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Common Ownership Around the World

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October 2026

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Abstract

We study common ownership in 49 countries from 2005 to 2023, covering economies that account for 86% of global GDP. Common ownership is pervasive and rising around the world: average pairwise implied profit weights (κ) more than doubled in the median country over our sample period and more than tripled in the United States. Common ownership exhibits a steep size gradient - highest among the largest firms and rising fastest at the top of the firm size distribution - a pattern we observe consistently across all countries and regions. We show that the rise of common ownership stems not just from more institutional investment but from its increasing concentration among a few megaproviders of capital such as the Big Three (BlackRock, Vanguard, State Street). Even outside the United States, where non-Big Three investors remain important, the Big Three account for the largest share of the increase in common ownership in most countries. We also investigate how common ownership is related to legal, institutional, and market characteristics such as investor protection laws, competition laws, mandatory ESG disclosure, and labor market frictions across firms and countries. Our results are generally robust to replacing the one-share-one-vote assumption with control rights measured from dual-class share structures and ownership chains.

Keywords: common ownership, concentration, institutional investors, global capital markets

JEL Classification: G32, L40, K21, F65

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October 19, 2026

Abstract

We study common ownership in 49 countries from 2005 to 2023, covering economies that account for 86% of global GDP. Common ownership is pervasive and rising around the world: average pairwise implied profit weights (κ) more than doubled in the median country over our sample period and more than tripled in the United States. Common ownership exhibits a steep size gradient—highest among the largest firms and rising fastest at the top of the firm size distribution—a pattern we observe consistently across all countries and regions. We show that the rise of common ownership stems not just from more institutional investment but from its increasing concentration among a few megaproviders of capital such as the Big Three (BlackRock, Vanguard, State Street). Even outside the United States, where non-Big Three investors remain important, the Big Three account for the largest share of the increase in common ownership in most countries. We also investigate how common ownership is related to legal, institutional, and market characteristics such as investor protection laws, competition laws, mandatory ESG disclosure, and labor market frictions across firms and countries. Our results are generally robust to replacing the one-share-one-vote assumption with control rights measured from dual-class share structures and ownership chains.

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1 Introduction

Over the last decade, common ownership—the practice whereby two or more competing firms are partially owned by the same investors—has drawn the attention of legal scholars (e.g., Elhauge (2016) and Posner (2021)) and antitrust authorities (e.g., Phillips (2018) and Vestager (2018)) due to its potentially harmful effects on product market competition first highlighted by academic contributions in economics and finance.[1] Marking a clear policy response to the growing evidence on the potential anticompetitive effects of common ownership, the 2023 U.S. Merger Guidelines explicitly recognize that transactions leading to or involving common ownership may raise competitive concerns and should be evaluated under the same substantive frameworks as full mergers (U.S. Department of Justice and Federal Trade Commission, 2023). However, despite the burgeoning research on and policy responses to common ownership, much of the existing work is primarily focused on the United States and even in the U.S. context little effort has been devoted to describing and understanding the drivers of the rise of common ownership except for the largest firms.[2]

In this paper, we make four principal contributions. First, we systematically document the global rise and prevalence of common ownership to cover a much broader set of publicly listed firms worldwide. Common ownership is a global phenomenon that started in the United States but has spread around the world. However, the U.S. remains an outlier and exhibits by far the highest level of common ownership, between two to four times as high as that observed in the next-highest countries. Second, we show that the rise of common ownership stems not only from increased institutional investment but also from its growing concentration, with the Big Three

[1] During this period, the literature on common ownership has grown in several directions yielding studies about its impact on product market competition, (He and Huang, 2017; Azar, Schmalz and Isabel, 2018), advertising (Lu, Shen, Wang and Zhang, 2021), asset prices (Antón and Polk, 2014), corporate governance (Kang, Luo and Na, 2018; Edmans, Levit and Reilly, 2019; He, Huang and Zhao, 2019; Gilje, Gormley and Levit, 2020; Antón, Ederer, Giné and Schmalz, 2023b), corporate social responsibility (Dai and Qiu, 2021), information disclosure (Park, Sani, Shroff and White, 2019), innovation (López and Vives, 2019; Eldar and Grennan, 2024; Antón, Ederer, Giné and Schmalz, 2025), labor market power (Azar and Vives, 2021a; Azar, Qiu and Sojourner, 2021; Goshen and Levit, 2021), market entry (Newham, Seldeslachts and Banal-Estanol, 2019; Xie and Gerakos, 2020), M&A transactions (Brooks, Chen and Zeng, 2018; Antón, Azar, Giné and Lin, 2022; Antón, Ederer, Giné and Pellegrino, 2023a), and total welfare (Ederer and Pellegrino, 2026) among many others.

[2] See the work of Backus, Conlon and Sinkinson (2021) focusing on S&P 500 firms as well as surveys by Schmalz (2018, 2021) and Ederer and Tecu (2025). An important exception to the U.S.-centric literature are Boot, Seldeslachts and Banal-Estañol (2022) who show that when focusing on S&P Europe 350 firms common ownership has also been increasing in Europe and Becker, Fahlenbrach and Mahdikhani (2025) who document that index-based ownership grew from 3.5% of global market capitalization in 2004 to 16.9% by 2023.

(BlackRock, Vanguard, and State Street) dominating in the United States and non-Big Three institutional investors playing important roles in other countries. Yet, despite the comparatively lesser importance of the Big Three outside the U.S., in most countries the strongest contribution to the rise of common ownership has come from the Big Three. Third, common ownership is highest among the largest firms in each country, with top-tercile firms exhibiting common ownership levels that are roughly three times as high as that of the median firm, a pattern that holds across all countries and time. Fourth, we investigate how common and universal ownership (defined as the widespread holding of diversified and sizable equity stakes by investors across many firms in the entire economy, though not necessarily in the same industry) are related to legal, institutional, and market characteristics such as investor protection laws, competition laws, mandatory ESG disclosure, and labor market frictions across firms and countries.

We first explore the global spread and variation of common ownership. While prior research has largely focused on the United States, our dataset spans 70,349 unique firms from 49 countries between 2005 and 2023, covering economies that account for 86% of global GDP. We find that both universal and common ownership are now global phenomena: in the median country, the average intra-industry implied profit weight (κ) is 0.036, and reaches as high as 0.155 in the United States, nearly twice that of any other country with the exception of Ireland. Common ownership is rising in every major economy, primarily driven by the growing share and concentration of institutional investor holdings. From 2005 to 2019, average pairwise κ more than doubled in the median country, with particularly sharp increases among the largest firms and in developed markets. In the United States, for instance, the average κ more than tripled from 2005 to 2023. Similarly, the Euro Area and Japan experienced substantial increases in κ, especially among top-tercile firms after 2009 and 2014, respectively. Although the U.S. remains a clear outlier, other countries with notably high levels of common ownership include China, South Africa, and Ireland. A second tier, including the United Kingdom, Finland, Sweden, and several Arab and European nations, also exhibits significant, though comparatively lower, levels of common ownership.

Common ownership is consistently highest among the largest firms, a pattern observed across all countries and regions and closely related to the broader rise of megafirms and superstar firms documented in the literature (Autor, Dorn, Katz, Patterson and Van Reenen, 2020; Grullon, Larkin and Michaely, 2019; De Loecker, Eeckhout and Unger, 2020; Covarrubias, Gutiérrez and Philippon, 2020). The data show that universal and common ownership is on average three times

higher for above-median firms than for the full universe of firms, with an even greater gap for the top tercile. At the end of our sample in 2023, the average pairwise κ for top-tercile firms reaches 0.564 in the United States, 0.057 in the Euro Area, 0.121 in Japan, and 0.171 in the United Kingdom. This pattern of higher common ownership among larger firms relative to smaller firms is particularly pronounced in developed capital markets such as the United States, the Euro Area, Japan, and the United Kingdom, where institutional investors hold larger stakes in high-market-cap firms. Whereas the United States and United Kingdom have experienced a steady and long-term increase, other regions and countries have seen more abrupt shifts due to consolidation between asset managers, regulatory changes, or policy responses.

We further investigate the identity of the largest shareholders and their role in shaping the global architecture of common ownership. The increasing prevalence of common ownership is not solely due to the overall rise of institutional investment but also to the growing concentration within institutional investing itself. We show that the rise of common ownership is closely tied to the growing influence of a small set of global institutional investors, particularly the Big Three. In the United States, these asset managers have become the largest shareholder in over 35% of public companies by 2023, up from under 3% in 2005. Their growing dominance is mirrored around the world where the Big Three consistently appear among the largest owners in most developed economies though at substantially lower ownership levels and often complemented by national players. Despite their generally small individual stakes outside the U.S., the Big Three contribute disproportionately to increases in common ownership due to the breadth of their portfolios. This is because common ownership is not exclusively driven by deep control of individual firms but by the widespread and overlapping presence of the same institutional investors across the equity landscape. Even where average stakes remain modest, the extensive spread and portfolio overlap of the Big Three gives rise to a dense network of common ownership.[3]

We further examine how institutional, legal, and market characteristics shape common ownership across countries. Stronger antitrust and competition laws and enforcement are associated with lower common ownership. However, more arduous market entry procedures are associated with

[3]An important and perhaps counterintuitive implication of this growing dominance of large passive investors is that their passivity may paradoxically empower smaller activist investors who step in to fill the resulting governance vacuum (Amel-Zadeh, Kasperk and Schmalz, 2022). Crucially, such activist investors do not merely counterbalance the soft competition encouraged by passive common owners. They may themselves contribute to common ownership when they hold overlapping stakes in competing firms. Goshen and Levit (2024) characterize this dynamic as an "unholy alliance" between common owners and activist hedge funds, whereby hedge fund activism reinforces rather than offsets the anticompetitive incentives generated by common ownership.

higher common ownership, suggesting that regulatory barriers can reinforce investor dominance. In contrast, rigid labor protections correlate with lower common ownership, likely by limiting investor control over workforce decisions. We also explore the impact of investor protection laws and ESG disclosure requirements on common ownership. Stronger investor protections encourage institutional investment and dispersed but overlapping ownership, whereas government-mandated ESG disclosures are linked to lower ownership concentration, potentially due to compliance costs or shifting investment preferences. We also investigate the relationship between political stability and common ownership, revealing that weaker regulatory environments and poor governance quality are associated with higher common ownership, possibly due to lobbying influence or firms consolidating control in response to regulatory uncertainty. Together, these findings demonstrate how legal frameworks and institutional environments shape the prevalence and structure of common ownership worldwide.

Our paper contributes to two important strands of literature. First, we provide a more comprehensive description of common ownership trends and patterns around the globe. Much of the literature has exclusively focused on common ownership among large U.S. firms (Azar, 2012; Gilje et al., 2020; Backus et al., 2021). An important exception to the U.S.-centric literature is Boot et al. (2022) who show that common ownership has also been increasing in Europe among S&P Europe 350 firms, though at substantially lower levels than in the United States. Similarly, though they do not study common ownership directly, Becker et al. (2025) document that index-based ownership grew from 3.5% of global market capitalization in 2004 to 16.9% by 2023, with index funds now owning 10% or more of over 5,300 firms globally—a trend that is central to the rise of common ownership we document. We extend this literature by providing the first systematic global analysis of common ownership across 49 countries and a far broader set of publicly listed firms than prior work. Second, we add to the vast literature at the intersection of law and finance that has explored the driving factors of corporate ownership and control. Seminal work by La Porta, Lopez-de Silanes, Shleifer and Vishny (1998) and La Porta, Lopez-de Silanes and Shleifer (1999) establishes that legal origins shape investor protection and, in turn, the concentration of corporate ownership. More recently, Aminadav and Papaioannou (2020) update this picture using a global sample, showing how corporate control varies across legal systems and stages of financial market development. We complement this literature by focusing on common ownership as a distinct form of dispersed but overlapping institutional ownership and connecting its global variation to the

same legal and institutional characteristics that have been shown to shape corporate ownership structures more broadly.

We directly verify the assumptions about control underlying our profit-weight estimates. For most of the paper, the profit weights we compute rest on the one-share-one-vote assumption and on an estimation panel that excludes multi-class share firms. In Section 7, however, we replace assumed control with control rights measured from ownership filings traced through holding chains and from collected dual-class voting terms for the firms where the two demonstrably diverge. We then measure the selection effect of the multi-class screen by reinstating the excluded U.S. firms with voting rights collected from proxy statements. The headline conclusions survive: the median country's average profit weight moves by less than one percent, the growth patterns are preserved, and the United States has the highest country-average profit weight under the in-panel correction; reinstatement lowers its measured level by about 14%. Even so, the U.S. country-average profit weight remains higher than that of every other country in the sample.

The rest of the paper is organized as follows. Section 2 describes the data and Section 3 contains descriptive results about the geographic spread and the cross-sectional and time series variation of common ownership. Section 4 analyzes the main drivers of common ownership including firm size and ownership structure. Section 5 provides a case study of the rise of common ownership in Japan. Section 6 examines the relationship between common ownership and institutional, legal, and market characteristics, Section 7 verifies our results when control rights are measured rather than assumed, and Section 8 concludes.

2 Data

2.1 Data Sources

To construct measures of universal and common ownership around the world, we use data from the LSEG Global Ownership database. This database identifies shareholdings by 13F institutions, mutual funds, pension funds, insurance funds, and other institutional investors, and it includes both insiders and blockholder positions using multiple sources and methods. For instance, in the US and Canada, data sources include, among others, 13-F filings from the Securities and Exchange Commission (SEC), Schedule 13Ds, Schedule 13Gs, proxy filings, 10Ks, SEC Form N-30D, SEC Forms 3, 4, and 5, the Canadian System for Electronic Disclosure by Insiders (SEDI),

and firm websites. Ownership data for other countries are sourced from the UK Share Register, stock exchanges, official regulatory bodies, third-party data vendors, company websites, news, and annual/interim reports.

Given the multiple and complementary data sources, one of the strengths of the LSEG Global Ownership database is that it provides a more accurate assessment and aggregation of ownership data compared to other sources such as the Capital IQ Platform, in particular when capturing the ownership by individuals or families that are influential owners in non-US firms.[4] Having the right level of aggregation of individual ownership is critical for the calculation of implied profit weights within many European countries and other parts of the world where the ownership structure of corporations tends to be less atomistic and characterized by family ownership (Faccio and Lang, 2002; Villalonga and Amit, 2020).

Our initial database ranges from 2005 to 2023 and includes details on shareholder identities, shareholder types (e.g., individual/family, pension fund, corporation), and the number of shares held by each shareholder, security identification codes, types (e.g., common stock, preferred stock, depositary receipt), and primary industry codes based on the Thomson Reuters Business Classification (TRBC) that follows a market-based rather than a production-process-based approach to allocate firms into industries. Our data also include the number of shares outstanding and the stock price for each security. Thus, we are able to calculate the market capitalization of firms. We restrict our attention to common stocks and exclude securities classified as depositary receipts. While depositary receipts are commonly used in the literature as a proxy for international cross-listing, our approach does not remove cross-listed firms per se. Instead, it eliminates foreign-traded representations of equity (e.g., ADRs/GDRs), thereby avoiding duplicate listings of the same firm and ensuring that ownership is measured consistently at the level of the underlying common equity. Then, we use data on firms' equity structure from Capital IQ to ensure the exclusion of

[4] A few examples from Europe illustrate the advantages of the database we use. For each case we manually searched reports and news and verified that the largest owners reported by the LSEG Global Ownership database for these cases and their ownership stakes are the correct ones. For Christian Dior (France) Capital IQ reports an ownership of 87.95% by the Arnault Family, while the LSEG Global Ownership database reports 97.50%. For Hermes International (France), Capital IQ reports H51 SAS as the largest owner of the firm with an ownership of 54.91%, yet this owner is just a holding firm held exclusively by members of the Hermes Family Group. On the other hand, the LSEG Global Ownership database identifies the Hermes Family as the largest shareholder of Hermes International, with a stake of 66.7%. In the case of BMW (Germany), Capital IQ reports Susanne Klatten as the largest shareholder with a stake of 19.12%. However, LSEG identifies Stefan Norbert Quandt as the largest shareholder with a stake of 25.83%.

multi-class share firms from our sample.[5,6] In Section 7 we also examine this exclusion directly in our sample. The multi-class screen removes 3,620 issuer codes, of which 1,603 are from the U.S., and we measure the effect of reinstating the excluded U.S. firms using voting rights measured from corporate disclosures.[7]

Given the scale of the data, we deal with cases that may have reporting issues or constitute significant outliers in terms of the recorded ownership information in the following way. We follow the same procedure as Schwartz-Ziv and Volkova (2024) and use forward filling when the gap between two reports associated with the same shareholder and firm is not greater than three years, given that some reports, especially in the case of blockholders, do not take place every quarter as 13F reports do. We exclude firm-quarter combinations where a single shareholder owns more than 98.5% of a firm in our data. While cases where a stake greater than 98.5% are likely due to misreporting issues, there are cases outside the US where using a lower threshold would be wrong; for instance, in 2019Q4, the Arnault family owned 97.5% of Christian Dior in France. Hence, we believe that using a threshold of 98.5% ownership share is appropriate as an exclusion criterion. Similar to Backus et al. (2021), we also exclude significant outliers constituted by firm-quarter observations where the ownership ratio, i.e., the ratio between the sum of the number of recorded shares for shareholders and the number of shares outstanding, exceeds 120%.[8] We

[5]The exclusion of multi-class share firms allows us to mitigate the potential impact of missing information regarding shares with special (or no) voting rights on the calculation of firm profit weights, as implied by the common ownership theory (Backus, Conlon and Sinkinson, 2019). For instance, without this exclusion, we would underestimate the influence of Mark Zuckerberg on Meta due to the lack of information on Meta's class B shares. Importantly, we believe that this exclusion does not imply a lack of ability to draw meaningful conclusions about universal or common ownership trends around the world and make other valuable inferences as multi-class share firms constitute a small fraction of companies worldwide. Gompers, Ishii and Metrick (2010) document that only 6% of US publicly-listed firms had dual-class share structures during the 1995-2002 period. Cremers, Lauterbach and Pajuste (2024) show that for a sample of 8,277 US firms that went public during 1980-2019, only 8.4% had a dual-class share structure. Using a worldwide sample that goes from 2001 to 2016, Matos, Kim and Xu (2018) show that the fraction of multi-class firms in the US is about 8% and that this type of firm represents only 5% of the publicly-listed firms across the globe and 10% of world market capitalization.

[6]On the other hand, data on the voting rights associated with different class shares may be incomplete or exhibit some inconsistencies in different ownership databases, including the LSEG Global Ownership database, Capital IQ, or FactSet. Hence, their use would require researchers to make some extra assumptions, hand-collect data from additional sources, or make value imputations to calculate the voting ownership of all declarable stakeholders (e.g., Lewellen and Lewellen (2022)). We address this concern in Section 7 using direct measures of voting rights from underlying corporate disclosures.

[7]Issuer codes identify security-issuing entities in the LSEG ownership data. They may not correspond one-to-one to firms—for instance, the same company can appear under several codes over the sample period. Table 17 and Appendix B describe how the excluded codes are linked to reinstated firms.

[8]See the procedure described on Michael Sinkinson's website: https://sites.google.com/view/msinkinson/research/common-ownership-data

then re-weight the shareholder stakes for a small number of firm-quarter observations where the ownership ratio is greater than 100% so that their stakes add up to 100% (Lewellen (2011)).

In the case of individual funds, ownership data are further aggregated at the level of the fund family. When doing so, we also account for some large M&A transactions in the asset management industry, such as the one between BlackRock and Barclays Global Investors (BGI). These transactions were identified using merger and acquisition data from SDC. We further consolidate the holdings by the Chinese government not just through government institutions but central- or provincial-state-owned enterprises (SOEs), given that China has more SOEs than any other country in the world and much of its participation in the ownership of firms takes place through SOEs. To consolidate holdings by the Chinese government through SOEs, we start by looking in our database shareholder names that matched with the names of approximately 800 large central and provincial SOEs that were hand-collected by Allen, Cai, Gu, Qian, Zhao and Zhu (2024).[9] We then proceed to manually look for the shareholder names in our database that match the names of the wholly owned subsidiaries of these large SOEs. Finally, from the list of Chinese shareholder names in our database that did not have a match with the aforementioned SOEs, we took the 5000 largest shareholders based on the value of their holdings and manually verified their SOE status. In this way, we ensure that we capture much of the ownership of the Chinese government through SOEs. We exclude firm-quarter observations with ownership ratios below 5% to mitigate the impact of poor ownership coverage in calculating implied universal or common ownership profit weights. Finally, we excluded some countries with a low number of firms covered over our sample period from our sample.

Our final sample comprises ownership information for 70,349 unique firms from 49 countries and spans the period from 2005 to 2023 representing 86% of the world's real GDP in 2019 according to data from the Penn World Tables. Figure A1 shows that our sample is very comprehensive in terms of firm coverage, market capitalization, and ownership information. First, Figure A1(A) shows that our sample includes a large number of firms. We start with 22,100 firms in 2005Q1, then it reaches 34,525 in 2009Q4 and increases to 37,367 in 2023Q4. Second, Figure A1(B) shows that the median ownership coverage ratio is high and remains above 58% in almost all the quarters during our sample period. Coverage nonetheless differs across markets, which raises the question of whether cross-country differences in measured common ownership simply track differences in coverage.

[9]We thank Allen et al. (2024) for sharing this list with us.

Figure 8 shows no statistically significant cross-country association between the logarithm of the 2023Q4 country-average pairwise profit weight, $\log \bar{\kappa}$, and the median ownership coverage ratio over 2005Q1–2023Q4.[10]

Finally, Figure A1(C) shows that the market capitalization of the firms included in our sample is sizable, around $USD 28.57 trillion at the beginning of 2005 and reaches $USD 71.38 trillion in the last quarter of 2019.[11] This figure further shows that the market value of the holdings recorded in our data tracks the market capitalization of the sample firms very well. Table A1 in the appendix provides an overall picture of the number of unique firms per country, their ownership ratios, market capitalization, and the holdings value captured by the ownership structure.[12] Importantly, Table A3 shows that when looking at the 500 largest firms around the world in 2023Q4, we find many cases where individuals, families or government institutions are the largest shareholders with very significant stakes. As mentioned before, this is one of the strengths of using this database, as it captures large stakes by non-institutional owners, like Jeff Bezos in Amazon (15.5%) or the Bettencourt Family in L'Oreal (33.3%), which is crucial for accurately measuring common ownership. For ease of exposition, we report only 20 of these cases. The examples in this table support the notion that using only data on 13F institutional investors when calculating common ownership may lead to poor estimates of the extent and intensity of this phenomenon.

2.2 Measuring Universal and Common Ownership

The existing literature proposes multiple measures of common ownership. We build on (Azar, 2017) and Backus et al. (2021) to construct theoretically informed measures of universal and common ownership. The theoretical foundation rests on the common ownership hypothesis, under which a firm f's manager maximizes a weighted sum of profits across all firms, $\phi_f = \pi_f + \sum_g \kappa_{fg}\pi_g$ and $\kappa_{fg} \geq 0$ captures the relative weight firm f places on firm g's profits (Azar, 2017; Backus et al., 2021). A higher κ_{fg} implies greater internalization of rival profits and therefore softer product

[10] Across the 49 countries, the Pearson correlation between full-period median ownership coverage and $\log \bar{\kappa}$ at 2023Q4 is -0.002 ($p = 0.99$), and the Spearman rank correlation is -0.12 ($p = 0.42$).

[11] This amount is approximately 80% of the $USD 89.57 trillion reported by the World Federation of Exchanges as global market capitalization in 2019. See the World Federation of Exchanges' website https://focus.world-exchanges.org/articles/market-capitalisation.

[12] Table A2 shows how we classify investors based on the reported owner type of each shareholder in the Thomson Reuters Global Ownership database.

market competition. The profit weight κ_{fg} is defined as follows:

$$\kappa_{fg} = \frac{\sum_{\forall s} \gamma_{fs}\beta_{gs}}{\sum_{\forall s} \gamma_{fs}\beta_{fs}} \tag{1}$$

κ_{fg} is the weight that firm f places on firm g's profits, as implied by the common ownership hypothesis, β_{fs} and γ_{fs} stand for the cash flow rights and control rights that shareholder s has in firm f, respectively, and β_{gs} denotes the cash flow rights that shareholder s has in firm g. For common ownership, the relevant firm pairs are in the same industry, whereas for universal ownership we consider all firm pairs in a given country or region.

Following the literature on common ownership (Azar, 2017; Backus et al., 2021), we adopt the "one share, one vote" assumption and set control rights proportional to cash flow rights, $\gamma_{fs} = \beta_{fs}$. This is the most widely used approach in the literature and ensures comparability across countries and time periods. All of our results hold when using Banzhaf profit weights ($\kappa_{Banzhaf}$), which replace γ_{fs} with the normalized Banzhaf voting power index (Banzhaf, 1965; Aminadav and Papaioannou, 2020; Azar and Vives, 2021b).[13] While the Banzhaf index addresses concerns about equating control rights with cash flow rights, it nevertheless infers control from reported ownership stakes. In Section 7 we provide an additional robustness check using measured control rights instead, showing that the levels, growth, and cross-country patterns of common ownership remain materially unchanged.

Our study covers three different common ownership measures. First, our universal ownership measure considers all firm pairs within the same country in a given quarter, independently of whether they share the same industry or not. Second, our intra-industry common ownership measure considers only firm pairs within the same country and industry in a given quarter. Third, our inter-industry common ownership measure considers only firm pairs that share the same country but not the same industry in a given quarter.

[13]The Banzhaf index captures how likely a shareholder is to be pivotal relative to other shareholders, and thus proxies for the weight that a firm's manager uses in her assessment of which shareholders' interests should be prioritized. It can be microfounded as the outcome of a shareholder voting model in which managerial candidates maximize their probability of winning the election (Azar, 2017; Brito, Osório, Ribeiro and Vasconcelos, 2018). For these Banzhaf robustness results, we assign a weight of zero to shareholders with ownership stakes below 0.5% to ensure computational tractability. However, this does not mean that we exclude these shareholdings from our sample, but their stakes are simply not used for the computation of the common ownership weights. This tradeoff between tractability and accounting for full distribution of ownership is not a major concern because owners below 0.5% have negligible pivotal voting power (Azar et al., 2018).

3 Descriptive Results

3.1 Geographic Variation

We begin our analysis by documenting the pervasiveness of universal and common ownership around the world for the most recent time period of our sample (2023Q4). The two panels of Figure 1 show a world map and report the average pairwise κ profit weights (measuring universal ownership) and intra-industry κ pairwise profit weights (measuring common ownership) between all firm pairs in a given country.

Specifically, for each pair of firms within a country, we calculate the weight that a firm f places on another firm g's profits (κ_{fg}) under the common ownership hypothesis. We assume that a shareholder's control weight in a firm's objective function is proportional to its ownership share, that is $\gamma = \beta$ ("one share, one vote"). Panel A of Figure 1 depicts the cross-country distribution of universal ownership by showing the arithmetic average of the pairwise implied profit weights κ_{fg} of all firm pairs within a country. In contrast, Panel B of Figure 1 focuses on intra-industry common ownership and reports the arithmetic average of the pairwise implied profit weights for firm pairs in the same country and industry.

Several patterns emerge from Figure 1. First, universal (Panel A) and common ownership (Panel B) are features of public equity markets around the world, with sizable profit weights in several economies. Second, universal and common ownership are strongly positively correlated. The average level of common ownership is generally higher than that of universal ownership, as shown by the darker red-shaded colors in Panel B, though there are some exceptions. Third, there is significant cross-country variation. In particular, universal and common ownership are comparatively high in the United States, the United Kingdom, Ireland, China, and South Africa. Among these countries, the US is a particularly large outlier. Its average pairwise κ for the full sample of firms is equal to 0.1583 (see Table 1), which is twice or even thrice as large as most other countries in the world. Although Ireland (0.1147), China (0.1017), and South Africa (0.0849) also have relatively high values, universal and common ownership are much less pervasive in most other European and Asian economies.

Table 1 provides further information on the spread of universal and common ownership across the globe. It reports average pairwise κ measures by country, grouped by geographical proxim-

ity, and splits them based on their ownership, size, and industry with higher values shaded in darker colors. Several patterns are worth highlighting. First, the United States remains a clear outlier: its average pairwise κ is higher than any other country. Second, within Europe, there is a striking North-South divide. Northern European countries (e.g., Ireland, the Netherlands, and the Nordic economies) exhibit substantially higher levels of universal and common ownership than their Southern European counterparts, such as Italy and Spain. Third, in many emerging markets, such as China, South Africa, and Mexico, common ownership levels are relatively high despite less mature asset management industries, likely reflecting the presence of large conglomerates or state-affiliated investors with cross-firm stakes. The table also reveals that intra-industry common ownership tends to exceed inter-industry ownership in nearly all countries, reinforcing the idea that overlapping ownership is especially concentrated among firms in the same sector.

These geographic patterns underscore the global spread of universal and common ownership and also reveal significant heterogeneity in levels and structure across countries and regions. Some of this variation reflects differences in the maturity and concentration of national asset management industries. In other cases, it may reflect ownership traditions, regulatory environments, or the structure of local capital markets. Although the United States stands out, many other economies already exhibit levels of common ownership that raise similar questions about potential market-wide effects. This geographic variation sets the stage for our subsequent analysis of the institutional and legal determinants of common ownership patterns around the world which we explore in Section 6.

3.2 Broad Time Patterns

While Figure 1 and Table 1 offer snapshots of the global distribution of universal and common ownership at a single point in time (i.e., the final quarter of 2023), understanding how these patterns have evolved over time is equally instructive. The rise of institutional ownership, consolidation among asset managers, and regulatory reforms may have shaped not only the level but also the trajectory of common ownership across countries. To capture these dynamics, we turn to a simple time series analysis that traces the development of universal and common ownership, first at the global aggregate and then by country and firm size.

Figure 2 offers an initial overview of the aggregate global trend, plotting the evolution of universal ownership for the top decile of firms worldwide. Universal ownership among these largest

global firms has doubled between 2005 and 2019. Crucially, this twofold increase of common ownership across the largest firms around the world also holds even after excluding U.S. firms from the sample. Thus, the rise of common ownership reflects a global shift in ownership rather than solely an American development. Yet this twofold increase is, in an important sense, an understatement. Because the global measure pools pairwise κ across all firm pairs in all 49 countries, thereby including pairs of firms from entirely different countries whose shareholders barely overlap, it is substantially diluted relative to within-country calculations where overlapping ownership is far more concentrated. Country by country, the increases are considerably larger.

Figures 3A, 3B, and 3C document the evolution of universal ownership by country and firm size over time using all the firms that appear in any given year of our sample.[14] In almost all major economies universal and common ownership have been on the rise, though the increase has generally been more muted and less steady than in the United States, where average pairwise κ for all firms more than tripled and rose from around 0.05 at the beginning of 2005 to 0.20 by the end of 2023.[15] This increase in universal ownership is more recent and sometimes more abrupt in other countries. For instance, the increase in universal ownership is substantially muted from 2005 to 2009 in the Euro Area for the full sample of firms. However, it received a kickstart in late 2009, particularly for larger firms, with the merger of BlackRock and BGI, and consistently continued thereafter, as shown in the right panel of Figure 3A. Similarly, the evolution of universal ownership in Germany and, to a lesser extent, also in France mirrors that for the Euro Area as shown in the corresponding panels in Figure 3B.

In contrast, in Japan, the rise of universal ownership only began in 2014. This increase is due to the Bank of Japan's quantitative easing policy and, more specifically, its ETF purchasing program, which is based on ETFs tracking the Nikkei 225 index, the TOPIX, and the JPX-Nikkei 400. The program began in 2010, expanded in scale and scope over the following few years, and received

[14] Our results also hold when we use a balanced panel that only uses firms that were present throughout the entire sample period. The overall level of κ is generally about twice as high as that of the full sample, but the overall trends are very similar. The balanced panel ensures that the trends reflect changes in ownership over time and are not influenced by changes in the firm sample from one quarter to another due to firm entries or exits, but the balanced panel does not capture the changing composition of public firms.

[15] The increase is even more dramatic in the balanced panel where κ more than quadrupled and rose from around 0.07 to over 0.3 as can be seen in Figure A2A in the appendix. Figure A2B examines the sensitivity of our main results to the assumed shareholder weighting scheme. In addition to our baseline one-share-one-vote assumption ($\gamma_{fs} = \beta_{fs}$), we consider two alternatives: Banzhaf-index weights, which reflect each shareholder's probability of being pivotal in a corporate vote, and squared cash-flow weights ($\gamma_{fs} \propto \beta_{fs}^2$), which assign greater influence to larger blockholders. For both the United States and the Euro Area, and across both the full firm sample and top-tercile firms, the level and trend in universal ownership are qualitatively similar under all three approaches.

another large boost in September 2016 when the BoJ increased the amount to be invested in ETFs tracking the three indices from 3 trillion yen to 5.7 trillion yen per year. A similar, though not as dramatic, change in the trajectory of universal ownership holds for Australia where universal ownership increased only slowly, even for top-tercile firms, until 2015 but increased rapidly since then.

But the rise of universal ownership is not a feature of all economies in our sample and there are some notable exceptions to this global trend. In the United Kingdom, Italy, China, India, and South Africa, the increase in universal ownership is more muted or even entirely absent in the full sample of firms, in some cases even for the largest firms. However, this lack of growth in common ownership has to be seen in context of very different levels across countries. Compared to the European economies which experienced large increases in universal ownership (e.g., Germany and France) and reached average values of κ for top-tercile firms of 0.0770 and 0.0429 respectively in 2023, universal ownership already was and still remains much higher in the United Kingdom, China, and South Africa where top-tercile firm κ averages are 0.1711, 0.1347, and 0.4159 respectively.[16]

These broad time patterns reveal both convergence and divergence in the evolution of common ownership across countries. While many economies are experiencing a steady rise of universal ownership, which is often triggered by institutional consolidation or policy shocks, others exhibit persistently high levels without recent growth. This heterogeneity highlights the role of both structural and temporal factors in shaping common ownership dynamics across global capital markets, and suggests that while the United States is a clear outlier, it may also offer a preview of trends that will likely emerge elsewhere.

3.3 Variance Decomposition

Table 2 complements these time patterns by decomposing the variance of $\log \kappa$ for top-tercile firms following Backus et al. (2021). Under the one-share-one-vote assumption ($\gamma_{fs} = \beta_{fs}$), the profit weight can be written as the product of two components: overlapping ownership, captured by the cosine similarity between the two firms' ownership vectors, and relative IHHI, captured by

[16] For the balanced panel of top-tercile firms they are as high as 0.3 for all three of these countries.

the ratio of investor concentration across the two firms. Formally,

$$\log \kappa_{fg} = \underbrace{\log \cos(\boldsymbol{\beta}_f, \boldsymbol{\beta}_g)}_{\text{overlapping ownership}} + \underbrace{\log \sqrt{\frac{\text{IHHI}_g}{\text{IHHI}_f}}}_{\text{relative IHHI}} \tag{2}$$

where $\cos(\boldsymbol{\beta}_f, \boldsymbol{\beta}_g) = \left(\sum_s \beta_{fs}\beta_{gs}\right) / \sqrt{\text{IHHI}_f \cdot \text{IHHI}_g}$ is the cosine similarity between the two ownership vectors and $\text{IHHI}_f = \sum_s \beta_{fs}^2$. Since for each ordered pair (f, g) we also observe its reverse (g, f), the covariance between the two log components is mechanically zero, so the variance of $\log \kappa_{fg}$ decomposes additively into the variance of each component. Table 2 reports this decomposition for the raw variance and for its cross-sectional, time-series, and panel dimensions. Overlapping ownership columns are shaded yellow and relative IHHI columns purple, with darker shading in each case indicating a higher variance share.[17]

Two findings stand out. First, overlapping ownership is the dominant driver of variation in κ in every country and in every dimension. In the cross-section, it accounts for at least 75% of the variance in κ in almost every country in our sample, and this share rises further in the time-series dimension, exceeding 85% in most economies. There is, however, notable cross-country variation. Mexico stands out as the most prominent exception, with an overlapping ownership share of only 69% in the raw sample that falls further to 58% in the panel dimension, indicating that relative IHHI—likely shaped by its concentrated ownership structure of large family-controlled conglomerates—plays a considerably larger role there than elsewhere. At the other extreme, several Asian markets including South Korea, Malaysia, Singapore, and Hong Kong, as well as Morocco, consistently report shares above 90% across all dimensions, reflecting similarly structured institutional ownership networks in which portfolio breadth dominates. Among developed economies, most of Western Europe clusters around 78–82% in the cross-section, but this share rises above 85% in the time-series dimension for most continental European countries, consistent with the broader secular shift toward greater portfolio overlap. This contrasts with Backus et al. (2021), who find that relative IHHI explains 30%–45% of the variation in their S&P 500 sample, with its role largest in the cross section at over 45%. The difference likely reflects our inclusion of blockholders and insiders, which raises IHHI levels but reduces variation in the relative IHHI, as well as differences in the sample period and firm coverage. Second, the time-series increase

[17] The two color scales are constructed as exact complements so that darker yellow always pairs with lighter purple and vice versa.

in common ownership is primarily a story about portfolio breadth, not investor concentration. The relative IHHI component is by construction symmetric across the two firms in a pair: a rise in investor concentration at firm f simultaneously increases the numerator of the relative IHHI for κ_{fg} and the denominator for κ_{gf}. As a result, shifts in ownership concentration within firms tend to wash out in the aggregate time series, leaving the expansion of overlapping ownership as the structural force behind the secular rise of common ownership globally. This conclusion holds across developed and emerging markets alike and constitutes a global regularity.[18]

4 Drivers of Common Ownership

Having established the global pervasiveness and upward trajectory of common and universal ownership, we now turn to examining the underlying drivers of this phenomenon. While the previous sections documented where and how common ownership is rising, this section investigates the structural firm-level and country-level characteristics that help explain these patterns. In particular, we assess how factors such as firm size, the composition of institutional investors, and the concentration of asset management contribute to the variation in common ownership both within and across economies and industries.

4.1 Firm Size

An important pattern that emerges from Table 1 and Figures 3A–3C is the role of firm size. Although the levels of universal ownership are quite different across countries and geographical regions, the relationship between universal ownership and firm size is remarkably similar across the world. In almost all countries in our sample, the average pairwise κ is about three times larger

[18]This decomposition concerns the variance of $\log \kappa_{fg}$ and is silent about levels. Within each ordered pair, the relative-IHHI terms for (f, g) and (g, f) are equal and opposite, so their mean is zero by construction. The level of average κ, however, still contains a concentration component: the average concentration factor is at least one because the relative-IHHI factors for (f, g) and (g, f) are reciprocals, and it exceeds one whenever two overlapping firms differ in IHHI. Table 18 in the appendix therefore decomposes the level of each country's average pairwise κ into average cosine similarity and a residual concentration factor. Overlapping ownership also dominates cross-country variation in average κ: at 2023Q4, the variance of log average cosine similarity accounts for essentially all of the variance in $\log \bar{\kappa}$, with a correlation above 0.99. The United States' gap over the median country is more than fully accounted for by overlap, while its concentration factor lies below the cross-country norm. Mexico has the largest concentration factor (1.88), followed by Italy (1.70), consistent with Mexico's prominent relative-IHHI role in Table 2. Figure A2D visualizes the two components among S&P 500 firms: the asymmetry between κ_{fg} and κ_{gf} is exactly the relative-IHHI factor.

for above-median firms than for the full universe of firms in each country. This pattern is even more pronounced for top-tercile firms (highlighted in progressively darker shades of green based on average pairwise κ in Table 1) and illustrates that universal ownership is substantially more widespread than previously documented by academic papers that exclusively focus on the largest firms included in major indices which tend to include only the top decile of firms.[19]

The increase is most consistent and steadiest in the United States where large asset owners have contributed to its rise since the late 1980s (Backus et al., 2019). Figure 3A highlights the pronounced and relatively steady gap in κ across firm size groups in the United States. Average pairwise κ for all U.S. firms rose steadily from around 0.05 in 2005 to around 0.20 by 2023. But the increase is even more pronounced for larger firms: for above-median firms, κ reaches 0.4928, while for top-tercile firms, it reaches 0.5636 by the end of the sample period. The dashed green line, which tracks S&P 500 firms, lies above all other groups throughout the time period, emphasizing the important role of index constituents in driving universal ownership trends. However, the high level of universal ownership is not a unique feature of just the very largest companies included in the S&P 500. For example, for the balanced sample, κ for the top tercile firms is nearly as high as for the S&P 500, indicating that the phenomenon is broad among large firms and not confined to top index firms. In the Euro Area the growth of universal ownership among top-tercile firms has been particularly large, with average pairwise κ rising from less than 0.015 in 2005 to over 0.08 in 2023 in the full sample and very similarly in the balanced sample. The gap in κ between top-tercile firms and the full sample of firms is even larger in Australia, Japan, Germany, and France and continues to increase over the sample period as shown in Figures 3B and 3C. However, in most other countries the gap is similarly large in overall proportions and remained relatively steady over 19 years.

Figures A3A–A3C in the appendix report the contribution of large-firm pairs to the share of total pairwise κ. This share is on the decline in the United States where universal ownership has reached the majority of, if not all public firms. But it is still mostly rising in all other countries where universal ownership is a particular feature among the largest firms. The share also varies considerably between countries, reaching as high as 90% in the Euro Area and as low as 30% in China.

[19]There are however some exceptions to this monotonicity result. For a few countries, including Mexico, Egypt, and Colombia, the average pairwise κ for top-tercile firms is lower than for firms above the median though it is still higher than for firms below the median.

These patterns suggest that large firms are an important, though not the only, conduit through which institutional investors (and, as we will show later, particularly the Big Three asset managers) concentrate their ownership. This is consistent with the asset allocation practices of global institutional investors, who tend to overweight large, liquid, and index-included firms, and mirrors the broader rise of megafirms and superstar firms that have come to dominate product markets (Autor et al., 2020; Grullon et al., 2019; De Loecker et al., 2020). As a result, measures of universal and common ownership may overstate the anticompetitive effects of common ownership for smaller firms, while understating the degree of coordination or reduced rivalry at the top end of the firm size distribution.

4.2 Types of Owners

The increasing concentration of common ownership, especially among large firms, naturally leads to questions about who the owners driving this increase are. A growing body of research has highlighted the role of large institutional investors, especially the so-called Big Three (BlackRock, Vanguard, State Street), in causing these patterns (Becker et al., 2025). These institutions have become dominant players in U.S. (public) equity markets and are increasingly prominent in discussions about market power and corporate governance. Understanding the ownership structure underlying universal and common ownership is therefore essential for interpreting its potential implications. While the drivers behind the secular increase in common ownership in the U.S. have been studied before, little is known about which owners are driving the increase in common ownership around the globe. We show that although the Big Three play a central role in the United States and are relatively less prominent in other countries, they nonetheless account for almost all of the recent global growth in universal and common ownership, even in markets where their direct stakes remain modest.

4.2.1 Role of the Big Three and Other Institutional Investors

Table 3 presents the percentage of firms in each country whose largest shareholder falls into one of five categories: an individual or family, a Big Three institutional investor, a non-Big Three institutional investor, a government institution, or another type of investor (primarily venture capital, private equity, or research firms). The table also reports the geographic origin of the largest shareholder (domestic, US foreign, or non-US foreign). A striking observation from Table 3

is the dominant role played by the Big Three asset managers in certain economies, particularly in the United States and Ireland and to a lesser extent in the Netherlands, Switzerland, and the United Kingdom.[20] In the U.S., these three institutional investors collectively account for 35.51% of the total ownership in publicly traded firms, making them the most influential shareholders in the American market.

This pattern is also highlighted by the blue shading in Table 1 of the columns that report the decomposition of average pairwise κ into contributions from the Big Three and other investors. The values indicate how much of a country's observed universal ownership can be attributed to each group with darker blue shading indicating a larger contribution to pairwise κ. The Big Three dominate in the U.S. and are influential in some developed markets, but non-Big Three investors play a relatively more important role in most other countries.

Figure 4 shows for the U.S. and the Euro area the fraction of firms whose largest shareholder is either an individual or family, a Big Three institutional investor, a non-Big Three institutional investor, a government institution, or any other type of investor from 2005 to 2023.[21] In the U.S., the share of firms where the largest owner is one of the Big Three asset managers has risen sharply, reaching around 35% by 2023, up from just less than 3% in 2005. This growth highlights the increasing dominance of the largest institutional investors. Meanwhile, the share of non-Big Three institutional investors as the largest owners declined from 65% of public companies in 2005 to below 40% in 2023, with a particularly sharp drop in 2009 due to the aforementioned BlackRock-BGI merger. The share of individuals and families as the largest owners declined more steadily, decreasing from around 40% in 2005 to below 20% in 2023.

In contrast, the average ownership structure is more stable over our sample period in the Euro Area. The share of firms with institutional investors (Big Three and non-Big Three) as the largest owner is lower than in the U.S., holding stable at around 60% which is lower than in the U.S. in 2023 where the same number is about 70%. Individual and family ownership is also stable at just over 30%. Government ownership is considerably higher than in the U.S., maintaining a steady 5% share across the years.[22]

[20] Table 5 provides a broad snapshot of ownership structures across various types of investors, including institutional investors, family owners, and government entities for all firms in each economy as of 2023Q4.

[21] The corresponding figures at the more granular country level (Figures A4A and A4B) are in the appendix.

[22] Figures A5A–A5C in the appendix complement these findings by reporting mean ownership by the five largest shareholders by country. In the United States, the Big Three's share of top-five stakes has risen markedly at the expense of individual and family ownership, while non-Big Three institutional investors have remained broadly stable. In most other countries top-five ownership shares are substantially larger, reflecting more concentrated

From Table 3 it is apparent that the prominence of the Big Three is slightly lower but still substantial in other countries, especially in Ireland where the Big Three make up 24% of total ownership.[23] Beyond the U.S. and Ireland, the footprint of the Big Three remains significant, albeit to a lesser extent. In European countries such as the Netherlands and Switzerland, their ownership share hovers around 8%, reflecting the broader trend of rising institutional investment in public equities. However, despite their global reach, the Big Three do not dominate ownership structures in most countries in the way they do in the United States. Instead, non-Big Three institutional investors emerge as the largest shareholders in the majority of economies.

Table 3 further shows that in Germany, Japan, and several smaller European markets domestic institutional investors or state-controlled funds hold the largest stakes in publicly traded firms. Exceptions to this pattern include France, Greece, and South Korea, where the presence of institutional investors (either domestic or foreign) is comparatively weaker, and other forms of ownership take precedence.

However, across nearly all economies in our sample, the increase in universal and common ownership (as measured by pairwise κ) is almost entirely driven by the increasing contribution of the Big Three, while the contribution of non-Big Three institutional investors has remained stable over time. This pattern holds not only in the United States where the Big Three have established themselves as the dominant, largest owners but also in countries where their aggregate holdings are substantially smaller. Due to their diversified and overlapping portfolios, even the modest stakes by the Big Three led to a substantial increase in pairwise κ across firms in many economies. This is because the contribution of an investor to κ is driven by two key factors: (i) the number of firms in which the investor holds a stake, and (ii) the size of the stake in each firm.

The growing influence of the Big Three is evident in Figures 5A–5C which document the Big Three's contribution to universal ownership over time.[24] In the United States, the Big Three account for a substantial and growing share of common ownership. Their contribution to average κ rises from about 0.008 in 2005 to 0.1781 by 2023 for all firms, and exceeds 0.45 when focusing on top tercile firms. Note that this tremendous increase in the contribution by the Big Three is

ownership structures, and their composition has remained relatively stable over time, with domestic institutional investors rather than the Big Three accounting for the bulk of top-five stakes.

[23]Ireland has a relatively small number of publicly listed firms, which amplifies the influence of the Big Three relative to other markets.

[24]Figures A6A and A6B–A6D in the appendix show the same decomposition of universal ownership into Big Three and non-Big Three measured at the global level for top decile firms and at the country level for top tercile firms.

not a unique feature of how we measure universal ownership or the firm sample composition and perhaps even understates the importance of the Big Three for the secular increase in overlapping ownership holdings. For example, when using a balanced panel of firms and Banzhaf-weighted κ the contribution of the Big Three rises from about 0.02 in 2005 to 0.27 by 2019 for all firms, and exceeds 0.55 when focusing on the largest firms.

But the central role of the Big Three in driving ownership concentration and portfolio overlap is not limited to U.S. firms. The increase in κ in the Euro Area (particularly in France and Germany) and in Australia is also primarily driven by the rising influence of the Big Three, while the contributions to average (and also the Banzhaf-weighted) κ of non-Big Three holdings have remained relatively stable. In Japan, both Big Three and non-Big Three holdings contribute in roughly equal parts to the increase in universal ownership. In contrast, in the United Kingdom, both for all firms and for top-tercile firms, Big Three and non-Big Three contributions to universal ownership have moved in opposite directions, thereby canceling out their aggregate effect on universal ownership. Increases in the contribution to universal ownership by the Big Three have been offset mostly by corresponding decreases in the contribution of non-Big Three investors.

Thus, even though, by the end of our sample period, the Big Three held only modest stakes outside the U.S. (e.g., for the average firm in the Euro Area, they held a combined stake of 2.43% as top-five shareholders) their extensive presence across a broad swath of the corporate sector gives rise to a dense network of overlapping ownership that meaningfully contributes to κ. Thus, it is the network structure of the Big Three's holdings, rather than the depth of their control over any single firm, that underpins their central role in shaping ownership overlap globally.

4.2.2 Largest Owners by Country

Table 4 reports the largest shareholders based on the number of firms they hold in their portfolios and the size of their holdings, providing insights into the influence of different investors. The data again document the dominance of the Big Three in the United States where Vanguard, BlackRock, and State Street each hold around 3,000 firms in their respective portfolios amounting to between 4 and 8 percent of total market capitalization. The Big Three hold small stakes of around 0.5% in a vast number of firms and their presence is also significant when looking at larger individual stakes, with Vanguard and BlackRock emerging as the most significant among them due to their sheer asset size. Both Vanguard and BlackRock hold stakes exceeding 5% in

more than 40 percent of US companies. In contrast, State Street holds such large stakes in only slightly more than 5 percent of companies despite holding more than 4 percent of the total market capitalization.

In the Euro Area, ownership is more fragmented across the largest five owners compared to the U.S., with a mix of local institutional investors and international asset managers. While BlackRock and Vanguard maintain their first- and second-place presence in the Euro Area at large as well as in Germany and France, they are not as dominant as in the United States. Instead, national financial institutions, such as Norges Bank, DWS, and Amundi in Germany, and Amundi and MFS in France, hold significant stakes. This suggests that while global asset managers are important, the ownership landscape in the Euro Area remains influenced by domestic institutional investors and reflects historical governance structures and perhaps also regulatory preferences for local financial control.

BlackRock is nearly ubiquitous among the top owners across all countries, with Vanguard also widely present but generally in fewer firms and with markedly smaller stakes. State Street appears even less frequently among the largest holders. In the Euro Area, for example, BlackRock is among the top five owners in 38.17% of firms, narrowly ahead of Norges Bank Investment Management (37.16%) and Amundi (36.49%). However, BlackRock tends to hold larger stakes on average and across many more firms, especially when looking at stakes exceeding 5%. Vanguard, by contrast, holds a lower percentage of the Euro Area's total market capitalization (2.54%) than BlackRock (4.58%) and has far fewer instances of large (>5%) stakes. This pattern reinforces the distinction between the spread and the depth of ownership, especially between BlackRock on the one hand and Vanguard and other large local asset managers on the other hand. It also largely holds in Germany, France, and Italy as well as outside the Euro Area, such as in the United Kingdom, Australia, and Brazil.

More specifically, in the United Kingdom, the Big Three are influential, but local asset managers such as Legal & General (L&G) and Schroder Investment Management also feature prominently in the aggregate ownership patterns, resulting in a more diversified ownership structure. The influence of the Big Three is generally smaller in the UK compared to the US, but they still have a sizable presence, especially BlackRock which holds stakes exceeding 5% in 14.54% of companies. Only Schroder at 8.77% rivals BlackRock's blockholder influence while L&G is a distant third at 2.17%. This pattern also holds to some extent for Japan where the largest asset manager

is Nomura, but BlackRock and Vanguard are a close second and third, while Nikko and Daiwa round out the top 5 universal owners. The situation in Australia is similar to the Euro Area, with Vanguard, BlackRock, and NBIM owning relatively small parts (especially when compared to the U.S.) of many publicly listed companies.

The widespread presence and significant average stake sizes of BlackRock and Vanguard across a broad range of countries help explain their central role in driving the global rise of common ownership shown in Figures 5A–5C. Their ownership combines both breadth (i.e., holding shares in a large number of firms across markets) and intensity (i.e., maintaining sufficiently large stakes in those firms to meaningfully contribute to common ownership). This dual characteristic is particularly important. Even when their individual holdings fall below traditional thresholds for control, the aggregate effect of BlackRock and Vanguard's portfolios which span thousands of firms with meaningful equity positions, systematically raises pairwise ownership measures. Their expansive and deep investment footprint thus accounts for a significant share of the upward trend in common ownership documented across many advanced economies.

Finally, government ownership plays a particularly significant role in China, India, South Africa, and Italy, where governmental institutions are the most important owners. However, the scale of their involvement varies. China stands out, with 2,598 firms under government-linked ownership, contrasting sharply with Italy, where only 15 firms are part of the government portfolio but the government's stake nonetheless amounts to 11.29% of market cap. In South Africa, the South African Public Investment Corporation (PIC), a state-owned entity, is the largest investor, and India even features two major government investment arms (Government of India and Life Insurance Corporation of India) alongside another public-private joint venture between SBI and Amundi in third place.

4.2.3 Persistence of Family and Individual Ownership

Another key theme of Table 3 is the continued relevance of family and individual ownership, which remains a defining characteristic of corporate governance in many regions. While institutional investors have become increasingly dominant in global capital markets, families and individuals still have a hand in corporate ownership across a range of economies such as Italy, Spain, and India, where family-controlled conglomerates continue to be a defining feature of the business environment.

However, there are notable outliers where individual or family ownership is relatively weak. Norway and Indonesia stand out as examples where this form of ownership is less prevalent (less than 10% of firms), likely due to the presence of strong sovereign wealth funds or other institutional arrangements that consolidate ownership under state control or institutional investors. A particularly interesting case is Norway, where the country's massive sovereign wealth fund has become the most important player in corporate ownership.[25]

4.2.4 Other Geographic Patterns of Ownership Structure

Table 3 also reveals important geographic patterns in ownership structures. In most countries, the largest owners tend to be domestic investors, reflecting a preference for local control and governance. This is particularly evident in large economies such as the U.S., China, Japan, and Germany, where domestic investors—whether institutional, corporate, or individual—dominate the ownership landscape. However, there are key exceptions, especially in smaller open economies such as Ireland, the Netherlands, and Switzerland. In these countries, foreign investors are particularly influential, often due to the international integration of their financial markets and the relatively small size of their domestic investment pools.

Proximity is also critical in shaping ownership structures. The U.S., as the world's largest financial market, has a significant ownership presence in neighboring countries such as Canada, Mexico, and even the United Kingdom and Ireland. Similarly, European countries tend to have significant cross-border ownership within the region, particularly in smaller economies with deep financial ties to larger markets. For example, the Netherlands and Switzerland have substantial ownership stakes held by foreign institutional investors, reflecting their status as financial hubs with strong capital market integration.

Another noteworthy trend is the influence of Chinese investors, particularly in Asia. Several Asian economies have large ownership stakes held by Chinese investors, raising questions about the broader implications of China's growing financial footprint. In particular, Hong Kong represents a unique case where ownership patterns are shaped by both Chinese and U.S. investors, reflecting the city's dual status as a global financial center and a gateway to mainland China.

[25] A question that emerges from Table 3 is whether Norway's sovereign wealth fund should be classified under the category of non-Big Three institutional investors or as a government entity. Given that it operates with a high degree of autonomy but is ultimately state-owned, it blurs the traditional lines between institutional and government ownership.

The combined Figures 4–A4B and A5A–A5C also provide a graphical representation of the distribution and concentration of ownership across different countries and firms and highlight the distinction between countries with dispersed ownership structures and those where ownership remains concentrated. They visually confirm the cross-country variation documented in Tables 3 and 5, with lower ownership concentration in Anglo-Saxon economies and higher concentration in markets such as France, China, and some parts of Europe where family, government, or institutional blockholders retain substantial control.

4.3 Intra- and Inter-industry Common Ownership

A crucial dimension of common ownership that bears directly on its economic and policy implications is whether overlapping ownership occurs primarily within industries or across them. Intra-industry common ownership, which occurs when investors hold stakes in multiple competing firms within the same sector, has drawn the most attention in the literature due to its potential to weaken competition. In contrast, inter-industry common ownership, while less explored, may reflect broader diversification strategies and could influence corporate behavior through indirect channels, such as governance spillovers or shared investor objectives. The literature on anti-competitive effects of common ownership has almost exclusively focused on intra-industry levels of common ownership, with the exception of Azar and Vives (2021a,b). Distinguishing between these two forms of ownership is therefore essential for understanding both the mechanisms through which common ownership operates and its potential consequences.

Table 1 separately reports common ownership both within and across industries. Intra- and inter-industry common ownership (as measured by average pairwise κ within the same industry and across different industries, respectively) are essentially the same on average as universal ownership for the United States. However, this is again a case of American exceptionalism and is not true for other countries. Figures 6 (as well as Figures A7A–A7C in the appendix) show that intra-industry κ is generally substantially higher in all major economies. Ownership is more overlapping within industry than across industry outside the United States which may be the result of higher industry specialization of domestic asset management companies or of national index composition focusing on a few select industries.[26]

[26]The pattern of increasing common ownership is also persistent across industries in several countries, as shown in Figures A8A–A8C in the appendix. As before, this trend is most pronounced in the United States, where industries that initially had high levels of common ownership also continued to have high levels in later years. This

Finally, our analysis so far has primarily focused on cross-country differences. However, there is also substantial variation across industries. Figure 7 shows the evolution of intra-industry common ownership of top decile firms for ten of the largest industries. Table 6 lists the ten industries with the highest levels of intra-industry common ownership for a select number of countries. As we documented before, the U.S., the United Kingdom, and China have many industries with high levels of common ownership compared to most other countries, but there are nonetheless several industries in other countries whose average industry pairwise profit weights rival those of the most commonly owned industries in the U.S. and the United Kingdom.

5 Case Study: Japan's ETF Purchasing Program

To complement the broad patterns documented across countries, time, firms, industries, and owners, we now turn to a case study that illustrates distinct mechanisms and country-specific dynamics behind common ownership. The following case study of Japan's ETF purchasing program provides a more granular perspective on how different types of investors, in particular government agencies and large asset managers, shape the evolving landscape of common ownership and can help explain the aggregate trend for Japan that we documented in Figure 3B.

In October 2010, the Bank of Japan (BoJ) introduced a temporary program to indirectly purchase Japanese assets through exchange-traded funds (ETFs) as part of its Comprehensive Monetary Easing (CME) program. This policy aimed to revitalize Japan's deflationary economy and reduce the risk premia of risky assets. The program started with a maximum outstanding amount of 0.45 trillion yen, proportionally allocated to ETFs tracking the Nikkei 225 index and the Tokyo Stock Price Index (TOPIX), and the BoJ's holdings reached 1.5 trillion yen by the end of March 2013.

Following Prime Minister Shinzo Abe's election in December 2012, Haruhiko Kuroda became BoJ governor in March 2013. In April 2013, Kuroda replaced the CME with the Quantitative and Qualitative Monetary Easing (QQE) program to achieve the 2% inflation target that the BoJ had adopted in January 2013, and expanded the monetary base through more aggressive asset purchases via ETFs (Shirai, 2018; Charoenwong, Morck and Wiwattanakantang, 2021).

While the new BoJ's ETF purchasing program continued to be based on ETFs tracking the

persistence of common ownership by industries also holds for other economies where the level of common ownership increased less steadily.

Nikkei 225 index and the TOPIX, it incorporated ETFs tracking the JPX-Nikkei 400 in November 2014. According to Harada and Okimoto (2021), the amount available for purchases of ETFs under this new program was allocated using a loading of approximately 53% on the Nikkei 225, 42% on the TOPIX, and 4% on the JPX-Nikkei 400 until September 2016. It is worth noticing that the amount of purchases of ETFs following these major Japanese indexes steadily increased since October 2010: the annual pace of purchases was raised to 3 trillion yen in October 2014 and to 6 trillion yen in July 2016.

In September 2016, the BoJ changed the rule used to allocate the 5.7 trillion yen per year invested in the ETFs tracking the three indexes (the remaining 0.3 trillion yen of the 6 trillion yen annual pace went to ETFs supporting firms proactively investing in physical and human capital). The new allocation rule emerged as a response to many concerns from market participants, arguing that existing purchasing rules assigning higher weights to ETFs following the Nikkei 225 index had distorted stock market prices due to the nature of the index. The Nikkei 225 index is a price-weighted index that uses a similar calculation method to the Dow Jones Industrial Average in the US. Hence, it may include small-cap firms with higher weights due to their relatively higher prices, and those weights could have led to capital misallocation. Since the TOPIX is a capitalization-weighted index of all companies listed on the First Section of the Tokyo Stock Exchange that uses a similar calculation method to the S&P500 in the US, and thus could be considered a better representation of the Japanese stock market than the Nikkei 225 index, the BoJ decided to significantly increase its TOPIX ETF holdings under the new allocation rule: 2.7 trillion yen were allocated to the TOPIX ETFs, and the remaining 3.0 trillion yen were proportionally allocated to the TOPIX, the Nikkei 225, and the JPX-Nikkei 400. In July 2018, the allocation of money to the TOPIX increased even more. A new rule allocated 4.2 trillion yen to the TOPIX ETFs, and the remaining 1.5 trillion yen were proportionally allocated to the TOPIX, the Nikkei 225, and the JPX-Nikkei 400 ETFs (Shino, Katagiri and Takahashi, 2022).

The documented increase in the amount invested by the BoJ in ETFs since October 2010, especially with the replacement of the CME with the QQE program in 2013, along with the two significant changes in the BoJ's ETF purchasing rules that took place in September 2016 and July 2018, helps explain the observed patterns in our measures of universal ownership in Japan which are most clearly shown in the Japan panel of Figure 3B. Our measure of universal ownership remains roughly flat until 2013Q1. It then increases faster after the implementation of the QQE

program in 2013Q2 until 2016Q3. The observed patterns during this period are likely because the BoJ's purchases of ETFs were relatively small in monetary terms initially and mainly focused on the Nikkei 225 index constituents, which may have included small-cap firms with higher weights due to their relatively higher stock prices. These small-cap firms may have a different set of shareholders than larger firms, and thus, the ETF purchasing program did not largely contribute to the increase in universal ownership during this period. The upward trend, however, is much more pronounced after 2016Q3 as can be seen in Figure 3B. This significant shift is likely due to a notable increase in the monetary base for ETF purchases and the BoJ's purchasing rule changes in September 2016 and July 2018, allocating more capital to purchase ETFs following the TOPIX, which better represents the Japanese stock market as a whole.

Although the BoJ does not disclose its specific holdings, we use our data to examine the evolution of holdings by the largest Japanese institutional investors offering ETFs related to the TOPIX and Nikkei 225 indices, known as the "Japanese Big Three": Nomura Asset Management Co., Ltd., Nikko (now Amova) Asset Management Co., Ltd., and Daiwa Asset Management Co., Ltd. We also examine the holdings of BlackRock, Inc., which likely offers one of the cheapest ETFs associated with these indexes through BlackRock Japan Co., Ltd. If the BoJ's ETF purchasing program contributed to the documented increase in common ownership in Japan, one could expect that it occurred at least through these very large institutional investors in Japan.

We calculate the value of the holdings of each of the Japanese Big Three and BlackRock in every quarter. Then, we divide those values by the sum of the market capitalization of all the firms in our sample of Japan. Hence, we estimate the percentage of the Japanese market capitalization held by each of these investors. Figure A9 in the appendix shows a significant increase in the value of the holdings of these investors starting in 2013, the year of the introduction of the BoJ's QQE program, which is related to a more aggressive purchase of ETFs. This is particularly true for Nomura and BlackRock. Table 4 further supports the notion that the stock ownership by these four institutional investors might explain the rise of universal and common ownership in Japan.

The BoJ's ETF purchases peaked in 2020, when the Bank doubled its annual purchase ceiling to 12 trillion yen in response to the COVID-19 shock. The BoJ later scaled back its purchases: at its March 2021 assessment, it decided to purchase ETFs only as necessary, within an annual upper limit of about 12 trillion yen, and new purchases fell sharply thereafter. This change helps explain the flattening of the holdings of the Japanese Big Three after 2020 shown in Figure A9; BlackRock's

holdings, by contrast, continued to rise until 2023. Because the Japanese Big Three offer the broad TOPIX- and Nikkei 225-linked ETFs that the BoJ accumulated, the program had raised their ownership stakes across nearly all listed firms simultaneously, mechanically increasing universal and common ownership; the plateau therefore reflects the sharp reduction in new purchases rather than divestment, as the accumulated stakes remained in place and universal ownership among the largest firms stabilized rather than continuing to rise, while it declined slightly among the broader set of firms. The BoJ discontinued new purchases in March 2024, alongside its exit from negative interest rates, and decided to begin disposing of its holdings only in September 2025, at a deliberately gradual pace of about 330 billion yen per year at book value intended to avoid destabilizing financial markets, with sales starting once the necessary operational preparations were completed. Both events fall after the end of our sample, so any resulting change in universal or common ownership is not reflected in our data.

6 Institutional Determinants of Common Ownership

The descriptive analysis in Section 3 established that common and universal ownership are global phenomena. They have risen steadily over time, especially concentrated among large firms and in countries with developed capital markets, with much of the increase driven by the Big Three. We now quantify the relationship between ownership overlap and firm- and country-level characteristics.

Our estimating equation throughout this section is as follows

$$\bar{\kappa}_{f,c,q} = \alpha_0 + \beta' X + \delta' Z_{f,c,q} + \gamma' GDP_{c,y} + \alpha_r + \alpha_{p4} + \alpha_q + \epsilon_{f,c,q} \tag{3}$$

where $\bar{\kappa}_{f,c,q}$ is the equal-weighted average of the weights that firm f places on all the $N-1$ firms in country c in quarter q. More formally, we define $\bar{\kappa}_{f,c,q} = \frac{1}{N_{c,q}-1} \sum_{g \neq f} \kappa_{fg,c,q}$. We refer to this as "equal-weighted kappa (UO)." We also calculate a slightly different version of this measure, focusing only on the weights assigned to other firms within the same country and industry in a given quarter which we refer to as "equal-weighted kappa (CO)." The vector X contains the variables of interest, either firm- and time-varying characteristics of ownership (see Section 6.1) or country- and time-varying institutional characteristics (see Sections 6.2–6.4). The vector $Z_{f,c,q}$ corresponds to time-varying firm-level controls (the ownership by the five largest shareholders, the

logarithm of market capitalization in USD, and the logarithm of firm age) and the vector $GDP_{c,y}$ contains yearly information on GDP per capita (logarithm of GDP per capita), which we take as a summary measure of a country's development. Finally, we include regional fixed effects (α_r),[27] industry fixed effects based on the four-digit TRBC codes (α_{p4}), and year-quarter fixed effects (α_q). Our final regression sample is based on 48 countries.[28]

6.1 Firm-level Drivers of Common Ownership

Table 7 presents regression results that explore the firm-level drivers of common and universal ownership across the full sample of countries over the period 2005–2023.[29] These regressions highlight how firm characteristics are associated with a given firm's ownership structure and its position in overlapping ownership networks.

Consistent with the patterns documented in Section 3, the results show that firm size (as measured by market capitalization) is by far the strongest predictor of both universal and common ownership. Larger firms are significantly more likely to be commonly owned, with coefficients that are economically large and statistically significant across all specifications.

Beyond firm size, the results also reveal a strong negative relationship between ownership concentration (measured by the C5 index) and common ownership. Firms with more concentrated ownership structures tend to exhibit lower levels of κ. Blockholders reduce the likelihood that shares are held by overlapping diversified investors. In contrast, holdings by the Big Three asset managers are positively associated with common ownership. Even after controlling for firm size and other covariates, firms with higher Big Three ownership are substantially more likely to exhibit overlapping ownership with other firms, thereby emphasizing the central role of these large passive investors in driving common ownership dynamics. Together, the dominant role of firm size and the positive association with Big Three ownership connect these findings to the broader megafirms

[27] Regions are defined as follows: Africa (Egypt, Morocco, and South Africa), Asia (China, Hong Kong, India, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand, and Vietnam), Europe (Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Poland, Romania, Russian Federation, Spain, Sweden, Switzerland, and the United Kingdom), Latin America (Brazil, Chile, Colombia, Mexico, and Peru), Middle East (Israel, Jordan, Kuwait, Oman, Saudi Arabia, and the United Arab Emirates), North America (Canada and the United States), and Oceania (Australia and New Zealand).

[28] We do not include Taiwan in our regressions because the World Bank does not provide GDP per capita data for this country.

[29] Variable definitions and summary statistics for all regression variables are provided in Tables A4 and A5 in the appendix.

literature (Autor et al., 2020; Grullon et al., 2019; De Loecker et al., 2020; Covarrubias et al., 2020): the same structural forces driving the rise and dominance of the largest firms in product markets also make them the primary focal points of overlapping institutional ownership.

The regression also highlights that firms with more individual/family or foreign investor ownership tend to have lower levels of common ownership, while the opposite is true for government ownership. These findings reinforce the descriptive results in Section 4.2 and emphasize the importance of investor type and diversification strategy in shaping firm-level variation in common ownership.

While firm-level characteristics such as size and ownership concentration explain a substantial share of within-country variation in κ, they do not account for the stark cross-country differences observed in both levels and trends. In what follows, we turn to an analysis of how country-level institutional, legal, and market characteristics are related to the prevalence of common ownership.

6.2 Antitrust Laws, Market Entry Regulation, and Labor Laws

Table 8 presents regression results examining the relationship between universal (UO) and common ownership (CO) and antitrust laws across countries. We use the competition law index (CLI) of Bradford and Chilton (2018) which ranges from 0 to 1 and where values closer to 1 indicate stricter competition policies. The CLI consists of two major components: authority and substance. The authority component measures enforcement strength, while the substance component assesses the scope of legal provisions on abuse of dominance, anticompetitive agreements, and merger control. As shown in Table 8, each of these three subcomponents affects ownership structures differently. The regression has firm-quarters as the unit of observation and uses regional, industry, year-quarter fixed effects such that the remaining variation is across countries.

The key finding is a negative correlation between antitrust law strength and both common and universal ownership, indicating that stronger competition regulations are associated with lower overlapping ownership between firms. Countries with stronger antitrust frameworks tend to have lower levels of common and universal ownership, suggesting that greater regulatory oversight constrains investor influence over multiple firms. Specifically, an increase in the CLI is linked to a 0.0303 decrease in universal ownership, significant at the 10% level, and a 0.0266 decrease in common ownership, though this result is not statistically significant.

Breaking down the components of antitrust enforcement, abuse of dominance provisions exhibit

the strongest negative relationship, with a 0.0361 and 0.0368 decrease in universal and common ownership, respectively, both significant at the 5% level. This suggests that stricter enforcement against market dominance is particularly effective in curbing common ownership. Similarly, anti-competitive agreement provisions, which target collusion and cartel-like behavior, are associated with a 0.0384 and 0.0370 decrease in universal and common ownership, both statistically significant at the 5% and 1% levels, respectively.

Merger control provisions display a somewhat more complex effect. While stronger merger regulations are generally expected to limit ownership concentration, the results indicate that in some cases, common ownership may act as a substitute for mergers in highly regulated environments. Specifically, stricter merger rules are associated with an increase in common ownership of 0.0290, significant at the 1% level, implying that firms may adopt common ownership structures as an alternative to full-scale M&A in jurisdictions with strong merger restrictions.[30] This finding highlights the strategic adaptation of ownership structures in response to competition policies.

A robustness check of Table 8 examines the effect of removing the U.S. from the sample, given its exceptionally high levels of common ownership. When U.S. firms are excluded, only abuse of dominance regulations remain statistically significant, suggesting that outside the U.S., common ownership is primarily constrained by policies restricting dominant shareholder influence rather than broader competition law measures.

Table 9 complements the findings on antitrust laws by demonstrating that barriers to market entry also contribute to higher levels of common ownership. Specifically, it examines the relationship between market entry regulations and common ownership by analyzing the number of procedures and the time required to start a business in different countries. The key explanatory variables include the logarithm of the number of administrative procedures and the number of days needed to start and formally operate a business.

The results indicate that more complex entry regulations (measured by the number of procedures and time required) are positively associated with higher levels of universal and common ownership. Specifically, a one-unit increase in the log number of procedures is associated with an increase of 0.0231 in universal and 0.0242 in common ownership, both statistically significant at the 5% and 1% levels, respectively. Similarly, an increase in the log number of days required to

[30] Anticompetitive agreements and merger control provisions are included in the regression separately, as abuse of dominance laws are highly correlated with both measures (0.62 and 0.73, respectively), while anticompetitive agreements and merger control provisions have a lower correlation (0.16).

start a business corresponds to a smaller but still significant increase in universal (0.0113) and common ownership (0.0118), both significant at the 10% level.

These findings suggest that in countries where starting a business is more cumbersome, common ownership tends to be higher. This could reflect barriers to entry limiting competition, which in turn increases the concentration of ownership among a few large institutional investors. The results of Table 9 relate to recent work showing that common ownership could preclude other firms from entering the market (e.g., Newham et al. (2019), Xie and Gerakos (2020)), as well as to evidence in support of a "quiet-life" hypothesis (Bertrand and Mullainathan, 2003) in less competitive environments (Giroud and Mueller, 2010, 2011) because "common owners are more willing to tolerate managerial slack and the resulting productive inefficiency at their portfolio firms because doing so also leads to less intense competition for the other firms in which they hold shares" (Antón et al., 2023b).

Labor laws are another important legal aspect shaping ownership overlap. Table 10 shows that, using indices developed by Botero, Djankov, La Porta, Lopez-de Silanes and Shleifer (2004), stronger labor laws are associated with lower levels of common and universal ownership. Specifically, employment protection laws have a significant negative relationship with universal ownership, with a coefficient of -0.0240 in the full regression specification, suggesting that stricter job security laws may reduce the ability of institutional investors to consolidate ownership across firms. Similarly, collective labor relations which capture union power and collective bargaining rights, also exhibit a negative relationship, with a coefficient of -0.0547 (significant at the 5% level). This aligns with theories suggesting that strong labor protections may limit corporate restructuring and ownership consolidation, thereby reducing common ownership levels. However, social security provisions, which capture government-funded worker benefits, show a positive but statistically insignificant relationship with universal and common ownership, implying that firms may rely more on state-funded benefits than on employer-driven worker protections. Stronger employee protections thus are associated with lower ownership overlap, potentially because they increase costs for investors seeking to exert governance control across multiple firms. Countries with more rigid labor markets may see less universal and common ownership, as shareholders have limited ability to influence employment decisions across firms.

6.3 Investor Protection

We now examine the relationship between investor protection, disclosure requirements, and common ownership across countries to show how legal safeguards and reporting requirements shape corporate ownership structures and investor influence. Perhaps unsurprisingly, robust investor protections appear to promote common ownership by facilitating institutional investment in firms.

Table 11 examines the role of investor protection laws in shaping common ownership using self-dealing Djankov, La Porta, Lopez-de Silanes and Shleifer (2008) and creditor rights indices (Djankov, McLiesh and Shleifer, 2007). The Anti-Self-Dealing Index, which measures the strength of laws preventing insider transactions, is positively associated with universal and common ownership, with coefficients of 0.0397 and 0.0392, respectively. This suggests that stronger investor protections encourage more dispersed but overlapping ownership, as legal frameworks prevent controlling shareholders from expropriating minority investors. Similarly, ex-ante private self-dealing provisions, which regulate conflicts of interest before transactions occur, show a positive relationship (0.0346, 0.0317), reinforcing the idea that stronger legal protections create an environment where diversified institutional ownership can thrive.

Conversely, ex-post self-dealing provisions, which address insider conflicts after they occur, do not have statistically significant coefficients, suggesting that preventative investor protections are more impactful than reactive measures. Meanwhile, creditor rights laws, which regulate debtholder protections, exhibit a small and statistically insignificant negative effect, indicating that these laws may not directly affect common ownership trends.

In recent years, environmental, social, and governance (ESG) requirements have become increasingly important for investors, as regulatory bodies, asset managers, and stakeholders emphasize sustainability, corporate accountability, and long-term risk management. Institutional investors, particularly large asset managers and pension funds, have integrated ESG factors into their investment strategies to mitigate financial risks related to climate change, social inequality, and corporate governance failures. Additionally, growing demand from socially responsible investors and regulatory pressures has led firms to adopt more transparent ESG reporting practices. As a result, ESG compliance has become a key factor in investment decision-making, influencing capital allocation, shareholder activism, and corporate governance policies worldwide.

Table 12 explores how mandatory ESG disclosure regulations affect common ownership. The results indicate that mandatory ESG disclosure (MESGD) has a generally weak and statistically

insignificant association with common ownership, suggesting that the introduction of these regulations does not substantially alter the investment behavior of large institutional shareholders with one notable exception. Government-led ESG disclosure requirements are associated with a significant decrease in common ownership (-0.0156 for universal, -0.0185 for common ownership). This suggests that state-imposed ESG regulations may deter ownership concentration, potentially by increasing compliance costs or influencing investment preferences. Alternatively, mandatory disclosure and common ownership may act as informational substitutes: when firms are required to disclose more, large shareholders may no longer need to maintain overlapping positions to gain informational advantages. This interpretation echoes the idea in Edmans et al. (2019) that common ownership may serve as a mechanism for aggregating firm-level information. In settings with greater disclosure, this informational role becomes less necessary, reducing the incentive for institutional investors to hold stakes across a broad range of firms.

In contrast, stock exchange-imposed ESG disclosure requirements show no significant relationship with common ownership, implying that privately initiated sustainability mandates do not disrupt institutional investment patterns.[31] Similarly, the method of ESG disclosure implementation, whether introduced all at once or gradually, does not yield significant coefficients, reinforcing the conclusion that only government-led mandates have a measurable impact.

Interestingly, among different compliance mechanisms, comply-or-explain ESG frameworks show a marginally significant negative effect on common ownership (-0.0105), suggesting that flexible reporting standards may still influence investment structures. However, full compliance mandates show no significant impact, indicating that more rigid frameworks do not systematically alter ownership dynamics.

Overall, these results suggest that ESG disclosure regulations, particularly when mandated by governments, are associated with lower universal and common ownership, possibly by reshaping institutional investment incentives, by increasing firm-specific compliance burdens, or because common ownership and ESG regulations are substitutes. However, stock exchange-imposed and non-binding ESG policies appear to have minimal effects.

[31] This finding aligns with recent evidence by Krueger, Sautner, Tang and Zhong (2024), who show that government-led ESG disclosures have stronger effects on stock liquidity, likely because governments have more credible implementation mandates, are less susceptible to regulatory capture, and possess greater resources to enforce compliance.

6.4 Political Institutions

Table 13 examines the relationship between political stability, regulatory quality, and corruption with universal and common ownership. The findings suggest that poor regulatory quality is positively associated with both universal and common ownership, with coefficients of 0.0295 and 0.0280, respectively, indicating that in countries with weak regulatory institutions, ownership is more concentrated, possibly due to reduced market competition and weaker enforcement of shareholder protections.

This result contrasts with the findings from Table 11 on investor protection, where stronger legal frameworks were associated with higher common ownership. While Table 11 suggests that common ownership flourishes in environments with strong investor rights, Table 13 implies that in environments with weak regulatory oversight, common ownership may also increase due to market distortions or rent-seeking behavior. This raises the question of whether common ownership in poorly regulated markets is a result of lobbying power or firm market dominance.

Other indicators, such as political instability and corruption, do not show statistically significant effects on common ownership. However, the positive correlation between poor regulatory quality and common ownership suggests a potential political economy explanation, where firms in unstable regulatory environments consolidate ownership as a form of risk mitigation or to exert influence over policy outcomes. This aligns with broader discussions on the role of lobbying and market power in shaping financial markets, as highlighted in recent research by Cowgill, Prat and Valletti (2024).

7 Dual-Class Shares and Control Chains

Two measurement choices underlie most of the results in this paper. First, control rights are assumed to be proportional to cash flow rights ($\gamma_{fs} = \beta_{fs}$, Section 2.2). Second, firms with more than one share class are dropped during sample construction because the ownership data do not record the votes attached to each class (Section 2.1); we refer to this exclusion as the *multi-class screen*. Importantly, this screen is imperfect because it relies on the vendor's classification of equity structures. Firms whose additional share classes are classified as securities other than

common stock may therefore remain in the panel.[32] Section 7.2 examines the excluded firms' proxy statements to identify quarters in which multiple classes of common stock were outstanding and reinstates the corresponding firm-quarter observations using measured voting rights. The baseline panel is otherwise left unchanged.

Both choices concern the control side of the profit weights. As the variance decomposition of Section 3.3 shows, κ_{fg} combines the breadth of overlapping ownership with the allocation of control within firms. The two components respond to different forces: portfolio overlap is driven by diversified institutions, whereas control concentration is driven by families, founders, and states. This section tests both measurement choices directly. For firms where control rights measurably depart from cash-flow rights, we replace assumed control with measured control rights; for firms removed by the multi-class screen, we measure the effect of reinstating them. The Banzhaf robustness of Section 2.2 varies the control model using the same reported ownership stakes. Our exercise instead changes the underlying control data while retaining the proportional-in-votes form of Equation (1), so that any movement in the results reflects changes in measurement rather than changes in the control model.[33] Figure A2C shows that sensitivity to the choice of control model varies substantially across countries, with the largest effects in Korea, Malaysia, and Chile, and is not well predicted by the share of controlled firms. This provides an additional reason to measure voting rights directly.

Control departs from cash flow through two structures. In a corporate pyramid, a family or state entity controls a listed firm through intermediate holding companies, so its voting control can substantially exceed the cash-flow claim obtained by multiplying stakes down the chain. Under a dual-class structure, a super-voting share class concentrates votes in a relatively small cash-flow position. The two control structures can operate jointly within the same firm. For instance, a family may control a listed firm through a chain of holding companies while the firm's charter concentrates votes in the share class held through that chain. Because control-chain stakes and dual-class voting terms can jointly determine a shareholder's voting rights, their effects on $\bar{\kappa}$ cannot generally be separated additively. We therefore report measured control as a single corrected series

[32] The screen also excludes firms whose additional share classes have been retired or converted, or whose sole remaining class retains a class designation.

[33] The corrected γ is a measured voting share throughout. Specifically, it is each holder's fraction of the votes actually attached to its holdings, read from a register or proxy statement where the figure is published and re-computed from share-class terms or consolidated chain stakes where it is not. No voting-power index enters the computation.

and identify markets where one structure is clearly the principal source of the change. In either case, the one-share-one-vote assignment overstates the influence of institutional investors and omits common-ownership links created by the controller's other holdings. Figure 9 summarizes how each structure is measured and incorporated into the panel.

For pyramids, we reconstruct control chains from Bureau van Dijk ownership filings, tracing 755,944 firm–owner links across our 49 countries to their ultimate owners. Because our Bureau van Dijk data are cross-sectional, we apply the reconstructed chains across the panel only in quarters in which they are consistent with the recorded holdings; otherwise, we retain the baseline control vector.[34] The trace identifies a controlling owner, most often a named family or individual, for 48,344 of 72,807 listed firms. For dual-class structures, the correction depends on whether the firm remains in the estimation panel. Where a multi-class structure is not identified by the multi-class screen and remains in the panel (Korean and Brazilian preferred-share issuers are the leading cases), we correct the firm in place using the measured voting terms of each share class, collected from statutory registers and annual reports. This correction covers 616 firms across 22 markets. Where the screen removes the firm, we instead reinstate eligible firm-quarters using measured voting rights (Section 7.2).

We apply measured control rights where the supporting records meet our inclusion criteria and otherwise retain the baseline values. Reconstructed control chains reweight existing ownership positions, while newly identified controllers enter the corrected series only if they satisfy the verification criteria detailed in Appendix B. At the reference quarter 2023Q4, the corrections apply to 27,347 of the 37,639 firms in the panel (72.7%), representing about 71.5% of panel market capitalization in the average market.[35] The divergence being corrected is economically meaningful. At the median treated firm, the largest owner-level difference between measured control rights and cash-flow rights, $|\gamma - \beta|$, is 8.3 percentage points, relative to the zero gap imposed by the one-share-one-vote assumption. At the 90th percentile, this gap reaches 37.5 percentage points. The discrepancy is also strongly directional: at 99.7% of treated firms, measured control rights exceed cash-flow rights, so the baseline systematically understates the influence of controllers.

[34] Most ownership links in our Bureau van Dijk extract are dated 2024 or 2025. See Appendix B for details on the control-chain reconstruction and its application to the estimation panel.

[35] Before applying the controller-record verification exclusions, coverage is 27,685 firms (73.6%) at 2023Q4.

7.1 The In-Panel Correction

The in-panel correction substitutes measured control vectors into the existing vendor-oriented estimation panel, combining the traced control chains with the measured voting terms of the 616 multi-class firms across 22 markets that survive the multi-class screen, yielding a single combined corrected series. Table 15 reports the country-average profit weight $\bar{\kappa}$ over all firm pairs (universal ownership, as defined in Section 2.2) under the baseline one-share-one-vote assignment and under the correction, at the 2023Q4 cross-section, for all 49 countries; Figure 10 ranks the countries by the size of the change. The center of the cross-section barely moves: the median country changes by -0.37% at 2023Q4.

The tails of the distribution show considerably larger changes. The correction lowers $\bar{\kappa}$ in 28 of the 49 countries at 2023Q4 and raises it in 20, with changes ranging from -19.1% to $+15.8\%$. Korea, Mexico, and Germany head the ranking, with reductions of 19.1%, 15.5%, and 11.0%, respectively, followed by Brazil at -10.3% and Sweden at -9.3%; the largest increase is Morocco's $+15.8\%$. In Mexico, the reduction runs primarily through the control chains. In other jurisdictions, the measured voting terms of surviving multi-class firms materially alter the control-chain correction. For instance, Korea's headline correction of -19.1%, the deepest of the 49 countries, runs almost entirely through measured preferred-share voting terms: with only the control-chain correction, the change is actually modestly positive ($+3.4\%$ of baseline). Similarly, Brazil's PN structures deepen its correction from -3.9% under the control-chain correction to -10.3%, and Sweden moves from -6.8% to -9.3% for the same reason. As expected, the largest corrections concentrate in markets whose largest owners are families, founding blockholders, and state entities (see Table A3 for examples), where our control measures shift profit weights away from institutional cross-holders and toward controllers who have concentrated portfolios.

At the opposite end of the ranking sit the markets where the correction raises $\bar{\kappa}$: with the in-panel correction, the United States rises 3.2%, 44th of the 49 countries. Among the other dispersed-ownership markets the movement runs the other way, with the United Kingdom falling 1.1% and Australia 6.8%. The increase in the United States is consistent with the recovery of common-ownership links that are obscured in the vendor data. For example, holdings in several firms may ultimately belong to the same controller but appear under different intermediate entities in the reported ownership records. Tracing those holdings to the common controller reveals links that the baseline treats as separate.

The time-series conclusions survive the correction. Table 16 reports the cumulative growth of $\bar{\kappa}$ from each market's first fully covered year to 2023, on the baseline and corrected series, for the United States and two groups of anchor markets. The pyramid group comprises Brazil, South Africa, Malaysia, and Korea, while the dispersed-ownership group comprises the United Kingdom, Japan, and Australia. In the United States, $\bar{\kappa}$ grows 401% under the correction against a 425% baseline, and its corrected level remains above the baseline in every one of the 76 sample quarters; the growth percentage is smaller only because the correction also lifts the base-year level. The pyramid group's rise steepens (134.9% against 129.7%), Japan's is essentially unchanged (64.8% against 63.7%), and where the baseline rise was small, the correction changes its magnitude without reversing its direction (Korea +1.9% to +4.8%, Australia +9.4% to +3.1%). Notably, among the countries reported in Table 16, no baseline rise in common ownership becomes a decline.

7.2 Reinstating the Excluded Firms

The multi-class screen excludes 3,620 issuer codes, including 1,603 in the United States. We examine the resulting selection effect primarily in the United States, where SEC DEF 14A proxy statements allow us to identify excluded firms and measure their voting rights. We reinstate a firm-quarter when the firm was exchange-listed and its proxy statement in force shows multiple classes of common stock and provides a usable voting-rights measurement. Reinstated firms enter with the voting rights reported in those statements, including when the measured voting–cash-flow wedge is zero.[36] Table 17 traces the 1,603 excluded U.S. issuer codes to 1,206 firms identified from proxy statements filed during 2004–2023. Of these, 678 were exchange-listed at 2023Q4, and 452 qualified for reinstatement. Over the full panel, 807 firms were reinstated in at least one quarter.

Figure 11 plots the United States panel-average $\bar{\kappa}$ over 2005Q1–2023Q4 under three specifications: our baseline, the in-panel correction, and the enlarged panel that adds reinstated firm-quarters. The level of common ownership changes in two steps. First, as alluded to earlier, the in-panel correction raises the 2023Q4 average from 0.200 to 0.206 (Table 15), a move of +3.2% across 2,898 treated firms. Restoring the excluded firms, however, lowers $\bar{\kappa}$ to 0.177, a fall of 14.2%

[36] A proxy statement is in force for its filing quarter and the following four quarters unless superseded by a later filing. Reinstated observations remain subject to the baseline exclusions in Section 2; the exchange-listing criterion is specified in Appendix B. Appendix B explains the treatment of multi-class firms with zero voting–cash-flow wedges, including umbrella partnership–C corporation (Up-C) and special purpose acquisition company (SPAC) structures.

relative to the level under the in-panel correction (Table A9). The selection effect is nearly identical when restored firm-quarters are instead appended to the baseline panel without the in-panel correction. On that basis, the 2023Q4 average falls from 0.200 to 0.172, a decline of 14.2% (Table A9). Despite the sizeable correction to common ownership from including dual-class firms, the United States remains the clear global outlier. Even after reinstating the excluded firm-quarters, U.S. $\bar{\kappa}$ remains above the in-panel corrected average of every other market in Table 15; Ireland, the next highest, has a corrected average of 0.148. Over the full sample period, the enlarged U.S. panel's annual average $\bar{\kappa}$ rises from 0.038 in 2005 to 0.173 in 2023, a 353% increase compared with 425% under the one-share-one-vote baseline. The rise documented in Section 3 therefore survives reinstatement.

Changes in the profit weights of incumbent firms may be decomposed into a mechanical dilution effect and a linkage gain. For each incumbent firm, enlarging the panel changes both the number of peers over which its profit weights are averaged and the set of links included in that average. The dilution effect holds the incumbent's links to its existing peers fixed but spreads them over a larger number of peers, lowering its average profit weight even if the entrants bring no new links. The linkage effect, in contrast, captures the additional incumbent-to-entrant links included when reinstated firms share owners with incumbents. At 2023Q4, measured against the corrected panel, the incumbents' average $\bar{\kappa}$ falls by 0.0126, reflecting a dilution effect of -0.0222 and a linkage effect of $+0.0096$ (Table A9).[37] The multi-class screen removed the firm pairs populated by those recorded holdings, and reinstating the firms restores those pairs. The asymmetry in these new links has an intuitive economic interpretation. In particular, incumbent firms place positive weight on reinstated dual-class firms because index funds and other institutional investors hold shares in both types of firms. Reinstated firms, however, place relatively little weight on incumbents because their voting control is concentrated among shareholders who typically hold few rival stakes.

Outside the United States, the available voting-rights evidence is less consistent across jurisdictions and does not support a comparable quarterly reinstatement exercise across the full sample. Table A7 documents the disposition of the excluded issuers, including 623 non-U.S. issuer codes with available control-chain or dual-class evidence and 1,027 for which measurement remains pending. As an additional check, we replicate the reinstatement exercise for Sweden's excluded issuer

[37] The reported components are rounded separately and therefore may not sum exactly to the reported total. The linkage effect is positive in all seventy-six quarters, and the ownership underlying these links was already present in our data.

codes, corresponding to 215 firms (Table A11), using the largest-shareholder tables and share-class voting terms in annual reports filed with Finansinspektionen (the Swedish Financial Supervisory Authority).[38] At the end of 2023Q4, 185 of these firms were exchange-listed, of which 126 had a multi-class measurement in force; reinstating those firms lowers the Swedish panel-average $\bar{\kappa}$ for that quarter from 0.0449 in the reference panel to 0.0324 in the enlarged panel, a decline of 27.9%. As in the U.S., incumbents' average profit weight falls as mechanical dilution (-0.0087 at 2023Q4) is only partly offset by a linkage gain ($+0.0020$ at 2023Q4); the linkage effect is positive in all 76 quarters of 2005Q1–2023Q4.

For the remaining jurisdictions, the available control-rights measurements for excluded firms provide only limited evidence on the effects of reinstatement. Although these measurements do not suggest that reinstatement would overturn the broad patterns in the levels, growth, and cross-country rankings of $\bar{\kappa}$, coverage is insufficient for a comprehensive assessment. Accordingly, the size-gradient results, the Big Three attribution, and the regressions of Section 6 continue to use the one-share-one-vote panel.

8 Conclusion

This paper provides the first comprehensive global documentation of common and universal ownership, covering 70,349 publicly listed firms across 49 countries from 2005 to 2023—economies that together account for 86% of global GDP. Our findings establish four principal conclusions.

First, common ownership is a global phenomenon that has grown substantially over our sample period, but the United States remains a clear outlier. Across all economies, average pairwise κ more than doubled in the median country between 2005 and 2019 and more than tripled in the United States. Common and universal ownership are now features of virtually every major capital market in the world.

Second, the rise of common ownership is driven not merely by the overall growth of institutional investment but also by increasing concentration within the institutional investor sector. The Big Three (BlackRock, Vanguard, and State Street) became the largest shareholder in over 35%

[38] Unlike the U.S. proxy statements, the Swedish annual reports carry no filing date, only the fiscal year and the date of the ownership table. Accordingly, we take each firm's measurement for calendar year $t+1$ from the largest-shareholder table and share-class voting terms in its annual report for fiscal year t. A year with no usable report carries the most recent report forward, and the quarters before a firm's first report take that first report.

of U.S. public companies by 2023, up from under 3% in 2005. Despite holding comparatively smaller individual stakes outside the United States, the Big Three contribute disproportionately to increases in common ownership worldwide due to the extraordinary breadth of their portfolios. In country after country, the Big Three account for the single largest contribution to the recent rise in common ownership, even in markets where domestic and non-Big Three institutional investors play quantitatively important roles.

Third, common ownership is concentrated disproportionately among the largest firms, a pattern that is remarkably consistent across all countries and regions and closely related to the broader rise of superstar firms and megaproviders of capital. Universal and common ownership are on average three times higher for above-median firms than for the full firm universe, and the gap widens further for top-tercile firms. This size gradient implies that measures of common ownership based solely on major stock index constituents substantially understate the concentration at the very top of the firm size distribution while potentially overstating it for the median publicly listed firm.

Fourth, cross-country variation in common ownership is systematically related to institutional, legal, and market characteristics. Stronger antitrust and competition law enforcement is associated with lower common ownership, while more burdensome market entry regulations are associated with higher levels, suggesting that regulatory barriers reinforce investor dominance over incumbent firms. Rigid labor protections correlate with lower common ownership, likely reflecting limited investor influence over workforce decisions. Stronger investor protection laws are associated with higher common ownership, consistent with institutional investors flourishing in environments that protect minority shareholder rights. Government-mandated ESG disclosure requirements are linked to lower ownership concentration, while weaker political institutions and governance quality are associated with higher common ownership.

These conclusions are robust to the control assumptions underlying our measures. Replacing the one-share-one-vote assignment with control rights measured from ownership chains and dual-class voting terms leaves the level, growth, and cross-country ranking of common ownership essentially unchanged outside a small set of concentrated-ownership markets, and reinstating the multi-class firms our screen excludes lowers the United States average profit weight by about 14%, leaving it the highest country average in our sample (Section 7).

Our findings carry significant implications for policymakers, financial regulators, and competition authorities. The global and accelerating rise of common ownership—concentrated among

the largest firms and driven by a small number of dominant passive investors—warrants careful scrutiny of its potential anticompetitive effects. At the same time, the substantial cross-country variation we document, and its systematic relationship with legal and institutional characteristics, suggests that policy design can meaningfully shape the prevalence and structure of common ownership. Understanding these global patterns is an essential first step toward informed and well-targeted regulatory responses.

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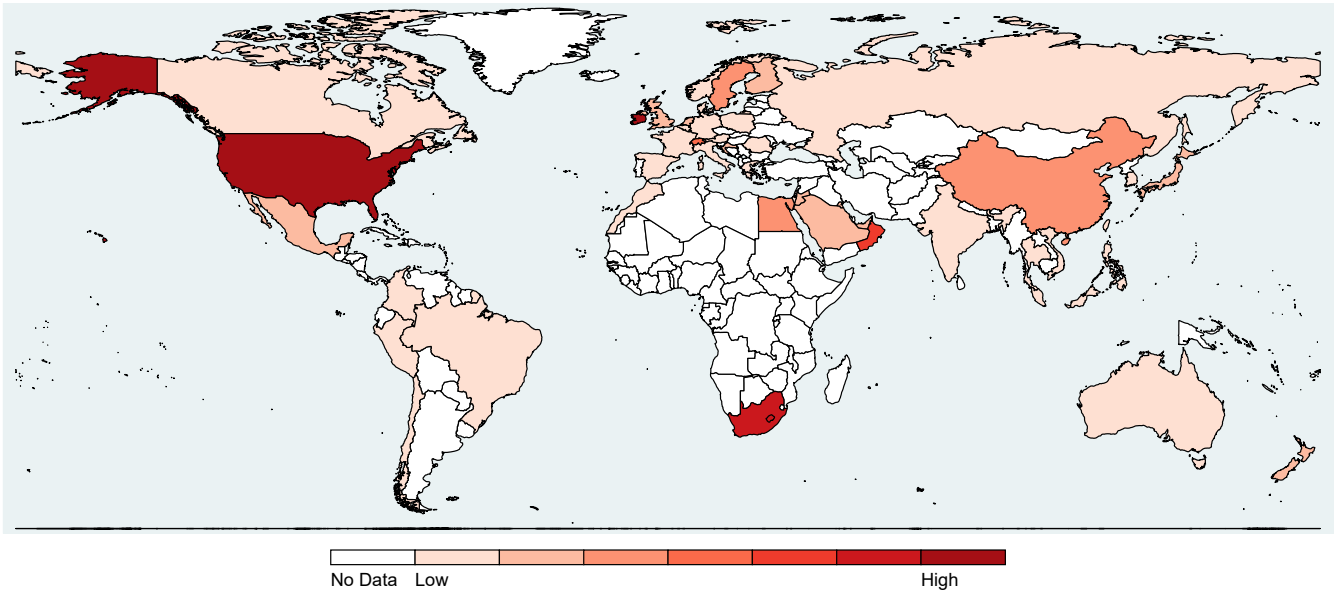
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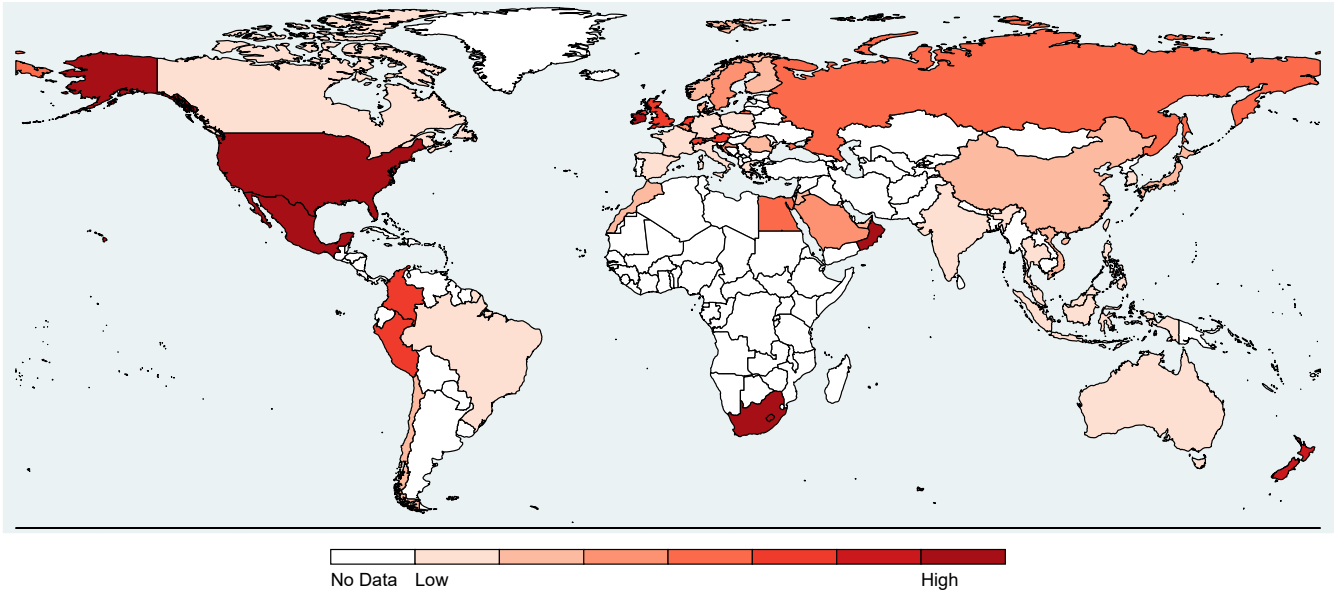
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A Main Figures and Tables

This section includes the main figures and tables referenced in the text.



(A) Average Pairwise κ by Country in 2023Q4



(B) Average Intra-Industry Pairwise κ by Country in 2023Q4

Figure 1. Universal and Common Ownership Around the World at a Glance. For each pair of firms within a country in our sample in 2023Q4, we calculate the weight that a firm places on the other's profits (κ) as implied by the common ownership hypothesis (Backus et al. (2021)). Chart A shows the arithmetic average of the pairwise κ by country in 2023Q4. Chart B shows the arithmetic average of the pairwise κ conditional on firm pairs where both firms are in the same country and industry in 2023Q4.

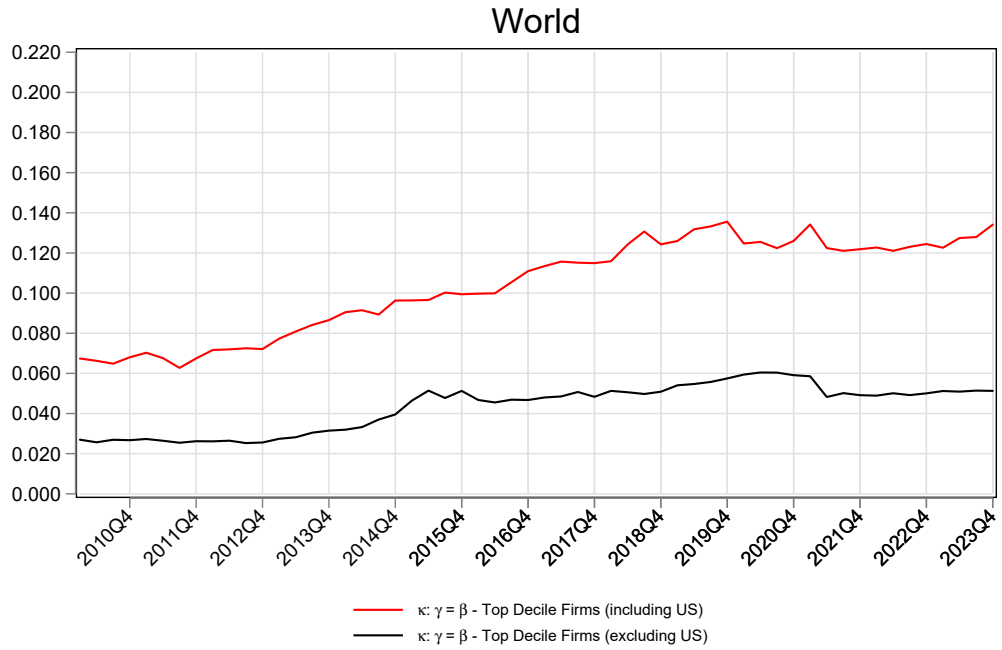


Figure 2. Universal Ownership Trends – Top Global Firms. This figure plots the evolution of universal ownership among the largest firms globally. For each quarter, we compute the arithmetic average of pairwise κ across all firm pairs in which both firms fall within the top decile of market capitalization in the full sample. The solid red line represents the average pairwise κ for top-decile firms in the full sample. The solid black line represents the average pairwise κ for the top-decile firms identified after first excluding U.S. firms from the sample.

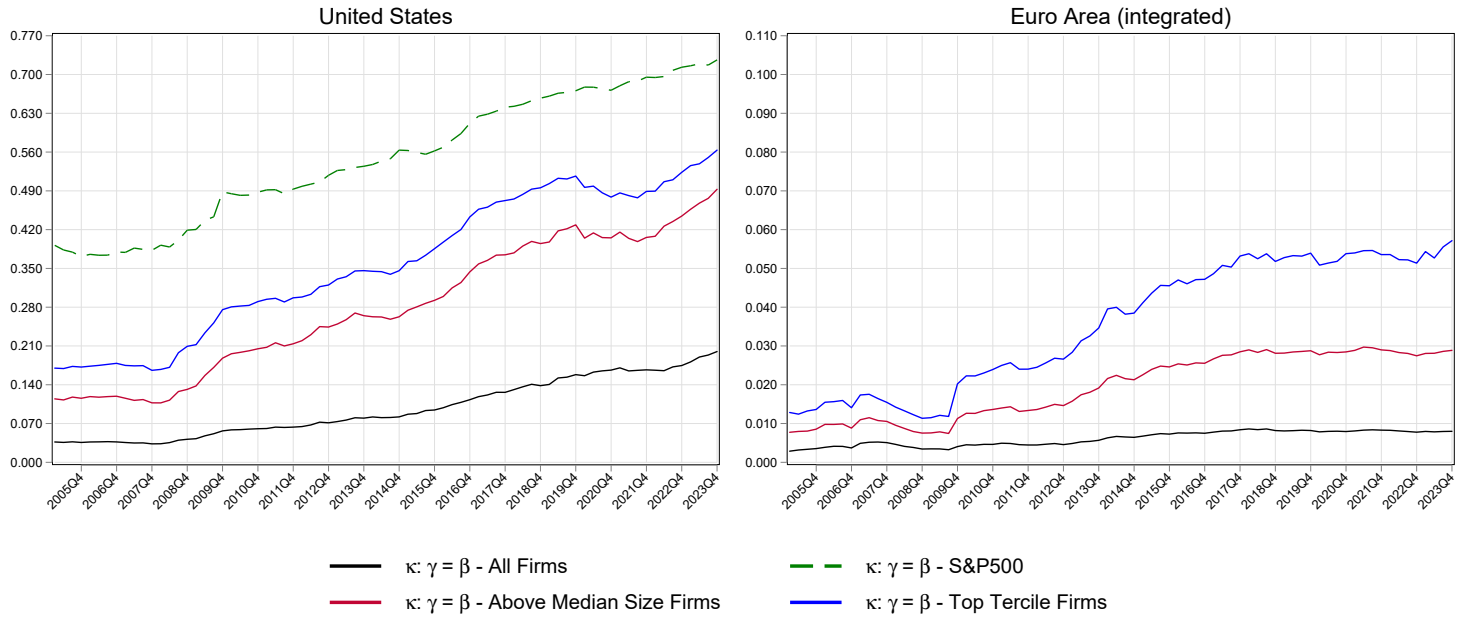


Figure 3A. Universal Ownership Trends. This figure portrays the evolution of universal ownership in the United States and the Euro Area. For each country-quarter combination, we calculate the arithmetic average of pairwise κ. The Euro Area is treated as a single country and comprises the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, and Spain. We exclude Croatia because it adopted the euro as a currency in 2023. We also exclude Greece because we have less than 76 quarters of data for this country compared to the countries included in our Euro Area sample. The solid black line represents the average pairwise κ using all firms in the country sample. The solid red line shows the average pairwise κ calculated across all firm pairs where both firms have market capitalizations above the median in their country in each quarter. The solid blue line depicts the average pairwise κ across all firm pairs where both firms are in the top tercile of market capitalization in their country in each quarter. The dashed green line, which is displayed only for the United States, is based on the S&P 500 index constituents in each quarter.

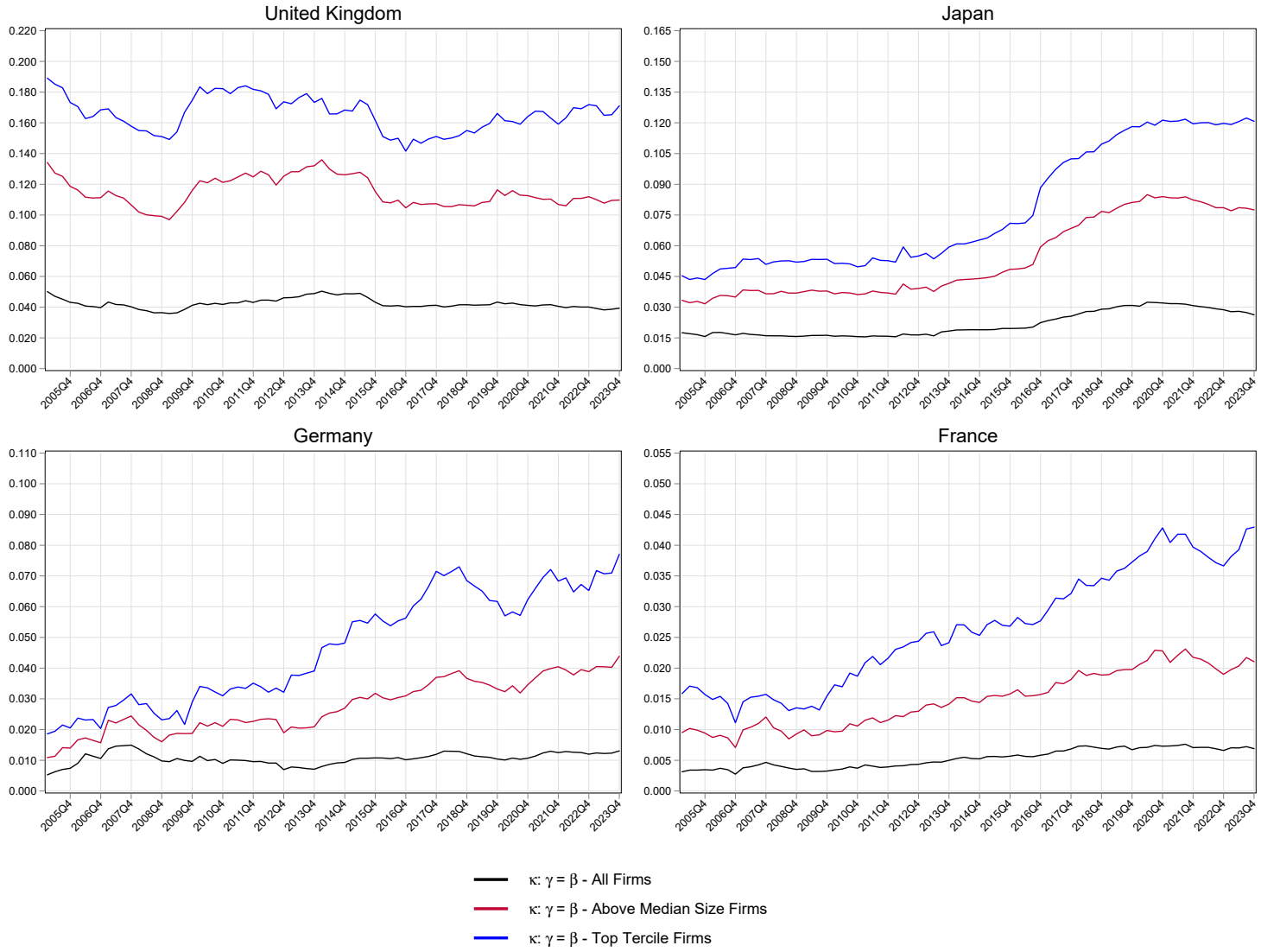


Figure 3B. Universal Ownership Trends. This figure plots the evolution of universal ownership in the United Kingdom, Japan, Germany, and France. For each country-quarter combination, we calculate the arithmetic average of pairwise κ. The solid black line represents the average pairwise κ using all firms in the country sample. The solid red line shows the average pairwise κ calculated across all firm pairs where both firms have market capitalizations above the median in their country in each quarter. The solid blue line depicts the average pairwise κ across all firm pairs where both firms are in the top tercile of market capitalization in their country in each quarter.

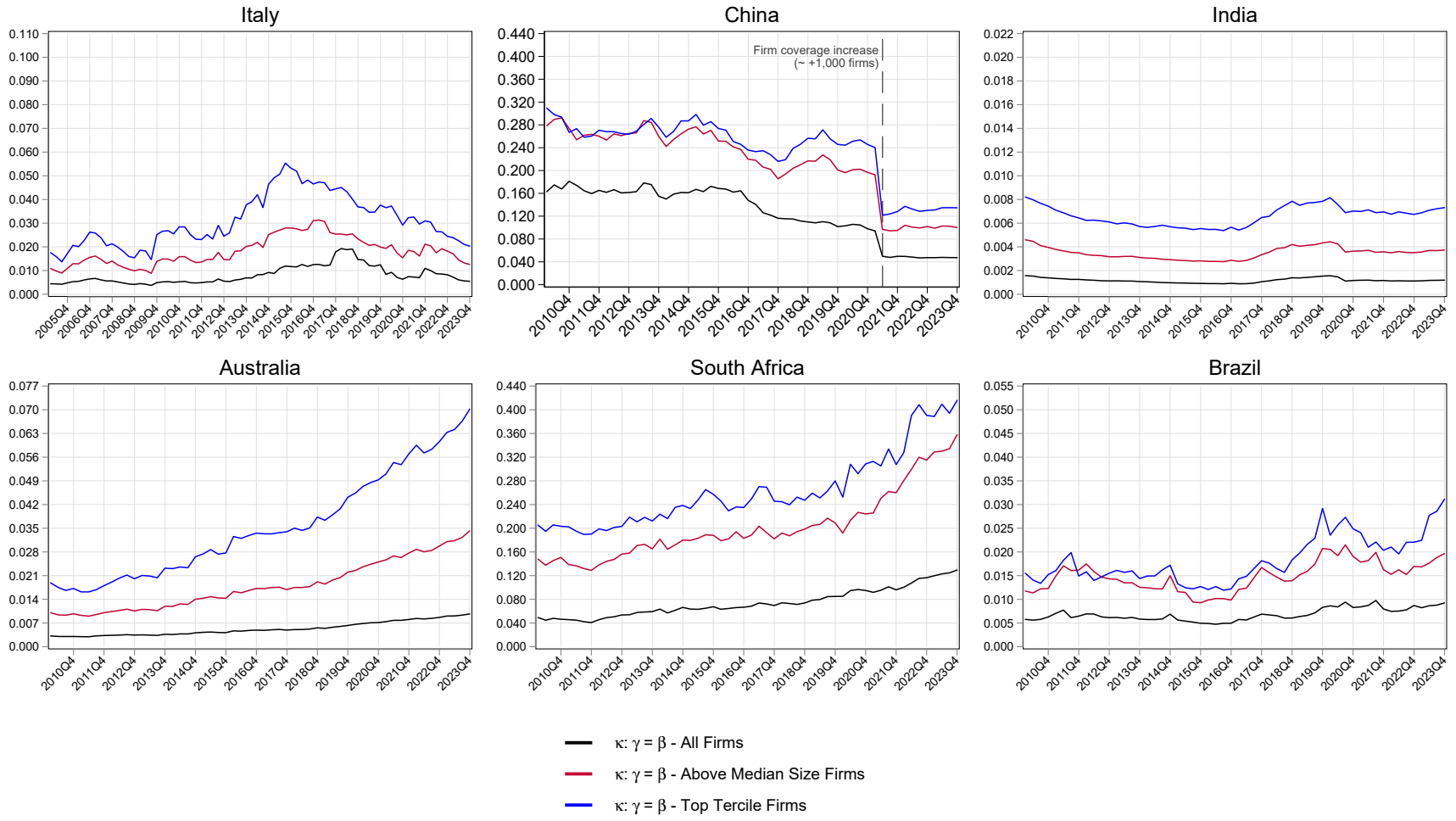


Figure 3C. Universal Ownership Trends. This figure plots the evolution of universal ownership in Italy, China, India, Australia, South Africa, and Brazil. For each country-quarter combination, we calculate the arithmetic average of pairwise κ. The solid black line represents the average pairwise κ using all firms in the country sample. The solid red line shows the average pairwise κ calculated across all firm pairs where both firms have market capitalizations above the median in their country in each quarter. The solid blue line depicts the average pairwise κ across all firm pairs where both firms are in the top tercile of market capitalization in their country in each quarter. The data vendor's coverage of Chinese firms increased significantly in 2021Q2, with the addition of approximately 1,000 firms.

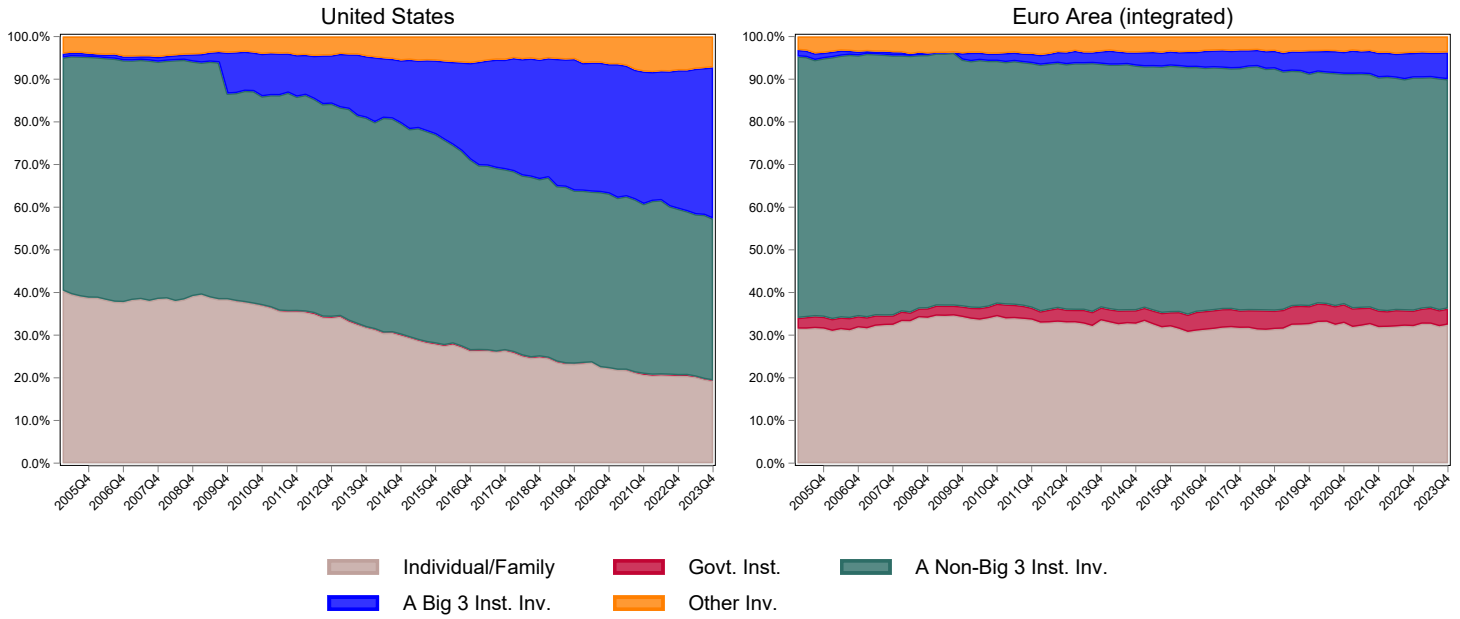


Figure 4. Who are the Largest Owners? This figure presents the fraction of firms in the United States and the Euro Area whose largest shareholder falls into one of the following categories: an individual or family, a Big Three institutional investor (BlackRock, Vanguard, State Street), a non-Big Three institutional investor, a government institution, or another type of investor (primarily venture capital, private equity, or research firms). The Euro Area is treated as a single country and comprises the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, and Spain. We exclude Croatia because it adopted the euro as a currency in 2023. We also exclude Greece because we have less than 76 quarters of data for this country compared to the countries included in our Euro Area sample.

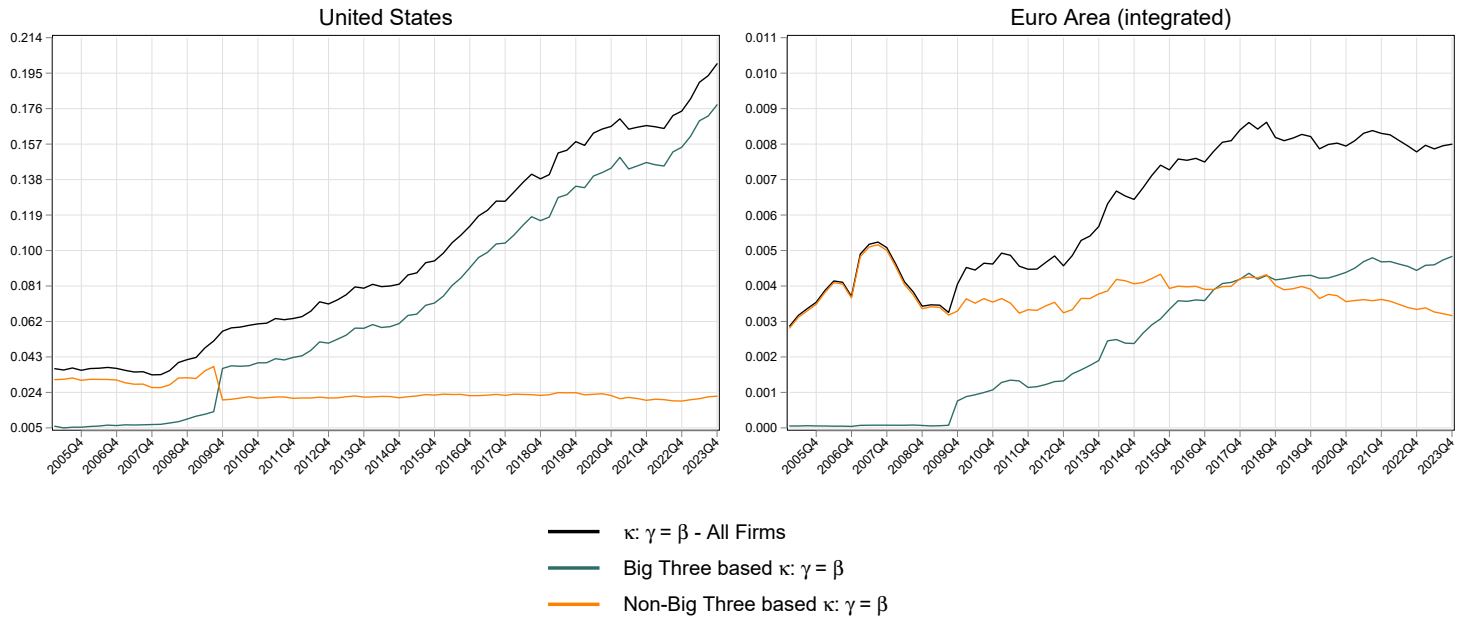


Figure 5A. Big Three Contribution to Universal Ownership (All Firms). This figure plots the evolution of universal ownership in the United States and the Euro Area stemming from the Big Three and shareholders other than the Big Three. For each country-quarter combination, we calculate the arithmetic average of pairwise κ and a breakdown of it into two terms, one driven by the Big Three (BlackRock, Vanguard, and State Street) and another driven by shareholders other than the Big Three. The Euro Area is treated as a single country and comprises the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, and Spain. We exclude Croatia because it adopted the euro as a currency in 2023. We also exclude Greece because we have less than 76 quarters of data for this country compared to the countries included in our Euro Area sample. The solid black line shows the overall trend of the average pairwise κ. The solid green line shows the average pairwise κ generated by the Big Three. The solid orange line shows the average pairwise κ generated by other shareholders.

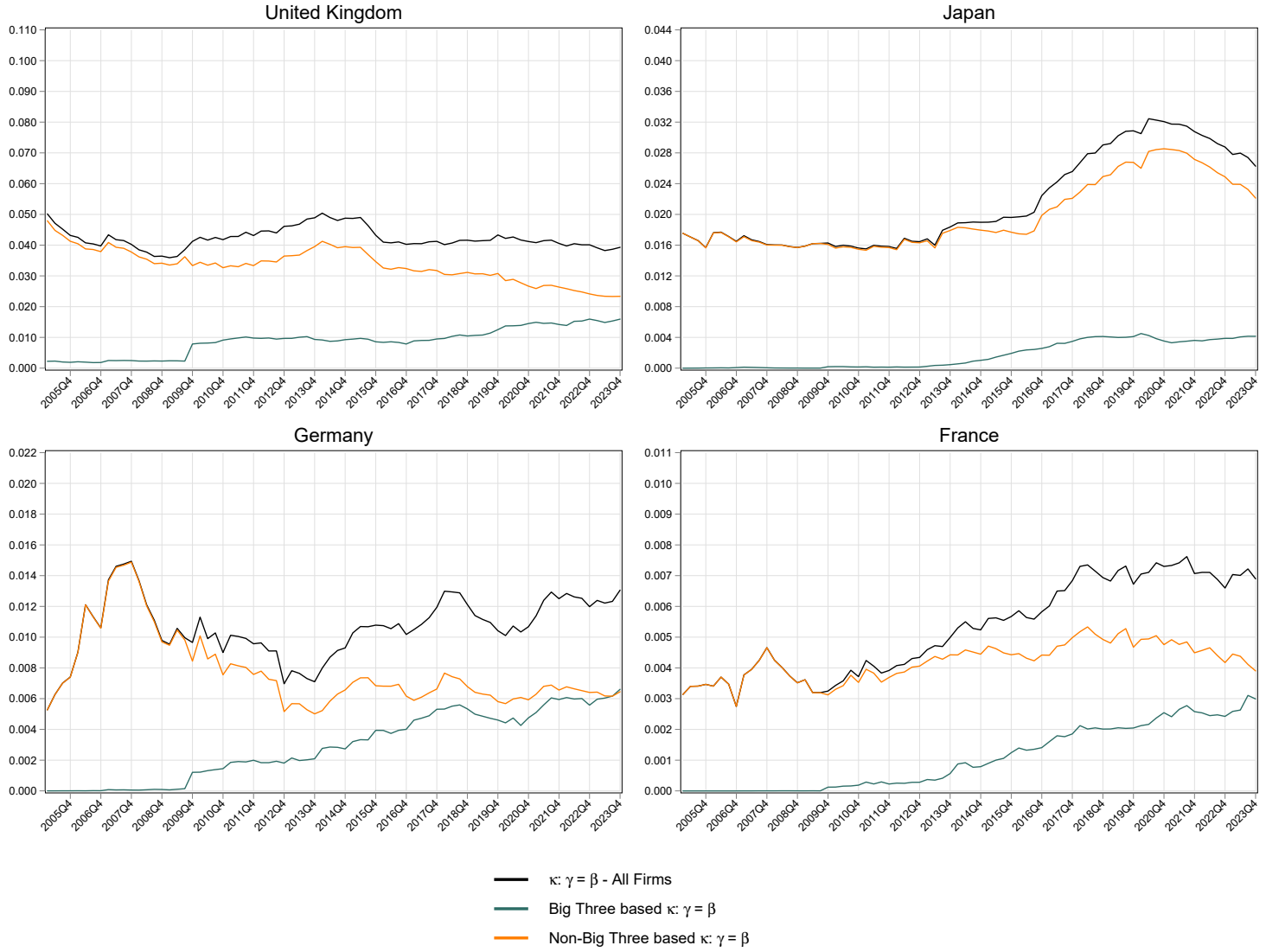


Figure 5B. Big Three Contribution to Universal Ownership (All Firms). This figure plots the evolution of universal ownership in the United Kingdom, Japan, Germany, and France, stemming from the Big Three and shareholders other than the Big Three. For each country-quarter combination, we calculate the arithmetic average of pairwise κ and a breakdown of it into two terms, one driven by the Big Three (BlackRock, Vanguard, and State Street) and another driven by shareholders other than the Big Three. The solid black line shows the overall trend of the average pairwise κ. The solid green line shows the average pairwise κ generated by the Big Three. The solid orange line shows the average pairwise κ generated by other shareholders.

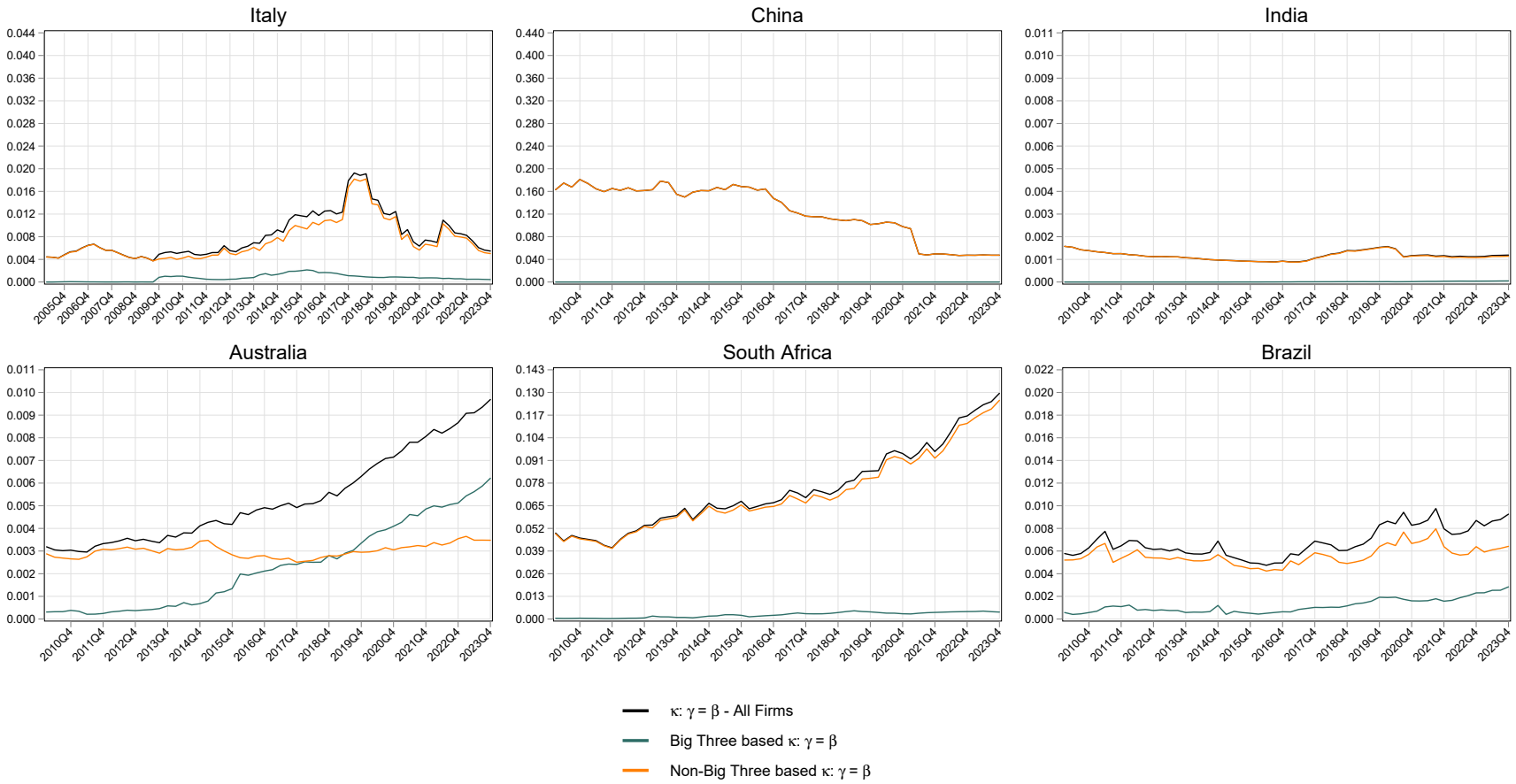
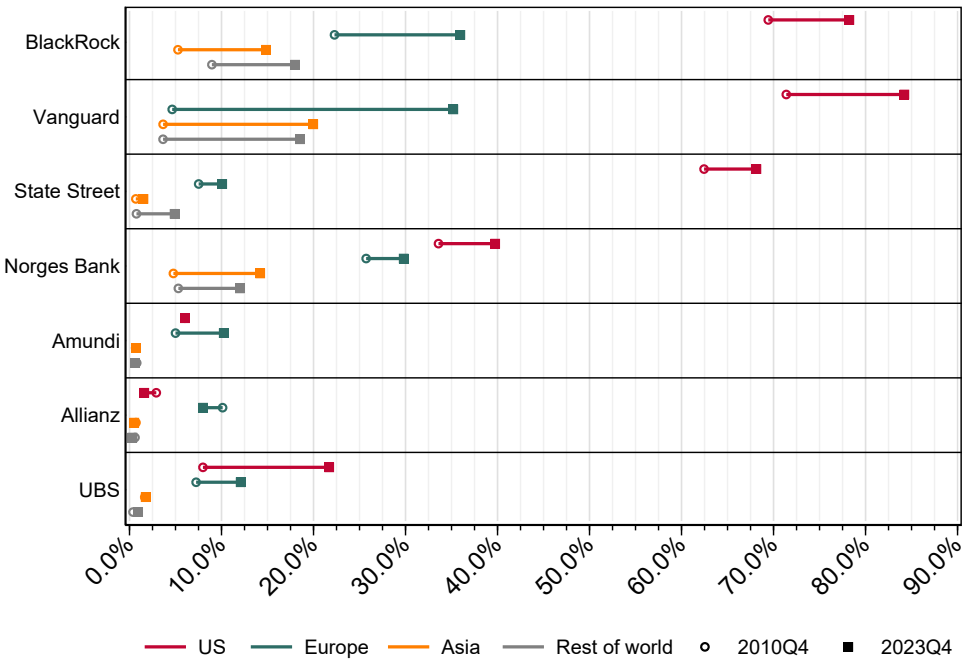
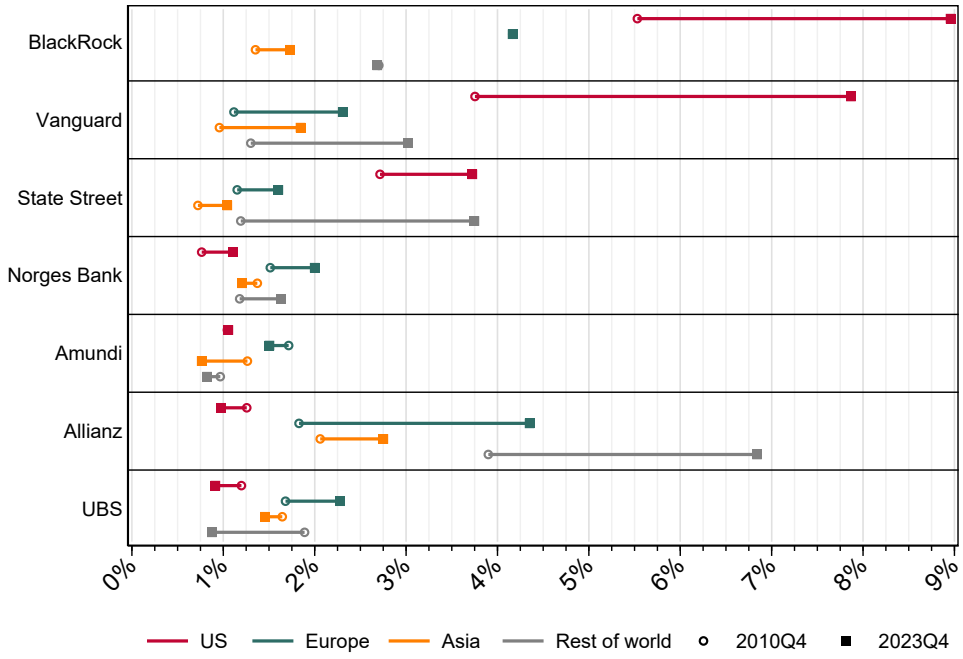


Figure 5C. Big Three Contribution to Universal Ownership (All Firms). This figure plots the evolution of universal ownership in Italy, China, India, Australia, South Africa, and Brazil, stemming from the Big Three and shareholders other than the Big Three. For each country-quarter combination, we calculate the arithmetic average of pairwise κ and a breakdown of it into two terms, one driven by the Big Three (BlackRock, Vanguard, and State Street) and another driven by shareholders other than the Big Three. The solid black line shows the overall trend of the average pairwise κ. The solid green line shows the average pairwise κ generated by the Big Three. The solid orange line shows the average pairwise κ generated by other shareholders.



A Portfolio breadth



B Portfolio depth

Figure 5D. Portfolio Breadth vs. Depth: 2010Q4 and 2023Q4. The figure compares the portfolio breadth and depth of large institutional investors in two snapshots, 2010Q4 and 2023Q4. The sample is restricted to firms present in both periods, so that the comparison holds the set of firms fixed and changes in the measures reflect investors' portfolio decisions rather than shifts in the composition of the firm universe. The resulting balanced panel comprises 19,923 firms across the United States (# firms = 1,992), Europe (# firms = 2,500), Asia (# firms = 12,248), and the rest of the world (# firms = 3,183). Panel A reports breadth, measured as the number of firms in a region where the investor holds a stake of at least 0.5%, as a fraction of all firms in that region's sample. Panel B reports depth, measured as the investor's average stake conditional on that stake being at least 0.5%. The threshold ensures the measures capture positions large enough to matter rather than trivial holdings. Hollow circles denote 2010Q4 and solid squares 2023Q4.

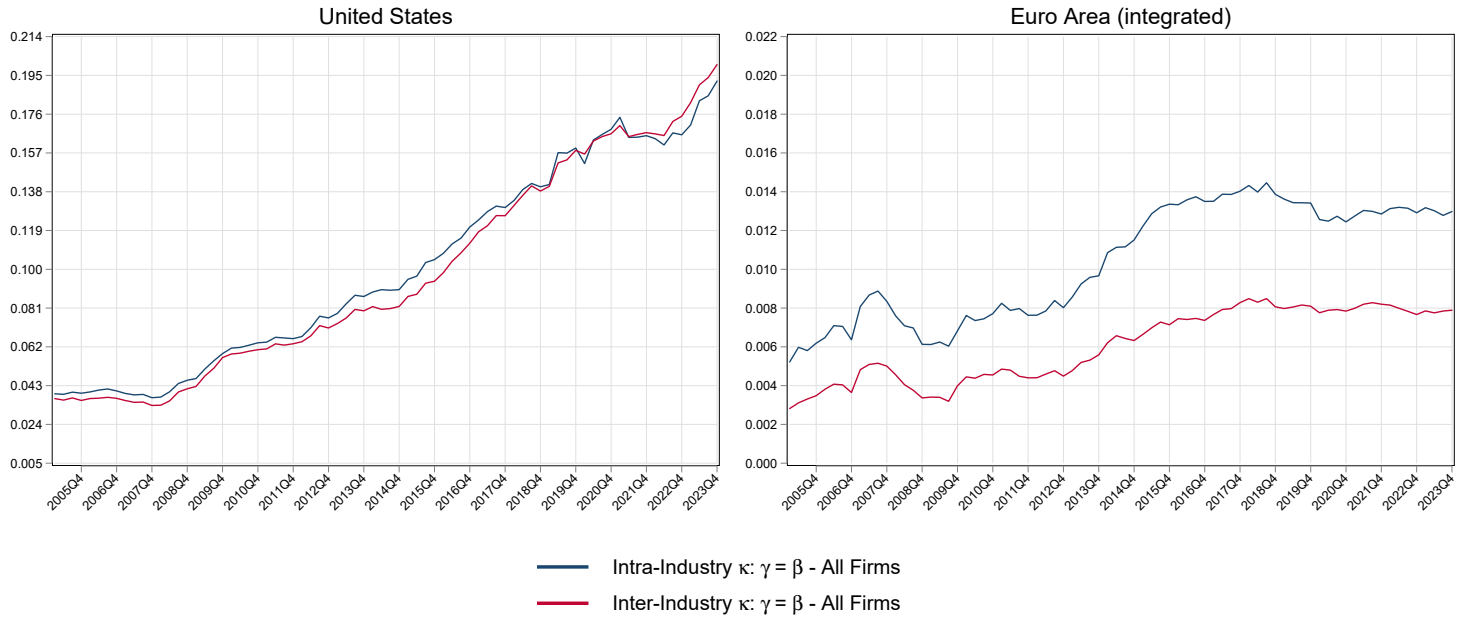


Figure 6. Intra- vs Inter-Industry Common Ownership. This figure plots the evolution of intra-industry and inter-industry common ownership in the United States and the Euro Area. For each country-quarter combination, we calculate the arithmetic average of pairwise κ, conditional on whether a pair of firms share the same industry or not. We refer to the former as intra-industry common ownership and the latter as inter-industry common ownership. The Euro Area is treated as a single country and comprises the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, and Spain. We exclude Croatia because it adopted the euro as a currency in 2023. We also exclude Greece because we have less than 76 quarters of data for this country compared to the countries included in our Euro Area sample. The solid blue line depicts the average intra-industry pairwise κ. The solid red line shows the average inter-industry pairwise κ.

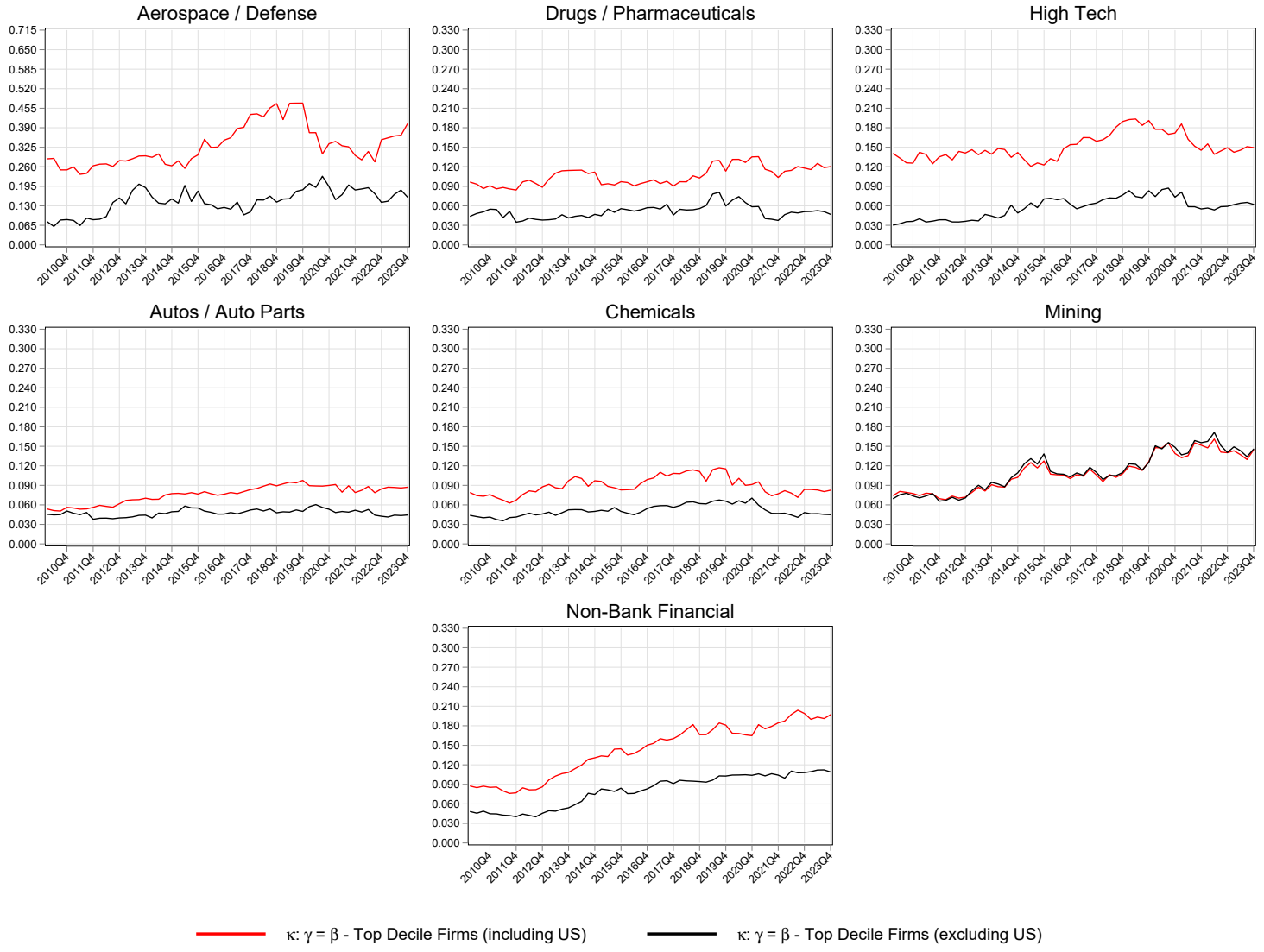


Figure 7. Common Ownership Trends by Industry - Largest Firms. This figure plots the evolution of common ownership among the largest firms globally within the following industries: Aerospace / Defense, Drugs / Pharmaceuticals, High Tech, Autos / Auto Parts, Chemicals, Mining, and Non-Bank Financial. For each industry-quarter combination, we compute the arithmetic average of pairwise κ across all firm pairs in which both firms fall within the top decile of market capitalization. We refer to this as intra-industry common ownership. The solid red line represents the average intra-industry pairwise κ for top-decile firms in the industry. The solid black line represents the average intra-industry pairwise κ for the top-decile firms identified after first excluding U.S. firms from the sample.

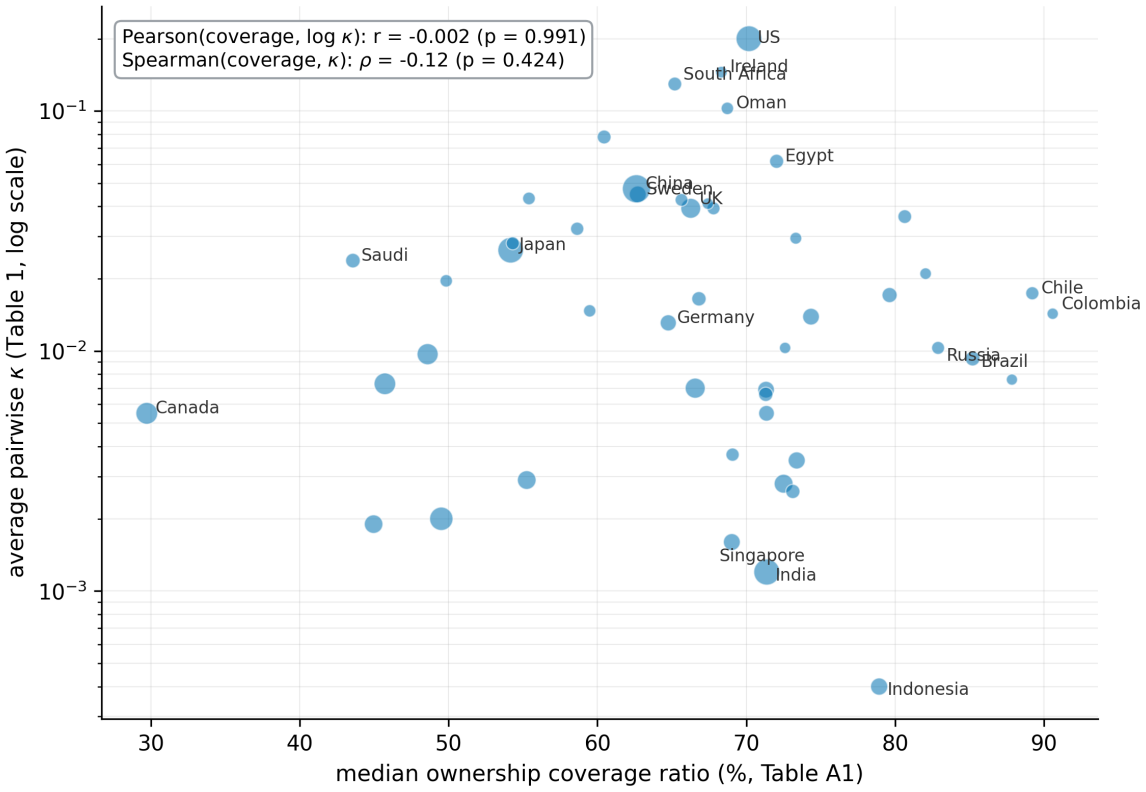


Figure 8. Common Ownership and Ownership Coverage. This figure plots the logarithm of the 2023Q4 country-average pairwise κ from Table 1 against each country's median ownership coverage ratio over 2005Q1–2023Q4 from Table A1. The relationship is essentially flat: the Pearson correlation between coverage and the logarithm of country-average pairwise κ is -0.002 ($p = 0.99$) and the Spearman rank correlation is -0.12 ($p = 0.42$), showing no statistically significant association in this cross-country comparison. Marker size increases with the number of firms in the country sample.

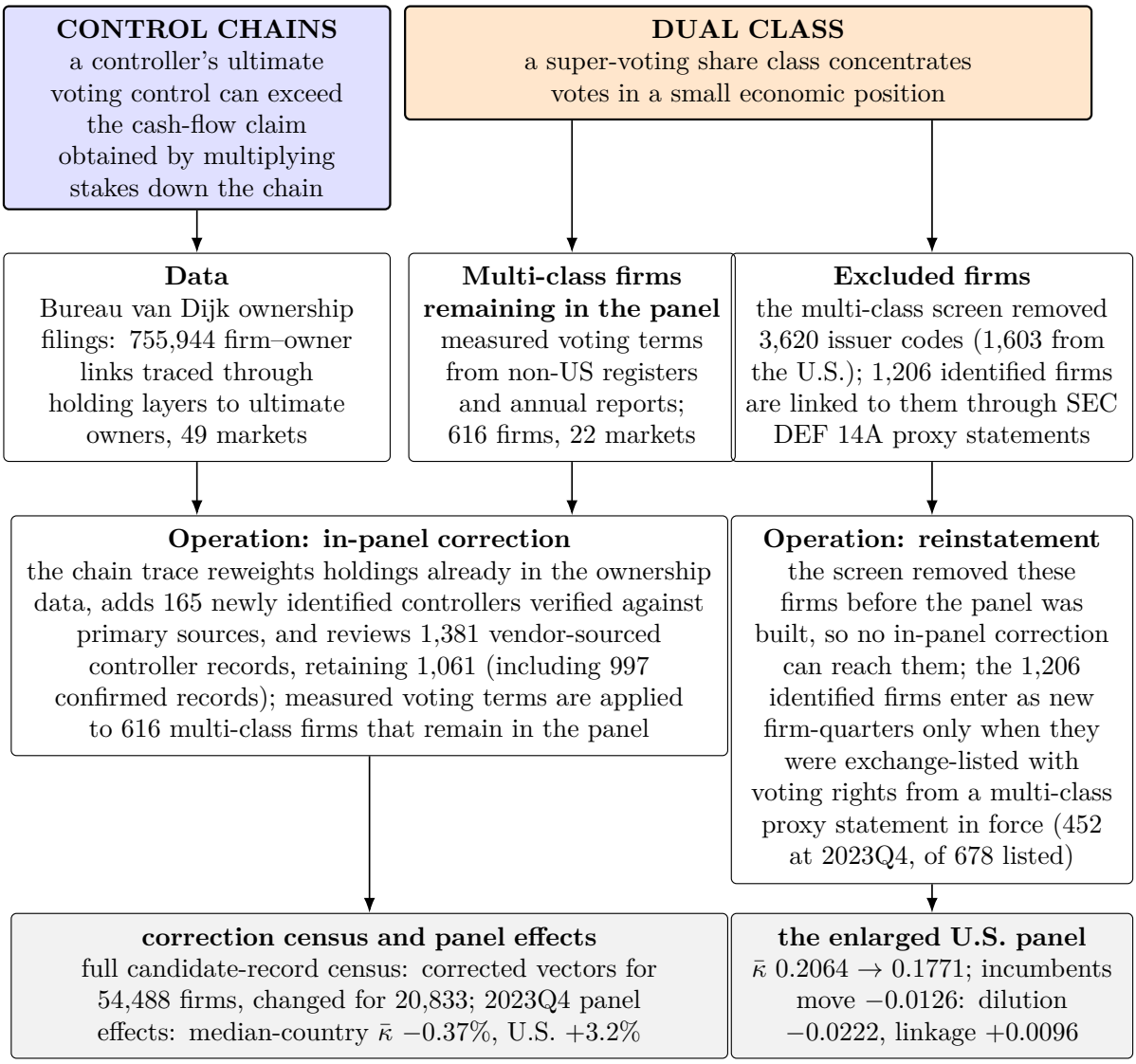


Figure 9. A Summary of the Control Correction. This figure summarizes the construction of the control correction. Control departs from cash-flow rights through two mechanisms (top row): control chains and dual-class share structures. Beneath each mechanism sits the data that measure it, the operation through which the measurement reaches the panel, and the result. The control-chain data feed the in-panel correction alone; the dual-class data apply either to multi-class firms that remain in the panel, which are corrected in place, or to excluded firms, which are reinstated. Because the multi-class screen was applied before the panel was built, the two groups are disjoint. The combined effect is recomputed directly on the enlarged U.S. panel rather than obtained by adding the separate effects, because the in-panel control-chain correction also changes incumbents' profit weights on reinstated firms. Section 7.2 explains why the main reinstatement exercise focuses on U.S. firms and reports a separate robustness check using Swedish data. The firm counts in the left result box are drawn from the full candidate-record census, including firms outside the estimation panel. The reported changes in $\bar{\kappa}$ and the count of reinstated firms refer to 2023Q4.

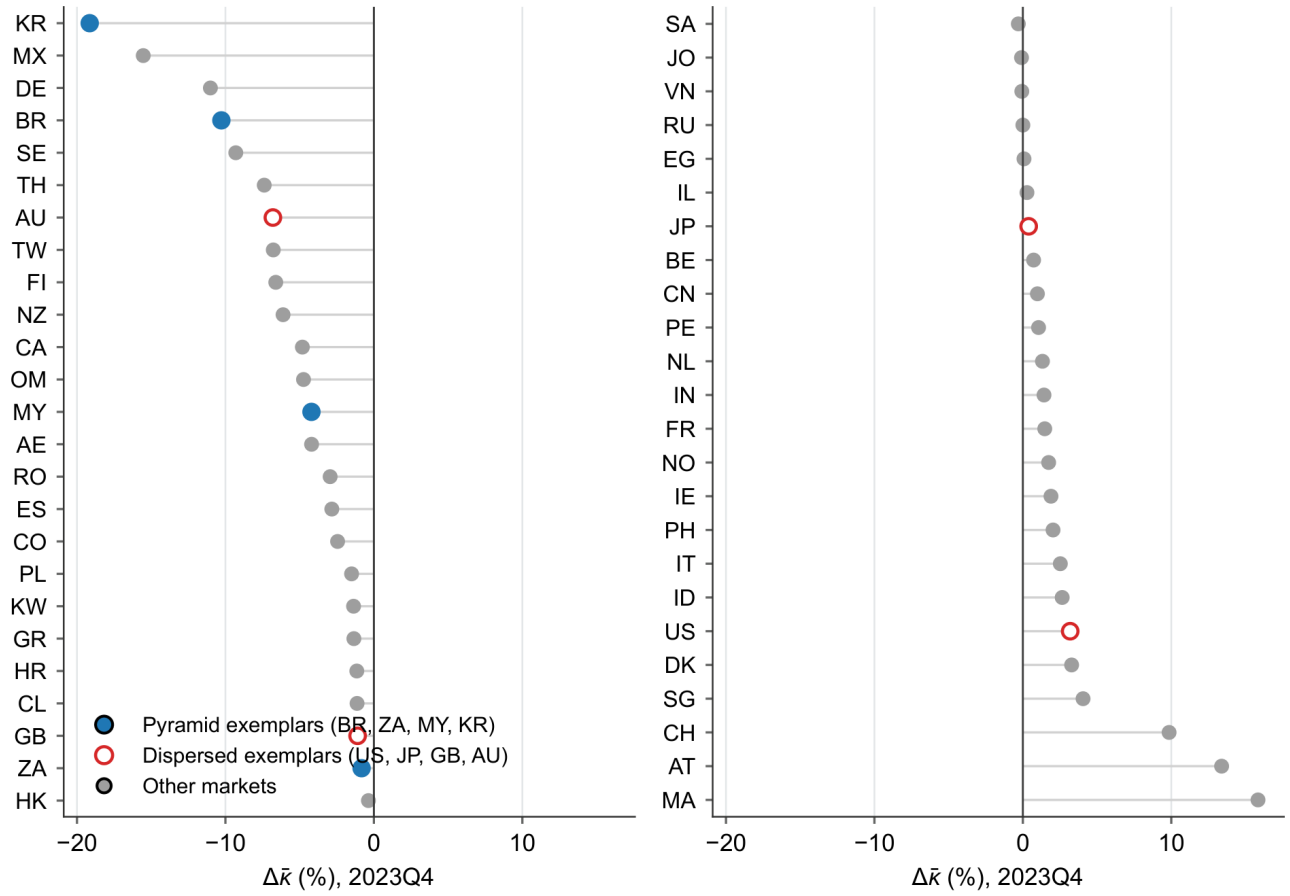


Figure 10. Change in Country-Average κ (Corrected Control). This figure plots the percent change in the country-average profit weight $\bar{\kappa}$ from the baseline one-share-one-vote assignment to the corrected series at 2023Q4, all 49 countries sorted from the largest reduction. Filled markers are the pyramid/concentrated-control anchor markets (Brazil, South Africa, Malaysia, Korea), open markers identify the United States and the dispersed-ownership anchor group (the United Kingdom, Japan, and Australia), and gray markers identify the remaining countries; the anchor groups are illustrative points along a continuous ordering. The cross-country average change is -1.4%.

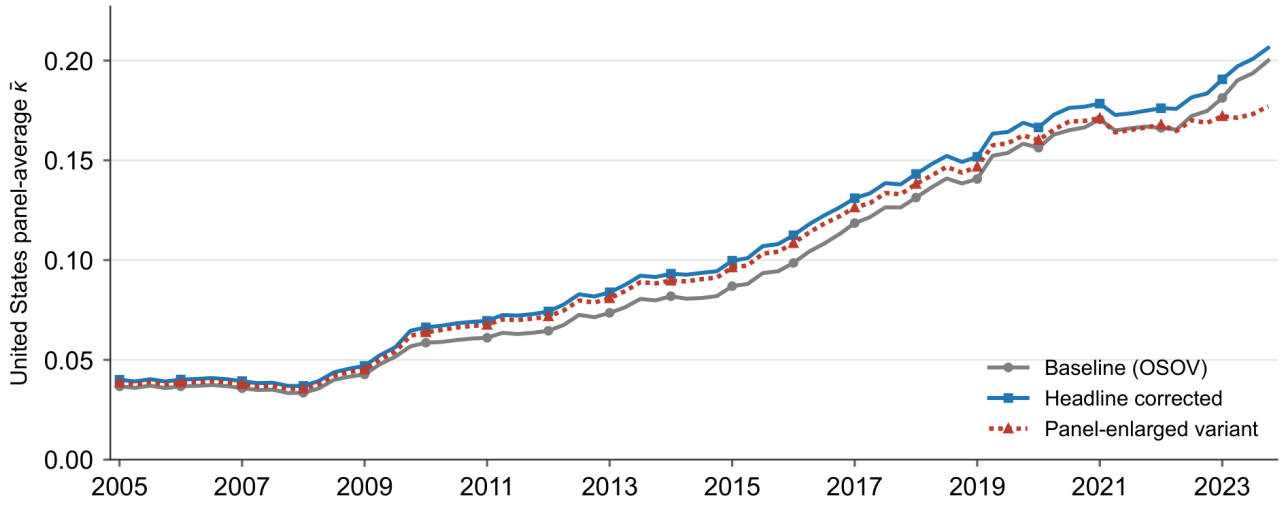


Figure 11. U.S. $\bar{\kappa}$ under Three Specifications. This figure plots the U.S. panel-average profit weight $\bar{\kappa}$ by quarter over 2005Q1–2023Q4 under three specifications: the baseline one-share-one-vote panel (Baseline (OSOV)), the in-panel control correction (Headline corrected), and the enlarged panel with reinstated firm-quarters (Panel-enlarged variant). Firm-quarters are reinstated when the firm is exchange-listed and its proxy statement in force reports multiple classes of common stock with a usable voting-rights measurement; 452 of the 1,206 identified firms qualify at 2023Q4. The in-panel correction shifts the level slightly upward in every quarter, while enlarging the panel lowers it relative to the corrected series in every quarter. The enlarged series lies above the one-share-one-vote baseline through 2021Q1, within 0.002 of it over the following year, and below it from 2022Q2 onward. Because reinstatement changes both the panel denominator and the set of common-ownership links, the figure does not attribute the level shift to either mechanism; Table A9 reports their separate contributions.

Table 1. Universal and Common Ownership Around the World (2023Q4)

Countries	#Unique Firms	Average Pairwise κ	Avg. Pairwise κ Decomposition		Avg. Pairwise κ Firm-Size Restricted Samples		Average Intra-Industry Pairwise κ	Average Inter-Industry Pairwise κ
			Big Three	Non-Big Three	Above Median	Top Tercile		
United States	3,757	0.2000	0.1781	0.0220	0.4928	0.5636	0.1923	0.2003
Canada	1,779	0.0055	0.0010	0.0045	0.0174	0.0321	0.0124	0.0047
Euro Area (integrated)	1,985	0.0080	0.0048	0.0032	0.0289	0.0572	0.0130	0.0079
United Kingdom	1,180	0.0393	0.0159	0.0234	0.1097	0.1711	0.1079	0.0368
France	503	0.0069	0.0030	0.0039	0.0210	0.0429	0.0150	0.0067
Germany	429	0.0131	0.0066	0.0065	0.0439	0.0770	0.0193	0.0129
Italy	367	0.0055	0.0004	0.0050	0.0126	0.0203	0.0129	0.0053
Spain	224	0.0066	0.0033	0.0033	0.0224	0.0478	0.0125	0.0064
Netherlands	118	0.0426	0.0255	0.0170	0.1117	0.1588	0.0970	0.0411
Belgium	96	0.0147	0.0050	0.0098	0.0402	0.0438	0.0445	0.0138
Ireland	65	0.1451	0.1119	0.0331	0.4343	0.5116	0.2095	0.1434
Austria	55	0.0103	0.0020	0.0083	0.0305	0.0310	0.0999	0.0081
Finland	128	0.0393	0.0014	0.0379	0.0649	0.0852	0.0334	0.0395
Sweden	524	0.0449	0.0004	0.0445	0.0450	0.0579	0.0627	0.0441
Norway	230	0.0165	0.0008	0.0157	0.0362	0.0540	0.0374	0.0157
Denmark	101	0.0196	0.0055	0.0140	0.0522	0.0892	0.0395	0.0186
Switzerland	187	0.0779	0.0212	0.0566	0.1796	0.2424	0.0924	0.0774
Poland	564	0.0035	0.0000	0.0035	0.0089	0.0155	0.0128	0.0032
Russian Federation	128	0.0103	0.0002	0.0101	0.0157	0.0162	0.0837	0.0043
Greece	146	0.0037	0.0002	0.0035	0.0118	0.0186	0.0175	0.0033
Croatia	75	0.0295	0.0000	0.0295	0.0366	0.0552	0.0492	0.0275
Romania	301	0.0171	0.0000	0.0171	0.0317	0.0476	0.0377	0.0163
Japan	3,681	0.0263	0.0041	0.0221	0.0775	0.1208	0.0311	0.0261
China	5,470	0.0474	0.0000	0.0474	0.1003	0.1347	0.0386	0.0477
India	3,932	0.0012	0.0000	0.0011	0.0037	0.0073	0.0017	0.0012
Hong Kong	1,219	0.0070	0.0001	0.0068	0.0180	0.0258	0.0074	0.0070
Taiwan	1,723	0.0073	0.0037	0.0036	0.0258	0.0439	0.0161	0.0068
South Korea	2,440	0.0020	0.0003	0.0017	0.0070	0.0139	0.0039	0.0019
Malaysia	918	0.0028	0.0000	0.0028	0.0093	0.0189	0.0033	0.0028
Indonesia	582	0.0004	0.0000	0.0004	0.0007	0.0011	0.0028	0.0003
Singapore	531	0.0016	0.0001	0.0015	0.0049	0.0104	0.0013	0.0016
Thailand	842	0.0019	0.0002	0.0017	0.0034	0.0051	0.0056	0.0018
Vietnam	873	0.0029	0.0000	0.0029	0.0040	0.0058	0.0261	0.0020
Philippines	217	0.0026	0.0000	0.0026	0.0061	0.0073	0.0062	0.0024
Australia	1,545	0.0097	0.0062	0.0035	0.0342	0.0702	0.0092	0.0097
New Zealand	112	0.0432	0.0052	0.0380	0.1074	0.1413	0.1237	0.0406
Brazil	260	0.0093	0.0028	0.0064	0.0197	0.0311	0.0149	0.0091
Mexico	58	0.0411	0.0128	0.0283	0.0675	0.0457	0.1332	0.0393
Chile	139	0.0174	0.0004	0.0170	0.0195	0.0237	0.0429	0.0165
Colombia	54	0.0143	0.0000	0.0143	0.0262	0.0157	0.1013	0.0094
Peru	49	0.0076	0.0000	0.0076	0.0122	0.0280	0.0907	0.0035
South Africa	181	0.1295	0.0040	0.1255	0.3581	0.4159	0.1646	0.1287
Egypt	205	0.0617	0.0000	0.0616	0.0892	0.1180	0.0697	0.0613
Morocco	64	0.0210	0.0000	0.0210	0.0239	0.0369	0.0430	0.0205
Israel	508	0.0139	0.0005	0.0135	0.0345	0.0448	0.0161	0.0138
United Arab Emirates	144	0.0323	0.0001	0.0322	0.0575	0.0717	0.0364	0.0321

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Countries	#Unique Firms	Average Pairwise κ	Avg. Pairwise κ Decomposition		Avg. Pairwise κ Firm-Size Restricted Samples		Average Intra-Industry Pairwise κ	Average Inter-Industry Pairwise κ
			Big Three	Non-Big Three	Above Median	Top Tercile		
Saudi Arabia	247	0.0238	0.0032	0.0206	0.0849	0.1353	0.0581	0.0227
Kuwait	137	0.0281	0.0003	0.0278	0.0474	0.0640	0.0197	0.0288
Oman	101	0.1025	0.0000	0.1025	0.1871	0.2754	0.2051	0.0991
Jordan	178	0.0363	0.0000	0.0363	0.0667	0.0877	0.0249	0.0370

This table presents the average value of the κ calculated for each pair of firms within each country as of 2023Q4, serving as a proxy for universal ownership. The table also provides a breakdown of the average pairwise κ into contributions from the Big Three and non-Big Three investors. Additionally, it reports the average pairwise κ for restricted firm samples, including firms with market capitalizations above the country median and those in the top tercile of the market capitalization distribution within their country in 2023Q4. Finally, the table displays the average pairwise κ for firms within the same country and industry in 2023Q4, which reflects intra-industry common ownership, as well as for firms in the same country but from different industries, capturing inter-industry common ownership. The Euro Area is treated as a single country and comprises the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, and Spain.

Table 2. Variance Decomposition of log κ - Top Tercile Firms

Countries	Raw		Cross Section		Time Series		Panel	
	Overlapping Ownership (%)	Relative IHHI (%)	Overlapping Ownership (%)	Relative IHHI (%)	Overlapping Ownership (%)	Relative IHHI (%)	Overlapping Ownership (%)	Relative IHHI (%)
United States	83.68	16.32	81.04	18.96	87.53	12.47	82.62	17.38
Canada	79.16	20.84	79.12	20.88	84.87	15.13	84.83	15.17
Euro Area (integrated)	80.57	19.43	80.08	19.92	87.34	12.66	84.86	15.14
United Kingdom	81.15	18.85	80.99	19.01	81.87	18.13	81.69	18.31
France	80.67	19.33	80.38	19.62	88.76	11.24	86.98	13.02
Germany	80.13	19.87	79.87	20.13	84.82	15.18	83.76	16.24
Italy	79.89	20.11	79.48	20.52	85.04	14.96	83.21	16.79
Spain	79.42	20.58	78.96	21.04	90.58	9.42	88.62	11.38
Netherlands	80.43	19.57	79.62	20.38	85.41	14.59	81.56	18.44
Belgium	80.26	19.74	79.05	20.95	89.05	10.95	86.18	13.82
Ireland	83.24	16.76	82.17	17.83	80.41	19.59	78.15	21.85
Austria	82.34	17.66	82.06	17.94	89.40	10.60	88.40	11.60
Finland	76.94	23.06	75.86	24.14	81.64	18.36	80.58	19.42
Sweden	83.50	16.50	83.18	16.82	83.84	16.16	83.56	16.44
Norway	81.01	18.99	80.77	19.23	86.37	13.63	85.66	14.34
Denmark	79.72	20.28	79.30	20.70	86.84	13.16	84.97	15.03
Switzerland	78.75	21.25	77.37	22.63	88.94	11.06	80.96	19.04
Poland	86.33	13.67	85.68	14.32	86.18	13.82	84.43	15.57
Russian Federation	92.75	7.25	92.56	7.44	83.92	16.08	83.35	16.65
Greece	89.34	10.66	88.75	11.25	88.18	11.82	87.86	12.14
Croatia	89.26	10.74	86.38	13.62	91.98	8.02	91.28	8.72
Romania	82.45	17.55	80.18	19.82	81.94	18.06	80.86	19.14
Japan	80.31	19.69	79.83	20.17	90.91	9.09	87.53	12.47
China	87.99	12.01	87.56	12.44	85.38	14.62	85.11	14.89
India	85.80	14.20	85.43	14.57	91.48	8.52	91.21	8.79
Hong Kong	93.39	6.61	93.32	6.68	93.48	6.52	93.35	6.65
Taiwan	79.73	20.27	79.12	20.88	91.66	8.34	88.59	11.41
South Korea	89.66	10.34	89.57	10.43	96.04	3.96	95.93	4.07
Malaysia	91.87	8.13	91.80	8.20	95.73	4.27	95.62	4.38
Indonesia	87.66	12.34	87.57	12.43	90.77	9.23	90.06	9.94
Singapore	91.17	8.83	90.76	9.24	92.70	7.30	92.64	7.36
Thailand	75.31	24.69	75.07	24.93	88.45	11.55	88.12	11.88
Vietnam	87.30	12.70	86.86	13.14	87.03	12.97	86.61	13.39
Philippines	90.37	9.63	90.05	9.95	90.29	9.71	89.46	10.54
Australia	82.51	17.49	81.95	18.05	89.42	10.58	88.20	11.80
New Zealand	81.62	18.38	81.20	18.80	84.07	15.93	82.40	17.60
Brazil	84.69	15.31	84.35	15.65	87.92	12.08	86.75	13.25
Mexico	68.27	31.73	67.06	32.94	64.35	35.65	59.92	40.08
Chile	89.26	10.74	89.03	10.97	89.24	10.76	88.22	11.78
Colombia	93.70	6.30	93.51	6.49	91.79	8.21	90.87	9.13
Peru	87.11	12.89	86.56	13.44	85.89	14.11	81.52	18.48
South Africa	85.47	14.53	85.12	14.88	82.02	17.98	80.54	19.46
Egypt	92.48	7.52	92.25	7.75	91.90	8.10	91.15	8.85
Morocco	95.96	4.04	95.14	4.86	88.59	11.41	86.83	13.17

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Countries	Raw		Cross Section		Time Series		Panel	
	Overlapping Ownership (%)	Relative IHHI (%)	Overlapping Ownership (%)	Relative IHHI (%)	Overlapping Ownership (%)	Relative IHHI (%)	Overlapping Ownership (%)	Relative IHHI (%)
Israel	83.97	16.03	83.35	16.65	92.86	7.14	92.26	7.74
United Arab Emirates	94.61	5.39	93.67	6.33	90.55	9.45	90.17	9.83
Saudi Arabia	87.56	12.44	81.19	18.81	94.39	5.61	92.67	7.33
Kuwait	82.47	17.53	79.68	20.32	90.51	9.49	89.92	10.08
Oman	73.33	26.67	72.62	27.38	67.50	32.50	64.43	35.57
Jordan	86.89	13.11	86.72	13.28	79.41	20.59	79.02	20.98

This table presents what proportion of the variance of log κ can be attributed to each of the two main components of κ under the "one share, one vote" assumption: (i) overlapping ownership and (ii) relative IHHI. All calculations are based on a restricted sample that considers all firm pairs where both firms are in the top tercile of market capitalization in their country in each quarter. The raw sample is unmodified. The cross-section is residualized on quarter fixed effects. The time series is residualized on ordered firm pair fixed effects. The panel is residualized on both quarter and ordered firm pair fixed effects.

Table 3. Largest Owners (2023Q4)

Countries	#Unique Firms	Percentage (%) of Firms where the Largest Owner is...							
		(Owner's Classification)					(Owner's Country)		
		Individual/ Family	Big Three Inst. Inv.	Non-Big Three Inst. Inv.	Govt. Inst.	Other Investor	Domestic Investor	US Foreign Investor	Non-US Frgn. Inv.
United States	3,757	19.30	35.51	37.90	0.11	7.19	92.20	0.00	7.80
Canada	1,779	47.44	1.35	48.23	0.34	2.64	65.04	21.19	13.77
Euro Area (integrated)	1,985	37.88	3.93	50.98	3.48	3.73	79.55	9.17	11.28
United Kingdom	1,180	27.46	8.73	59.58	0.51	3.73	65.25	16.10	18.64
France	503	50.70	2.58	39.36	2.78	4.57	80.12	7.75	12.13
Germany	429	33.80	4.90	53.85	2.80	4.66	72.03	8.86	19.11
Italy	367	38.15	0.82	55.86	4.36	0.82	92.10	1.09	6.81
Spain	224	37.95	3.13	55.36	1.79	1.79	76.34	6.70	16.96
Netherlands	118	28.81	5.93	56.78	2.54	5.93	38.14	31.36	30.51
Belgium	96	36.46	2.08	50.00	6.25	5.21	59.38	8.33	32.29
Ireland	65	16.92	33.85	46.15	3.08	0.00	16.92	53.85	29.23
Austria	55	21.82	1.82	72.73	1.82	1.82	69.09	5.45	25.45
Finland	128	27.34	1.56	53.91	8.59	8.59	79.69	2.34	17.97
Sweden	524	30.15	0.38	60.50	0.38	8.59	83.59	2.48	13.93
Norway	230	6.96	0.87	84.35	2.17	5.65	80.00	3.04	16.96
Denmark	101	13.86	3.96	73.27	1.98	6.93	84.16	7.92	7.92
Switzerland	187	32.62	7.49	49.73	5.88	4.28	60.96	14.97	24.06
Poland	564	48.23	0.00	48.58	1.77	1.42	86.70	1.24	12.06
Russian Federation	128	21.88	0.78	70.31	7.03	0.00	88.28	0.78	10.94
Greece	146	62.33	0.00	34.25	3.42	0.00	87.67	1.37	10.96
Croatia	75	21.33	0.00	70.67	8.00	0.00	78.67	0.00	21.33
Romania	301	30.23	0.00	50.17	7.64	11.96	88.04	0.00	11.96
Japan	3,681	22.52	1.58	74.44	0.19	1.28	91.77	3.88	4.35
China	5,470	37.95	0.00	45.78	15.36	0.91	90.93	0.44	8.63
India	3,932	50.58	0.03	46.87	1.88	0.64	94.35	0.92	4.73
Hong Kong	1,219	40.36	0.00	51.76	6.97	0.90	54.72	0.90	44.38
Taiwan	1,723	21.82	0.81	75.68	0.93	0.75	95.01	1.45	3.54
South Korea	2,440	49.10	0.04	49.30	0.12	1.43	97.42	0.45	2.13
Malaysia	918	29.74	0.00	66.67	3.16	0.44	90.31	0.54	9.15
Indonesia	582	12.89	0.00	86.77	0.34	0.00	83.33	0.52	16.15
Singapore	531	42.56	0.00	52.54	3.77	1.13	70.43	2.64	26.93
Thailand	842	47.03	0.12	51.31	1.31	0.24	92.16	0.24	7.60
Vietnam	873	32.07	0.00	64.95	2.63	0.34	94.96	0.00	5.04
Philippines	217	11.98	0.00	86.18	1.38	0.46	92.63	0.46	6.91

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Countries	#Unique Firms	Percentage (%) of Firms where the Largest Owner is...							
		(Owner's Classification)					(Owner's Country)		
		Individual/ Family	Big Three Inst. Inv.	Non-Big Three Inst. Inv.	Govt. Inst.	Other Investor	Domestic Investor	US Foreign Investor	Non-US Frgn. Inv.
Australia	1,545	37.93	4.79	54.50	0.13	2.65	78.71	8.41	12.88
New Zealand	112	34.82	0.89	52.68	11.61	0.00	73.21	3.57	23.21
Brazil	260	16.15	0.77	75.77	5.38	1.92	87.31	5.00	7.69
Mexico	58	29.31	8.62	60.34	1.72	0.00	77.59	13.79	8.62
Chile	139	10.79	0.72	88.49	0.00	0.00	87.05	1.44	11.51
Colombia	54	7.41	0.00	90.74	1.85	0.00	83.33	3.70	12.96
Peru	49	0.00	0.00	93.88	2.04	4.08	53.06	4.08	42.86
South Africa	181	11.05	0.00	59.67	29.28	0.00	88.40	1.10	10.50
Egypt	205	38.54	0.00	37.56	21.46	2.44	82.93	0.00	17.07
Morocco	64	21.88	0.00	75.00	3.13	0.00	82.81	0.00	17.19
Israel	508	46.26	0.79	46.85	0.00	6.10	83.86	8.27	7.87
United Arab Emirates	144	22.92	0.00	43.06	31.94	2.08	86.11	0.69	13.19
Saudi Arabia	247	37.25	0.81	46.56	14.98	0.40	90.28	0.81	8.91
Kuwait	137	18.98	0.00	72.99	8.03	0.00	94.89	0.00	5.11
Oman	101	17.82	0.00	62.38	15.84	3.96	66.34	0.00	33.66
Jordan	178	39.89	0.00	48.88	10.67	0.56	76.97	0.00	23.03
All Countries	37,367	34.57	4.62	54.46	4.10	2.25	86.25	3.47	10.28

This table presents the percentage of firms in each country whose largest shareholder falls into one of the following categories as of 2023Q4: an individual or family, a Big Three institutional investor (BlackRock, Vanguard, State Street), a non-Big Three institutional investor, a government institution, or another type of investor (primarily venture capital, private equity, or research firms). Additionally, it shows the percentage of firms whose largest shareholders are domestic, U.S. foreign, or non-U.S. foreign investors during the same period. The Euro Area is treated as a single country and comprises the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, Netherlands, and Spain. The last row of the table provides these summary statistics for the entire sample.

Table 4. Top 5 Universal Owners by Country (2023Q4)

Countries	Owner's Name	# Firms in Portfolio	As % of Country Sample Firms	As % of Country Sample Mkt. Cap.	Pct. (%) of Country Sample Firms where Stake is...		
					$\geq 0.5\%$	$\geq 1\%$	$\geq 5\%$
United States	The Vanguard Group, Inc.	2,957	78.71	9.05	75.43	72.56	46.13
United States	BlackRock, Inc.	2,941	78.28	7.60	69.36	64.44	50.44
United States	State Street Corporation	2,788	74.21	4.26	57.84	53.87	8.41
United States	Fidelity Investments	2,555	68.01	2.16	27.26	22.46	7.56
United States	Geode Capital Management, LLC	3,009	80.09	1.90	70.27	54.78	0.00
Euro Area (integrated)	BlackRock, Inc.	740	37.28	5.24	26.70	20.96	8.97
Euro Area (integrated)	The Vanguard Group, Inc.	647	32.59	2.67	27.41	23.02	1.26
Euro Area (integrated)	Norges Bank Investment Management (NBIM)	696	35.06	1.63	29.32	22.42	1.01
Euro Area (integrated)	Amundi SA	712	35.87	0.97	14.86	8.41	0.45
Euro Area (integrated)	State Street Corporation	781	39.35	0.77	3.38	2.12	0.15
United Kingdom	BlackRock, Inc.	535	45.34	7.37	37.03	27.97	16.02
United Kingdom	The Vanguard Group, Inc.	467	39.58	3.01	31.95	23.56	2.54
United Kingdom	Norges Bank Investment Management (NBIM)	270	22.88	1.86	20.34	17.29	0.93
United Kingdom	State Street Corporation	485	41.10	1.35	18.31	10.93	0.17
United Kingdom	Legal & General Group plc	496	42.03	0.93	33.14	12.97	0.42
France	BlackRock, Inc.	135	26.84	4.24	21.07	16.30	6.36
France	The Vanguard Group, Inc.	132	26.24	1.55	22.07	17.30	0.20
France	Norges Bank Investment Management (NBIM)	143	28.43	1.55	22.66	17.50	1.19
France	The Capital Group Companies, Inc.	45	8.95	1.47	6.56	4.97	2.39
France	Amundi SA	174	34.59	1.25	17.10	9.54	0.80
Germany	BlackRock, Inc.	158	36.83	6.05	29.37	22.38	11.89
Germany	The Vanguard Group, Inc.	158	36.83	2.05	31.00	24.71	0.23
Germany	Norges Bank Investment Management (NBIM)	166	38.69	1.83	33.57	26.11	1.17
Germany	DWS Investment GmbH	168	39.16	1.29	19.58	14.22	1.40
Germany	Amundi SA	163	38.00	0.90	14.69	8.16	0.00
Italy	Government of Italy	13	3.54	10.28	3.54	3.54	3.54
Italy	BlackRock, Inc.	155	42.23	3.66	16.35	10.63	1.63
Italy	The Vanguard Group, Inc.	89	24.25	1.88	19.35	15.80	0.00
Italy	Norges Bank Investment Management (NBIM)	119	32.43	1.63	27.25	20.16	0.82
Italy	Amundi SA	114	31.06	1.07	14.99	8.99	1.09
Japan	Nomura Asset Management Co., Ltd.	2,048	55.64	3.71	53.57	46.54	4.35
Japan	BlackRock, Inc.	2,026	55.04	2.90	24.37	18.39	2.15
Japan	The Vanguard Group, Inc.	1,279	34.75	2.08	33.28	31.49	0.35
Japan	Nikko (now Amova) Asset Management Co., Ltd.	2,086	56.67	1.73	47.79	26.11	0.76
Japan	Daiwa Asset Management Co., Ltd.	2,113	57.40	1.68	50.04	24.50	0.35

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Countries	Owner's Name	# Firms in Portfolio	As % of Country Sample Firms	As % of Country Sample Mkt. Cap.	Pct. (%) of Country Sample Firms where Stake is...		
					$\geq 0.5\%$	$\geq 1\%$	$\geq 5\%$
China	Government of China	4,577	83.67	16.11	59.41	48.35	22.78
China	E Fund Management Co., Ltd.	2,555	46.71	0.46	11.24	5.96	0.42
China	Fullgoal Fund Management Co., Ltd.	2,698	49.32	0.31	10.71	5.19	0.20
China	GF Fund Management Co., Ltd.	3,852	70.42	0.31	11.96	5.81	0.26
China	China Universal Asset Management Co., Ltd.	2,903	53.07	0.23	7.09	2.74	0.05
India	Government of India	80	2.03	10.89	1.93	1.91	1.78
India	Life Insurance Corporation of India	284	7.22	3.54	7.22	7.15	2.37
India	SBI Funds Management Private, Ltd.	498	12.67	1.64	5.87	4.86	1.58
India	ICICI Prudential Asset Management Co., Ltd.	555	14.11	1.03	5.98	4.55	0.43
India	HDFC Asset Management Co., Ltd.	574	14.60	0.97	6.03	5.04	1.53
Australia	The Vanguard Group, Inc.	293	18.96	5.53	18.32	17.86	6.73
Australia	BlackRock, Inc.	285	18.45	4.67	14.89	12.36	4.27
Australia	State Street Corporation	299	19.35	3.77	8.41	7.77	2.98
Australia	Norges Bank Investment Management (NBIM)	319	20.65	1.15	17.48	11.97	0.13
Australia	Dimensional Fund Advisors, LP	459	29.71	0.53	14.50	9.32	0.91
South Africa	Public Investment Corporation SOC, Ltd.	97	53.59	13.22	53.59	53.04	47.51
South Africa	BlackRock, Inc.	70	38.67	3.41	34.25	30.39	7.73
South Africa	The Vanguard Group, Inc.	71	39.23	2.75	35.91	34.81	1.10
South Africa	Allan Gray Proprietary, Ltd.	71	39.23	1.84	31.49	28.18	16.57
South Africa	Ninety One SA Pty., Ltd.	90	49.72	1.68	37.02	31.49	12.71
Brazil	BlackRock, Inc.	110	42.31	2.69	31.54	25.38	7.31
Brazil	The Vanguard Group, Inc.	117	45.00	1.42	36.92	30.38	0.00
Brazil	Caixa Econômica Federal	135	51.92	1.37	13.46	4.62	1.15
Brazil	BTG Pactual WM Gestão de Recursos Ltda.	164	63.08	0.78	18.85	12.31	4.62
Brazil	Itaú Unibanco SA	143	55.00	0.63	21.54	10.00	0.77

This table reports the top 5 universal owners as of 2023Q4 for 12 countries: United States, Euro Area, United Kingdom, France, Germany, Italy, Japan, China, India, Australia, South Africa, and Brazil. It also shows the number of firms in their portfolios, both in levels and as a percentage of the number of firms in the country sample, as well as the market capitalization of the country sample. It further reports the percentage of firms in the country sample where the universal owner has a stake of at least 0.5%, 1%, or 5%. The top 5 universal owners are identified as follows: We calculate a universal owner index as the product of the number of firms in the investor's portfolio, expressed as a fraction of the number of firms in the country sample, and the value of the investor's portfolio, expressed as a fraction of the market capitalization of all the firms in the country. We then sort all investors based on the value of this universal owner index and select the top five. The Euro Area is treated as a single country and comprises the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, Netherlands, and Spain.

Table 5. Ownership by the Top 5 Shareholders (2023Q4)

Countries	#Unique Firms	Top 5's Mean Ownership Ratio (%)	Top 5 Investors' Mean Ownership Decomposition (%)							
			(Owner's Classification)					(Owner's Country)		
			Individual/ Family	Big Three Inst. Inv.	Non-Big Three Inst. Inv.	Govt. Inst.	Other Investor	Domestic Investor	US Foreign Investor	Non-US Foreign Investor
United States	3,757	40.04	8.18	11.28	17.71	0.11	2.76	36.25	0.00	3.79
Canada	1,779	29.80	13.72	0.42	14.65	0.11	0.89	19.04	6.05	4.71
Euro Area (integrated)	1,985	56.98	21.59	1.29	30.56	1.65	1.90	45.84	4.27	6.87
United Kingdom	1,180	43.08	12.47	2.10	26.56	0.25	1.69	29.91	5.57	7.60
France	503	57.95	29.62	0.84	23.80	1.30	2.40	47.12	3.48	7.36
Germany	429	56.81	19.09	1.34	32.64	1.40	2.33	40.23	4.35	12.22
Italy	367	63.95	22.68	0.45	37.52	2.53	0.77	56.73	1.38	5.85
Spain	224	60.30	23.90	0.95	33.69	0.72	1.04	45.83	3.91	10.56
Netherlands	118	48.71	14.55	2.96	26.68	1.13	3.39	18.11	11.73	18.87
Belgium	96	54.25	19.35	1.36	28.12	2.70	2.71	30.63	4.53	19.08
Ireland	65	37.98	5.54	8.78	20.90	1.62	1.15	4.92	20.17	12.90
Austria	55	62.84	12.33	1.01	46.69	1.73	1.08	41.10	3.55	18.19
Finland	128	44.74	11.50	0.63	28.02	2.60	1.98	36.33	1.20	7.20
Sweden	524	47.08	14.11	0.25	29.41	0.21	3.11	39.55	1.23	6.30
Norway	230	47.00	2.89	0.51	40.46	1.14	2.00	37.84	1.43	7.74
Denmark	101	42.74	6.96	1.27	31.55	1.26	1.71	34.10	3.42	5.22
Switzerland	187	48.20	17.15	2.64	24.29	2.71	1.42	29.07	6.41	12.72
Poland	564	67.36	33.11	0.08	32.37	1.07	0.73	58.11	1.34	7.91
Russian Federation	128	72.85	13.26	0.19	54.87	4.41	0.12	64.91	0.42	7.52
Greece	146	64.94	38.78	0.31	23.57	2.16	0.11	55.33	1.81	7.80
Croatia	75	71.09	12.09	0.00	53.20	5.80	0.00	55.39	0.10	15.60
Romania	301	74.80	20.91	0.02	37.69	5.43	10.75	65.78	0.20	8.82
Japan	3,681	42.47	11.28	0.46	29.75	0.08	0.90	39.45	1.46	1.57
China	5,470	53.62	19.48	0.04	25.12	8.05	0.92	48.17	0.33	5.11
India	3,932	57.26	28.65	0.05	26.78	1.36	0.41	53.38	0.80	3.08
Hong Kong	1,219	60.00	23.84	0.27	31.09	4.20	0.61	32.21	1.12	26.67
Taiwan	1,723	37.47	8.54	0.51	27.85	0.34	0.24	35.22	0.80	1.45
South Korea	2,440	44.10	20.14	0.33	22.94	0.13	0.55	41.81	0.87	1.42
Malaysia	918	54.55	17.31	0.05	34.68	2.31	0.20	48.92	0.37	5.26
Indonesia	582	76.44	12.60	0.13	63.17	0.48	0.06	61.63	0.60	14.21
Singapore	531	62.15	27.76	0.22	31.44	2.03	0.69	43.93	1.89	16.33
Thailand	842	45.29	23.96	0.11	20.39	0.68	0.14	41.37	0.18	3.73
Vietnam	873	56.97	15.63	0.01	39.37	1.86	0.11	53.73	0.07	3.17
Philippines	217	67.61	8.42	0.16	58.02	0.66	0.35	61.47	0.59	5.56

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Countries	#Unique Firms	Top 5's Mean Ownership Ratio (%)	Top 5 Investors' Mean Ownership Decomposition (%)							
			(Owner's Classification)					(Owner's Country)		
			Individual/ Family	Big Three Inst. Inv.	Non-Big Three Inst. Inv.	Govt. Inst.	Other Investor	Domestic Investor	US Foreign Investor	Non-US Foreign Investor
Australia	1,545	35.17	13.06	1.48	19.61	0.13	0.88	27.37	2.73	5.06
New Zealand	112	43.19	14.56	1.14	21.39	5.98	0.13	30.79	1.98	10.42
Brazil	260	66.09	10.11	0.95	49.38	4.09	1.56	56.88	3.22	5.99
Mexico	58	44.93	18.46	1.25	24.75	0.31	0.16	39.24	3.81	1.88
Chile	139	75.36	7.05	0.74	67.55	0.02	0.00	65.10	1.65	8.62
Colombia	54	70.00	2.83	0.22	64.17	2.77	0.00	61.11	2.06	6.83
Peru	49	80.10	3.32	0.13	72.01	2.01	2.63	46.29	3.43	30.38
South Africa	181	56.68	7.40	1.30	39.08	8.87	0.03	48.36	2.69	5.63
Egypt	205	66.51	25.13	0.09	24.32	15.73	1.24	54.84	0.19	11.48
Morocco	64	72.39	13.77	0.00	56.23	2.07	0.31	58.18	0.16	14.04
Israel	508	61.50	26.66	0.20	32.01	0.06	2.57	54.01	3.29	4.20
United Arab Emirates	144	62.00	13.68	0.41	28.47	17.86	1.58	54.15	0.86	6.99
Saudi Arabia	247	45.90	16.61	0.92	21.56	6.66	0.17	40.42	1.49	4.00
Kuwait	137	53.55	10.80	0.44	37.66	4.61	0.05	49.44	0.56	3.54
Oman	101	67.83	13.42	0.00	37.80	14.52	2.08	48.60	0.25	18.98
Jordan	178	63.01	26.27	0.00	30.05	6.63	0.06	49.08	0.08	13.85
All Countries	37,367	49.61	17.30	1.53	27.39	2.27	1.10	42.49	1.49	5.63

This table presents descriptive statistics on the ownership by the top five largest shareholders of each firm as of 2023Q4 for every country in our sample. Namely, this table displays the mean ownership ratio by the top 5 shareholders and its decomposition based on the shareholder classifications and the countries of the top 5 owners. The Euro Area is treated as a single country and comprises the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, Netherlands, and Spain. The last row of this table shows the same summary statistics for the entire sample.

Table 6. Top 10 Industries with the Highest Levels of Intra-Industry Common Ownership (2023Q4)

Macro Sector	Sector	Industry	Average Industry Pairwise κ	Industry Firm Count	Average Industry Firm Count	Industry Market Cap.	Average Industry Mkt. Cap.
United States							
Financials	REIT	REIT-Mixed Properties	0.8103	90	37.37	714.18	401.66
Industrials	Transportation	Shipping	0.7397	2	37.37	8.47	401.66
Materials	Metals	Aluminum	0.7352	3	37.37	8.33	401.66
Financials	REIT	REIT-Factory Outlet Centers	0.7289	65	37.37	412.24	401.66
Financials	REIT	REIT-Apartments	0.7234	19	37.37	170.85	401.66
Consumer Discretionary	Retail	Retail (Discounters/Offprice)	0.6669	9	37.37	542.45	401.66
Health Care	Health Care	Health Care (Managed Care)	0.6602	8	37.37	807.12	401.66
Materials	Mining	Coal	0.6073	2	37.37	6.31	401.66
Utilities	Electric Utilities	Power Producers (Independ)	0.5645	14	37.37	184.33	401.66
Utilities	Non-Electric Utilities	Natural Gas-Distr-Pipe Line	0.5560	12	37.37	55.23	401.66
Euro Area (integrated)							
Financials	Non-Bank Financial	Insurance Brokers	0.7992	2	21.72	82.53	104.16
Energy	Energy	Oil & Gas (International Integrated)	0.0784	3	21.72	235.54	104.16
Financials	Non-Bank Financial	Financial (Diversified)	0.0668	63	21.72	749.20	104.16
Technology	High Tech - Hardware	Semiconductors	0.0598	34	21.72	534.98	104.16
Consumer Staples	Consumer Staples	Distributors (Food & Health)	0.0592	18	21.72	53.50	104.16
Energy	Energy	Oil & Gas (Services)	0.0572	19	21.72	61.42	104.16
Materials	Chemicals	Chemicals	0.0556	49	21.72	537.64	104.16
Financials	Non-Bank Financial	Insurance (Multi-Line)	0.0506	16	21.72	253.30	104.16
Industrials	Aerospace/Defense	Aerospace/Defense	0.0489	16	21.72	254.24	104.16
Telecommunication Services	Communication Services	Integrated Telecom	0.0357	20	21.72	225.51	104.16
United Kingdom							
Consumer Staples	Consumer Staples	Tobacco	0.7954	2	13.49	85.65	29.12
Utilities	Non-Electric Utilities	Water Utilities	0.4263	4	13.49	21.54	29.12
Financials	REIT	REIT-Mixed Properties	0.4060	13	13.49	27.39	29.12
Financials	Non-Bank Financial	Insurance (Property-Casualty)	0.3426	4	13.49	19.03	29.12
Financials	Non-Bank Financial	Insurance (Life/Health)	0.3326	8	13.49	80.60	29.12
Consumer Discretionary	Consumer Cyclicals	Homebuilding	0.2367	9	13.49	36.82	29.12
Utilities	Electric Utilities	Power Producers (Independ)	0.2298	4	13.49	61.26	29.12
Consumer Discretionary	Retail	Retail (Building Supplies)	0.2278	4	13.49	8.54	29.12
Consumer Staples	Consumer Staples	Distributors (Food & Health)	0.2193	5	13.49	42.36	29.12
Financials	REIT	REIT-Apartments	0.2160	8	13.49	8.55	29.12

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Macro Sector	Sector	Industry	Average Industry Pairwise κ	Industry Firm Count	Average Industry Firm Count	Industry Market Cap.	Average Industry Mkt. Cap.
France							
Consumer Staples	Consumer Staples	Distributors (Food & Health)	0.7094	5	7.46	13.08	42.31
Industrials	Transportation	Railroads	0.1050	4	7.46	17.68	42.31
Energy	Energy	Oil & Gas (Services)	0.0918	4	7.46	8.99	42.31
Financials	REIT	REIT-Mixed Properties	0.0772	5	7.46	15.44	42.31
Industrials	Business Cyclicals	Engineering & Construction	0.0694	7	7.46	106.01	42.31
Utilities	Electric Utilities	Power Producers (Independ)	0.0603	4	7.46	71.10	42.31
Consumer Discretionary	Autos/Auto Parts	Auto Parts & Equipment	0.0503	10	7.46	37.27	42.31
Financials	Non-Bank Financial	Financial (Diversified)	0.0469	8	7.46	105.91	42.31
Financials	REIT	REIT-Factory Outlet Centers	0.0371	12	7.46	32.60	42.31
Industrials	Manufacturing	Electrical Equipment & Components	0.0310	13	7.46	156.24	42.31
Germany							
Industrials	Aerospace/Defense	Aerospace/Defense	0.2073	4	6.70	29.40	31.20
Technology	High Tech - Hardware	Semiconductors	0.1387	11	6.70	69.11	31.20
Materials	Chemicals	Chemicals	0.1368	13	6.70	131.50	31.20
Financials	Non-Bank Financial	Insurance (Multi-Line)	0.1241	5	6.70	208.40	31.20
Consumer Discretionary	Retail	Retail (Footwear)	0.0948	3	6.70	45.00	31.20
Industrials	Business Cyclicals	Trucks & Parts	0.0697	7	6.70	61.61	31.20
Utilities	Electric Utilities	Power Producers (Independ)	0.0348	5	6.70	71.17	31.20
Technology	Internet	Internet	0.0321	12	6.70	28.67	31.20
Financials	Banks & Thrifts	Banks (Major Regional)	0.0315	2	6.70	1.45	31.20
Financials	Non-Bank Financial	Financial (Diversified)	0.0261	14	6.70	88.37	31.20
Italy							
Energy	Energy	Oil & Gas (Services)	0.3316	3	6.16	20.73	9.41
Utilities	Electric Utilities	Electric Companies	0.1691	4	6.16	98.80	9.41
Consumer Discretionary	Autos/Auto Parts	Automobiles	0.1014	5	6.16	1.46	9.41
Consumer Discretionary	Consumer Cyclicals	Homebuilding	0.0757	3	6.16	0.12	9.41
Financials	Non-Bank Financial	Financial (Diversified)	0.0585	16	6.16	142.20	9.41
Telecommunication Services	Communication Services	Integrated Telecom	0.0564	5	6.16	6.84	9.41
Industrials	Business Cyclicals	Building Materials	0.0359	8	6.16	6.97	9.41
Technology	Computer Services	Computer Services	0.0270	21	6.16	8.25	9.41
Technology	High Tech - Hardware	Semiconductors	0.0262	4	6.16	6.29	9.41
Consumer Discretionary	Media Cyclicals	Publishing	0.0221	8	6.16	1.49	9.41

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Macro Sector	Sector	Industry	Average Industry Pairwise κ	Industry Firm Count	Average Industry Firm Count	Industry Market Cap.	Average Industry Mkt. Cap.
Japan							
Financials	REIT	REIT-Factory Outlet Centers	0.5637	18	39.93	28.93	53.71
Financials	REIT	REIT-Mixed Properties	0.5169	23	39.93	34.35	53.71
Financials	Banks & Thrifts	Banks (Major Regional)	0.4271	13	39.93	20.03	53.71
Financials	REIT	REIT-Apartments	0.3946	4	39.93	4.44	53.71
Consumer Discretionary	Consumer Cyclicals	Distributors (Durables)	0.3259	10	39.93	206.42	53.71
Financials	Non-Bank Financial	Mutual Funds	0.2852	5	39.93	1.12	53.71
Consumer Discretionary	Consumer Cyclicals	Consumer Electronics	0.2548	4	39.93	26.73	53.71
Consumer Discretionary	Autos/Auto Parts	Automobiles	0.2467	13	39.93	440.40	53.71
Financials	Non-Bank Financial	Financial (Diversified)	0.1928	65	39.93	292.38	53.71
Industrials	Transportation	Miscellaneous Transportation	0.1913	30	39.93	119.03	53.71
China							
Financials	Non-Bank Financial	Mutual Funds	1.0025	2	62.10	0.04	108.83
Financials	Non-Bank Financial	Investment Banking/Brokerage	0.6340	32	62.10	169.23	108.83
Utilities	Electric Utilities	Electric Companies	0.4547	34	62.10	168.16	108.83
Utilities	Electric Utilities	Power Producers (Independ)	0.4238	40	62.10	131.62	108.83
Materials	Mining	Gold/Precious Metals Mining	0.3933	12	62.10	30.41	108.83
Industrials	Transportation	Railroads	0.3806	29	62.10	88.12	108.83
Consumer Discretionary	Media Cyclicals	Publishing	0.3208	26	62.10	39.82	108.83
Industrials	Transportation	Shipping	0.3064	29	62.10	65.07	108.83
Industrials	Transportation	Miscellaneous Transportation	0.3035	13	62.10	26.99	108.83
Materials	Mining	Coal	0.2919	41	62.10	107.52	108.83
India							
Financials	Non-Bank Financial	Insurance (Multi-Line)	0.1691	3	44.47	17.77	39.35
Materials	Metals	Diversified Metals	0.1677	5	44.47	29.24	39.35
Telecommunication Services	Communication Services	Integrated Telecom	0.0965	7	44.47	9.80	39.35
Financials	Banks & Thrifts	Banks (Major Regional)	0.0832	17	44.47	122.12	39.35
Consumer Staples	Consumer Staples	Tobacco	0.0644	5	44.47	69.90	39.35
Utilities	Non-Electric Utilities	Natural Gas-Distr-Pipe Line	0.0509	7	44.47	20.66	39.35
Industrials	Aerospace/Defense	Aerospace/Defense	0.0389	13	44.47	31.31	39.35
Financials	Non-Bank Financial	Financial (Diversified)	0.0387	62	44.47	330.43	39.35
Consumer Discretionary	Media Cyclicals	Publishing	0.0385	13	44.47	1.98	39.35
Energy	Energy	Oil & Gas (Refining & Mktg)	0.0352	20	44.47	80.13	39.35

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Macro Sector	Sector	Industry	Average Industry Pairwise κ	Industry Firm Count	Average Industry Firm Count	Industry Market Cap.	Average Industry Mkt. Cap.
		Australia					
Financials	Non-Bank Financial	Insurance (Property-Casualty)	0.6483	4	19.39	39.28	18.07
Financials	REIT	REIT-Mixed Properties	0.2645	9	19.39	16.94	18.07
Financials	REIT	REIT-Factory Outlet Centers	0.2428	13	19.39	53.85	18.07
Financials	Banks & Thrifts	Banks (Major Regional)	0.2121	2	19.39	4.50	18.07
Materials	Metals	Containers-Metal & Glass	0.1697	4	19.39	15.50	18.07
Consumer Staples	Consumer Staples	Distributors (Food & Health)	0.1592	6	19.39	54.33	18.07
Consumer Discretionary	Leisure Cyclicals	Restaurants	0.1552	2	19.39	4.55	18.07
Consumer Discretionary	Leisure Cyclicals	Gaming, Lottery & Parimutuel	0.1350	8	19.39	28.67	18.07
Financials	Non-Bank Financial	Financial (Diversified)	0.1151	27	19.39	365.16	18.07
Financials	Non-Bank Financial	Insurance (Life/Health)	0.1081	5	19.39	12.51	18.07
		South Africa					
Consumer Discretionary	Leisure Cyclicals	Restaurants	0.7621	2	3.88	0.48	6.09
Consumer Discretionary	Retail	Retail Stores-Dept Stores	0.7270	2	3.88	7.83	6.09
Energy	Energy	Oil & Gas (Exploration & Production)	0.7040	2	3.88	0.14	6.09
Financials	Banks & Thrifts	Banks (Major Regional)	0.4200	3	3.88	39.94	6.09
Consumer Discretionary	Consumer Cyclicals	Services (Commercial Consum)	0.3903	4	3.88	1.71	6.09
Consumer Staples	Consumer Staples	Distributors (Food & Health)	0.3610	5	3.88	18.68	6.09
Materials	Chemicals	Chemicals	0.3443	3	3.88	1.27	6.09
Financials	Non-Bank Financial	Financial (Diversified)	0.3375	4	3.88	28.86	6.09
Financials	REIT	REIT-Mixed Properties	0.3106	7	3.88	3.78	6.09
Consumer Discretionary	Consumer Cyclicals	Lodging-Hotels	0.2955	2	3.88	0.56	6.09
		Brazil					
Energy	Energy	Oil & Gas (Exploration & Production)	0.0912	3	5.11	10.83	12.63
Consumer Discretionary	Consumer Cyclicals	Homebuilding	0.0875	5	5.11	2.09	12.63
Materials	Paper & Forest Products	Paper & Forest Products	0.0492	4	5.11	18.28	12.63
Industrials	Machinery	Machinery	0.0428	2	5.11	0.26	12.63
Energy	Energy	Oil & Gas (Refining & Mktg)	0.0393	3	5.11	11.22	12.63
Industrials	Business Cyclicals	Waste Management	0.0373	3	5.11	1.05	12.63
Industrials	Transportation	Miscellaneous Transportation	0.0372	2	5.11	14.94	12.63
Industrials	Transportation	Railroads	0.0368	9	5.11	23.02	12.63
Consumer Discretionary	Autos/Auto Parts	Auto Parts & Equipment	0.0358	8	5.11	3.85	12.63
Health Care	Health Care	Health Care (Hospital Mgmt)	0.0345	7	5.11	21.50	12.63

This table reports the top 10 industries with the highest levels of intra-industry common ownership for 12 countries: United States, Euro Area, United Kingdom, France, Germany, Italy, Japan, China, India, Australia, South Africa, and Brazil. It also shows the sector and macro-sector to which an industry belongs, the average value of pairwise κ for the industry, the number of firms in the industry, the average number of firms per industry, the market cap. of the industry (USD billion), and the average market cap. of industries (USD billion). The Euro Area is treated as a single country and comprises the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, and Spain.

Table 7. Firm-Level Drivers

Method of Estimation:	OLS											
Dependent Variable:	Equal-Weighted Average Kappa (UO)						Equal-Weighted Average Kappa (CO)					
	(7.1)	(7.2)	(7.3)	(7.4)	(7.5)	(7.6)	(7.7)	(7.8)	(7.9)	(7.10)	(7.11)	(7.12)
Log Market Capitalization	0.0122***	0.0046***	0.0133***	0.0128***	0.0054	0.0082**	0.0143***	0.0057***	0.0170***	0.0150***	0.0068**	0.0097***
	(0.0031)	(0.0016)	(0.0027)	(0.0032)	(0.0033)	(0.0031)	(0.0031)	(0.0017)	(0.0028)	(0.0031)	(0.0032)	(0.0033)
Log Age	0.0026	0.0026**	-0.0001	0.0021	-0.0016	0.0042	0.0050	0.0037***	0.0018	0.0044	0.0001	0.0066**
	(0.0039)	(0.0012)	(0.0047)	(0.0039)	(0.0029)	(0.0028)	(0.0037)	(0.0011)	(0.0046)	(0.0037)	(0.0029)	(0.0025)
Ownership Concentration (C5)	-0.0702***	-0.0300***	-0.1142***	-0.0641***	-0.0535***	-0.0710***	-0.0887***	-0.0357***	-0.1435***	-0.0821***	-0.0703***	-0.0876***
	(0.0149)	(0.0087)	(0.0244)	(0.0152)	(0.0106)	(0.0137)	(0.0175)	(0.0108)	(0.0275)	(0.0182)	(0.0140)	(0.0159)
Foreign Inv. Holdings				-0.0390**						-0.0415**		
				(0.0188)						(0.0189)		
Big 3 Holdings					0.9842***						1.0948***	
					(0.1769)						(0.1560)	
Govt. Inst. Holdings						1.0480**						1.1393***
						(0.4185)						(0.4048)
Individual/Fam. Holdings						-0.0155***						-0.0244***
						(0.0050)						(0.0070)
Log GDP per Capita	-0.0089*	-0.0026*	-0.0121	-0.0086*	-0.0061	-0.0052**	-0.0099*	-0.0038	-0.0115	-0.0095*	-0.0067	-0.0059*
	(0.0050)	(0.0015)	(0.0111)	(0.0048)	(0.0060)	(0.0026)	(0.0052)	(0.0026)	(0.0104)	(0.0049)	(0.0061)	(0.0031)
Sample	Full Sample	Small Firms	Large Firms	Full Sample	Full Sample	Full Sample	Full Sample	Small Firms	Large Firms	Full Sample	Full Sample	Full Sample
Regional FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	1,765,342	882,693	882,649	1,765,342	1,765,342	1,765,342	1,729,761	869,792	859,969	1,729,761	1,729,761	1,729,761
Adj. R-Squared	0.370	0.172	0.372	0.378	0.516	0.479	0.377	0.143	0.388	0.383	0.483	0.454
# Country Clusters	48	48	48	48	48	48	48	48	48	48	48	48

This table reports the results obtained from OLS regressions. The dependent variables are the equal-weighted average of the weights that a firm places on all the N-1 other firms in the country (UO) and only those that also belong to the same industry (CO). The key explanatory variables are the logarithm of market capitalization, the logarithm of firm age, ownership concentration measured by the ownership held by the top 5 largest shareholders of the firm, and the logarithm of GDP per capita. We further include other regressors like the ownership by foreign investors, the Big Three, government institutions, and individuals/families. Fixed effects are included as specified in the table. Standard errors are robust and clustered at the country level, they are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8. Antitrust Laws

Method of Estimation:	OLS									
Dependent Variable:	Equal-Weighted Average Kappa (UO)					Equal-Weighted Average Kappa (CO)				
	(8.1)	(8.2)	(8.3)	(8.4)	(8.5)	(8.6)	(8.7)	(8.8)	(8.9)	(8.10)
Competition Law Index (CLI)	-0.0321*					-0.0268				
	(0.0182)					(0.0174)				
CLI - Abuse of Dominance Provisions		-0.0375**					-0.0371**			
		(0.0177)					(0.0172)			
CLI - Anticompetitive Agreement Provisions			-0.0452***		-0.0513***			-0.0423**		-0.0501***
			(0.0166)		(0.0137)			(0.0164)		(0.0128)
CLI - Merger Control Provisions				0.0130	0.0283**				0.0220	0.0368***
				(0.0242)	(0.0118)				(0.0216)	(0.0104)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	1,696,626	1,696,626	1,696,626	1,696,626	1,696,626	1,661,553	1,661,553	1,661,553	1,661,553	1,661,553
Adj. R-Squared	0.381	0.383	0.398	0.371	0.405	0.383	0.386	0.393	0.381	0.400
# Country Clusters	47	47	47	47	47	47	47	47	47	47

This table reports the results obtained from OLS regressions. The dependent variables are the equal-weighted average of the weights that a firm places on all the N-1 other firms in the country (UO) and only those that also belong to the same industry (CO). The key explanatory variables are: the competition law index, which ranges from 0 to 1 and captures provisions of a country's competition law; the abuse of dominance provisions index, which ranges from 0 to 1 and captures general prohibition of anticompetitive abuses of a dominant position; the anticompetitive agreement provisions index, which ranges from 0 to 1 and captures limits to both horizontal and vertical agreements between companies by a country's competition law; and merger control provisions index, which ranges from 0 to 1 and captures merger control provisions of a country's competition law (Bradford and Chilton (2018)). We include these variables by means of using their average values over the 1980-2005 period. Control variables and fixed effects are included as specified in the table. Standard errors are robust and clustered at the country level, they are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 9. Market Entry Regulation

Method of Estimation:	OLS			
Dependent Variable:	Equal-Weighted Average Kappa (UO)		Equal-Weighted Average Kappa (CO)	
	(9.1)	(9.2)	(9.3)	(9.4)
Log # Proc. to Start Business (Avg.)	0.0261**		0.0268***	
	(0.0098)		(0.0096)	
Log # Days to Start Business (Avg.)		0.0128**		0.0131**
		(0.0060)		(0.0059)
Control Variables	Yes	Yes	Yes	Yes
Regional FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
# Observations	1,134,165	1,134,165	1,104,602	1,104,602
Adj. R-Squared	0.387	0.373	0.366	0.358
# Country Clusters	48	48	48	48

This table reports the results obtained from OLS regressions. The dependent variables are the equal-weighted average of the weights that a firm places on all the N-1 other firms in the country (UO) and only those that also belong to the same industry (CO). The key explanatory variables are: the logarithm of the number of administrative procedures required by the average entrepreneur to start and operate a business in each year and the logarithm of the number of days that it takes for the average entrepreneur to start up and formally operate a business in each year. These variables are obtained from the World Bank's Doing Business database. Control variables and fixed effects are included as specified in the table. Standard errors are robust and clustered at the country level, they are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 10. Labor Laws

Method of Estimation:	OLS									
Dependent Variable:	Equal-Weighted Average Kappa (UO)					Equal-Weighted Average Kappa (CO)				
	(10.1)	(10.2)	(10.3)	(10.4)	(10.5)	(10.6)	(10.7)	(10.8)	(10.9)	(10.10)
Employment Laws	-0.0412*			-0.0497**	-0.0287	-0.0611**			-0.0702***	-0.0592**
	(0.0225)			(0.0196)	(0.0204)	(0.0230)			(0.0207)	(0.0221)
Collective Relations		-0.0596**			-0.0506*		-0.0473			-0.0262
		(0.0281)			(0.0283)		(0.0305)			(0.0285)
Social Security			0.0569	0.0647	0.0636			0.0542	0.0656	0.0648
			(0.0717)	(0.0726)	(0.0668)			(0.0658)	(0.0674)	(0.0643)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	1,744,496	1,744,496	1,744,496	1,744,496	1,744,496	1,711,365	1,711,365	1,711,365	1,711,365	1,711,365
Adj. R-Squared	0.377	0.382	0.379	0.385	0.390	0.387	0.385	0.385	0.391	0.392
# Country Clusters	44	44	44	44	44	44	44	44	44	44

This table reports the results obtained from OLS regressions. The dependent variables are the equal-weighted average of the weights that a firm places on all the N-1 other firms in the country (UO) and only those that also belong to the same industry (CO). The key explanatory variables are: the employment laws index, which ranges from 0 to 1 and captures labor protection laws; the collective relations index, which ranges from 0 to 1 and captures labor union power and collective disputes; and the social security index, which ranges from 0 to 1 and measures social security benefits (Botero et al. (2004)). Control variables and fixed effects are included as specified in the table. Standard errors are robust and clustered at the country level, they are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 11. Investor Protection

Method of Estimation:	OLS					
Dependent Variable:	Equal-Weighted Average Kappa (UO)			Equal-Weighted Average Kappa (CO)		
	(11.1)	(11.2)	(11.3)	(11.4)	(11.5)	(11.6)
Anti-Self-Dealing Index	0.0408**			0.0405**		
	(0.0154)			(0.0173)		
Ex Ante Private Self-Dealing		0.0354**			0.0316**	
		(0.0145)			(0.0148)	
Ex Post Private Self-Dealing		-0.0359			-0.0233	
		(0.0345)			(0.0347)	
Creditor Rights			-0.0076			-0.0087
			(0.0081)			(0.0089)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Regional FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	1,722,921	1,722,921	1,765,342	1,690,301	1,690,301	1,729,761
Adj. R-Squared	0.384	0.395	0.374	0.397	0.401	0.380
# Country Clusters	43	43	48	43	43	48

This table reports the results obtained from OLS regressions. The dependent variables are the equal-weighted average of the weights that a firm places on all the N-1 other firms in the country (UO) and only those that also belong to the same industry (CO). The key explanatory variables are: the anti-self-dealing index, which is a variable that takes values from 0 to 1 and captures disclosure requirements for self-dealing transactions by managers and controlling shareholders; the ex-ante and ex-post private control of self-dealing index, both indexes range from 0 to 1 (Djankov et al. (2008)); and the creditor rights index, which ranges from 0 to 4 (Djankov et al. (2007)). We include the latter using its average value from 1978 to 2003. Control variables and fixed effects are included as specified in the table. Standard errors are robust and clustered at the country level, they are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 12. ESG Disclosure Regulations

Method of Estimation:	OLS							
Dependent Variable:	Equal-Weighted Average Kappa (UO)				Equal-Weighted Average Kappa (CO)			
	(12.1)	(12.2)	(12.3)	(12.4)	(12.5)	(12.6)	(12.7)	(12.8)
Mandatory ESG Disclosure (MESGD)	-0.0025				-0.0064			
	(0.0127)				(0.0118)			
MESGD - All at Once		-0.0019				-0.0062		
		(0.0153)				(0.0141)		
MESGD - Gradual		-0.0047				-0.0071		
		(0.0065)				(0.0080)		
MESGD - Government			-0.0171**				-0.0199**	
			(0.0072)				(0.0079)	
MESGD - Stock Exchange			0.0043				-0.0003	
			(0.0179)				(0.0162)	
MESGD - Full Compliance				-0.0010				-0.0049
				(0.0153)				(0.0141)
MESGD - Comply-or-Explain				-0.0077				-0.0112*
				(0.0059)				(0.0063)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	1,519,662	1,519,662	1,519,662	1,519,662	1,490,040	1,490,040	1,490,040	1,490,040
Adj. R-Squared	0.344	0.344	0.350	0.344	0.354	0.354	0.357	0.354
# Country Clusters	46	46	46	46	46	46	46	46

This table reports the results obtained from OLS regressions. The dependent variables are the equal-weighted average of the weights that a firm places on all the N-1 other firms in the country (UO) and only those that also belong to the same industry (CO). The key explanatory variables are: an indicator variable of ESG disclosure that takes a value of 1 starting from the first year in which a country introduced mandatory ESG disclosure, two indicator variables that capture whether mandatory ESG disclosure is implemented all at once or gradually, two indicator variables that capture whether mandatory ESG disclosure is issued by a government institution or a stock exchange, and two indicator variables that capture whether mandatory ESG disclosure is implemented on a full compliance or a comply-or-explain basis (Krueger et al. (2024)). Control variables and fixed effects are included as specified in the table. Standard errors are robust and clustered at the country level, they are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 13. Political Institution Quality

Method of Estimation:	OLS					
Dependent Variable:	Equal-Weighted Average Kappa (UO)			Equal-Weighted Average Kappa (CO)		
	(13.1)	(13.2)	(13.3)	(13.4)	(13.5)	(13.6)
Political Instability	0.0056			-0.0015		
	(0.0090)			(0.0115)		
Poor Regulatory Quality		0.0336**			0.0306**	
		(0.0163)			(0.0141)	
Corruption			0.0155			0.0156
			(0.0113)			(0.0120)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Regional FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	1,765,342	1,765,342	1,765,342	1,729,761	1,729,761	1,729,761
Adj. R-Squared	0.370	0.381	0.372	0.377	0.382	0.379
# Country Clusters	48	48	48	48	48	48

This table reports the results obtained from OLS regressions. The dependent variables are the equal-weighted average of the weights that a firm places on all the N-1 other firms in the country (UO) and only those that also belong to the same industry (CO). The key explanatory variables are indicator variables that capture: perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism (political instability); perceptions of the inability of the government to formulate and implement sound policies and regulations that permit and promote private sector development (poor regulatory quality); and perceptions of the extent to which public power is exercised for private gain (corruption). We construct these indicator variables using data from the World Bank's website (namely, from the Worldwide Governance Indicators) on the political stability, regulatory quality, and control of corruption indexes. For each index and every year, we group the countries in our sample into quartile buckets and create an indicator variable that takes a value of 1 for countries in the bottom quartile and zero otherwise. Control variables and fixed effects are included as specified in the table. Standard errors are robust and clustered at the country level, they are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 14. Pension Funds

Method of Estimation:	OLS							
Dependent Variable:	Equal-Weighted Average Kappa (UO)				Equal-Weighted Average Kappa (CO)			
	(14.1)	(14.2)	(14.3)	(14.4)	(14.5)	(14.6)	(14.7)	(14.8)
Pension AUM / GDP	0.0090				0.0128			
	(0.0119)				(0.0140)			
Large Pension Sector		0.0039				0.0093		
		(0.0104)				(0.0107)		
Pension Equity Holdings / GDP			0.0510				0.0540	
			(0.0369)				(0.0437)	
Large Pension Equity Holdings				0.0141**				0.0145**
				(0.0052)				(0.0070)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	1,643,861	1,643,861	1,294,513	1,294,513	1,614,366	1,614,366	1,270,461	1,270,461
Adj. R-Squared	0.380	0.379	0.486	0.487	0.400	0.400	0.482	0.482
# Country Clusters	41	41	38	38	41	41	38	38

This table reports the results obtained from OLS regressions. The dependent variables are the equal-weighted average of the weights that a firm places on all the N-1 other firms in the country (UO) and only those that also belong to the same industry (CO). The key explanatory variables are: the total assets under management of pension providers divided by GDP (pension AUM / GDP); an indicator variable that takes a value of 1 for countries above the sample median of pension AUM / GDP in each year and zero otherwise (large pension sector); the equity holdings of pension providers divided by GDP, where equity holdings are total pension assets multiplied by the share of those assets allocated to equities (pension equity holdings / GDP); and an indicator variable that takes a value of 1 for countries above the sample median of pension equity holdings / GDP in each year and zero otherwise (large pension equity holdings). These variables are constructed from the statistical annex of the OECD Pension Markets in Focus 2025 report (Tables A.2, A.3, and A.8). Control variables and fixed effects are included as specified in the table. Standard errors are robust and clustered at the country level, they are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 15. Country-Average κ (Corrected Control)

Countries	2023Q4		
	Baseline	Corrected	Δ%
Australia	0.010	0.009	-6.8
Austria	0.010	0.012	13.4
Belgium†	0.015	0.015	0.7
Brazil	0.009	0.008	-10.3
Canada†	0.005	0.005	-4.8
Chile‡	0.017	0.017	-1.1
China	0.047	0.048	1.0
Colombia‡	0.014	0.014	-2.4
Croatia	0.029	0.029	-1.2
Denmark†	0.020	0.020	3.3
Egypt	0.062	0.062	0.1
Finland†	0.039	0.037	-6.6
France	0.007	0.007	1.5
Germany†	0.013	0.012	-11.0
Greece‡	0.004	0.004	-1.3
Hong Kong†	0.007	0.007	-0.4
India	0.001	0.001	1.4
Indonesia‡	0.000	0.000	2.6
Ireland	0.145	0.148	1.9
Israel	0.014	0.014	0.3
Italy	0.005	0.006	2.5
Japan	0.026	0.026	0.4
Jordan	0.036	0.036	-0.1
Korea	0.002	0.002	-19.1
Kuwait	0.028	0.028	-1.4
Malaysia‡	0.003	0.003	-4.2
Mexico†	0.041	0.035	-15.5
Morocco	0.021	0.024	15.8
Netherlands	0.043	0.043	1.3
New Zealand	0.043	0.041	-6.1
Norway†	0.016	0.017	1.7
Oman‡	0.103	0.098	-4.7
Peru†	0.008	0.008	1.1
Philippines‡	0.003	0.003	2.0
Poland†	0.004	0.003	-1.5
Romania	0.017	0.017	-2.9
Russia	0.010	0.010	0.0
Saudi Arabia	0.024	0.024	-0.3
Singapore	0.002	0.002	4.1
South Africa‡	0.130	0.128	-0.8
Spain	0.007	0.006	-2.8
Sweden	0.045	0.041	-9.3
Switzerland†	0.078	0.086	9.9
Taiwan	0.007	0.007	-6.8
Thailand‡	0.002	0.002	-7.4
United Arab Emirates	0.032	0.031	-4.2
United Kingdom†	0.039	0.039	-1.1
United States	0.200	0.206	3.2
Vietnam	0.003	0.003	-0.1
Unweighted mean	0.030	0.029	-1.4

This table reports the country-average profit weight $\bar{\kappa}$ for the 49 countries in our sample under the baseline one-share-one-vote assignment (Baseline) and with measured control rights substituted (Corrected; Section 7), at 2023Q4, with $\Delta\% = 100 \times (\text{corrected/baseline} - 1)$ computed from unrounded values. The final row is the unweighted cross-country average of each column. † marks markets where more than a third of the reviewed candidates yield no usable disclosure or fewer than two thirds of the genuine-wedge firms have measured voting rights, so the in-panel correction is incomplete in those markets; ‡ marks the nine markets whose registers publish capital-only or class-implied ownership without voting rights for individual shareholders, so those markets receive only the control-chain correction.

Table 16. Growth of $\bar{\kappa}$ by Country Group

	Base	Baseline			Corrected			Δ growth
	year	Base	2023	Growth (%)	Base	2023	Growth (%)	(pp)
United States	2005	0.0364	0.1913	425.3	0.0397	0.1988	401.2	-24.1
Pyramid group	2010	0.0150	0.0345	129.7	0.0146	0.0342	134.9	5.1
Brazil	2007	0.0081	0.0087	7.6	0.0054	0.0080	48.1	40.5
South Africa	2005	0.0766	0.1243	62.2	0.0766	0.1242	62.3	0.1
Malaysia	2010	0.0050	0.0030	-41.0	0.0050	0.0029	-42.4	-1.4
Korea	2010	0.0021	0.0021	1.9	0.0016	0.0017	4.8	2.9
Dispersed group	2005	0.0239	0.0252	5.4	0.0240	0.0250	4.0	-1.4
United Kingdom	2005	0.0464	0.0388	-16.3	0.0468	0.0386	-17.5	-1.2
Japan	2005	0.0167	0.0274	63.7	0.0167	0.0275	64.8	1.1
Australia	2005	0.0085	0.0093	9.4	0.0085	0.0088	3.1	-6.3

This table reports annual means of the quarterly country-average $\bar{\kappa}$ under the baseline one-share-one-vote assignment and the in-panel corrected series (Section 7). "Base" denotes each country's first fully covered calendar year (all four quarters present); for a group, it is the first year in which every constituent country is fully covered. For example, the Pyramid group (Brazil, South Africa, Malaysia, and Korea) has a base year of 2010 because Malaysia and Korea enter the panel in 2009Q2. A group's level is the unweighted average of its member countries' levels. We refer to the group's growth as the percentage change in its group level, not the average of the members' growth rates. Growth is the percentage change in the annual mean from the base year to 2023, and Δ growth is the corrected growth rate minus the baseline growth rate, expressed in percentage points. Growth rates are sensitive to small base-year values of $\bar{\kappa}$ and should be interpreted accordingly.

Table 17. U.S. Multi-Class Exclusions and Reinstatement, 2023Q4

Step	Count
U.S. issuer codes excluded by the multi-class screen	1,603
Identified firms (a 2004–2023 proxy statement links them to a code)	1,206
of which listed at 2023Q4	678
of which restored (multi-class voting-rights measurement in force)	452
of which not restored: single-class measurement in force	171
of which not restored: no usable voting-rights measurement in force	55

This table traces U.S. issuer codes excluded by the multi-class screen (Section 7) to identified firms and their reinstatement status at 2023Q4. Issuer codes are identifiers used in the vendor's ownership data and do not necessarily correspond one-to-one to firms identified from SEC filings. Firms are identified by linking excluded issuer codes to SEC DEF 14A proxy statements filed during 2004–2023. The first row counts issuer codes, while the remaining rows count firms. Reinstatement requires exchange listing at quarter-end and a proxy statement in force that reports multiple classes of common stock and provides usable voting-rights information; we include cases with a zero voting–cash-flow wedge. The listing and proxy-validity rules are specified in the note to Table A9 and Section 7.2, respectively. Table A7, Panel B, reports the disposition of identified firms over the full panel.

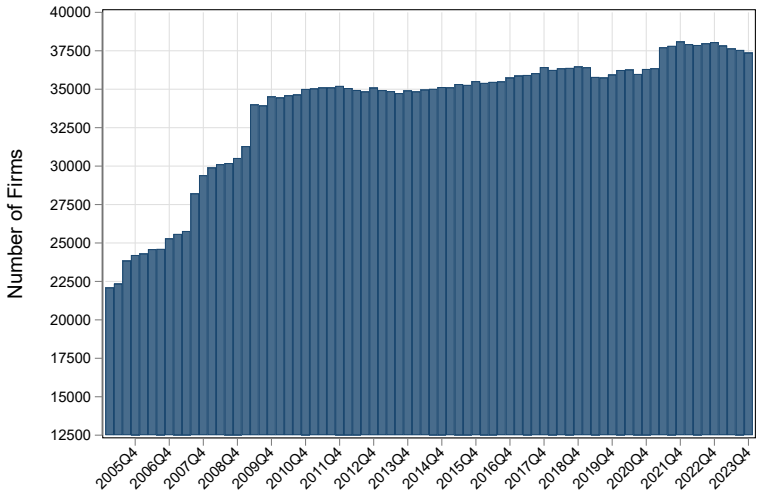
Table 18. Country-Average κ (Overlap versus Concentration)

Countries	2023Q4		
	$\bar{\kappa}$	$\overline{\cos}$	Factor
United States	0.2000	0.1781	1.12
Canada	0.0055	0.0042	1.29
Euro Area (integrated)	0.0080	0.0062	1.30
United Kingdom	0.0393	0.0324	1.21
France	0.0069	0.0049	1.40
Germany	0.0131	0.0095	1.38
Italy	0.0055	0.0032	1.70
Spain	0.0066	0.0048	1.37
Netherlands	0.0426	0.0357	1.19
Belgium	0.0147	0.0113	1.30
Ireland	0.1451	0.1383	1.05
Austria	0.0103	0.0076	1.36
Finland	0.0393	0.0315	1.24
Sweden	0.0449	0.0341	1.32
Norway	0.0165	0.0132	1.25
Denmark	0.0196	0.0144	1.36
Switzerland	0.0779	0.0588	1.32
Poland	0.0035	0.0029	1.22
Russia	0.0103	0.0096	1.08
Greece	0.0037	0.0029	1.25
Croatia	0.0295	0.0217	1.36
Romania	0.0171	0.0132	1.30
Japan	0.0263	0.0214	1.23
China	0.0474	0.0387	1.23
India	0.0012	0.0010	1.24
Hong Kong	0.0070	0.0057	1.22
Taiwan	0.0073	0.0059	1.23
Korea	0.0020	0.0016	1.26
Malaysia	0.0028	0.0024	1.20
Indonesia	0.0004	0.0004	1.10
Singapore	0.0016	0.0013	1.22
Thailand	0.0019	0.0013	1.39
Vietnam	0.0029	0.0025	1.17
Philippines	0.0026	0.0024	1.11
Australia	0.0097	0.0080	1.22
New Zealand	0.0432	0.0343	1.26
Brazil	0.0093	0.0071	1.31
Mexico	0.0411	0.0219	1.88
Chile	0.0174	0.0145	1.20
Colombia	0.0143	0.0135	1.06
Peru	0.0076	0.0062	1.22
South Africa	0.1295	0.1136	1.14
Egypt	0.0617	0.0530	1.16
Morocco	0.0210	0.0146	1.44
Israel	0.0139	0.0102	1.36
United Arab Emirates	0.0323	0.0271	1.19
Saudi Arabia	0.0238	0.0144	1.66
Kuwait	0.0281	0.0203	1.39
Oman	0.1025	0.0616	1.67
Jordan	0.0363	0.0238	1.53

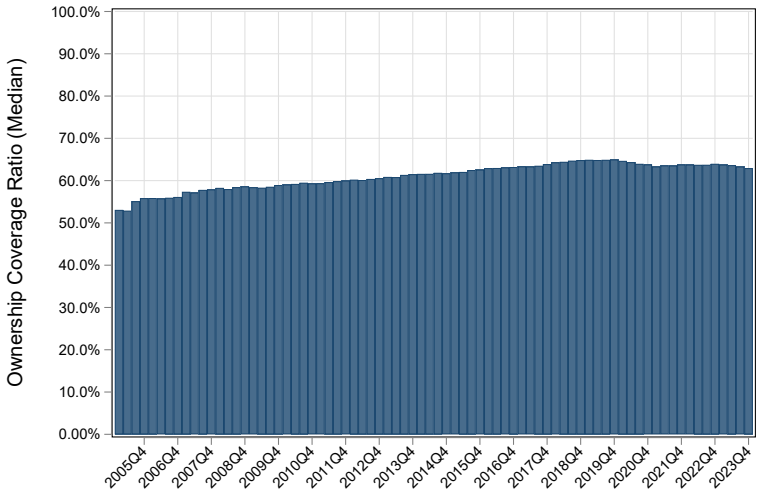
This table reports the level decomposition of the country-average profit weight under the baseline one-share-one-vote assignment. For each country, $\bar{\kappa}$ is the average pairwise profit weight over all ordered firm pairs, $\overline{\cos}$ is the average pairwise cosine similarity of the ownership vectors, and Factor $= \bar{\kappa}/\overline{\cos}$ is the residual concentration factor induced by the relative-IHHI component of Equation (2). The average concentration factor is at least one because the relative-IHHI terms for (f, g) and (g, f) are reciprocals, and it exceeds one whenever two overlapping firms differ in IHHI. Rows follow the country ordering of Table 1. Across countries, variation in the average cosine accounts for essentially all of the variation in $\log \bar{\kappa}$ (correlation above 0.99), and the U.S. factor (1.12) sits below the cross-country norm; the largest factors are Mexico (1.88) and Italy (1.70).

Appendix for "Common Ownership Around The World"

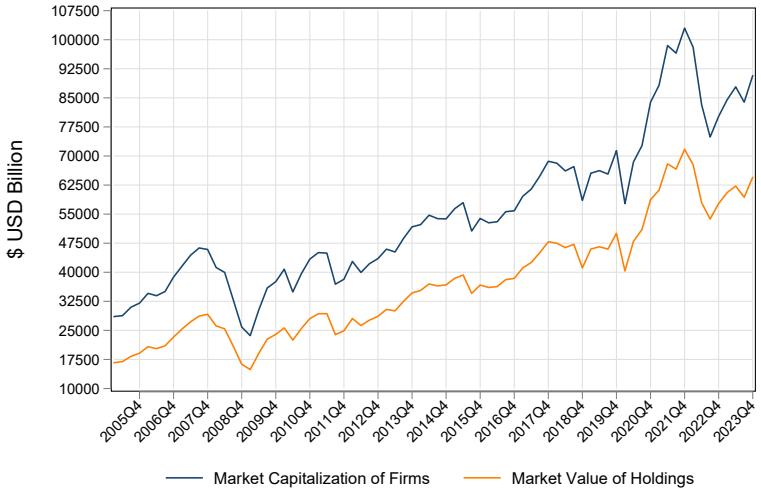
This appendix contains additional figures and tables.



(A) Number of covered firms



(B) Median ownership coverage ratio



(C) Market capitalization

Figure A1. Data Quality. This figure provides descriptions of the data quality. Panel A presents the number of firms covered in our sample for each quarter. Panel B illustrates the median ownership coverage ratio for each quarter. Panel C depicts the total market capitalization of the firms in our sample for each quarter, alongside the value of the holdings recorded in our data.

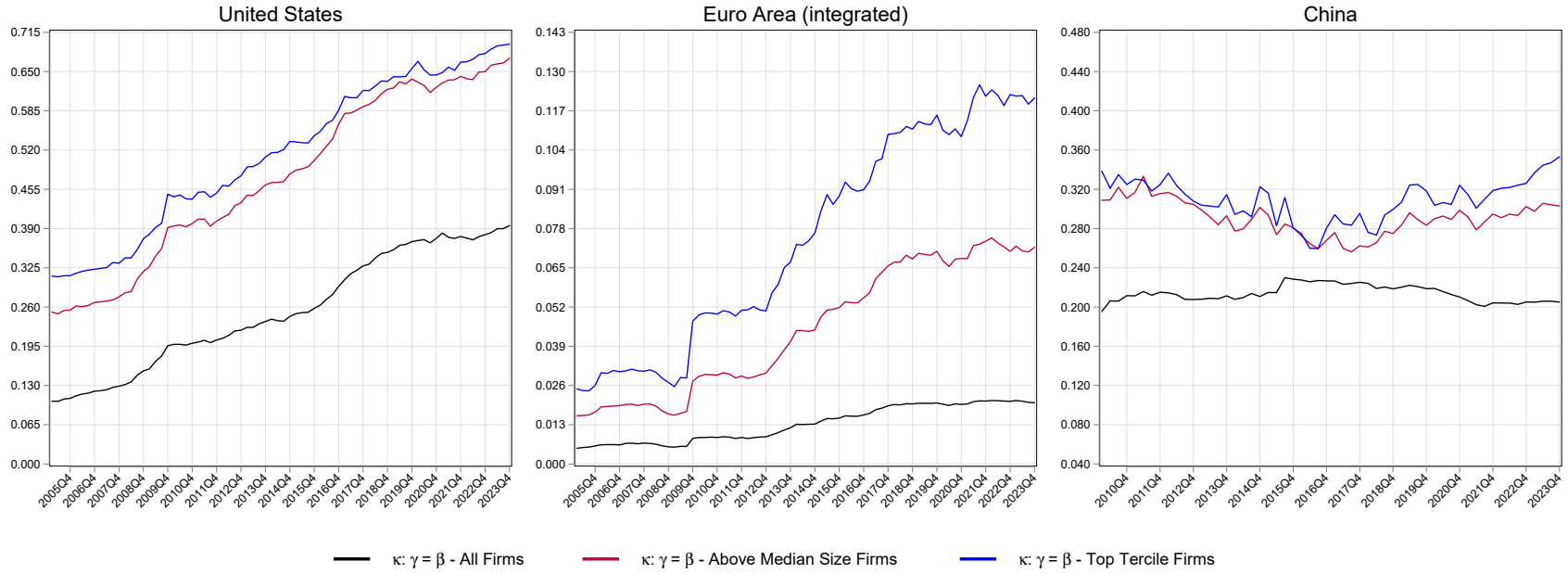


Figure A2A. Universal Ownership Trends - Balanced Panel. This figure plots the evolution of universal ownership in the United States, the Euro Area, and China using a balanced panel of firms for each country. For each country-quarter combination, we calculate the arithmetic average of pairwise κ. To track changes in ownership over time, we use a balanced panel of firms for the United States (# firms = 1,218), the Euro Area (# firms = 694), and China (# firms = 1,464). The Euro Area is treated as a single country and comprises the following countries: Austria (# firms = 30), Belgium (# firms = 50), Finland (# firms = 40), France (# firms = 216), Germany (# firms = 170), Ireland (# firms = 27), Italy (# firms = 83), the Netherlands (# firms = 37), and Spain (# firms = 41). We exclude Croatia because it adopted the euro as a currency in 2023. We also exclude Greece because we have less than 76 quarters of data for this country compared to the countries included in our Euro Area sample. The solid black line represents the average pairwise κ using all firms in the country sample. The solid red line shows the average pairwise κ calculated across all firm pairs where both firms have market capitalizations above the median in their country in each quarter. The solid blue line depicts the average pairwise κ across all firm pairs where both firms are in the top tercile of market capitalization in their country in each quarter.

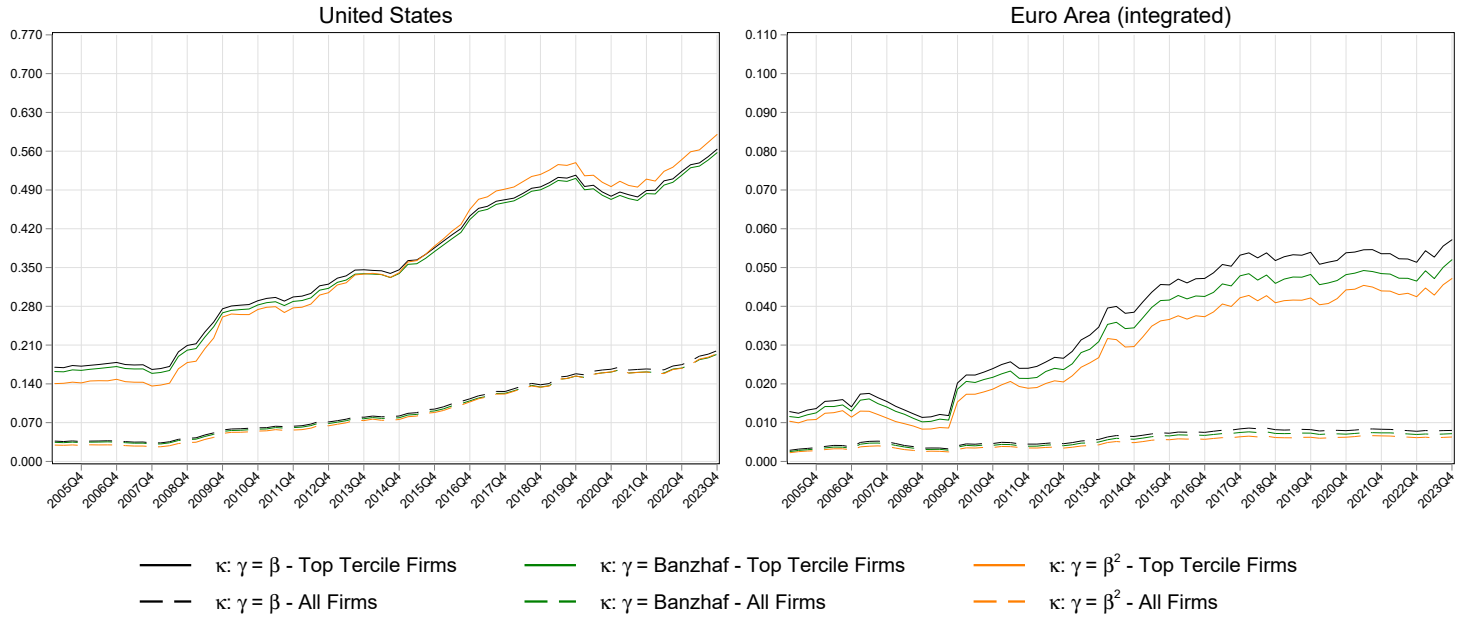


Figure A2B. Universal Ownership Trends - Alternative Approaches. This figure plots the evolution of universal ownership in the United States and the Euro Area. For each country-quarter combination, we calculate the arithmetic average of pairwise κ. We assume that a shareholder's weight in the objective function of a firm (γ) is proportional to one of the following: (i) their cash-flow ownership (β), i.e., we follow the "one share, one vote" approach; (ii) their probability of being pivotal in a corporate election proxied by the Banzhaf index, or (iii) the squared value of their cash-flow ownership, i.e., we assign more weight to the largest shareholders. The Euro Area is treated as a single country and comprises the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, and Spain. We exclude Croatia because it adopted the euro as a currency in 2023. We also exclude Greece because we have less than 76 quarters of data for this country compared to the countries included in our Euro Area sample. The dashed lines represent the average pairwise κ across all firms in the country sample. The solid lines depict the average pairwise κ across firm pairs in which both firms fall within the top tercile of market capitalization in their country for each quarter. The black lines reflect the "one share, one vote" assumption, while the green and orange lines correspond to the Banzhaf and the squared cash-flow ownership assumptions, respectively.

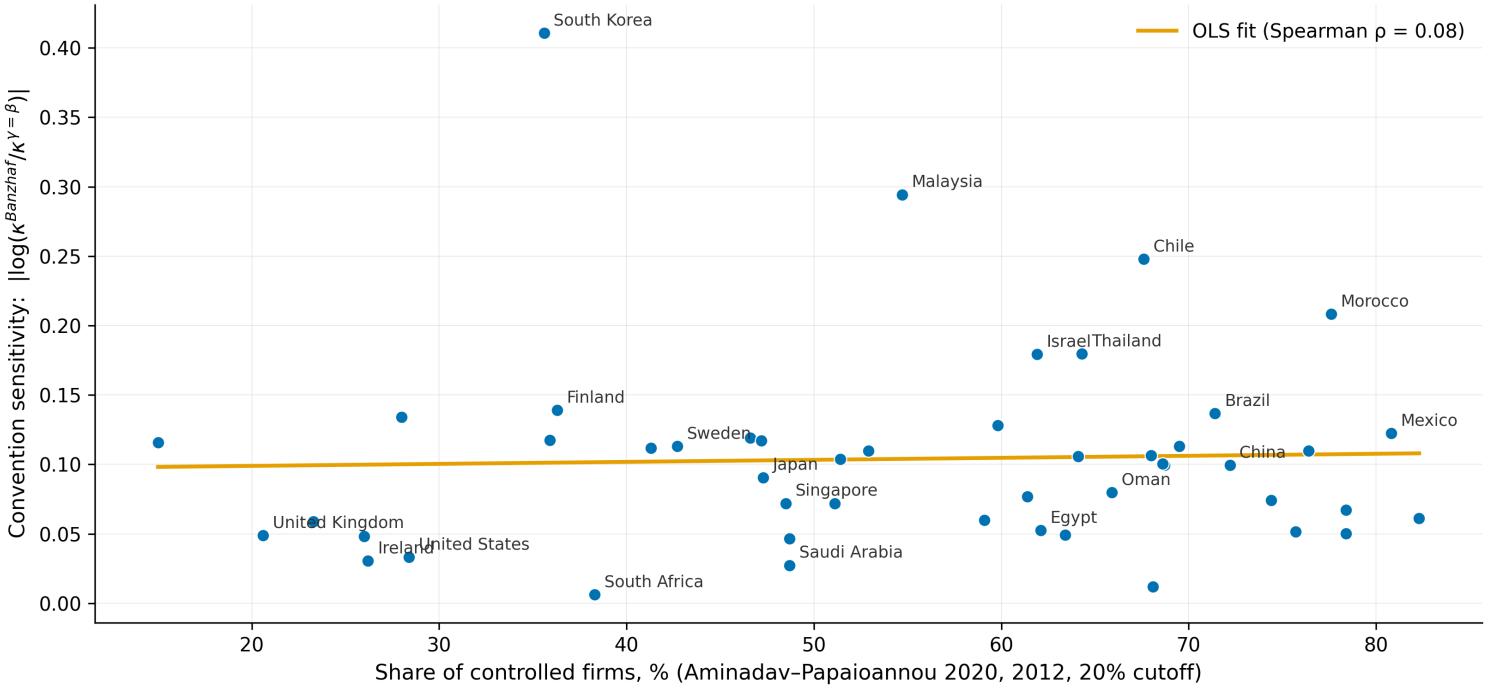


Figure A2C. Sensitivity of $\bar{\kappa}$ to Control Variants. This figure plots, for each country, the absolute log ratio of the country-average κ under the Banzhaf control assignment to its value under the one-share-one-vote assignment ($\gamma = \beta$), computed from the LSEG ownership data at 2023Q4. (Figure A2B describes the two approaches), against the share of controlled firms from Aminadav and Papaioannou (2020). The horizontal axis is the share of controlled firms in 2012 using a 20% cutoff. The convention matters most in Korea, Malaysia, and Chile (0.25–0.41 log points) and is essentially uncorrelated with the share of controlled firms (Spearman $\rho = 0.08$). This sensitivity is not predicted by the prevalence of controlled firms. Section 7 instead changes the underlying control data while retaining the proportional-in-votes form of Equation (1).

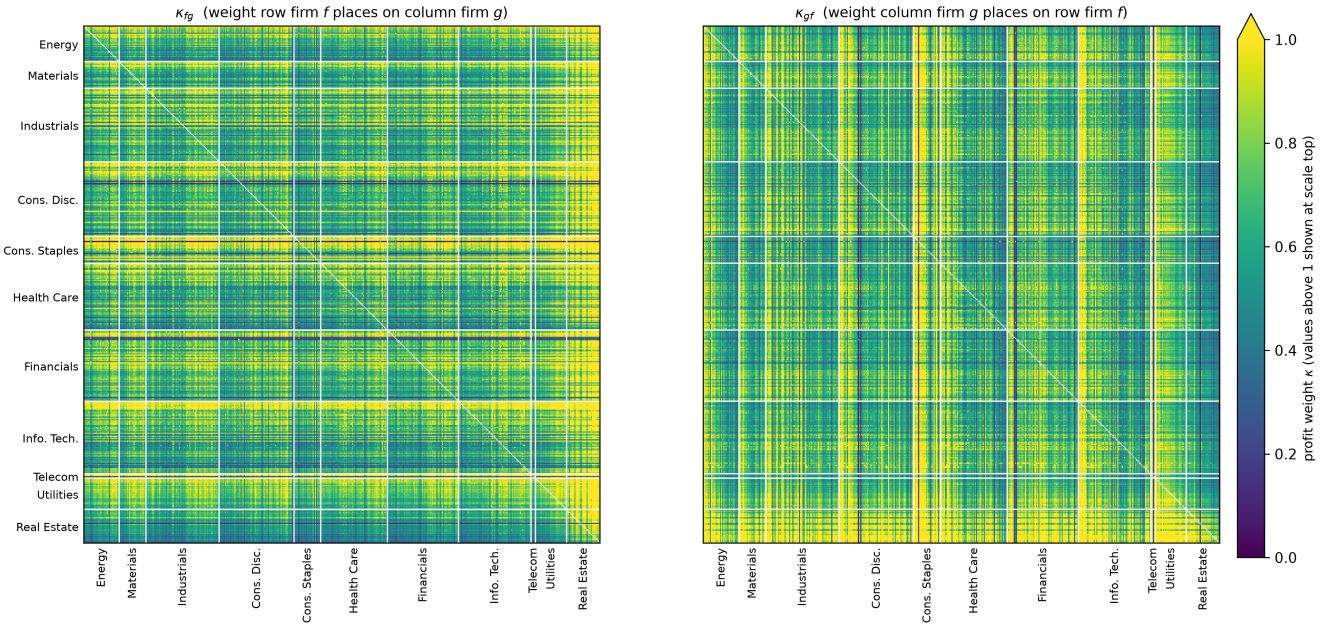


Figure A2D. Directional Profit Weights among S&P 500 Firms. This figure shows the pairwise profit weights among S&P 500 constituents at 2017Q3, computed using the 13F-based ownership data of Backus et al. (2021), whose publicly available series ends in that quarter. Firms are ordered by Global Industry Classification Standard (GICS) sector and market capitalization within sector (mean $\kappa = 0.696$, matching their published average of about 0.70). The left panel shows κ_{fg}, the weight the row firm places on the column firm; the right panel shows the transpose κ_{gf} under the same ordering and one shared color scale, so any visible difference between the panels is attributable to the relative-IHHI factor of Equation (2), the cosine component being symmetric. The mean absolute difference $|\kappa_{fg} - \kappa_{gf}|$ is 0.32 against a mean level of 0.70, 11.2% of ordered-pair profit weights exceed 1, and the correlation between κ_{fg} and κ_{gf} across ordered pairs is -0.30.

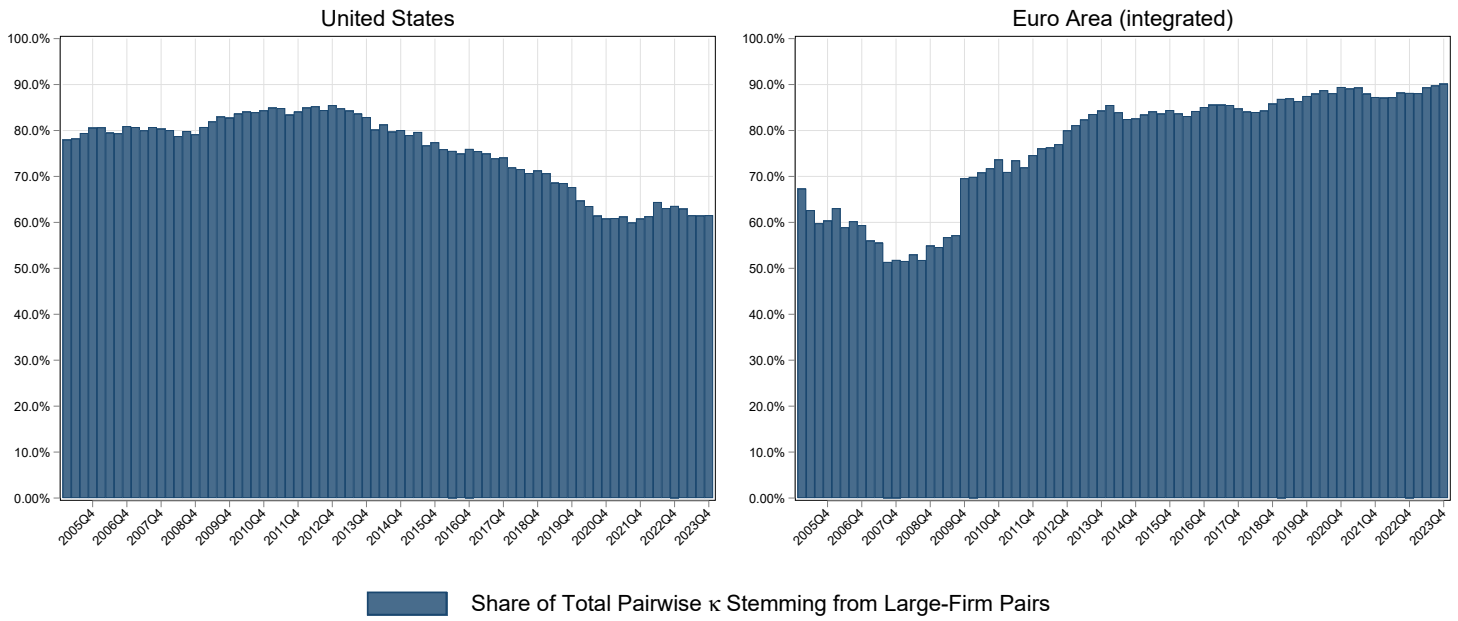


Figure A3A. Share of Total Pairwise κ stemming from Large-Firm Pairs. This figure displays the contribution of large-firm pairs to the total pairwise κ in the United States and the Euro Area. For each country-quarter combination, we calculate the sum of pairwise κ conditional on firm pairs where both firms are large and then divide it by the sum of pairwise κ using all firms in the country sample. Large firms are those whose market capitalization is above the median in their country in each quarter. The Euro Area is treated as a single country and comprises the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, and Spain. We exclude Croatia because it adopted the euro as a currency in 2023. We also exclude Greece because we have less than 76 quarters of data for this country compared to the countries included in our Euro Area sample. The blue bars represent the share of total pairwise κ stemming from large-firm pairs.

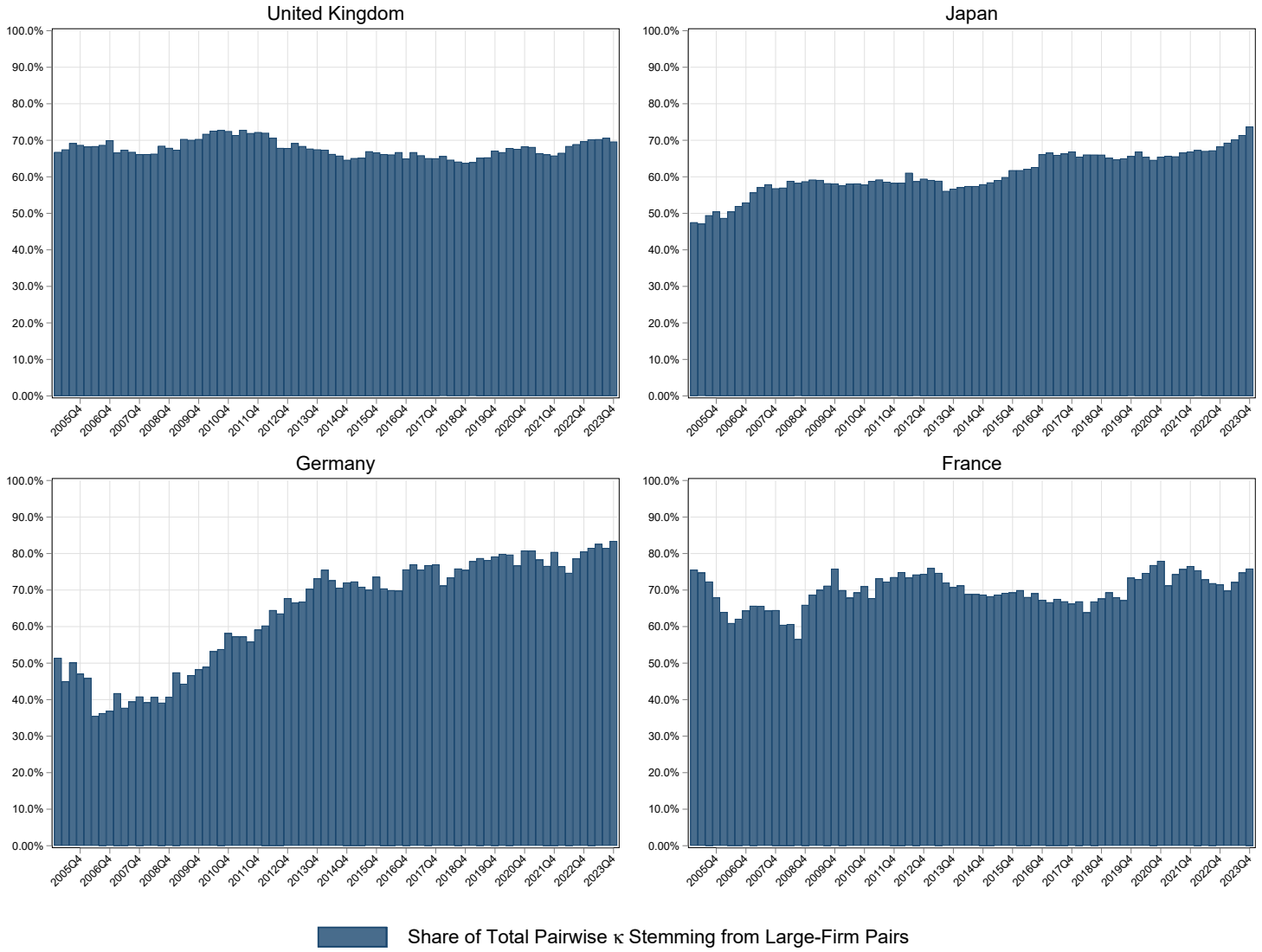


Figure A3B. Share of Total Pairwise κ stemming from Large-Firm Pairs. This figure displays the contribution of large-firm pairs to the total pairwise κ in the United Kingdom, Japan, Germany, and France. For each country-quarter combination, we calculate the sum of pairwise κ conditional on firm pairs where both firms are large and then divide it by the sum of pairwise κ using all firms in the country sample. Large firms are those whose market capitalization is above the median in their country in each quarter. The blue bars represent the share of total pairwise κ stemming from large-firm pairs.

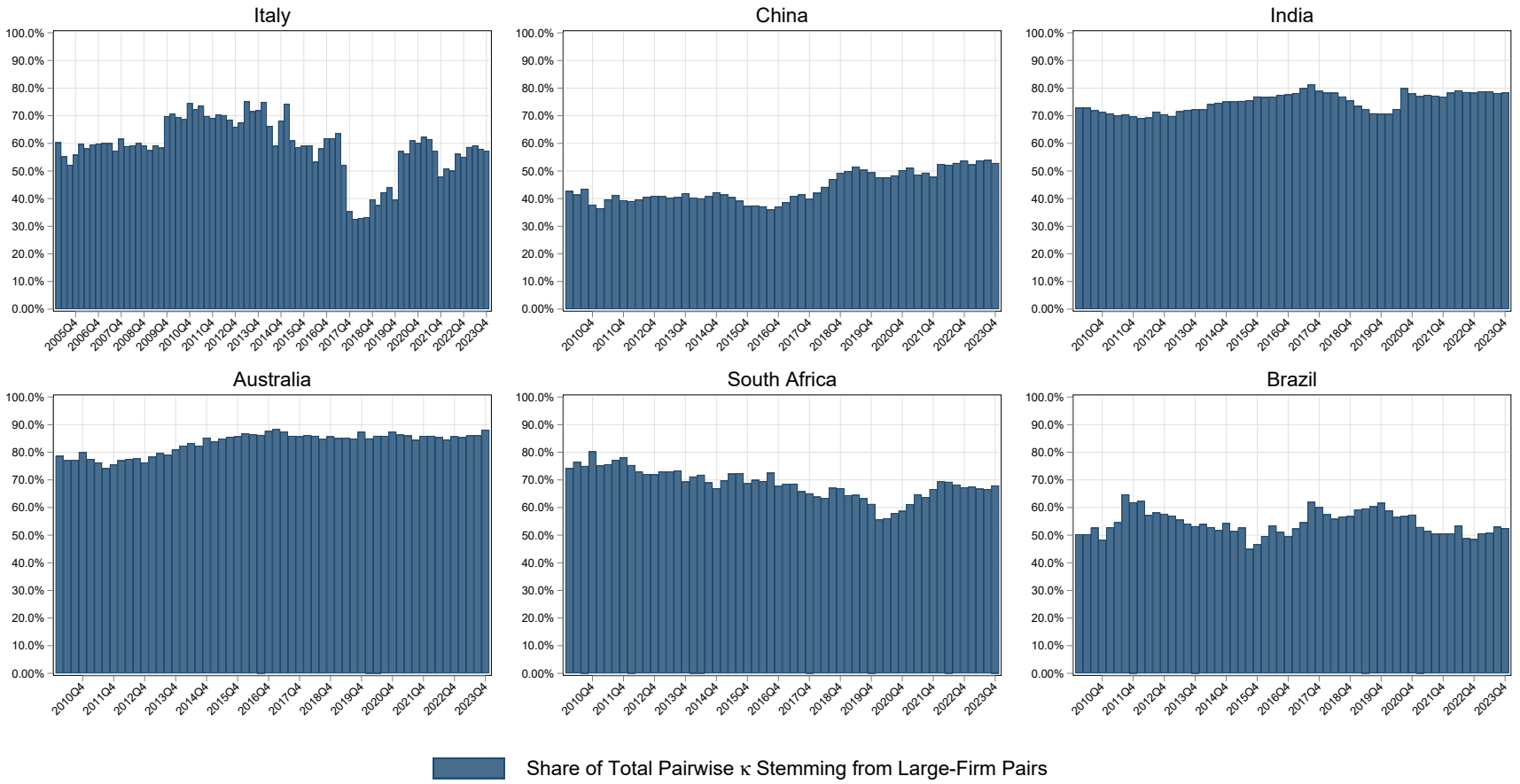


Figure A3C. Share of Total Pairwise κ stemming from Large-Firm Pairs. This figure displays the contribution of large-firm pairs to the total pairwise κ in Italy, China, India, Australia, South Africa, and Brazil. For each country-quarter combination, we calculate the sum of pairwise κ conditional on firm pairs where both firms are large and then divide it by the sum of pairwise κ using all firms in the country sample. Large firms are those whose market capitalization is above the median in their country in each quarter. The blue bars represent the share of total pairwise κ stemming from large-firm pairs.

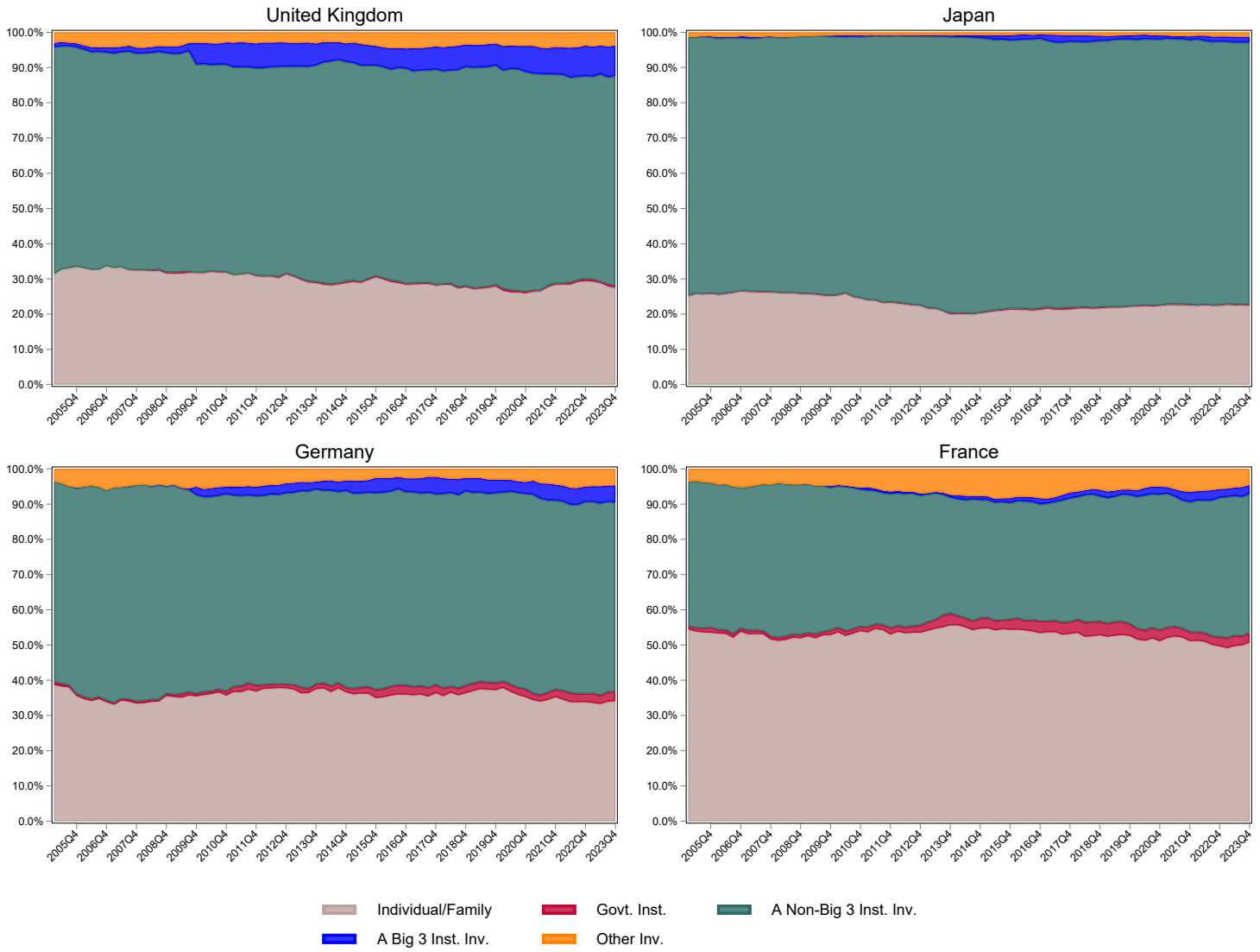


Figure A4A. Who are the Largest Owners? This figure presents the fraction of firms in the United Kingdom, Japan, Germany, and France whose largest shareholder falls into one of the following categories: an individual or family, a Big Three institutional investor (BlackRock, Vanguard, State Street), a non-Big Three institutional investor, a government institution, or another type of investor (primarily venture capital, private equity, or research firms).

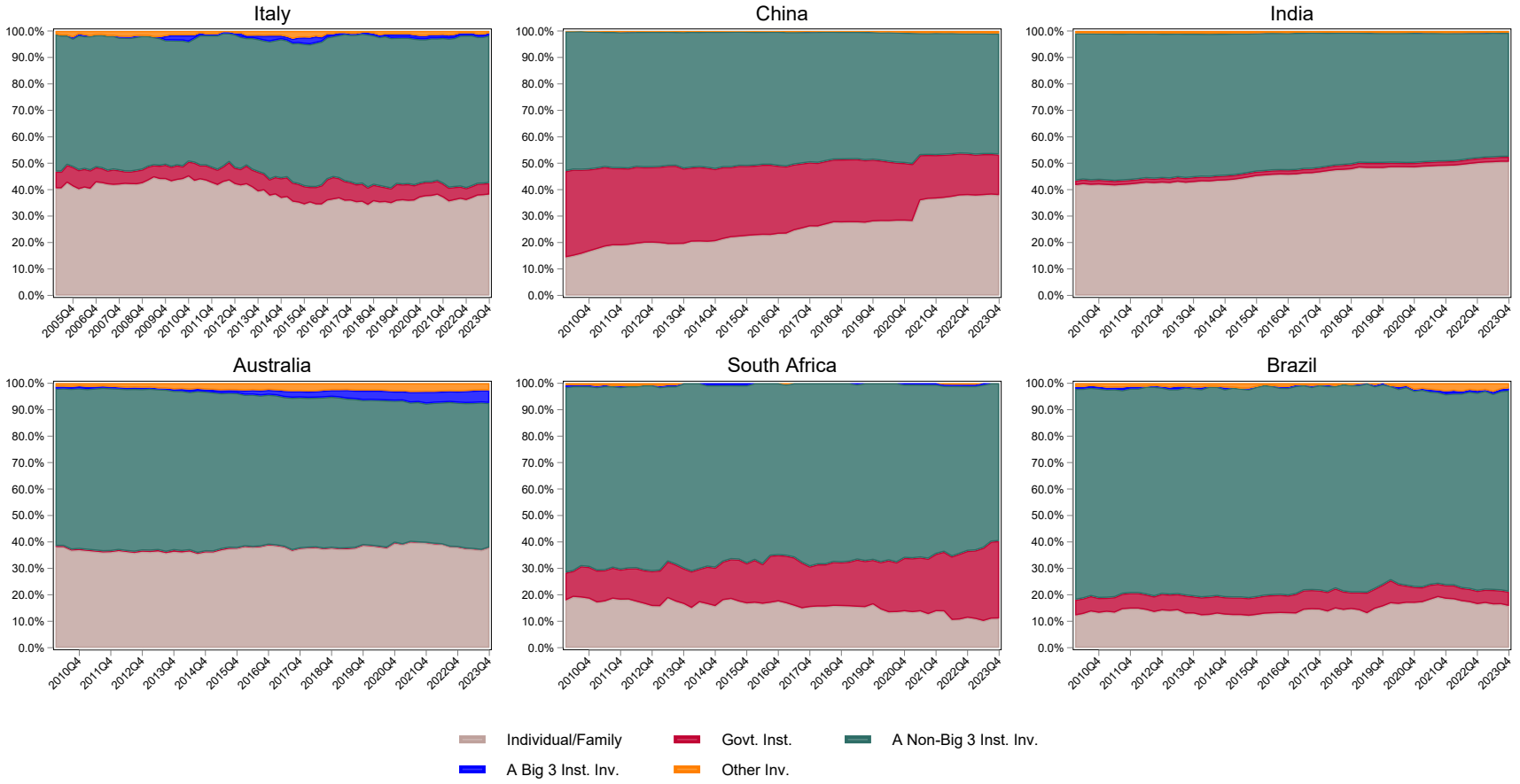


Figure A4B. Who are the Largest Owners? This figure presents the fraction of firms in Italy, China, India, Australia, South Africa, and Brazil whose largest shareholder falls into one of the following categories: an individual or family, a Big Three institutional investor (BlackRock, Vanguard, State Street), a non-Big Three institutional investor, a government institution, or another type of investor (primarily venture capital, private equity, or research firms).

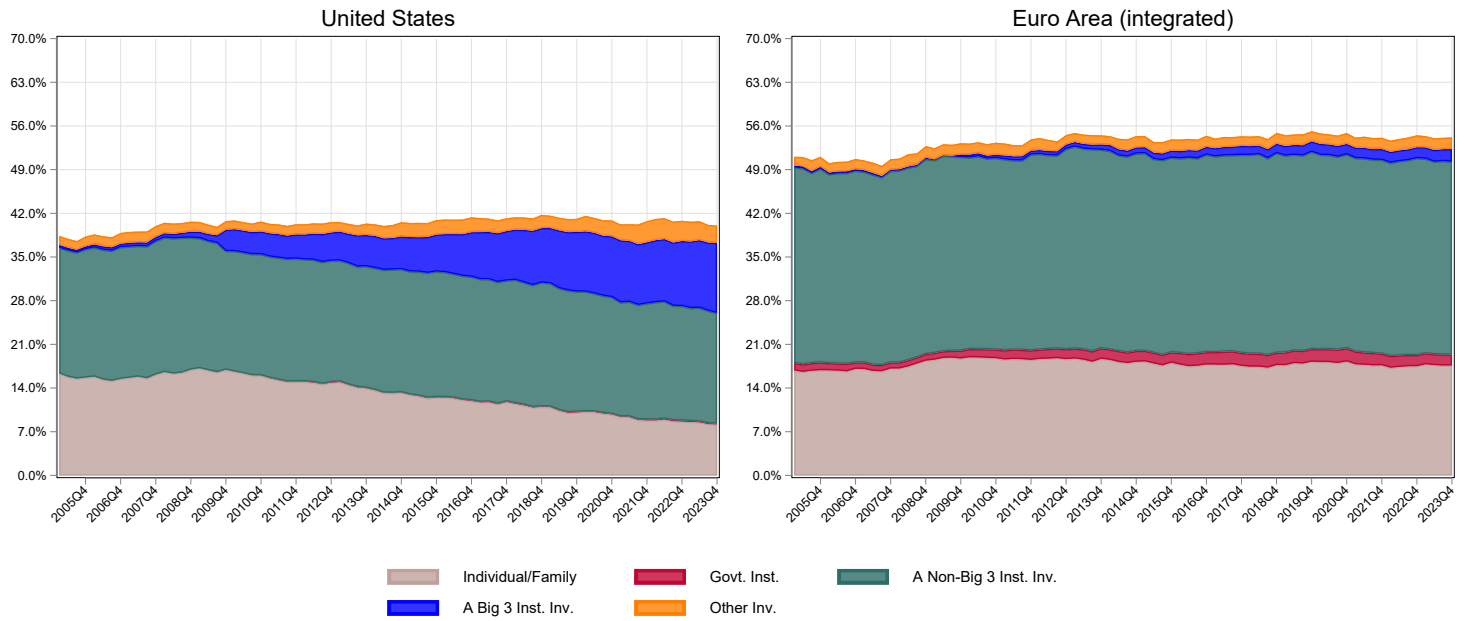


Figure A5A. Top 5 Investors' Mean Ownership Decomposition. This figure presents the mean ownership by the top five largest shareholders of each firm in the United States and the Euro Area. It also shows its decomposition into the following shareholder categories: individual or family, a Big Three institutional investor (BlackRock, Vanguard, State Street), a non-Big Three institutional investor, a government institution, or another type of investor (primarily venture capital, private equity, or research firms). The Euro Area is treated as a single country and comprises the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, and Spain. We exclude Croatia because it adopted the euro as a currency in 2023. We also exclude Greece because we have less than 76 quarters of data for this country compared to the countries included in our Euro Area sample.

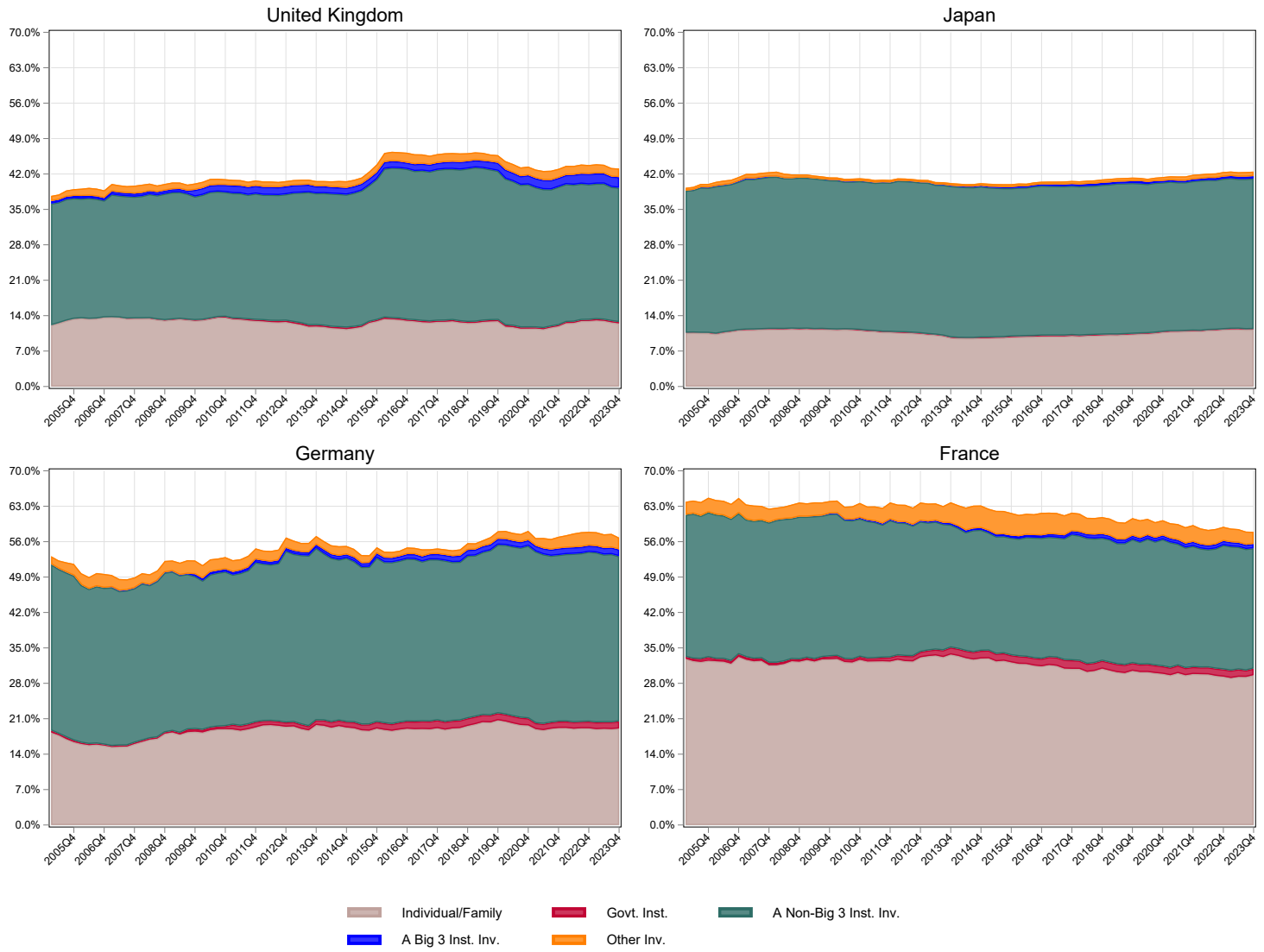


Figure A5B. Top 5 Investors' Mean Ownership Decomposition. This figure presents the mean ownership by the top five largest shareholders of each firm in United Kingdom, Japan, Germany, and France. It also shows its decomposition into the following shareholder categories: individual or family, a Big Three institutional investor (BlackRock, Vanguard, State Street), a non-Big Three institutional investor, a government institution, or another type of investor (primarily venture capital, private equity, or research firms).

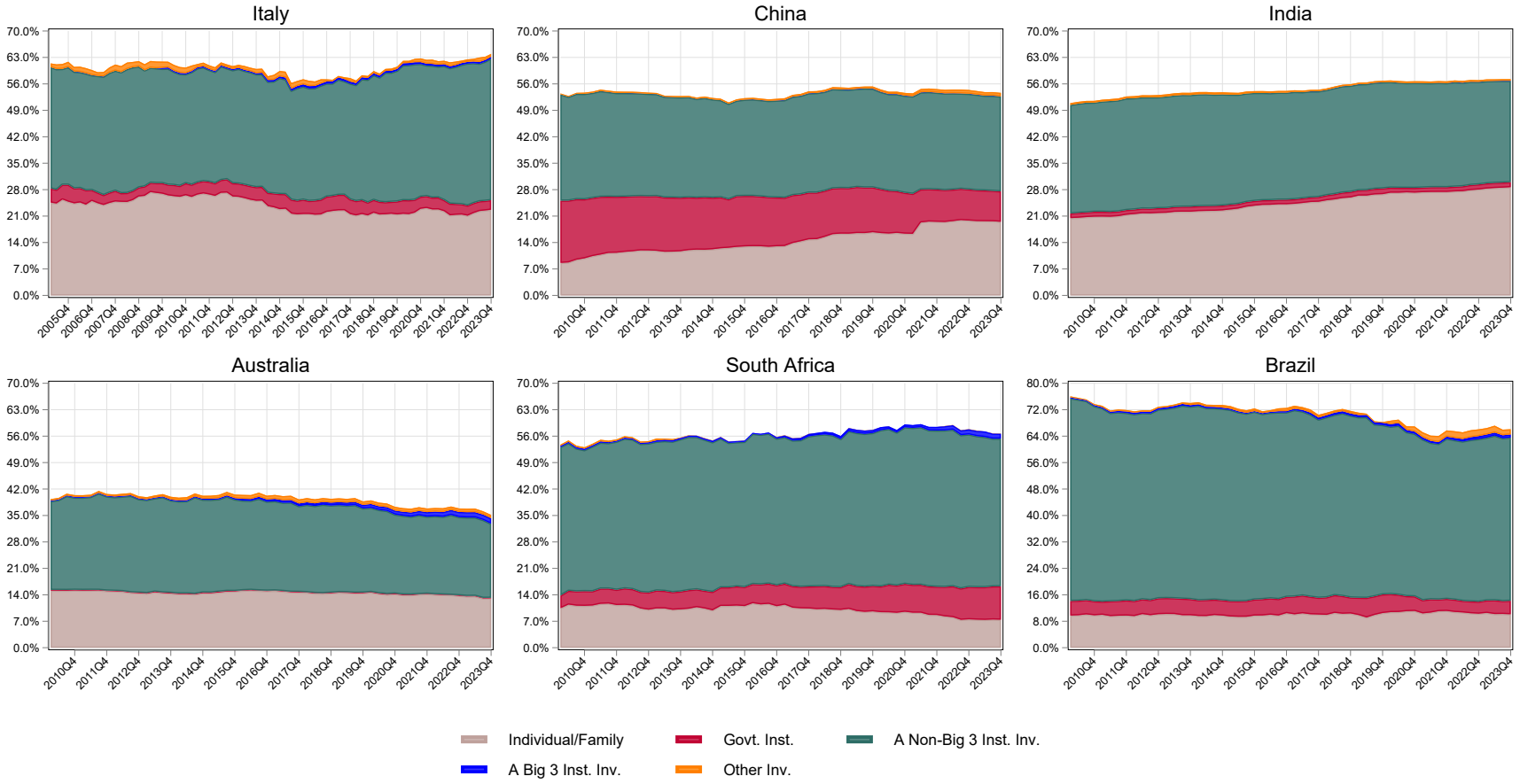


Figure A5C. Top 5 Investors' Mean Ownership Decomposition. This figure presents the mean ownership by the top five largest shareholders of each firm in Italy, China, India, Australia, South Africa, and Brazil. It also shows its decomposition into the following shareholder categories: individual or family, a Big Three institutional investor (BlackRock, Vanguard, State Street), a non-Big Three institutional investor, a government institution, or another type of investor (primarily venture capital, private equity, or research firms).

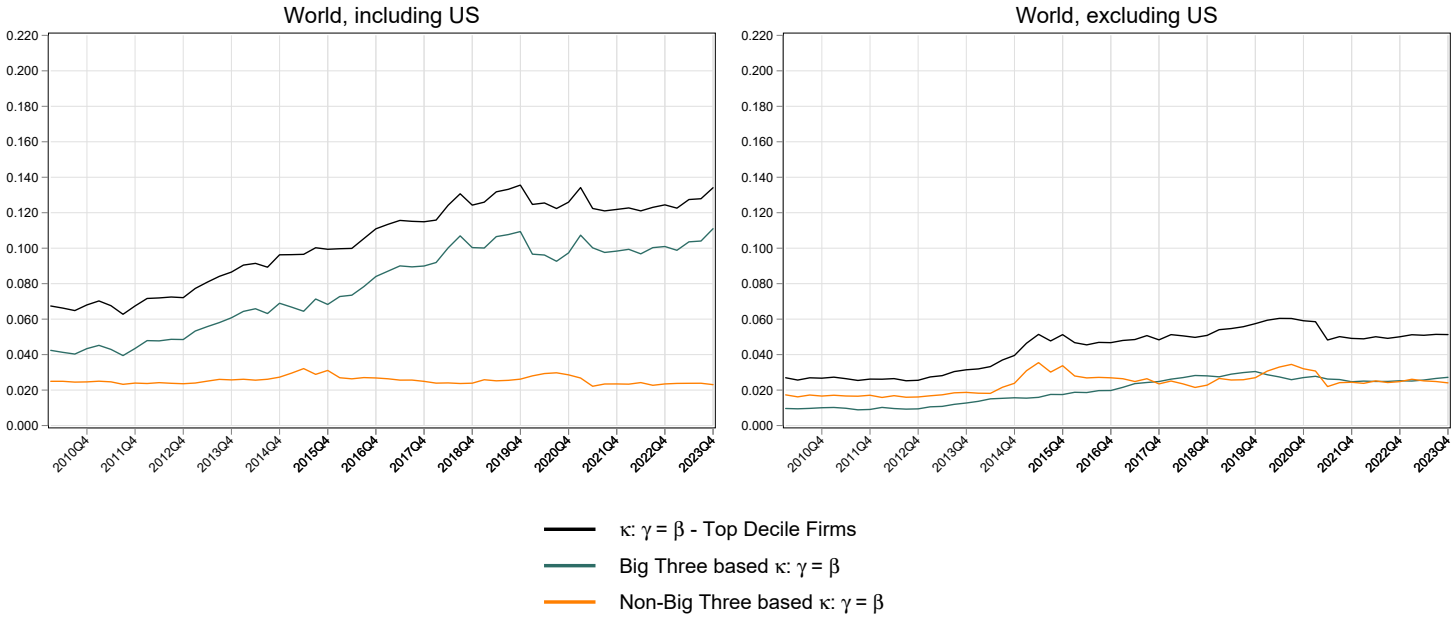


Figure A6A. Big Three Contribution to Universal Ownership – Top Global Firms. This figure plots the evolution of universal ownership among the largest firms globally, stemming from the Big Three and shareholders other than the Big Three. For each quarter, we compute the arithmetic average of pairwise κ across all firm pairs in which both firms fall within the top decile of market capitalization in the sample and a breakdown of it into two terms, one driven by the Big Three (BlackRock, Vanguard, and State Street) and another driven by shareholders other than the Big Three. The solid black line shows the overall trend of the average pairwise κ for top-decile firms. The solid green line shows the average pairwise κ generated by the Big Three. The solid orange line shows the average pairwise κ generated by other shareholders.

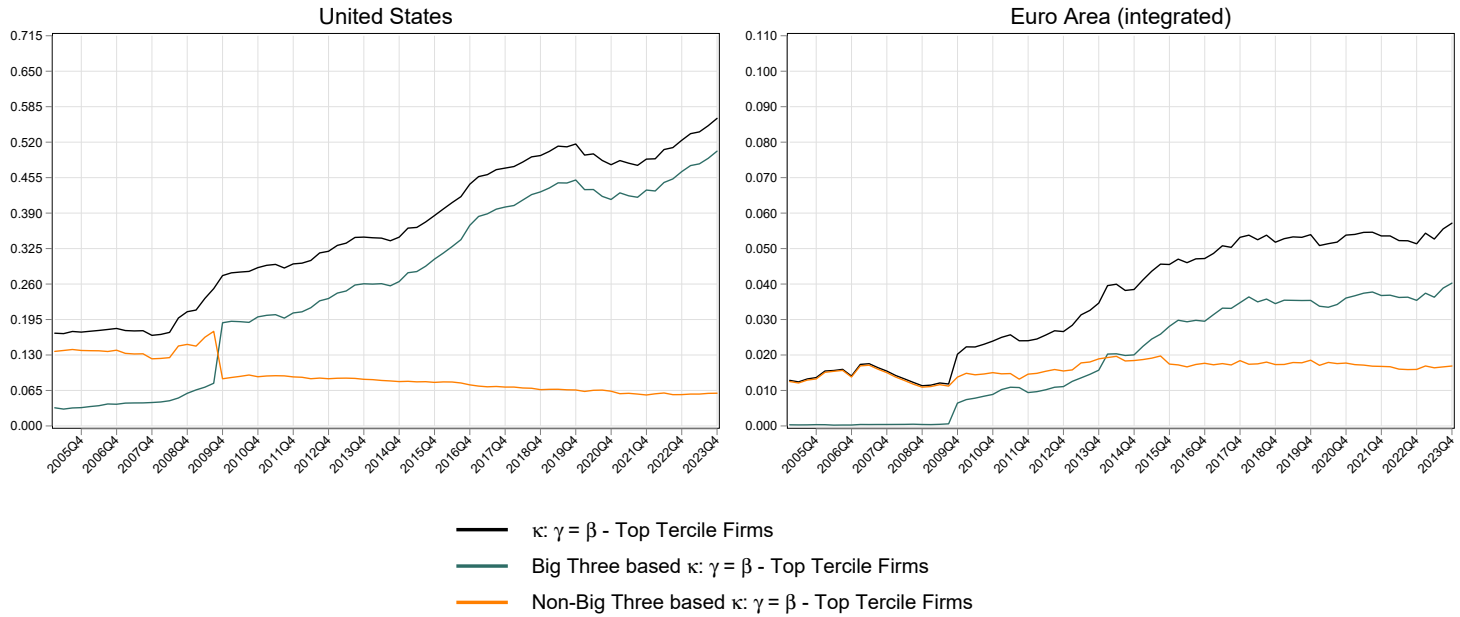


Figure A6B. Big Three Contribution to Universal Ownership (Top Tercile Firms). This figure plots the evolution of universal ownership in the United States and the Euro Area stemming from the Big Three and shareholders other than the Big Three, while focusing on a set of significantly large firms. For firms whose market capitalization is in the top tercile in each country-quarter combination, we calculate the arithmetic average of pairwise κ and a breakdown of it into two terms, one driven by the Big Three (BlackRock, Vanguard, and State Street) and another driven by shareholders other than the Big Three. The Euro Area is treated as a single country and comprises the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, and Spain. We exclude Croatia because it adopted the euro as a currency in 2023. We also exclude Greece because we have less than 76 quarters of data for this country compared to the countries included in our Euro Area sample. The solid black line shows the overall trend of the average pairwise κ for the restricted sample of firms. The solid green line shows the average pairwise κ generated by the Big Three. The solid orange line shows the average pairwise κ generated by other shareholders.

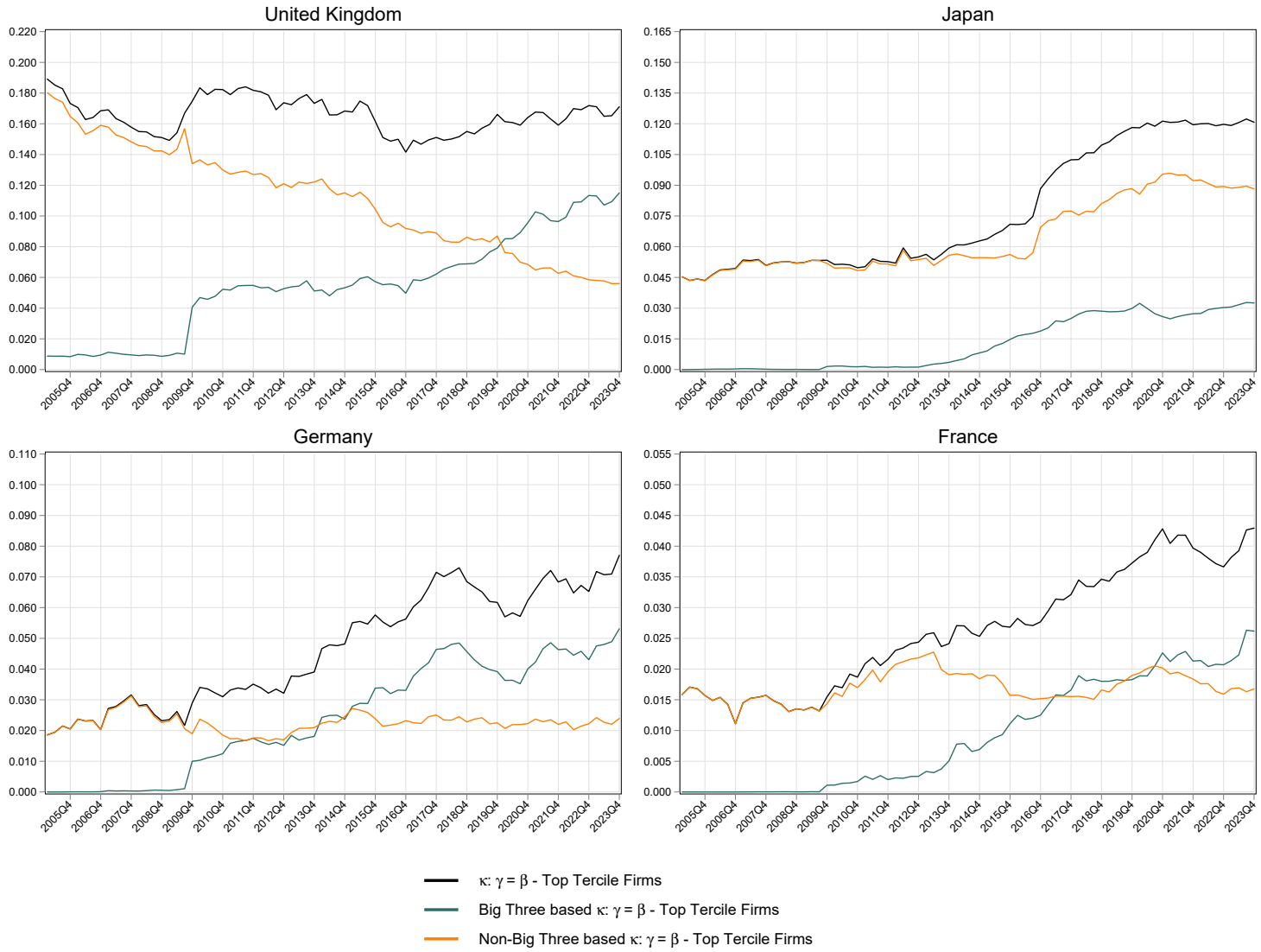


Figure A6C. Big Three Contribution to Universal Ownership (Top Tercile Firms). This figure plots the evolution of universal ownership in the United Kingdom, Japan, Germany, and France, stemming from the Big Three and shareholders other than the Big Three, while focusing on a set of significantly large firms. For firms whose market capitalization is in the top tercile in each country-quarter combination, we calculate the arithmetic average of pairwise κ and a breakdown of it into two terms, one driven by the Big Three (BlackRock, Vanguard, and State Street) and another driven by shareholders other than the Big Three. The solid black line shows the overall trend of the average pairwise κ for the restricted sample of firms. The solid green line shows the average pairwise κ generated by the Big Three. The solid orange line shows the average pairwise κ generated by other shareholders.

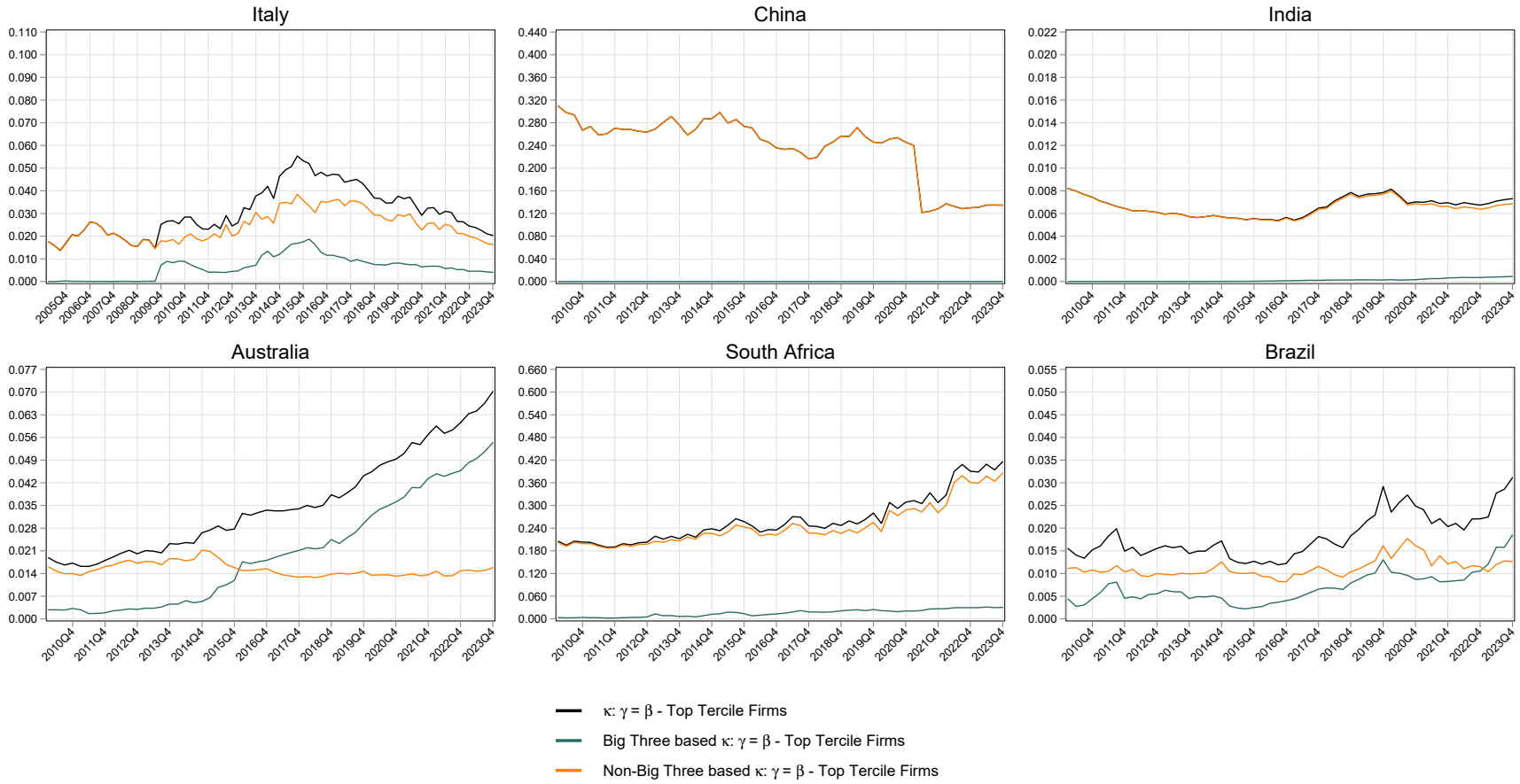


Figure A6D. Big Three Contribution to Universal Ownership (Top Tercile Firms). This figure plots the evolution of universal ownership in Italy, China, India, Australia, South Africa, and Brazil, stemming from the Big Three and shareholders other than the Big Three, while focusing on a set of significantly large firms. For firms whose market capitalization is in the top tercile in each country-quarter combination, we calculate the arithmetic average of pairwise κ and a breakdown of it into two terms, one driven by the Big Three (BlackRock, Vanguard, and State Street) and another driven by shareholders other than the Big Three. The solid black line shows the overall trend of the average pairwise κ for the restricted sample of firms. The solid green line shows the average pairwise κ generated by the Big Three. The solid orange line shows the average pairwise κ generated by other shareholders.

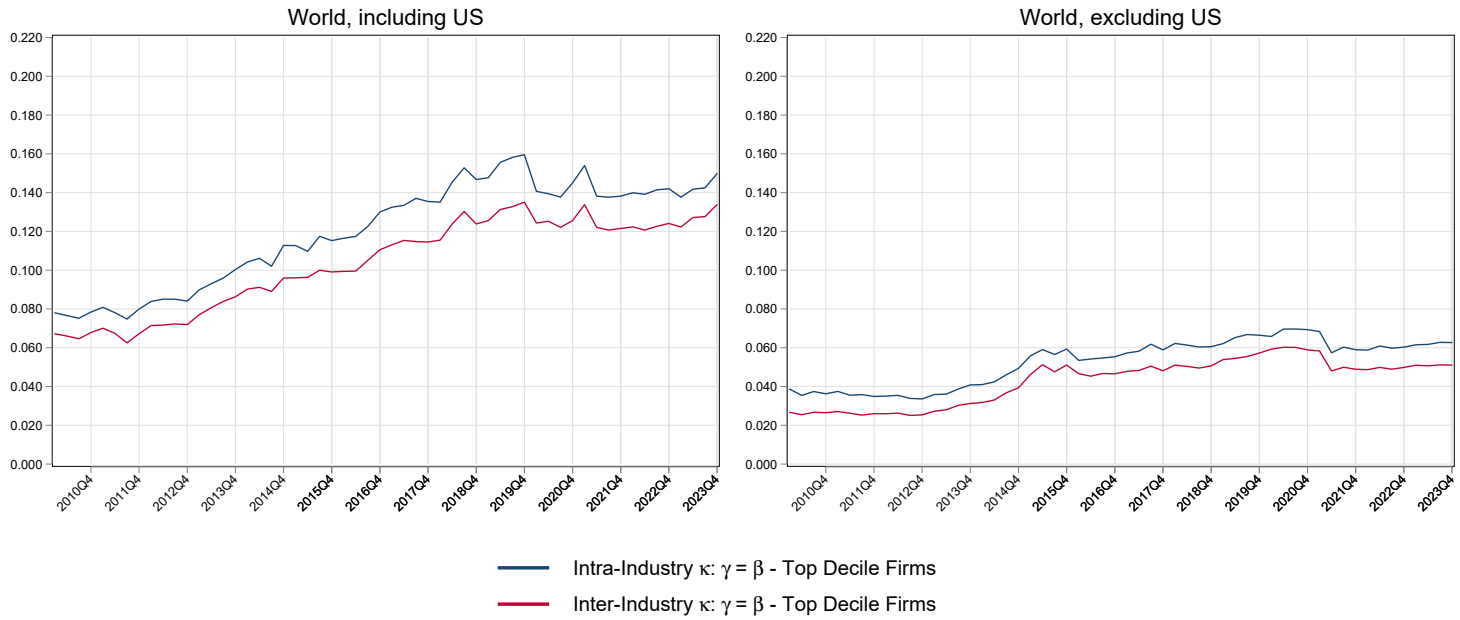


Figure A7A. Intra- vs Inter-Industry Common Ownership - Top Global Firms. This figure plots the evolution of intra-industry and inter-industry common ownership among the largest firms globally. For each quarter, we compute the arithmetic average of pairwise κ across all firm pairs in which both firms fall within the top decile of market capitalization in the sample, conditional on whether a pair of firms share the same industry or not. We refer to the former as intra-industry common ownership and the latter as inter-industry common ownership. The solid blue line depicts the average intra-industry pairwise κ. The solid red line shows the average inter-industry pairwise κ.

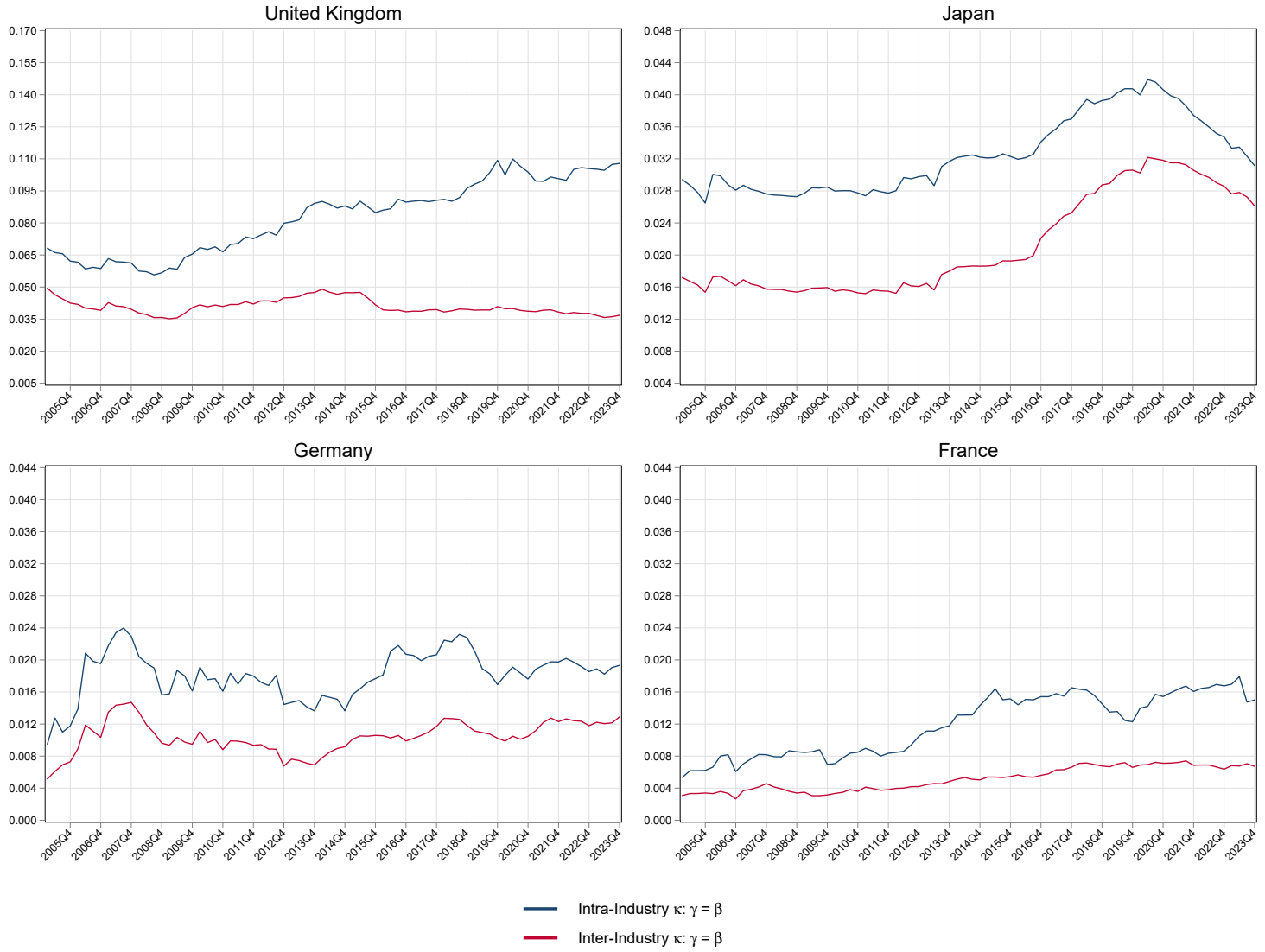


Figure A7B. Intra- vs Inter-Industry Common Ownership. This figure plots the evolution of intra-industry and inter-industry common ownership in the United Kingdom, Japan, Germany, and France. For each country-quarter combination, we calculate the arithmetic average of pairwise κ, conditional on whether a pair of firms share the same industry or not. We refer to the former as intra-industry common ownership and the latter as inter-industry common ownership. The solid blue line depicts the average intra-industry pairwise κ. The solid red line shows the average inter-industry pairwise κ.

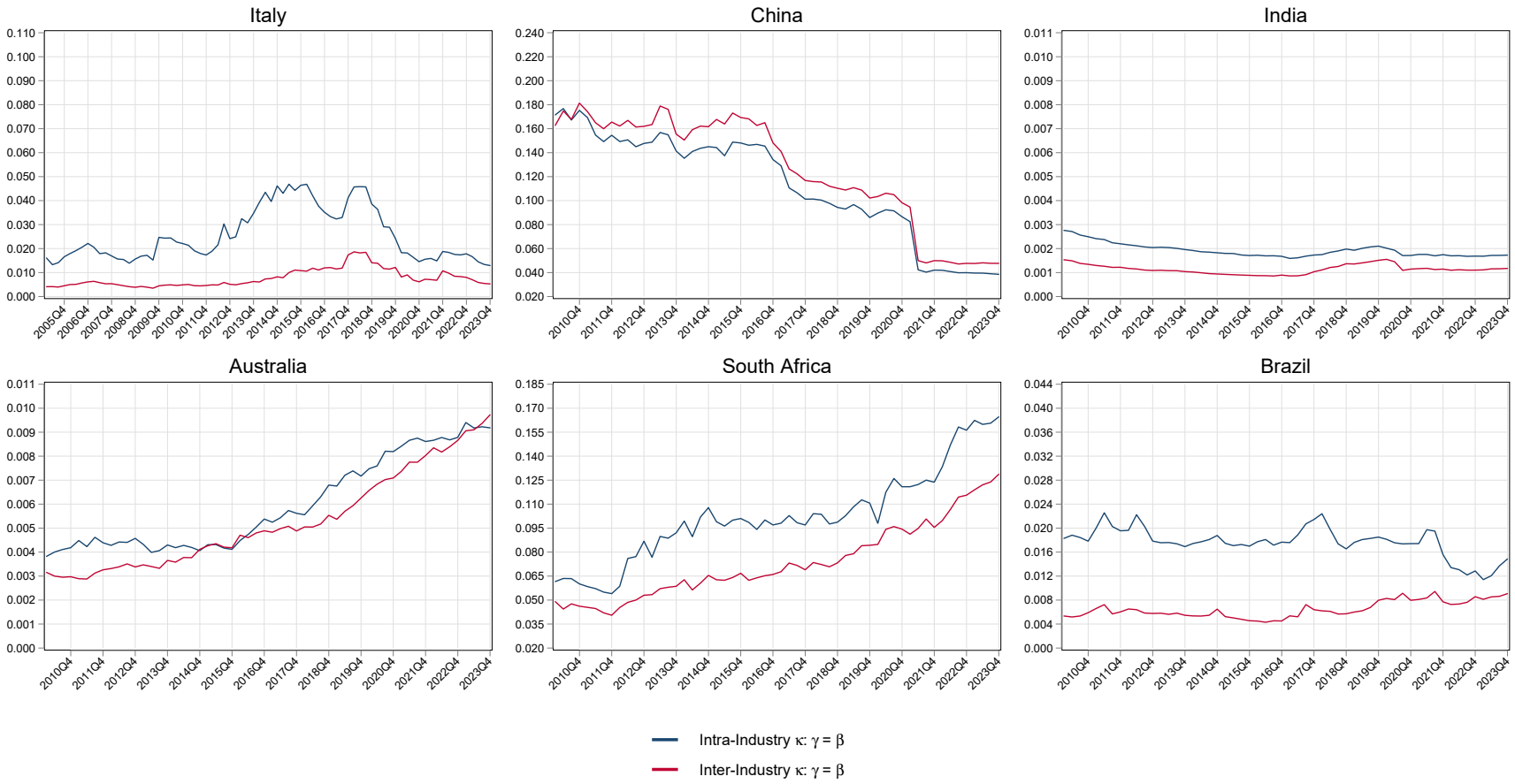


Figure A7C. Intra- vs Inter-Industry Common Ownership. This figure plots the evolution of intra-industry and inter-industry common ownership in Italy, China, India, Australia, South Africa, and Brazil. For each country-quarter combination, we calculate the arithmetic average of pairwise κ, conditional on whether a pair of firms share the same industry or not. We refer to the former as intra-industry common ownership and the latter as inter-industry common ownership. The solid blue line depicts the average intra-industry pairwise κ. The solid red line shows the average inter-industry pairwise κ.

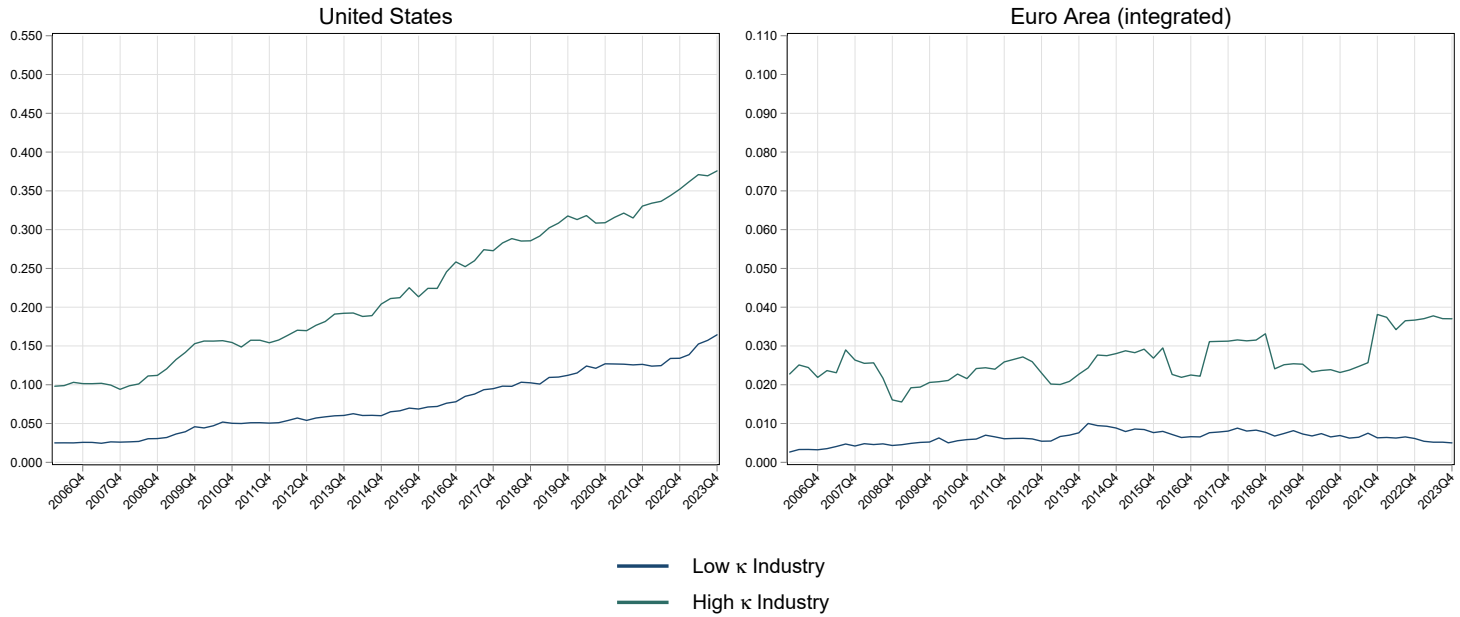


Figure A8A. Common Ownership Persistence by Industry κ. This figure plots the evolution of common ownership within industries characterized by high versus low levels of κ in the United States and the Euro Area. For each country-industry-quarter combination, we first calculate the arithmetic average of pairwise κ. We refer to this as the industry κ. Using industry κ values in the last quarter of the first year of data of each country, we sort industries into two buckets based on the industry κ median: low and high κ industries. For each industry bucket in a given country and every quarter, we then calculate the equally weighted average of the industry κ. The Euro Area is treated as a single country and comprises the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, and Spain. We exclude Croatia because it adopted the euro as a currency in 2023. We also exclude Greece because we have less than 76 quarters of data for this country compared to the countries included in our Euro Area sample. The solid blue line depicts the evolution of the average industry κ for low κ industries. The solid green line depicts the evolution of the average industry κ for high κ industries.

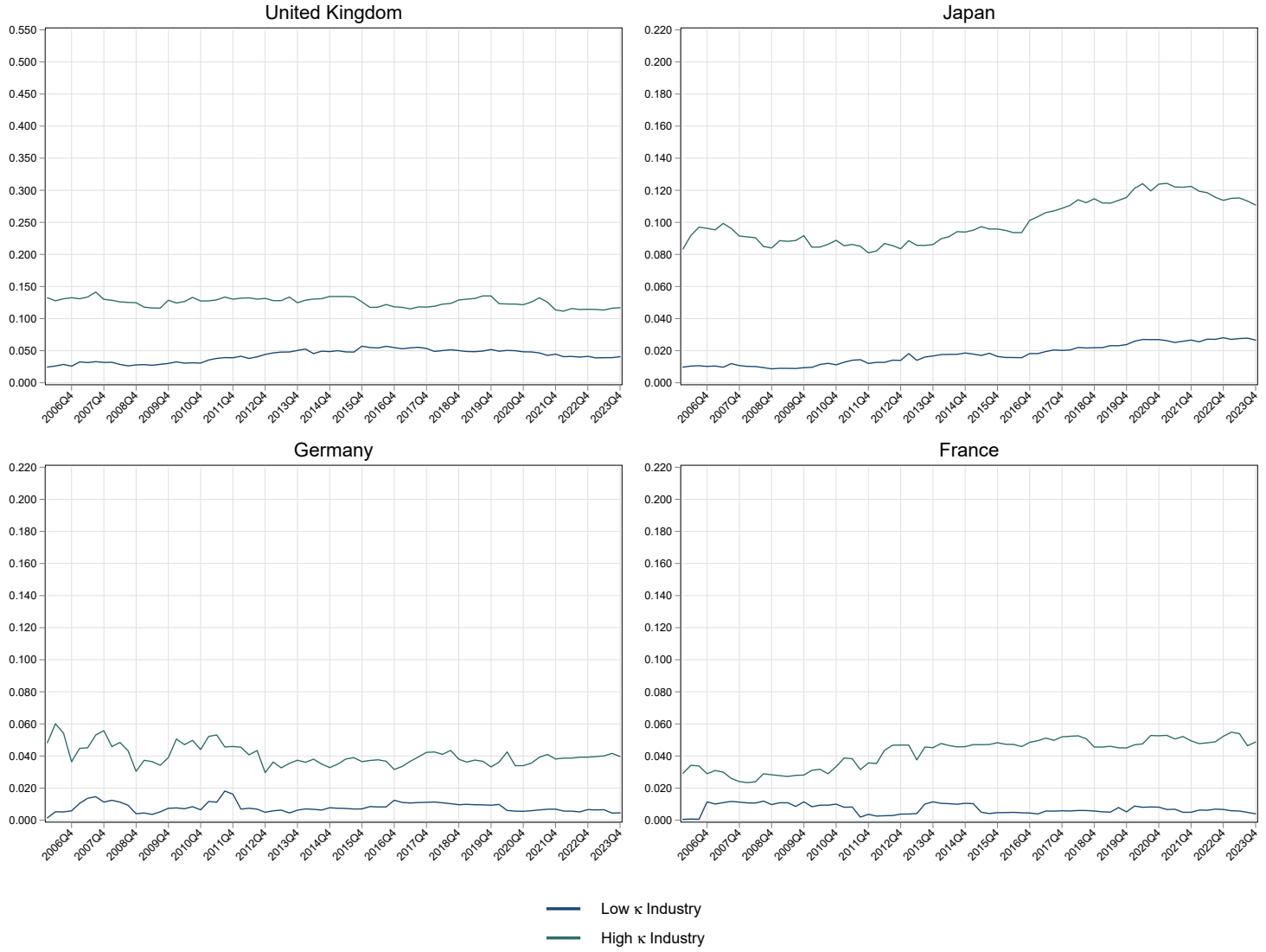


Figure A8B. Common Ownership Persistence by Industry κ. This figure plots the evolution of common ownership within industries characterized by high versus low levels of κ in the United Kingdom, Japan, Germany, and France. For each country-industry-quarter combination, we first calculate the arithmetic average of pairwise κ. We refer to this as the industry κ. Using industry κ values in the last quarter of the first year of data of each country, we sort industries into two buckets based on the industry κ median: low and high κ industries. For each industry bucket in a given country and every quarter, we then calculate the equally weighted average of the industry κ. The solid blue line depicts the evolution of the average industry κ for low κ industries. The solid green line depicts the evolution of the average industry κ for high κ industries.

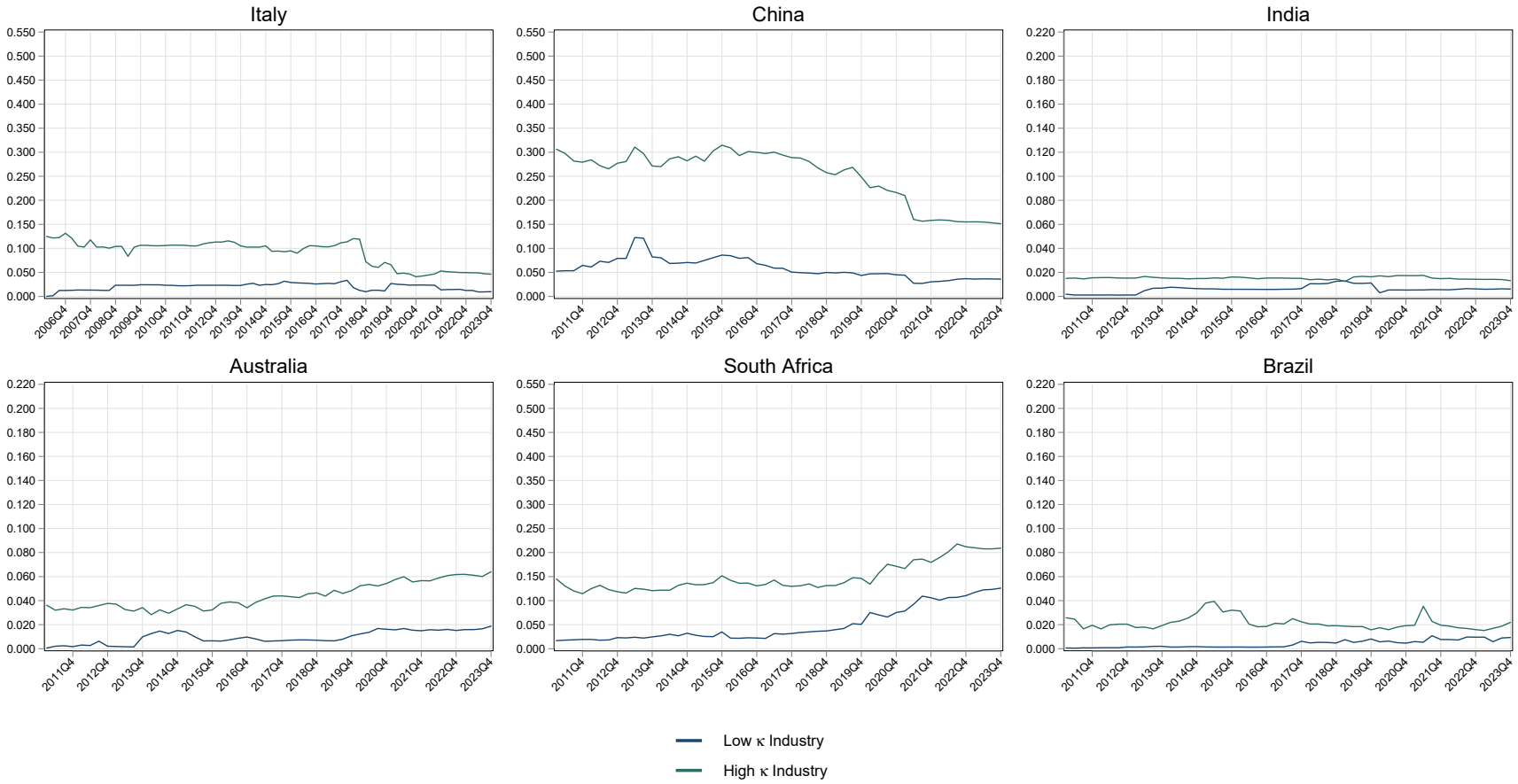


Figure A8C. Common Ownership Persistence by Industry κ. This figure plots the evolution of common ownership within industries characterized by high versus low levels of κ in Italy, China, India, Australia, South Africa, and Brazil. For each country-industry-quarter combination, we first calculate the arithmetic average of pairwise κ. We refer to this as the industry κ. Using industry κ values in the last quarter of the first year of data of each country, we sort industries into two buckets based on the industry κ median: low and high κ industries. For each industry bucket in a given country and every quarter, we then calculate the equally weighted average of the industry κ. The solid blue line depicts the evolution of the average industry κ for low κ industries. The solid green line depicts the evolution of the average industry κ for high κ industries.

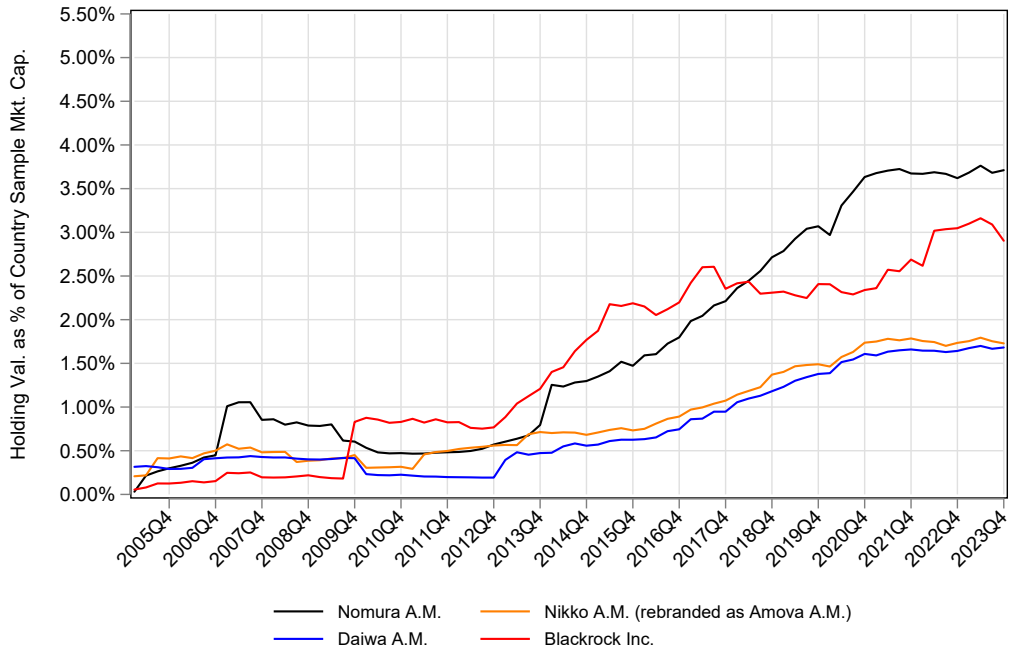


Figure A9. Did the Japanese ETF Purchasing program enhance Universal and Common Ownership? To provide evidence on the impact of the Bank of Japan's ETF purchasing program, we analyze the evolution of holdings by the so-called "Big Three" Japanese institutional investors (Nomura, Nikko [now Amova Asset Management], and Daiwa) and BlackRock as a fraction of Japan's total market capitalization.

Table A1. Descriptive Statistics

Countries	# Unique Firms	Ownership Ratio			Market Cap. ($USD bn)			Holdings Value ($USD bn)		
		Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
United States	14,369	0.6494	0.7018	0.2808	3.9905	0.1514	31.1360	3.1492	0.0872	21.7858
Canada	5,946	0.3462	0.2972	0.2211	0.6640	0.0115	9.7331	0.3929	0.0029	3.0711
United Kingdom	3,430	0.6271	0.6627	0.2256	1.7826	0.0887	11.5588	1.0539	0.0535	5.1039
France	1,207	0.6744	0.7133	0.2154	3.4162	0.1122	15.0260	2.1169	0.0725	9.6056
Germany	1,099	0.6036	0.6476	0.2501	3.0794	0.1320	11.6975	1.7957	0.0754	6.2092
Italy	663	0.6635	0.7136	0.1993	2.1656	0.1751	8.1431	1.2951	0.1177	4.5222
Spain	411	0.6701	0.7131	0.2227	3.8478	0.2366	12.4917	2.1880	0.1507	6.7633
Netherlands	291	0.6214	0.6565	0.2260	5.3972	0.7220	15.2151	3.3818	0.4153	9.2798
Belgium	207	0.5607	0.5948	0.2291	1.4166	0.2702	3.7404	0.8513	0.1512	2.4409
Ireland	164	0.6451	0.6833	0.2477	7.1362	0.5810	19.6432	5.6171	0.3728	15.9943
Austria	120	0.6834	0.7261	0.2162	1.8572	0.4085	4.6190	1.1645	0.2596	2.2957
Finland	209	0.6496	0.6780	0.1883	2.2192	0.1911	9.4152	1.1274	0.1195	4.0998
Sweden	870	0.5821	0.6271	0.2334	0.7154	0.0735	2.7006	0.4755	0.0403	1.8186
Norway	482	0.6283	0.6682	0.2248	1.4667	0.1442	7.8743	1.0531	0.0858	5.4118
Denmark	248	0.4939	0.4984	0.2351	1.6004	0.0995	7.4664	0.9024	0.0409	3.7982
Switzerland	370	0.5777	0.6045	0.2176	5.4882	0.5434	22.9296	2.6302	0.2964	8.9412
Poland	867	0.6784	0.7339	0.2314	0.3395	0.0295	1.3450	0.2562	0.0190	1.0282
Russian Federation	689	0.7640	0.8289	0.2133	2.1243	0.0852	10.4193	1.3508	0.0643	6.7324
Greece	301	0.6555	0.6908	0.1824	0.2786	0.0204	0.9291	0.1810	0.0133	0.6328
Croatia	251	0.6761	0.7333	0.2424	0.1355	0.0162	0.5448	0.1057	0.0100	0.4738
Romania	395	0.7325	0.7963	0.2232	0.1591	0.0072	0.7462	0.1064	0.0050	0.5878
Japan	5,549	0.5411	0.5417	0.1693	1.2709	0.1320	6.0008	0.6207	0.0665	2.8232
China	6,059	0.6026	0.6262	0.1848	1.7199	0.6829	8.4577	1.1272	0.3832	5.3144
India	5,691	0.6777	0.7138	0.1924	0.4451	0.0060	3.2772	0.3522	0.0040	2.6128
Hong Kong	1,812	0.6119	0.6657	0.1880	1.3118	0.1018	9.5512	0.8885	0.0585	5.9154
Taiwan	1,935	0.4694	0.4572	0.1774	0.6945	0.1066	6.5223	0.3499	0.0453	2.9592
South Korea	3,266	0.4896	0.4951	0.2008	0.6918	0.0901	6.0627	0.4057	0.0397	3.6351
Malaysia	1,266	0.6903	0.7251	0.1732	0.4420	0.0423	1.8202	0.3490	0.0283	1.4469
Indonesia	837	0.7548	0.7893	0.1635	0.6797	0.1006	2.8430	0.5272	0.0713	2.3128
Singapore	1,022	0.6577	0.6903	0.1775	0.6066	0.0540	3.0205	0.3879	0.0333	1.8490
Thailand	985	0.5214	0.4496	0.2284	1.2614	0.1228	4.7713	0.4639	0.0516	2.0976
Vietnam	1,611	0.5381	0.5525	0.2380	0.1324	0.0102	0.7311	0.0938	0.0049	0.6054
Philippines	275	0.6966	0.7313	0.1978	1.0135	0.1419	2.4165	0.7322	0.0959	1.7293
Australia	3,169	0.4973	0.4859	0.2138	0.6153	0.0259	3.9004	0.2378	0.0117	1.1541
New Zealand	208	0.5534	0.5540	0.2254	0.6233	0.1223	1.3807	0.2836	0.0625	0.6076

Continued on next page

Countries	# Unique Firms	Ownership Ratio			Market Cap. ($USD bn)			Holdings Value ($USD bn)		
		Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Brazil	508	0.8026	0.8521	0.1928	2.6900	0.3767	15.3543	1.9358	0.2988	7.8530
Mexico	123	0.5698	0.6742	0.3031	3.3378	0.8173	7.5384	2.2297	0.3129	5.8627
Chile	226	0.8337	0.8922	0.1792	1.1654	0.2073	2.7097	0.9500	0.1822	2.2157
Colombia	88	0.8559	0.9059	0.1553	1.9725	0.2364	7.2418	1.7862	0.1885	6.7890
Peru	145	0.7906	0.8785	0.2224	1.0123	0.0767	3.2620	0.8851	0.0585	3.0546
South Africa	508	0.6197	0.6520	0.2183	1.4400	0.1659	4.7607	0.9196	0.0943	2.8605
Egypt	328	0.6793	0.7204	0.2187	0.2237	0.0378	0.6324	0.1540	0.0252	0.4160
Morocco	89	0.7887	0.8205	0.1369	0.8459	0.1540	2.0313	0.6919	0.1184	1.6947
Israel	965	0.6897	0.7435	0.1948	0.3614	0.0449	1.6357	0.2286	0.0309	0.8917
United Arab Emirates	170	0.5642	0.5864	0.2251	2.3821	0.2936	9.7882	1.5328	0.1449	7.2204
Saudi Arabia	290	0.4325	0.4357	0.2276	6.3513	0.4985	82.1356	5.0143	0.2017	80.5698
Kuwait	230	0.5463	0.5431	0.2225	0.6623	0.1013	3.6724	0.3384	0.0533	2.8106
Oman	141	0.6642	0.6873	0.2064	0.1708	0.0391	0.4025	0.1077	0.0253	0.2757
Jordan	264	0.7663	0.8065	0.1704	0.1180	0.0160	0.5277	0.0914	0.0122	0.3900
All Countries	70,349	0.5907	0.6147	0.2373	1.6276	0.0863	15.0730	1.0999	0.0453	10.6445

This table reports the number of unique firms by country over the 2005Q1-2023Q4 period and summary statistics (mean, median, and standard deviation) on the following firm-level characteristics: the ownership ratio (number of recorded shares, divided by the number of shares outstanding), the market capitalization (in $USD billion), and the market value of the recorded holdings (in $USD billion). The high dispersion for Saudi Arabia reflects the inclusion of Saudi Arabian Oil Co. from 2020Q1 onward, whose market capitalization ranges from $USD 1,602 billion in 2020Q1 to $USD 2,130 billion in 2023Q4. The last row of this table shows the same summary statistics for the full sample.

Table A2. Owner Classification

Owner Classifications	Owner Type Names
Individual/Family	Individual Investors Foundations
Institutional Investor	Pension Funds Insurance Companies Investment Advisors Hedge Funds Endowment Funds Bank And Trust Corporations Holding Companies
Government Institution	Government Agency Sovereign Wealth Fund
Other	Private Equity Venture Capital Research Firms Any Other Owner Type

This table outlines how we classify investors based on the reported owner type of each shareholder in the LSEG Global Ownership database.

Table A3. Example of Firms whose Largest Owners are not Institutional Investors - 2023Q4

Countries	Firm Name	Largest Owner	Share (%)
United States	Oracle Corp.	Lawrence Ellison	41.42
United States	Tesla Inc.	Elon Musk	12.96
United States	Amazon.com Inc.	Jeffrey Bezos	9.56
France	Hermes International SCA	Hermes Family	66.72
France	L'Oreal SA	Bettencourt Meyers Family	34.73
France	EssilorLuxottica SA	Del Vecchio Family	32.28
Germany	Bayerische Motoren Werke (BMW) AG	Stefan Quandt	26.82
Germany	Mercedes-Benz Group AG	Government of China	9.98
Italy	Enel SpA	Government of Italy	23.58
Spain	Industria de Diseño Textil S.A.	Amancio Ortega	59.29
Netherlands	Heineken NV	Heineken Family	50.01
Japan	Japan Tobacco Inc.	Government of Japan	33.35
Japan	Fast Retailing Co Ltd.	Tadashi Yanai	17.75
China	Kweichow Moutai Co Ltd.	Government of China	63.43
China	Muyuan Foods Co Ltd.	Yinglin Qin	38.17
China	Industrial Bank Co. Ltd.	Government of China	20.01
India	State Bank of India	Government of India	56.92
Brazil	Petroleo Brasileiro SA Petrobras	Government of Brazil	50.26
Brazil	Banco do Brasil SA	Government of Brazil	50.00
Saudi Arabia	Saudi Arabian Oil Co.	Government of Saudi Arabia	90.19

This table provides some examples of the case where the largest shareholder of a sizeable firm is not an institutional investor. First, we construct a list of the 500 largest firms around the world in 2023Q4 based on their market capitalization. Then, we restrict our sample to cases where the largest shareholder is not an institutional investor and select some examples for ease of exposition. In all cases, the largest shareholders are individuals/families or government institutions. The Government of China holds its stake in Mercedes-Benz Group AG through BAIC Group, a Beijing state-owned automaker.

Table A4. Variables Description

Variables	Definitions
Firm Level Variables (continuous variables are winsorized at the 5% level)	
Equal-Weighted Average Kappa (UO)	Average of the weights that the shareholders of a firm place on the profits of the N - 1 other firms in the country.
Equal-Weighted Average Kappa (CO)	Average of the weights that the shareholders of a firm place on the profits of the other firms in the same country and industry.
Ownership Concentration (C5)	Ownership by the five largest shareholders of a firm, which is calculated using the LSEG Global Ownership database.
Foreign Inv. Holdings	Ownership by foreign investors, which is calculated using the LSEG Global Ownership database.
Big 3 Holdings	Ownership by the Big Three institutional investors (BlackRock, Vanguard and State Street), which is calculated using the LSEG Global Ownership database.
Govt. Inst. Holdings	Ownership by government institutions, which is calculated using the LSEG Global Ownership database.
Individual/Fam. Holdings	Ownership by individuals or families, which is calculated using the LSEG Global Ownership database.
Log Market Capitalization	Logarithm of a firm's market capitalization in USD billion. The latter is calculated using the LSEG Global Ownership database.
Log Age	Logarithm of a firm's age, which is calculated as the number of years since its foundation year. The latter is obtained from Capital IQ.
Country Level Variables (continuous variables are winsorized at the 5% level)	
Log GDP per Capita	Logarithm of the Gross Domestic Product per capita in current USD.
Competition Law Index (CLI)	An index, which ranges from 0 to 1, that captures stringency of a country's competition law. We use the mean value over the period 1980 to 2005. (Bradford and Chilton (2018))
CLI - Abuse of Dominance Provisions	An index, which ranges from 0 to 1, that captures general prohibition of anticompetitive abuses of a dominant position. We use the mean value over the period 1980 to 2005. (Bradford and Chilton (2018))
CLI - Anticompetitive Agreement Provisions	An index, which ranges from 0 to 1, that captures limits to both horizontal and vertical agreements between companies. We use the mean value over the period 1980 to 2005. (Bradford and Chilton (2018))
CLI - Merger Control Provisions	An index, which ranges from 0 to 1, that captures merger control provisions of a country's competition law. We use the mean value over the period 1980 to 2005. (Bradford and Chilton (2018))
Log # Proc. to Start Business (Avg.)	Logarithm of the number of administrative procedures required by an entrepreneur to start and operate a business, which is estimated using the yearly average number of procedures for men and women and obtained from the World Bank's Doing Business database.
Log # Days to Start Business (Avg.)	Logarithm of the number of days that it takes an entrepreneur to start and operate a business, which is estimated using the yearly average number of days for men and women and obtained from the World Bank's Doing Business database.
Employment Laws	An index, which ranges from 0 to 1, that captures labor protection laws. (Botero et al. (2004))
Collective Relations	An index, which ranges from 0 to 1, that captures labor union power and collective disputes. (Botero et al. (2004))
Social Security	An index, which ranges from 0 to 1, that captures social security benefits. (Botero et al. (2004))
Anti-Self-Dealing Index	An index, which ranges from 0 to 1, that captures the strength of minority shareholder protection against self-dealing by the controlling shareholder. (Djankov et al. (2008))
Ex Ante Private Self-Dealing	An index, which ranges from 0 to 1, that captures disclosures and the approval of the transaction by disinterested shareholders. (Djankov et al. (2008))
Ex Post Private Self-Dealing	An index, which ranges from 0 to 1, that captures the disclosure requirements after the transaction is approved and the ease of proving wrongdoing. (Djankov et al. (2008))
Creditor Rights	An index, which ranges from 0 to 4, that captures the strength of creditors' rights as specified in securities and corporate law legislation. We use the mean value over the period 1978 to 2003. (Djankov et al. (2007))
Political Instability	Indicator variable that equals 1 if a country belongs to the bottom quartile of the yearly distribution of the political stability index obtained from the Worldwide Governance Indicators, and 0 otherwise.
Poor Regulatory Quality	Indicator variable that equals 1 if a country belongs to the bottom quartile of the yearly distribution of the regulatory quality

Continued on next page

Variables	Definitions
	index obtained from the Worldwide Governance Indicators, and 0 otherwise.
Corruption	Indicator variable that equals 1 if a country belongs to the bottom quartile of the yearly distribution of the control of corruption index obtained from the Worldwide Governance Indicators, and 0 otherwise.
Mandatory ESG Disclosure (MESGD)	Indicator variable that equals 1 starting from the first year in which a country introduced mandatory ESG disclosure, and 0 otherwise. (Krueger et al. (2024))
MESGD - All at Once	Indicator variable that equals 1 starting from the first year in which a country with all-at-once implementation of ESG disclosure introduced mandatory ESG disclosure, and 0 otherwise. (Krueger et al. (2024))
MESGD - Gradual	Indicator variable that equals 1 starting from the first year in which a country with gradual implementation of ESG disclosure introduced mandatory disclosure on the last of the three E, S, and G topics, and 0 otherwise. (Krueger et al. (2024))
MESGD - Government	Indicator variable that equals 1 starting from the first year in which a government institution in a country introduced mandatory ESG disclosure, and 0 otherwise. (Krueger et al. (2024))
MESGD - Stock Exchange	Indicator variable that equals 1 starting from the first year in which a stock exchange in a country introduced mandatory ESG disclosure, and 0 otherwise. (Krueger et al. (2024))
MESGD - Full Compliance	Indicator variable that equals 1 starting from the first year in which a country introduced mandatory ESG disclosure if the disclosure is on a full-compliance basis, and 0 otherwise. (Krueger et al. (2024))
MESGD - Comply-or-Explain	Indicator variable that equals 1 starting from the first year in which a country introduced mandatory ESG disclosure if the disclosure is on a comply-or-explain basis, and 0 otherwise. (Krueger et al. (2024))
Pension AUM / GDP	Total assets under management of pension providers divided by GDP. Obtained from the statistical annex of the OECD Pension Markets in Focus 2025 report (Table A.3).
Large Pension Sector	Indicator variable that equals 1 if a country is above the yearly sample median of Pension AUM / GDP, and 0 otherwise.
Pension Equity Holdings / GDP	Equity holdings of pension providers divided by GDP, where equity holdings are total pension assets times the share allocated to equities. Constructed from the statistical annex of the OECD Pension Markets in Focus 2025 report (Tables A.2, A.3, and A.8).
Large Pension Equity Holdings	Indicator variable that equals 1 if a country is above the yearly sample median of Pension Equity Holdings / GDP, and 0 otherwise.

This table shows the definition of the variables included in our regression analysis.

Table A5. Regression Variables - Summary Statistics

Variables	Mean	SD	P10	P90	N
Equal-Weighted Average Kappa (UO)	0.0335	0.0635	0.0000	0.1305	1,765,342
Equal-Weighted Average Kappa (CO)	0.0447	0.0832	0.0000	0.1782	1,729,761
Ownership Concentration (C5)	0.4642	0.2079	0.1863	0.7647	1,765,342
Foreign Inv. Holdings	0.1013	0.1618	0.0000	0.3565	1,765,342
Big 3 Holdings	0.0156	0.0353	0.0000	0.0616	1,765,342
Govt. Inst. Holdings	0.0082	0.0219	0.0000	0.0204	1,765,342
Individual/Fam. Holdings	0.1728	0.2077	0.0000	0.5378	1,765,342
Log Market Capitalization	-2.1555	2.3427	-5.4788	1.0923	1,765,342
Log Age	3.3257	0.8569	2.0794	4.5326	1,765,342
Log GDP per Capita	10.0635	1.1611	7.7319	11.0029	1,765,342
Competition Law Index (CLI)	0.6425	0.2525	0.2118	0.9832	1,696,626
CLI - Abuse of Dominance Provisions	0.5821	0.2398	0.2668	0.9375	1,696,626
CLI - Anticompetitive Agreement Provisions	0.5925	0.2771	0.2923	0.9269	1,696,626
CLI - Merger Control Provisions	0.5291	0.3256	0.0625	0.8750	1,696,626
Log # Proc. to Start Business (Avg.)	1.7211	0.5543	1.0986	2.3979	1,134,165
Log # Days to Start Business (Avg.)	2.1998	0.8797	0.9163	3.4452	1,134,165
Employment Laws	0.3335	0.1571	0.1639	0.5676	1,744,496
Collective Relations	0.3873	0.1497	0.1964	0.6280	1,744,496
Social Security	0.6511	0.1259	0.4003	0.7869	1,744,496
Anti-Self-Dealing Index	0.6336	0.1774	0.4200	0.9500	1,722,921
Ex Ante Private Self-Dealing	0.4857	0.3200	0.2200	1.0000	1,722,921
Ex Post Private Self-Dealing	0.7914	0.1783	0.5300	0.9800	1,722,921
Creditor Rights	2.2187	0.9316	1.0000	3.6923	1,765,342
Political Instability	0.2226				1,765,342
Poor Regulatory Quality	0.2298				1,765,342
Corruption	0.1976				1,765,342
Mandatory ESG Disclosure (MESGD)	0.3600				1,519,662
MESGD - All at Once	0.2456				1,519,662
MESGD - Gradual	0.1144				1,519,662
MESGD - Government	0.1284				1,519,662
MESGD - Stock Exchange	0.2316				1,519,662
MESGD - Full Compliance	0.2943				1,519,662
MESGD - Comply-or-Explain	0.0657				1,519,662
Pension AUM / GDP	0.6496	0.5415	0.0480	1.4230	1,643,861
Large Pension Sector	0.6824				1,643,861
Pension Equity Holdings / GDP	0.2263	0.1988	0.0060	0.4990	1,294,513
Large Pension Equity Holdings	0.6047				1,294,513

This table reports summary statistics for the variables included in our regression analysis. All continuous variables are winsorized at the 5% level.

B Data Construction for the Control Correction

This section documents the construction of the measured control rights used in Section 7: the control-chain reconstruction, the dual-class voting-term collection, the verification criteria that determine which measurements enter, and the supporting exhibits. The control-chain measures and voting terms for firms already in the estimation panel feed into the in-panel correction of Section 7.1, while the DEF 14A voting terms for excluded U.S. firms provide the basis for the reinstatement exercise in Section 7.2.[1]

B.1 Control Chains

The reconstruction begins from Bureau van Dijk ownership filings. For each of the 49 countries, we pull the listed-firm universe with its first-level shareholders and expand every corporate holder with a stake of at least 5% recursively through the global ownership database, to at most eight layers, following Aminadav and Papaioannou (2020). A chain thus passes through private holding companies to the family or state entity behind them. In total, 755,944 firm–owner links are traced. We consolidate holdings attributable to the same ultimate owner across nominees and holding vehicles, since treating them as separate owners would miss common-ownership links across firms. On these consolidated ownership blocks, we calculate each traced ultimate owner's voting-rights share γ from the ownership records, regardless of whether the firm is classified as controlled. Cash-flow rights β are computed as the product of ownership stakes along the chain, capped at γ, so that $\gamma - \beta$ measures the attenuation of cash-flow rights relative to voting rights through the pyramid. Separately, for descriptive purposes, we classify a firm as controlled if its largest owner holds more than 20% of the votes or has a Shapley–Shubik voting-power index of at least 0.75, as in Aminadav and Papaioannou (2020). This classification does not enter the computation of γ or β.

Our Bureau van Dijk ownership extract is cross-sectional: historical vintages are unavailable, and most recorded links are dated 2024 or 2025. To apply a reconstructed chain to a historical firm-quarter, we match its traced owners by name to the holders recorded in that quarter. We apply the chain only if the resulting control shares sum to no more than one and the recorded cash-flow shares, including any newly added controller's cash-flow claim, also sum to no more than one. Otherwise, we retain the firm's baseline control vector for that quarter.

We automate the construction wherever the relevant task can be reduced to a reliable rule. We use deterministic code to handle, among other things, ownership-tree traversal, voting-power calculations, cash-flow rights along ownership chains, parsing of standardized records, and the associated screens and consistency checks. Some questions cannot be resolved reliably by a common rule across jurisdictions, particularly when ownership records differ in language, naming conventions, or legal form. In these situations, we use multiple frontier large language models (LLMs) to review the underlying source material and jurisdiction-specific documentation independently. Where the available evidence does not support a sufficiently reliable determination, we retain the

[1] A companion technical report (*Correcting Control in "Common Ownership around the World": Data and Exhibits*, 2026) documents the full construction census and the per-market detail and will accompany the replication package.

baseline record rather than impute a controller or control stake. All resulting decisions and their supporting sources are recorded so that individual cases can be manually audited and revised without rerunning the broader construction.

Integration with the estimation panel is designed to avoid double counting, because the panel already incorporates several ownership corrections, including fund-family aggregation, the BlackRock–BGI consolidation, and a consolidated Chinese state owner (Section 2.1). When a newly identified controller corresponds to an owner already recorded in the ownership data, we replace the existing position with the corrected one. When no corresponding owner can be found, we add the controller only after verifying that it is absent from the full set of reported holders. Ambiguous records, applying the construction procedure described above, remain at their baseline values, as do firms for which the corrected ownership or control shares would exceed one. Measured by their contribution to $\gamma \times \beta$ at 2023Q4, 53.2% of the newly identified controller positions replace positions already present in the data, 45.6% are excluded because they cannot be matched or independently verified as absent, and 1.2% enter as genuinely new positions.

B.2 Verification of Controller Records

Records identifying a controller *not* already present in the ownership data undergo additional verification before entering the calculation of κ. A record is confirmed only when *at least one* primary document independent of the vendor's chain data (a regulatory filing, register entry, exchange disclosure, or annual report, read in the local language where necessary) identifies the same owner and issuer and reports an ownership or voting stake consistent with the candidate record.[2]

The corrected series includes 165 *verified discovered controllers*, each confirmed against primary sources and independently re-examined. We also identify 1,381 *vendor-sourced controllers* that satisfy our initial screening criteria. These records initially had a measured error rate of 26.0% (one-sided 95% upper confidence bound of 38.1%), prompting record-by-record verification against public sources. Following this review, 1,061 vendor-sourced records are retained, of which 997 (94%) are individually confirmed.[3] A further 45,846 uncorroborated candidate records are excluded entirely. At 2023Q4, the correction covers 27,347 firms (72.7%), compared with 27,685 (73.6%) before applying the controller-record verification exclusions.

B.3 Dual-Class Voting Terms

Outside the United States, we review 1,701 candidate multiple-class firms across 37 markets: 897 have a genuine wedge between voting and cash-flow rights, 389 have no such wedge, and 415 yield no usable disclosure. For firms that remain in the estimation panel, the measured voting rights of each shareholder form the dual-class component of the in-panel correction of Section 7: 616 firms across 22 markets, with each voting wedge measured from the firm's own register or annual-report disclosure and no imputation. Coverage is flagged in Table 15 using two criteria. A

[2] Absence of evidence does not refute a record, while the chain arithmetic that generates a candidate is not itself treated as confirmation.

[3] Vendor-sourced records are treated as presumptively accurate unless clearly contradicted by independent evidence. These sources are distinguished from records individually confirmed against independent primary sources.

† marks markets where more than a third of the reviewed candidates yield no usable disclosure or fewer than two thirds of the genuine-wedge firms have measured voting rights, so the correction is incomplete in those markets. A ‡ marks the nine markets whose registers publish capital-only or class-implied ownership without voting rights for individual shareholders (Chile, Colombia, Greece, Indonesia, Malaysia, Oman, the Philippines, South Africa, and Thailand). Constructing voting rights from these capital-only registers would require substantial imputation, so these markets receive only the control-chain correction.

For the United States, we derive voting rights from SEC DEF 14A proxy statements using Item 403 beneficial-ownership share counts, class-specific voting terms, and disclosures attributing holdings across affiliated trusts and vehicles, which we consolidate at the control-group level. The excluded issuer codes are linked to 1,206 identified firms through proxy statements filed during 2004–2023.[4] Parsing the available proxy statements from the start of the panel through 2023 yields 8,358 firm-year classifications: 3,978 with a genuine voting wedge, 778 with a proportional multi-class structure, 2,747 with a single class of common stock, and 855 that could not be classified.

We use these proxy statements to construct quarterly voting-rights measurements. A statement is in force for its filing quarter and the following four quarters unless superseded by a later filing, which takes effect in its own filing quarter. Reinstatement requires exchange listing at quarter-end, a proxy statement in force showing multiple classes of common stock with usable voting-rights information, and satisfaction of the baseline ownership filters (an ownership ratio between 5% and 120% and no single holder above 98.5%). At each quarter-end, we classify a firm as exchange-listed if a security linked to it has a CRSP month-end price on the NYSE, NYSE American, or Nasdaq (exchange codes 1, 2, or 3) and an eligible share code corresponding to ordinary common stock, an ADR, a REIT, or a unit (first digit 1, 3, 4, or 7, excluding closed-end funds). We link securities to firms using CUSIP, ticker, and exact-name matches, resolving remaining cases against corporate filings and exchange records.

A proportional multi-class structure has more than one class of common stock but no wedge between holders' voting and economic shares once associated economic interests are accounted for. Two common examples are Up-Cs and SPACs. In a proportional Up-C, founders hold Class B shares carrying votes but no direct claim on operating profits, together with corresponding units in the operating partnership that are exchangeable for Class A shares. We measure these units on an as-exchanged basis. Where Class B shares carry additional votes per share, the structure may instead produce a genuine wedge. In a proportional SPAC, public Class A shares and sponsor Class B founder shares carry one vote per share, with the latter converting one-for-one into ordinary shares at the business combination. We measure the sponsor's economic claim on this as-converted basis; differences in acquisition price or pre-combination board appointment rights do not enter the voting–cash-flow wedge. These proportional structures qualify for reinstatement despite having zero measured wedges, so their inclusion affects the composition of the panel without itself introducing a voting–cash-flow correction.

The multi-class screen also excludes firms whose proxy statements show only one outstanding class of common stock. Of the 1,206 identified firms, 244 show a single class in every available

[4]Using each firm's most recent proxy statement filed during 2004–2023, 475 firms show a genuine voting wedge, 309 a proportional multi-class structure, 322 a single class of common stock, and 100 a documented but unresolvable structure. These firm-level classifications may differ from classifications in earlier years as firms change their share-class structures.

proxy statement, often because a second class had previously been retired or the sole remaining class retained its original designation. A further 194 firms show both single-class and multi-class structures during the sample period as additional classes are converted or retired.[5] We do not reinstate firm-quarters whose proxy statement in force shows only one class of common stock, since the reinstatement exercise is restricted to observations with multiple classes outstanding. Table A9 reports the number of such exclusions at 2023Q4.

Under these criteria, 807 of the 1,206 identified firms are reinstated in at least one quarter, including 452 at 2023Q4. We compute each holder's voting share γ as its fraction of aggregate votes across all classes, while its economic share β reflects the economic rights attached to those classes (a non-economic voting stub counts as zero, while an Up-C unit enters at its as-exchanged value). Among firm-years with a genuine wedge, the median controller holds 24.3 percentage points more of the votes than of the cash flows, while the maximum wedge reaches 94.5 percentage points. Each reinstated firm's voting-rights measurement is independently checked against the underlying proxy statement before entering any calculation of κ.

B.4 Supporting Exhibits

Table A6 reports coverage and treatment of the correction on the estimation panel; Table A7 accounts for every excluded issuer; Table A8 and Figure A10 show the largest measured U.S. wedges and their effect on directional profit weights; Table A9 reports the reinstatement both with and without the in-panel correction; Table A10 varies the control-propagation rule; and Table A11 replicates the reinstatement using annual reports filed with Finansinspektionen (the Swedish Financial Supervisory Authority).

[5] Examples include Mondelēz, whose Class A common stock is its sole outstanding class; Lee Enterprises, which retired its Class B shares in 2011; and Tilray, which reclassified its Class 2 shares as common stock in 2023.

Table A6. Coverage and Treatment of the Control Correction

	Firms covered	Treated firms	Treated firms (%)	Treated mkt. cap (%)	Mean $\lvert\gamma - \beta\rvert$
China	11,979	3,583	29.9	52.5	0.158
United States	7,195	2,064	28.7	17.4	0.085
India	6,149	2,469	40.2	71.1	0.125
Japan	4,024	1,222	30.4	25.1	0.122
Korea	2,745	1,221	44.5	84.9	0.149
Canada	2,475	428	17.3	12.9	0.124
Taiwan	2,122	774	36.5	13.4	0.093
Australia	1,763	731	41.5	16.7	0.080
Vietnam	1,574	776	49.3	77.7	0.151
United Kingdom	1,506	887	58.9	39.8	0.098
All countries	54,488	20,833	38.2	50.3	0.144

This table reports the ten markets with the most covered firms and the 49-market pooled total. Firms covered counts distinct listed firms for which the correction computes a corrected control vector; treated firms are those whose vector it alters (owner-level wedge $\gamma - \beta$ above a 10^{-6} tolerance); Treated mkt. cap (%) is the treated firms' share of covered-firm capitalization; Mean $\lvert\gamma - \beta\rvert$ is the mean over treated firms of the largest within-firm control-share reallocation. In the All countries row, the firm counts are sums over all 49 markets. Treated mkt. cap (%) is the average of the country shares across the 47 markets with market-cap data; France and Sweden have none. Counts are cross-sectional on the full candidate-record set (the census basis). The 2,064 U.S. firms shown here use the census definition, whereas the 2,898 firms reported for the 2023Q4 U.S. result in Section 7.2 use the estimation-panel definition. At the 2023Q4 reference quarter the corrected series applies to 27,347 of the 37,639 firms in the panel (72.7%). Both components of the in-panel correction are covered: traced control chains and measured voting terms for multi-class firms.

Table A7. Disposition of the Excluded Multi-Class Issuers

	N	Share
Panel A. Excluded issuers by disposition (issuer codes)		
United States (disposition in Panel B)	1,603	44.3%
Separate replication: Sweden	216	6.0%
Not reinstated: control-chains route	169	4.7%
Not reinstated: other non-US dual-class evidence	454	12.5%
Measurement infeasible, non-US	151	4.2%
Remaining and pending	1,027	28.4%
Total excluded issuer codes	3,620	100.0%
Panel B. United States (firms)		
Identified from a 2004–2023 proxy statement	1,206	
of which reinstated (multi-class wedge measured, in the panel in at least one quarter; 452 at 2023Q4)	807	
of which single class in every proxy statement, not reinstated	244	
of which not reinstated for another reason	155	

This table reports the disposition of the 3,620 issuer codes excluded by the multi-class screen. Panel A assigns each issuer code to one category. Outside the United States, 169 issuer codes have an available control-chain route and 454 have other dual-class evidence; the 216 Swedish issuer codes, corresponding to 215 firms, are examined separately in Table A11. Not reinstated rows hold evidence that the reinstatement exercise (which covers the United States and Sweden) does not use. Infeasible means measurement was attempted and failed, and pending means it is unfinished. Panel B reports the disposition of U.S. firms identified by linking excluded issuer codes to SEC DEF 14A proxy statements filed during 2004–2023. The identification window begins in 2004 because proxy statements remain in force for their filing quarter and up to four subsequent quarters, allowing some 2004 filings to provide voting-rights measurements in 2005. Panel B counts firms rather than issuer codes, which do not necessarily correspond one-to-one vis-a-vis each other. Reinstatement requires exchange listing at quarter-end, a proxy statement in force reporting multiple classes of common stock with usable voting-rights information, and satisfaction of the baseline ownership filters (Section 7.2). Firms with proportional multi-class structures remain eligible even when their measured voting–cash-flow wedge is zero.

Table A8. Largest Voting Wedges among Excluded U.S. Firms

Company	Controlling holder	Proxy year	Voting γ (%)	Economic β (%)	Wedge (pp)
EZCORP	MS Pawn L.P. (Phillip Ean Cohen)	2014	100.0	5.5	94.5
Molson Coors	Pentland Securities (Molson family)	2023	95.5	3.9	91.6
Hims & Hers	Andrew Dudum	2023	88.6	9.5	79.1
Graham Holdings	Daniel L. Mosley (trustee of various trusts)	2023	98.6	21.0	77.6
Universal Health Services	Alan B. Miller	2023	87.2	9.7	77.5
U.S. Global Investors	Frank E. Holmes	2006	93.0	19.7	73.3
Domo	Josh James	2023	80.4	10.4	70.0
Expensify	Expensify Voting Trust (David Barrett et al.)	2023	86.0	17.3	68.8
Paramount Global	National Amusements (Redstone family)	2023	77.4	9.7	67.6
UiPath	Daniel Dines	2023	86.6	19.5	67.1
Oppenheimer	Albert G. Lowenthal	2023	97.5	30.8	66.6
Atlis Motor Vehicles	Mark Hanchett	2023	66.5	0.0	66.5
E.W. Scripps	Signatories to Scripps Family Agreement	2023	93.3	27.1	66.2
Coupang	Bom Kim	2023	76.0	9.8	66.1
Marchex	Russell C. Horowitz	2023	75.7	13.0	62.7
Skillz	Andrew Paradise	2023	80.0	18.4	61.7
BuzzFeed	Jonah Peretti	2023	70.1	8.6	61.5
Hyperfine	Jonathan M. Rothberg	2023	84.9	24.0	60.9

This table reports the 18 largest measured voting–cash-flow wedges ($\gamma - \beta$) among the 475 excluded U.S. firms whose most recent DEF 14A proxy statement filed during 2004–2023 shows a genuine wedge. For each firm, "Controlling holder" identifies the beneficial owner or voting bloc with the largest measured wedge, and "Proxy year" gives the filing year of the relevant statement. Named family, trust, and holding-company blocs count as identified holders, while director-and-officer aggregates and memorandum rows are excluded. Holdings attributable to the same identified bloc are consolidated. For Molson Coors, Pentland Securities represents the Molson-family holding company whose Class A shares are voted jointly with the Coors Trust under a voting trust. Voting and economic shares are calculated from the underlying share-class terms and ownership disclosures and may differ from a proxy statement's headline voting percentages, which can include options exercisable within 60 days or use holder-specific denominators.

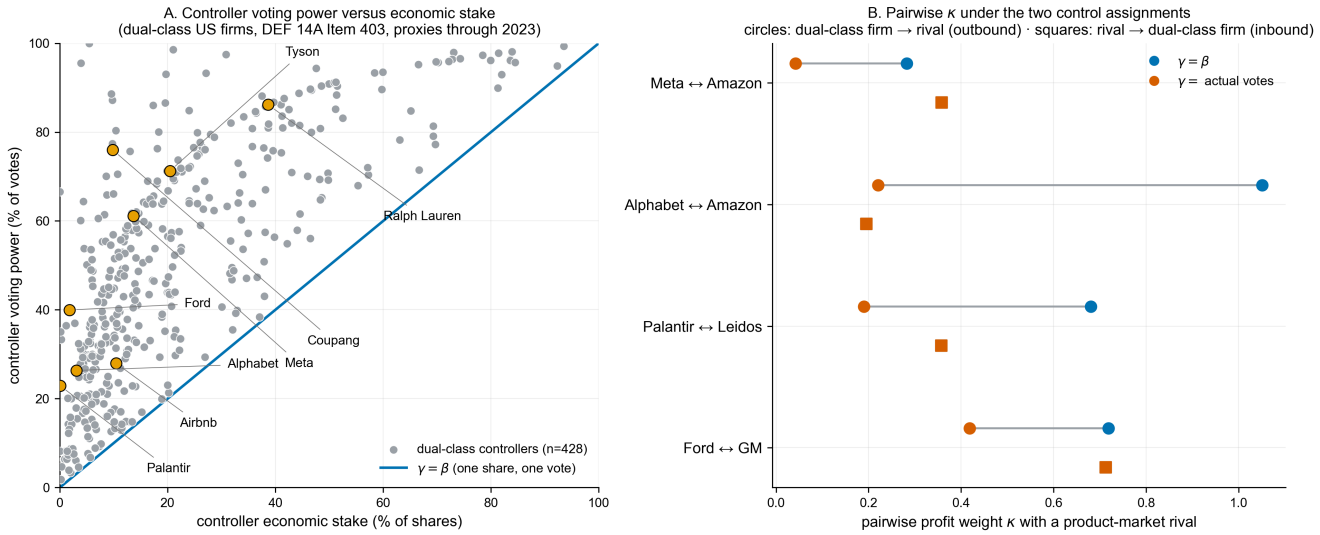


Figure A10. Effect of Dual-Class Wedge on Profit Weights. Panel A plots each controlling holder's voting share against its economic share for identified U.S. firms with a genuine wedge, using each firm's most recent DEF 14A proxy statement through 2023 and the holder-identification conventions of Table A8. The plot includes 428 controllers whose voting share exceeds their economic share by at least one percentage point. The diagonal represents the one-share-one-vote benchmark, and selected firms are highlighted. Panel B compares the directional profit weights κ for four pairs of a dual-class firm and a product-market rival, calculated from their 2023 proxy statements under the one-share-one-vote assignment ($\gamma = \beta$) and measured voting rights. Circles show the dual-class firm's weight on its rival (outbound), while squares show the rival's weight on the dual-class firm (inbound). Under measured voting rights, outbound weights decline, including from 0.283 to 0.042 for Meta on Amazon, while inbound weights remain unchanged. The latter markers therefore overlap. Institutional holders are matched by name across the two firms' Item 403 beneficial-ownership disclosures. The asymmetry arises because institutional investors hold shares in both firms, while concentrated voting control leaves the dual-class firm placing relatively little weight on its rival. This Figure uses proxy-statement holdings alone and is separate from the in-panel correction and reinstatement exercises in Section 7.

Table A9. Reinstatement of Excluded U.S. Firms and the Change in $\bar{\kappa}$

	Appended to baseline panel	Composed with in-panel control correction
Panel A. From identified firms to reinstated firms (2023Q4; firms, N)		
Identified firms	1,206	1,206
Excluded: not listed at 2023Q4	528	528
Listed at 2023Q4: exchange-listed at quarter end	678	678
Excluded: no voting-rights measurement in force	55	55
Excluded: single-class measurement in force	171	171
Included: multi-class measurement in force	452	452
Panel B. Panel-average profit weight $\bar{\kappa}$, all firms (2023Q4)		
Reference-panel firms (N)	3,757	3,757
Enlarged-panel firms (N)	4,209	4,209
Reference-panel $\bar{\kappa}$	0.2000	0.2064
Enlarged-panel $\bar{\kappa}$	0.1717	0.1771
Change in $\bar{\kappa}$ (level)	-0.0283	-0.0293
Change in $\bar{\kappa}$ (%)	-14.2	-14.2
Panel C. Decomposition of the change in $\bar{\kappa}$ in Panel B (2023Q4)		
Incumbents' $\bar{\kappa}$ before reinstatement	0.2000	0.2064
Incumbents' $\bar{\kappa}$ after reinstatement	0.1878	0.1938
Movement per incumbent	-0.0122	-0.0126
Dilution	-0.0215	-0.0222
Linkage	0.0093	0.0096
Reinstated firms' $\bar{\kappa}$	0.0378	0.0378
Contribution of incumbents ($\times$ 3,757/4,209)	-0.0109	-0.0112
Contribution of reinstated firms ($\times$ 452/4,209)	-0.0174	-0.0181
Sum = change in $\bar{\kappa}$ (Panel B)	-0.0283	-0.0293

This table reports the reinstatement of excluded U.S. multi-class firms at 2023Q4 and its effect on the panel-average profit weight $\bar{\kappa}$. Column 1 adds reinstated firms, using their measured voting rights, to the baseline one-share-one-vote panel; column 2 combines reinstatement with the in-panel control correction. The latter specification corresponds to the enlarged-panel series in Figure 11. The two corrections cannot be combined by simple addition because the in-panel control-chain correction also changes incumbents' profit weights on reinstated firms. Panel A reports the reinstatement eligibility counts. Firms are identified by linking excluded issuer codes to SEC DEF 14A proxy statements filed during 2004–2023 (Table A7). Reinstatement requires exchange listing at quarter-end, a proxy statement in force reporting multiple classes of common stock with usable voting-rights information, and satisfaction of the baseline firm-quarter exclusions in Section 2. A proxy statement is in force for its filing quarter and the following four quarters unless superseded by a later filing. The CRSP listing criterion is documented in Appendix B. Firms with zero voting–cash-flow wedges remain eligible. Panel B compares the equal-weighted average $\bar{\kappa}$ of the 3,757 reference-panel firms with that of the enlarged panel of 4,209 firms. Panel C decomposes the change in Panel B into contributions from incumbent and reinstated firms. For incumbents, the change in their average $\bar{\kappa}$ is divided into mechanical dilution (existing links averaged over more peers) and a linkage gain (additional links to reinstated firms). The incumbent contribution is this change weighted by the incumbents' share of the enlarged panel; the reinstated-firm contribution is the difference between their average $\bar{\kappa}$ and the reference-panel average, weighted by their share of the enlarged panel. These contributions sum to the change reported in Panel B. The reinstated firms' $\bar{\kappa}$ is identical across columns because their voting rights and their peers' cash-flow rights are unchanged by the in-panel correction.

Table A10. Control-Rule Robustness (Ultimate Owner vs. Weakest Link)

	Ultimate-owner trace 2023Q4	Weakest-link 2023Q4	Rule Δ (2023Q4)	Δ% vs. baseline	
				Trace	Weak
Ireland	0.1251	0.1226	0.0025	-13.8	-15.5
South Africa	0.0801	0.0822	-0.0021	-38.2	-36.5
United States	0.1746	0.1734	0.0012	-12.7	-13.3
Colombia	0.0104	0.0112	-0.0008	-27.2	-21.9
China	0.0328	0.0334	-0.0006	-30.7	-29.5
United Arab Emirates	0.0236	0.0241	-0.0005	-27.0	-25.4
Peru	0.0044	0.0049	-0.0005	-41.8	-35.9
Morocco	0.0121	0.0125	-0.0004	-42.7	-40.6
Egypt	0.0440	0.0444	-0.0004	-28.6	-27.9
Chile	0.0135	0.0139	-0.0004	-22.5	-20.3
Denmark	0.0151	0.0149	0.0003	-22.5	-23.9
Switzerland	0.0613	0.0615	-0.0003	-21.3	-21.0
Austria	0.0093	0.0096	-0.0003	-9.7	-7.2
Finland	0.0241	0.0244	-0.0003	-38.6	-38.0
United Kingdom	0.0257	0.0259	-0.0002	-34.6	-34.2
Median, all 49	0.0110	0.0112	0.0001	-26.7	-25.4

This table reports the country-average $\bar{\kappa}$ under two control-propagation rules. The ultimate-owner-trace column follows ownership through pyramid chains; the weakest-link column applies the rule of Aminadav and Papaioannou (2020), under which a chain is only as strong as its weakest intermediate layer. Both columns are computed on the full candidate-record series (the only basis carrying both rules), so the Δ% columns are on that base and not on the corrected series' base. This basis difference accounts for the U.S. Δ% of −12.7 here and +3.2 in Table 15. "Rule Δ" is trace minus weakest-link at 2023Q4. Rows are the 15 countries with the largest absolute rule difference; the final row is the all-49 median, whose Rule-Δ cell is the median absolute difference, 0.0001 (maximum 0.0025, Ireland). On this candidate-record basis, the two rules yield similar country averages.

Table A11. Reinstatement of Excluded Swedish Firms and the Change in $\bar{\kappa}$

	Appended to baseline panel
Panel A. From excluded firms to reinstated firms (2023Q4; firms, N)	
Excluded multi-class firms	215
Excluded: not listed at 2023Q4	30
Listed at 2023Q4: exchange-listed at quarter end	185
Excluded: no voting-rights measurement in force	42
Excluded: single-class measurement in force	17
Included: multi-class measurement in force	126
Panel B. Panel-average profit weight $\bar{\kappa}$, all firms (2023Q4)	
Reference-panel firms (N)	524
Enlarged-panel firms (N)	650
Reference-panel $\bar{\kappa}$	0.0449
Enlarged-panel $\bar{\kappa}$	0.0324
Change in $\bar{\kappa}$ (level)	-0.0125
Change in $\bar{\kappa}$ (%)	-27.9
Panel C. Decomposition of the change in $\bar{\kappa}$ in Panel B (2023Q4)	
Incumbents' $\bar{\kappa}$ before reinstatement	0.0449
Incumbents' $\bar{\kappa}$ after reinstatement	0.0382
Movement per incumbent	-0.0067
Dilution	-0.0087
Linkage	0.0020
Reinstated firms' $\bar{\kappa}$	0.0083
Contribution of incumbents ($\times$ 524/650)	-0.0054
Contribution of reinstated firms ($\times$ 126/650)	-0.0071
Sum = change in $\bar{\kappa}$ (Panel B)	-0.0125

This table replicates Table A9 for 215 firms (216 excluded Swedish issuer codes), using largest-shareholder tables and share-class voting terms in FY2006–2023 annual reports filed with Finansinspektionen (the Swedish Financial Supervisory Authority). Reinstatement requires exchange listing at quarter end, measured from Compustat Global with annual-report spans as fallback, and a multi-class measurement in force. Unlike the U.S. proxy statements, the Swedish annual reports carry no filing date, only the fiscal year and the date of the ownership table. Accordingly, we take each firm's measurement for calendar year $t+1$ from the largest-shareholder table and share-class voting terms in its annual report for fiscal year t. A year with no usable report carries the most recent report forward, and the quarters before a firm's first report take that first report. The panel covers 2005Q1–2023Q4. Note that unlike the U.S., Swedish reports are only available from fiscal year 2006, so the quarters in 2005 and 2006 are filled from each firm's first report. Panel A reports eligibility at 2023Q4: 30 firms were not listed; of 185 listed firms, 42 had no measurement in force, 17 had a single-class measurement in force, and 126 were reinstated with a multi-class measurement in force. Panel B compares equal-weighted $\bar{\kappa}$ across 524 reference-panel firms under one-share-one-vote and 650 enlarged-panel firms. Panel C divides incumbents' average change into mechanical dilution (existing links averaged over more peers) and linkage (additional links to reinstated firms). The incumbent contribution weights this change by 524/650; the reinstated-firm contribution weights their average $\bar{\kappa}$ minus the reference-panel average by 126/650. These contributions sum to the change in Panel B. Linkage is positive in all 76 quarters.

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