish real estate company (controlled by Carl Stefan Erling Persson), is the key shareholder of H&M, founded by his father Erling Persson.

[30] For example, Anheuser-Busch InBev, a beverage and brewing company headquartered in Belgium and listed in Euronext, NYSE, and Johannesburg, is a direct shareholder of Ambev, the biggest brewery in Latin America. A.P. Moller–Maersk, a Danish publicly listed conglomerate is a direct shareholder of Danske Bank, the largest bank in Denmark. Nestlé S.A, a Swiss food and beverage company is a direct shareholder of L'Oréal S.A., a French cosmetics company.

[31] For example, Aberdeen Asset Management PLC is a direct shareholder of QBE Insurance, Australia's largest insurer. The Vanguard Group is a direct shareholder of Exxon Mobil Corp. BlackRock is a direct shareholder of HSBC.

[32] For example, the Commonwealth Bank of Australia is a direct shareholder of Qantas Airways. JPMorgan Chase & Co. is a shareholder of Total S.A., a French multinational integrated oil and gas company. The Bank of Tokyo-Mitsubishi UFJ, Ltd. is a direct shareholder of Honda Motor Co., Ltd.

[33] For example, Paulson & Co. Inc. is a direct shareholder of Wells Fargo & Company. Sequoia Capital is shareholder of LinkedIn. KKR is a major shareholder of Legrand, the French industrial group.

[34] For example, the government of Argentina is a direct shareholder of Yacimientos Petrolíferos Fiscales, a vertically integrated Argentine energy compan. The government of China holds a large stake in PetroChina Company Limited. The government of India is a major shareholder of Coal India Limited, the largest coal producer company in the world.

[35] 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 direct shareholder of Alexandria Real Estate Equities, Inc., a company that is engaged in the business of providing office/laboratory and tech office space for lease to the science and technology industries.

3.2 Ownership Concentration around the World

Using the information on equity holdings (voting rights) we construct measures of ownership concentration summing the equity holdings of the single, three, and five largest shareholders for all firms ($C1$, $C3$, and $C5$). The construction of these measures is standard in the literature (e.g., La Porta *et al.* (1999), Faccio and Lang (2002)); yet in contrast to previous works, we sum all members of the same family. The $C1$ index reflects the ownership holding of all family members if they hold together the largest block. In BMW $C1$ equals the sum of the voting rights of all members of the Quandt family. Table 1 reports the number of firms and the simple and the market-value-weighted average of the $C1$, $C3$ and $C5$ ownership concentration index for all 85 countries in the 2012 sample. [Appendix Table 2 reports the same measures by country in 2007]. Table $2A$ gives firm level summary statistics and Table $2B$ gives country-level summary statistics in 2012. [Appendix Tables $3A$ and $3B$ tabulate the corresponding summary statistics in 2007].

On average, the single largest shareholder (e.g., individual, family, financial institution, government, etc) holds 31.5% of the equity of the publicly-traded corporations in our sample; and the largest three (five) shareholders jointly hold 41.7% (44.6%) of firm's equity**.** A controlling shareholder(s) voting rights exceed slightly 50% (average 53.7% and median 51% with the minimum stake of control being 20%). Figure 3 reveals the wide distribution of ownership concentration around the world, as reflected on the mean $C3$ index. Ownership concentration is the highest in Africa and Eastern Europe. In the Czech Republic, Ukraine, Latvia, Lithuania, and Russia the three largest shareholders hold more than 70% of the equity of publicly traded firms. Relatively, ownership is disperse in Taiwan, Canada, United States, Australia, and South Korea, where the $C3$ index is around 30% and in Japan, India, Ireland, Finland, Sweden and Singapore where $C3$ is around 35%. [The patterns are similar when we use market-weighted measures.]

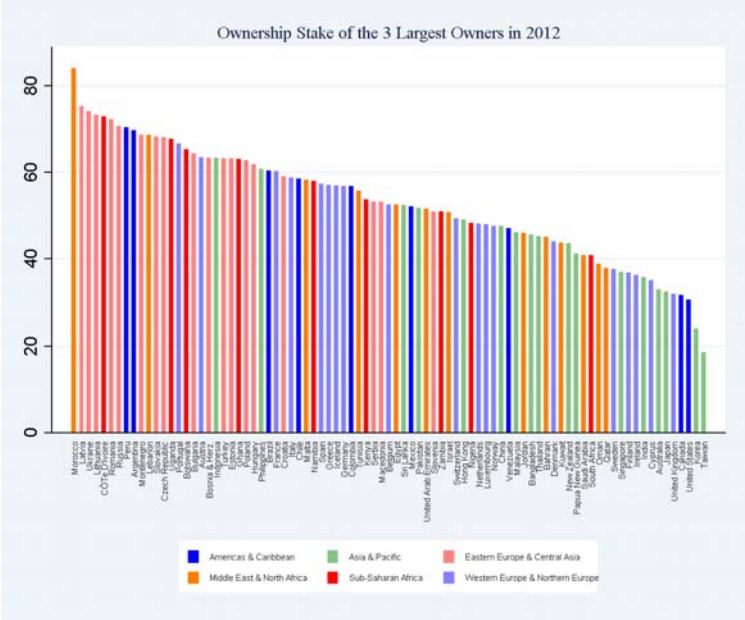


Figure 3; **Ownership Concentration (C3) in** 2012

3.3 Corporate Control around the World

Our aim is to provide the most complete-to-date characterization of control of publicly-traded corporations around the world. To start with we classify firms as either "widely-held" or "controlled". We further split widely-held firms to those with a significant block-holder (exceeding 5%) and those without any large block (dispersed shareholders). Controlled firms fall into the following mutually exclusive categories reflecting the dominant shareholder(s): (*i*) family/individual; (*ii*) private firms that we could not trace the controlling (individual or family) shareholder; (*iii*) government, including municipalities, localities and state agencies; (*iv*) private firms that are widely-held (multiple unrelated shareholders where no shareholder is strong enough to control, e.g. limited partnerships); and (*v*) widely-held public firm.

Figures $4a - 4b$ report the outcome of our algorithm that identifies ultimate control. The charts portray corporate control across the world using arithmetic and market-cap value-weighted measures. Approximately half of the firms (47% in 2012 and 48.7% in 2007) are widely-held corporations which however do have a block shareholder, i.e., an entity holding more than 5% of the stock. This is consistent with many country-studies documenting that equity blocks are prevalent even in countries with strong investor protection and relatively disperse ownership, such as the United States (Holderness, 2009) and Japan (Franks, *et al.* 2014)). The share of widely-held corporations without a block shareholder is low, 9% in 2012 and 6.3% in 2007; yet since these firms are typically large, the market capitalization shares are 15.2% in 2012 and 11% in 2007. Turning now to controlled firms, the government controls around 4.7% of firms in 2012; yet these firms amount to 13.7% of the total market capitalization, as the state typically controls large utilities and banks. Family control is about 15.2%. The share of unmatched firms is about 14.6%, but since these firms are small, in market-capitalization terms they capture 2.6% and 4.7% of the sample in 2012 and 2007, respectively. While most likely these private firms are owned and controlled by individuals/families, we keep them as a "separate category" though in our analysis we also report estimates merging them with family firms (as Faccio and Lang (2002) and Masulis, Pham, and Zein (2011)). Widely-held private firms ultimately control about 2.9% of the firms in our sample in 2012, these ultimate owners are usually private firms held by several families or corporations (e.g. joint ventures).[36] Widely held public firms ultimately control about 6.6% of the firms in our sample. For example, Grupo ACS controlling Hochtief AG, or Renault controlling Volvo.

[36] For example Anheuser-Busch InBev was ultimately controlled by Stichting Anheuser-Busch, a private entity firm owned by several individuals (who are not family members). Lafarge SA is controlled by Parjointco NV, a private company firm, jointly controlled by Albert Frère and Paul Desmarais.

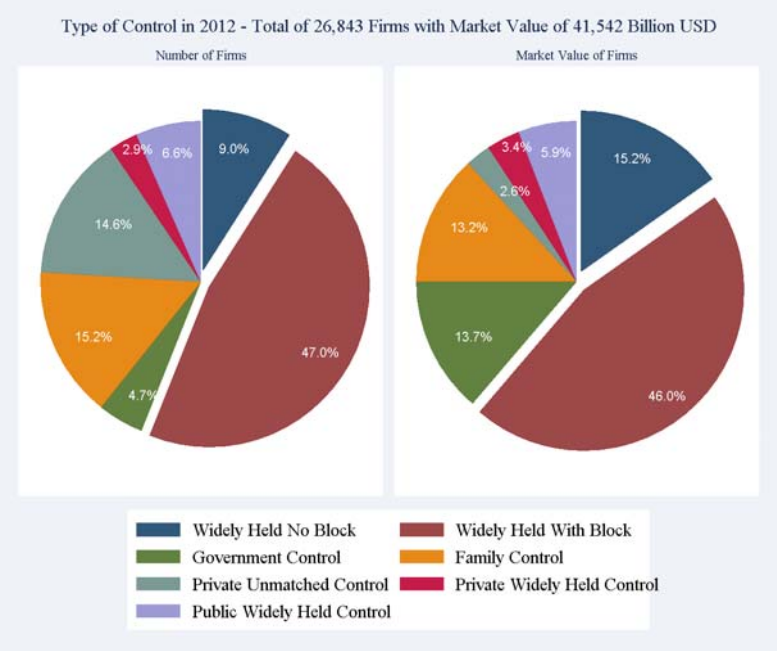


Figure 4*a*; **Corporate Control Type in** 2012

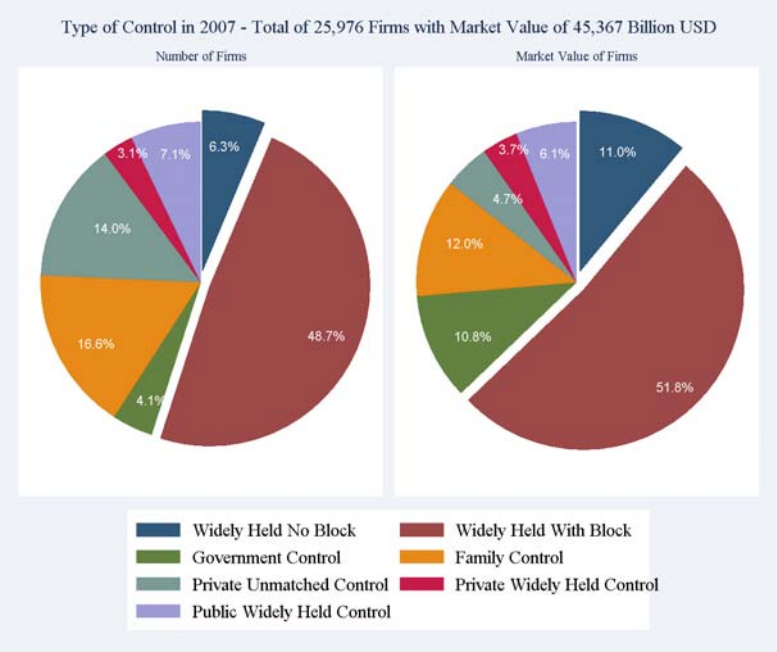


Figure 4*b*; **Corporate Control Type in** 2007

In 2012 about 44% of the firms in our sample are ultimately controlled, with the remaining 56% classified as widely-held. Many widely-held firms (47% of the total sample) have (at least one) key equity block-holder, defined as block-holding of equity of more than 5% (but less than the required firm-specific voting power threshold for classifying the firm as "controlled" according to our algorithm). For the remaining share of widely-held firms (9% of the total sample), we could not identify a shareholder with a sizable equity block. Table 1 tabulates the cross-country patterns in 2012, while Appendix Table 2 for

2007. Table 2 reports summary statistics for all variables of corporate control in 2012 and Appendix Table 3 reports the statistics for 2007. Appendix Table 4 reports the correlation structure of the main variables.

Figure 5 provides an illustration of the considerable heterogeneity on corporate control around the world. On the one hand, the Berle and Means (1932) type of corporation with many small shareholders is almost absent in Africa (in Uganda, Ivory Coast, Botswana more than 80% of the firms are "controlled") and in Eastern Europe (in the Czech Republic, Bulgaria, and Russia more than 80% of the firms have a controlling shareholder). On the other hand, corporate control is low (below 30%) in New Zealand, Canada, US, UK, Australia, and in Taiwan, where more listed firms are widely-held (though there are blocks). The country rankings are in line with previous works (La Porta *et al.* 1999; Faccio and Lang 2002; Claessens, Laeven, and Lang 2002, Lins, Volpin, and Wagner, 2013) though there are differences. The correlation of the identifier for controlled firms with the $C1$, $C3$, and $C5$ concentration measures is high, though not perfect (0.73, 0.64, and 0.58; Appendix Table 4). In the Appendix we provide a detailed description ofcorporate control for the G7 countries and the BRICs and connect our paper with case-studies on corporate control and ownership concentration.

Figure 5; **Share of Controlled Firms (simple average) in** 2012

We now examine patterns of corporate control, looking at the main types of controlling shareholders.

Figure 6*a* plots the distribution of family control around the world.[37] Family-controlled firms are pervasive in countries with strong family ties and social values centred around the family, such as Greece and Italy (see Alesina and Giuliano, 2014). In contrast, there are few family-controlled listed corporations

[37] For 15.2% of the firms in the 2012 sample we could trace an ultimate controlling family or individual; and for 14.6% of the firms the ultimate controlling shareholder is a privately held firm (that almost certainty is owned by a family or individual though we could not trace his/her identity).

in Taiwan, Ireland, and Australia.

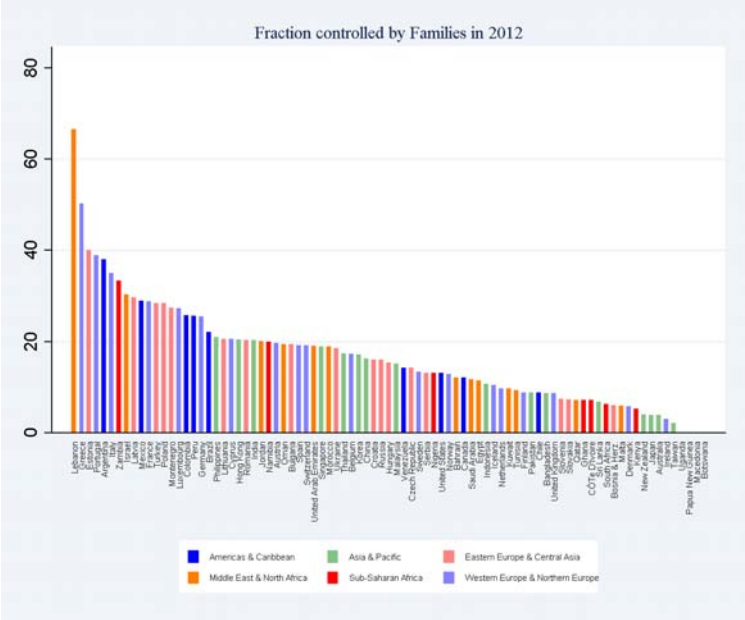


Figure 6*a*; **Family Control (simple average) in** 2012

In Figure 6*b* we add to family-controlled firms listed firms controlled by a private unidentified firm, as most likely these firms (that we could not trace the ultimate shareholder) are controlled by families/individuals. This approach follows Faccio and Lang (2002), Masulis, Pham, and Zein (2011), and many other works. The patterns are similar though now the proportion of family controlled firms around the world increases to 30% and the country level mean (median) increases to 35% (33%).

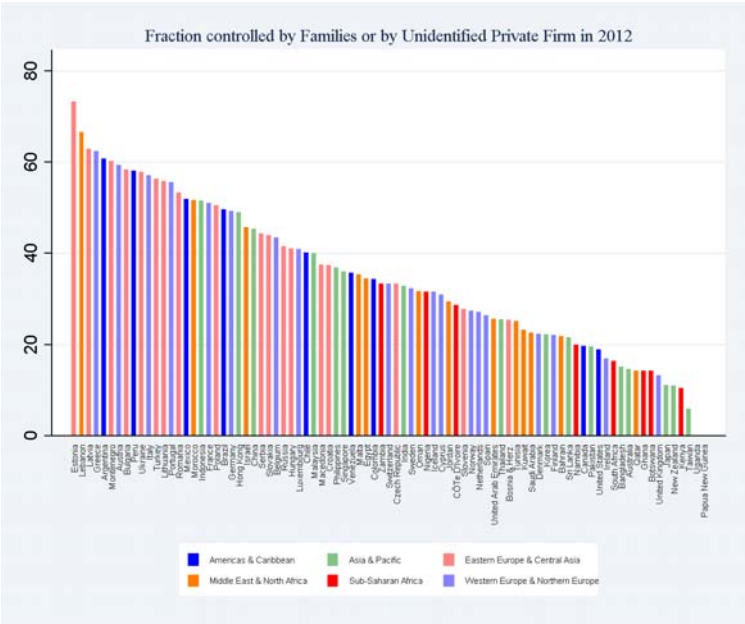


Figure 6*b*; **Family Control Extended (simple average) in** 2012

Figure 6*c* gives a graphical illustration of the distribution of state control around the world. National

(federal) governments, state agencies, and municipalities control roughly 4% of sample firms. While state control is (close to) zero in many countries (United States, Canada, and Taiwan) it is quite high in Uganda, China, the Arab World (Oman, Qatar, UAE), and also in Eastern Europe (Russia, Slovenia).[38]

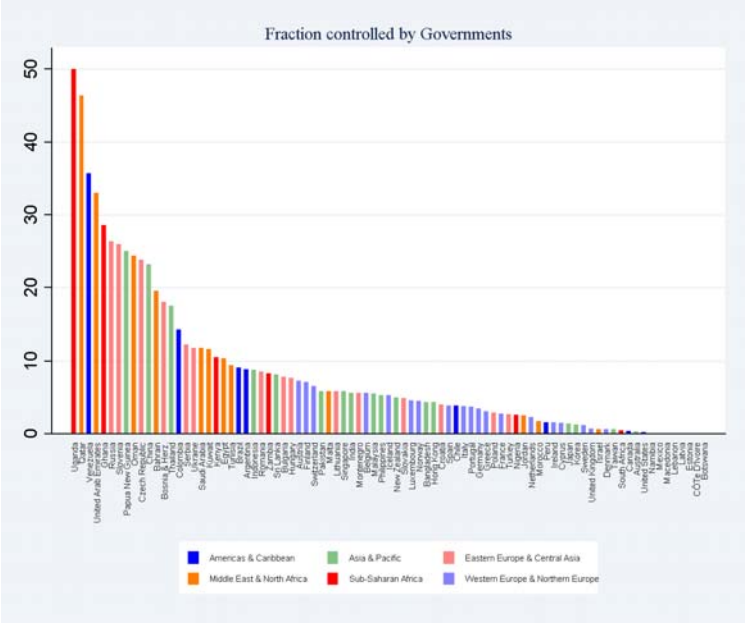


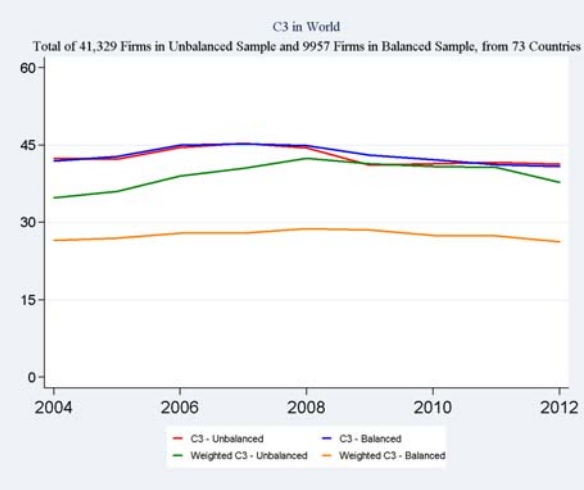
Figure 6*c*; **Government Control (simple average) in** 2012

3.4 Trends in Ownership Concentration and Corporate Control

We examined the evolution of ownership concentration and corporate control patterns during the period $2004-2012$. This may be a relatively brief period to study dynamics; yet, as the sample includes the US financial meltdown of $2007-2009$, the subsequent global economic recession, and the euro crisis of $2010-2012$ it allows examining the impact of these large economic shocks on corporate structure. In Figures 7*a* and 7*b* we plot the evolution of the $C3$ concentration index and the share of controlled firms over the $2004-2012$; as ORBIS coverage changes over time we plot the concentration index and the corporate control share both for a broad unbalanced sample that includes $41,329$ firms and for a balanced sample that includes $9,957$ firms in 73 countries.[39] Ownership concentration and control are persistent. As we show in the Appendix, these patterns of stability are present across all advanced economies and to a lesser extent also in the sample of middle and low-income countries. The high inertia in ownership concentration is consistent with La Porta, Lopez-de-Silanes, and Shleifer (1999) and detailed country studies (e.g., Franks, Mayer, and Miyajima (2014) on Japanese corporations and Morck *et al.* (2005) on Canadian firms).

[38] As control by private banks, institutional investors, and other-than-banks (non-state owned) financial institutions is overall low, for brevity we do not report graphical illustrations.

[39] We are concentrating on 73 countries out of our core sample of 85 countries, because for those 73 countries we have good coverage not only in 2012, but also for the 9 years between $2004-2012$.



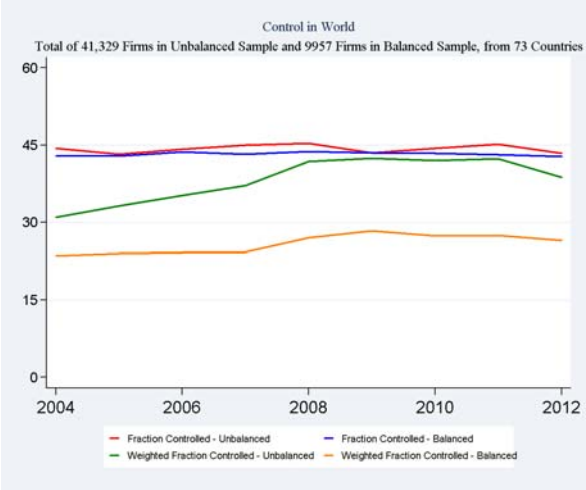


Figure $7a$: **Dynamics of Ownership Concentration** **Figure** $7b$: **Dynamics of Corporate Control**

While the share of controlled (and widely-held) corporations across the world sample or/and specific countries may appear persistent over time, there may be changes. The roughly stable share of controlled firms may either reflect (at the extreme) that ownership does not change over time for any firm or that there are many changes in control that cancel out (because widely-held corporations become controlled and at the same time controlled firms become widely-held). We examined this in detail looking both at the balanced sample of $9,957$ firms that we have ownership and control information throughout $2004-2012$ and for a larger sample of $15,930$ listed firms that we have information in 2012 and 2007.

$2004-2012$ **Comparison** In the sample of $9,957$ firms covering the full period, we observe $1,967$ distinct firms that have stayed with the exact same controlling owner throughout this period [e.g., Petrochina is "controlled" by the Chinese Government throughout this period, Wal-Mart is "controlled" by the Walton family and Volkswagen AG controlled by the Porsche-Piech family]. $4,412$ firms have remained widely-held throughout $2004-2012$ [e.g., Exxon Mobil Corp, General Electric Company, Rio Tinto]. So 64% of listed firms did not experience any change on corporate control during this 9-year period. Of the remaining 36% of the sample, 607 firms have remained controlled throughout the period but there was a change of 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. Bashneft (Russia) was controlled by Ural Rakhimov until mid-2009, when control moved to the hands of Evtushenkov Vladimir Petrovich]. The control of the remaining $2,971$ firms has changed from either being widely-held to having a controlling shareholder or/and vice versa.

$2007-2012$ **Comparison** We now turn to our examination of changes in corporate control in the sample of $15,930$ firms that we have information in 2007 and in 2012. $3,829$ firms have the exact same controlling ultimate shareholder/owner (24%). In addition, $7,502$ (47%) firms are classified as widely

held in both years 2007 and in 2012. Of the remaining 29% of firms that changed control, 1,461 (9%) have remained "controlled", but there has been a change of the controlling shareholder in both years but changed hands. The remaining 3,138 firms have changed classification during the crisis period, as they either move from being widely-held to controlled or vice versa.

4 Legal Origin and Corporate Control

In this section we report the "reduced-form" estimates linking corporate control with legal origin. First, we report the baseline cross-country specifications. Second, we search for heterogeneity w.r.t. firm size and age. Third, we examine the link between legal origin and the key types of controlled corporations. Fourth, we perform some necessary sensitivity checks.

4.1 Empirical Specification

Our baseline specification exploring the "reduced-form" association between corporate control (and also ownership concentration) and legal origin reads:

$$y_{i,c} = LO_c'\Phi + X_{i,c}'\Gamma + Z_c'\Psi + a_s + a_r + \varepsilon_{i,s,c}.$$

The dependent variable ($y_{i,c}$) is an indicator that takes on the value of one if a firm i in country c is controlled (by either an individual/family, a private firm that we could not identify the ultimate controlling family/individual, the government, banks, or institutional investors) and zero when the firm is widely held (with or without a block). The key explanatory variables capture countries' legal family (LO_c). We include French, German, and Scandinavian civil-law legal origin indicator variables using common-law as the benchmark omitted category. To partly account for vast regional differences in ownership and economic performance, in many specifications we include regional fixed-effects, a_r, relying on World Bank's classification. Since ownership and control differ considerably across industries, many specifications include sector constants, a_s. $X_{i,c}'$ is a set of firm-specific controls; following Holderness (2016a,b), we control for (log) firm age and size (log market capitalization).

Before reporting the results it is important to stress that legal origin may affect corporate control via numerous channels, such as investor protection, court efficiency, product market regulation, labour laws (see La Porta, Lopez-de-Silanes, and Shleifer, 2008). Thus the estimated coefficients on the legal origin indicators capture the "reduced-form" relationship between legal family/tradition and corporate control (and ownership concentration); in an effort to isolate the role of legal origin from other country features, in many specifications we include the log of per capita GDP that we take a summary measure of economic, institutional, and financial development (Z_c'). Since the legal origin indicators (and GDP) take the same value for all firms in a country, we cluster standard errors at the country-level (Moulton (1990)).

4.2 Baseline Estimates

Table 3 reports the results. As the dependent variable is binary, we estimate probit models with maximum likelihood. Since probit coefficients are not easily interpretable, the table gives marginal effects estimated at the mean of the other covariates. Column (1) gives unconditional estimates. The simple test of means suggests that the share of controlled firms is 33% higher in French civil law countries as compared to common law countries. Compared to common-law countries, the share of controlled firms is roughly 19% higher in German civil-law countries and around $5-6\%$ higher in Scandinavian countries.

In column (2) we control for (log) GDP p.c. that enters with a significantly negative coefficient. Ownership concentration is higher in relatively underdeveloped countries, perhaps because of weak investor protection, other institutional of financial frictions. 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; the likelihood of listed firms with a controlling shareholder, as compared to widely-held corporations, is significantly higher (around 30%) for countries whose legal system is build around the Napoleonic civil code of 1803, as compared to (mostly) British colonies that have a common-law legal system. The German and the Scandinavian civil-law dummies also enter with positive and significant estimates; the probability of a listed firm with a controlling shareholder is higher by approximately $11-16$ percentage points in these countries.

In columns (3) and (4) we condition on continental fixed-effects. The regional constants are highly significant (coefficients not shown), as widely-held corporations are less common in Sub-Saharan Africa and Eastern Europe and Central Asia. The coefficient on the French legal origin indicator retains its economic and statistical significance (0.295). The estimates on German and Scandinavian legal origin indicators fall somewhat and turn statistically insignificant.

In column (5) we control for log firm age and log market capitalization, so as to partly account for the large heterogeneity of listed firms around the world. Size and age may be related to the legal tradition and the stage of economic development. Both variables enter with small and statistically indistinguishable from zero coefficients. As there are no major differences on firm age and size across legal families, the coefficients and associated marginal effects on the legal origin indicators retain their magnitude.

In (6)-(7) we augment the specification with a vector of industry (85 SIC2-code) constants. This is *a priori* important, as previous theoretical and empirical research shows that there are large differences on ownership structure across sectors (e.g., Faccio and Lang (2002)). Since the sample drops when we condition on firm age and size, we report specifications with and without these controls. The coefficient on the French civil-law dummy retains its significance. The estimate implies that -conditional on highly relevant regional features and industry characteristics and conditional on the level of development- the likelihood of controlled firms in French civil law countries is on average 24% higher as compared to common law countries. The German legal origin indicator also enters with a significant (at the 90% confidence level) estimate (0.13). The estimate on the Scandinavian civil law dummy is smaller (0.07) and does not pass

the standard significance levels.

Examples A couple of examples illustrate the probit marginal estimates. The fraction of controlled firms in Malaysia, a common-law country, is 0.50, while the corresponding share in Indonesia, a Dutch colony with a French civil law system is 0.76. The share of controlled firms in Cyprus, a former British colony with a strong common law tradition, is half of the analogous share in Greece, a French civil-law country (0.34 compared to 0.75). Differences in corporate control across legal families are also present in Africa, where the share of widely held corporations is overall quite small. The share of controlled firms in common-law Kenya and Nigeria is 0.74 and 0.68, while in French civil-law Ivory Coast is 0.92.

4.3 Ordered (Hierarchical) Analysis

In most instances there is at least one large block stake shareholder in widely held firms. For example Bill Gates holds a large stake in Microsoft. Blackrock and Fidelity hold big blocks in Apple, while Berkshire Hathaway holds a sizable block in IBM. In Europe, Groupe Bruxelles Lambert holds a block on Total, Dodge and Cox hold a large block in Credit Suisse, and the Kuwait Investment Corporation holds around 5.7% of Daimler's voting rights. In 2012, 47% of the firms are classified as widely held with a block (reflecting 46% of total market capitalization) and 9.1% are classified as widely held with no block (15.2% of total market capitalization). Block shareholders can exert (at least) some control in these corporations (see Edmans and Holderness (2016)). We thus defined an ordered index (0, 1, 2) of control that accommodates heterogeneity on the degree (intensity) of control and repeated estimation. The trichotomous index takes the value of zero for widely held firms without any block shareholder (all shareholders hold less than 5% of firm's voting rights); the index takes the value of one for widely held firms with at least one block shareholder (in excess of 5% and less than 50%), and equals two for firms that our algorithm identifies as controlled, having a well-identified controlling shareholder of any type (e.g., family/individual, government, private equity, hedge fund, etc.). We then estimate ordered probit models (with maximum likelihood) that associate the ordered (0, 1, 2) index of control with legal origin (regression equation (1)); this allows jointly assessing the role of the legal system structure on the various forms of corporate control.

Table 4 reports ordered probit coefficients. A couple of noteworthy patterns emerge. First, the threshold parameters are statistically significant from each other, suggesting that the ordered model fits the data better than the binary model (that merges categories 0 and 1). Second, across all specifications the coefficient on the French legal origin indicator enters with a positive and highly significant estimate, suggesting that the likelihood of observing controlled firms and widely-held firms with a block shareholder is higher in French civil-law countries as compared to common-law countries. Third, the coefficients on the German civil-law and Scandinavian civil law dummies are also positive, but in most specifications are statistically insignificant. Fourth, log GDP p.c. continues to enter with a negative coefficient suggesting that economic development is associated with a higher likelihood of widely-held corporations. This applies

even when we look at firms in the same industry and the same continent.

The estimated ordered probit marginal effects, in column (6) imply that, conditional on regional features and the level of economic development, the likelihood that a listed firm in French civil-law country will be controlled by a key shareholder (family/individual, government, institutional investor) is 66.4% [the sample includes 4,516 firms in 33 French-civil-law countries], quite similar to the unconditional likelihood of 66.8%. The ordered probit specifications further imply that in French civil-law countries approximately 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 shareholder holding more than 5% of the firm's voting rights. These estimates are again close to the unconditional means. Turning now to firms in common-law countries (the sample includes 13,984 firms in 28 common-law countries), the ordered probit estimates imply that 10% of listed firms will be widely dispersed without a block shareholder and 57.5% of listed firms will be widely held but with a sizable block. These estimates (that control on income, industry and regional effects) are close to the unconditional tabulations (12.5% and 53%, respectively). In Figure 8*a* we tabulate the estimated likelihoods of the three outcomes for each legal family using the specification with the rich set of controls (reported in column (6)), as this allows visualizing at which margin legal origin operates. For comparability Figure 8*b* plots the unconditional means/likelihoods of the three outcomes.

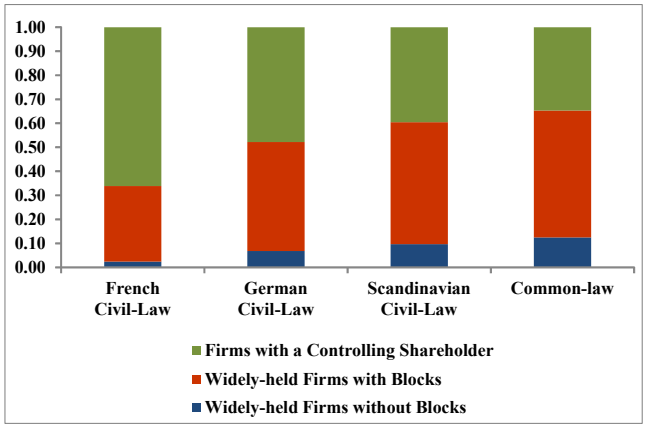


Figure 8*a*; **Estimated Conditional Likelihoods**

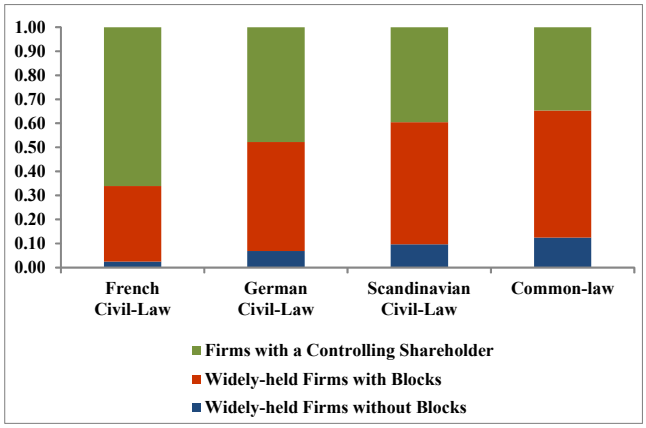


Figure 8*b*; **Unconditional Likelihoods**

Some interesting patterns emerge, that all point out that one has to *jointly* examine the impact of legal origin on widely-held firms with and without a block shareholder and one firms with a controlling dominant shareholder. First, when we look at differences across legal families on the share of widely held firms without any block shareholder, the key difference is between French civil-law and all other legal families. The estimated likelihood (and the unconditional probability) of widely held firms in French civil-law countries is just 2.68% and 2.48% respectively. In contrast the corresponding likelihoods for common law countries are 10.11% and 12.46%. Yet the differences in the share of widely-held firms without a block between common-law countries and Scandinavian civil-law countries are much more attenuated, as 9.7% of Scandinavian firms are widely held (and the estimated likelihood is 8.11%). Second, when we examine the

shares of widely-held firms with a block shareholder across the four main legal families, we also detect large differences between French civil-law and common-law. The conditional ordered probit likelihood in common law countries is 57.5%, while in French civil-law counties 31%. These estimates are close to the simple mean values of 52.8% and 31.4%. The estimated likelihood of widely-held firms with blocks in German civil-law countries is 37.1%, significantly lower than the corresponding likelihood in common law countries. In contrast, the differences in the share of widely-held firms with a large block between Scandinavian civil-law and common-law countries are much smaller. Third, when we look at the share of firms with an identified controlling shareholder, which is typically a family/individual or the government, a clear pecking order across legal families emerges. The estimated and unconditional likelihood of controlled firms in French civil-law countries are around 66%; in German civil-law countries the corresponding likelihoods are around 52%; in Scandinavian civil-law countries significantly lower around 39%; and in common-law countries the lowest around $32\% - 32\%$.

4.4 Heterogeneous Effects

The size distribution of publicly-traded firms is highly skewed, obeying a "power law" (see Gabaix, 2009 for a review).[40] In our sample the mean market capitalization is 1.55 Billion USD, while the median is ten times lower, 0.15 Billion USD. Given the skewness of firm size, simply controlling for market capitalization may be inadequate. Moreover, the "reduced-form" relationship between corporate control and legal origin may differ for small, medium, large, and very large firms (Holderness (2016a,b)).

Table 5 reports specifications (probit marginal effects) examining in detail heterogeneity and the sensitivity of our baseline estimates to firm size.[41] In column (1) we drop the top 1% of firms in our sample, namely firms with market capitalization exceeding 30 billion USD, while in columns (2) and (3) we drop firms at the top 5% and the top 10%, respectively (7.4 billion USD and 3 billion USD). Across all permutations, the French legal origin indicator continues to enter with a stable (around 0.25) and statistically significant at the 99% level coefficient. .The German civil law indicator also enters with a significant estimate (at the 90% level), implying that compared to common-law countries, the likelihood that a firm will be controlled is 14% higher. In line with the baseline estimates, log GDP p.c. enters with a statistically significant estimate.

In (4) and (5) we split the sample using the median market capitalization (0.155 Billion USD) and repeat estimation in the two sub-samples; this allows us examining whether the impact of legal origin differs for small and large firms. Legal origin correlates significantly with control in both sub-samples. The French civil law indicator is significantly positive in both samples. The marginal effect of German civil law dummy is also similar in the two sub-samples, $0.11 - 0.13$. And there are no differences in the share of controlled

[40] A power law (with the exponent close to one) seems to characterize firm size distribution, as reflected on employment, sales, assets, and market capitalization in the United States (e.g., Axtell (2001), Luttmer (2007), and Gabaix and Landier (2008)), Europe (Fujiwara *et al.* 2004), Japan (Okuyama *et al.* 1999), and other countries (Gabaix, 2009).

[41] Since age and size to not correlate with ownership concentration and legal origin, to maximize the sample we report results omitting them from the empirical specification. The results are almost identical if we include them as controls.

(as opposed to widely-held) firms between common law and Scandinavian countries. The regressions reveal an additional (and to the best of our knowledge novel). The negative association between log GDP p.c. and widely-held listed corporations is particularly strong for large firms. The coefficient on log output per capita in the large firm sample is negative and highly significant in the sample of above median size firms. In contrast log GDP p.c. enters with an estimate that is close to zero in the sample of medium-small listed firms. And the coefficient on log GDP p.c. in this sub-sample is statistically insignificant. This novel result echoes the findings of Hsieh and Klenow (2014) that compare the life cycle of plants in Mexico, India, and the United States showing that the key differences in productivity and size across these countries are on large plants at late stages of firm's life cycle.

In columns (6) and (7) we restrict estimation to large in terms of market capitalization firms using the top 10% and the top 5% cutoff, respectively. The French legal origin indicator enters with a significantly positive coefficient that is quite similar to the full-sample estimate. Interestingly the coefficient on log GDP p.c. increases in absolute value (-0.20) implying that the positive relation between economic development and widely-held corporations is particularly strong for very large firms.

In columns (8) and (9) we split the sample using median firm age (23 years) and re-estimate the specification in the sample of "young" and "old" firms. The patterns are similar. The positive marginal effect of the French civil law is present and similar in magnitude in both sub-samples. Likewise economic development is associated with a smaller likelihood that a publicly traded firm will be effectively controlled for both young and old firms.

4.5 Legal Origin and Type of Corporate Control

We also examine whether there are differences across legal families on the type of corporate control, estimating multinomial logit models. In these cross-sectional specifications, the dependent variable is a non-hierarchical categorical score that classifies each firm in our sample either as widely held (with or without a significant block), or controlled by the state, a family/individual (including private firms that we could not trace its ultimate controlling shareholder), a widely-held private firm, and a widely-held public firm. (For an overview of economic choice models see Mc Fadden (2001)).

Table 6 reports the multinomial logit estimates. In columns (1a)-(5a) we report marginal effects of a simple specification that does not include any controls; in columns (2a)-(2e) we control for the log of per capita GDP and also include continental and industry fixed-effects. [We omit the controls for firm size and age that are insignificant correlates of corporate control, so as to maximize the country-firm sample]. First, the likelihood of observing a listed firm with dispersed ownership is considerably lower (by approximately 28%) in French civil-law countries, as compared to common-law countries. Second, this difference is mostly driven by family firms; the likelihood that a firm will be controlled by a family or an individual is approximately 15% higher in French civil-law countries, as compared to common law countries. For comparison the unconditional likelihoods of family control are 46.63% and 23.48% in French

civil law and common-law countries, respectively. There are also differences between French civil-law and British common-law countries in the share of state controlled firms (approximately 4%); this estimate is line with simple mean difference (2.23% and 7.66% are the corresponding likelihoods of state control in French civil-law and British civil-law countries). Third, GDP per capita is robust correlate of corporate control by the state and by families/individuals.

In Appendix Table 5 we examine heterogeneity of the multinomial logit estimates with respect to firm size. First, the difference in the share of widely-held firms between French civil-law and common-law countries is considerable and statistically significant in both samples (-0.27 and -0.25). Second, state ownership is higher in civil-law countries both in the sample of large and medium/small listed firms. Third, family control is higher in French civil-law (and to a lesser extent in Germany civil-law countries), but the differences compared to common-law countries are considerably larger in the sample of small firms. Fourth, economic development is a significant correlate of corporate control *only* in the sample of medium and large listed firms, a novel (to the best of our knowledge) finding that echoes the firm-level evidence from India, China, Mexico and the United States of Hsieh and Klenow (2014). In developed countries the ownership of large firms becomes more dispersed and control by families and the state falls, but this does not apply in the sample of small listed firms.

4.6 Sensitivity Checks

In the Appendix we report various sensitivity checks of the reduced-form relationship between corporate control and legal origin. Appendix Table 6-Panel A reports linear probability model (OLS) estimates, while Panel B gives logit ML estimates. The French civil-law dummy enters with a positive and highly significant estimate that is quite similar to the probit marginal effects (0.25). In the linear specifications the coefficient on the German civil law indicator is also positive and in most specifications statistically significant. The coefficient in column (7) implies that compared to common-law countries, the probability that a firm is going to be controlled (rather than widely held) is 14% higher. Appendix Table 7 reproduces the baseline specifications in 2007. The marginal effect on the French civil-law dummy is around 0.25 and highly significant across all model permutations. Appendix Table 8 reports estimates pooling all observations across all 117 countries across $2004-2012$; this is quite useful, as we maximize the country sample. In these models we also add year constants to account for trends. The coefficient on the French legal-origin indicator is 0.26 in the most restrictive specifications in (6) and (7) and highly significant. The estimate on the German civil-law indicator is also significantly positive (around 0.17) implying considerable effects. Appendix Table 9 we average the control index across firms in each country and then run cross-country regressions using the share of controlled firms in each country as the dependent variable. These models are far from ideal, as the distribution of firm size differs considerably across the world, and hence the country means mask sizable heterogeneity across a relevant dimension. The coefficients on the French and German civil-law countries are positive and significant in most specifications.

5 Legal Origin and Ownership Concentration

5.1 Baseline Estimates

The literature has focused on the role of legal origin on ownership concentration, proxied by the voting/control rights of the one, three, or five largest shareholders. We thus estimated the reduced-form specifications associating ownership concentration with the legal origin. Table 7 reports the baseline results. The unconditional specification in (1) shows that, compared to common-law countries, ownership concentration is significantly higher in civil-law countries. On average the share of the three largest shareholders/families is 25 percentage points higher in countries whose French legal origin countries, as compared to countries with a common-law legal system. Ownership concentration is higher by approximately $6-7$ in German civil-law and the Scandinavian civil-law countries. The legal origin indicators explain 10% of the total variance in ownership concentration. This is far from negligible, as in total country fixed-effects explain 25% of the variability in ownership concentration.[42] So legal origin explains 40% of the variance captured by all country features.

Figures $10a-b$ give a graphical illustration of the differences on ownership concentration between common-law countries and French-civil-law countries using the $C3$ and the $C5$ measures. The Figures overlap the histogram of ownership concentration for common-law ($13,986$ firms in 28) and French civil-law (4516 firms in 33) countries. Ownership concentration in French civil-law countries is titled on the right of the distribution for common law countries. The median value of $C3$ in common law countries is 29.01%, while the median value in French civil law countries is 62.17%. The $25th$ percentile of the distribution of $C3$ in common law countries is 13.84%, while in French civil-law countries 42.98%. The $75th$ percentile of $C3$ in common law countries is 51.96%, while in French civil-law countries is 81.79%.

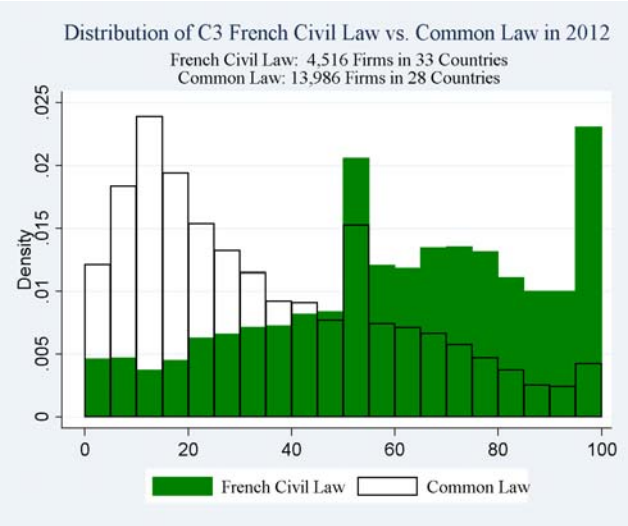


Figure $10a$; **Concentration** $(C3)$ **Index in** 2012

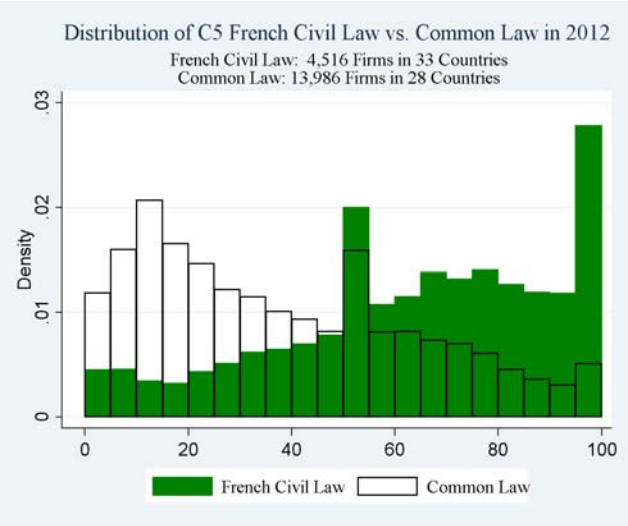


Figure $10b$; **Concentration** $(C5)$ **Index in** 2012

[42] The sizable impact of country-level features in explaining variability in ownership concentartion echoes the findings of Doidge, Karolyi, and Stulz (2007) and Helwege, Pirinsky, and Stulz (2007).

In column (2) we control for the log of per capita GDP in 2012. Ownership concentration is higher in relatively underdeveloped countries. The model fit increases modestly (R^2 moving to 0.12), as the economic significance of GDP is small-to-moderate. As legal origin is not systematically linked to output per capita, the coefficients on the legal origin indicators are not affected much. In columns (3)-(4) we include regional fixed-effects to account for continental differences in ownership concentration, development, and other hard-to-account-for factors. The inclusion of the highly significance regional constants improves the model fit (R^2 increases by 0.05); but the legal origin indicators explain twice as much of the variance of the dependent variable as compared to the regional fixed effects. The coefficients on all three civil-law indicators drop; yet the coefficient on the French civil-law dummy retains significance (at 99% level). The estimate in (4) implies that ownership concentration (as captured by the ownership holdings of the three largest shareholders) is 16% higher in French civil-law countries, as compared to common-law countries (the omitted category) and Scandinavian and German civil-law countries (as the estimates are zero). This effect is far from being negligible, as the firm level mean of the $C3$ index is 0.42 and the standard deviation across firms (countries) is 0.281 (0.147). In column (5) we control for log stock market capitalization and log firm age. This has no impact on the estimates on the legal origin indicators.[43] The coefficient on the French civil-law dummy is stable (0.174) retaining significance at the 99% level. In columns (6)-(7) we add 85 SIC2-code dummies. The industry fixed effects are highly significant and improve the model fit (R^2 increases to $0.18 - 0.20$).[44] The coefficient on the French civil-law dummy retains its economic and statistical significance. The estimate implies that -conditional on highly relevant regional features and industry unobserved characteristics and conditional on the level of development, firm age and size- shareholders of firms in French civil law countries have on average 15% more equity as compared to shareholders in common law countries.

Examples A couple of examples illustrate the regression estimates. The average value of the $C3$ index for the 14 publicly-traded firms incorporated in Ghana, a former British colony that has a common law legal system, is 63.1%, while the mean value of the $C3$ index for the 14 firms incorporated in (adjacent to Ghana) Ivory Coast, a French civil-law country, is 72.9%. [GDP p.c. is similar in the two countries ($1,300 - 1,600$ USD per capita) and so is total market capitalization (around 2 billion USD)]. The value of the $C3$ index in Nigeria and Kenya, two former British colonies with large stock markets in Africa is even lower than in Ghana, 48.4% and 53.8%, respectively, illustrating again the role of legal origin in shaping ownership concentration. In East Asia the mean value of $C3$ in Indonesia that has a French civil-law system (inherited from Dutch and French colonizers) is 63.4%, while mean concentration in Thailand, a country with a common-law system, is considerably lower, 45.2%.

[43] The lack of a systematic association between firm age and ownership concentration echoes the results of Foley and Greenwood (2010) and Franks, Mayer, Volpin, and Wagner (2011), who show that ownership concentration gets dispersed after the IPO only in countries with liquid capital markets and strong investor protection.

[44] The highest coefficient of the 82 industry constants are for the coal mining, auto repair, and water sectors; the smallest coefficients are on the trucking, eating and drinking, and instruments sectors.

5.2 Heterogeneous Effects

Table 8 reports specifications examining heterogeneity. In columns, (1), (2) and (3) we drop firms at the top 1%, 5% and 10%, respectively. Across all permutations, the French legal origin indicator continues to enter with a stable (around 0.15) and statistically significant coefficient. This reassures that the link between corporate ownership concentration and legal origin is not driven by very large firms. In (4) and (5) we examine whether the impact of legal origin differs for small and large firms. Legal origin correlates significantly with ownership concentration in both samples. The regressions reveal also an additional interesting result that regards the correlation of economic development and ownership concentration. The negative association between log GDP p.c. and ownership concentration is particularly strong for large firms. The coefficient on log output per capita in the large firm sample is negative and significant, implying a considerable economic effect; a doubling in GDP p.c. is related to fall in ownership concentration of $4\% - 5\%$ percentage points. In contrast log GDP p.c. enters with an estimate that is close to zero in the sample of medium-small listed firms. And the coefficient on log GDP p.c. in this sub-sample is statistically insignificant. In columns (6) and (7) we restrict estimation to large in terms of market capitalization firms. While the country-sample drops, the fit of the model continues to be decent. The French legal origin indicator enters with a significantly positive coefficient (0.15). The coefficient on log GDP p.c. increases in absolute value (-0.06) implying that the positive relation between economic development and ownership dispersion is particularly strong for large (and very large) firms. In columns (8) and (9) we split the sample using median firm age and re-estimate the specification in the sample of "young" and "old" firms. The patterns are similar.

5.3 Sensitivity Checks

As in the specifications with corporate control, we perturbed the empirical specifications across various dimensions to examine the stability of the estimates on the average impact of legal origin on ownership concentration. Below we discuss the key sensitivity checks that we report in the Appendix. In Appendix Table 10 we examine the link between legal origin and ownership concentration using data before the global financial crisis of $2008 - 2009$. (the ordering of the specifications follows the structure of table 8). The French civil-law origin indicator enters with a significant estimate that is quite similar to the baseline model (0.15 when we control for log GDP p.c. and other features). The association is quite similar across large and small market capitalization firms. In Appendix Table 11 we maximize the country sample, pooling all firms across all 117 countries across all years ($2004 - 2012$). The coefficient on the French legal-origin indicators is 0.15 and statistically significant at standard confidence levels. In Appendix Table 12 we average the concentration index across firms in each country and then run cross-country regressions using country means. The coefficient on the French civil-law dummy is $0.10 - 0.15$ and more than two standard errors larger than zero across all specifications. In Appendix Table 13 we report least-absolute-deviation (median) regression estimates so as to account for outliers. The median estimate on the French civil-law

dummy is quite similar -and if anything slightly larger- to the LS coefficient (0.18). This applies to both the 2012 and the 2007 sample. In Appendix Table 14 we show that the association between legal origin and ownership concentration is present when one proxies the latter with the equity holdings of the single largest shareholder ($C1$) and when one sums the share holdings of the five largest shareholders ($C5$).

6 A Primer on Mechanisms

The strong association between corporate control by families/individuals and the state (and ownership concentration) and legal origin begets an explanation on the mechanisms. The law and finance literature (La Porta *et al.* (1997, 1998); Djankov, Hart, Mc Liesh and Shleifer (2008)) emphasize the impact of legal origin on corporate ownership structure via the sound protection of minority shareholders against expropriation by company insiders (dominant shareholders and/or managers). However, besides corporate law, legal origin has been linked to many other institutional and regulatory features. Legal formalism and the quality of the judiciary differ considerably across legal families (Djankov *et al.* 2003). There are also non-negligible differences across legal families in regulatory features of product and entry markets (Djankov *et al.* 2002) and labour markets (Botero *et al.* 2004). As summarized by La Porta, Lopez-de-Silanes, and Shleifer (2006), in its "strong form" common law promotes dispute resolution with light state involvement and relatively little regulation. In contrast, civil law is "policy implementing, a strategy of social control" over markets, that depends on professional judges, who interpret rather than create law, and a strong government with active involvement in product, labour, and capital markets (see Glaeser and Shleifer (2002) for a theoretical model and a discussion of the emergence of the key differences of the two legal families). In Appendix Table 15 we show that in line with these works legal origin correlates significantly with proxies of investor protection rights, legal quality, entry and labour market regulatory features.[45]

To shed light on the channels, we replace the legal origin indicators with various proxies of investor protection, court efficiency, red tape in entry markets, and labour market regulation. While these models do not identify causal effects, as there are always concerns of omitted variables, reverse causation, and error-in-variables, they allow assessing the strength of the correlation of these features with control, conditional on the level of development, regional and industry features. Tables $9-12$ give the results.

6.1 Investor Protection

We start our "channels" analysis examining the association between corporate control and investor protection, as this has been the key mechanism emphasized by the law and finance literature. Table 9 reports the main results. Panel A gives probit ML marginal effects and Panel B gives ordered probit coefficients; in these models we allow for differences between widely-held corporations without and with large equity blocks. In all specifications we include industry fixed-effects and regional constants to account for differ-

[45] Appendix Table 1 Panel C reports the values of all country characteristics. Appendix Table 4 Panel C gives the correlation structure across countries.

ences on corporate control across sectors and the large continental differences on ownership concentration. Besides reporting specifications in the core (2012 and the 2007) samples, the table also gives estimates in the pooled sample ($2004 - 2012$), so as to maximize country coverage.

In columns (1), (4) and (7) we proxy investor protection with a $0 - 6$ shareholder protection index and $0 - 4$ creditor rights index.[46] The measures are retrieved Djankov *et al.* (2008) and Djankov *et al.* (2007), respectively, who expand, correct, and update the original shareholder protection and creditor's rights indicators compiled by La Porta *et al.* (1997, 1998). There is no systematic link between control and creditor's right, a result consistent with earlier works. The estimated marginal effect on the anti-directors rights index is negative in all specifications but statistically insignificant. In countries with stronger minority rights, the likelihood of observing widely-held, as compared to controlled firms is higher; but the effect is not strong. The results are similar when we use ownership concentration as the outcome variable (Appendix Table 16).

In columns (2),(5) and (8) we measure shareholder protection with the Djankov *et al.* (2008) anti-self-dealing index that quantifies the legal rights that minority shareholders have against self-dealing transactions of corporate insiders. Djankov *et al.* (2008) argue that this index is theoretically more appealing and empirically a stronger correlate of various financial market outcomes. This composite index reflects 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 approvals of disinterested shareholders, disclosure requirements by the seller and buyer, and independent reviews by auditors or financial experts. Ex post mechanisms include disclosure of the transaction of insiders in periodic filings (annual reports), access of minority shareholders to evidence, and the easiness to sue and hold liable managers and controlling shareholders for misconduct. Following Djankov e*t al.* (2008) we include in the regression an index of public enforcement of shareholder's protection rights, based on prison time for corporate insiders engaging in self-dealing transactions and fines. The anti-self-dealing index enters with a negative coefficient that is significant in the 2007 and the pooled $2004 - 2012$ samples; the estimate is marginally insignificant in 2012 (p-value 0.11). These results point out that stronger protection of minority shareholders from self-dealing transactions by company insiders is associated with a higher likelihood of widely held listed firms. These results are strengthened when we estimate ordered probit specifications that allow for widely-held corporations with and without large blocks (Panel B). In contrast, the estimated marginal effect on the public enforcement index is statistically insignificant, pointing out that imprisonment and large fines are not related to corporate control.[47]

In columns (3), (6) and (9) we enter separately in the regression the ex-ante and the ex-post anti-self-dealing measures. [The correlation of the two sub-indicators is small, around 0.15]. While there are differences in both components across legal families, the discrepancies are pronounced for the ex-post index

[46] We insert both measures in the specifications, as the correlation of the two measures is far from perfect (0.26).

[47] The non-significance of the public enforcement index is consistent with the evidence in Djankov *et al.* (2008).

that mostly captures the easiness to sue directors and insiders for misconduct (see Appendix Table 15). The mean value of the ex-post anti-self dealing index across French (German) civil-law countries is 0.47 (0.58), while in common law countries the mean value is way higher, 0.89. Across all specifications the ex-post anti-self-dealing index enters with a negative and highly significant coefficient. The marginal effect in the 2012 sample implies that a one standard deviation increase in the protection of minority shareholders against insiders' self-dealing activities is associated with an increased likelihood that the listed firm will be widely-held (as compared to controlled) by 7.5 percentage points, a far from negligible effect. The ordered probit coefficient on the ex-post anti-self-dealing index is also significant across all samples. And the results are similar when we associate ownership concentration with anti-self-dealing (Appendix Table 16).

Heterogeneity We searched for heterogeneity on the association between corporate control and minority shareholder protection. The results (Appendix Table 17) point out that the effect of the ex-post anti-self dealing index is somewhat stronger for larger firms. Across all specifications the coefficient on the ex-post anti-self-dealing is larger in absolute value in the sample of large as compared to small firms. Yet a test of coefficient similarity indicates that the estimated marginal effects at the two sub-samples are not statistically different from each other.

Further Evidence We estimated specifications entering jointly the legal origin indicators and the ex-ante and the ex-post anti-self-dealing.[48] These models are far from ideal, but do shed some light on whether legal origin impacts corporate control solely via investor protection or whether there are other mechanisms. The results (in Appendix Table 18) point out that legal origin affects corporate control (and concentration) through alternative to shareholder protection mechanisms.

6.2 Court System Formalism

Legal origin is related to the efficiency of the court system. Djankov *et al.* (2003, 2007) compiled proxies of legal formalism for a large number of countries, measuring the days it takes to resolve via courts some simple disputes. They showed that there are differences across legal families on courts' formalism, that is linked to financial development. While often firms get around inefficient and slow court jurisdictions, legal quality may be related to corporate control, as in response to a dysfunctional, slow, and formalistic court system shareholders may want to exercise control fearing managerial misconduct.

In Table 10 we examine the role of legal formalism on corporate control, augmenting the specification with the logarithm of days it takes to resolve a simple dispute via the court system (from Djankov *et al.* (2007)). The mean (median) value in common law countries is 288 (250) days, while in French civil law countries plaintiffs need on average (median) 352 (330) days to resolve an almost identical dispute. Columns (1)-(3) report probit marginal effects with the control indicator as the outcome variable; columns (4)-(6)

[48] We cannot use legal origin dummies as instruments for minority shareholder protection, as the legal system that colonial powers established affects current levels of ownership and finance via numerous channels.

report ordered probit coefficients with the trichotomous index of control in the LHS; and columns (7)-(9) give OLS estimates with the $C3$ concentration index as the dependent variable. The coefficient on the legal formalism proxy is small and does not pass the standard significance thresholds. We experiment with alternative measures of court quality and speed (e.g. the log of days to solve a commercial sale dispute from the World Bank Doing Business), finding similar results. The link between corporate control (and ownership concentration) is not much related to legal formalism.

6.3 Product and Entry Market Regulation

Legal origin is related to product market regulations and entry barriers. Glaeser and Shleifer (2002, 2003) provide eloquent historical narratives on the differential rise of the "regulatory" state across legal families, while Djankov *et al.* (2002) uncover sizable differences on entry regulations between common and civil-law countries. Regulations in product markets impeding entry and protecting incumbents may affect corporate structure (Tirole, 1988, 2010). For example firms in oligopolistic markets, protected by new entrants, can finance projects via retained earnings and will not depend much on external sources of financing. Thus they will be much more likely to be controlled by families/individuals. Moreover, state ownership and control may be higher in more "interventionist" in product markets governments.

In Table 11 we examine the link between entry regulation and corporate control using three proxies of entry regulation from Djankov *et al.* (2002), the log number of days and the log number of administrative-bureaucratic procedures needed to start a new business and the cost associated with starting a new business. Panel A gives probit ML marginal effects, while Panel B reports corresponding ordered probit coefficients with the hierarchical measure of firm control as the outcome variable. The coefficient on the log number of days and the cost to start a new business is small and statistically indistinguishable from zero in both the binary and the ordered probit specifications. The pattern is similar when we use ownership concentration as the outcome variable [Appendix Table 19]. There is some link between corporate control and the log number of administrative-bureucratic procedures to start a new business, with the likelihood of widely held corporations being higher in countries with less red tape. Yet the economic effect is not very large; and the correlation turns insignificant when we use ownership concentration in the LHS of the specification [Appendix Table 19]. We also examined whether the conditional correlation between entry regulation and corporate control (and ownership concentration) differs for large and small listed firms, without finding much evidence of heterogeneity [Appendix Table 20].

6.4 Labour Market Regulation

Legal origin is related to labour market legislation and regulations. Botero *et al.* (2004) constructed measures reflecting the regulation of labour markets through employment, collective relations, and social securities laws for 85 countries and showed that alongside former socialist countries, French and Scandinavian civil law countries have considerably higher levels of labour market regulation (see Appendix Table 15

for similar results in our sample). Pagano and Volpin (2005) develop a political economy model with three "players", company insiders (managers or controlling shareholders), minority shareholders, and workers, to examine the link between labour market regulation and corporate control. If there are large private benefits of control, then managers collaborate with employees offering them long-term contracts, perks, and other benefits; in turn they get "effective protection" from hostile takeovers. Labour laws making it hard and expensive to fire workers and regulations promoting unions and collective disputes can sustain corporate control. Labour market regulation could affect corporate structure via other mechanisms, for example by raising the cost of bankruptcy, which in turn lowers external sources of financing (Simintzi, Vig, and Volpin (2014)). And Perotti and von Thadden (2006) emphasize the reverse link, developing a political economy model where concentrated ownership of companies and wealth may lead to protectionist labour market institutions.

In Table 12 we augment the specification with the three measures of Botero *et al.* (2004); (*i*) an "employment laws" index that reflects the existence and cost of alternative to the standard employment contract, the costs of overtime pay, dismissal procedures and cost of firing; (*ii*) a "collective relations" index reflects the statuary protection power of labour unions and the protection of workers via collective disputes; and (*iii*) a "social security" index measuring level and duration of unemployment benefits, sickness and health benefits, and old-age, disability, and death benefits. Legal origin is highly correlated with the employment laws and the collective relations index, while there are no significant differences on the social security index (Appendix Table 15). The probit estimates in columns (1)-(3) point out that there is a strong positive link between the collective relations index and corporate control. In countries where unions are powerful, a large fraction of workers are unionized, and where there are strong collective action resolution mechanisms, listed corporations are much more likely to be controlled by families/individuals or the state. The estimate in the 2012 sample implies that a 0.20 point increase in the collective actions index, that corresponds to the difference in the mean value in common-law (0.287) and civil-law countries (0.498), increases the likelihood that the firm will be controlled (as compared to be widely-held) by 12 percentage points. For comparison the difference in the share of controlled firms between civil-law and common-law countries is 24 percentage points, as 56% and 32.5% of listed firms are "controlled" in civil-law and common-law countries. In contrast there is no systematic association between corporate control and social security legislation and the employment laws index.

Since the link between corporate control and labour regulations is (to the best of our knowledge) novel, we further explored its robustness. Columns (4)-(6) report ordered probit ML coefficients that allow for a finer classification of listed corporations, into widely-held without block (the dependent variable equals 0), widely held with one or more equity blocks (the outcome variable equals 1), and controlled firms (the outcome equals 2). In all three samples, the coefficient on the collective action index is positive and highly significant. Conditioning on continental factors, the level of economic development, widely held corporations are more likely in countries that regulate lightly collective labour disputes and in countries

with low-powered unions, even when looking at firms in the same industries. In columns (7)-(9) we examine the role of labour market regulations on ownership concentration, using as the dependent variable the $C3$ index. The patterns are similar. Labour market regulations, related to the power of unions and the collective resolution of employment disputes, are associated with more concentrated ownership of listed corporations. This pattern applies to both small and large firms. However, the impact of the collective actions index is considerably stronger in the sample of relatively smaller listed firms (Appendix Table 21).

Taking Stock The results in Tables $9-12$ point out that the strong link between corporate control of listed firms (and ownership concentration) and legal origin reflects not only corporate law features protecting minority shareholders (as the law and finance literature has forcefully argued), but also labour market regulations, a result in line with the Pagano and Volpin (2005) model and more recent works stressing interlinks between labour and capital markets. In contrast, the link between corporate control and legal formalism and entry-product market regulation is weak (see also Appendix Table 22). And while the cross-country correlations do not necessarily identify causal relationships, they are conditional on regional and industry fixed-effects as well as the overall level of development (that continues to be a significantly negative correlate of ownership concentration and corporate control).

7 Conclusion

Employing a plethora of original sources, big data techniques, and manual checks we extend and correct the ORBIS database of corporate ownership and have constructed a new dataset depicting corporate control patterns around the world. Our database covers corporate ownership concentration and corporate control across more than $40,000$ listed firms from 127 countries over the period $2004-2012$. Our sample includes very large, big, medium-sized, and small publicly traded firms from all continents and from all income groups. We then apply a game-theoretic algorithm that explicitly accommodates heterogeneity of shareholders' voting power and estimate Shapley-Shubik measures that reflect the power structure of the various shareholders in each firm. Our algorithm also accommodates the complex network structure of corporate ownership with cross-equity holdings, pyramids, and holding companies. The algorithm allows classifying firms as either controlled or widely-held without relying on any ad hoc threshold of voting rights. We also allow for an intermediate category of widely-held firms (without a controlling shareholder) with, however, sizable equity block(s). Our analysis proceeds in three steps.

First, we provide a detailed autopsy of the patterns of corporate ownership concentration and corporate control around the world. Our analysis suggests that family ownership and control are pervasive corporate structures around the world, both 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), national and local governments hold controlling equity blocks in many large firms. We also find that while in many countries the dominant form of listed corporations follows the Berle

and Means (1932) paradigm of dispersed ownership, in most widely-held corporations there are large, in many cases multiple, equity blocks (exceeding 5%).

Second, we examine the link between legal origin and corporate control. The "reduced-form" estimates show that ownership is more concentrated and corporate control by families and the government is more pervasive in French-civil law (and to a lesser-extent) German civil-law countries. Ownership is more dispersed and the share of widely-held firms larger in common-law countries that tend to offer superior protection to investors. These patterns are present both in the sample of very large, big, and medium-small listed firms. We also show that while large equity blocks in widely-held firms are common practice all around the world, they are more pervasive in French civil-law countries. We also find that the (negative) correlation between economic development and corporate control by families, individuals, and the state is present only in the sample of large (and very large) corporations. In contrast the correlation between GDP and ownership concentration is weak and insignificant for small and medium-sized listed firms.

Third, since we examine the mechanisms. Legal origin has shaped various institutional and political features, related to investor protection rights, legal formalism, product and market regulation, that in turn may affect ownership concentration and corporate control (La Porta, Lopez-de-Silanes, and Shleifer (2008)). We thus associate control (and ownership concentration) to proxies of these institutional features. The analysis shows that corporate law provisions protecting minority shareholders from self-dealing activities of managers and dominant shareholders is a significant correlate of corporate structure. However, the reduced-form association between legal origin and corporate control does not only operate via legal rights of shareholders, as differences in labour market regulation play a key role. In line with political economy theories of corporate control modelling the incentives and potential alliances between controlling shareholders (or managers) with workers at the expense of outside minority shareholders (e.g., Pagano and Volpin (2005)) we find that ownership concentration is lower and the likelihood of widely-held firms is lowers in countries with strong employment protection. In contrast there is no link between corporate control and entry regulation and court quality.

We view this paper as a first-step in reassessing some fundamental issues in corporate finance, related to the drivers and consequences of corporate structure. More work is needed in identifying the determinants of corporate control and ownership concentration. Subsequent work could employ the newly-constructed database to examine the long-run impacts on corporate structure of deeply-rooted cultural traits, such as family ties and religion. Another issue that deserves follow-up work is examining the international dimension of corporate control, investigating for example the role of cultural ties on cross-border corporate ownership and control. Another important issue that we leave for future work is the closer examination of the complexity of corporate control structures, related to the use of pyramids and the use of intermediate holding companies that are typically incorporated in off-shore tax heavens. We plan addressing some of these questions in future research.

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Table 1: Summary Statistics. Ownership and Control by Country in 2012

				Ownership Concentration Measures							Number of Listed Firms Controlled by				
	Firms	Market Cap (billion USD)	GDP p.c.	Mean C1	Weighted C1	Mean C3	Weighted C3	Mean C5	Weighted C5	Controlled Firms	State	Families - Individuals	Private Firms (unmatched owners)	Widely-Held Private Firms	Widely-Held Public Firms
Argentina	79	33.3	14436.6	64.7	58.1	69.8	72	70	74.8	73	7	30	18	10	8
Australia	1347	1069.1	67511.8	22.1	28	32.9	49.3	36.8	60.5	282	4	52	146	23	57
Austria	96	93	48348.2	49.2	40.8	63.5	57.7	65.5	59.6	78	7	19	38	7	7
Bahrain	41	16.5	23063.1	29.8	32.7	45.1	48.8	47.1	51.4	22	8	5	4	2	3
Bangladesh	46	12.1	856.7	38.1	44.8	45.6	51.6	47.7	52.7	28	2	4	3	12	7
Belgium	161	305.4	44818	38.6	42.9	52.6	53.9	55.6	57.6	97	9	28	42	10	8
Bosnia-Herz.	83	2.6	4415.9	47.7	72.5	63.4	83.6	67.9	86.6	42	15	5	16	5	1
Botswana	7	3	6935.6	56.7	66.2	65.3	71.8	67.4	73.6	6	0	0	1	3	2
Brazil	276	713	11922.7	47	46.2	60.5	62.4	63.2	65.1	191	25	61	76	10	19
Bulgaria	77	4.3	7198.5	53.1	64.4	64.4	84.4	65.1	85.3	61	6	15	30	1	9
Canada	2019	1418.2	52733.5	25.5	23.4	31.6	30.9	32.2	32.6	513	7	244	154	40	68
Chile	182	272.1	15253.3	44	42.3	58.6	58	63.8	62.7	111	7	16	57	9	22
China	1679	2938.9	6264.6	37.1	47.6	47.6	58.9	50.3	60.9	1189	389	274	488	32	6
Colombia	35	197.2	7885.1	46.7	69.3	56.8	75.3	59.7	77.9	24	5	9	3	0	7
Croatia	174	20.3	13236	45.3	55.5	59.1	80.4	63.6	84.1	98	7	28	37	13	13
Cyprus	68	7.3	28868.3	27.5	37.2	35.1	43.4	36.5	43.6	24	1	14	7	1	1
Czech Republic	21	41.6	19670.4	63.6	60.1	68.1	66.6	68.1	66.6	20	5	3	4	2	6
Ivory Coast	14	2	1281.4	68	67.6	72.9	75.3	72.9	75.3	13	0	1	3	4	5
Denmark	156	176.3	57636.1	32	31.6	44.1	60.3	46.5	65.6	53	1	9	26	9	8
Egypt	87	41.7	3068.2	41.9	52.5	52.6	58.7	55.7	60	50	9	10	20	6	5
Estonia	15	1.8	17132.2	43.8	47.2	63.2	65.7	71.3	74.1	11	0	6	5	0	0
Finland	113	126	47415.6	24.3	26.7	36.8	39.6	42.1	44.8	37	8	10	15	1	3
France	788	1448	40850.4	46.4	39.4	60.2	52.3	63.3	56.9	510	22	226	176	46	40
Germany	722	1152.8	43931.7	45.3	27	56.8	38.9	59.1	42.6	478	25	184	172	46	51
Ghana	14	1.9	1641.8	51.9	51.6	63.1	64.8	66.6	66.9	13	4	1	1	1	6
Greece	229	33.1	22494.4	44.2	34	57.1	49.5	58.6	52.5	171	7	115	28	3	18
Hong Kong	694	1251.6	36707.7	37.9	50	49.2	60.2	51.6	63.3	396	30	142	198	8	18
Hungary	39	19.2	12784.3	38	27.3	61.9	45.2	66.6	55.2	20	3	6	10	0	1
Iceland	19	5.6	44377.4	42.6	61.4	56.9	73.5	60.8	78.2	9	1	2	4	2	0
India	1478	1035.4	1449.7	27.3	45.5	35.7	56.5	38.4	59.9	669	83	301	183	13	89
Indonesia	250	311.5	3700.5	51	55.3	63.4	62.4	65	62.9	190	22	27	102	7	32
Ireland	65	145.4	48391.3	23.3	16	36.3	24.9	41	27.7	14	1	2	9	1	1
Israel	457	109.5	32514.4	39.9	37.5	50.8	51.9	53	54.4	269	3	138	71	12	45

Italy	266	442.8	34854.4	44	37	58.8	47.8	63.1	52.4	180	10	93	59	6	12
Japan	1452	2589.9	46679.3	28	20.8	32.5	27	34.1	30.1	671	21	57	105	30	458
Jordan	119	22.7	4896.7	31.5	31.6	46.1	62.4	51.5	69.7	52	3	24	11	1	13
Kenya	19	8.1	1184.9	44.6	48.5	53.8	53.8	55.6	55.2	14	2	1	1	3	7
Korea	817	857	24454	21	21	24.1	27.7	24.4	30	289	10	141	41	9	88
Kuwait	155	82.3	50896.5	32.1	27.1	43.8	37.3	45.9	38.2	82	18	15	21	8	20
Latvia	27	0.8	14031.8	46	48.2	75.4	87.9	80.3	90.6	18	0	8	9	0	1
Lebanon	6	4.3	9729.3	49.8	43.3	68.7	73.9	74.1	85.2	5	0	4	0	0	1
Lithuania	34	4.5	14333.2	59.2	72.1	73.3	84	78.2	86.3	24	2	7	12	0	3
Luxembourg	44	116.2	106022.8	36.7	44.2	48	52.7	49.9	54.2	26	2	12	6	5	1
Macedonia	8	1.1	4709.5	48.2	50.2	53.2	53.1	53.3	53.2	6	0	0	3	1	2
Malaysia	528	369.5	10507.8	33.3	31.6	46.2	41.8	51	45.1	269	29	80	131	4	26
Malta	17	4.1	21176.3	47.4	65.6	58.3	72	60.2	72.4	14	1	1	5	6	1
Mexico	52	273.2	9721.1	46.8	47.2	52.1	57.8	53.3	59.4	40	0	15	12	6	7
Montenegro	161	1.9	6519.2	53.6	72.6	68.7	86.7	71.3	87.7	114	9	44	53	7	1
Morocco	58	56.9	2860.9	57.8	54.6	84.1	83	88.7	87	40	1	11	19	5	4
Namibia	5	1.1	5681.6	53.4	47	58	54.8	58.9	56.7	4	0	1	0	0	3
Netherlands	133	639.5	49128.1	34.6	35.4	48.2	47.1	54.4	51.1	54	3	13	23	8	7
New Zealand	100	39.4	39573.8	30.5	36.4	43.6	50.2	48.6	56.2	26	5	4	7	4	6
Nigeria	38	30.3	2739.9	43.2	63.1	48.4	65.2	49.2	65.3	26	1	5	7	3	10
Norway	201	224.7	101563.7	32.4	44.7	47.7	55.9	53.1	60.7	75	9	26	29	8	3
Oman	41	17.4	21533.8	28.5	24.4	38.8	34.1	40.9	35.3	26	10	8	5	1	2
Pakistan	102	20.2	1266.4	41.9	46.3	51.8	59.9	53.9	61.9	61	6	9	11	5	30
Papua New Guinea	4	21.9	2151.2	38.5	49.9	41.3	54.8	41.4	55	3	1	0	0	1	1
Peru	129	89.4	6388.8	52.4	50.6	70.4	67.3	73.7	70.2	91	2	33	42	2	13
Philippines	57	122.6	2606.2	47.8	40.6	60.8	55.7	64.2	61	34	3	12	9	1	9
Poland	713	143.7	13036.4	44.7	50.8	62.8	61.1	66.4	63.3	422	21	202	158	10	31
Portugal	54	50.8	20577.4	45.5	40.6	66.7	64.5	73.4	71.5	36	2	21	9	2	2
Qatar	28	87.6	94236.1	32.5	44.8	37.9	46.2	38.9	46.4	18	13	2	2	1	0
Romania	152	14.1	8445.3	59	45.2	72.3	69.1	73.9	72.5	112	13	31	50	4	14
Russia	436	797.9	14078.8	53.1	54.7	70.7	74.3	73.5	78.3	336	115	70	111	23	17
Saudi Arabia	119	342.5	24883.2	28.4	45.4	40.8	58.2	43.3	61	53	14	14	13	6	6
Serbia	106	3.1	5659.4	43.7	56.4	53.3	72.7	55.7	74.3	65	13	14	33	4	2
Singapore	511	419.2	54578.2	30.1	36.9	36.9	47.2	38.7	52.4	247	30	97	87	7	26
Slovakia	41	3.8	17151.4	49.8	58.6	68.2	68.9	71.5	73	26	2	3	15	1	5
Slovenia	54	6.2	22488.7	34.2	28.2	51	45	57.3	51.7	32	14	4	11	2	1
South Africa	206	427.1	7592.2	30.1	30.3	40.8	43.6	44.2	47.2	73	1	13	21	10	28
Spain	182	524	28985.3	39.6	38.9	57.4	52.8	64.7	60	79	7	35	13	10	14
Sri Lanka	74	6.9	2921.7	46	44.1	52.4	50.1	54.5	53.5	54	6	5	11	1	31
Sweden	337	458.7	57134.1	28.7	31.9	37.7	42.5	40.8	46.9	141	4	45	64	12	16
Switzerland	276	1186.6	83295.3	37.9	25.1	49.4	37.5	53.3	41.7	137	18	53	39	15	12
Taiwan	962	512.7	21269.6	12.3	16.8	18.7	23.7	21.6	26.2	143	6	20	37	8	72

Thailand	126	205	5448.8	37	42.4	45.2	51	47	53.5	79	22	22	10	2	23
Tunisia	32	7.5	4197.5	41.4	43.1	55.7	52.7	57.7	53.4	21	3	3	5	4	6
Turkey	296	237.5	10646	50.1	50.7	63.3	73.2	64.5	75.9	222	8	84	83	21	26
Uganda	4	0.7	670.2	67.8	75.7	67.8	75.7	67.8	75.7	4	2	0	0	0	2
Ukraine	102	23	3855.4	55.5	66.8	74.1	82.6	78.8	84.8	74	12	19	40	2	1
United Arab Emirates	94	110.3	41587.5	36.9	48.2	51.6	56.6	55.1	58.5	59	31	18	6	2	2
United Kingdom	1347	2444.4	41050.8	19.5	17.3	31.9	28.4	37.1	34.1	226	9	117	61	16	23
United States	4461	14499	51456.7	21.4	13	30.5	22.1	33.9	27.2	1112	9	584	264	150	105
Venezuela	14	11.1	12339.4	40.5	65.4	47.1	68.9	48.8	69.2	10	5	2	3	0	0
Zambia	12	2	1686.6	48.2	62	51	66	51.1	66.2	9	1	4	0	1	3

Table 1 reports the number of firms, their total market capitalization, real GDP per capita, the simple and the market-value-weighted average of the C1, C3 and C5 ownership concentration measures, the total number of controlled firms and the number of firms in each ownership category (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, Widely Held with at least one blockholder (stake >5%), and widely Held without any blockholder - dispersed) for all 85 countries in the 2012 sample.

Table 2A: Firm-Level Summary Statistics in 2012

	Obs.	mean	st. dev.	min	p5	p25	median	p75	p95	max
C1 (Ownership Concentration Index, Largest Shareholder)	26843	31.46	25.28	0.01	3.2	10	24.11	51	82.72	95
C3 (Ownership Concentration Index, Three Largest Shareholders)	26843	41.73	28.13	0.01	4.53	16.3	39.09	62.85	93.73	100
C5 (Ownership Concentration Index, Five Largest Shareholders)	26843	44.6	28.8	0.01	4.65	18.51	44.1	67.18	95.71	100
Controlled Binary Index	26843	0.44	0.5	0	0	0	0	1	1	1
Mean Ownership Stake of Controlling Block	11719	53.71	20.83	20	23.3	38.2	51	66	96.8	100
Ultimate owner is State/Government	26843	0.05	0.21	0	0	0	0	0	0	1
Ultimate owner is Individual/Family	26843	0.15	0.36	0	0	0	0	0	1	1
Ultimate owner is Private Firm without a matched Owner	26843	0.15	0.35	0	0	0	0	0	1	1
Ultimate owner is Widely Held Private Firm	26843	0.03	0.17	0	0	0	0	0	0	1
Ultimate owner is Widely Held Public Firm	26843	0.07	0.25	0	0	0	0	0	1	1
Widely Held Corporation with at least one blockholder (>5%)	26843	0.47	0.5	0	0	0	0	1	1	1
Widely Held Corporation Without blockholders (dispersed)	26843	0.09	0.29	0	0	0	0	0	1	1
Market Capitalisation (Billion USD)	26843	1.55	8.84	0	0	0.02	0.1	0.57	5.79	546.08
Age of Firm (in years)	21763	34.32	34.1	0	6	13	22	43	107	647

The table reports summary statistics at the firm-level for the main variables employed in the empirical analysis in 2012.

Table 2B: Country-Level Summary Statistics in 2012

	Obs.	mean	st. dev.	min	p5	p25	median	p75	p95	max
Average C1 (Ownership Concentration, Largest Shareholder)	85	41.31	11.5	12.34	22.08	32.37	42.62	48.16	59.19	67.95
Market-Cap Weighted C1 (Ownership Concentration Largest Shareholder)	85	44.59	14.74	12.95	20.78	34.03	44.83	54.63	69.3	75.74
Average C3 (Ownership Concentration, Three Largest Shareholders)	85	53.08	13.07	18.65	31.93	45.12	52.63	63.2	72.89	84.06
Market-Cap Weighted C3 (Ownership Concentration, Three Largest Shareholders)	85	57.14	15.66	22.1	27.67	47.77	56.62	68.86	83.58	87.86
Average C5 (Ownership Concentration, Five Largest Shareholders)	85	56	13.38	21.61	34.11	47.08	55.62	65.49	74.08	88.65
Market-Cap Weighted C5 (Ownership Concentration, Five Largest Shareholders)	85	60.29	15.52	26.22	30.11	52.41	60.02	72.37	86.3	90.59
Average Share of Controlled Firms	85	60.24	18.87	14.86	24.93	48.34	62.77	73.33	92.41	100
Market-Cap Weighted Share of Controlled Firms	85	67.33	22.63	10.41	18.75	56.23	74.84	85.59	96.07	100
Average Share of State Controlled Firms	85	8.43	10.28	0	0	1.55	5.26	9.38	28.57	50
Market-Cap Weighted Share of State Controlled Firms	85	20.96	21.39	0	0	3.28	14.17	29.8	64.72	85.52
Average Share of Family/Individual Controlled Firms	85	16.73	11.52	0	2.08	8.7	15.38	20.59	37.97	66.67
Market-Cap Weighted Share of Family/Individual Controlled Firms	85	15.83	15.24	0	0.26	4.48	10.95	23.45	46.08	62.9
Average Share of Controlled Firms by Unmatched Private Firms	85	18.19	10.85	0	0	9.76	16.67	25.64	37.5	40.8
Market-Cap Weighted Share of Controlled Firms by Unmatched Private Firms	85	9.07	13.15	0	0	1.93	4.1	9.52	32.14	83.87
Average Share of Controlled Firms by Widely-Held Private Firms	85	5.69	7.55	0	0	1.4	3.62	6.37	25	42.86
Market-Cap Weighted Share of Controlled Firms by Widely-Held Private Firms	85	7.37	12	0	0	0.46	2.43	7.91	31.29	68.01
Average Share of Controlled Firms by Widely-Held Public Firms	85	11.21	12.19	0	0.36	3.7	6.9	13.46	36.84	60
Market-Cap Weighted Share of Controlled Firms by Widely-Held Public Firms	85	14.11	16.94	0	0.05	2.92	7.08	17.44	49.61	75.61
Average of Widely Held Corporations with a Block	85	34.39	16.38	0	7.59	23.53	31.58	44.63	66	73.87
Market-Cap Weighted Average of Widely Held Corporations with a Block	85	28.26	20.21	0	1.75	12.63	22.78	41.16	68.4	84.41
Average of Widely Held Corporations without a Block	85	5.34	5.81	0	0	1.31	4.18	8.05	14.44	37.84
Market-Cap Weighted Average of Widely Held Corporations without a Block	85	4.4	6.93	0	0	0.03	1.39	5.73	18.61	36.88
Average Ownership Stake of Controlling Blockholder	85	57.5	7.71	36.9	46.24	52.18	57.64	62.19	70	77

The table reports summary statistics at the country-level for the main variables employed in the empirical analysis in 2012.

Table 2C: Country-Level Summary Statistics - Laws

	Obs.	mean	st. dev.	min	p5	p25	median	p75	p95	max
Employment Laws	65	0.48	0.19	0.15	0.17	0.34	0.47	0.65	0.74	0.83
Colletctive Relations	65	0.45	0.13	0.19	0.21	0.36	0.45	0.54	0.65	0.71
Social Security	65	0.62	0.21	0.11	0.18	0.49	0.70	0.76	0.84	0.87
Time to Start a Business	79	35.89	29.48	3.00	5.00	16.00	29.00	46.00	104.00	143.00
N. Procedures to Start a Business	79	8.68	3.53	2.00	3.00	6.00	9.00	11.00	16.00	17.00
Revised Anti Director Index	64	3.46	1.10	1.00	2.00	3.00	3.50	4.00	5.00	5.00
Anti Self Dealing Index	64	0.46	0.24	0.08	0.16	0.28	0.42	0.63	0.95	1.00
Ex Post Private Self Dealing	64	0.55	0.23	0.08	0.16	0.37	0.53	0.70	0.95	1.00
Ex Ante Private Self Dealing	64	0.37	0.33	0.00	0.00	0.14	0.23	0.59	1.00	1.00
Public Enforcement	64	0.43	0.44	0.00	0.00	0.00	0.50	1.00	1.00	1.00
Protecting Investors	78	55.09	15.88	23.33	30.00	46.67	53.33	63.33	86.67	96.67
Ease Sharheolder Suits	78	5.92	2.17	1.00	2.00	5.00	6.00	7.00	9.00	10.00
Director Liability	78	4.82	2.24	0.00	1.00	3.00	5.00	6.00	9.00	9.00
Disclosure	78	5.78	2.65	0.00	1.00	4.00	6.00	8.00	10.00	10.00
Days to enforce a contract	76	343.20	228.19	27.00	60.00	204.00	325.00	423.00	730.00	1390.00
Days to Solve Commercial Sale Dispute (WB)	71	513.28	180.63	120.00	216.00	395.00	510.00	595.00	880.00	987.00

The table reports summary statistics at the country-level for the labour, product market, protecting investors and enforcement variables employed in the empirical analysis.

Table 3. Corporate Control and Legal Origin
Baseline Cross-Country Probit (ML) Estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
French Legal Origin	0.3287***	0.2916***	0.2947***	0.2564***	0.2951***	0.2370***	0.2430***
	(0.1248)	(0.0961)	(0.1569)	(0.1561)	(0.1789)	(0.1572)	(0.1733)
German Legal Origin	0.1876**	0.1614***	0.1244	0.1350*	0.1215	0.1309*	0.1352*
	(0.2062)	(0.1690)	(0.2391)	(0.2123)	(0.2543)	(0.2004)	(0.2172)
Scandinavian Legal Origin	0.0558	0.1126***	0.0681	0.0804	0.0745	0.0714	0.0848
	(0.1211)	(0.1028)	(0.2364)	(0.2393)	(0.2481)	(0.2423)	(0.2517)
Log Market Capitalization					0.0095		0.0084
					(0.0251)		(0.0282)
Log Age					0.0061		-0.0019
					(0.0410)		(0.0342)
Log GDP Per Capita		-0.0670***		-0.0585***		-0.0521***	-0.0558***
		(0.0421)		(0.0580)		(0.0560)	(0.0582)
Regional Fixed Effects	No	No	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	No	No	No	No	No	Yes	Yes
R-squared	0.05	0.07	0.06	0.07	0.07	0.09	0.09
Observations	26843	26843	26843	26843	21751	26835	21743
Countries	85	85	85	85	85	85	85

The table reports firm-level probit model (maximum-likelihood) estimates (marginal effects). The dependent variable is an indicator that takes on the value of one if a firm is controlled in 2012 (by either an individual/family, a private firm that we could not identify the ultimate controlling family/individual, the government, banks, or institutional investors) and zero when the firm is widely held (with or without a block). The key explanatory variables are legal origin indicator variables that take the value of one for French civil-law, German civil-law, and Scandinavian civil-law countries, respectively, with British-origin common law serving as the omitted category. The specifications in columns (3)-(7) include regional fixed effects (constants not reported). The specifications in columns (6) and (7) include industry fixed effects, using SIC-2 sectoral classifications (85 sectors, constants not reported). The Data Appendix gives detailed variable definitions and sources. Heteroscedasticity adjusted and clustered at the country-level standard errors are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 4. Corporate Control and Legal Origin
Baseline Cross-Country Ordered Probit (ML) Estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
French Legal Origin	0.8174***	0.7509***	0.7068***	0.6392***	0.7075***	0.6120***	0.6232***
	(0.1131)	(0.0926)	(0.1474)	(0.1506)	(0.1700)	(0.1484)	(0.1632)
German Legal Origin	0.3402	0.2897	0.1965	0.2178	0.1870	0.2335	0.2419
	(0.2196)	(0.1995)	(0.2391)	(0.2259)	(0.2557)	(0.2077)	(0.2216)
Scandinavian Legal Origin	0.1321	0.2371***	0.1161	0.1428	0.1224	0.1376	0.1578
	(0.0946)	(0.0896)	(0.2107)	(0.2167)	(0.2195)	(0.2119)	(0.2186)
Log Market Capitalization					0.0265		0.0227
					(0.0227)		(0.0242)
Log Age					0.0020		-0.0155
					(0.0388)		(0.0347)
Log GDP Per Capita		-0.1314***		-0.1124**		-0.1008**	-0.1127**
		(0.0446)		(0.0510)		(0.0501)	(0.0516)
cutoff 1	-1.1557***	-2.5127***	-1.2563***	-2.3319***	-1.0635***	-2.2628***	-2.1801***
	(0.0824)	(0.4759)	(0.1087)	(0.4934)	(0.2214)	(0.4968)	(0.5132)
cutoff 2	0.3893***	-0.9563**	0.3019***	-0.7679	0.4718**	-0.6786	-0.6157
	(0.1089)	(0.4570)	(0.1159)	(0.4986)	(0.1863)	(0.4957)	(0.5238)
Regional Fixed Effects	No	No	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	No	No	No	No	No	Yes	Yes
R-squared	0.03	0.04	0.04	0.04	0.05	0.05	0.06
Observations	26843	26843	26843	26843	21751	26843	21751
Countries	85	85	85	85	85	85	85

The table reports ordered probit (maximum likelihood) coefficients. The dependent variable is an ordered index of corporate control. The trichotomous index takes the value of zero for widely held firms without any shareholder holding a significant block (all shareholders hold less than 5% of firm's voting rights); the index takes the value of one for widely held firms with at least one block shareholder (in excess of 5% and less than 50%), the index equals two for firms with a well-identified controlling shareholder of any type. The key explanatory variables are legal origin indicator variables that take the value of one for French civil-law, German civil-law, and Scandinavian civil-law countries, respectively, with British-origin common law serving as the omitted category. The specifications in columns (3)-(7) include regional fixed effects (constants not reported). The specifications in columns (6) and (7) include industry fixed effects, using SIC-2 sectoral classifications (85 sectors, constants not reported). The Data Appendix gives detailed variable definitions and sources. Heteroscedasticity adjusted and clustered at the country-level standard errors are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 5. Corporate Control and Legal Origin. Heterogeneity

Sample	Excl. Top 1%	Excl. Top 5%	Excl. Top 10%	Small	Large	Only Top 10%	Only Top 5%	Young	Old
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
French Legal Origin	0.2622***	0.2600***	0.2558***	0.2529***	0.2304***	0.2602***	0.3098***	0.2595***	0.2682***
	(0.0650)	(0.0659)	(0.0664)	(0.0751)	(0.0677)	(0.0886)	(0.0801)	(0.0649)	(0.0670)
German Legal Origin	0.1481*	0.1466*	0.1410*	0.1095	0.1351*	0.1642	0.1440	0.1662*	0.1172
	(0.0853)	(0.0854)	(0.0853)	(0.1025)	(0.0774)	(0.1049)	(0.1102)	(0.0887)	(0.0795)
Scandinavian Legal Origin	0.0867	0.0802	0.0695	0.0372	0.1239	0.2641*	0.3486**	0.1279	0.0479
	(0.1007)	(0.1013)	(0.1015)	(0.1028)	(0.1166)	(0.1364)	(0.1525)	(0.0974)	(0.0998)
Log GDP Per Capita	-0.0614***	-0.0575**	-0.0523**	-0.0116	-0.1147***	-0.2013***	-0.2066***	-0.0592**	-0.0555***
	(0.0228)	(0.0224)	(0.0220)	(0.0168)	(0.0248)	(0.0411)	(0.0424)	(0.0300)	(0.0162)
Firm-level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21526	20654	19566	10859	10876	2154	1071	11000	10735
Countries	85	85	85	84	85	55	62	83	84

The table reports firm-level probit model (maximum likelihood) estimates (marginal effects). The dependent variable is an indicator that takes on the value of one if a firm is controlled in 2012 (by either an individual/family, a private firm that we could not identify the ultimate controlling family/individual, the government, banks, or institutional investors) and zero when the firm is widely held (with or without a block). The key explanatory variables are legal origin indicator variables that take the value of one for French civil-law, German civil-law, and Scandinavian civil-law countries, respectively, with British-origin common law serving as the omitted category. In all specifications, we control for the logarithm of real GDP p.c. in 2012. In columns (1), (2), and (3) we drop the largest in terms of market capitalization firms, using the top 1%, 5%, and 10% cut-off, respectively. In columns (4) and (5) we focus on small and large firms using as a cut-off the (world-sample) median value of market capitalization. In columns (6) and (7) we restrict estimation to large in terms of market capitalization firms using the top 10% and the top 5% cut-off, respectively. In columns (8) and (9) we focus on relatively young and old firms using the as cut-off the (world-sample) median of firm age (years since incorporation). All specifications include regional fixed effects (constants not reported); industry fixed effects, using SIC-2 sectoral classifications (85 sectors, constants not reported); and firm-level controls for size (log market capitalization) and age (log number of years since firm incorporation). The Data Appendix gives detailed variable definitions and sources. Heteroscedasticity adjusted and clustered at the country-level standard errors are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 6. Types of Control and Legal Origin
Multinomial Logit Estimates (Marginal Effects)

Type of Corporate Control	Model (1)					Model (2)				
	State	Family / Individual	Private Unidentifie	Widely-Held	Widely-Held Public	State	Family / Individual	Private Unidentifie	Widely-Held	Widely-Held Public
	(1a)	(2a)	(3a)	(4a)	(5a)	(2a)	(2b)	(2c)	(2d)	(2e)
French Legal Origin	0.0543**	0.0956***	0.136***	0.0255***	0.0301***	0.0248	0.0352	0.141***	0.0147**	0.0616***
	(0.0231)	(0.0276)	(0.0250)	(0.00623)	(0.0117)	(0.0162)	(0.0355)	(0.0327)	(0.00699)	(0.0222)
German Legal Origin	0.0537	0.0103	0.0725	0.00188	0.0568	0.0353	-0.0000248	0.0562	0.00841	0.0370
	(0.0402)	(0.0349)	(0.0448)	(0.00672)	(0.0485)	(0.0225)	(0.0373)	(0.0476)	(0.00788)	(0.0272)
Scandinavian Legal Origin	0.00554	-0.0228	0.0665***	0.0151**	-0.00865	0.0364	-0.0551	0.104**	0.0106	0.0149
	(0.0139)	(0.0208)	(0.0222)	(0.00711)	(0.0116)	(0.0299)	(0.0362)	(0.0447)	(0.00987)	(0.0206)
Log GDP Per Capita						-0.0255***	-0.0269**	-0.0186	-0.00196	0.0105
						(0.00829)	(0.0112)	(0.0161)	(0.00351)	(0.0119)
Firm-level Controls	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Regional Fixed-Effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes

The table reports firm-level multinomial logit model (maximum likelihood) estimates (marginal effects). The dependent variable is a categorical variable that identifies (i) widely-held firms without a dominant controlling shareholder; (ii) controlled by the state firms; (iii) controlled by families or individuals firms; (iv) controlled firms by privately held firms with a disperse wonership base; and (v) controlled firms by listed widely-held corporations. The key explanatory variables are legal origin indicator variables that take the value of one for French civil-law, German civil-law, and Scandinavian civil-law countries, respectively, with British-origin common law serving as the omitted category. In all specifications, we control for the logarithm of real GDP p.c. in 2012. All specifications include regional fixed effects (constants not reported). The Data Appendix gives detailed variable definitions and sources. Heteroscedasticity adjusted and clustered at the country-level standard errors are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 7. Ownership Concentration and Legal Origin
Baseline Cross-Country Estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
French Legal Origin	0.2534***	0.2373***	0.1771***	0.1591***	0.1743***	0.1497***	0.1523***
	(0.0245)	(0.0249)	(0.0363)	(0.0377)	(0.0409)	(0.0368)	(0.0396)
German Legal Origin	0.0734	0.0616	0.0181	0.0226	0.0120	0.0242	0.0212
	(0.0536)	(0.0514)	(0.0505)	(0.0478)	(0.0524)	(0.0455)	(0.0475)
Scandinavian Legal Origin	0.0644**	0.0890***	0.0083	0.0143	0.0076	0.0131	0.0161
	(0.0305)	(0.0317)	(0.0560)	(0.0584)	(0.0604)	(0.0544)	(0.0583)
Log Market Capitalization					0.0073		0.0074
					(0.0049)		(0.0048)
Log Age					-0.0003		-0.0037
					(0.0091)		(0.0080)
Log GDP Per Capita		-0.0302**		-0.0287**		-0.0251*	-0.0239*
		(0.0143)		(0.0145)		(0.0142)	(0.0137)
Regional Fixed-Effects	No	No	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	No	No	No	No	No	Yes	Yes
R-squared	0.1	0.12	0.15	0.16	0.17	0.18	0.2
Observations	26843	26843	26843	26843	21751	26843	21751
Countries	85	85	85	85	85	85	85

The table reports firm-level OLS estimates. The dependent variable is the C3 index of ownership concentration in 2012. The C3 index reflects the equity stake (voting rights) held by the 3 largest shareholders (while 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 one for French civil-law, German civil-law, and Scandinavian civil-law countries, respectively, with British-origin common law serving as the omitted category. The specifications in columns (3)-(7) include regional fixed effects (constants not reported). The specifications in columns (6) and (7) include industry fixed effects, using SIC-2 sectoral classifications (85 sectors, constants not reported). The Data Appendix gives detailed variable definitions and sources. Heteroscedasticity adjusted and clustered at the country-level standard errors are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 8. Ownership Concentration and Legal Origin
Heterogeneity w.r.t. Firm Size and Age

Sample	Excl. Top 1%	Excl. Top 5%	Excl. Top 10%	Small	Large	Only Top 10%	Only Top 5%	Young	Old
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
French Legal Origin	0.1499***	0.1493***	0.1490***	0.1541***	0.1293***	0.1190***	0.1525***	0.1447***	0.1549***
	(0.0399)	(0.0404)	(0.0409)	(0.0453)	(0.0396)	(0.0410)	(0.0425)	(0.0388)	(0.0405)
German Legal Origin	0.0201	0.0198	0.0177	0.0251	-0.0156	-0.0083	-0.0334	0.0390	-0.0101
	(0.0475)	(0.0475)	(0.0468)	(0.0533)	(0.0460)	(0.0589)	(0.0598)	(0.0468)	(0.0491)
Scandinavian Legal Origin	0.0114	0.0094	0.0048	-0.0086	0.0277	0.0627	0.0967	0.0308	-0.0074
	(0.0589)	(0.0597)	(0.0599)	(0.0597)	(0.0661)	(0.0701)	(0.0587)	(0.0520)	(0.0613)
Log GDP Per Capita	-0.0234*	-0.0223	-0.0203	-0.0052	-0.0422**	-0.0605***	-0.0556**	-0.0226	-0.0193
	(0.0137)	(0.0135)	(0.0129)	(0.0096)	(0.0162)	(0.0225)	(0.0239)	(0.0156)	(0.0127)
Firm-level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.20	0.20	0.20	0.24	0.19	0.27	0.33	0.22	0.21
Observations	21534	20663	19575	10870	10881	2176	1088	11006	10745
Countries	85	85	85	84	85	55	62	83	84

The table reports firm-level OLS estimates. The dependent variable is the C3 index of ownership concentration in 2012. The C3 index reflects the equity stake (voting rights) held by the 3 largest shareholders (while 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 one for French civil-law, German civil-law, and Scandinavian civil-law countries, respectively, with British-origin common law serving as the omitted category. In all specifications, we control for the logarithm of real GDP p.c. in 2012. In columns (1), (2), and (3) we drop the largest in terms of market capitalization firms, using the top 1%, 5%, and 10% cut-off, respectively. In columns (4) and (5) we focus on small and large firms using as a cut-off the (world-sample) median value of market capitalization. In columns (6) and (7) we restrict estimation to large in terms of market capitalization firms using the top 10% and the top 5% cut-off, respectively. In columns (8) and (9) we focus on relatively young and old firms using the as cut-off the (world-sample) median of firm age (years since incorporation). All specifications include regional fixed effects (constants not reported); industry fixed effects, using SIC-2 sectoral classifications (85 sectors, constants not reported); and firm-level controls for size (log market capitalization) and age (log number of years since firm incorporation). The Data Appendix gives detailed variable definitions and sources. Heteroscedasticity adjusted and clustered at the country-level standard errors are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 9. Corporate Control and Protecting Investors
Panel A: Cross-Country Probit (ML) Estimates

Sample	2012			2007			2004-2012		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Revised Anti Director Index	-0.0326			-0.0123			-0.0229		
	(0.0212)			(0.0291)			(0.0263)		
Creditors Rights	-0.0220			-0.0366			-0.0272		
	(0.0409)			(0.0413)			(0.0427)		
Anti Self Dealing Index		-0.1778			-0.2946**			-0.2693**	
		(0.1610)			(0.1196)			(0.1268)	
Public Enforcement		0.0401			0.0848			0.0735	
		(0.0492)			(0.0524)			(0.0506)	
Ex Ante Private Self Dealing			0.0082			-0.1315			-0.0842
			(0.0993)			(0.0932)			(0.0950)
Ex Post Private Self Dealing			-0.3553**			-0.2391			-0.3037**
			(0.1361)			(0.1460)			(0.1465)
Log GDP Per Capita	-0.0577**	-0.0602*	-0.0508*	-0.0531*	-0.0552*	-0.0496	-0.0543*	-0.0559*	-0.0468*
	(0.0271)	(0.0352)	(0.0263)	(0.0297)	(0.0320)	(0.0300)	(0.0285)	(0.0331)	(0.0280)
Time Fixed Effects	No	No	No	No	No	No	Yes	Yes	Yes
Regional Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.07	0.07	0.08	0.06	0.07	0.07	0.06	0.07	0.07
Observations	25688	25751	25751	25383	25460	25460	215941	216581	216581
Countries	62	64	64	59	61	61	67	69	69

Panel B: Ordered Probit (ML) Estimates

Sample	2012			2007			2004-2012		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Revised Anti Director Index	-0.0757			-0.0421			-0.0605		
	(0.0634)			(0.0700)			(0.0686)		
Creditors Rights	-0.0342			-0.0867			-0.0609		
	(0.1133)			(0.0983)			(0.1062)		
Anti Self Dealing Index		-0.3629			-0.7675***			-0.6509**	
		(0.3953)			(0.2784)			(0.2902)	
Public Enforcement		0.1762			0.1609			0.2092*	
		(0.1195)			(0.1290)			(0.1231)	
Ex Ante Private Self Dealing			0.0977			-0.2784			-0.1446
			(0.2463)			(0.2086)			(0.2144)
Ex Post Private Self Dealing			-1.0122***			-0.7496**			-0.9114***
			(0.3237)			(0.3203)			(0.3264)
Log GDP Per Capita	-0.1276*	-0.1318	-0.1068*	-0.1126	-0.1196	-0.0983	-0.1242*	-0.1288	-0.1003
	(0.0677)	(0.0907)	(0.0573)	(0.0700)	(0.0792)	(0.0682)	(0.0676)	(0.0845)	(0.0613)
Time Fixed Effects	No	No	No	No	No	No	Yes	Yes	Yes
Regional Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.05	0.05	0.05	0.04	0.05	0.05	0.05	0.05	0.05
Observations	25696	25759	25759	25390	25467	25467	215970	216610	216610
Countries	62	64	64	59	61	61	67	69	69

The table reports in Panel A firm-level probit model (maximum-likelihood) estimates (marginal effects) and in Panel B ordered probit (maximum likelihood) coefficients. In Panel A the dependent variable is an indicator that takes on the value of one if a firm is controlled (by either an individual/family, a private firm that we could not identify the ultimate controlling family/individual, the government, banks, or institutional investors) and zero when the firm is widely held (with or without a block). In Panel B the dependent variable is an ordered index of corporate control. The trichotomous index takes the value of zero for widely held firms without any shareholder holding a significant block (all shareholders hold less than 5% of firm's voting rights); the index takes the value of one for widely held firms with at least one block shareholder (in excess of 5% and less than 50%), the index equals two for firms with a well-identified controlling shareholder of any type.. In both panels the results are reported in 2012 (columns (1)-(3)), in 2007 (columns (4)-(6)) and in 2004-2012 (in columns (7)-(9)). The key explanatory variables are various measures of investor protection..The specifications in columns (7)-(9) include time effects (constants not reported). All the specifications include regional fixed effects (constants not reported) and industry fixed effects, using SIC-2 sectoral classifications (85 sectors, constants not reported). The Data Appendix gives detailed variable definitions and sources. Heteroscedasticity adjusted and clustered at the country-level standard errors are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 10. Corporate Control / Ownership Concentration and Court system formalism

Sample	Control			Ordered Index of Control			C3		
	2012	2007	2004-2012	2012	2007	2004-2012	2012	2007	2004-2012
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Log of days to enforce a contract	-0.0423	-0.0975	-0.0882	-0.0955	-0.2447*	-0.2147*	-0.0079	-0.0477	-0.0372
	(0.0439)	(0.0601)	(0.0536)	(0.1145)	(0.1452)	(0.1289)	(0.0283)	(0.0291)	(0.0287)
Log GDP Per Capita	-0.0822**	-0.1014***	-0.0961***	-0.1764**	-0.2352***	-0.2236***	-0.0409*	-0.0448**	-0.0477**
	(0.0338)	(0.0352)	(0.0338)	(0.0864)	(0.0902)	(0.0861)	(0.0220)	(0.0224)	(0.0203)
Time Fixed Effects	No	No	Yes	No	No	Yes	No	No	Yes
Regional Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.07	0.06	0.06	0.04	0.05	0.05	0.15	0.13	0.14
Observations	26336	25729	220046	26344	25737	220072	26344	25737	220072
Countries	76	67	94	76	67	94	76	67	94

The table reports firm-level probit model (maximum-likelihood) estimates (marginal effects) for control, ordered probit coefficients for the ordered index of control, and OLS estimates for C3. The three dependent variables are: (i) columns (1)-(3): control - an indicator that takes on the value of one if a firm is controlled (by either an individual/family, a private firm that we could not identify the ultimate controlling family/individual, the government, banks, or institutional investors) and zero when the firm is widely held (with or without a block); (ii) columns (4)-(6): An ordered index of corporate control. The trichotomous index takes the value of zero for widely held firms without any shareholder holding a significant block (all shareholders hold less than 5% of firm's voting rights); the index takes the value of one for widely held firms with at least one block shareholder (in excess of 5% and less than 50%), the index equals two for firms with a well-identified controlling shareholder of any type; (iii) columns (7)-(9) The C3 index of ownership concentration in which reflects the equity stake (voting rights) held by the 3 largest shareholders. For each dependent variable the results are reported in 2012 (columns (1),(4),(7)), in 2007 (columns (2),(5),(8)) and in 2004-2012 (in columns (3),(6),(9)). The key explanatory variables are various measures of Court system formalism..The specifications in columns (3),(6), and (9) include time effects (constants not reported). All the specifications include regional fixed effects (constants not reported) and industry fixed effects, using SIC-2 sectoral classifications (85 sectors, constants not reported). The Data Appendix gives detailed variable definitions and sources. Heteroscedasticity adjusted and clustered at the country-level standard errors are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 11. Corporate Control and Product and Entry Market Regulation
Panel A: Cross-Country Probit (ML) Estimates

Sample	2012			2007			2004-2012		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Time to Start a Business (Log Days)	0.0345			0.0282			0.0327		
	(0.0374)			(0.0485)			(0.0460)		
N. Procedures to Start a Business (Log)		0.1249**			0.1178**			0.1320***	
		(0.0522)			(0.0506)			(0.0482)	
Cost to Start a Business (% of income pc)			0.0003			0.0014			0.0008
			(0.0017)			(0.0020)			(0.0017)
Log GDP Per Capita	-0.0479	-0.0478*	-0.0639*	-0.0476	-0.0432	-0.0512	-0.0454	-0.0426*	-0.0548
	(0.0383)	(0.0267)	(0.0380)	(0.0415)	(0.0260)	(0.0376)	(0.0390)	(0.0247)	(0.0360)
Time Fixed Effects	No	No	No	No	No	No	Yes	Yes	Yes
Regional Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06
Observations	26476	26476	26476	25787	25787	25787	220957	220957	220957
Countries	79	79	79	69	69	69	106	106	106

Table 11. Corporate Control and Product and Entry Market Regulation
Panel B: Cross-Country Ordered Probit (ML) Estimates

Sample	2012			2007			2004-2012		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Time to Start a Business (Log Days)	0.0418			0.0418			0.0455		
	(0.1166)			(0.1086)			(0.1106)		
N. Procedures to Start a Business (Log)		0.2334			0.2528**			0.2660**	
		(0.1435)			(0.1220)			(0.1195)	
Cost to Start a Business (% of income pc)			0.0025			0.0044			0.0029
			(0.0046)			(0.0052)			(0.0045)
Log GDP Per Capita	-0.1166	-0.1041	-0.1177	-0.1146	-0.0942	-0.0999	-0.1159	-0.0992	-0.1151
	(0.1082)	(0.0723)	(0.0949)	(0.0998)	(0.0662)	(0.0929)	(0.0983)	(0.0650)	(0.0904)
Time Fixed Effects	No	No	No	No	No	No	Yes	Yes	Yes
Regional Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Observations	26484	26484	26484	25795	25795	25795	220983	220983	220983
Countries	79	79	79	69	69	69	106	106	106

The table reports in Panel A firm-level probit model (maximum-likelihood) estimates (marginal effects) and in Panel B ordered probit (maximum likelihood) coefficients. In Panel A the dependent variable is an indicator that takes on the value of one if a firm is controlled (by either an individual/family, a private firm that we could not identify the ultimate controlling family/individual, the government, banks, or institutional investors) and zero when the firm is widely held (with or without a block). In Panel B the dependent variable is an ordered index of corporate control. The trichotomous index takes the value of zero for widely held firms without any shareholder holding a significant block (all shareholders hold less than 5% of firm's voting rights); the index takes the value of one for widely held firms with at least one block shareholder (in excess of 5% and less than 50%), the index equals two for firms with a well-identified controlling shareholder of any type.. In both panels the results are reported in 2012 (columns (1)-(3)), in 2007 (columns (4)-(6)) and in 2004-2012 (in columns (7)-(9)). The key explanatory variables are various measures of product and entry market regulation. The specifications in columns (7)-(9) include time effects (constants not reported). All the specifications include regional fixed effects (constants not reported) and industry fixed effects, using SIC-2 sectoral classifications (85 sectors, constants not reported). The Data Appendix gives detailed variable definitions and sources. Heteroscedasticity adjusted and clustered at the country-level standard errors are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 12. Corporate Control / Ownership Concentration and Labour Market Regulation

Sample	Control			Ordered Index of Control			C3		
	2012	2007	2004-2012	2012	2007	2004-2012	2012	2007	2004-2012
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Employment Laws	0.0574	-0.0676	-0.0230	0.0649	-0.0436	0.0883	0.0905	0.0415	0.0883
	(0.1703)	(0.1471)	(0.1630)	(0.4897)	(0.3692)	(0.4273)	(0.1226)	(0.1165)	(0.1163)
Colletctive Relations	0.5476***	0.7837***	0.7113***	1.4252***	1.8813***	1.6602***	0.2676**	0.3360***	0.2974***
	(0.1728)	(0.1406)	(0.1525)	(0.5275)	(0.3809)	(0.4377)	(0.1250)	(0.1029)	(0.1070)
Social Security	0.0586	0.0067	0.0487	0.1686	0.1690	0.2287	0.0086	0.0231	0.0452
	(0.2477)	(0.1885)	(0.2169)	(0.6722)	(0.4194)	(0.5265)	(0.1409)	(0.0879)	(0.1029)
Log GDP Per Capita	-0.0763*	-0.0808**	-0.0809**	-0.1791	-0.1926**	-0.1917*	-0.0373	-0.0296	-0.0370*
	(0.0432)	(0.0385)	(0.0394)	(0.1109)	(0.0950)	(0.1003)	(0.0246)	(0.0204)	(0.0209)
Time Fixed Effects	No	No	Yes	No	No	Yes	No	No	Yes
Regional Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.08	0.09	0.09	0.05	0.07	0.06	0.17	0.16	0.16
Observations	25760	25411	216489	25768	25418	216518	25768	25418	216518
Countries	65	61	77	65	61	77	65	61	77

The table reports firm-level probit model (maximum-likelihood) estimates (marginal effects) for control, ordered probit coefficients for the ordered index of control, and OLS estimates for C3. The three dependent variables are: (i) columns (1)-(3): control - an indicator that takes on the value of one if a firm is controlled (by either an individual/family, a private firm that we could not identify the ultimate controlling family/individual, the government, banks, or institutional investors) and zero when the firm is widely held (with or without a block); (ii) columns (4)-(6): An ordered index of corporate control. The trichotomous index takes the value of zero for widely held firms without any shareholder holding a significant block (all shareholders hold less than 5% of firm's voting rights); the index takes the value of one for widely held firms with at least one block shareholder (in excess of 5% and less than 50%), the index equals two for firms with a well-identified controlling shareholder of any type; (iii) columns (7)-(9) The C3 index of ownership concentration in which reflects the equity stake (voting rights) held by the 3 largest shareholders. For each dependent variable the results are reported in 2012 (columns (1),(4),(7)), in 2007 (columns (2),(5),(8)) and in 2004-2012 (in columns (3),(6),(9)). The key explanatory variables are various measures of labour market regulation..The specifications in columns (3),(6), and (9) include time effects (constants not reported). All the specifications include regional fixed effects (constants not reported) and industry fixed effects, using SIC-2 sectoral classifications (85 sectors, constants not reported). The Data Appendix gives detailed variable definitions and sources. Heteroscedasticity adjusted and clustered at the country-level standard errors are reported in parentheses below the estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.