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## **THE GLOBALIZATION OF CORPORATE CONTROL**

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Papaioannou

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# THE GLOBALIZATION OF CORPORATE CONTROL

## Abstract

The internationalization of corporate control is a facet of globalization that is not well understood, as it is challenging to trace controlling shareholders from the esoteric structure of corporate ownership, often hidden behind "shell" vehicles in offshore centers. We identify ultimate controlling shareholders from complex ownership pyramids across \$22,000\$ publicly-traded firms in 2012, after the global financial crisis, and in 2019, just before the pandemic, and study the globalization of control. Home bias in corporate control is sizable, higher than in portfolio equity. The use of tax-haven incorporated companies in the exercise of control is, on average, modest but heterogeneous across countries. The network of international control appears very sparse, with much fewer links than ownership. In the empirical part, we explore the drivers of cross-border corporate control and ownership. First, we show that a baseline gravity model does a good job, as bilateral links are more potent for populous, affluent, and proximate countries. Institutional quality and tax haven status at source and destination improve the model fit modestly. Second, we explore the role of bilateral features. Legal tradition similarities, international economic policy coordination, and cultural, linguistic, and historical ties play a non-negligible role telling of asset market and informational frictions in the globalization of control markets; economic policy and legal similarities matter for banks and other financial institutions, while informational, cultural barriers are potent for individuals and families. International diversification motives play no major role. The results have implications for theoretical works on the internationalization of corporate control markets.

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paper was mostly written while Luis Fonseca was at London Business School and should not be reported as representing the views of the European Central Bank (ECB)

# The Globalization of Corporate Control\*

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January 21, 2023

## Abstract

The internationalization of corporate control is a facet of globalization that is not well-understood, as it is challenging to trace controlling shareholders from the esoteric structure of corporate ownership, often hidden behind “shell” vehicles in offshore centers. We identify ultimate controlling shareholders from complex ownership pyramids across 22,000 publicly-traded firms in 2012, after the global financial crisis, and in 2019, just before the pandemic, and study the globalization of control. Home bias in corporate control is sizable, higher than in portfolio equity. The use of tax-haven incorporated companies in the exercise of control is on average modest, but heterogeneous across countries. The network of international control appears very sparse, with much fewer links than ownership. In the empirical part, we explore the drivers of cross-border corporate control and ownership. First, we show that a baseline gravity model does a good job, as bilateral links are more potent for populous, affluent, and proximate countries. Institutional quality and tax haven status at source and destination improve modestly the model fit. Second, we explore the role of bilateral features. Legal tradition similarities, international economic policy coordination, and cultural, linguistic and historical ties play a non-negligible role, telling of asset market and informational frictions in the globalization of control markets; economic policy and legal similarities matter for banks and other financial institutions, while informational, cultural barriers are potent for individuals and families. International diversification motives play no major role. The results have implications for theoretical works on the internationalization of corporate control markets.

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# 1 Introduction

Much ink has been spilled studying the origins and implications of the expansion of trade, outsourcing, international banking, foreign direct and portfolio investment. There is, however, little work on the integration of the markets for corporate control. This may not be surprising, as mapping the global network of corporate control is challenging, even for publicly-traded companies under regulatory-supervisory scrutiny. Ownership structures of large listed companies are often esoteric; there are pyramid arrangements and equity cross-holdings between parents, subsidiaries, and holding companies. In addition, controlling ownership often goes through special investment vehicles in tax-havens, whose role is central in the international financial system (Zucman (2015)). The recent leaks on wealth held offshore brought these issues into the spotlight. The sanctions imposed on Russian high-net-worth individuals and corporates have further revealed the challenges of identifying controlling rights even in eponymous companies.<sup>1</sup>

Here, we advance on the measurement of control of listed companies worldwide tracing ultimate controlling entities from pyramidal structures — often hidden behind shells. We provide mappings of the internationalization of corporate control, taking into account indirect links in 2019, just before the pandemic, and in 2012, after the global financial crisis. Our sample covers about 22,000 listed firms, both with a controlling shareholder (voting rights over 20%) and widely-held, in 81 countries. Shareholder entities come from 158 countries. We distinguish between three types of (controlling) shareholders: domestic, foreign, and in tax-haven jurisdictions.

**Stylized Facts** We commence the analysis presenting stylized facts to shed light on some core questions in international finance. First, home bias is considerable, as individuals, families, banks, governments, financial institutions, private, and public firms own and control about 75% of domestic market capitalization, with foreign shareholders holding the remaining 25%. Home bias in corporate control is, therefore, larger than in global portfolio equity (and bond) markets that hovers around 60% (Coourdacier and Rey (2013)). The share of market capitalization controlled by foreign entities is tiny for some large advanced economies, like the United States. But, it is around 50% or higher for some emerging markets, mainly in Eastern Europe and Asia. Cross-border ownership and control appear, on average, larger (and home bias smaller) in smaller economies; entities from smaller economies hold a higher share of (controlling) equity stakes abroad. Second, we zoom into the role of offshore jurisdictions, as there is huge interest from policymakers and the public in their functions. On average, the use of holding companies and special investment/purpose vehicles in offshore jurisdictions is modest; tax haven entities appear in one out of seven controlled firms. But there is considerable variation. Shareholders in offshore centers

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<sup>1</sup>For example, there was uncertainty on whether Mr. Alexey Mordashov, sanctioned by the European Union (EU) in the spring of 2022, was still controlling TUI, the German tour operator, as it was unclear who are the ultimate owners of the two subsidiaries used as conduits.

hold controlling rights in more than a fourth of the market capitalization in many Eastern and Southern European countries. Besides, in some countries, a non-negligible portion of the market capitalization of controlled firms is by domestic shareholders, using intermediates in tax-haven jurisdictions. Third, studying bilateral positions reveals a very sparse network with few controlling links even when we zoom in on advanced economies.

**Gravity** Building on empirical works on other forms of financial integration, we estimate gravity specifications to characterize the heterogeneity of international ownership and control. First, links are stronger for proximate dyads, more populous, richer, and with larger equity markets countries, suggesting that gravity forces are first-order in control markets (as in Head and Ries (2008)' theoretical exploration). Besides size, tax haven status and institutions at destination and source explain a small to modest part of international control. Capital and labor taxes are weakly correlated with control and ownership, possibly because investors, controlling and passive, can bypass them or exploit loopholes and exemptions. Neither education nor trust correlates with international corporate control. Second, adding source and destination fixed-effects to absorb all country features relevant for the globalization of control, we zoom into bilateral features. Building on theoretical and empirical research on home bias (Coeurdacier and Rey (2013) and Pellegrino et al. (2021)), we distinguish between diversification motives, related to economic similarities, frictions in asset markets, related to legal system dissimilarities and limited international policy coordination, and informational barriers and behavioral biases, driven by deep historical and cultural factors. International controlling equity links are not much related to diversification. Controlling equity stakes are considerably larger between countries with similar legal systems, with policy coordination, and euro area members, suggesting that frictions in control markets (double taxation, common standards, legal convergence) play a non-negligible role. These features play a more potent role for banks and other financial institutions, telling of the role of regulatory-legal harmonization in cross-border capital market integration (Barth and Levine (2016); Kalemli-Ozcan et al. (2010)). Besides, historical ties and cultural similarities are strong correlates, especially for individuals and families, telling of informational frictions and potentially behavioral biases of international corporate control markets.

## 1.1 Related Literature

Our paper mainly contributes to research on the determinants of various aspects of globalization and the role of asset market, informational, and cultural barriers preventing the efficient allocation of capital across the world. Rather than looking at foreign direct investment (FDI), international banking, portfolio equity and debt flows (Portes and Rey (2005); Aviat and Coeurdacier (2007); Alfaro et al. (2008, 2020); Lane and Milesi-Ferretti (2008)), we look at the internationalization of

control of listed corporations that, given data challenges, has not been much studied. As our data incorporate indirect investment, often via special purpose vehicles (SPVs) and holding companies in off-shore centers, it deals with a major shortcoming of most international asset and liabilities datasets (IMF International Financial Statistics, US Treasury International Capital System) that, following the *residence principle*, miss indirect exposure. While international institutions, policy-makers, and researchers have acknowledged this limitation, there has been little progress capturing indirect exposure. In this regard our paper relates to the parallel works of Coppola et al. (2021) and Damgaard et al. (2019) on equity issuance via SPVs and FDI, respectively.<sup>2</sup> We take a panoramic view and examine the role of many source and destination features, related to size, taxation and institutional quality, and bilateral features, aiming to provide a set of patterns that would guide theory. In line with the setting in Head and Ries (2008), which however, focuses on control by multinationals, informational frictions play a chief role on cross-border control. And so do legal system features that attenuate agency frictions in line with the setting of Shleifer and Wolfenzon (2002). Besides, historical and cultural ties matter, suggesting the need of theoretical explorations on cross-border control to delve into deep barriers to global capital allocation leading to segmented asset markets, as Pellegrino et al. (2021) do in parallel work.

Second, our evidence that a non-negligible portion of control of listed companies gets through offshore financial centers contributes to the fast-growing research agenda documenting and describing their role in the global economic system (Hines and Rice (1994); Zucman (2015); Tørsløv et al. (2022)); enabling multinationals to shift earnings across jurisdictions (Bruner et al. (2018)), allowing the ultra-wealthy to hide assets (Alstadsæter et al. (2018)), and obscure criminal activity (Andersen et al. (2022)). We add to this genre that offshore centers are chief conduits in the internationalization of corporate control. As the data come from *publicly available* sources, such as regulatory reports and financial data providers, our study highlights their tax and convenience benefits that theoretical work on the global network of financial globalization needs to consider.

Third, our paper adds to research in corporate finance that links corporate control across countries to differences in investor protection, legal origin, culture, financial, and economic development (Claessens et al. (2000); Faccio and Lang (2002); Laeven and Levine (2008)). Our key contribution is zooming in on the internationalization of corporate control, which with the exception of De La Cruz et al. (2019) has not been much studied.<sup>3</sup>

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<sup>2</sup>Damgaard et al. (2019) combine FDI data from various sources to approximate real and “phantom” FDI, often channeled via countries with tailored to multinationals tax systems. Coppola et al. (2021) match tax-haven-incorporated subsidiaries to their parents (country) with a mutual fund and exchange-traded-fund dataset on global holdings to restate bilateral passive equity positions to reflect actual, direct and indirect, linkages.

<sup>3</sup>Works in corporate finance have examined the role of taxes, legal system efficiency, and trust on cross-border mergers and acquisitions (Rossi and Volpin (2004); di Giovanni (2005); Erel et al. (2012); Meier and Smith (2022)).



**Structure** Section 2 presents the ownership data of listed companies, summarizes our methodology to identify ultimate controlling shareholders, and discusses the aggregation of the firm information across countries and country-pairs. Section 3 gives some stylized facts of the internationalization of corporate ownership and control. Section 4 reports gravity specifications, zooming into the roles of source and destination countries’ size, taxation, and institutions, alongside country-pair features, related to diversification, international policy coordination, legal system similarities, cultural and historical ties. In Section 5 we summarize and discuss avenues for future research.

## 2 Data and Methodology

In this section, we first present the firm-level ownership data of public corporations. Second, we discuss our methodology to identify ultimate controlling shareholders. Third, we discuss the aggregation of the firm-level information into country and country-pair structures.

### 2.1 Ownership

Our corporate ownership and control data builds on and extends the work in Aminadav and Papaioannou (2020), who extend, clean, and update Bureau van Dijk’s (BvD) ORBIS dataset for public companies in 2004 – 2012 to re-examine the link between corporate control and legal origin for the largest sample of publicly traded firms. We trace ultimate control for almost the universe of listed companies in 2012, when ORBIS coverage improves considerably, and in 2019, just before the coronavirus pandemic. We retain firms appearing in both years to ensure comparability (though the results are similar in the unbalanced sample). We start with a balanced sample of 23,776 firms listed in 114 jurisdictions with market capitalization data. For meaningful country-level statistics, we drop: (i) jurisdictions with 10 or fewer public companies;<sup>4</sup> (ii) listed firms with market capitalization below 1 million USD or without information.

Our final sample consists of 21,709 listed firms in 81 jurisdictions, representing 95% of global GDP in 2019. According to World Bank statistics, the firms account for 77% of global market capitalization in 2019 and 66% in 2012. Shareholders come from 158 jurisdictions. We have information on the nationality for about 70%, accounting for the overwhelming majority of the market value of equity (94%). Regarding ultimate controlling shareholders, we have nationality information for 88%, accounting for 96% of the market capitalization of controlled firms; controlling shareholders come from 110 jurisdictions. The combined market capitalization is 35,888 and

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<sup>4</sup>We lose 104 companies from 32 small jurisdictions, namely: Anguilla, Bahamas, Barbados, Benin, Botswana, Burkina Faso, Cameroon, Côte d’Ivoire, Curaçao, Ecuador, Gabon, Gambia, Georgia, Gibraltar, Iraq, Jamaica, Kazakhstan, Lebanon, Liberia, Liechtenstein, Malawi, Marshall Islands, Monaco, North Macedonia, Palestinian Territories, Panama, Papua New Guinea, Senegal, Tanzania, Trinidad & Tobago, Uganda, and Zimbabwe.

60,801 billion USD in 2012 and 2019, respectively. Our data capture equity holdings for roughly half, 17,283 billion in 2012 and 26,504 bn in 2019.

## 2.2 Corporate Control

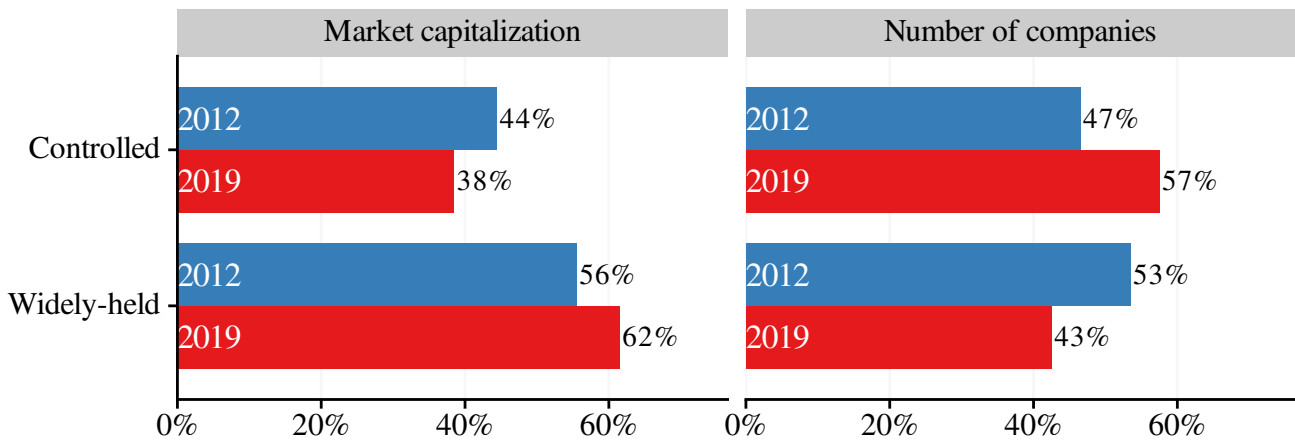
It is challenging to identify controlling shareholders from the obscure, pyramidal, and esoteric firm ownership structures. We provide a summary of the procedure to trace ultimate controlling shareholders, in line with Aminadav and Papaioannou (2020), Unal (2022), and Aminadav et al. (2022). We start with the ORBIS database, which collects ownership information from roughly half of the equity stakes in listed companies. We look in 2012 and 2019, as coverage improves after the global financial crisis of 2008-2010. We correct inconsistencies, omissions, and errors. ORBIS data have gaps on shareholders for many private firms holding large equity stakes in listed companies, which prevents tracing control. We manually check and add information for listed firms with incomplete coverage, using regulatory filings, reports, financial press, media leaks on offshore wealth, and country-specific data providers. For 2004 – 2012, Aminadav and Papaioannou (2020) and Aminadav et al. (2022) gathered information for 14 859 firms. For 2019, we obtained information for 5 003 private firms that hold controlling stakes in listed corporations.

We apply a 20% voting rights cutoff to identify controlled, as opposed to widely held companies, as La Porta et al. (1999). As in Aminadav and Papaioannou (2020), but in contrast to earlier studies, we aggregate the voting rights of all firms that an individual (family or entity) uses to exercise control and aggregate the voting rights of all family members. Figure 1 shows the share of controlled and widely-held firms in 2012 and 2019.

## 2.3 International Corporate Ownership and Control

We aggregate the firm-level data two ways. First, we compile corporate ownership and control statistics of listed companies, taking the country viewpoints of source (nationality of shareholding entity) and destination (nationality of listed firm). Second, we compile bilateral integration statistics. For ownership, we focus on the value (in USD) of the stakes in listed firms in destination,  $d$ , held by entities from source,  $s$ , multiplying the market capitalization of the listed firm by the percentage of the equity held by various shareholders. We calculate equity positions across controlled and widely-held listed companies. For control, we focus on the total market capitalization of listed firms in destination country controlled by entities from source.

We distinguish between three nationality types for shareholders (in controlled and widely-held firms) and *ultimate* controlling entities (in controlled firms): (a) domestic, (b) foreign, and



**Figure 1:** Share of controlled and widely-held listed firms in 2012 and 2019. The sample covers 21 709 listed firms in 81 jurisdictions in both 2012 and 2019.

(c) tax-haven (foreign), using the classification in Tørsløv et al. (2022).<sup>5</sup> Thus, there are nine nationality types for the control chain, i.e., the nationality of the ultimate owner and the immediate shareholding entity.<sup>6</sup> Three caveats apply. First, the tax haven classification misses control and ownership of regional subdivisions that offer convenience and tax incentives, as is the case of the state of Delaware in the United States. Second, there are some contentious countries, as for example the United Kingdom and the Netherlands. Third, as we trace the nationality of ultimate controlling shareholders and of the immediate shareholder, but not other firms in the control chain, the tax-haven estimates are lower bounds on their role.

<sup>5</sup>The tax haven jurisdictions are Andorra, Anguilla, Bahamas, Bahrain, Barbados, Belgium, Belize, Bermuda, British Virgin Islands, Cayman Islands, Curaçao, Cyprus, Gibraltar, Hong Kong SAR China, Ireland, Isle of Man, Jersey, Lebanon, Liberia, Liechtenstein, Luxembourg, Macao SAR China, Maldives, Malta, Marshall Islands, Mauritius, Monaco, Netherlands, Panama, Puerto Rico, Samoa, Seychelles, Singapore, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenadines, Switzerland, and Vanuatu.

<sup>6</sup>The possibilities [and examples] are: (i) Control of domestically listed firm by a national of the same country directly or via a domestic entity. [Walton family controlling Wal-Mart through Walton Enterprises.] (ii) Control of a domestic firm by a local via a foreign company. [Paul Singer, an American, controls Barnes & Noble, a US listed firm, via a British firm, Elliott Advisors]. (iii) Control of a domestic company by a local via a tax-haven incorporated company. [The Lee Hyson family of Hong Kong controls Hysan Development Company in Hong Kong via Jersey shell.] (iv) Control of a listed firm by a foreign shareholder directly or via a foreign intermediary. [Unilever Plc (UK) controlling Hindustan Unilever Lt in India]. (v) Control by a foreign shareholder via a domestic entity. [The Ontario Teachers Pension Fund controls the Copenhagen Airport via Copenhagen Airports Denmark ApS (Denmark)]. (vi) Foreign control via a tax-haven incorporated company. [ChemChina, ultimately controlled by the Chinese State, controls Syngenta AG, a large Swiss agriculture company via a Dutch company, Cnac Saturn.] (vii) Control of a listed firm by a tax-haven entity directly or via a company in another tax-haven. [Hongkonger Lawrence Ho controls Cayman-Islands incorporated Melco Resorts & Entertainment Ltd through a BVI vehicle.] (viii) Control of a listed firm by tax-haven entity via a foreign company [Singapore citizen Goh Cheng Liang controls Australian paint maker DuluxGroup Ltd through Japanese firm Nippon Paint]. (ix) Control by a tax-haven entity via a domestic entity. [The State of Singapore, through Singtel Global Investment Pte Ltd, controls Thai telecommunications company Advanced Info Service Pcl through Thai entity Intouch Holdings PCL.]

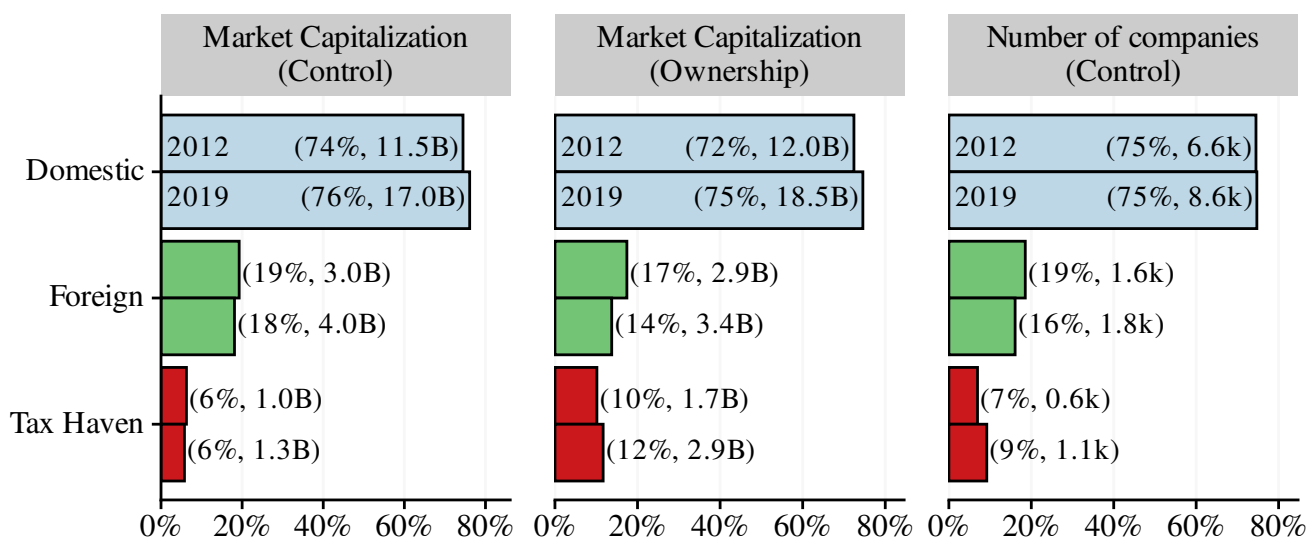
### 3 Stylized Facts

We commence the analysis presenting some stylized facts on the internationalization of control that emerge from the newly-compiled statistics. We zoom into three aspects. First, we explore patterns of foreign control of listed companies, connecting them to the voluminous literature on home bias in international finance (Coeurdacier and Rey (2013); Lewis (1999)). Second, we portray the role of financial off-shore centers as conduits of international corporate control. Third, we graph the network of international (controlling) ownership links.

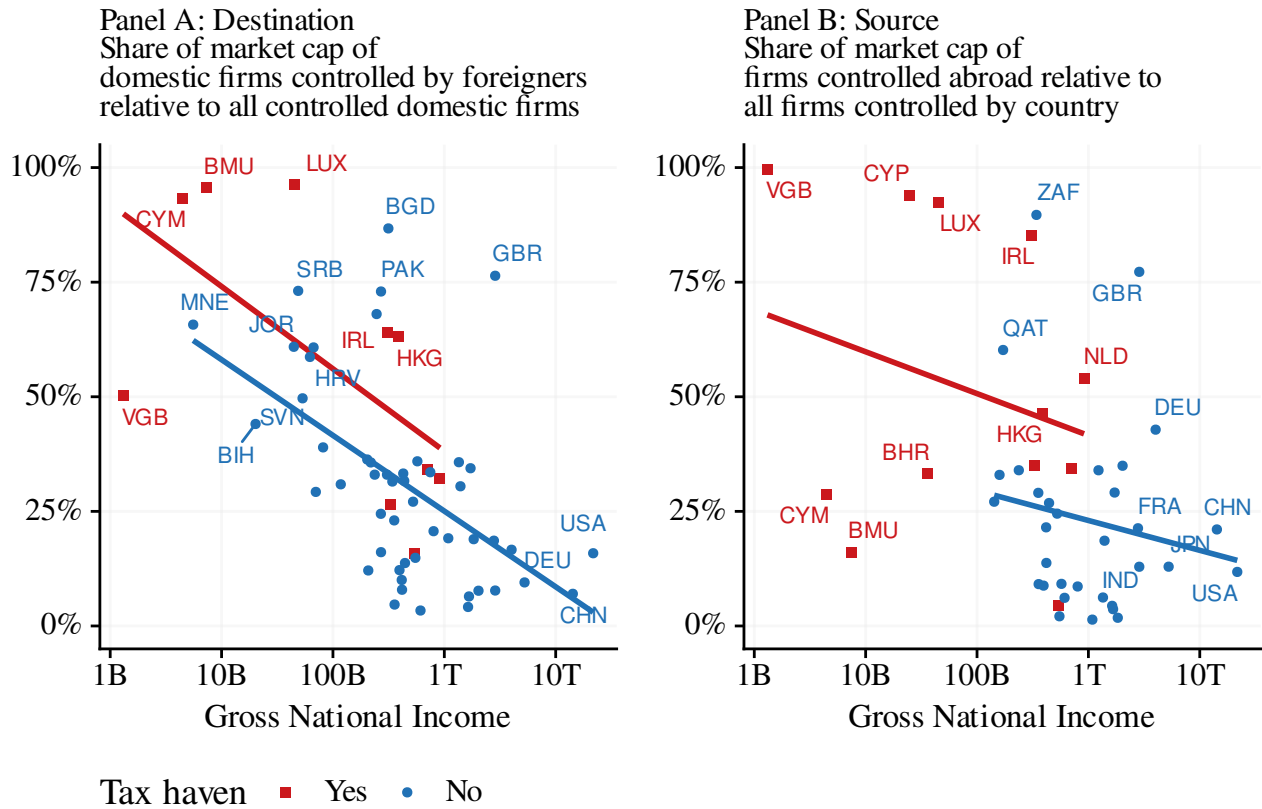
#### **Fact 1. Sizable but Heterogeneous Home Bias in Corporate Control**

**Global Average** Figure 2 shows the proportion of controlled firms whose ultimate owner is a domestic, foreign, or (foreign) tax haven entity. There is an evident home bias. Domestic entities control around three out of four listed companies. Within the 25% of control exercised by non-domestic entities, roughly three-fourths are foreign, and one fourth are in tax haven jurisdictions. There is a similar 75% – 25% split between domestic and foreign ownership. However, there is a higher prevalence of tax haven entities for ownership than for control, suggesting that entities in tax havens often act as vehicles for ultimate owners in other jurisdictions. Home bias in control of listed companies appears higher than in portfolio equity investment that hovers around 60%; it is comparable to home bias in cross-border banking activities and bond portfolios (Coeurdacier and Rey (2013)).

**Country Variation** As the country-level tabulations, reported in Appendix Tables A.1, A.2, A.3, and A.4, show, there is non-negligible variation. Foreign control is smaller in large advanced economies, such as the US, Japan, Germany, and in large middle income economies such as China, Russia, and Mexico. Smaller economies display significantly higher levels of openness to foreign control. Figure 3 explores the correlation. Figure 3 - Panel *A* plots the share of non-domestic control in all controlled firms in a destination country against destination Gross National Income (GNI) in 2019. Panel *B* takes a source country viewpoint, plotting the share of foreign firms controlled by a source country against the source country's GNI. Panel *A* shows that the proportion of market capitalization controlled by foreign entities (regardless of their tax haven status) is negatively correlated with the size of the economy. The relation has a similar magnitude for tax havens, albeit at higher levels of openness. The proportion of foreign companies among those controlled by entities from source, the relation is also negative, but with weaker magnitude. Home bias is more potent for wealthier and larger economies, a pattern in line with the idea that these countries offer greater diversification opportunities.



**Figure 2:** Nationality of controlling shareholder entities in listed companies worldwide. The figure portrays the proportion of companies whose ultimate owner is a domestic, foreign, and (foreign) tax haven entity. The left and center panels show proportions of the market capitalization of listed companies for control and ownership; the right panel shows proportions of the number of controlled listed companies. For each group of controlling shareholders, the top bar shows the statistics for 2012 and the bottom bar the statistics for 2019. Besides proportions (in percentage points) the parentheses give the number of companies and market capitalization (in US dollars). The 2012 sample includes 10,100 controlled companies with USD 15.9 trillion market capitalization, listed in 81 countries, with controlling shareholders from 106 jurisdictions. The 2019 sample includes 12,479 controlled companies with USD 24.4 trillion market capitalization, listed in 81 countries, with controlling shareholders from 111 jurisdictions. The sum of these figures may not add up to the total reported in the main text due to incomplete coverage regarding the nationality of controlling and shareholding entities.



Only countries with at least 10 listed and controlled companies (Panel A) or whose entities control at least 10 companies (Panel B) are shown.

**Figure 3:** Economy Size and Cross-Border Corporate Control in 2019

Panel A plots the share of total market capitalization at the destination country with a foreign controlling shareholder against destination countries' Gross National Income (GNI). Panel B plots the share of the total market capitalization controlled abroad by shareholders in the source country against the source country's GNI. The (red and blue) lines show least squares coefficients, estimated separately for tax-haven and non-tax-haven jurisdictions.

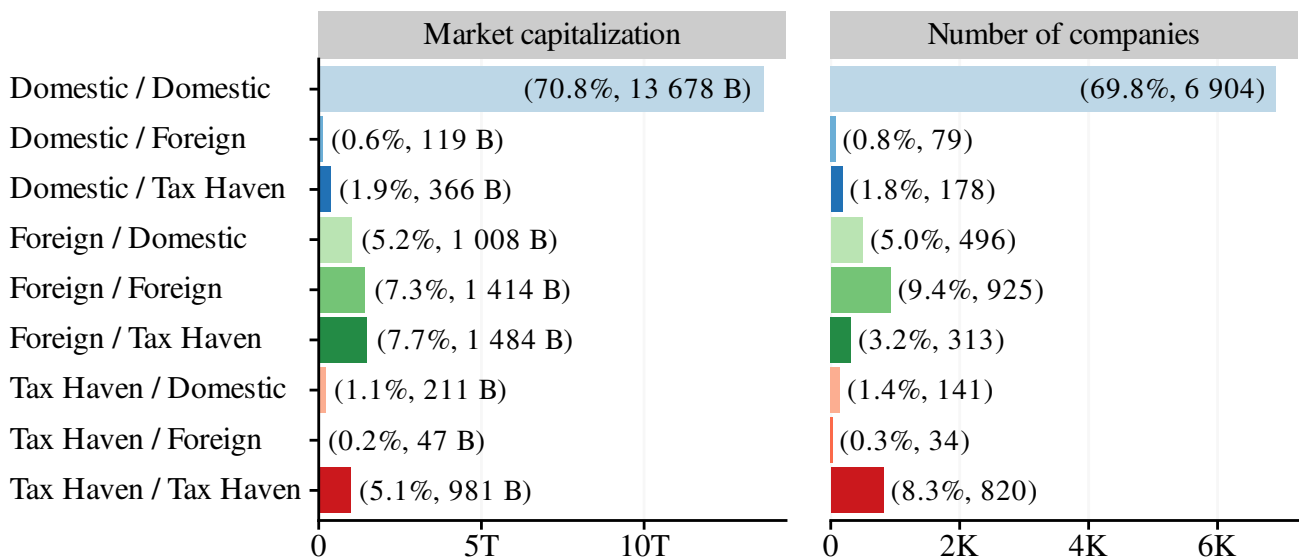
## Fact 2. Modest but Heterogeneous Role of Tax Havens

**Global Average** In Figure 4 we split controlled companies by the nationality type (domestic, foreign, and tax haven) of *controlling* entity and of the *immediate* main shareholding entity in 2019 [Appendix Figure A.7 shows equivalent statistics for 2012]. Out of the nine categories, five involve an entity in a tax haven; three with the ultimate controller in a tax haven jurisdiction (and a domestic, foreign, or tax-haven immediate controller) and three with a tax haven immediate controller (and domestic, foreign, or tax-haven ultimate controller), with the latter in each group overlapping. In 2019, tax haven entities are involved in the control of around 15% of listed firms with a controlling shareholder. Note that, as we trace the nationality of ultimate controlling entities and of the immediate shareholder, but not of other firms in the control chain, these estimates on tax-haven usage are lower bounds. We observe a tax haven incorporated controller in 8.3% of controlled firms globally, while shareholders from tax haven jurisdictions control 5% of the market capitalization of publicly-traded firms. In addition, quite often foreign shareholders channel their controlling stakes via companies in tax-haven jurisdictions (about 1.5 trillion of a total of about 4 trillion). Besides, in 2% of controlled firms, we have a domestic shareholder channeling her controlling stake via a tax-haven incorporated company.

**Country Variation** Figure 5 delves into the usage of tax haven entities for exercising control, plotting the shares of the five (out of nine) combinations involving a tax haven. There is wide country heterogeneity with some noteworthy regional patterns. Tax haven use is of first order in Southern Europe (Portugal, Greece), Eastern Europe (Russia, Ukraine), including Baltic and Balkan countries (e.g., Latvia, Bulgaria, and Serbia), and some emerging markets in Asia (Indonesia, Philippines, and Pakistan) and Africa (Nigeria and Kenya). In contrast, tax-haven incorporated entities in control appear minimal in the United States (although we do not capture the role of Delaware) and Japan. A closer look at the types of control entailing tax-haven companies yields some additional insights. In Southern and Eastern Europe (Portugal, Greece, Czechia, Russia, Ukraine, Italy, and Spain), domestic residents exert control of local cooperates using firms in tax-haven jurisdictions [blue].<sup>7</sup> Besides, in Eastern and Southern Europe, we also observe foreign control often passing via tax-haven incorporated companies [green].

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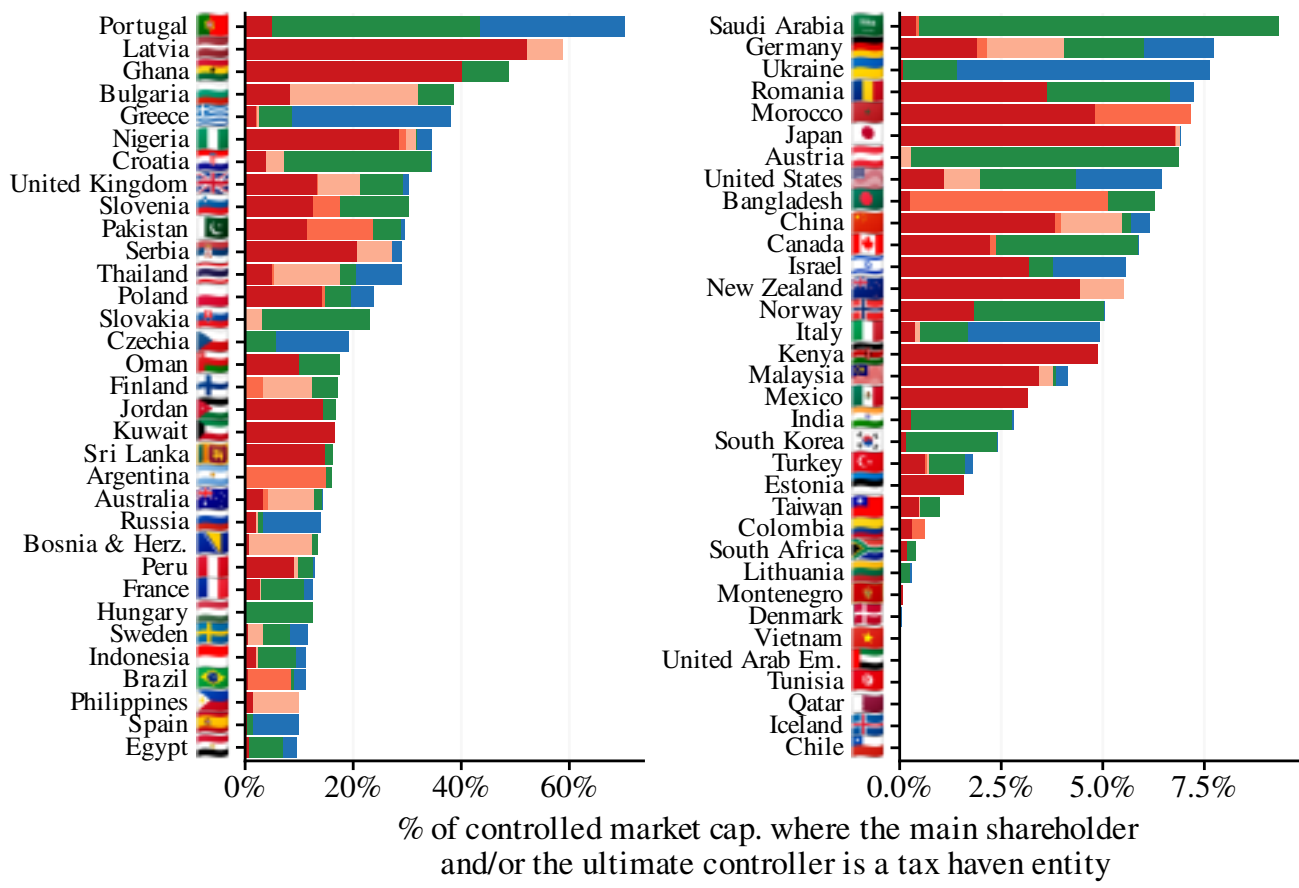
<sup>7</sup>For example, Jerónimo Martins SGPS, a Portuguese food distribution and retail group is controlled by the family of Alexandre Soares dos Santos through Dutch-based entity Sociedade Francisco Manuel dos Santos BV. Greek retailer Jumbo SA is controlled by Greek citizen Apostolos Vakakis through Tanocerian Maritime, a Luxembourg entity. Russian citizen Vladimir Lisin controls Russian steelmaker Novolipetsk through Fletcher Group Holdings Limited, a Cyprus-based vehicle.



The labels indicate the nationality of the controller and of the main immediate shareholder entity.  
 E.g. Domestic / Tax Haven indicates that the controller is domestic, and the main shareholder is from a foreign tax haven.

**Figure 4:** Share of the different nationality types of control chains among controlled firms, worldwide, in 2019. Controlled companies are split according to the nationality type (domestic, foreign, and tax haven) of their *controlling* entity and of the *immediate* main shareholding entity. Market capitalization is measured in US dollars.





Dom indicates a domestic shareholder or controlled. For indicates a foreign non-tax haven. TH indicates a foreign tax haven. E.g., Dom / TH indicates that the controller is domestic, and the main shareholder is from a foreign tax haven.

**Figure 5:** Tax Haven Incorporated Vehicles in Corporate Control Chain across countries (Destination) in 2019. The chart shows the percentage of the market capitalization of controlled firms for which a tax haven entity is either the ultimate controller or the main immediate shareholder. The chart provides disaggregation of the five possible combinations: three with ultimate controller from a tax haven (and a domestic, foreign, or tax-haven immediate controller) and three with a tax haven immediate controller (and domestic, foreign, or tax-haven ultimate controller), with the latter of both groups overlapping. The chart is divided in two panels for convenience. Note that the x-axis of the right panel is in a different scale.

### **Fact 3. International Network of Corporate (Controlling) Ownership. Tax Havens, Regionalism, and Sparsity**

We then turn to network structure, as it helps grasp the interconnections and the features shaping the links between countries. The graphing of international (controlling) ownership links reveals a very sparse network with a few large connections among advanced economies and large emerging markets, regionalism with some links within (sub-)continents, and a prominent role of tax havens.

**Largest Links. Tax-Havens** Table 1 zooms into the largest bilateral links in 2019 for the ten economies with the largest market capitalization of controlled firms. The largest ownership links globally are between the Cayman Islands and the British Virgin Islands (\$397*bn*) and between Hong Kong and the BVI (\$340*bn*). Of the ten largest ownership and control links, six entail a tax haven jurisdiction, three of them are between two tax-havens. [See Appendix Table A.1]. For comparison, tax haven jurisdictions appear only once in the ten most extensive international trade links (Germany-Netherlands) and in three of the largest service trade links in 2019 (Ireland-Netherlands, Ireland-US, and Hong Kong-China). The role of tax havens in ownership and control is prominent for all ten countries. Shareholding entities in Luxembourg and the Netherlands hold larger equity stakes in the US stock markets than many large economies. Shareholders in Switzerland and Luxembourg own larger stakes than British or German investors in France. Almost all foreign equity investment in China passes via Hong Kong; we observe \$286*bn* in links from Hong Kong to China compared to \$12*bn* from the United States, the second largest investor. American entities are the largest foreign shareholders in France, Germany, Japan, Switzerland, and the United Kingdom. Large American asset managers and investment banks are major contributors, as they own significant stakes in large companies worldwide. The United Kingdom is the most important foreign shareholder in the United States. Turning to control (Panel *B*), the largest bilateral link is between the Cayman Islands and South Africa, reflecting Tencent Holdings, incorporated in the Caribbean archipelago, where South African entity Naspers Limited holds a controlling stake. In the United States, Japanese and Germans are the largest controlling shareholders.<sup>8</sup> In France, entities from other European countries are the largest foreign controllers.<sup>9</sup>

**Sparsity** Figures 6-7 illustrate a subset of the network structure of corporate ownership and control in 2019, plotting listed firms' jurisdictions (in the horizontal axis) against the nationality of shareholding entities, controlling or passive (in the vertical axis) for the 20 countries with the

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<sup>8</sup>For example, T-Mobile US, the American telecommunications company is owned by Deutsche Telekom, which is controlled by the German state. Morgan Stanley is controlled by Japanese holding company Mitsubishi UFJ Financial Group, thanks to an equity stake exceeding 20%.

<sup>9</sup>For example, French company Sartorius Stedim Biotech SA is controlled by the German Sartorius family through Sartorius AG.

### Panel A. Ownership

Destination	Market Cap. Owned		Largest 5 foreign ownership bilateral links				
	by Domestic	by Foreign	1	2	3	4	5
Cayman Islands	65B	551B	British Virgin I. (397B)	Hong Kong (64B)	United States (32B)	United Kingdom (12B)	China (12B)
China	2 543B	338B	Hong Kong (286B)	United States (12B)	France (9B)	Singapore (9B)	British Virgin I. (6B)
France	924B	357B	United States (88B)	Switzerland (66B)	Luxembourg (48B)	United Kingdom (38B)	Netherlands (23B)
Germany	472B	279B	United States (109B)	United Kingdom (25B)	Norway (24B)	Luxembourg (16B)	China (16B)
Hong Kong	232B	451B	British Virgin I. (340B)	United States (41B)	United Kingdom (12B)	Cayman Islands (9B)	China (9B)
Japan	1 656B	287B	United States (120B)	United Kingdom (53B)	Switzerland (32B)	Singapore (17B)	France (12B)
Russia	361B	164B	Cyprus (60B)	France (24B)	Netherlands (19B)	Singapore (15B)	United Kingdom (13B)
Switzerland	334B	319B	United States (135B)	United Kingdom (61B)	Netherlands (54B)	Germany (12B)	Luxembourg (12B)
United Kingdom	482B	532B	United States (138B)	Japan (85B)	Netherlands (61B)	Belgium (56B)	Norway (28B)
United States	4 747B	710B	United Kingdom (188B)	Canada (86B)	Japan (73B)	Luxembourg (68B)	Netherlands (48B)

### Panel B. Control

Destination	Market Cap. Controlled		Largest 5 foreign control bilateral links				
	by Domestic	by Foreign	1	2	3	4	5
Cayman Islands	70B	963B	South Africa (460B)	British Virgin I. (249B)	China (135B)	Hong Kong (87B)	United States (15B)
China	3 061B	231B	Hong Kong (146B)	Thailand (46B)	British Virgin I. (18B)	France (10B)	Taiwan (6B)
France	829B	189B	Italy (85B)	Germany (56B)	Switzerland (20B)	United States (4B)	Spain (4B)
Germany	502B	100B	United Kingdom (18B)	France (16B)	Luxembourg (12B)	United States (10B)	Spain (9B)
Hong Kong	342B	583B	China (453B)	British Virgin I. (58B)	United Kingdom (50B)	Japan (14B)	Macao SAR China (6B)
Japan	1 655B	174B	Switzerland (52B)	United States (38B)	France (34B)	Hong Kong (17B)	South Korea (13B)
Russia	641B	28B	Cyprus (7B)	France (4B)	Denmark (4B)	Finland (4B)	Luxembourg (3B)
Switzerland	334B	174B	China (44B)	South Africa (41B)	United States (32B)	Monaco (12B)	Germany (10B)
United Kingdom	134B	434B	United States (187B)	Netherlands (48B)	Switzerland (40B)	Japan (36B)	France (32B)
United States	3 620B	683B	Germany (217B)	Japan (134B)	United Kingdom (112B)	Canada (60B)	Ireland (40B)

**Table 1: Largest bilateral links for the ten economies with the largest market capitalization.** The table reports the largest five bilateral ownership (Panel A) and control (Panel B) links in 2019, in US Dollars, for the ten economies (destination) with the largest market capitalization of listed firms.

highest value of (controlling) equity stakes held by foreigners. Dark(er) squares indicate large(r) stakes held (controlled) by entities from the source country at the destination.<sup>10</sup> Countries are sorted according to the similarity of ownership and controlling links. Countries closer to each other, especially at the extremes, have similar connections.

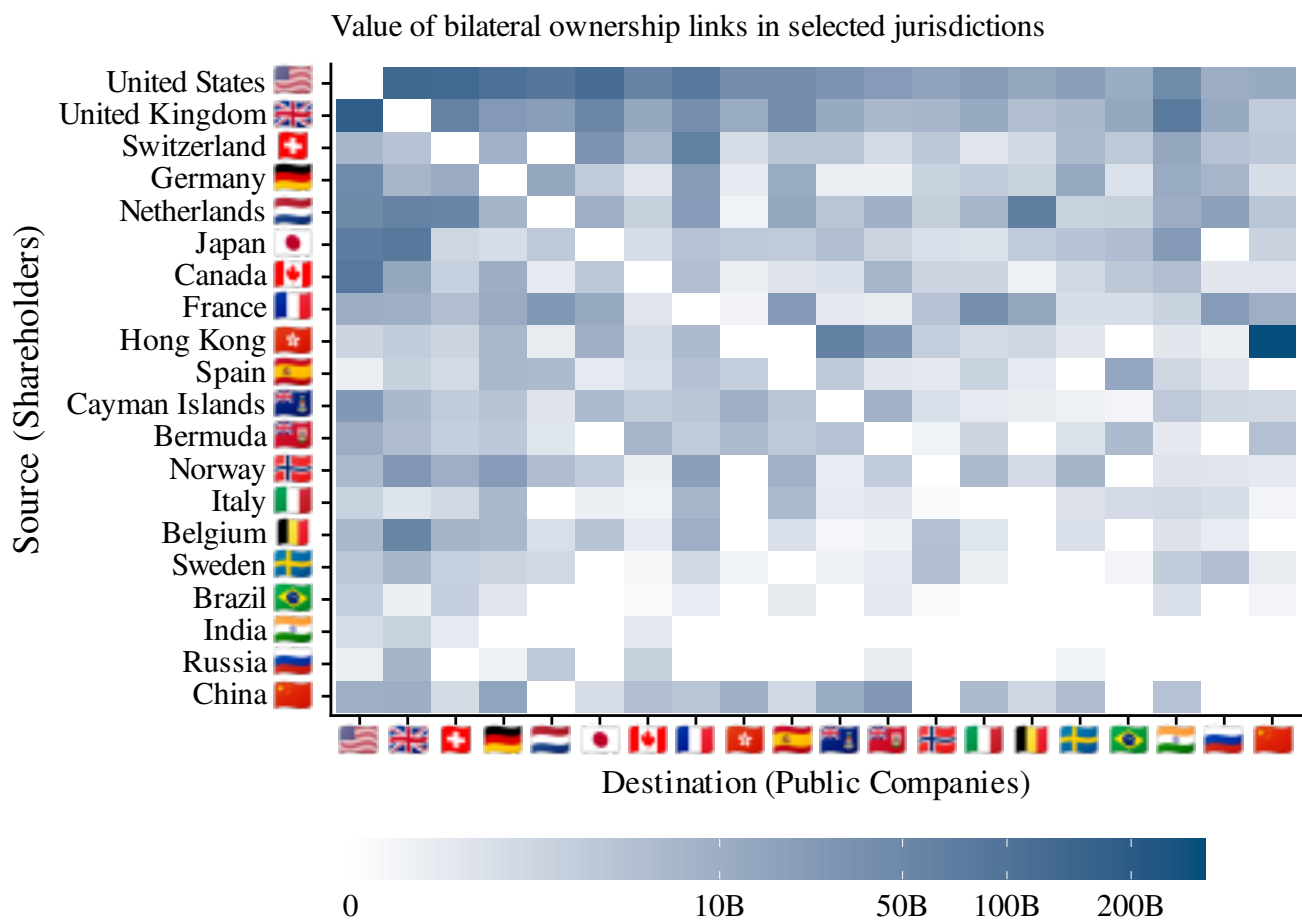
The United States, the United Kingdom, Switzerland, Germany, Netherlands, Japan, and Canada appear first in Figure 6, as shareholders in these countries hold large stakes in listed companies in each other. The lower half includes large emerging economies; the BRICs (Brazil, Russia, India, and China) appear grouped last. The other three countries display sparser links to the remaining jurisdictions in the heat map.

Some interesting patterns emerge when we look at control in Figure 7, especially when contrasting with ownership. The control matrix appears sparser as there are fewer (significant) links. We observe stronger cross-regional links. For example, the matrix shows solid controlling investments in Japan from Europe (Switzerland, France, and Germany), while China is a sizable controlling shareholder in France and Switzerland. Countries are less clustered on a regional basis relative to ownership, as France and Switzerland appear next to Asia, and Japan is closer to Western economies. A unique pattern emerging from the matrices of corporate ownership and control is the sparsity of the network. We see few, if any, controlling stakes from large economies, like Brazil or India, to many other large markets.<sup>11</sup> The sparsity contrasts quite strongly with the international trade network, where the number of positive links between countries is one order of magnitude larger. In our 2019 sample, with 81 destination countries and 161 source countries, we observe in total of 10 592 and 12 147 non-zero links in international trade in goods and services respectively. For our compiled statistics on control and ownership, we see only 967 and 1863 strictly positive links.

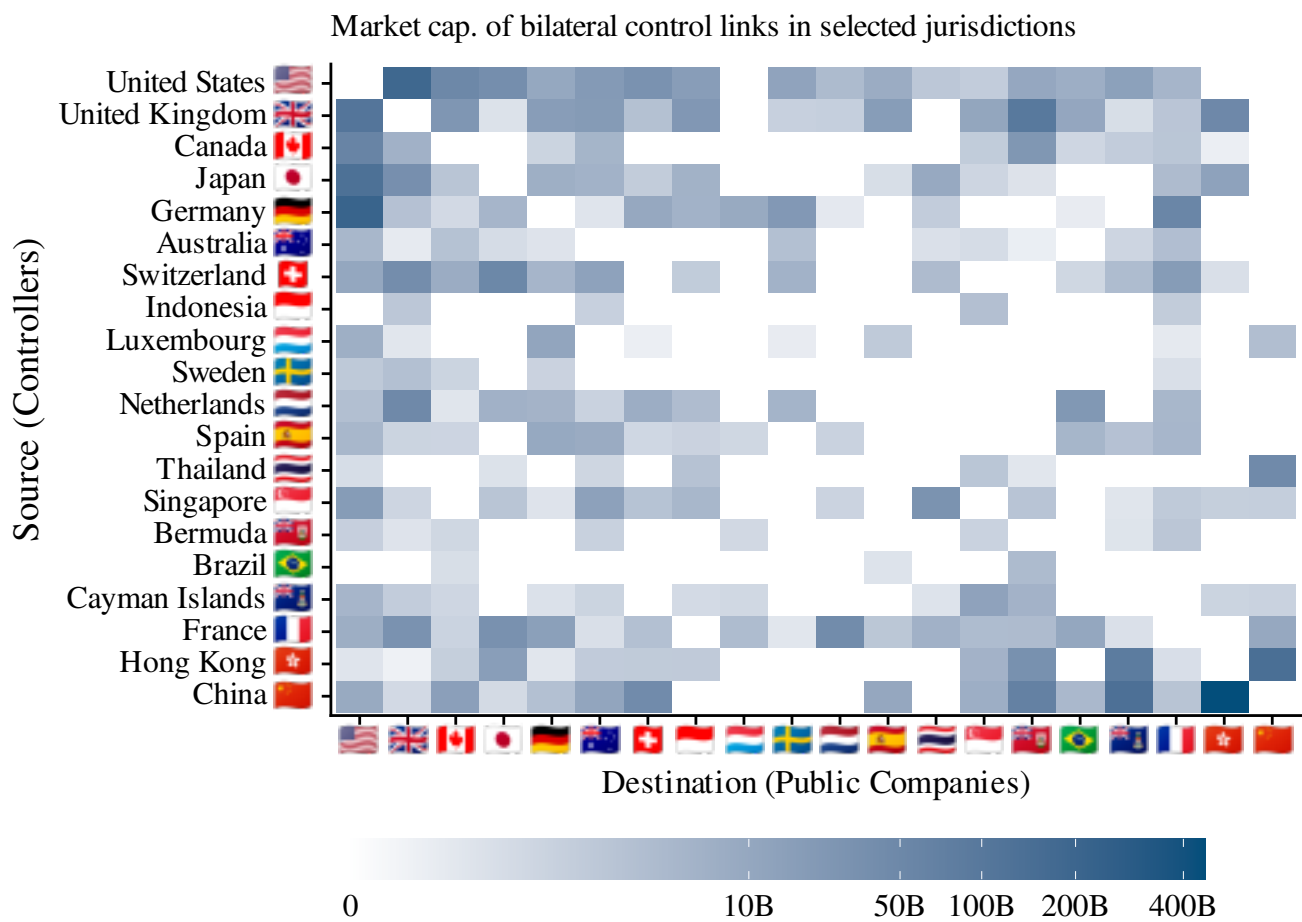
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<sup>10</sup>We exclude own-country links to zoom into the globalization of control and ownership.

<sup>11</sup>The data record investments by asset managers and mutual and pension funds but not indirect exposures by their clients. While there are many country pairs with no exports and imports, international trade is less sparse than global corporate ownership and control.



**Figure 6:** Heat map of the value in US Dollars of bilateral ownership stakes in 2019, measured by the market value of equity stakes. Darker squares indicate larger values of equity stakes held by entities from source jurisdictions (y-axis) in public firms from destination jurisdictions (x-axis). Own-country (home bias) links are not shown. Countries are ordered according to the similarity of their international ownership links. Countries closer to each other, especially at the extremes, have similar links. The ordering of the countries was obtained from the loading of each (source) country on the first principal component of the matrix shown in the chart, with the addition of own-country links (diagonal).



**Figure 7:** Heat map of the value in US Dollars of bilateral control stakes in 2019, measured by the total market capitalization of firms. Darker squares indicate larger market capitalization values of the firms controlled by entities from source jurisdictions (y-axis) in public firms from destination jurisdictions (x-axis). Own-country (home bias) links are not shown. Countries are ordered according to the similarity of their international ownership links. Countries closer to each other, especially at the extremes, have similar links. The ordering of the countries was obtained from the loading of each (source) country on the first principal component of the matrix shown in the chart, with the addition of own-country links (diagonal).

## 4 Gravity Analysis

We now turn to our empirical exploration of the globalization of corporate control. First, we go over earlier and parallel research that provides justification for a gravity model for cross-border (controlling) investment. Second, we lay down the empirical framework and discuss estimation. Third, we report the cross-sectional estimates that explore the role of distance, countries' size, and other source and destination features. Fourth, we estimate gravity specifications with source and destination country fixed effects to isolate the role of bilateral features related to diversification motives, frictions in corporate control markets, and informational asymmetries. Fifth, we explore heterogeneity across controlling shareholder types to shed light on mechanisms.

### 4.1 Gravity in International Finance

**Empirical Studies** We estimate “gravity” models to study the internationalization of corporate control, as earlier studies focusing on other aspects of financial integration show that international asset allocation is linked to countries' size and (inversely) distance (see Head and Mayer (2014) for a review). In an early contribution, Portes and Rey (2005) show that a simple gravity equation, similar to the one used to model international trade, explains well cross-border equity flows. While transaction costs in equity markets are small (e.g., Tesar and Werner (1995)), Portes and Rey (2005) showed that distance captures information asymmetries related, among others, to linguistic differences. Subsequent empirical works with expanded coverage revealed similar regularities (Lane and Milesi-Ferretti (2008)), uncovering further a gravity structure for foreign direct investment (Head and Ries (2008)), cross-border mergers and acquisitions (di Giovanni (2005)), bonds (Coourdacier and Martin (2009)), and banking activities (Papaioannou (2009)).<sup>12</sup>

**Theory** Given the compelling evidence, theoretical explorations have provided justifications for the gravity structure of international finance. The first genre of studies connected cross-border financial transactions, bank lending, and equity investment to international trade (Lane and Milesi-Ferretti (2008), Rose and Spiegel (2004), Aviat and Coourdacier (2007)). Complementarities between trade in goods and assets justify a gravity structure of international finances (Okawa and van Wincoop (2012)), given solid theoretical underpinnings of size and distance in goods trade (e.g., Anderson and van Wincoop (2003)). The second genre of theories focuses on imperfections in international markets. Martin and Rey (2004) derive a gravity specification for international equity positions in a setting where countries' assets are imperfect substitutes and investors have

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<sup>12</sup>Recent works reveal that despite financial globalization and plummeting transaction costs, strong home bias in the currency of international bond issuance and holdings (Maggiori et al. (2020)). Besides, Lustig and Richmond (2020) uncover a gravity structure of currency returns, with larger risk premia for more geographically, culturally, and linguistically distant countries.

better knowledge of local conditions. Population, income per capita, and market capitalization capture diversification opportunities. Rather than transportation costs, distance approximates asset trade frictions related to information asymmetries and familiarity effects that appear first-order in portfolio choice (Barberis and Thaler (2003)). Van Nieuwerburgh and Veldkamp (2009) build an endogenous information acquisition setup where even a tiny informational advantage of local investors can yield considerable home bias and limited international diversification. Third, looking at control by multinationals, Head and Ries (2008) develop a model where headquarters have imperfect information on destination countries. Lumpy monitoring and information gathering costs are increasing in distance; the destination’s size matters as it offers a larger share of assets to foreign equity investors, while source country size shapes international control by supplying potentially more bidders. Fourth, Pellegrino et al. (2021) generate a gravity specification of international capital allocation, developing a multi-country model where rationally inattentive investors have imperfect knowledge of capital’s return in various destinations. Agents can acquire information but at higher costs for more culturally, linguistically, and distant destinations. The model yields a rational inattention logit international asset demand system (Matějka and McKay (2015)), where home bias and strong gravity emerge even though investors can theoretically learn about returns at all destinations. Market segmentation emerges from deep frictions, cultural differences, and international policy barriers.

## 4.2 Empirical Framework and Estimation

**Cross-sectional Specification** The gravity specification associates corporate control (and ownership) of all firms listed in the destination country,  $d$ , by shareholder entities in the source country,  $s$  to countries’ size,  $X_d$  and  $X_s$ , and their distance,  $D_{d,s}$ , that captures relative financial frictions.<sup>13</sup> The cross-sectional specification reads:

$$Y_{d,s,t} = \exp[\beta^d \mathbf{X}_{d,t} + \beta^s \mathbf{X}_{s,t} + \beta^D \mathbf{D}_{d,s} + \beta^T \mathbf{T}_{d,s} + \phi_t + \eta_{d,s,t}]. \quad (1)$$

The dependent variable  $Y_{d,s,t}$  reflects controlling shareholder links (in USD) in destination country  $d$  by residents in source country  $s$  in period/year  $t$ . We also run specifications using all ownership links, controlling and passive, across controlled and widely-held listed corporations.  $\phi_t$  is a year constant in the specifications pooling across 2012 and 2019.  $\mathbf{X}_{d,t}$  and  $\mathbf{X}_{s,t}$  are vectors of destination and source “size” variables. The size proxies are log GNI per capita, log population, and stock market capitalization (as a share of GDP). We augment the specifications with proxies of source and destination countries’ tax regimes, human capital, institutional quality, and trust, as

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<sup>13</sup>In most theories, the relative friction is the share of country-pair financial transaction costs to the product of multilateral resistance terms from the viewpoint of source and destination (e.g., Okawa and van Wincoop (2012)).



earlier works show that these features partly explain trade, equity, bond, and bank investments.<sup>14</sup>  $\mathbf{D}_{d,s}$  denotes geographic but also cultural, linguistic, and genetic distance.<sup>15</sup>  $\mathbf{T}_{d,s}$  is a vector of countries' similarities, colonial ties, common legal systems, etc.

**Source and Destination Country Fixed-Effects Gravity Specification** We estimate specifications with source country  $s$  and destination country  $d$  constants  $\phi_d$  and  $\phi_s$  to isolate the role of distance and other bilateral features (Anderson and van Wincoop (2003)).

$$Y_{d,s,t} = \exp[\beta^D \mathbf{D}_{d,s} + \beta^T \mathbf{T}_{d,s} + \phi_{d(t)} + \phi_{s(t)} + \eta_{d,s,t}]. \quad (2)$$

Besides size, country constants absorb all source and destination-specific costs related to equity investment (Okawa and van Wincoop (2012)). Building on earlier theoretical work on home bias and gravity equations in international finance, we distinguish three categories of bilateral features other than geodesic distance (Coerdacier and Rey (2013)): (i) Diversification motives; similarities in production, return differentials, and business cycle synchronization [*Diversif*]. (ii) Asset trade costs related to international taxation, trade and investment treaties, regulatory-legal harmonization in financial services, and legal system similarities [*IntPol*]. (iii) Informational frictions and behavioral biases, in turn, related to deep historical and cultural ties [*Inform*]:

$$Y_{d,s,t} = \exp[\gamma \mathbf{GeoD}_{d,s} + \lambda_1 \mathbf{Diversif} + \lambda_2 \mathbf{IntPol} + \lambda_3 \mathbf{Inform} + \phi_{d(t)} + \phi_{s(t)} + \eta_{d,s,t}]. \quad (3)$$

**Estimation** We estimate the gravity model with the Poisson Pseudo Maximum Likelihood (PPML) estimator, proposed by Santos Silva and Tenreyro (2006), which deals efficiently with heteroskedasticity and many zeros.<sup>16</sup> The PPML is well-behaved and efficient, even when the conditional variance is not proportional to the conditional mean (Gourieroux et al. (1984)). Santos Silva and Tenreyro (2011) present simulation evidence showing that the estimator preserves its

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<sup>14</sup>National accounts and population data are retrieved from UN National Accounts - Analysis of Main Aggregates database. National accounts data have been complemented by World Bank data for a handful of small jurisdictions.

<sup>15</sup>Geodesic distance adjusted for population and other geographic variables come from Dynamic Gravity Dataset (DGD) available on the US International Trade Commission's website. Other geographic and historical data come from CEPII's Gravity database (Head and Mayer (2014); Conte et al. (2021)).

<sup>16</sup>The concern with OLS estimation of log-linearised parameters is that heteroscedasticity in the original multiplicative error term leads to biased estimates. The PPML estimator addresses this issue and deals naturally with zeros, a common occurrence in country-pair data of international integration, including ours. See Head and Mayer (2014) and Santos Silva and Tenreyro (2011) for the performance of several gravity equations estimation methods. We estimate the PPML specifications using the routine developed by Correia et al. (2020). The coefficients on logged regressors are elasticities. The coefficients on other regressors are semi-elasticities, whose impact on the outcome is given by  $e^{\beta-1}$ .

efficiency even in the presence of many zeros.<sup>17</sup> Standard errors are double clustered at source and destination with the method of Cameron et al. (2011).

## 4.3 Cross-Sectional Gravity Results

### 4.3.1 Size and Cross-Border Corporate Control and Ownership

Table 2 reports PPML estimates with four outcomes: corporate control (in USD), which factors in indirect links (columns (1), (5), and (9)); all shareholder (not necessarily controlling) stakes by entities in the source country in listed companies in destination (columns (2), (6), and (10));<sup>18</sup> and, for comparability, international trade in goods (columns (3), (7), and (11)) and in services (columns (4), (8), and (12)).<sup>19</sup> As we want to compare the estimates and the fit for control and ownership to international trade, we include observations where we have data for all outcomes. The table gives the estimates in 2012 (columns (1)-(4)), in 2019 (in (5)-(8)), and pooling the two years (in (9)-(12)).

The gravity model does well explaining cross-border ownership and control. While the model fit for corporate control is lower than for trade, the core gravity terms explain a non-negligible portion of the variation.<sup>20</sup> First, the elasticity on distance in the control and ownership specifications is closer to zero; in the pooled specifications, the distance elasticity is  $-0.34$  for control and  $-0.27$  for ownership, compared to  $-0.88$  and  $-0.64$  for trade in goods and services, respectively. This appears plausible as transportation costs in the goods market are larger than equity markets transaction costs. Second, population appears less relevant for ownership and control, as small jurisdictions play a disproportionate role. Third, when we augment the specification with stock market capitalization at source and destination to better capture diversification opportunities and the market size of bidders and opportunities for corporate control (as in Martin and Rey (2004) and Head and Ries (2008), respectively), we obtain highly significant estimates for both the source and destination country. [See Appendix Tables B.5-B.6].

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<sup>17</sup>Fernández-Val and Weidner (2016), Weidner and Zylkin (2021), and Santos Silva and Tenreyro (2011) show that the PPML with two-way fixed-effects remains asymptotically unbiased, maintaining its efficiency properties.

<sup>18</sup>The samples used in the gravity regressions do not include domestic ownership; nor do they include domestic control, regardless of the nationality of the main shareholder vehicle.

<sup>19</sup>Bilateral trade flows data have been collected from the IMF (DOTS), the UN (Comtrade), the BACI database from CEPII, and the BaTis (WTO) dataset.

<sup>20</sup>The pseudo- $R^2$  equals one minus the ratio of the log-likelihood of the fitted model (numerator) to the log-likelihood for the intercept-only model (denominator). In the control specifications, it is 0.32, and for ownership, it is 0.4, compared to about 0.8 for goods trade. Likewise, the Root Mean Squared Errors (RMSE) of the corporate control (and ownership) specifications lay around 25, while the for trade is 1.2 to 2.6.

**Table 2:** Cross Sectional Gravity Estimates. Size and Distance

	2012				2019				Pooled			
	Control	Ownership	Trade		Control	Ownership	Trade		Control	Ownership	Trade	
	(1) For. Ctrl.	(2) All	(3) Goods	(4) Services	(5) For. Ctrl.	(6) All	(7) Goods	(8) Services	(9) For. Ctrl.	(10) All	(11) Goods	(12) Services
Log Pop-Wght dist.	-0.484** (0.202)	-0.249 (0.195)	-0.881*** (0.051)	-0.665*** (0.060)	-0.240 (0.192)	-0.285 (0.174)	-0.878*** (0.055)	-0.626*** (0.051)	-0.339* (0.195)	-0.271 (0.181)	-0.879*** (0.052)	-0.642*** (0.053)
D. Log GNI per cap.	0.570*** (0.142)	0.861*** (0.124)	0.825*** (0.060)	0.981*** (0.060)	1.255*** (0.235)	1.075*** (0.202)	0.880*** (0.064)	1.053*** (0.053)	0.886*** (0.179)	0.974*** (0.150)	0.851*** (0.062)	1.020*** (0.052)
S. Log GNI per cap.	1.020*** (0.156)	1.513*** (0.295)	0.806*** (0.041)	1.065*** (0.098)	0.995*** (0.220)	1.644*** (0.372)	0.840*** (0.052)	1.161*** (0.088)	1.003*** (0.181)	1.590*** (0.325)	0.823*** (0.045)	1.118*** (0.091)
D. Log Pop.	0.222 (0.199)	0.463** (0.196)	0.880*** (0.050)	0.706*** (0.049)	0.169 (0.258)	0.432* (0.251)	0.852*** (0.042)	0.678*** (0.044)	0.179 (0.240)	0.444* (0.230)	0.864*** (0.046)	0.689*** (0.044)
S. Log Pop.	0.680*** (0.188)	0.419* (0.238)	0.877*** (0.047)	0.712*** (0.068)	0.601*** (0.200)	0.363* (0.217)	0.871*** (0.040)	0.670*** (0.050)	0.631*** (0.193)	0.381* (0.221)	0.873*** (0.043)	0.686*** (0.056)
Observations	12960	12960	12960	12960	12960	12960	12960	12960	25920	25920	25920	25920
Obs. total	12960	12960	12960	12960	12960	12960	12960	12960	25920	25920	25920	25920
Num. countries (D/S)	81/161	81/161	81/161	81/161	81/161	81/161	81/161	81/161	81/161	81/161	81/161	81/161
RMSE	23.580	28.649	1.265	1.839	22.167	25.583	1.156	2.607	23.610	27.053	1.209	2.353
Pseudo- $R^2$	0.324	0.396	0.842	0.824	0.329	0.403	0.857	0.827	0.319	0.400	0.850	0.826
Deviance- $R^2$	0.324	0.396	0.842	0.827	0.329	0.403	0.857	0.829	0.319	0.400	0.850	0.828
Fixed Effects	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE

Notes: The table reports Poisson Pseudo Maximum Likelihood (PPML) estimates. The outcomes are various forms of international integration across pairs of countries in 2012 (columns (1)-(4)), in 2019 (in columns (5)-(8)), and pooling 2012 and 2019 (in columns (9)-(12)). In columns (1), (5), and (9), the dependent variable denotes the logarithm of controlled listed firms' market capitalization in destination by shareholder entities in the source country. In (2), (6), and (10), the dependent variable is the market value of ownership (voting rights) from shareholding entities in source to firms in the destination country in both widely held and controlled firms, irrespective of whether the shareholder controls the company. In (3), (7), and (11), the dependent variable denotes international goods exports and imports from source to destination. In columns (4), (8), and (12), the dependent variable denotes international services trade between origin and destination. The explanatory variables are the logarithm of the population-weighted distance between origin and destination, the log of Gross National Income (GNI) per capita and log population at source and destination. Pseudo- $R^2$  is defined as one minus the ratio of the log-likelihood of the fitted model to the log-likelihood for the intercept-only model. Deviance- $R^2$  follows is defined as the difference between the model log-likelihood and the highest possible likelihood for a given dependent variable. Double-clustered at source and destination country standard errors are reported below the estimates. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% confidence level, respectively.

### 4.3.2 Source and Destination Country Features

We augment the cross-sectional specification (equation (1)) with proxies of human capital, institutions, taxation, and trust at source and destination, as empirical studies in other forms of financial globalization and theoretical explorations of home bias stress their role in lowering returns and increasing risk. Figure 8 plots coefficients (alongside two standard error bands) from three permutations: (i) A specification including only the relevant variable (in *green*). (ii) A specification adding the relevant variable to the baseline gravity terms (distance, population, and GNI per capita; in *red*). (iii) A rich specification including all independent variables (in *blue*).<sup>21</sup> Figure 9 does the same for corporate ownership. For brevity, the figure plots the coefficients from the pooled across the two years' specifications.<sup>22</sup>

**Taxation** We commence the analysis exploring the role of taxes, first-order considerations for investors when investing passively and exercising control. We use indicators of tax-haven status, and information on effective tax rates on capital and labor recently compiled by Bachas et al. (2022). The coefficients on tax-haven status are significantly positive in both the control and ownership specifications, reflecting their chief role as conduits of international equity investment. The estimate conditional on the baseline gravity terms (in blue) suggests that cross-border ownership is 174% higher when the source is a tax haven ( $[exp(1.007) - 1]$ ). As tax haven jurisdictions are interconnected, the coefficient on the destination tax haven implies a doubling of ownership stakes ( $[exp(0.706) - 1]$ ). When we look at control, the estimates on the tax haven indicator at the destination enter with smaller estimates, telling of the usefulness of our methodology that identifies ultimate controlling shareholders. The source tax haven indicator retains significance, as many ultimate controlling entities (and individuals) are in off-shore jurisdictions.

Turning to the effective tax rates on capital, the estimates are small and, in general, insignificant when we condition on the baseline gravity terms. The estimates on effective labor taxes are negative and, in some specifications, significant. There is some weak evidence that high labor taxes are related to weaker levels of foreign control. The weak effect of tax rates, which accords with empirical studies of other forms of financial integration, may reflect various mechanisms. First, tax rates rarely capture the actual levy of investors. Second, tax codes are esoteric, provisions on loss carry-overs vary, and depreciation and amortization calculations differ. Third, quite often, there are exemptions for foreign investors. Fourth, the use of intermediate shell companies reflects (controlling) shareholders' efforts to bypass high taxation. Ultimately, it may not be surprising that taxes rates do not play much of a role.

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<sup>21</sup>We omit from the rich specification the measures of trust and stock market capitalization as the sample size declines. The patterns are similar when we include them.

<sup>22</sup>Appendix Figures B.1 and B.2 report the corresponding figures separately for 2012 and 2019. Tables B.7-B.8 show the results of the respective regressions.

**Education** We examine the role of human capital that features prominently in explanations on why capital does not flow from rich to poor countries (e.g., Lucas (1990)), augmenting the specification with mean years of schooling at source and destination, using data from Barro and Lee (2013). When we include only the human capital variables, the coefficients are significantly positive, revealing stronger (controlling) equity links between countries with high levels of education. However, when conditioning on size and distance, the estimates on education fall considerably and turn statistically indistinguishable from zero, suggesting a small – if any – role.

**Institutions** We then turn to the role of institutional quality, as it explains a non-negligible portion of the variation in FDI, international equity, and banking transactions (e.g., Wei (2000), Alfaro et al. (2008), Aviat and Coeurdacier (2007) and Papaioannou (2009)), using a composite rule of law index from the World Bank’s Governance Indicators Database.<sup>23</sup> The coefficient for the rule of law at the destination is significantly positive. Corporate control (and ownership) from foreign shareholding entities appear, on average, higher in destination countries with stronger and more efficient institutions. The estimate implies that corporate control increases by approximately 60% when the rule of law, ranging from  $-2.5$  to  $2.5$ , increases by one unit in the destination country. Take, for example, Italy and France, which differ in the rule of law index by one unit ( $0.3 - 0.4$  vs.  $1.4$ ). Corporate control by foreigners is around 60% higher for France than Italy. As shown on Figure 8, institutions at the destination are significant correlates of corporate control even when we condition on size, schooling, and taxation. The source country’s rule of law index also enters with a positive coefficient; controlling investors from high institutional quality countries exert a disproportionate control of foreign listed firms.

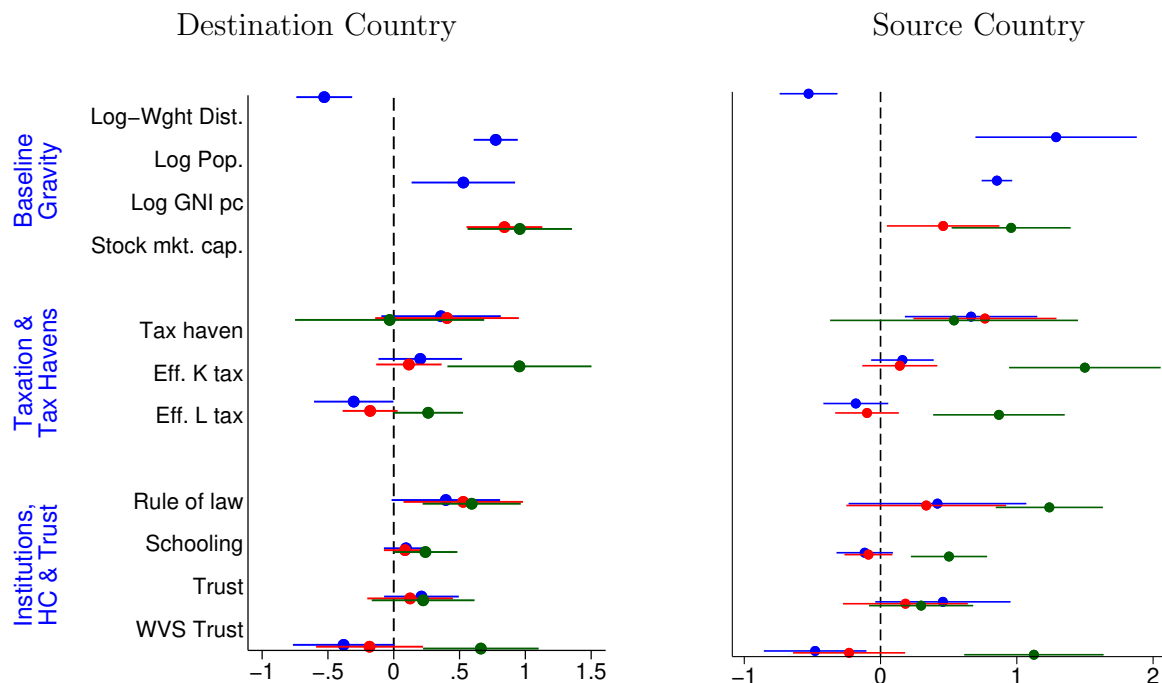
**Trust** Building on works revealing cultural biases in global portfolios (Guiso et al. (2009)), mergers and acquisitions (Ahern et al. (2015)), we explored the role of general trust at source and destination using data from Falk et al. (2018), available for a small number of countries, and the World Value Surveys with wider coverage. The estimates on trust are unstable with large standard errors. There is little evidence that trust shapes cross-border control.

**Taking Stock** Figure 10 summarizes the results on the role of size, distance, taxation, education, and institutions on the internationalization of corporate ownership and control, contrasting them with international trade in goods and services, where the gravity model is performing remarkably well. First, size (population and income per capita) explains a significant – more than half – portion of the variance in cross-border corporate control and ownership; this result supports the

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<sup>23</sup>The World Bank measures are principal component aggregates of dozens of institutional capacity measures by NGOs, international agencies, and risk assessment firms. Data is unavailable for some small jurisdictions: Curaçao, BVI, Gibraltar, Jersey, Monaco, and New Caledonia.

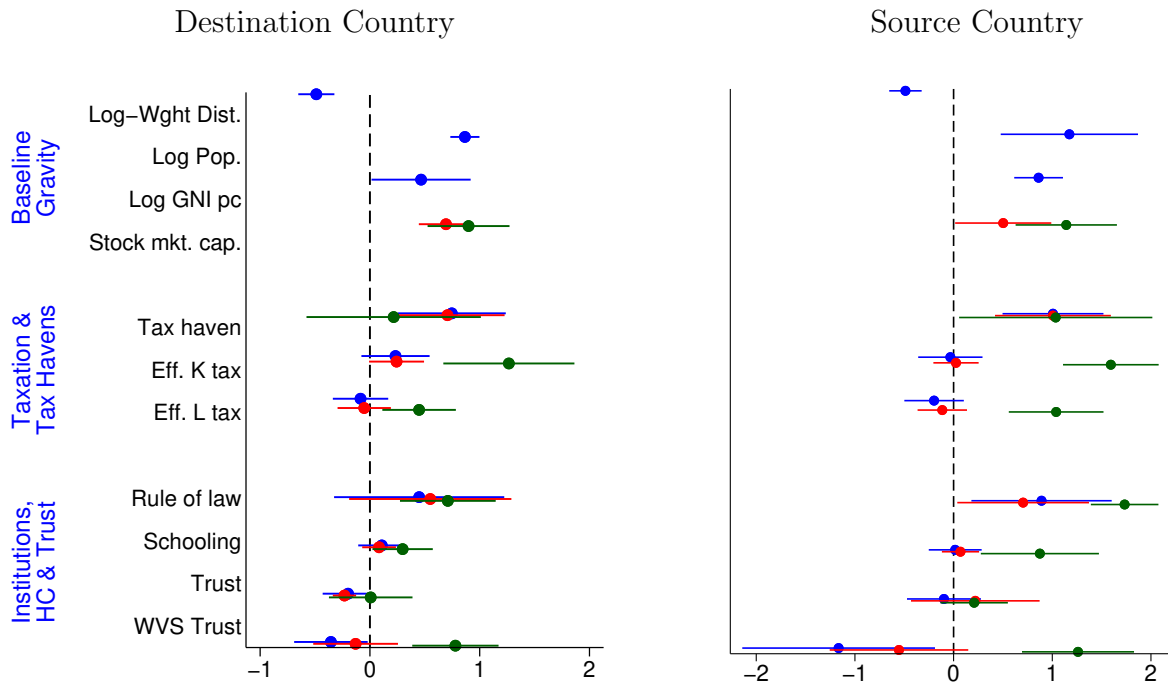
**Figure 8:** Cross-Sectional Gravity Specification PPML Estimates: Corporate Control



The figure plots coefficients and two standard error bands of Poisson Pseudo Maximum Likelihood (PPML) cross-sectional gravity specifications. The dependent variable is the market value of all controlling links from shareholding entities in the source country in listed companies in the destination country. The explanatory variables are the logarithm of the population-weighted distance between origin and destination, the logarithm of Gross National Income (GNI) per capita, the logarithm of the population at source and destination, stock market capitalization as a share of GDP, mean years of schooling, a rule of law index, binary variables for tax haven status, effective capital and labor taxes at source and destination countries. Coefficients from the specification, including all reported variables, are denoted in *blue*. Coefficients from the specification, including only the relevant variable (on top of the distance, national population, and national GNI per capita variables) are reported in *red*. Coefficients from the specification, including only the relevant variable, are reported in *green*. The pooled 2012 and 2019 specifications are estimated across 15,478 observations, although for some variables, there are missing values.

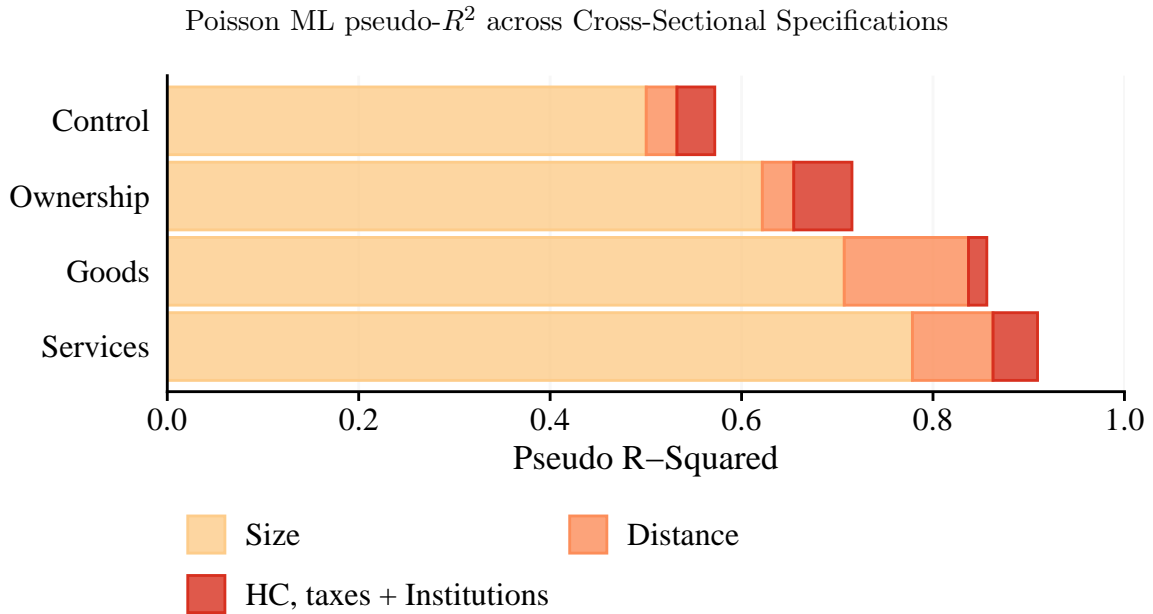
limited theoretical work (Martin and Rey (2004), Head and Ries (2008)) on international equity and control investment. Second, while geodesic distance is a significant correlate of cross-border (controlling) equity investment, its role is smaller than for trade, suggesting smaller bilateral transaction costs for equity as compared to goods markets. The increase in the *pseudo* -  $R^2$  when adding distance to the population, GNI p.c., and stock market capitalization is about 0.05 in the corporate control specification, about 0.15 in goods trade. Third, the gravity model with human capital, institutions, and tax-haven status improves the fit for the (controlling) ownership specifications mainly because the tax-haven indicators and institutional quality are significant correlates, while their role in international goods trade is less significant.

**Figure 9:** Cross-Sectional Gravity Specification PPML Estimates: Corporate Ownership



The figure plots coefficients and two standard error bands of Poisson Pseudo Maximum Likelihood (PPML) cross-sectional gravity specifications. The dependent variable denotes the market value of all ownership links from shareholding entities in the source country in listed companies in the destination country. The explanatory variables are the logarithm of the population-weighted distance between origin and destination, the logarithm of Gross National Income (GNI) per capita, the logarithm of the population at source and destination, stock market capitalization as a share of GDP, mean years of schooling, a rule of law index, binary variables for tax haven status, effective capital and labor taxes at source and destination countries. Coefficients from the specification, including all reported variables, are denoted in *blue*. Coefficients from the specification, including only the relevant variable (on top of the distance, national population, and national GNI per capita variables) are reported in *red*. Coefficients from the specification, including only the relevant variable, are reported in *green*. The pooled 2012 and 2019 specifications are estimated across 15,478 observations, although for some variables, there are missing values.

**Figure 10: Corporate Control, Augmented Gravity, and Country Features**



The Figure plots the cumulative (McFadden's) pseudo- $R^2$  in Poisson Pseudo Maximum Likelihood (PPML) specifications in the pooled across 2012 and 2019 sample. The dependent variable in the three specifications in bar (1) is the market capitalization of controlled firms in the destination country from shareholding entities in the source. The dependent variable in bar (2) is the market value of all ownership links, passive and controlling, from shareholding entities in the source country in listed companies in the destination country. The dependent variable in columns (3) and (4) is the exports and imports (in USD million) from source to destination in goods and services, respectively. Each bar gives the *pseudo - R<sup>2</sup>* for three specifications: (i) A cross-sectional specification with the log of Gross National Income (GNI) per capita and log population at source and destination (*beige*). (ii) A cross-sectional specification with the log of the population-weighted distance between origin and destination, the log of Gross National Income (GNI) per capita, and the log of the population at source and destination (*coral*). (iii) A cross-sectional specification that adds indicators for tax haven status, effective capital and labor taxes, human capital (HC) indicators measured by the mean years of schooling, and World Bank indicators of rule of law, at source and destination country (*red*).



## 4.4 Bilateral Features

We now turn to the role of bilateral features on the globalization of corporate control running gravity specifications with source country and destination country fixed effects (interacted with a year indicator). Following upon theoretical explorations of home bias in equity and debt (Coeurdacier and Rey (2013), Maggiori (2022)), we distinguish between three broad categories. (i) Diversification-related motives (on top of countries' size, absorbed by the constants). (ii) Costs in international transactions stemming from differences in taxation, incomplete convergence of regulation, and differences in the legal system. (iii) Informational frictions and behavioral biases related to linguistic, religious, and cultural differences between origin and destination. Figure 11 shows the PPML estimates on corporate control for all variables across three specifications: (i) Unconditional, with only the source country and the destination country constants (in *green*); (ii) Simply conditioning on log distance (in *red*); and (iii) Entering all variables of the three categories in the RHS (in *blue*). Appendix Section C gives additional results, zooming in 2012 and 2019, and also on ownership links, alongside summary statistics and decriptives.

### 4.4.1 Distance

We commence the analysis by examining the distance elasticity for corporate control when we absorb all source and destination features. Table 3 gives the estimates for corporate control, ownership, and, for comparability, international trade. The elasticity on distance for control is about  $-0.75/ -0.88$ , somewhat lower than goods trade. The distance elasticity for ownership is significantly negative, albeit smaller in absolute value, as tax havens' play a chief conduit role. The improvement in the marginal pseudo  $R^2$  when adding the log of distance is about 5 percentage points for corporate control, higher than with ownership, telling of the benefits of tracing indirect (controlling) equity positions channeled via offshore jurisdictions. But, the role of distance for trade in goods is twice as large as for corporate control.

**Table 3:** Geodesic Distance in Cross-Border Corporate Control, Ownership, and International Trade

## Source and Destination Country Fixed-Effects Estimates

	2012				2019				Pooled			
	Control	Ownership	Trade		Control	Ownership	Trade		Control	Ownership	Trade	
	(1) For. Ctrl.	(2) All	(3) Goods	(4) Services	(5) For. Ctrl.	(6) All	(7) Goods	(8) Services	(9) For. Ctrl.	(10) All	(11) Goods	(12) Services
Log Pop-Wght dist.	-0.881*** (0.162)	-0.572*** (0.140)	-0.963*** (0.070)	-0.803*** (0.046)	-0.744*** (0.136)	-0.683*** (0.141)	-0.931*** (0.065)	-0.757*** (0.049)	-0.800*** (0.133)	-0.641*** (0.138)	-0.946*** (0.067)	-0.776*** (0.047)
Observations	7592	10694	11856	12160	7752	11502	11856	12160	15344	22196	23712	24320
Obs. total	12960	12960	12960	12960	12960	12960	12960	12960	25920	25920	25920	25920
Num. countries (D/S)	81/161	81/161	81/161	81/161	81/161	81/161	81/161	81/161	81/161	81/161	81/161	81/161
RMSE	2.996	2.337	0.789	0.669	2.626	2.136	0.748	0.749	2.774	2.226	0.769	0.716
Pseudo- $R^2$	0.673	0.754	0.916	0.938	0.719	0.789	0.928	0.933	0.700	0.775	0.922	0.935
Marginal- $R^2$	0.058	0.021	0.106	0.074	0.040	0.035	0.100	0.066	0.047	0.029	0.103	0.069
Deviance- $R^2$	0.712	0.766	0.919	0.942	0.749	0.795	0.930	0.937	0.735	0.783	0.925	0.939
Fixed Effects	S&D	S&D	S&D	S&D	S&D	S&D	S&D	S&D	S&D-Y	S&D-Y	S&D-Y	S&D-Y

Notes: The table reports Poisson Pseudo Maximum Likelihood (PPML) estimates. The outcomes are various forms of international integration across pairs of countries in 2012 (columns (1)-(4)), in 2019 (in columns (5)-(8)), and in 2012 and 2019 (in columns (9)-(12)). In columns (1), (5), and (9), the dependent variable denotes the logarithm of controlled listed firms' market capitalization in destination by shareholder entities in the source country. In (2), (6), and (10), the dependent variable is the market value of ownership (voting rights) from shareholding entities in source and destination country in both widely-held and controlled firms, irrespective on whether the shareholder controls the company. In (3), (7), and (11), the dependent variable denotes international goods exports and imports from source to destination, while in columns (4), (8), and (12) the dependent variable denotes international services trade between origin and destination. The explanatory variable is the logarithm of the population-weighted distance between the source and destination. The specifications include source country and destination country constants, in columns (9)-(12) interacted with a year dummy variable. Pseudo- $R^2$  is defined as one minus the ratio of the log-likelihood of the fitted model to the log-likelihood for the intercept-only model. Deviance- $R^2$  is defined as the difference between the model log-likelihood and the highest possible likelihood for a given dependent variable. Double-clustered at source and destination country standard errors are reported below the estimates. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% confidence level, respectively.

#### 4.4.2 Diversification

We examine the role of similarities in production structure and business cycle synchronization searching for potential diversification-related motives in international controlling investments across the world. [Appendix Table C.11 reports the regression estimates.]

**Sectoral Dissimilarities** As sectoral similarities correlate with international trade and financial integration (e.g., Imbs (2006), Lane and Milesi-Ferretti (2008)), using two-digit sector data from the UNIDO, we added in the RHS the sum of differences in gross value added between source and destination across sectors. The sectoral production dissimilarity proxy enters with an estimate that is small and statistically indistinguishable from zero, even when we do not condition on geodesic distance.

**Output Synchronization** We explored the role of output similarities at a business cycle frequency using the difference between annualized GDP growth between source and destination over the past five years. The output synchronization index is unrelated to cross-border control and ownership. [Using 5, 7, and 10-year correlations yields similarly insignificant estimates]. There is little evidence that shareholders seek to invest in countries with not very similar output dynamics.<sup>24</sup>

#### 4.4.3 Asset Trade Frictions. Policy Coordination and Legal System Similarities

We then turn to the role of frictions in the international market for corporate control, distinguishing between legal system dissimilarities and limited international economic policy cooperation. [Appendix Table C.12 reports the regression estimates.]

**Legal Tradition** Despite convergence in corporate law and securities legislation since the 1990s, there are still some non-negligible differences in stock market regulation, duties of company insiders and controlling shareholders, bankruptcy, and courts across the world (Djankov et al. (2008)). To examine the role of legal system similarities, we add an indicator that takes the value of one when both countries have either a common law or a civil law system, as there are vast differences in investor protection, courts, bankruptcy, securities, and corporate law across legal tradition; the omitted category consists of pairs of countries with different legal systems. The identifier for pairs with similar legal traditions enters with a highly significant coefficient in the unconditional

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<sup>24</sup>We also explored the role of equity return synchronization. While neoclassical finance theory suggests a negative correlation, as the gains of diversification are larger when equity markets are negatively correlated, we uncover positive associations with cross-border ownership and control. This result, which is in line with earlier research on cross-border equity flows (e.g., Portes and Rey (2005), Aviat and Coeurdacier (2007)) further weakens simple diversification motives on the globalization of corporate control.

specification, when we condition on geodesic distance, but also when we control for proxies of international economic policy coordination and deep ties. Corporate control is more than two times larger between countries with a similar law system and tradition than pairs with different legal families ( $\exp(0.88) - 1 = 1.4$ ).

**International Policy Coordination** We augment the specification with indicators that equal one when the source and destination are part of a customs union, have Economic Integration Agreements, and Free Trade Agreements (FTA) that often go together with capital taxation provisions, to explore the role of international economic policy convergence.<sup>25</sup> The estimate is highly significant across all permutations. International economic agreements between source and destination triple cross-border controlling (and passive) equity investment.

**European Integration** To examine the role of European Integration, we add indicators that switch to one when the two countries are part of the European Union and the Euro Area. The estimate on the EU indicator is unstable, changes sign, and mostly insignificant. But the indicator for euro area enters with a significantly positive coefficient. When the source and destination countries are members of the euro, cross-border controlling shareholding increase threefold. These results add to the literature on the effect of the EU and the euro on financial integration (e.g., Lane (2006), Kalemli-Ozcan et al. (2010)) that has not looked at cross-border corporate control.

#### 4.4.4 Informational Frictions and Behavioral/Cultural Barriers

Motivated by recent works uncovering deep, geographic, cultural, and historical origins of comparative development, technology diffusion, and integration (e.g., Spolaore and Wacziarg (2018)), we examine their role in cross-border corporate control augmenting the specification with historical ties/distance measures. [Appendix Table C.13 gives the regression estimates.]

**Colonial Ties** First, we use a binary variable identifying country-pairs with similar colonial history, as many global firms with foreign (controlling) shareholders originate in the colonial times (e.g., Unilever, Anglo-American), as colonization was, to a great extent, a private enterprise endeavor. Besides, colonization was accompanied with population movements across countries and colonies of the same imperial power, mitigating asymmetric information. The indicator enters

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<sup>25</sup>Examples of regional Economic Integration Agreements are the North American Free Trade Agreement (NAFTA) between the United States, Canada, and Mexico and the Asian Pacific Economic Cooperation Forum (APEC), which includes NAFTA members, Japan and China. Free Trade Agreement examples are the South Asian Free Trade Area (Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka) and the Central America Free Trade Agreement (United States, Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua). Examples of currency unions include the Southern African Customs Union, the Central American Common Market, and the Gulf Cooperation Council.

with a significantly positive estimate in both the control and ownership specification, implying a doubling of cross-border controlling equity links between pairs sharing a common colonial history.

**Cultural Differences** Second, we consider the role of three proxies of cultural distance. (i) Cultural distance, retrieved from Spolaore and Wacziarg (2018) and Pellegrino et al. (2021), reflects the average of (Euclidean) differences across dozens of World Value Surveys questions about citizens' values, norms, and beliefs on politics, family, work, religion, the environment, and national identity. (ii) Differences in the dominant religion; and (iii) Linguistic distance. The underlying data come from Dow (2015). Cultural distance enters with a negative estimate that, in some specifications, passes standard significance thresholds. However, the underlying data are not available for all countries, so the sample drops considerably, preventing definitive conclusions. But religious and primarily linguistic distance enter with significantly negative estimates in most permutations (with and without conditioning on geodesic distance), even controlling for all bilateral controls. The coefficient on linguistic distance is the largest in absolute value and more precisely estimated telling of the role of information costs, alongside broader cultural differences. Linguistic distance measure is associated with an approximately 84% drop in cross-border corporate control ( $\exp(-1.828) - 1$ ).

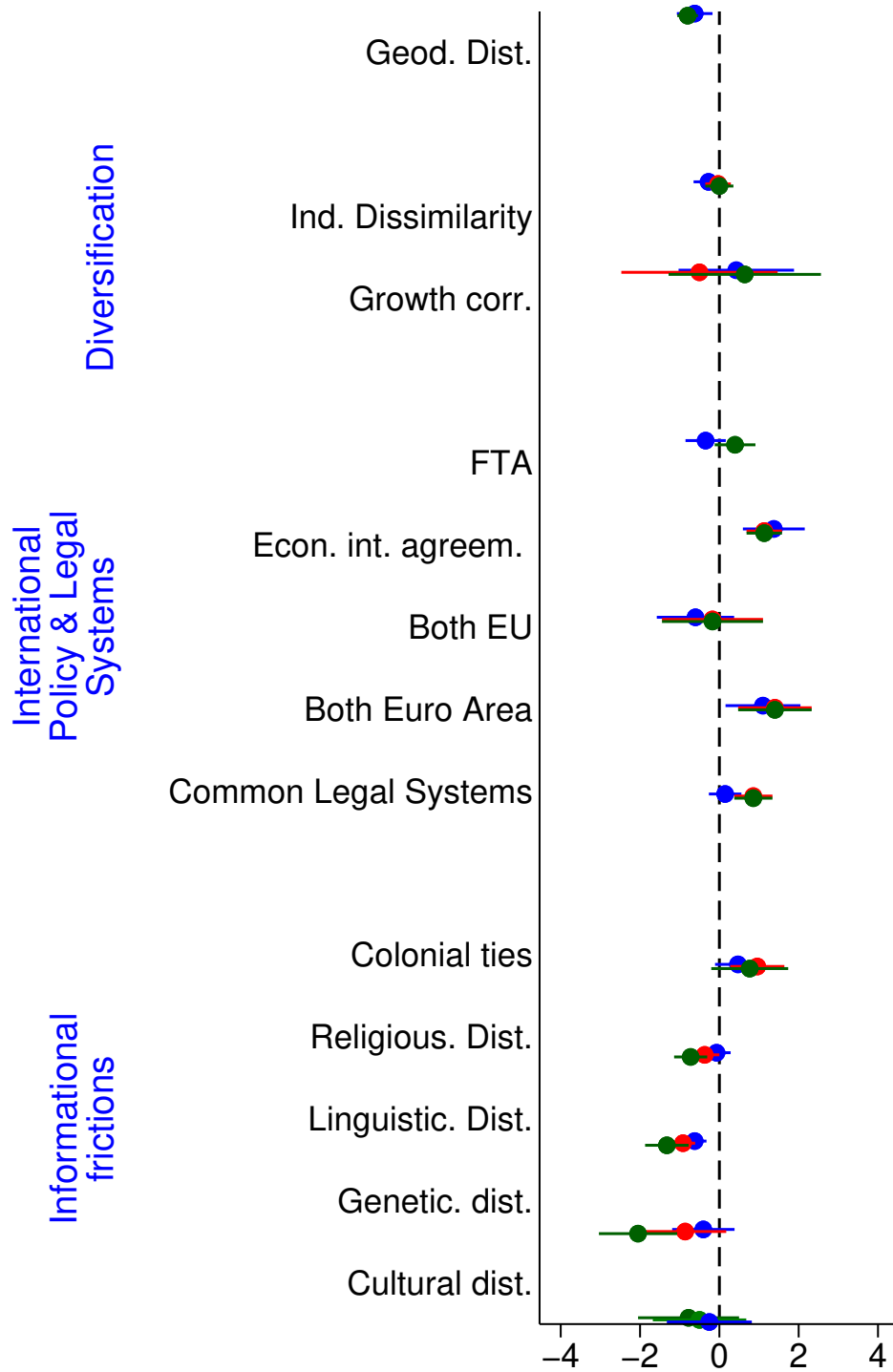
**Genetic Differences** We also consider a genetic distance variable reflecting the allele frequency differences for about 120 gene loci, as earlier works connect trade and foreign investment and technology adoption to genetic similarities (Guiso et al. (2009), Spolaore and Wacziarg (2018)). The heterozygosity index (FST) measures the probability that two genes at a given locus, selected randomly from the populations of source and destination, will be different. Genetic distance that ranges from 0 to 1 enters with a highly significant unconditional estimate; however, once we condition on geodesic distance (and the other bilateral features), the estimate drops in absolute value and becomes statistically indistinguishable from zero.

#### 4.4.5 Taking Stock

The analysis in Figure 11 (and in Appendix C) yields three main takeaways. First, there is no evidence that foreign controlling shareholders' behavior reflects a motive to invest in countries with dissimilarities in production, asynchronous business cycle dynamics, and low equity market return correlations, to realize international diversification gains. Second, frictions in corporate control markets, dissimilar legal systems and weak international economic policy coordination are correlated with lower integration of cross-border control markets. The use of the euro and the accompanying financial sector harmonization policies do seem to matter, with a caveat that estimates do not reflect a causal mechanism. Third, cultural, linguistic, and historical ties go hand

in hand with cross-border controlling links, hinting at informational and perhaps behavioral biases which lead to the segmentation of the market for corporate control. The top-bar of Figure 12 gives further insights on the role of the various country and bilateral factors in cross-border corporate control, plotting the increase in McFadden's pseudo  $R^2$ , as we progressively augment the baseline gravity specification. First, size alone yields a pseudo  $R^2$  of about 0.5, telling of the role of market depth. Accounting for tax haven status and institutions improves modestly the gravity model fit. Second, the role of distance, while significant, is modest. Third, among bilateral features, legal system similarities and economic policy coordination can explain a similar amount as geodesic distance. Informational frictions and behavioral biases, stemming from linguistic, religious, and genetic distances are quite important, improving the pseudo  $R^2$  by about 0.1.

**Figure 11:** Source and Destination Country Fixed-Effects PPML Estimates - Corporate Control



The figure plots Poisson Pseudo Maximum Likelihood (PPML) estimates from the specification where the dependent variable denotes the market value of all control links from shareholding entities in the source country in listed companies in the destination country. The three reported specifications are: (i) Unconditional with only the source country and the destination country constants and log distance (in *green*); (ii) Simply conditioning on log geodesic distance (in *red*); and (iii) Entering all variables of the last two categories in the RHS (in *blue*). For presentation reasons, the last four distance terms have been scaled by a factor of 2.

## 4.5 Investor Type Heterogeneity

We explored heterogeneity of the role of size and distance, source and destination country features, diversification motives, asset market and informational frictions on cross-border corporate control distinguishing across investor types to inspect the underlying forces.<sup>26</sup> Following ORBIS classification of shareholder entities, we distinguish between banks, non-bank financial institutions (hedge funds, private equity, and venture capital), government, individuals/families, and other public companies, and repeated the analysis for each main controlling shareholder type. As the number of zeros in the matrix of cross-border control increases considerably when we look separately across investor types, besides PPML, we estimate linear probability models (LPM).

Figure 12 plots the evolution of McFadden’s pseudo- $R^2$  for each block of explanatory variables from six specifications: (i) Cross-sectional gravity with GNI p.c. and population at source and destination (in *beige*). (ii) Adding to size, indicators of tax haven, capital and labor taxes, schooling, and rule of law at source and destination (in *red*). (iii) Simply with source and destination country constants interacted with a year index (in *dark grey*). (iv) Augmenting the source and destination country fixed-effects specification with the log of distance (in *light orange*). (v) Adding to the source and destination fixed-effects and log distance, all proxies of asset market frictions, international economic policy coordination and legal similarities (in *blue*).<sup>27</sup> (vi) Adding linguistic, religious, genetic, and historical similarities measures to capture information frictions and behavioral biases (in *light green*). Appendix Section D.1 gives PPML and LPM coefficients.

Some noteworthy patterns emerge that shed light on the mechanisms underlying the baseline results. First, the core gravity model does a good job across all types of investors (with the minor exception of governments’ when investing abroad), suggesting that size effects are chief. Second, taxes institutions, and human capital features are most important for financial institutions (banks and HF/PE/VC), hinting at the prominence of financial regulation and supervision. Third, and in line with the conjecture that financial regulatory and legislative issues are chief for financial institutions, international economic policy agreements and legal system similarities explain a non-negligible portion of foreign controlling investment for banks and HF/PE/VC. International policy agreements and legal system similarities do not correlate with control by families/individuals. Fourth, informational frictions and behavioral biases, linked to historical and cultural differences are first-order for banks and HF/PE/VC.

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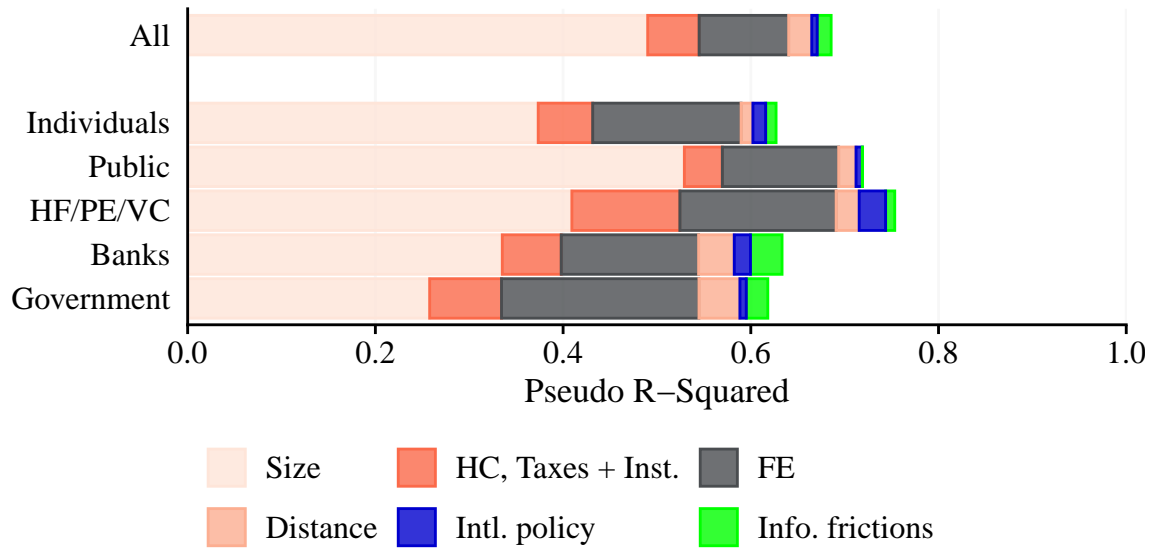
<sup>26</sup>We also repeated the analysis distinguishing between controlling shareholders in high and middle income countries without, however, detecting heterogeneity. See Appendix Section D.2.

<sup>27</sup>We omit the diversification-related variables (industrial and business cycle similarities) as they are insignificant and have a more limited sample coverage.



**Figure 12: Corporate Control by Shareholder Type**

Pseudo- $R^2$ . Cross-Sectional and Source and Destination Country Fixed Effects Specifications



The Figure plots the cumulative (McFadden's) pseudo- $R^2$  in Poisson Pseudo Maximum Likelihood (PPML) specifications in the pooled across 2012 and 2019 sample. The dependent variable is the market capitalization of controlled firms in destination country from various types of shareholding entities in the source country. Each bar gives the *pseudo - R<sup>2</sup>* from six specifications: (i) Cross-sectional gravity with size (GNI per capita and population at source and destination) in *beige*. (ii) Adding to size, indicators of tax haven, effective capital, and labor taxes, schooling (Human Capital), and rule of law at source and destination (in *red*). (iii) A specification with source and destination country constants (in *dark grey*). (iv) Augmenting the source and destination country fixed-effects specification with the log of distance (in *light orange*). (v) Adding to the source and destination fixed-effects and log distance, all proxies of asset market frictions variables, international economic policy coordination (EU, Euro-area, investment treaties, Economic Integration Agreements, Free Trade Agreement) and legal similarities (in *blue*). We omit the diversification related variables (industrial and business cycle similarities) as they are insignificant and the sample drops. We report these results in the Appendix (Section D.1). (vi) Adding linguistic, religious, genetic, and historical similarities measures to capture information frictions and behavioral biases (in *light green*). The number of control links per category are as follows: There are 688 bilateral control links where the ultimate controlling shareholding entity is an individual or family; 560 with another public company being the controlling shareholder; 301 with non-bank financial companies (hedge funds, private equity, venture capital) as controlling shareholders; 181 with banks; and 214 with foreign government entity as the ultimate controlling shareholder.

## 5 Conclusion

**Summary** We provide new mappings of cross-border corporate control identifying controlling shareholder entities from the often obscure corporate ownership network for about 22,000 public companies listed in 81 countries after the global financial crisis, in 2012, and just before the pandemic, in 2019. Home bias in corporate control is sizable, especially in larger and more developed countries. The role of offshore financial centers appears on average modest, but heterogeneous. The network structure of control is sparse, with few links and mainly across developed and large emerging markets. We explore the correlates of bilateral links, aiming to grasp the underlying forces and to provide a guide to theoretical explorations of international control. First, a workhorse gravity model performs well in explaining cross-border corporate control; controlling shareholder links are higher for countries which are more populous, richer, and with more developed capital markets. While distance enters with a significantly negative elasticity, the magnitude is weaker than for international trade. Accounting for tax haven status and institutional quality improves modestly the model fit, while education, trust and capital tax rates do not correlate with control across borders. Second, we isolate the role of bilateral features. Frictions in the market of corporate control, related to differences in the legal system and imperfect international policy coordination matter, especially for banks and other financial institutions, telling of the role of legislative-regulatory harmonization in global capital markets. Religious, genetic, and mainly linguistic differences are first-order, especially for individuals and families, revealing deeply-rooted informational frictions and behavioral/cultural barriers to the integration of corporate control markets.

**Future Research** Our mapping of cross-border corporate control calls for future research. On the theoretical side, the strong home-bias and network sparsity, coupled with the role of legal system similarities, international policy cooperation, and the importance of information and cultural barriers for individuals, can provide the empirical backbone for theoretical explorations on the globalization of control markets. Blending insights from international finance research justifying a gravity structure (e.g., Martin and Rey (2004); Head and Ries (2008)), based on market segmentation reflecting historical and cultural barriers (Pellegrino et al. (2021)) with agency costs on cross-border controlling equity investment (as in Shleifer and Wolfenzon (2002)) appears a fruitful avenue. On the empirical side, expanding the data backward to examine dynamics and advance on identification would be valuable. Besides, one can compare our mappings of corporate control taking direct and indirect links with other re-drawings of capital flows (Coppola et al. (2021)) to understand the propagation of shocks across countries, grasp, and model the special role of offshore jurisdictions. Finally, international corporate ownership and control could play a part in the diffusion of managerial practices across borders.

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# Appendix: The Globalization of Corporate Control

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# Supplementary Online Appendix

The Appendix reports summary statistics, descriptive patterns, mappings, and additional gravity model estimates complementing the analysis in the main paper. The Appendix consists of two main Sections. Section A complements the descriptive analysis in the main paper (**Stylized Facts**, Section 3). Section B complements the cross-sectional empirical gravity analysis that explores the drivers of cross-border controlling ownership in 2012, when ORBIS coverage improves considerably, and in 2019, just before the coronavirus pandemic (**Cross-Sectional Gravity Results**, Section 4.3). Section C complements the results in the main paper running gravity specifications with source country and destination country fixed effects that isolate the role of country-pair features in the internationalization of corporate control (**Bilateral Features**, Section 4.4). Section D gives further evidence.

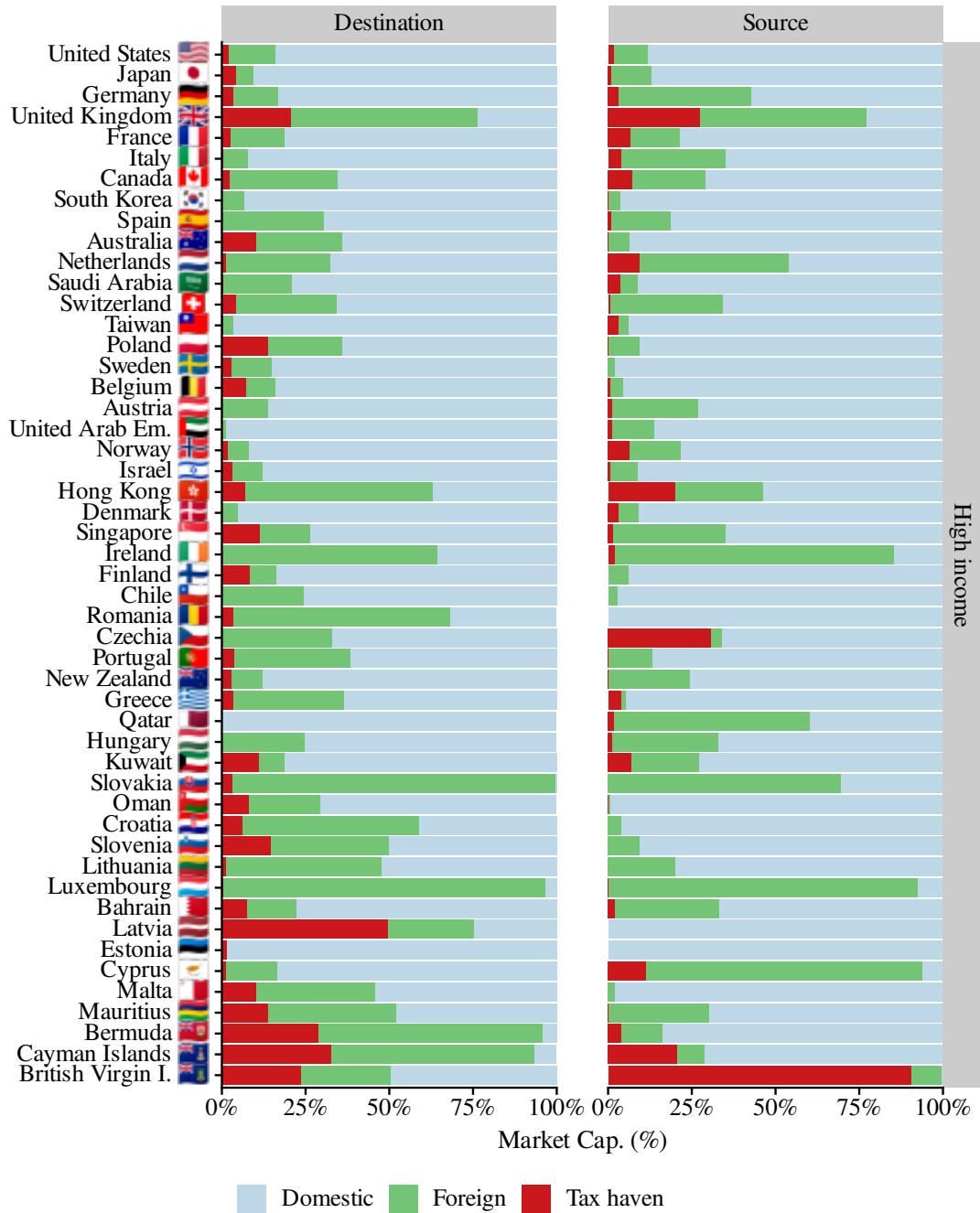
## A International Corporate Control: Descriptives and Mappings

### A.1 Foreign Ownership and Control in Listed Companies

**Country Patterns** Figures A.1, A.2, A.3, and A.4 show country-level statistics on domestic and foreign control in 2019 and 2012, the years with the richest information in ORBIS. The charts plot the share of the total market capitalization of controlled firms at destination, distinguishing by the nationality type of the *ultimate controlling entity*. The countries are split by income levels according to the World Bank classification, and ordered within-group by the size of their economies as measured by GNI. The left panel takes a destination country viewpoint, i.e. for firms located in the country, while the right panel takes a source country viewpoint, i.e. for firms worldwide that are controlled by entities from that country.

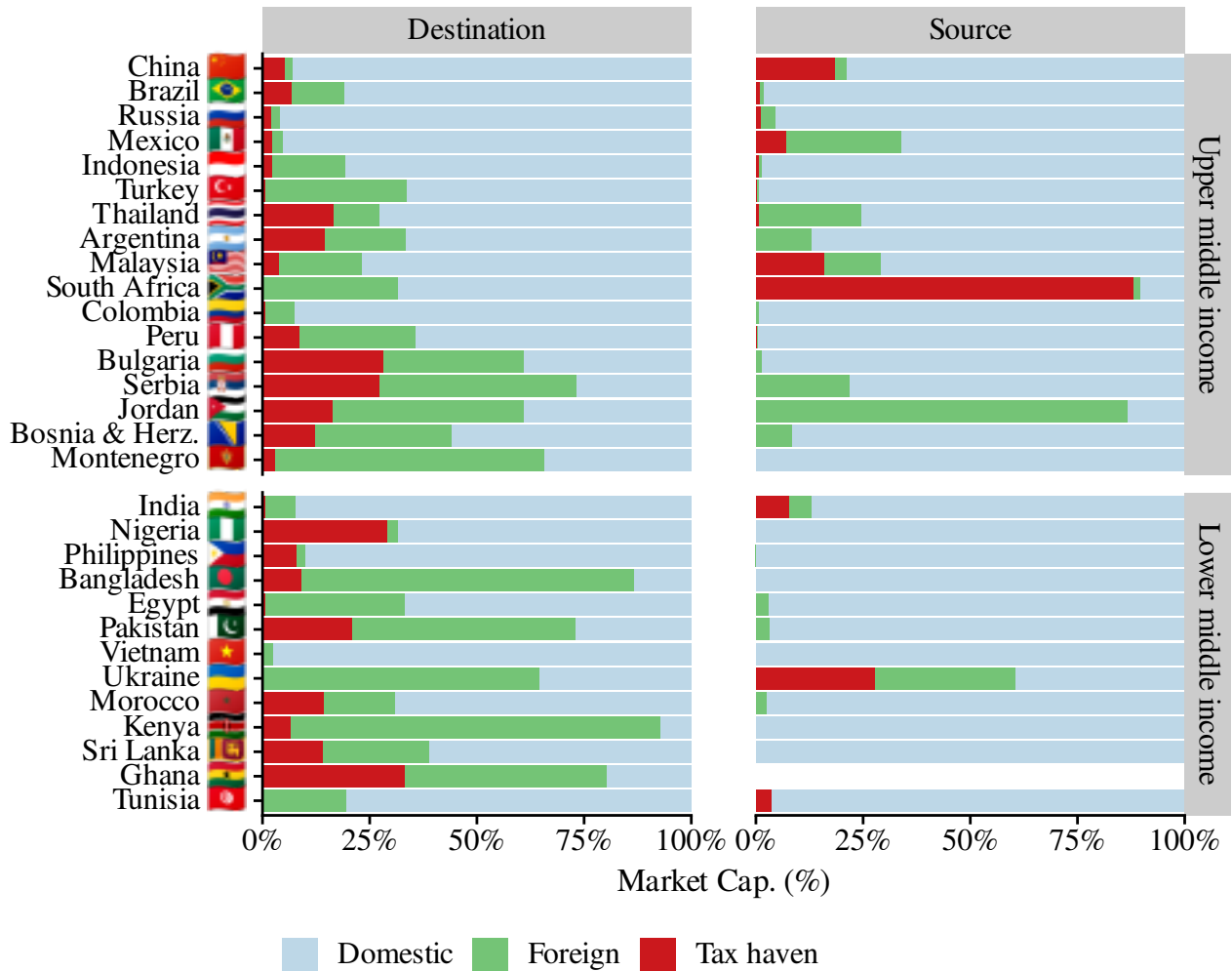
**Regional Patterns** Figure A.5 plots the share of the total market capitalization of controlled firms across regions in 2019, distinguishing by the three nationality types of the ultimate controlling shareholding entity in 2019: (i) domestic; (ii) foreign; and (iii) tax haven (foreign). The left panel takes a destination country viewpoint, while the right panel takes a source country viewpoint. The figure, therefore, aggregates the country-level information reported in Figures A.1-A.4. Figure A.5 plots the share of the total market capitalization of controlled firms across regions in 2012, aggregating the country-level information reported in Figures A.3-A.4.

**Nationality Types of control chains in 2012** Figure A.7 gives the share of controlled firms by domestic, foreign, and tax-haven shareholder entities in 2012, complementing the analogous results for 2019 reported in the main paper (Section 3).



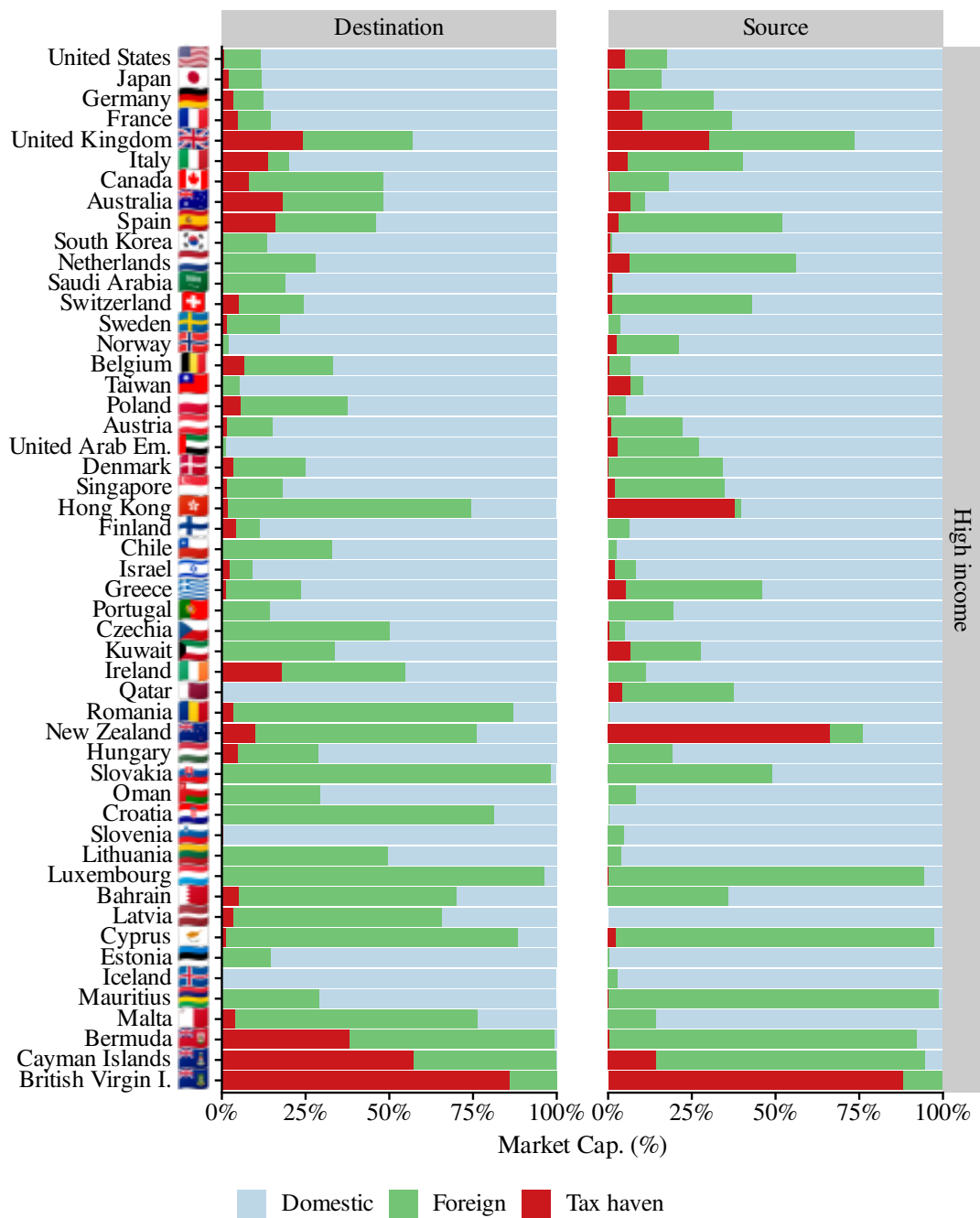
Only jurisdictions with at least 5 controlled companies are shown.

**Figure A.1:** Nationality of controllers in high-income countries in 2019. The charts plot the share of the total market capitalization of controlled firms at the country level, distinguishing by the nationality type of the *ultimate controlling entity*. The countries are split by income levels according to the World Bank classification, and ordered within-group by the size of their economies as measured by GNI. The left panel takes a destination country viewpoint, i.e. for firms located in the country, while the right panel takes a source country viewpoint, i.e. for firms worldwide that are controlled by entities from that country.



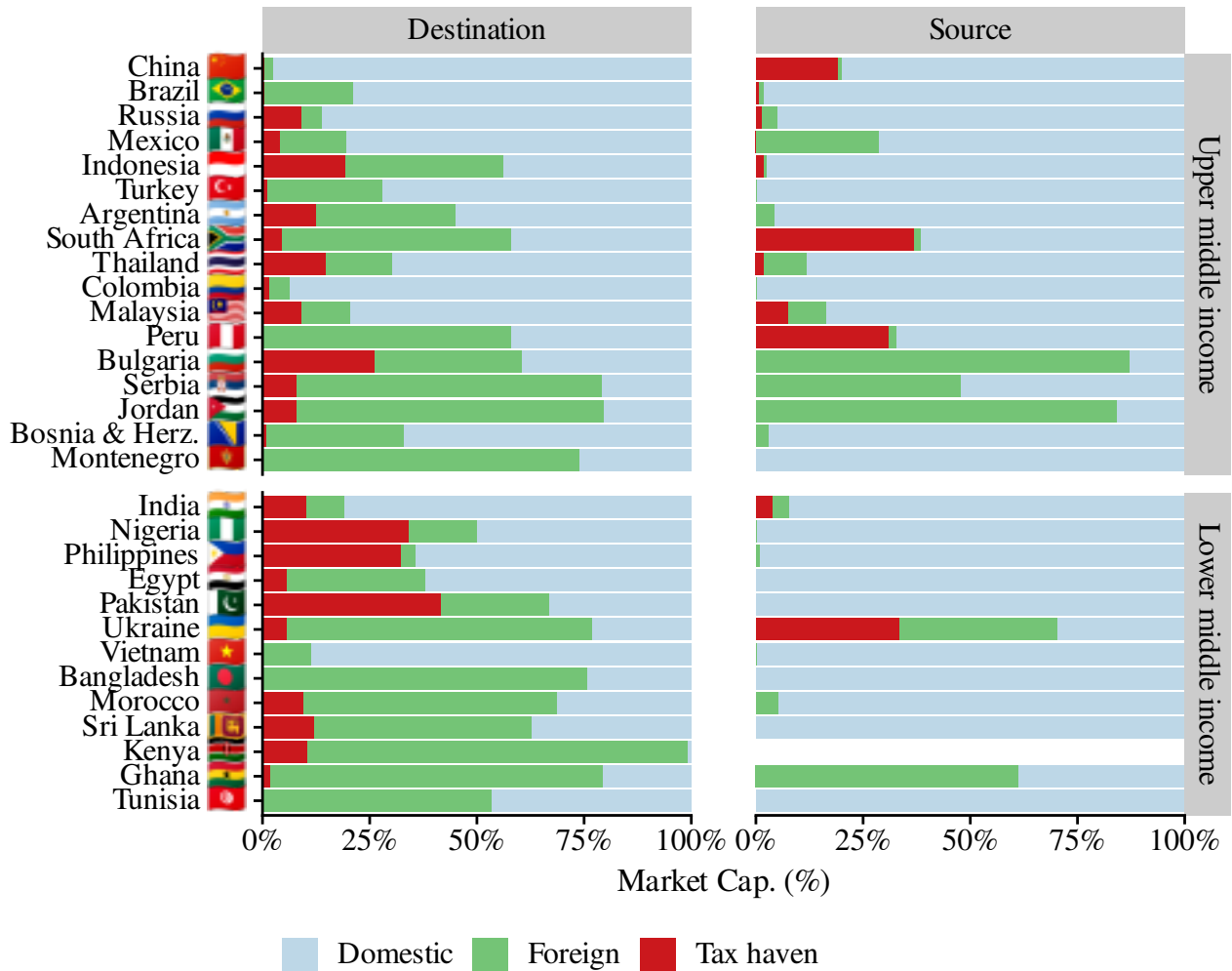
Only jurisdictions with at least 5 controlled companies are shown.

**Figure A.2:** Nationality of controllers in middle-income countries in 2019. The charts plot the share of the total market capitalization of controlled firms at the country level, distinguishing by the nationality type of the *ultimate controlling entity*. The countries are split by income levels according to the World Bank classification, and ordered within-group by the size of their economies as measured by GNI. The left panel takes a destination country viewpoint, i.e. for firms located in the country, while the right panel takes a source country viewpoint, i.e. for firms worldwide that are controlled by entities from that country.



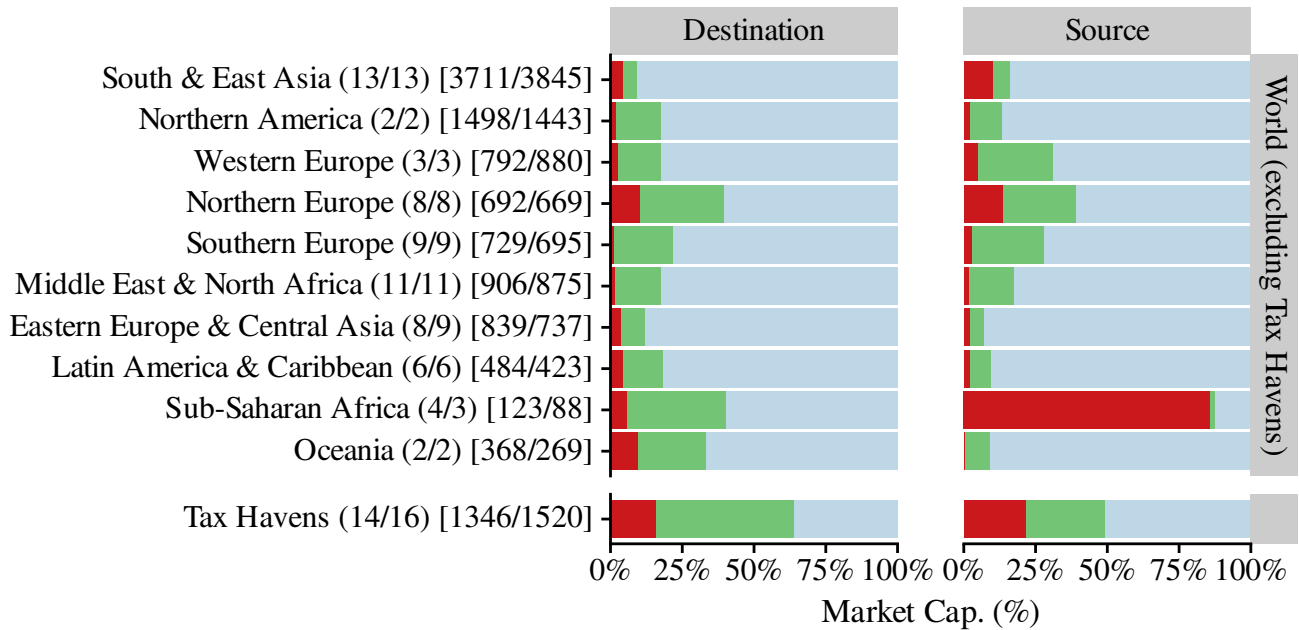
Only jurisdictions with at least 5 controlled companies are shown.

**Figure A.3:** Nationality of controllers in high-income countries in 2012. The charts plot the share of the total market capitalization of controlled firms at the country level, distinguishing by the nationality type of the *ultimate controlling entity*. The countries are split by income levels according to the World Bank classification, and ordered within-group by the size of their economies as measured by GNI. The left panel takes a destination country viewpoint, i.e. for firms located in the country, while the right panel takes a source country viewpoint, i.e. for firms worldwide that are controlled by entities from that country.



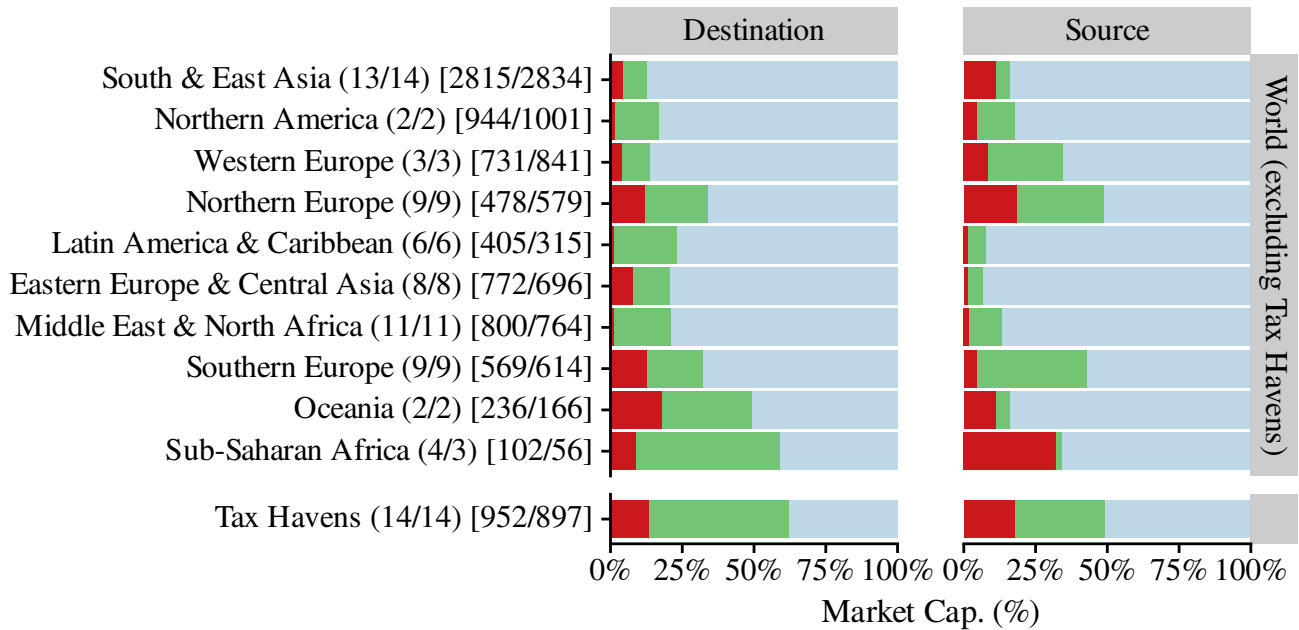
Only jurisdictions with at least 5 controlled companies are shown.

**Figure A.4:** Nationality of controllers in middle-income countries in 2012. The charts plot the share of the total market capitalization of controlled firms at the country level, distinguishing by the nationality type of the *ultimate controlling entity*. The countries are split by income levels according to the World Bank classification, and ordered within-group by the size of their economies as measured by GNI. The left panel takes a destination country viewpoint, i.e. for firms located in the country, while the right panel takes a source country viewpoint, i.e. for firms worldwide that are controlled by entities from that country.



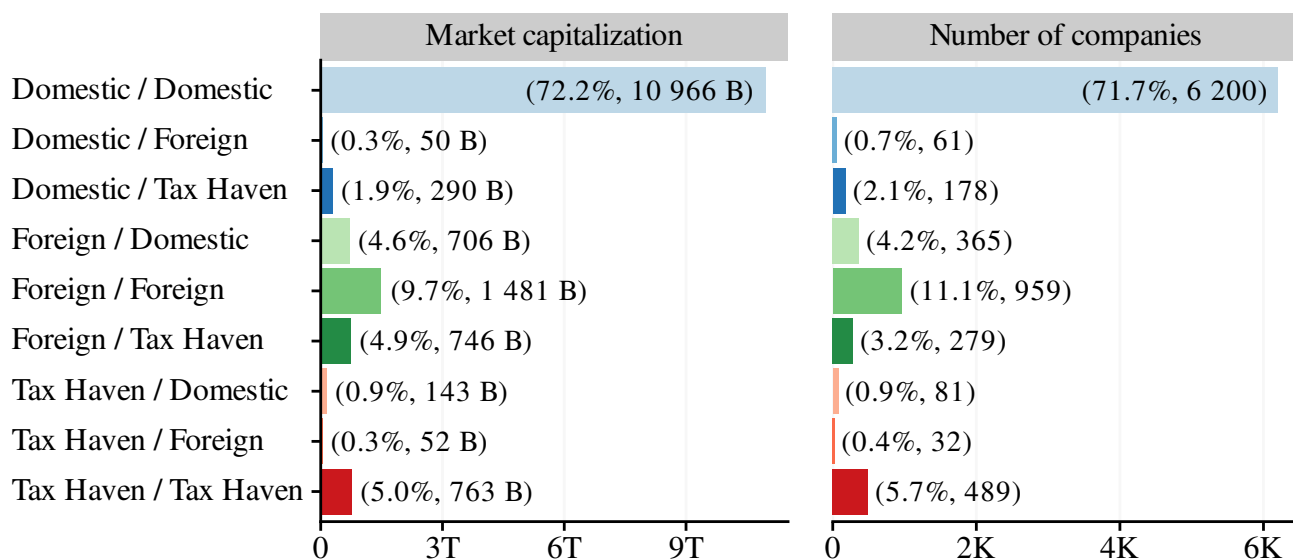
Rounded [Square] brackets indicate number of countries [controlled companies] in Destination/Source.  
 Categories are aggregations of United Nations subregions.  
 Tax Havens are shown separately from their regions.

**Figure A.5:** Nationality of Controlling Shareholders across regions in 2019. The figures distinguish across three nationality types of the *ultimate controlling entity*: (i) domestic (blue), (ii) foreign (green), and tax haven (red). The left panel takes a destination country viewpoint. The right panel takes a source country viewpoint, the country of controlling shareholder entity. The figures report in parentheses the number of destination and source countries. The figure also reports in square brackets the number of public firms of each region at the destination and at the source country.



Rounded [Square] brackets indicate number of countries [controlled companies] in Destination/Source.  
 Categories are aggregations of United Nations subregions.  
 Tax Havens are shown separately from their regions.

**Figure A.6:** Nationality of Controlling Shareholders across regions in 2012. The figures distinguish across three nationality types of the *ultimate controlling entity*: (i) domestic (blue), (ii) foreign (green), and tax haven (red). The left panel takes a destination country viewpoint. The right panel takes a source country viewpoint, the country of controlling shareholder entity. The figures report in parentheses the number of destination and source countries. The figure also reports in square brackets the number of public firms of each region at the destination and at the source country.



The labels indicate the nationality of the controller and of the main immediate shareholder entity. E.g. Domestic / Tax Haven indicates that the controller is domestic, and the main shareholder is from a foreign tax haven.

**Figure A.7:** Share of the different nationality types of control chains among controlled firms, worldwide, in 2012. Controlled companies are split according to the nationality type (domestic, foreign, and tax haven) of their *controlling* entity and of the *immediate* main shareholding entity. Market capitalization is measured in US dollars.

## A.2 Tax Havens Role

Table A.1 portrays the ten largest corporate ownership and control links between countries. The importance of financial off-shore jurisdictions is apparent. Three out of the ten largest ownership links are between two tax haven jurisdictions: the British Virgin Islands links with the Cayman Islands, Hong Kong, and Bermuda. In addition, three other pairs include one tax haven country. For control, at least 6 links involve one tax haven jurisdiction. For comparison, tax haven jurisdictions appear once in the ten most extensive international trade links (Germany-Netherlands) and three of the largest service trade links in 2019 (Ireland-Netherlands, Ireland-US, and Hong Kong-China).



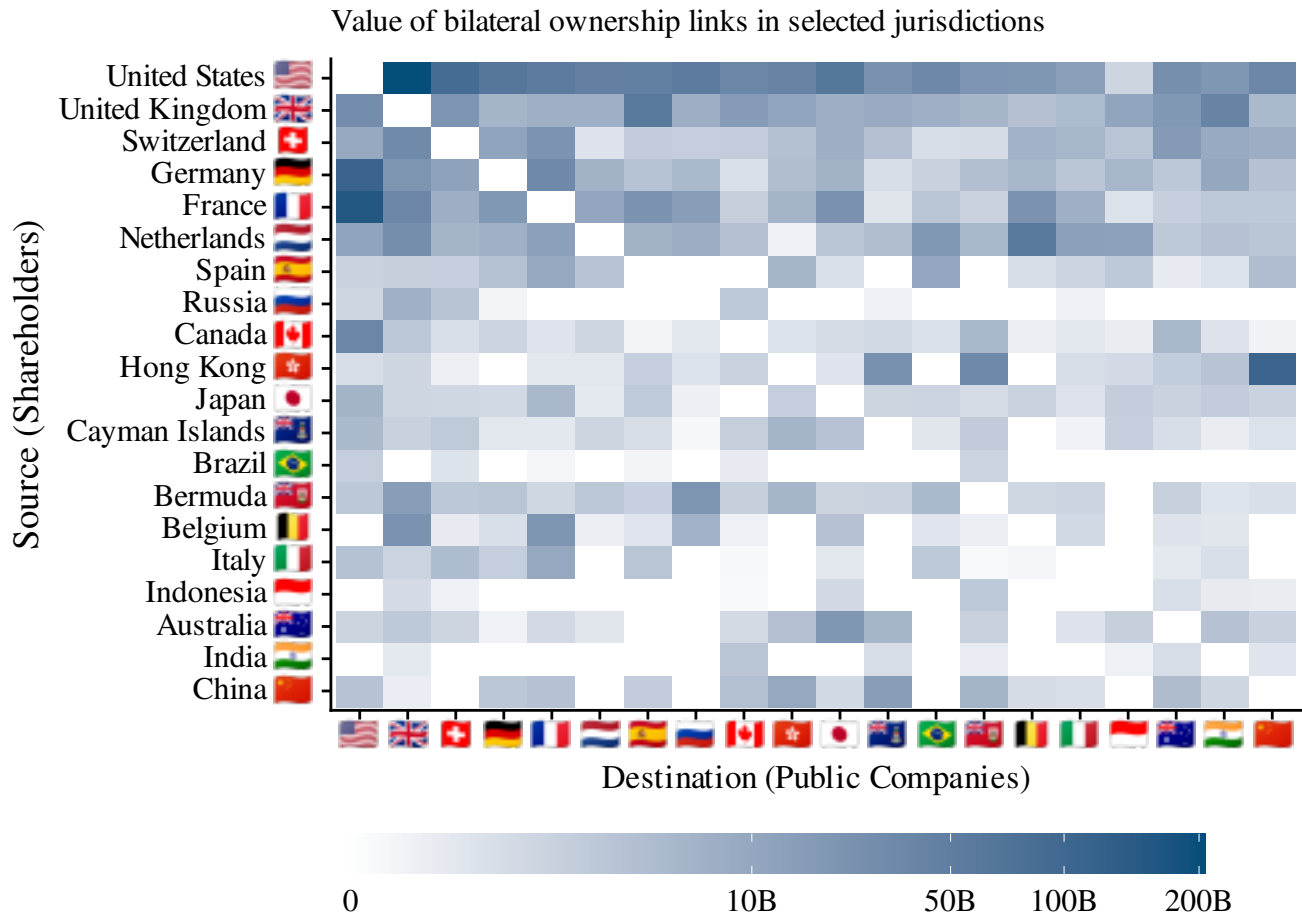
Ownership			Control		
Destination	Source		Destination	Source	
Cayman Islands	British Virgin I.	397B	Cayman Islands	South Africa	460B
Hong Kong	British Virgin I.	340B	Hong Kong	China	453B
China	Hong Kong	286B	Cayman Islands	British Virgin I.	249B
United States	United Kingdom	188B	United States	Germany	217B
United Kingdom	United States	138B	United Kingdom	United States	187B
Switzerland	United States	135B	China	Hong Kong	146B
Bermuda	British Virgin I.	125B	Cayman Islands	China	135B
Japan	United States	120B	United States	Japan	134B
Germany	United States	109B	United States	United Kingdom	112B
Netherlands	United States	88B	Bermuda	United Kingdom	97B

**Table A.1: Largest bilateral links.** The table reports the ten largest bilateral links for corporate ownership (left panel) and corporate control (right panel) of listed companies across the world in 2019, measured in US Dollars.

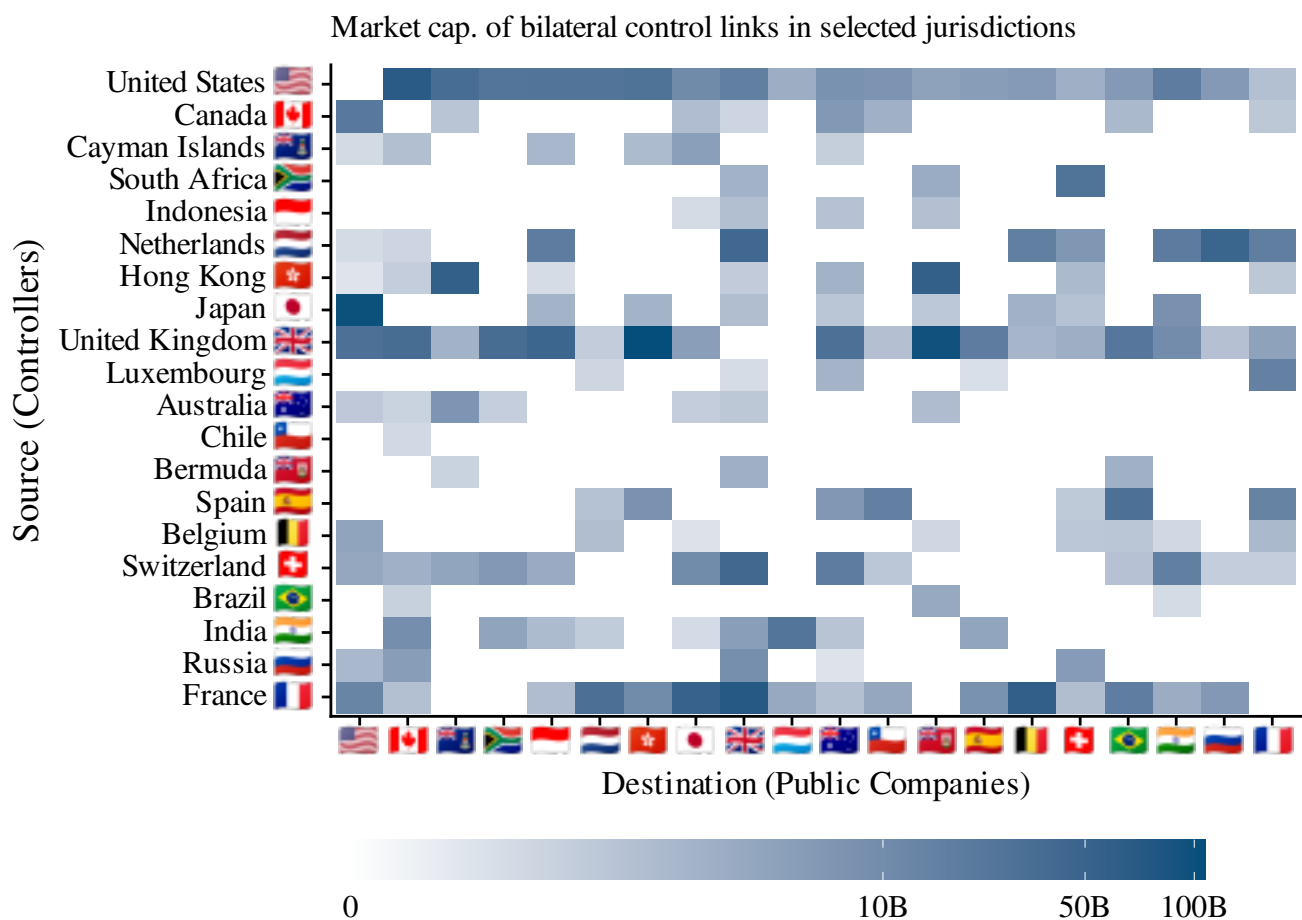
### A.3 Network Structure and Statistics

Appendix Figure A.8 illustrates the network structure of corporate ownership in 2012, rather than in 2019 reported in the main paper (Fact 3). In the horizontal axis, the figure gives listed firms' jurisdictions (destination) and on the vertical axis, the figure plots the nationality of shareholding entities (controlling or passive) from source countries. Dark(er) squares indicate large(r) equity stakes held by entities from the source country in public firms at the destination in 2012. The chart orders countries according to the similarity of their international ownership links (both in widely-held and controlled listed corporations). Countries closer to each other, especially at the extremes, have similar bilateral ownership linkages.

Appendix Figure A.9 performs the exercise by looking at country-pair links on listed corporations at destination countries controlled by ultimate controlling shareholders from source jurisdictions in 2012. As revealed in the analogous plot in the main paper that zoomed in 2019, the network of cross-border corporate control is very sparse, with fewer linkages than ownership.



**Figure A.8:** Heat map of the value of bilateral ownership stakes, measured by the market value of equity stakes, held by entities from source countries (y-axis) in public firms from destination countries (x-axis) in 2012. The ordering of the countries was obtained from the loading of each (source) country on the first principal component of the matrix shown in the chart, with the addition of own-country links (diagonal).



**Figure A.9:** Heat map of the value of bilateral control stakes, measured by total market capitalization, held by entities from source countries (y-axis) in public firms from destination countries (x-axis) in 2012. The ordering of the countries was obtained from the loading of each (source) country on the first principal component of the matrix shown in the chart, with the addition of own-country links (diagonal).

## B Cross-Sectional Gravity Analysis

Below we report additional results that complement the cross-sectional gravity specifications in the main paper.

### B.1 Summary Statistics and Correlation Structure

Appendix Table B.2 gives summary statistics of the main country-level variables, distinguishing by source (controlling investor) country (Panels *A*) and destination country (Panel *B*). The table reports summary statistics for log GNI per capita, log population, effective tax rates on capital and labor (in %), and World Bank indicators on the rule of law from a source and destination country viewpoint, respectively. Appendix Table B.3 Panel A and Panel B show the correlation structure of the cross-country variables for the destination country and the source country, respectively.

**Table B.2: Summary Statistics.**  
Main Country-Level Variables at Source & Destination

	Mean	50 <sup>th</sup> perc.	St. Dev.	Min	50 <sup>th</sup> perc.	90 <sup>th</sup> perc.	Max
S. Log GNI per cap.	19760	8554	27115	355	1064	52513	189506
S. Log Pop.	43.83	8.50	155.25	0.01	0.20	83.43	1433.78
S. Eff. tax rate on K	19.70	16.07	12.96	0.10	6.85	36.01	67.02
S. Eff. tax rate on L	17.07	12.40	13.90	0.34	2.65	37.65	52.03
S. Rule of law	0.13	-0.02	0.98	-2.32	-1.02	1.68	2.06
S. Stock mkt cap.	72.39	46.75	139.99	0.08	11.32	117.67	1349.46
S. Mean Yrs of School.	9.40	9.90	2.94	1.88	4.84	12.78	13.64
WVS Trust	24.88	22.26	15.74	2.83	7.81	49.43	73.73
	Mean	50 <sup>th</sup> perc.	St. Dev.	Min	50 <sup>th</sup> perc.	90 <sup>th</sup> perc.	Max
D. Log GNI per cap.	27142	19269	24320	925	3046	59622	118179
D. Log Pop.	74.83	11.62	214.27	0.03	1.25	145.87	1433.78
D. Eff. tax rate on K	22.43	20.45	13.13	0.10	7.80	39.83	60.81
D. Eff. tax rate on L	22.31	24.53	15.01	0.34	2.56	42.25	52.03
D. Rule of law	0.62	0.57	0.87	-1.15	-0.55	1.81	2.06
D. Stock mkt cap.	79.19	48.33	150.52	5.73	14.58	121.05	1349.46
D. Mean Yrs of School.	10.74	11.40	2.15	5.11	7.54	12.98	13.64
WVS Trust	28.46	23.81	16.62	2.83	8.54	54.43	73.73
Observations	25920						

The table reports summary statistics for the main explanatory variables in the source country (Panel A) and the destination country (Panel B) in the sample without missing values for any of the variables [number of observations in Table 2 of the main paper, namely 25,920].

**Table B.3: Correlation Matrix.**  
Panel A. Destination country

	D. Log GNI p.c.	D. Log Pop.	D. Eff. K tax	D. Eff. L tax rate	D. Rule of law	D. Stock mkt cap.	D. Schooling	WVS Trust
D. Log GNI p.c.	1							
D. Log Pop.	-0.206***	1						
D. Eff. K tax	0.538***	-0.0191**	1					
D. Eff. L tax	0.482***	-0.243***	0.505***	1				
D. Rule of law	0.771***	-0.258***	0.537***	0.576***	1			
D. Stock mkt cap.	0.178***	-0.0318***	0.278***	-0.196***	0.243***	1		
Schooling.	0.562***	-0.331***	0.408***	0.602***	0.679***	0.153***	1	
WVS Trust	0.608***	0.183***	0.343***	0.246***	0.545***	0.243***	0.298***	1

Panel B. Source country

	S. Log GNI p.c.	S. Log Pop.	S. Eff. K tax	S. Eff. L tax	S. Rule of law	S. Stock mkt cap.	S. Schooling.	WVS Trust
S. Log GNI p.c.	1							
S. Log Pop.	-0.0872***	1						
S. Eff. K tax	0.504***	0.0221**	1					
S. Eff. L tax	0.585***	-0.122***	0.499***	1				
S. Rule of law	0.707***	-0.0813***	0.502***	0.670***	1			
S. Stock mkt cap.	0.203***	-0.0179*	0.296***	-0.140***	0.261***	1		
Schooling	0.591***	-0.0966***	0.392***	0.643***	0.662***	0.181***	1	
WVS Trust	0.609***	0.216***	0.356***	0.303***	0.515***	0.250***	0.320***	1
Observations	25920							

Notes: Table reports the correlations between the variables used for the specification on cross-country features and institutions in Table B.8 for the source country for the destination country on Panel A and the source country for Panel B.

## B.2 Cross-sectional Gravity Results. Further Evidence

**Extensive Margin Analysis** Appendix Table B.4 reports linear probability model estimates (LPM) exploring the role of geodesic distance, source and destination countries population and income per capita on the extensive margin of cross-border corporate control, ownership, and trade in goods and services. The dependent variable takes the value of one if there is a link between source and destination country in any of the four aspects of globalization and zero otherwise. Looking at the extensive margin is particularly useful, as the matrix of cross-border corporate control is very sparse with many zeros. The likelihood that source and destination country have at least on control link is increasing in the countries' size and proximity. While the gravity model terms are highly significant the estimates are smaller and model fit worse for corporate control, as compared to international goods trade, a similar to the Poisson ML estimates in the main paper.

**Table B.4:** Linear Probability Model Cross-Sectional Estimates

	2012			2019			Pooled		
	Control	Ownership	Trade	Control	Ownership	Trade	Control	Ownership	Trade
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	For. Ctrl.	All	Goods	For. Ctrl.	All	Goods	For. Ctrl.	All	Goods
Log Pop-Wght dist.	-0.032*** (0.007)	-0.054*** (0.010)	-0.051*** (0.016)	-0.037*** (0.008)	-0.048*** (0.011)	-0.046*** (0.016)	-0.034*** (0.007)	-0.051*** (0.011)	-0.049*** (0.016)
D. Log GNI per cap.	0.016*** (0.005)	0.041*** (0.008)	0.048*** (0.014)	0.026*** (0.007)	0.048*** (0.010)	0.043*** (0.015)	0.020*** (0.005)	0.044*** (0.009)	0.046*** (0.014)
D. Log Pop.	0.013*** (0.004)	0.023*** (0.006)	0.056*** (0.015)	0.016*** (0.005)	0.028*** (0.007)	0.054*** (0.016)	0.014*** (0.004)	0.025*** (0.007)	0.055*** (0.016)
S. Log GNI per cap.	0.047*** (0.007)	0.089*** (0.011)	0.021** (0.010)	0.058*** (0.008)	0.098*** (0.011)	0.017 (0.010)	0.052*** (0.007)	0.093*** (0.011)	0.019* (0.010)
S. Log Pop.	0.025*** (0.004)	0.031*** (0.007)	0.074*** (0.009)	0.027*** (0.005)	0.031*** (0.007)	0.066*** (0.009)	0.026*** (0.005)	0.031*** (0.007)	0.070*** (0.009)
Observations	12960	12960	12960	12960	12960	12960	25920	25920	25920
Num. countries (D/S)	81/161	81/161	81/161	81/161	81/161	81/161	81/161	81/161	81/161
RMSE	0.227	0.303	0.334	0.244	0.315	0.330	0.236	0.309	0.332
R <sup>2</sup>	0.124	0.196	0.255	0.139	0.195	0.219	0.131	0.195	0.237
Fixed Effects	None	None	None	None	None	None	Year FE	Year FE	Year FE

Notes: The table reports Linear Probability Model (LPM) estimates. The outcomes are various forms of international integration across pairs of countries in 2012 (columns (1)-(3)), in 2019 (in columns (4)-(6)), and pooling 2012 and 2019 (in columns (7)-(9)). In columns (1), (4), and (7), the dependent variable denotes the logarithm of controlled listed firms' market capitalization in destination by shareholder entities in the source country. In (2), (5), and (8), the dependent variable is the market value of ownership (voting rights) from shareholding entities in source to firms in the destination country in both widely held and controlled firms, irrespective of whether the shareholder controls the company. In (3), (6), and (9), the dependent variable denotes international goods exports and imports from source to destination. The explanatory variables are the logarithm of the population-weighted distance between origin and destination, the log of Gross National Income (GNI) per capita and log population at source and destination. Double-clustered at source and destination country standard errors are reported below the estimates. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% confidence level, respectively.

**Stock Market Capitalization** Theoretical explorations of gravity in international finance stress the role of market size, often proxied by the share of equity market capitalization to domestic output (GDP). For example, in Martin and Rey (2004), market size captures diversification opportunities, larger in countries with more developed equity markets, while in Head and Ries (2008), stock market size captures potential bidders for international investment and more opportunities for foreign investors. We, thus, explored the role of stock market capitalization at the source and destination of the globalization corporate control, using data from the World Bank

(which is however not available for all countries). Appendix Table B.5 reproduces the baseline cross-sectional gravity specification using stock market capitalization rather than GNI p.c. as size proxy (besides population). Appendix Table B.6 uses both GNI per capita and stock market capitalization (besides population). In all specifications, stock market capitalization at source and destination enters with significantly positive estimates, telling of the positive role of financial development on the globalization of control markets.

**Table B.5:** Cross Sectional Gravity Estimates. Population, Stock Market Capitalization, and Distance

	2012				2019				Pooled			
	Control	Ownership	Trade		Control	Ownership	Trade		Control	Ownership	Trade	
	(1) For. Ctrl.	(2) All	(3) Goods	(4) Services	(5) For. Ctrl.	(6) All	(7) Goods	(8) Services	(9) For. Ctrl.	(10) All	(11) Goods	(12) Services
Log Pop-Wght dist.	-0.723*** (0.191)	-0.706*** (0.156)	-1.004*** (0.113)	-0.891*** (0.122)	-0.559** (0.232)	-0.815*** (0.158)	-1.032*** (0.125)	-0.888*** (0.122)	-0.631*** (0.194)	-0.767*** (0.155)	-1.018*** (0.118)	-0.889*** (0.122)
D. Stock mkt cap.	0.845*** (0.088)	0.700*** (0.155)	0.629*** (0.131)	0.644*** (0.145)	0.514** (0.252)	0.654*** (0.179)	0.604*** (0.132)	0.629*** (0.131)	0.635*** (0.187)	0.671*** (0.163)	0.615*** (0.128)	0.634*** (0.134)
S. Stock mkt cap.	0.908*** (0.146)	0.871*** (0.216)	0.419*** (0.127)	0.696*** (0.155)	1.025*** (0.167)	0.890*** (0.167)	0.451*** (0.123)	0.634*** (0.140)	0.984*** (0.150)	0.883*** (0.179)	0.436*** (0.122)	0.657*** (0.143)
D. Log Pop.	0.140 (0.198)	0.376*** (0.114)	0.569*** (0.092)	0.420*** (0.092)	-0.070 (0.287)	0.398*** (0.117)	0.551*** (0.089)	0.393*** (0.089)	0.008 (0.250)	0.388*** (0.114)	0.560*** (0.090)	0.405*** (0.089)
S. Log Pop.	0.530*** (0.122)	0.365* (0.189)	0.570*** (0.083)	0.425*** (0.106)	0.574*** (0.141)	0.261 (0.185)	0.581*** (0.086)	0.366*** (0.101)	0.557*** (0.132)	0.308* (0.183)	0.576*** (0.084)	0.391*** (0.103)
Observations	5226	5226	5226	5226	5226	5226	5226	5226	10452	10452	10452	10452
Obs. total	5226	5226	5226	5226	5226	5226	5226	5226	10452	10452	10452	10452
Num. countries (D/S)	67/79	67/79	67/79	67/79	67/79	67/79	67/79	67/79	67/79	67/79	67/79	67/79
RMSE	6.622	7.659	1.689	2.926	9.560	6.927	1.551	3.773	9.850	7.132	1.622	3.556
Pseudo- $R^2$	0.330	0.302	0.613	0.522	0.271	0.340	0.640	0.496	0.288	0.323	0.627	0.509
Deviance- $R^2$	0.330	0.302	0.613	0.524	0.271	0.340	0.640	0.497	0.288	0.323	0.627	0.510
Fixed Effects	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE

Notes: The table reports Poisson Pseudo Maximum Likelihood (PPML) estimates. The outcomes are various forms of international integration across pairs of countries in 2012 (columns (1)-(4)), in 2019 (in columns (5)-(8)), and pooling 2012 and 2019 (in columns (9)-(12)). In columns (1), (5), and (9), the dependent variable denotes the logarithm of controlled listed firms' market capitalization in destination by shareholder entities in the source country. In (2), (6), and (10), the dependent variable is the market value of ownership (voting rights) from shareholding entities in source to firms in the destination country in both widely held and controlled firms, irrespective of whether the shareholder controls the company. In (3), (7), and (11), the dependent variable denotes international goods exports and imports from source to destination. In columns (4), (8), and (12), the dependent variable denotes international services trade between origin and destination. The explanatory variables are the logarithm of the population-weighted distance between origin and destination, stock market capitalization at source and destination (in % of GDP), and log population at source and destination. Double-clustered at source and destination country standard errors are reported below the estimates. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% confidence level, respectively.



**Table B.6:** Cross Sectional Gravity Estimates. GNI p.c., Population, Stock Market Capitalization, and Distance

	2012				2019				Pooled			
	Control	Ownership	Trade		Control	Ownership	Trade		Control	Ownership	Trade	
	(1) For. Ctrl.	(2) All	(3) Goods	(4) Services	(5) For. Ctrl.	(6) All	(7) Goods	(8) Services	(9) For. Ctrl.	(10) All	(11) Goods	(12) Services
Log Pop-Wght dist.	-0.665*** (0.220)	-0.532*** (0.103)	-0.884*** (0.060)	-0.708*** (0.064)	-0.445* (0.234)	-0.586*** (0.118)	-0.879*** (0.061)	-0.658*** (0.060)	-0.527** (0.221)	-0.565*** (0.106)	-0.882*** (0.060)	-0.682*** (0.060)
D. Log GNI per cap.	0.243* (0.134)	0.695*** (0.107)	0.704*** (0.045)	0.847*** (0.045)	1.118*** (0.331)	0.881*** (0.190)	0.753*** (0.073)	0.920*** (0.063)	0.616*** (0.204)	0.786*** (0.129)	0.723*** (0.057)	0.884*** (0.049)
S. Log GNI per cap.	0.862*** (0.126)	1.541*** (0.220)	0.729*** (0.058)	0.871*** (0.101)	0.607* (0.338)	1.763*** (0.262)	0.779*** (0.080)	1.047*** (0.130)	0.713*** (0.240)	1.638*** (0.214)	0.753*** (0.066)	0.961*** (0.113)
D. Stock mkt cap.	0.845*** (0.125)	0.542*** (0.121)	0.410*** (0.107)	0.404*** (0.056)	0.191 (0.396)	0.316* (0.185)	0.276*** (0.106)	0.273*** (0.068)	0.490* (0.258)	0.418*** (0.139)	0.336*** (0.101)	0.323*** (0.057)
S. Stock mkt cap.	0.678*** (0.117)	0.550** (0.217)	0.097 (0.075)	0.431*** (0.078)	0.806*** (0.271)	0.486*** (0.166)	0.055 (0.070)	0.224*** (0.087)	0.753*** (0.201)	0.508*** (0.168)	0.075 (0.067)	0.308*** (0.074)
D. Log Pop.	0.215 (0.209)	0.582*** (0.104)	0.825*** (0.039)	0.661*** (0.045)	0.162 (0.243)	0.629*** (0.082)	0.786*** (0.045)	0.617*** (0.048)	0.145 (0.250)	0.605*** (0.091)	0.801*** (0.042)	0.632*** (0.045)
S. Log Pop.	0.776*** (0.130)	0.634*** (0.146)	0.831*** (0.054)	0.643*** (0.079)	0.716*** (0.121)	0.494*** (0.097)	0.831*** (0.047)	0.589*** (0.064)	0.738*** (0.120)	0.550*** (0.111)	0.830*** (0.050)	0.607*** (0.071)
Observations	5226	5226	5226	5226	5226	5226	5226	5226	10452	10452	10452	10452
Obs. total	5226	5226	5226	5226	5226	5226	5226	5226	10452	10452	10452	10452
Num. countries (D/S)	67/79	67/79	67/79	67/79	67/79	67/79	67/79	67/79	67/79	67/79	67/79	67/79
RMSE	7.493	8.296	1.024	1.821	9.224	7.068	0.961	2.081	12.938	7.383	0.993	2.089
Pseudo- $R^2$	0.427	0.557	0.838	0.826	0.383	0.593	0.849	0.805	0.379	0.574	0.843	0.811
Deviance- $R^2$	0.427	0.557	0.838	0.827	0.383	0.594	0.849	0.807	0.379	0.574	0.843	0.813
Fixed Effects	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE	Year FE

Notes: The table reports Poisson Pseudo Maximum Likelihood (PPML) estimates. The outcomes are various forms of international integration across pairs of countries in 2012 (columns (1)-(4)), in 2019 (in columns (5)-(8)), and pooling 2012 and 2019 (in columns (9)-(12)). In columns (1), (5), and (9), the dependent variable denotes the logarithm of controlled listed firms' market capitalization in destination by shareholder entities in the source country. In (2), (6), and (10), the dependent variable is the market value of ownership (voting rights) from shareholding entities in source to firms in the destination country in both widely held and controlled firms, irrespective of whether the shareholder controls the company. In (3), (7), and (11), the dependent variable denotes international goods exports and imports from source to destination. In columns (4), (8), and (12), the dependent variable denotes international services trade between origin and destination. The explanatory variables are the logarithm of the population-weighted distance between origin and destination, the log of Gross National Income (GNI) per capita and log population at source and destination, stock market capitalization (in % of GDP), and log population at source and destination. Double-clustered at source and destination country standard errors are reported below the estimates. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% confidence level, respectively.

### B.3 Source and Destination Country Features

The results below complement the discussion in Section 4.3.2 of the main paper, exploring the role of various source and destination country features on cross-border corporate control.

Figures B.1 and B.2 complement Figure 8, plotting for each variable proxying taxation, human capital, trust, and institutions coefficients (alongside two standard error bands) from three specifications with corporate control as the dependent variable in 2012 and 2019: (i) An unconditional specification including only the relevant variable (in *green*). (ii) Adding the relevant variable to the baseline gravity terms (distance, population, and GNI per capita) (in *red*). (iii) A rich specification including all variables in the RHS (in *blue*).

The two panels on Figure B.3 are otherwise similar to Figure 10, zooming on 2012 and 2019 respectively. The figures plot the evolution of the PPML *pseudo*  $-R^2$ , across three cross-sectional gravity specifications: (i) Only with size (log GNI p.c. and log population at source and destination); (ii) Adding to the size proxies the log of geodesic distance; (iii) Adding to the core gravity terms (size and distance), proxies of taxation, human capital, and institutions on the RHS. We omit trust, which is not a robust correlate of cross-border corporate control, as the sample drops. For comparability, besides results with cross-border corporate control and ownership, the figures give the patterns with international trade in goods and services.

Table B.7 report cross-sectional gravity specifications that associate cross-border corporate control, ownership, and international goods and service trade with taxation at source and destination countries. The explanatory variables are:

- Bilateral geodesic distance between the two countries, weighted by population.
- The logarithm of Gross National Income per capita (GNI p.c.).
- The logarithm of population.
- Indicators that take on the value of one when the country is classified as a tax-haven jurisdiction (OECD (2000) and Tørsløv et al. (2022)).
- Proxies of effective tax rates on capital and labor, retrieved from Bachas et al. (2022).

There is a good fit of the gravity model for cross-border corporate control, as distance and size appear significant correlates. Besides, cross-border controlling equity holdings in listed companies is larger for tax haven jurisdictions, telling of their chief role. Higher effective labor taxes are associated with lower cross-border controlling investment.

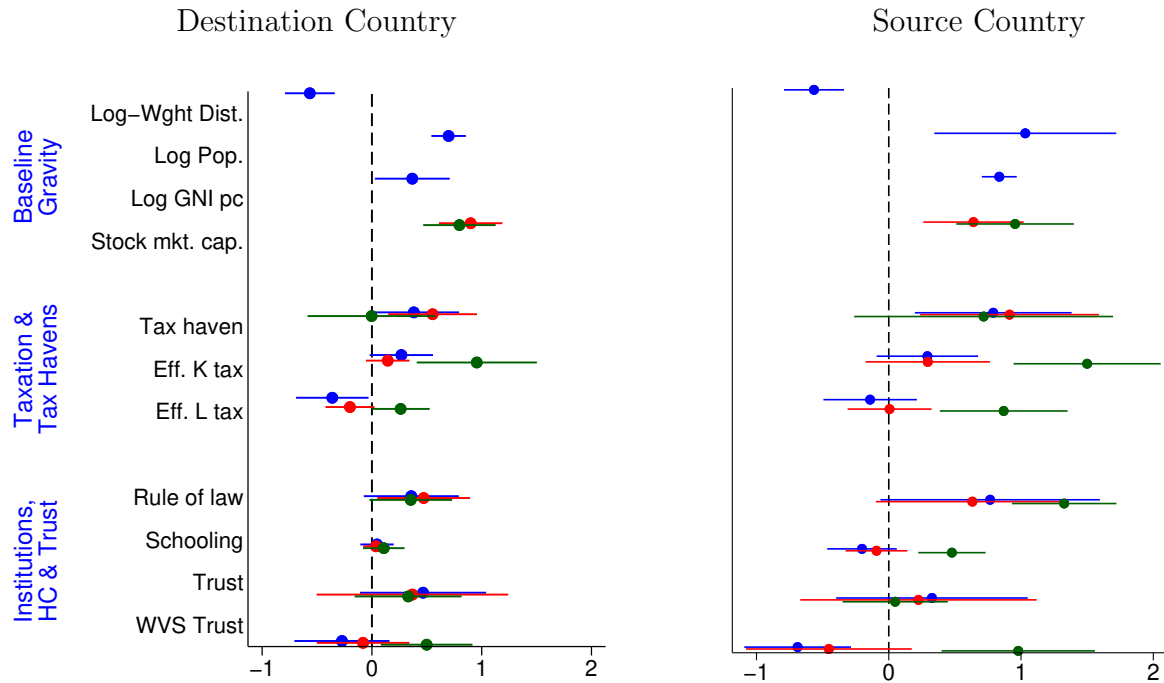
Table B.8 reports cross-sectional gravity specifications that associate cross-border corporate control, ownership, and international trade with institutions, general trust, and human capital at

source and destination countries, conditional on size and distance. The explanatory variables are:

- Bilateral geodesic distance between the two countries, weighted by population.
- The logarithm of Gross National Income per capita (GNI p.c.).
- The logarithm of population.
- Mean years of schooling attained by individuals aged 15 to 64 from Barro-Lee Educational Attainment Dataset (Barro and Lee (2013))
- A composite Rule of law index from the World Bank's Governance Matters Database, ranging from -2.5 to +2.5, with a global mean of zero.
- Self-reported general trust measures from various rounds of World Value Survey.

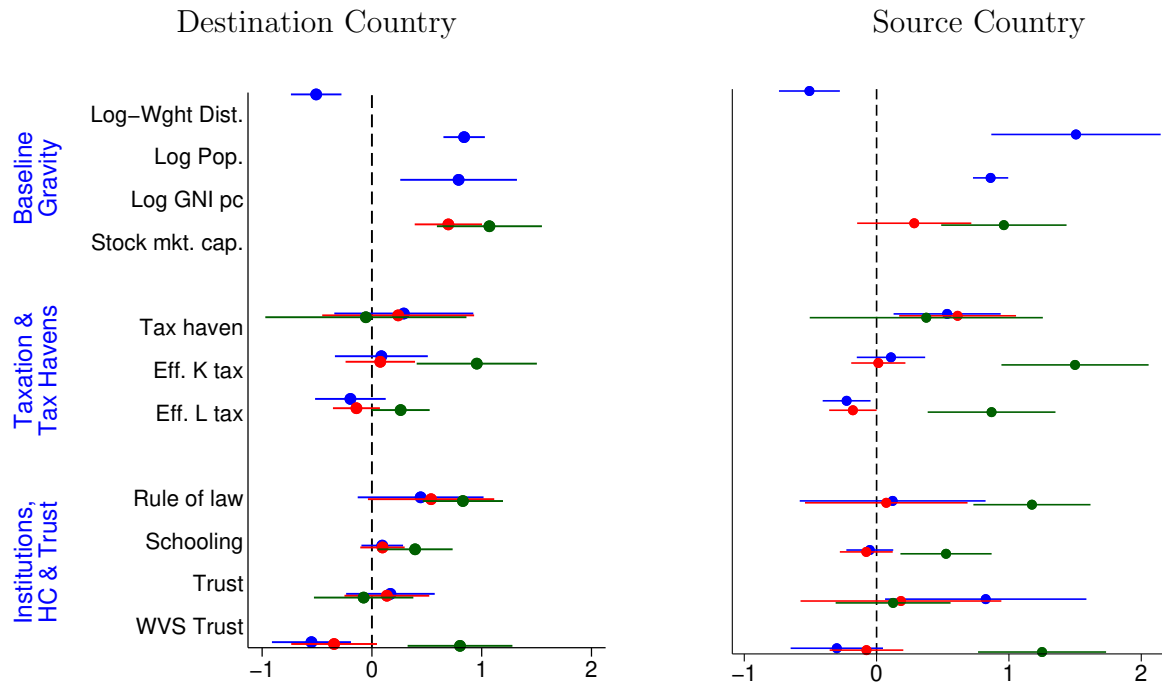
The human capital and the social capital proxies, education and trust, do not correlate with cross-border control and ownership. In contrast, sound institutions at destination appear to attract foreign controlling investment (column (5)), a pattern that retains significance even conditional on taxation, as shown on the main paper results.

**Figure B.1:** Cross-Sectional Gravity Specification PPML Estimates: Corporate Control in 2012



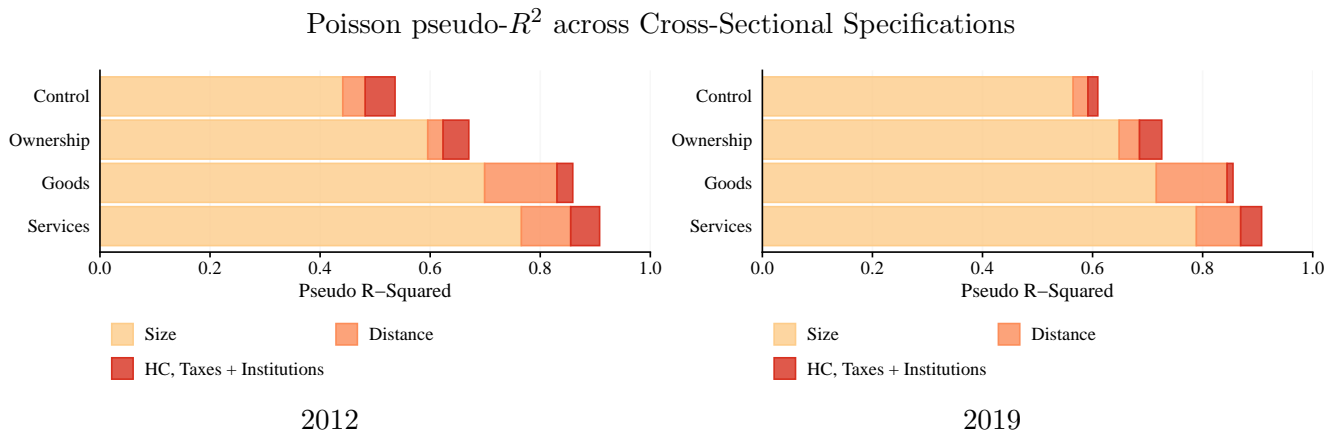
The coefficient plots report Poisson Pseudo Maximum Likelihood (PPML) estimates from the specification on Table B.8, but looking at the 2012 sample. The dependent variable denotes the share of controlled listed firms' market capitalization in destination by shareholder entities in source country. The explanatory variables are the logarithm of population-weighted distance between origin and destination, the logarithm of Gross National Income (GNI) per capita, the logarithm of population at source and destination, stock market capitalization (as % of GDP) the mean years of schooling at source and destination, the level of the rule of law World Bank indicator, dummies whether the source or destination country is a tax haven, the level of the effective tax rates on capital and labor at source and destination countries. Coefficients from the specification including all reported variables are denoted in *blue*. Coefficients from the specification including only the relevant variable (on top of the distance, national population and national GNI per capita variables) are reported in *red*. Coefficients from the specification including only the relevant variable are reported in *green*.

**Figure B.2:** Cross-Sectional Gravity Specification PPML Estimates: Corporate Control in 2019



The coefficient plots report Poisson Pseudo Maximum Likelihood (PPML) estimates from the specification on Table B.8, but looking at the 2019 sample. The dependent variable denotes the share of controlled listed firms' market capitalization in destination by shareholder entities in source country. The explanatory variables are the logarithm of population-weighted distance between origin and destination, the logarithm of Gross National Income (GNI) per capita, the logarithm of population at source and destination, stock market capitalization (as % of GDP), the mean years of schooling at source and destination, the level of the rule of law World Bank indicator, dummies whether the source or destination country is a tax haven, the level of the effective tax rates on capital and labor at source and destination countries. Coefficients from the specification including all reported variables are denoted in *blue*. Coefficients from the specification including only the relevant variable (on top of the distance, national population and national GNI per capita variables) are reported in *red*. Coefficients from the specification including only the relevant variable are reported in *green*.

**Figure B.3:** Corporate Control, Augmented Gravity, and Country Features



The Figure plots the cumulative pseudo- $R^2$  (McFadden's) in Poisson Pseudo Maximum Likelihood (PPML) specifications in the 2012 sample on the left-hand-side and the 2019 sample on the right-hand-side. The dependent variable in the three specifications in bar (1) is the market capitalization of controlled firms in destination country from shareholding entities in source. The dependent variable in bar (2) is the market value of all ownership links from shareholding entities in source country in listed companies in destination country. The dependent variable in columns (3) and (4) is the level of exports and imports (in USD million) from source to destination in goods and services, respectively. Each bar gives the  $R^2$  for three specifications: A cross-sectional specification with the log of Gross National Income (GNI) per capita and log population at source and destination (*beige*). (b) A cross-sectional specification with the log of population-weighted distance between origin and destination, the log of Gross National Income (GNI) per capita and the log of population at source and destination (*coral*). (c) A cross-sectional specification that add indicators for tax haven status, measures of statutory corporate income tax rate, and rule of law proxies, at source and destination country (*red*).

**Table B.7:** Cross-Sectional Gravity Specifications  
Taxation (2012 and 2019 pooled sample)

	Control	Ownership	Trade		Control	Ownership	Trade		Control	Ownership	Trade	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	For. Ctrl.	All	Goods	Services	For. Ctrl.	All	Goods	Services	For. Ctrl.	All	Goods	Services
Log Pop-Wght dist.	-0.490*** (0.106)	-0.481*** (0.074)	-0.846*** (0.065)	-0.587*** (0.054)	-0.595*** (0.111)	-0.601*** (0.092)	-0.913*** (0.066)	-0.695*** (0.045)	-0.546*** (0.104)	-0.509*** (0.081)	-0.882*** (0.070)	-0.615*** (0.045)
D. Log GNI per cap.	0.886*** (0.140)	1.027*** (0.167)	0.840*** (0.070)	0.985*** (0.037)	0.968*** (0.153)	1.043*** (0.144)	0.907*** (0.092)	1.091*** (0.057)	0.956*** (0.155)	1.011*** (0.137)	0.890*** (0.092)	1.047*** (0.047)
D. Log Pop.	0.773*** (0.095)	0.855*** (0.087)	0.913*** (0.040)	0.762*** (0.022)	0.726*** (0.101)	0.781*** (0.075)	0.882*** (0.049)	0.700*** (0.040)	0.745*** (0.104)	0.826*** (0.088)	0.909*** (0.046)	0.759*** (0.022)
S. Log GNI per cap.	1.343*** (0.149)	1.829*** (0.201)	0.794*** (0.049)	1.031*** (0.094)	1.410*** (0.148)	1.966*** (0.205)	0.918*** (0.055)	1.091*** (0.119)	1.366*** (0.155)	1.847*** (0.205)	0.906*** (0.058)	1.037*** (0.116)
S. Log Pop.	0.838*** (0.055)	0.828*** (0.105)	0.863*** (0.042)	0.765*** (0.059)	0.755*** (0.055)	0.713*** (0.117)	0.847*** (0.039)	0.703*** (0.066)	0.820*** (0.055)	0.824*** (0.108)	0.863*** (0.043)	0.764*** (0.063)
S. is tax haven	0.766*** (0.268)	1.007*** (0.300)	0.305** (0.147)	0.735*** (0.215)					0.702** (0.273)	0.983*** (0.302)	0.266* (0.151)	0.724*** (0.205)
D. is tax haven	0.405 (0.278)	0.706*** (0.266)	0.418** (0.202)	0.763*** (0.220)					0.302 (0.241)	0.636*** (0.243)	0.393** (0.191)	0.727*** (0.212)
D. Eff. tax rate on K					0.305** (0.145)	0.344** (0.135)	0.024 (0.103)	0.104 (0.077)	0.284** (0.142)	0.294** (0.125)	-0.003 (0.096)	0.052 (0.072)
S. Eff. tax rate on K					0.271* (0.143)	0.134 (0.137)	0.012 (0.060)	0.058 (0.114)	0.230 (0.141)	0.091 (0.141)	-0.003 (0.061)	0.008 (0.103)
D. Eff. tax rate on L					-0.327** (0.151)	-0.205 (0.135)	-0.095 (0.133)	-0.207* (0.106)	-0.310** (0.150)	-0.147 (0.123)	-0.069 (0.127)	-0.163* (0.086)
S. Eff. tax rate on L					-0.222** (0.105)	-0.176 (0.143)	-0.214*** (0.078)	-0.065 (0.123)	-0.192 (0.117)	-0.150 (0.139)	-0.201** (0.082)	-0.010 (0.110)
Observations	15478	15478	15478	15478	15478	15478	15478	15478	15478	15478	15478	15478
Obs. total	15478	15478	15478	15478	15478	15478	15478	15478	15478	15478	15478	15478
Pseudo- $R^2$	0.539	0.661	0.861	0.871	0.539	0.646	0.862	0.851	0.546	0.664	0.865	0.873
Deviance- $R^2$	0.539	0.661	0.861	0.873	0.540	0.646	0.862	0.853	0.546	0.664	0.865	0.875
Fixed Effects	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year

Notes: The table reports Poisson Pseudo Maximum Likelihood (PPML) estimates. The outcomes are various forms of international integration across pairs of countries in the pooled sample for 2012 and 2019 based on various specifications. In columns (1), (5), and (9), the dependent variable denotes the share of controlled listed firms' market capitalization in destination by shareholder entities in source country. In (2), (6), and (10), the dependent variable is the market value of ownership (voting rights) from shareholding entities in destination country in both widely-held and controlled firms, irrespective on whether the shareholder controls the company. In (3), (7), and (11), the dependent variable denotes international goods exports and imports from source to destination, while in columns (4), (8), and (12) the dependent variable denotes international services trade between origin and destination. The explanatory variables are the log of population-weighted distance between origin and destination, the log of Gross National Income (GNI) per capita, the log of population at source and destination and, depending on each column, dummies whether the source or destination country is a tax haven, and the level of the effective tax rates on capital and labor at source and destination countries. Double-clustered at source and destination country standard errors are reported below the estimates. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% confidence level, respectively.

**Table B.8:** Cross-Sectional Gravity Specifications  
Human Capital, Institutions and Trust (2012 and 2019 pooled sample)

	Control	Ownership	Trade		Control	Ownership	Trade		Control	Ownership	Trade	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	For. Ctrl.	All	Goods	Services	For. Ctrl.	All	Goods	Services	For. Ctrl.	All	Goods	Services
Log Pop-Wght dist.	-0.539*** (0.112)	-0.568*** (0.090)	-0.878*** (0.062)	-0.659*** (0.051)	-0.511*** (0.117)	-0.523*** (0.094)	-0.881*** (0.060)	-0.633*** (0.056)	-0.542*** (0.120)	-0.538*** (0.073)	-0.822*** (0.070)	-0.636*** (0.053)
D. Log GNI per cap.	0.752*** (0.151)	0.902*** (0.206)	0.780*** (0.076)	0.996*** (0.062)	0.516*** (0.147)	0.629** (0.264)	0.791*** (0.100)	0.854*** (0.089)	0.989*** (0.167)	1.102*** (0.204)	0.830*** (0.081)	0.988*** (0.044)
D. Log Pop.	0.754*** (0.086)	0.809*** (0.070)	0.892*** (0.043)	0.703*** (0.042)	0.774*** (0.086)	0.829*** (0.064)	0.894*** (0.044)	0.710*** (0.044)	0.778*** (0.083)	0.800*** (0.063)	0.865*** (0.059)	0.732*** (0.042)
S. Log GNI per cap.	1.566*** (0.216)	1.850*** (0.264)	0.818*** (0.086)	0.969*** (0.085)	1.120*** (0.265)	1.381*** (0.351)	0.930*** (0.095)	0.713*** (0.109)	1.550*** (0.182)	2.299*** (0.202)	0.731*** (0.055)	1.091*** (0.113)
S. Log Pop.	0.784*** (0.058)	0.701*** (0.117)	0.846*** (0.039)	0.707*** (0.057)	0.780*** (0.058)	0.736*** (0.127)	0.837*** (0.036)	0.727*** (0.061)	0.757*** (0.070)	0.786*** (0.099)	0.792*** (0.040)	0.764*** (0.065)
D. Mean Yrs of School.	0.086 (0.082)	0.083 (0.078)	0.041 (0.036)	0.022 (0.024)								
S. Mean Yrs of School.	-0.089 (0.090)	0.070 (0.096)	-0.006 (0.038)	0.064 (0.043)								
D. Rule of law					0.528** (0.232)	0.550 (0.377)	0.083 (0.106)	0.225** (0.097)				
S. Rule of law					0.335 (0.299)	0.705** (0.340)	-0.171* (0.099)	0.477*** (0.110)				
WVS Trust									-0.184 (0.207)	-0.130 (0.197)	0.072 (0.096)	0.103 (0.064)
WVS Trust									-0.231 (0.210)	-0.554 (0.358)	0.221** (0.096)	-0.050 (0.119)
Observations	15478	15478	15478	15478	15478	15478	15478	15478	8640	8640	8640	8640
Obs. total	15478	15478	15478	15478	15478	15478	15478	15478	8640	8640	8640	8640
Pseudo- $R^2$	0.533	0.642	0.857	0.848	0.538	0.652	0.858	0.856	0.535	0.660	0.840	0.863
Deviance- $R^2$	0.533	0.642	0.857	0.850	0.538	0.652	0.858	0.857	0.527	0.588	0.802	0.715
Fixed Effects	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year

Notes: The table reports Poisson Pseudo Maximum Likelihood (PPML) estimates. The outcomes are various forms of international integration across pairs of countries in the pooled sample for 2012 and 2019 based on various specifications. In columns (1), (5), and (9), the dependent variable denotes the share of controlled listed firms' market capitalization in destination by shareholder entities in source country. In (2), (6), and (10), the dependent variable is the market value of ownership (voting rights) from shareholding entities in destination country in both widely-held and controlled firms, irrespective on whether the shareholder controls the company. In (3), (7), and (11), the dependent variable denotes international goods exports and imports from source to destination, while in columns (4), (8), and (12) the dependent variable denotes international services trade between origin and destination. The explanatory variables are the log of population-weighted distance between origin and destination, the log of Gross National Income (GNI) per capita and the log of population at source and destination and, depending on each column, mean years of schooling at source and destination countries, World Bank governance indicators on the rule of law for the source and destination country, and self-reported trust measures from World Values Survey at source and destination countries. Double-clustered at source and destination country standard errors are reported below the estimates. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% confidence level, respectively.

## C Bilateral Features

This section complements Section 4.4, where we examine the role of bilateral features on the globalization of corporate control. We do so estimating gravity specifications with source country fixed effects and destination country fixed effects (both interacted with a year indicator in the specifications pooling 2012 and 2019). Building on Coeurdacier and Rey (2013), we distinguish between three broad categories of bilateral features, besides geodesic distance (see also Pellegrino et al. (2021)). (i) Diversification-related motives, related to economic similarities between the two countries in industrial production and business cycle movement. (ii) Costs in international market for corporate control, stemming from differences in taxation, incomplete convergence of regulation, and differences in the legal system and tradition. (iii) Informational frictions and behavioral biases related to historical, linguistic, religious, and cultural differences between origin and destination.

### C.1 Summary Statistics and Correlation Structure

Appendix Table C.9 reports summary statistics for the bilateral variables, we consider in the analysis log population-weighted geodesic distance, standardized geodesic distance, standardized linguistic distance, standardized religious distance, standardized genetic distance, and standardized cultural distance.

Appendix Table C.10 reports the pairwise correlations of the country-pair features, related to international economic policy coordination (Panel A) and historical, linguistic, and cultural distances between source and destination (Panel B).

**Table C.9:** Summary statistics: Bilateral variables

	Mean	50 <sup>th</sup> perc.	St. Dev.	Min	50 <sup>th</sup> perc.	90 <sup>th</sup> perc.	Max
Log Pop-Wght dist.	8.63	8.87	0.84	4.20	7.40	9.52	9.89
Std. Geodesic. dist.	0.37	0.36	0.23	0.00	0.08	0.69	1.00
FTA	0.21	0.00	0.41	0.00	0.00	1.00	1.00
Econ. int. agreem.	0.10	0.00	0.30	0.00	0.00	0.00	1.00
FTA	0.21	0.00	0.41	0.00	0.00	1.00	1.00
Common law	0.31	0.00	0.46	0.00	0.00	1.00	1.00
Both EU	0.06	0.00	0.23	0.00	0.00	0.00	1.00
Both Euro Area	0.03	0.00	0.16	0.00	0.00	0.00	1.00
Colonial ties	0.09	0.00	0.29	0.00	0.00	0.00	1.00
Linguistic. Dist.	1.35	1.50	0.69	0.00	0.00	2.00	2.00
Religious. Dist.	0.98	1.00	0.74	0.00	0.00	2.00	2.00
Genetic. dist.	1.69	1.63	0.68	0.00	0.85	2.62	4.00
Cultural dist.	0.85	0.81	0.34	0.00	0.42	1.31	2.00
Observations	25920						

The table reports summary statistics for the bilateral variables in the sample of Table 2, namely 25,920. The observations for cultural distance are 6,996. All distance terms are standardized.



**Table C.10:** Panel C. Bilateral Features

	Log Pop-W. dist.	FTA	Econ.int.agreem.	Common law	Both EU	Both EA
Log Pop-W. dist.	1					
FTA	-0.187***	1	0.632***			
Econ.int.agreem.	-0.0856***	0.632***	1			
Common law	0.0235***	-0.0291***	-0.0440***	1		
Both EU	-0.440***	-0.125***	-0.0802***	-0.0782***	1	
Both EA	-0.281***	-0.0842***	-0.0542***	-0.00342	0.600***	1
Observations	25920					
	Std. Geodesic. dist.	Linguistic. Dist.	Religious. Dist.	Genetic. dist.	Cultural dist.	
Geodesic. dist.	1					
Linguistic. Dist.	0.0566***	1				
Religious. Dist.	0.0674***	0.343***	1			
Genetic. dist.	0.541***	0.0667***	0.0619***	1		
Cultural dist.	0.124***	0.344***	0.398***	0.258***	1	
Observations	25920					

Notes: The table reports the correlations between the variables proxying frictions in the cross-border market for corporate control (Panel A) and informational frictions (Panel B).

## C.2 Diversification

Table C.11 reports gravity equation regression estimates with source and destination country fixed-effects, interacted with a year constant, exploring the role of international diversification on cross-border corporate control and ownership and, for comparability, international trade in goods and services, conditional on (log) geodesic distance. The explanatory variables are:

- An index of dissimilarities in industrial production. The index is the sum of the differences in the share of sectoral value added to the total value added between the source and destination in all industrial sectors (Imbs, 2006). The data are sourced from UNIDO INDSTAT2 Industrial Statistics Database, which includes time series of the manufacturing sector at the 2-digit level of ISIC. The granular industrial detail needed for the construction of this index is not available for the entire universe of our country pairs.
- A proxy of the synchronization of output growth using a window of annualized GDP growth correlation during the last twenty years of our sample (2000-2019) across each source and destination country pair.
- A measure of equity returns correlations, using S&P Global Equity Indices, which cover approximately 11,000 securities from over 80 countries. It includes the S&P Global Broad Market Index (BMI), S&P Global 1200, S&P/IFCI, and S&P Frontier BMI. All indices are float-adjusted, market capitalization-weighted indices expressed as % of GDP in US Dollars. For the specifications using this measure, the sample is significantly reduced as this index does not cover the entire universe of our countries.

## C.3 Asset Trade Frictions. International Policy Coordination and Legal System Similarities

Appendix Table C.12 reports source and destination country fixed-effects gravity specifications that associate cross-border corporate control, ownership, and for comparison international goods and service trade with proxies of frictions in corporate control markets, conditional on (log) distance. The explanatory variables that capture legal system similarities and international economic policy coordination are:

- An indicator on common legal systems, taking the value of one when a pair of source country and destination country share legal origins, sourced from La Porta et al. (2008).
- An indicator on customs unions, taking the value of one when the source and destination countries have entered a customs union, sourced from Version 2.1 of the Dynamic Gravity Dataset (DGD) made available on the US International Trade Commission (USITC) website.

- An indicator on free trade agreements, taking the value of one when the source and destination countries have signed a free trade agreement, sourced from Version 2.1 of the Dynamic Gravity Dataset (DGD) made available on the US International Trade Commission (USITC) website.
- An indicator on economic integration agreements, taking the value of one when the source and destination countries have signed any form of such an agreement, sourced from Version 2.1 of the Dynamic Gravity Dataset (DGD) made available on the US International Trade Commission (USITC) website.
- An indicator on mutual EU membership, taking the value of one when both source and destination countries are members of the European Union.
- An indicator on mutual Euro Area membership, taking the value of one when both source and destination countries are members of the Euro Area.

#### C.4 Informational Frictions and Behavioral/Cultural Barriers

Appendix Table C.13 examines the role of informational frictions and deeper bilateral flows in cross-border corporate control and ownership, conditional on distance. We augment the baseline fixed effects gravity specification with the following variables:

- An indicator on colonial ties, taking the value of one if the source country and destination country (i) are engaged in a colonial relationship currently, or (ii) have been in a colonial relationship post-1945, sourced from the CEPII Gravity Database (Conte et al., 2021).
- A (standardized) measure of linguistic distance, which quantifies the difference between the dominant languages of each source and destination country pair on a five-point scale, source from *The Research page for Douglas Dow: Distance and Diversity Scales for International Business Research* (Dow (2015)), which provides wider coverage of the linguistic distance sourced from (Spolaore and Wacziarg, 2018), for our given sample. The measure refers to the latest 2015 estimates.
- A (standardized) measure of religious distance, which quantifies the difference between the dominant religions of each source and destination country pair on a five-point scale, source from *The Research page for Douglas Dow: Distance and Diversity Scales for International Business Research* (Dow (2015)). Similarly to linguistic distance, this source provides better coverage than alternatives. The measure refers to the latest 2015 estimates.

- A (standardized) measure of weighted genetic distance reflecting the allele frequency differences for about 120 gene loci, sourced from (Spolaore and Wacziarg, 2018). The heterozygosity index (FST) measures the probability that two genes at a given locus, selected randomly from the populations of source and destination, will be different. We employ the (weighted) FST measure based on heterozygosity indices.
- Last, a (standardized) measure of cultural distance, sourced from Spolaore and Wacziarg (2016), who use answers to the World Values Survey to construct broader metrics of distance in values, norms and attitudes. Differences across populations in the answer shares to a specific question were used to calculate the cultural distance between source and destination countries on that specific question, the aggregation of which gives the cultural distance index employed here. As discussed on Spolaore and Wacziarg (2016), data availability is patchy, due to the low number of country pairs for which a representative set of questions is available from the World Values Survey.

## C.5 All Bilateral Features

Figures C.4, C.5, and C.6 complement the results reported in Figure 11. All figures give PPML estimates looking at cross border ownership (Figure C.4) and corporate control (Figures C.5-C.6), examining the role of geodesic distance, proxies of international diversification, corporate control market frictions (weak economic policy coordination and legal system dissimilarities), and information frictions related to deep cultural and historical differences. For all variables, reported on the right of the vertical axis, each figure reports coefficients and two standard error bands, across three specifications: (i) With only the source country and the destination country constants (in *green*); (ii) Only controlling on log distance, besides the destination country and the source country constants (in *red*); and (iii) Including all variables of the three categories in the specification (in *blue*).

Two results. First, we obtain similar patterns to the ones reported in the main paper from the pooled specification when we look separately at the drivers of cross-border corporate control in 2012 and in 2019. For example legal system similarities, having an economic policy agreement, being members of the euro, and being linguistically and culturally close go together with cross-border control. Second, the patterns with ownership are similar to control but less clear.

**Table C.11:** Source and Destination Country Fixed-Effects Gravity Specifications  
Panel A: International Diversification

	2012				2019				Pooled			
	Control	Ownership	Trade		Control	Ownership	Trade		Control	Ownership	Trade	
	(1) For. Ctrl.	(2) All	(3) Goods	(4) Services	(5) For. Ctrl.	(6) All	(7) Goods	(8) Services	(9) For. Ctrl.	(10) All	(11) Goods	(12) Services
Log Pop-Wght dist.	-1.028*** (0.212)	-0.699*** (0.188)	-0.961*** (0.070)	-0.811*** (0.053)	-0.715*** (0.169)	-0.714*** (0.180)	-0.914*** (0.067)	-0.774*** (0.057)	-0.844*** (0.180)	-0.709*** (0.181)	-0.937*** (0.068)	-0.789*** (0.055)
Ind. Dissimilarity	0.076 (0.244)	0.046 (0.144)	0.050 (0.093)	-0.002 (0.033)	0.055 (0.180)	0.176 (0.120)	0.056 (0.067)	-0.019 (0.029)	0.073 (0.193)	0.118 (0.120)	0.053 (0.078)	-0.012 (0.029)
Growth corr.	-0.749 (0.565)	-0.133 (0.571)	0.176 (0.254)	0.215 (0.159)	1.261** (0.528)	0.808 (0.721)	0.431 (0.283)	0.247 (0.171)	0.429 (0.525)	0.422 (0.623)	0.309 (0.268)	0.234 (0.164)
Return corr.	2.944*** (1.047)	2.644*** (0.868)	0.078 (0.258)	0.578** (0.225)	2.684*** (0.948)	3.468*** (1.073)	0.366 (0.248)	0.430* (0.235)	2.862*** (0.936)	3.072*** (0.911)	0.216 (0.247)	0.488** (0.228)
Observations	3600	4032	4222	4222	3597	4158	4222	4222	7197	8190	8444	8444
Obs. total	4222	4222	4222	4222	4222	4222	4222	4222	8444	8444	8444	8444
Pseudo- $R^2$	0.709	0.787	0.908	0.933	0.732	0.818	0.923	0.931	0.719	0.804	0.915	0.932
Fixed Effects	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y

Panel B: International Diversification

	2012				2019				Pooled			
	Control	Ownership	Trade		Control	Ownership	Trade		Control	Ownership	Trade	
	(1) For. Ctrl.	(2) All	(3) Goods	(4) Services	(5) For. Ctrl.	(6) All	(7) Goods	(8) Services	(9) For. Ctrl.	(10) All	(11) Goods	(12) Services
Log Pop-Wght dist.	-0.945*** (0.225)	-0.603*** (0.177)	-0.963*** (0.069)	-0.805*** (0.053)	-0.681*** (0.175)	-0.651*** (0.175)	-0.920*** (0.067)	-0.754*** (0.060)	-0.788*** (0.185)	-0.631*** (0.173)	-0.941*** (0.068)	-0.775*** (0.056)
Ind. Dissimilarity	-0.122 (0.213)	-0.136 (0.100)	0.047 (0.088)	-0.022 (0.037)	-0.088 (0.151)	-0.007 (0.050)	0.038 (0.067)	-0.049 (0.033)	-0.091 (0.170)	-0.061 (0.065)	0.042 (0.076)	-0.038 (0.033)
Growth corr.	-0.132 (0.744)	0.568 (0.588)	0.193 (0.211)	0.440** (0.185)	1.995*** (0.765)	1.775*** (0.644)	0.517** (0.250)	0.497** (0.209)	1.121 (0.750)	1.272** (0.605)	0.361 (0.230)	0.471** (0.197)
Observations	4426	5313	6001	6070	4697	5794	6001	6070	9123	11107	12002	12140
Obs. total	6070	6070	6070	6070	6070	6070	6070	6070	12140	12140	12140	12140
Pseudo- $R^2$	0.689	0.778	0.916	0.932	0.734	0.813	0.929	0.926	0.711	0.797	0.922	0.929
Fixed Effects	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y

Notes: Both panels on the table report Poisson Pseudo Maximum Likelihood (PPML) estimates. The outcomes are various forms of international integration across pairs of countries in the 2012 sample based on various specifications. In columns (1), (5), and (9), the dependent variable denotes the share of controlled listed firms' market capitalization in destination by shareholder entities in source country. In (2), (6), and (10), the dependent variable is the market value of ownership (voting rights) from shareholding entities in destination country in both widely-held and controlled firms, irrespective on whether the shareholder controls the company. In (3), (7), and (11), the dependent variable denotes international goods exports and imports from source to destination, while in columns (4), (8), and (12) the dependent variable denotes international services trade between origin and destination. The explanatory variables refer to the sum of absolute differences of the manufacturing sectors between destination and source country as a share of GVA (Imbs, 2006), the correlation of GDP growth, and, only on Panel B, of equity returns (S& Global Equity Returns) between source and destination country. Double-clustered at source and destination country standard errors are reported below the estimates. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% confidence level, respectively.

**Table C.12:** Source and Destination Country Fixed Effects Gravity Specifications

International Economic Policy Coordination & Legal Similarities

	Control	Ownership	Trade		Control	Ownership	Trade		Control	Ownership	Trade	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	For. Ctrl.	All	Goods	Services	For. Ctrl.	All	Goods	Services	For. Ctrl.	All	Goods	Services
Log Pop-Wght dist.	-0.679*** (0.104)	-0.583*** (0.122)	-0.921*** (0.063)	-0.743*** (0.042)	-0.821*** (0.138)	-0.721*** (0.131)	-0.879*** (0.078)	-0.775*** (0.044)	-0.710*** (0.134)	-0.695*** (0.126)	-0.829*** (0.076)	-0.723*** (0.037)
Customs union	0.618 (0.810)	0.677 (0.783)	-0.069 (0.233)	-0.006 (0.080)					0.508 (0.797)	0.437 (0.873)	0.079 (0.261)	0.043 (0.096)
Econ. int. agreem.	1.458** (0.615)	1.029*** (0.347)	0.362* (0.198)	0.236 (0.198)					1.520** (0.647)	1.238*** (0.393)	0.252 (0.171)	0.201 (0.183)
FTA	-0.306 (0.395)	-0.129 (0.081)	-0.158 (0.189)	0.109 (0.217)					-0.380 (0.438)	-0.370*** (0.139)	0.004 (0.157)	0.156 (0.196)
Common legal systems	0.881*** (0.253)	0.463** (0.227)	0.277*** (0.076)	0.265*** (0.052)					0.702*** (0.257)	0.365 (0.278)	0.285*** (0.074)	0.237*** (0.044)
Both EU					-0.733 (0.534)	-0.849** (0.424)	0.451* (0.254)	-0.166 (0.173)	-0.560 (0.437)	-0.864* (0.486)	0.571** (0.231)	-0.008 (0.132)
Both Euro Area					1.679*** (0.430)	0.813*** (0.192)	0.056 (0.226)	0.378*** (0.144)	1.085** (0.450)	0.465 (0.308)	-0.009 (0.197)	0.291** (0.122)
Observations	15344	22196	23712	24320	15344	22196	23712	24320	15344	22196	23712	24320
Obs. total	25920	25920	25920	25920	25920	25920	25920	25920	25920	25920	25920	25920
Pseudo- $R^2$	0.723	0.784	0.925	0.939	0.708	0.778	0.924	0.936	0.726	0.786	0.926	0.939
Deviance- $R^2$	0.755	0.792	0.927	0.942	0.741	0.786	0.926	0.940	0.757	0.794	0.929	0.943
Fixed Effects	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y

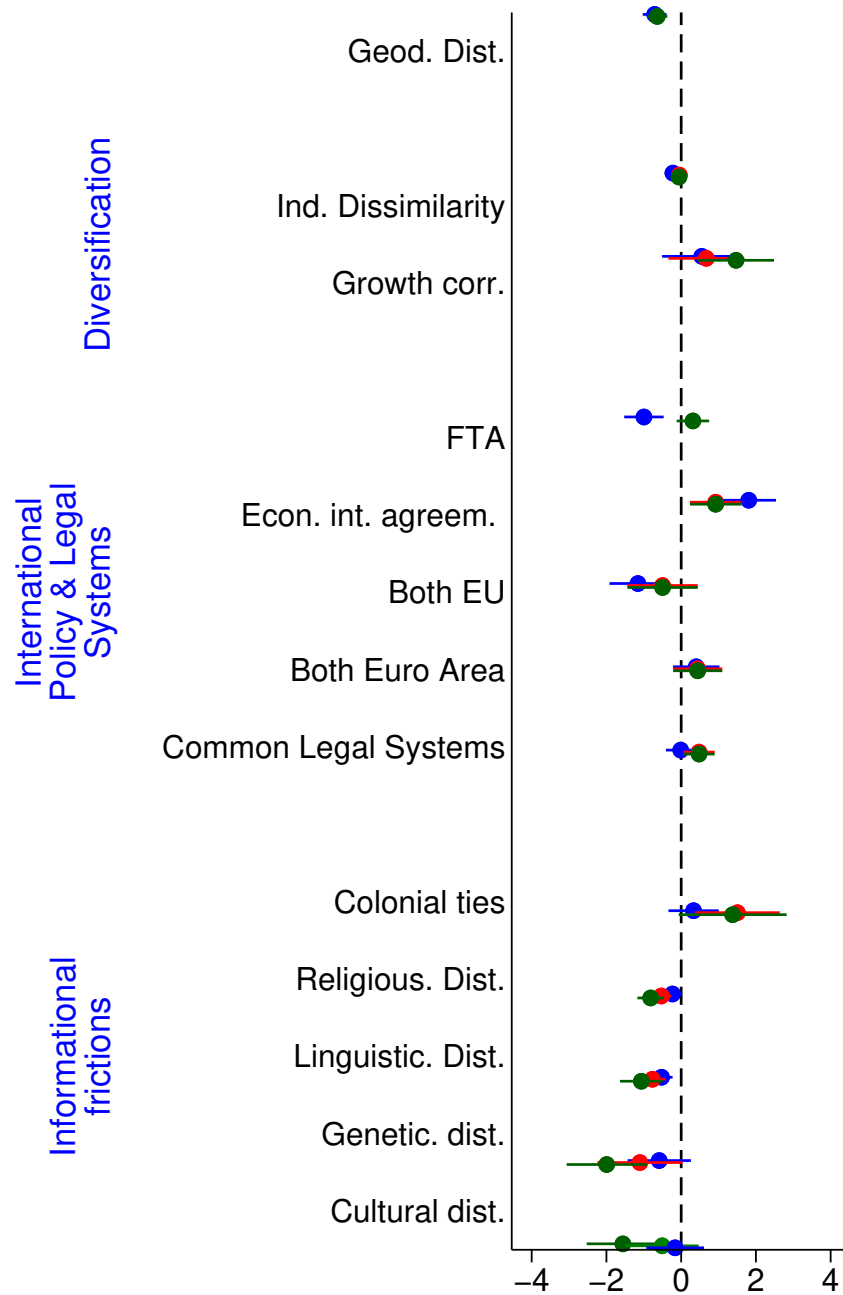
Notes: The table reports Poisson Pseudo Maximum Likelihood (PPML) estimates. The outcomes are various forms of international integration across pairs of countries in the pooled sample for 2012 and 2019 based on various specifications. In columns (1), (5), and (9), the dependent variable denotes the share of controlled listed firms' market capitalization in destination by shareholder entities in source country. In (2), (6), and (10), the dependent variable is the market value of ownership (voting rights) from shareholding entities in destination country in both widely-held and controlled firms, irrespective of whether the shareholder controls the company. In (3), (7), and (11), the dependent variable denotes international goods exports and imports from source to destination, while in columns (4), (8), and (12) the dependent variable denotes international services trade between origin and destination. The explanatory variables are the log of population-weighted distance between origin and destination, and dummies taking the value of one if the two countries are in a customs union, if they form part of an economic integration agreement or a free trade agreement, if they share the same legal systems, and if they are both members of the European Union and Euro Area. Double-clustered at source and destination country standard errors are reported below the estimates. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% confidence level, respectively.

**Table C.13:** Source and Destination Country Fixed Effects Gravity Specifications  
 Informational Frictions. Religious, Linguistic, Genetic Differences, and Historical Ties

	Control						Ownership					
	(1) For. Ctrl.	(2) For. Ctrl.	(3) For. Ctrl.	(4) For. Ctrl.	(5) For. Ctrl.	(6) For. Ctrl.	(7) All	(8) All	(9) All	(10) All	(11) All	(12) All
Log Pop-Wght dist.	-0.930*** (0.192)	-0.839*** (0.157)	-0.683*** (0.117)	-0.681*** (0.190)	-0.170 (0.197)	-0.594*** (0.178)	-0.736*** (0.192)	-0.639*** (0.170)	-0.595*** (0.142)	-0.524*** (0.166)	-0.616*** (0.160)	-0.429*** (0.134)
Colonial ties	0.516* (0.311)					0.298 (0.267)	0.478 (0.389)					0.275 (0.406)
Religious. Dist.		-0.733* (0.377)				-0.227 (0.333)		-1.062*** (0.270)				-0.660** (0.271)
Linguistic. Dist.			-1.828*** (0.312)			-1.671*** (0.267)			-1.534*** (0.357)			-1.256*** (0.265)
Genetic. dist.				-1.784* (1.080)		-0.639 (0.908)				-2.218* (1.167)		-1.352 (1.023)
Cultural dist.					-0.990 (1.204)						-1.013 (0.995)	
Observations	11262	11262	11262	11262	4858	11262	15902	15902	15902	15902	6414	15902
Obs. total	18300	18300	18300	18300	6572	18300	18300	18300	18300	18300	6572	18300
Num. countries (D/S)	75/123	75/123	75/123	75/123	75/123	75/123	75/123	75/123	75/123	75/123	75/123	75/123
Pseudo- $R^2$	0.701	0.704	0.726	0.704	0.628	0.727	0.802	0.808	0.816	0.807	0.771	0.822
Deviance- $R^2$	0.413	0.414	0.422	0.414	0.152	0.422	0.455	0.457	0.460	0.456	0.171	0.462
Fixed Effects	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y	S&D-Y

Notes: The table reports Poisson Pseudo Maximum Likelihood (PPML) estimates in the pooled across 2012 and 2019 sample. The outcomes are two forms of international integration across pairs of countries in the pooled sample across 2012 and 2019 based on various specifications. In columns (1)-(6), the dependent variable denotes the share of controlled listed firms' market capitalization in destination by shareholder entities in source country. In columns (7)-(12), the dependent variable is the market value of ownership (voting rights) from shareholding entities in destination country in both widely-held and controlled firms, irrespective on whether the shareholder controls the company. The explanatory variables in the various specification are the logarithm of population-weighted distance between origin and destination, a dummy whether source country and destination country have engaged in a colonial relationship, a measure of religious and linguistic distance, a (weighted) measure of genetic distance and last, a measure of cultural distance. All distances are standardized measures. Double-clustered at source and destination country standard errors are reported below the estimates. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% confidence level, respectively.

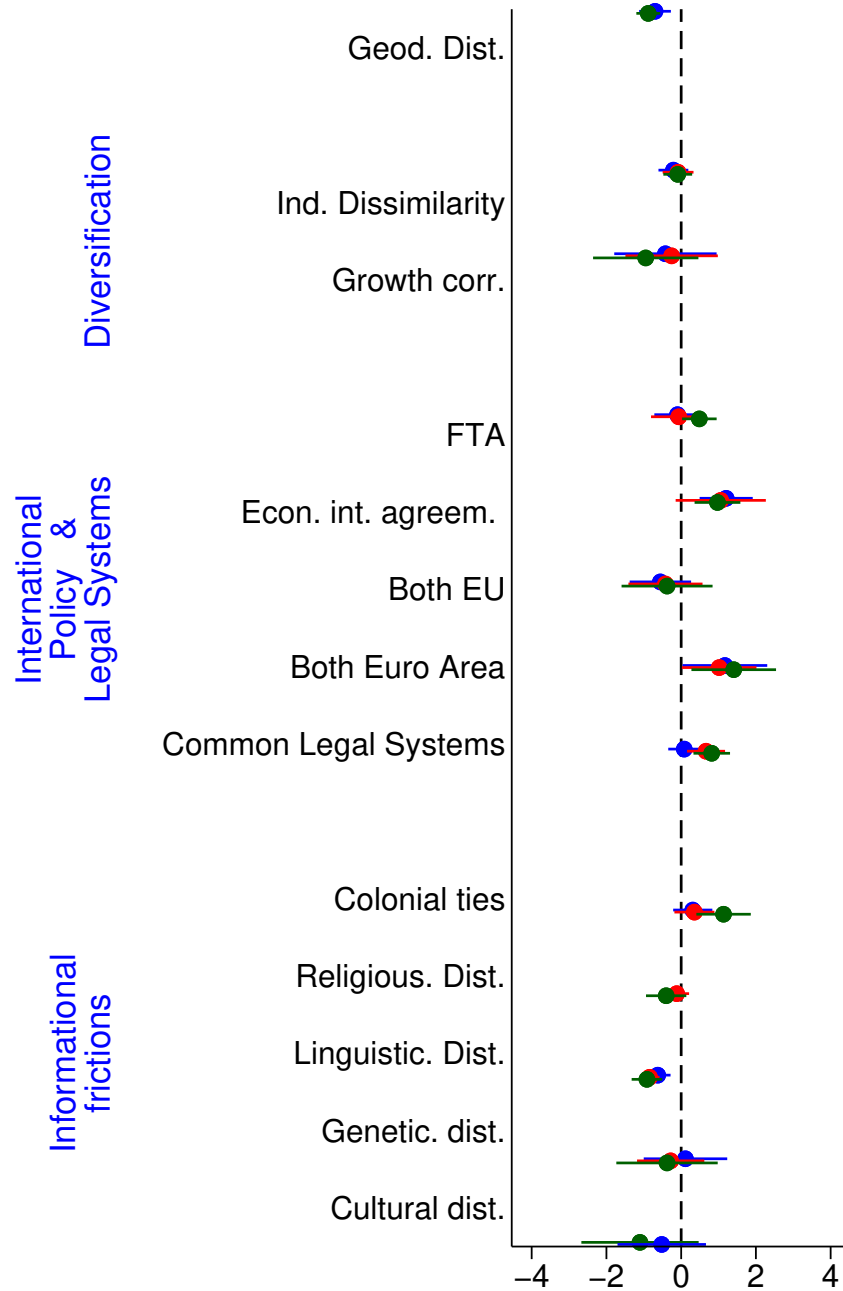
**Figure C.4:** Source and Destination Country FE Gravity: Corporate Ownership



The figure plots Poisson Pseudo Maximum Likelihood (PPML) estimates from the specification where the dependent variable denotes the market value of all ownership links from shareholding entities in the source country in listed companies in the destination country. The three reported specifications are: (i) Unconditional with only the source country and the destination country constants (in *green*); (ii) Simply conditioning on log geodesic distance (in *red*); and (iii) Entering all variables of the three categories in the RHS (in *blue*).

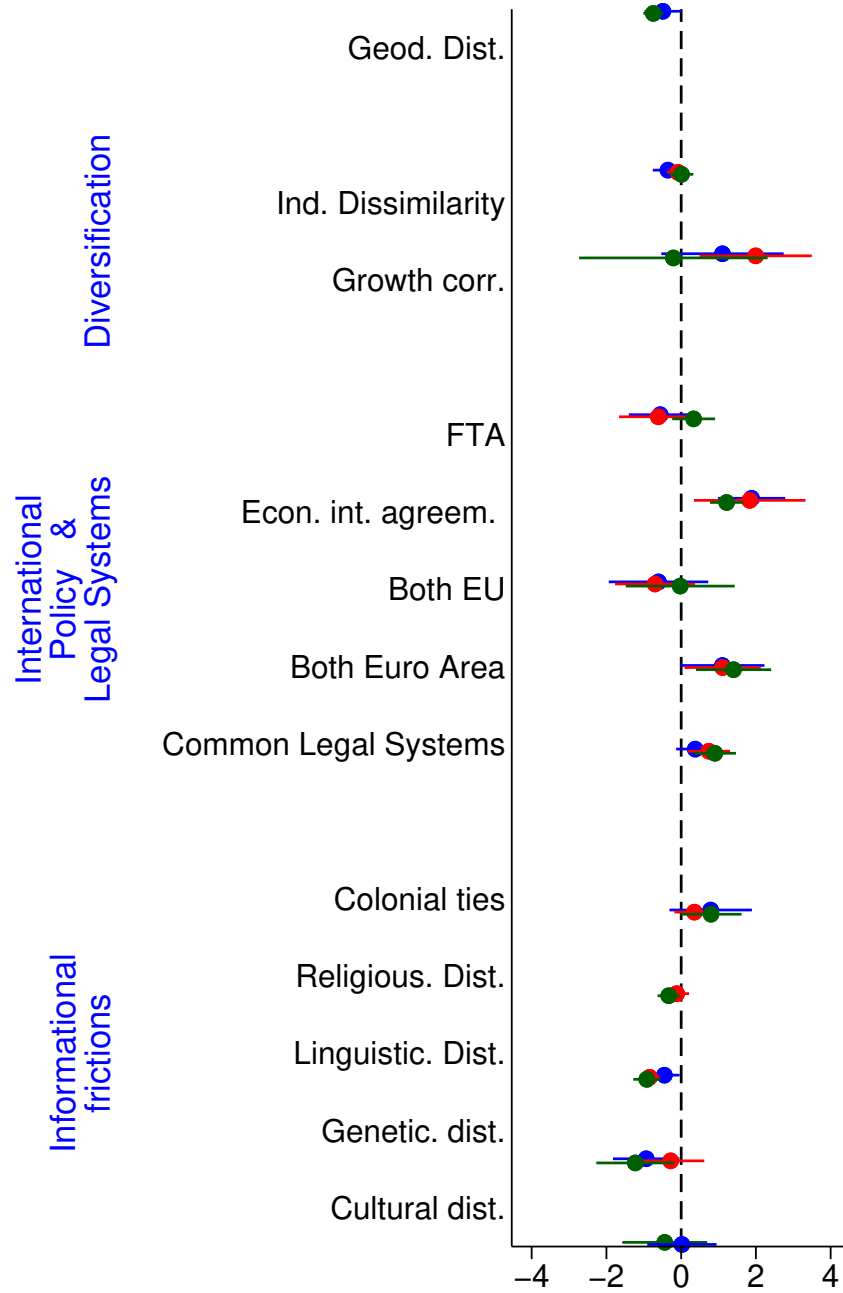


**Figure C.5:** Source and Destination Country FE Gravity: Corporate Control in 2012



The figure plots Poisson Pseudo Maximum Likelihood (PPML) estimates from the specification where the dependent variable denotes the market value of all control links from shareholding entities in the source country in listed companies in the destination country. The three reported specifications are: (i) Unconditional with only the source country and the destination country constants (in *green*); (ii) Simply conditioning on log geodesic distance (in *red*); and (iii) Entering all variables of the last two categories in the RHS (in *blue*). For presentation reasons, the last four distance terms have been scaled by a factor of 2.

**Figure C.6:** Source and Destination Country FE Gravity: Corporate Control in 2019



The figure plots Poisson Pseudo Maximum Likelihood (PPML) estimates from the specification where the dependent variable denotes the market value of all ownership links from shareholding entities in the source country in listed companies in the destination country. The three reported specifications are: (i) Unconditional with only the source country and the destination country constants (in *green*); (ii) Simply conditioning on log geodesic distance (in *red*); and (iii) Entering all variables of the last two categories in the RHS (in *blue*). For presentation reasons, the last four distance terms have been scaled by a factor of 2.

## D Further Evidence

### D.1 Investor Type Heterogeneity

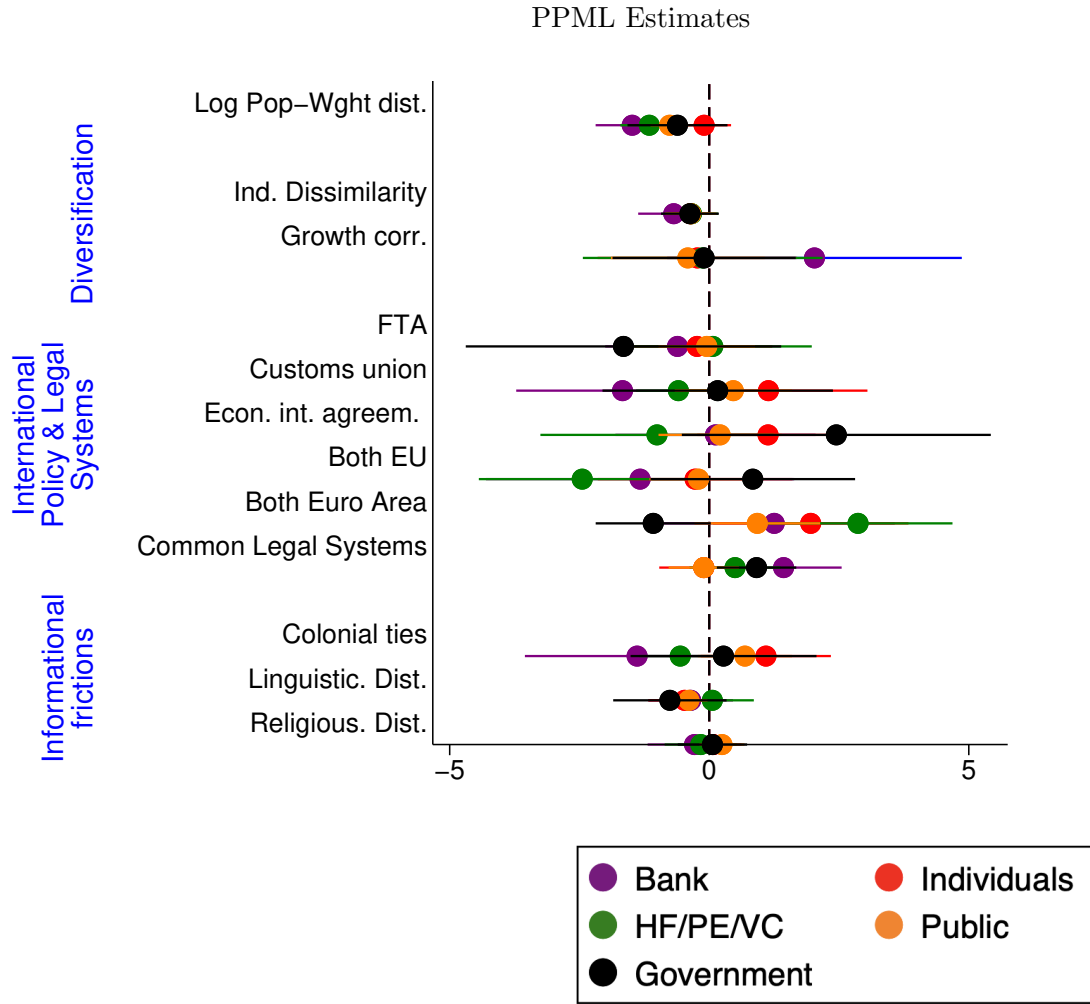
Below we report further evidence (to the one reported in Section 4.5), on heterogeneity across investor types. We examine the heterogeneous role of (i) geodesic distance, (ii) international diversification motives, related to similarities in production and business cycles, (iii) frictions in the market for corporate control, related to differences in legal systems and low levels of international economic policy cooperation, and (iv) proxies of informational asymmetries and behavioral biases related to historical ties, linguistic and religious distance, on cross-border corporate control.

We aggregate the 19 categories of investor types in ORBIS to five: (i) Individual/families; (ii) Banks; (iii) Non-bank financial institutions, Private Equity, Hedge Funds, and Venture Capital; (iv) Government and state agencies and state owned enterprise; (v) Publicly-listed companies and a residual.<sup>1</sup> As there are many zeros when we run the specifications separately for each type of investor, besides Poisson Pseudo Maximum Likelihood (PPML), we also estimate linear probability model (LPM) estimates that zoom at the extensive margin of controlling equity links. Appendix Figures D.7 and D.8 give PPML and LPM estimates of specifications with source and destination country fixed-effects interacted with a year indicator and log distance, in the pooled in 2012 and 2019 sample. The results, therefore, complement the evolution of the PPML pseudo  $R^2$  in Figure 12. The coefficient estimates on the various explanatory variables are quite uncertain, as the number of observations falls and the sparsity of the matrix of bilateral control-links increases.

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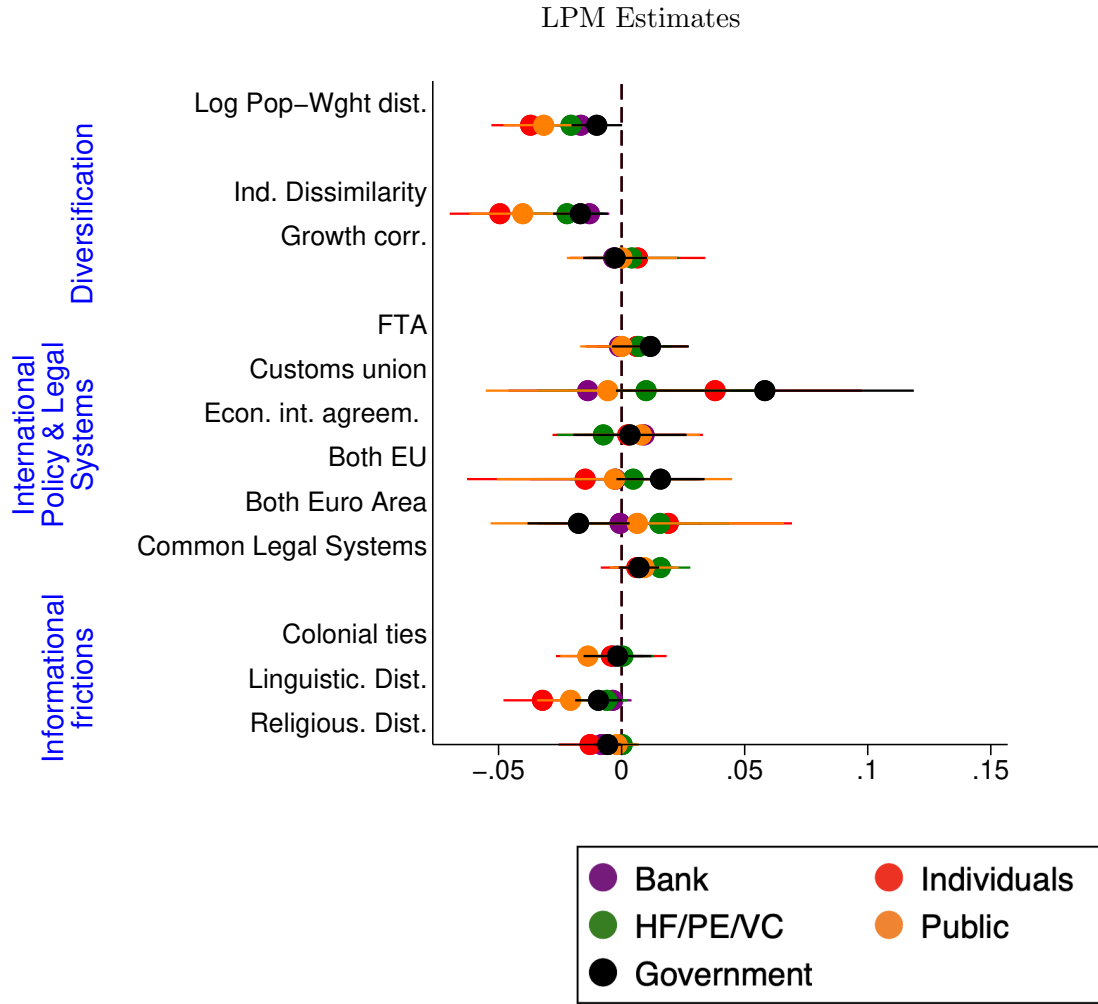
<sup>1</sup>The following list shows our aggregation and the original entity types: (i) *Bank*: Bank; (ii) *Non-bank Finance*: Financial company; Insurance company; Mutual & Pension Fund / Nominee / Trust / Trustee; Private equity firms; Venture capital; Hedge fund; (iii) *Industry*: Industrial companies, which mainly consists of private companies that BvD could not trace ultimate controller; (iv) *Public and Other*: Foundation / Research Institute; Public; Other unnamed shareholders, aggregated; Branch; Marine Vessels; (v) *Individuals / Families*: Individuals; Employees / Managers / Directors; Self-ownership; Unnamed private shareholders; (vi) *Government*: Public authorities, States, Governments.

**Figure D.7:** Bilateral Features and Cross-Border Corporate Control. Shareholder Heterogeneity



Notes: The figures plot coefficients from a Poisson Pseudo Maximum Likelihood (PPML) specification in the pooled across 2012 and 2019 sample. The dependent variable in the specifications is market capitalization of controlled firms in destination country from shareholding entities of the five types (banks, individuals/families, non-bank finance (HF, PE, VC), public companies, and government) in source country. The explanatory variables are the logarithm of population-weighted distance between origin and destination, a measure of industrial dissimilarity as on Imbs (2006) between source and destination countries, a measure of GDO growth correlation between source and destination countries, indicators taking the value of one if the two countries are in a customs union, if they form part of an economic integration agreement or a free trade agreement, if they are both members of the European Union and Euro Area; an indicator on common legal systems; an indicator whether source country and destination country have shared a common colonizer or engaged in a colonial relationship, a measure of religious and linguistic distance. Estimates on genetic distance as on 11 are not reported here due to the low number of observations for the category of Banks. Two categories are not reported here: Other, and Unclassified/Unknown.

**Figure D.8:** Bilateral Features and Cross-Border Corporate Control. Shareholder Heterogeneity



Notes: The figures plot coefficients from a Poisson Pseudo Maximum Likelihood (LPM) specification in the pooled across 2012 and 2019 sample. The dependent variable in the specifications is market capitalization of controlled firms in destination country from shareholding entities of the five types (banks, individuals/families, non-bank finance (HF, PE, VC), public companies, and government) in source country. The explanatory variables are the logarithm of population-weighted distance between origin and destination, a measure of industrial dissimilarity as on Imbs (2006) between source and destination countries, a measure of GDO growth correlation between source and destination countries, indicators taking the value of one if the two countries are in a customs union, if they form part of an economic integration agreement or a free trade agreement, if they are both members of the European Union and Euro Area; an indicator on common legal systems; an indicator whether source country and destination country have shared a common colonizer or engaged in a colonial relationship, a measure of religious and linguistic distance. Estimates on genetic distance as on Figure 11 of the main paper are not reported here due to the low number of observations for the category of Banks. Two categories are not reported here: Other, and Unclassified/Unknown.

## D.2 Heterogeneity w.r.t. Economic Development at Source

We repeated the cross-sectional (equation (1)) and the source and destination country fixed-effects (equation (2)) specifications separately for controlling shareholder entities from middle and low-income countries (84 countries) and from high-income countries (40 countries), as this may shed further light on the underlying motivations of investors and the mechanisms. We drop tax havens from both source and destination to avoid capturing their idiosyncratic role. So the sample includes 84 middle- and low-income countries, 40 high-income source countries, and 67 destinations.

**Cross-Sectional Gravity** Appendix Table D.14 reports the cross-sectional estimates exploring the heterogeneous role of size and distance for corporate ownership and control in high-income and in middle- and low-income countries. Size and distance are significant correlates of cross-border corporate control (columns (1)-(6)) and of ownership in widely-held and controlled firms (columns (7)-(12)), for both groups of countries. The coefficients are not statistically different from each other, as the standard error bands of the estimates in middle- and low-income countries are wide and standard confidence intervals include the estimate in high-income countries. The model fit in the control specifications, as captured by McFadden's pseudo- $R^2$ , is similar in the the two groups of countries. The only difference regards the model fit in the cross-border ownership specifications, which appears larger for high-income countries; in the pooled sample the pseudo- $R^2$  is 0.69 in the high-income group and 0.39 for middle and low-income countries. We also explored heterogeneity of the coefficients and the model fit, when we add schooling, trust, institutions, and effective tax rates at source and destination. We find no significant evidence of heterogeneity (in unreported results).

**Bilateral Features** We also explored heterogeneity of the country-pair features, capturing international diversification, economic policy coordination and legal tradition similarities, and cultural distance between high-income and emerging economies. Appendix Figure D.9 shows the PPML estimates for cross-border corporate control, conditioning on the log of geodesic distance, and source and destination country fixed-effects. First, distance is a significantly negative correlate of international equity investment for shareholders in high-income and middle- and low-income countries, though the magnitude is larger in absolute terms for the low-income group. Second, the significantly positive role of legal system similarities is strong for controlling shareholders from rich countries. Third, controlling links are lower for linguistically apart countries with the estimates similar for high and middle/low income countries. Fourth, cross-border corporate control from low-income source countries seems to be impacted more strongly from genetic dissimilarities, while high-income source countries are impacted more strongly from cultural dissimilarities.

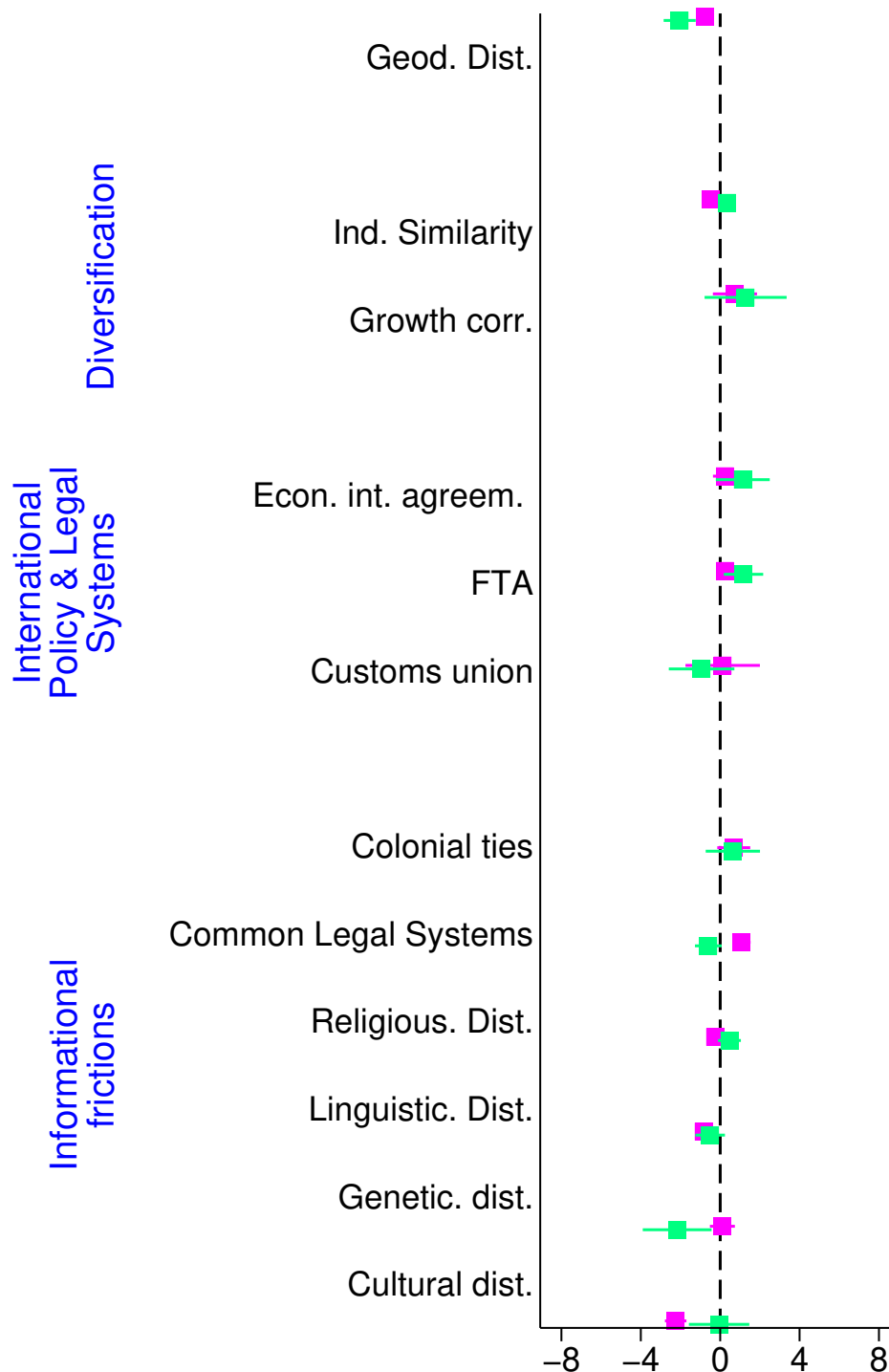
**Table D.14:** Cross Sectional Gravity Estimates. Size and Distance for High and Low Income Group Countries

	High Inc.	Low Inc.	High Inc.	Low Inc.	High Inc.	Low Inc.	High Inc.	Low Inc.	High Inc.	Low Inc.	High Inc.	Low Inc.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	For. Ctrl.	For. Ctrl.	For. Ctrl.	For. Ctrl.	For. Ctrl.	For. Ctrl.	All	All	All	All	All	All
Log Pop-Wght dist.	-0.575*** (0.172)	-1.726*** (0.503)	-0.571*** (0.135)	-0.896 (0.592)	-0.563*** (0.138)	-1.278** (0.556)	-0.523*** (0.079)	-0.691* (0.377)	-0.601*** (0.106)	-0.352 (0.303)	-0.562*** (0.073)	-0.508 (0.311)
D. Log GNI per cap.	0.656*** (0.110)	1.067*** (0.254)	1.406*** (0.237)	0.962*** (0.178)	1.019*** (0.176)	0.997*** (0.200)	1.125*** (0.162)	0.964*** (0.212)	1.268*** (0.211)	0.982*** (0.177)	1.196*** (0.174)	0.977*** (0.168)
S. Log GNI per cap.	1.181*** (0.321)	0.429 (0.514)	1.407*** (0.314)	1.316*** (0.354)	1.275*** (0.291)	0.841* (0.439)	1.769*** (0.383)	0.568 (0.460)	2.344*** (0.359)	1.560*** (0.225)	1.980*** (0.303)	0.994*** (0.386)
D. Log Pop.	0.726*** (0.097)	0.962*** (0.173)	0.896*** (0.120)	0.813*** (0.208)	0.823*** (0.121)	0.861*** (0.185)	0.926*** (0.100)	0.595*** (0.106)	0.910*** (0.104)	0.636*** (0.096)	0.914*** (0.100)	0.618*** (0.091)
S. Log Pop.	0.932*** (0.087)	0.738*** (0.113)	0.964*** (0.131)	0.781*** (0.069)	0.945*** (0.100)	0.782*** (0.076)	1.077*** (0.062)	0.697*** (0.064)	0.887*** (0.038)	0.732*** (0.092)	0.986*** (0.032)	0.748*** (0.087)
Observations	2643	5598	2643	5598	5286	11196	2643	5598	2643	5598	5286	11196
Obs. total	2643	5598	2643	5598	5286	11196	2643	5598	2643	5598	5286	11196
Num. countries (D/S)	67/40	67/84	67/40	67/84	67/40	67/84	67/40	67/84	67/40	67/84	67/40	67/84
RMSE	3.390	6.383	3.688	7.159	3.457	6.929	2.964	15.626	2.605	14.857	2.799	16.543
Pseudo- $R^2$	0.493	0.433	0.629	0.494	0.559	0.449	0.683	0.303	0.707	0.468	0.693	0.388
Fixed Effects	None	None	None	None	Year	Year	None	None	None	None	Year	Year

Notes: The table reports Poisson Pseudo Maximum Likelihood (PPML) estimates for two groups of countries as per the World Bank classification: high income, and low income, the latter of which includes (lower and upper) middle income group. Across columns (1)-(6), the dependent variable denotes the logarithm of controlled listed firms' market capitalization in destination by shareholder entities in the source country. Across columns (7)-(12), the dependent variable is the market value of ownership (voting rights) from shareholding entities in source to firms in the destination country in both widely held and controlled firms, irrespective of whether the shareholder controls the company. The explanatory variables are the logarithm of the population-weighted distance between origin and destination, the log of Gross National Income (GNI) per capita and log population at source and destination. In columns (1), (3), (5), (7), (9) and (11), only the high income group countries are included in the sample. In columns (2), (4), (6), (8), (10) and (12), only the low income group countries are included in the sample. Columns (1)-(2) and (7)-(8) refer to country pairs in the 2012 sample. Columns (3)-(4) and (9)-(10) refer to country pairs in the 2012 sample. Columns (5)-(6) and (11)-(12) refer to country pairs in the pooled across 2012 and 2019 sample. Double-clustered at source and destination country standard errors are reported below the estimates. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% confidence level, respectively. Tax havens have been excluded from this sample.

**Figure D.9:** Source and Destination Country Fixed-Effects Gravity Estimates

Corporate Control by Source Country Group (excl. Tax Havens)



The figure plots Poisson Pseudo Maximum Likelihood (PPML) estimates. The dependent variable is the market value of all control links from shareholding entities in the source country in listed companies in the destination country. For each independent variable, the figure plots the coefficient when we estimate the specification for controlling shareholders in high-income countries (in magenta squares) and in upper-middle, lower-middle, and low income countries (in mint green squares). Tax haven jurisdictions in source and destination have been excluded. The PPML specification, estimated in the pooled across 2012 and 2019 sample, includes source and destination country fixed-effects interacted with a year indicator, log geodesic distance, and the variable listed on the right of the vertical axis.



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