Investment agreements and the fragmentation of firms across countries

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Abstract

We examine the global ownership structure of firms in the context of the investment regime. Investment agreements extend valuable privileges to firms invested abroad. But, these privileges only apply to firms whose assets are owned in a country that has signed an agreement with their host market; firms lack protections under investment agreements for many of their target markets. We argue that, by strategically locating subsidiaries in 'transit' countries, firms systematically expand their access to investment agreements. This firm-specific access to investment agreements through transit countries also has implications for investment flows: Transit countries receive more inflows and outflows of investment. Moreover, the impact of agreements declines over time and treaty partners, as seemingly newly protected firms have previously gained coverage through subsidiaries. Drawing on subsidiary location choices of the world's largest firms, as well as data on firm ownership structures and aggregate investment flows, we present systematic evidence consistent with this argument. The paper highlights the importance of the global ownership structure of firms in an environment of heterogeneous international rules and discusses new distributional consequences of the investment regime.

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In September 2007, Exxon Mobil initiated a US$7 billion claim for compensation against the government of Venezuela at the International Centre for Settlement of Investment Disputes (ICSID).[1] The company alleged that Venezuela expropriated its assets, leading to a decline in revenue. Because Venezuela and the United States have no investment agreement in place, Exxon Mobil, which is headquartered in the U.S., lacks direct access to ICSID. Instead, Exxon Mobil advanced the claim on the basis of an investment agreement between Venezuela and the Netherlands using a subsidiary, Venezuela Holdings, located in the Netherlands. The fragmentation of Exxon Mobil's financial interests across several countries, through the creation of subsidiaries abroad, allowed it to overcome the fragmentation of the predominantly bilateral investment regime.

Anecdotally, similar high-profile cases are well-documented: firms not covered by the investment agreements of their home country gain cover, and access to arbitration mechanisms such as ICSID, by locating subsidiaries in third countries that have investment agreements with relevant target markets in place. The extent of this behavior, and the implications of the global fragmentation of firms for global financial relations in general and the investment regime in particular, are less well understood (see Gray 2020 for a recent discussion).

In this paper, we offer an account of the fragmentation of the world's largest firms across countries, and of the resulting ownership structure of firms, in the context of the investment regime. We argue that firms systematically locate subsidiaries in countries that expand their access to investment agreements abroad, creating indirect investment through ownership layers that stretch across borders. By documenting that the fragmentation of firms across borders is a response to the fragmentation of the investment regime, we provide a political logic to the expansion of firms across countries.

We further demonstrate that these firm-level responses have implications for the aggregate distribution of investment and for the role of investment agreements in explaining investment flows, and we suggest several new implications for the global investment regime. More generally, we point to the ownership structure of firms – which includes decisions about where to locate investments as well as where to locate the ownership of those investments – as a theoretically important aspect of global financial relations.

Drawing on subsidiary location choices by the world's largest firms, we provide evidence that firms are more likely to create subsidiaries in countries that extend their access to investment agreements to otherwise uncovered markets. Combining firm-level data on the location of subsidiaries abroad with data on the participation of countries in investment agreements, we construct measures of the extent to which investing in a country increases a firm's access to investment agreements. Our empirical strategy exploits heterogeneity across firms and over time, holding constant country-specific attributes as well as each country's overall participation in investment agreements.

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[1]The company has since been awarded US$1.6 billion.

We also present evidence consistent with several additional implications. First, cases filed at ICSID are frequently initiated by subsidiaries whose parent companies lack coverage under investment agreements through their home countries. Second, the internal organization of firms systematically expands coverage under investment agreements, compared to a random organization of subsidiaries within the firm. Third, new investment agreements have become less effective in attracting investment as the ability of firms to rely on third-country coverage has increased over time. Finally, we show that some countries emerge as hubs for global investment flows. They account for larger investment inflows and outflows, not because they provide protections for investments from abroad in their own market but because they provide protections for investments in third countries. In this view, international institutions become a source of comparative advantage, with distributional implications both across countries and across firms.

Our paper contributes to several debates. First, we speak to an extensive literature on whether and how investment agreements attract investment (e.g., Kerner 2009; Tobin and Rose-Ackerman 2011). We highlight an assumption implicit in this literature: that, from the perspective of firms, access to investment agreements is fixed and determined by their own governments' investment agreements, whereas investment locations are interchangeable and, at least in part, driven by their own governments' investment agreements. This assumption motivates existing analyses that evaluate whether investment agreements attract investment. Our paper questions this assumption. We show that firms can gain access to investment agreements for most business locations by creating subsidiaries in appropriate third countries, regardless of their own government's investment agreements. Firms can treat eventual investment locations as largely fixed and motivated by business considerations, whereas access to investment agreements is malleable. Echoing an argument in the literature on tax treaties (Arel-Bundock 2017), this implies that even ostensibly bilateral investment agreements have multilateral implications, providing benefits to firms located in non-signatory countries – and in the course changing the global distribution of investment flows. Newly negotiated investment treaties may simultaneously offer valuable protections to firms and yet do little to attract aggregate investment, instead reshuffling the reported source country of existing investments.

Second, we point to the ownership structure of firms as an important aspect of the contemporary world economy. The world's largest multinational corporations have assets in dozens of countries. Instead of investing directly, these firms route about a third of their foreign assets through subsidiaries in third countries, separating the location of the immediate owner from the location of the ultimate owner.[2] With few exceptions, such as the global tax regime (Arel-Bundock 2017) and protection from own government predation (Betz and Pond 2019), the logic behind the disaggregation of ownership shares across countries remains a topic that is largely unexplored and not accounted for in existing theories. In particular, the ownership structure of firms is not well explained by existing theories of asset mobility, global value chains, and foreign direct investment. A firm can engage in international investment

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[2]Data from the world's 500 largest firms, obtained from Orbis. See the next section.

without shifting ownership abroad and without creating corporate layers of indirect investment.[3] Recent work has pointed out that such indirect investment flows cause challenges in the interpretation of aggregate foreign direct investment and balance-of-payments data (Kerner 2014; Linsi and Mügge 2019), and it has highlighted the consequences of the fragmentation of firms for the regulatory power of governments relative to firms (Crasnic et al. 2017) and other governments (Farrell and Newman 2019). We contribute to this literature by offering a political logic to the fragmentation of firms across countries; and by showing how market entry, rather than exit, combines with international law to provide firms with new sources of influence over governments.

Third, our paper emphasizes connections between the literature on the diffusion of international law and the literature on financialization. The authority to create international legal commitments rests with governments. But where firms are able to transfer the ownership of assets across jurisdictions, they can expand the scope of existing commitments. In addition to choosing among overlapping agreements through forum shopping (Alter and Meunier 2009), firms increase their access to new agreements. Not only did governments grant deeper rights to firms than they anticipated (Poulsen 2014), they also granted rights to more firms than they anticipated. This perspective ascribes non-state actors an active role in the diffusion of international law, supplementing their role in the enforcement of law, the emergence of norms, or the development of private regimes (Finnemore and Sikkink 1998; Dai 2005; Simmons 2009; Büthe and Mattli 2011). The difference between governments and non-state actors in their authority to delineate the coverage of international law is becoming increasingly blurred in this context – as is the concept of the nationality of asset owners (Wellhausen 2014). Our paper therefore joins a growing literature on the role of non-state actors in an increasingly legalized and financialized global environment (Farrell and Newman 2016; Alter et al. 2019; Betz and Pond 2019).

1 Investment agreements and the fragmentation of firms

In recent decades, with changes in financial markets and technology, firm ownership has become increasingly flexible and fragmented. The largest multinational firms are invested in dozens of countries. While dominant theories of foreign direct investment emphasize production processes to explain this fragmentation of firms across countries, these investments frequently also have financial ties to each other, created by a firm's ownership structure. Multinational firms choose where to locate their investments, for example by setting up production or distribution facilities in multiple countries. But, for any given investment location, firms also choose where to locate the ownership of that investment, through an ownership stake or through financial instruments.

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[3]Firms can invest abroad, for example by building factories or distribution centers or by partnering with domestic firms in the host country, while retaining full ownership of these investments in their home countries.

For example, a multinational firm located in the United States can invest directly in Argentina, such that the U.S. firm is both the *immediate* and the *ultimate* owner of that investment. Alternatively, the firm can invest indirectly in Argentina by routing the investment through subsidiaries creating corporate layers that stretch across several countries. While the multinational firm in the U.S. remains the ultimate owner of the investment in Argentina, it can establish a subsidiary in a third country – which we call transit country in the following – that becomes the immediate owner of the investment in Argentina. These corporate layers establish an allocation of ownership stakes across countries, but need not affect or reflect the firm's productive operations. The fragmentation of firms across countries creates exposure in multiple jurisdictions to market conditions and government policy abroad: in the example of the U.S. multinational with an investment in Argentina, financial losses in Argentina not only impact the parent firm in the U.S., they also affect any subsidiary firms with ownership stakes in Argentina.[4] Investments abroad are frequently tied not just to the parent firm, but also to each other.

Multinational firms rely on corporate layers extensively, splitting the immediate owner from the ultimate owner of the investment. They thus create indirect investment, which we define as any investment that is owned through subsidiaries that are located neither in the firm's home market nor in the target market – that is, investment routed through subsidiaries in transit countries. Among the world's 500 largest firms (defined by operating revenue), each firm on average owns about 30 percent of its foreign assets indirectly, routing the ownership of these assets through subsidiaries that are located neither in the firm's home country nor in the country of the eventual investment. For many firms, indirect investment is the dominant mode of structuring their investments: the median investment of the world's 500 largest firms is owned through two corporate layers, and more than a quarter of the world's 500 largest firms route the majority of their foreign assets through subsidiaries in transit countries.[5]

Figure 1 shows these patterns across industries. We calculate the share of each firm's foreign investment that is owned indirectly and aggregate the data by NACE industry codes. The average share of foreign assets that are owned indirectly, by the world's 500 largest firms, is marked with circles. We also compute these data for a random sample of 1,000 multinational corporations, marked with squares.[6]

Two features stand out in the data. First, a substantial share of foreign investment is owned indirectly, with systematic differences across industries. However, these differences across industries are not just asset mobility. For example, firms in finance and insurance, industries typically characterized by highly mobile assets, structure less of their foreign assets through subsidiaries than firms involved in mining, an industry often characterized by mostly fixed assets. Indeed, the differences between firms within these industries are more pronounced than the differences across industries. Second, even smaller multinationals appear to engage

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[4]This example only considers exposure through ownership stakes; it does not consider other forms through which multinationals can create exposure to investments elsewhere, including through patent rights or trade relationships.

[5]Own calculations, based on data from Orbis.

[6]Figure 1 and several of the subsequent figures use a figure template adapted from Bischof (2017).
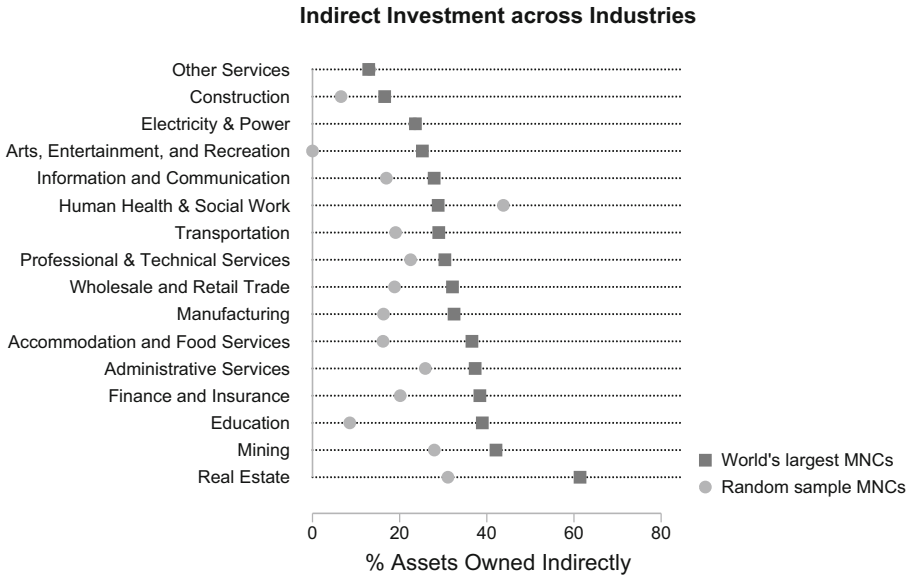
Indirect Investment across Industries

Fig. 1 The share of assets owned indirectly by the largest 500 MNCs in the world and by a random sample of 1,000 firms (for which data on foreign assets is available). Indirect investment is defined as investment owned through subsidiaries that are located neither in the firm's home market nor in the target market. Source: Own calculations, based on data from Orbis

in this behavior somewhat frequently. Still, on average the world's largest firms own a larger share of their foreign assets indirectly than firms in the random sample of multinational corporations. In the following, we focus on the world's largest firms. The actions of these firms are relevant, as multinational activities are overwhelmingly concentrated on relatively few, large firms. In the U.S., for example, "In 2000, 2.6 percent of firms export, 1.7 percent of firms import, and 0.9 percent of firms both import and export. Fewer than a quarter of exporters or importers are multinationals" (Bernard et al. 2005 10). Among these already elite firms, economic activity is concentrated on the largest individual firms, which also account for the bulk of global investment flows (Bernard et al. 2007; 2018). We thus expect that the world's largest firms provide a useful representation of global economic activity.

The creation of corporate layers and the resulting expansion of firm boundaries across countries is not explained well by existing theories. Theories of exit threats and asset mobility emphasize how firms gain influence from the ability to move assets abroad (Przeworski and Wallerstein 1988; Oatley 1999; Pond 2018). These theories do not account for the expansion of firm boundaries across countries, which allows firms to keep existing assets in place. Theories of foreign direct investment and multinational corporation emphasize the support of multinationals for open markets (Goodman and Pauly 1993; Danzman 2020), examine the political consequences of the offshoring of production (Chase 2008; Owen and Johnston 2017; Rommel and Walter 2018), and highlight the importance of global and domestic production networks (Johns and Wellhausen 2016; Kim et al. 2017). Related work explains

the location of foreign investments with differences in factor endowments (Frieden 1991), domestic political institutions (Li and Resnick 2003; Jensen 2008), and networks of individuals (Pandya and Leblang 2017; Graham 2019) or states (Gray 2013). This literature does not explain why, and how, firms expand their ownership across countries.

We contend that the fragmentation of firms across countries is in part a response to the differential treatment of asset owners based on their location. Because both domestic and international rules for the treatment of asset owners tend to be defined on the basis of state boundaries, firms located in different states frequently enjoy different rights (Farrell and Newman 2016). In such contexts, broadening the boundaries of the firm across countries allows firms to appeal to, and choose from, a wider set of rules. This is different from treaty shopping or forum shopping, which describes how states and non-state actors choose among overlapping and sometimes contested rules (Busch 2007; Alter and Meunier 2009). Rather than choosing among an existing set of rules, firms expand their options to choose from.

We consider a domain where access to such rules is frequently valuable to firms in their interactions with governments: the international investment regime. Recognizing the simultaneous need to protect investments of their firms abroad and to attract investments from abroad, governments have negotiated international investment agreements, which extend protections to firms through international law. These agreements, predominantly bilateral investment treaties (BITs) and investment provisions in trade agreements, provide firms invested abroad with considerable rights relative to governments, both procedurally and substantively (Bonnitcha 2014; Simmons 2014).

The majority of investment agreements provide covered firms – firms from one agreement member with investments in the other agreement member – with access to third-party arbitration when they perceive that their rights have been violated. The most prominent arbitration body is the International Centre for Settlement of Investment Disputes (ICSID). Others include the Permanent Court of Arbitration, the International Chamber of Commerce, or the United Nations Commission on International Trade Law. Although the arbitration bodies have no formal power to enforce decisions, countries frequently comply – the violation has been clearly identified, putting the government's reputation at stake, and compliance with the decision is easily assessed.

Access to investment agreements and their arbitration bodies is valuable to firms. Substantively, investment agreements offer protections relevant to a variety of government policies. Firms can challenge outright expropriation as well as government policies that indirectly harm their asset values – including currency convertibility and environmental, health, and safety regulations. This latter category represents a growing share of investment disputes between firms and governments (Wellhausen 2016; Pelc 2017). In some cases firms derive protections from investment agreements that surpass the protections of domestic firms in the host country and of domestic firms in their home countries (Been and Beauvais 2003; Betz and Pond 2019). The value of these protections is underscored by the increasing availability of third-party financing from investors that anticipate large returns (Dafe and Williams 2020).

The potential compensation for costly government policies is valuable in its own right. Arbitration awards have surpassed US$1 billion several times. Arbitration outcomes tend to favor firms on average, with over 60% of cases either ending in a settlement or in an award for the firm (Wellhausen 2016); this number is even higher for governments from middle-income and low-income countries (Behn et al. 2018). Moreover, because governments often face substantial litigation costs, governments from middle-income and low-income countries are likely to settle disputes that they may have won in arbitration (Strezhnev 2017).

In addition to compensating firms ex post, the threat of arbitration can have deterrent effects on governments, leading to regulatory chill (Bonnitcha 2014). Investment disputes bring high legal costs. And even where governments win cases, the initiation of arbitration leads to a loss of future investment (Allee and Peinhardt 2011). Driven by the uncertainty over creating potential arbitration cases and the legal as well as economic costs of being the target of arbitration, governments have become reluctant to implement policies that might trigger arbitration (Wellhausen 2016). These effects are policy-specific and most pronounced for countries concerned about the threat of arbitration (Moehlicke 2019). Where firms negotiate with governments over the implementation of new policies in the shadow of potential arbitration, firms therefore gain new sources of leverage.

Survey evidence shows that firms are aware of the benefits of investment agreements. For example, in the 2017-2018 World Bank Global Investment Competitiveness Survey among 754 executives of multinational corporations, close to 50% of respondents rated the presence of investment agreements as 'important' or 'critically important' in their investment decisions; less than 15% of respondents considered investment agreements 'not at all important' (Kusek and Silva 2018).

While the protections of investment agreements are valuable to firms, firms frequently do not enjoy those protections in markets where they have business interests. An investment agreement between any two countries provides no direct benefits to firms from countries outside the agreement; nor does it provide benefits to firms with investments outside the agreement members. The consequence is an international regime that is fragmented and uneven. The top panel of Fig. 2 displays the number of BITs in force for each country, as of 2014. Over 3,000 of these agreements have been negotiated to date, but, even among countries of similar levels of development, participation in investment agreements varies widely. For the same investment locations, firms from different home countries enjoy different coverage. For example, the U.S. has BITs with 40 countries, compared to 20 for Japan and 96 for the U.K. The majority of the over 140 countries in which U.S. firms are invested have no investment agreement with the U.S. In the bottom panel of Fig. 2, we display the only partial overlap in the investment agreements of Canada and the U.S.. Most countries in the world have no investment agreement with either country. Many countries have an investment agreement with either Canada or the U.S. Only 15 countries have investment agreements with both Canada and the U.S. in place. This suggests inequalities between firms. Depending on their home country, they enjoy substantially different protections for their investments abroad.

The top panel of Fig. 2, and theories based on the investment regime as portrayed in the panel, provide an incomplete picture of the coverage of the investment
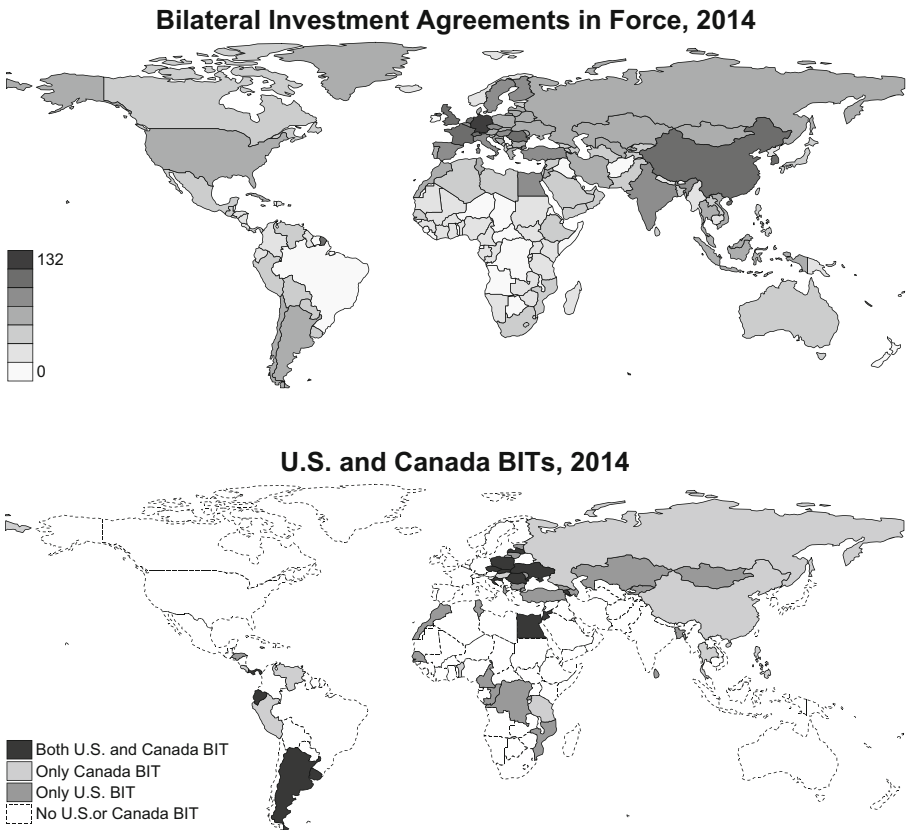
Bilateral Investment Agreements in Force, 2014

U.S. and Canada BITs, 2014

Fig. 2 Top panel: Number of BITs in force, by country, as of 2014; darker shades represent more investment treaties. Bottom panel: BIT partners for United States and Canada in 2014. Source: UNCTAD Investment Agreement Navigator

regime for individual firms. Existing theories take the de jure coverage of investment agreements in Fig. 2 as given and contend that firms are more likely to invest in markets that are covered by an investment agreement with the firm's home country, and that firms from home countries with BITs enjoy superior protections abroad than firms from countries without BITs. We instead start with the assumption that a firm's target markets are determined by economic considerations (see Dunning 1981 and Markusen 1995). If a firm wants to gain access to an investment agreement for an otherwise uncovered investment, it can do so by expanding its ownership structure to what we call *transit countries* in the following. We therefore take for granted the economic motivation to invest in eventual target markets and instead consider how firms use the flexibility of global ownership structures to their advantage.

To extend access to investment agreements in new markets, firms employ a relatively simple strategy. Consider a firm whose home country has no investment agreement with its target market. The firm finds a transit country that has an investment agreement with the target market. The firm then creates a subsidiary in the

transit country and associates that subsidiary with its investment in the target market – most explicitly by making the subsidiary in the transit country the immediate owner of the investment in the target market or, taking advantage of the broad coverage of losses in many investment agreements, through financial instruments, such as bonds (Betz and Pond 2019). If the firm suffers losses in the target market, the associated subsidiary also suffers losses and the subsidiary may initiate arbitration under the investment agreement. Figure 3 depicts the argument. We posit that firms systematically locate subsidiaries in markets that expand their access to investment agreements; consequently, the fragmentation of firms across countries becomes a response to the fragmentation of the investment regime.

To further illustrate the argument, consider a hypothetical U.S. firm. If the firm is interested in gaining protection for an investment in Argentina, it has direct coverage under the investment agreement between the U.S. and Argentina. If, in contrast, the firm has an investment in Tanzania, it lacks access to an investment agreement directly; but it can take advantage of the investment agreement between Canada and Tanzania by locating a subsidiary in Canada. Rather than creating an advantage for Canadian firms relative to U.S. firms, the agreement between Canada and Tanzania provides an opportunity for U.S. firms – or any other firm able to locate a subsidiary in Canada – to secure protections for their investments in Tanzania. A focus on the de jure network of bilateral investment agreements suggests that the agreement between Canada and Tanzania should increase investment by firms from these two countries, and might tilt investment decisions by Canadian firms toward investing in Tanzania. In contrast, we emphasize that the investment agreement may lead to investment in Tanzania that is routed through Canada and is, ultimately, owned in other home countries – and, in particular, owned by firms that planned to invest in Tanzania, and that adjusted their ownership structure in response to the uneven coverage of investment agreements across countries.

This strategy is made possible by two features of international markets and the investment regime. First, with open global financial markets, it is relatively easy for firms to structure the ownership of their assets across locations. Multinational
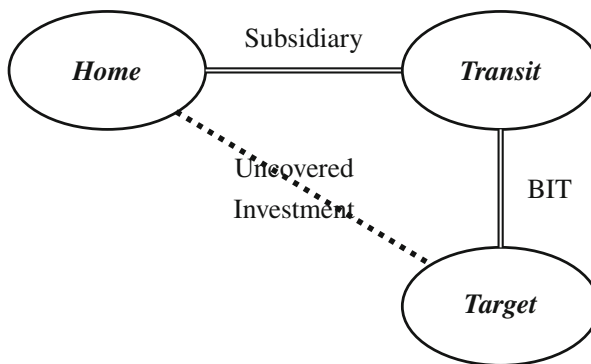
Fig. 3 A firm whose home market has no investment agreement with its target market may create a subsidiary in a transit country that has an investment agreement with the target market

corporations, in particular, can reshuffle ownership to grant coverage to their investments elsewhere. Second, common stipulations in investment agreements facilitate this strategy. Investment agreements typically only require that an investor is "of the other Party," but the investor's parent company or ultimate owner need not be a national of one of the agreement partners. The protections are instead afforded by the loss of profits and the location of the assets – and the definition of assets is typically broad and based on a non-exhaustive list that includes various financial instruments. By fragmenting the ownership of assets across countries, firms can therefore access protections that are not available in their home country.

These features enable firms, especially large multinational firms, to gain coverage under investment agreements relatively easily. Velocity Global, a company that specializes in providing technical assistance for international expansions, estimates that setting up a subsidiary costs around US$15-20,000, with a further US$40,000 per year in maintenance costs for firms with one employee.[7] While these costs are relatively modest, these subsidiaries are only useful to firms that can plausibly and credibly afford the costs of arbitration, which can reach millions of dollars. Large multinationals, who are responsible for most international trade and investment (Helpman et al. 2004; Bernard et al. 2007; 2018), have operations on a scale that justifies the legal costs of investment arbitration. They are also exposed to political risks in multiple markets at the same time.

Several characteristics make some countries attractive as transit countries. Foremost, the transit country must have a different *portfolio of investment agreements* than the firm's home country. If the transit country shares the same agreements as the home country, the firm gains no additional coverage through subsidiary creation. If instead the transit country provides access to treaty provisions for numerous investments that the firm has made or investments the firm plans to make, subsidiary creation increases access to investment agreements. Second, the transit country must have strong investor protections; otherwise, the subsidiary could add rather than reduce risk (Crasnic et al. 2017). From this perspective, a country's portfolio of investment agreement partners, relative to a firm's home country, becomes an important driver of investment decisions. The fragmentation of the investment regime triggers a fragmentation of firm ownership across countries.

Executives appear to be aware that, beyond the immediate benefits of investment agreements, gaining access to investment agreements for new markets can be an important factor in deciding where to invest. Anecdotally, firms and lawyers have recognized the benefits of gaining access to BIT protections through ownership restructuring. In a 2014 publication of the American Bar Association, two lawyers for Houthoff Buruma emphasize that investors would be "well advised to analyze [...] the existence and substance of BITs" that expand their legal options when deciding on corporate ownership structures.[8] In the case of Exxon Mobil's claim against Venezuela, cited in the introduction, Exxon Mobil restructured the

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[7]https://velocityglobal.com/blog/international-subsidiary-company-benefits-and-risks/, visited Feb 20, 2019.

[8]https://www.americanbar.org/publications/blt/2014/03/01_sprenger.html, last accessed January 19, 2018.

ownership of its investments in Venezuela between October 2005 and November 2006 – at which point Venezuela had already imposed tax increases, but had not yet announced nationalization, which happened in January 2007. Exxon, the claimant, acknowledged that "the aim of the restructuring of their investments in Venezuela through a Dutch holding was to protect those investments against breaches of their rights by the Venezuelan authorities by gaining access to ICSID arbitration through the BIT."[9] ICSID accepted this strategy. Even if the explicit aim of the restructuring was to gain protections against the investment agreement, gaining access to arbitration was "a perfectly legitimate goal" (Award, p. 67). The case illustrates not only the acceptance of this strategy by arbitration bodies, but also that companies try to thwart damaging government policies by expanding the protections available to them. In other cases, discussed below, ICSID also explicitly acknowledged that firms can take advantage of ownership restructuring, even for the sole purpose of gaining access to investment agreements.

Moreover, firms take advantage of indirect ownership links to file a substantial, and increasing, number of cases at ICSID, indicating that executives take advantage of these opportunities. To assess whether firms systematically use subsidiaries to gain access to investment agreements, we obtain data from ICSID on the nationality of the claimants for each claim between 1994 and 2016. Using information about the ownership structure of each claimant from Orbis (Bureau van Dijk 2017), we determine for each claimant whether they have a parent company as ultimate owner and where that parent company is located.[10] Figure 4 shows that using subsidiaries in transit countries to file claims is a systematic pattern in investment arbitration, that it is relatively widespread, and that it is increasingly common. A substantial portion of ICSID claims, about 20 percent, are initiated by claimants located in countries that differ from the home country of the parent firm. In recent years, that share reached over 30 percent. Moreover, arbitration is costly for both firms and governments, implying selection effects into arbitration. Large multinational corporations should be more likely to cover their subsidiaries through transit countries and should also enjoy more bargaining power in the shadow of arbitration. Figure 4 may thus understate the importance of transit country coverage for the political balance between firms and governments.

These transit country claims do not come from countries that have a larger number of investment agreements than the parent firm's home country. Instead, Table 1 shows that they have a different portfolio of investment agreement partners. The first column in Table 1 compares the countries from which transit country claims originated to the home countries of the parent firms. Transit countries have barely more investment agreements in force than the parent firm's home country; the difference is small and not statistically significant. However, as column 2 shows, transit countries have very different agreement partners than the parent's home country and, as a

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[9]ICSID Decision on Jursidiction, Mobil Corporation, Venezuela Holdings B.V. et al. vs. Bolivarian Republic of Venezuela, ICSID Case No. ARB/07/27.

[10]We are able to identify the nationality of all claimants and their ultimate owners in 274 cases (out of a total of 441 cases), almost 62 percent.
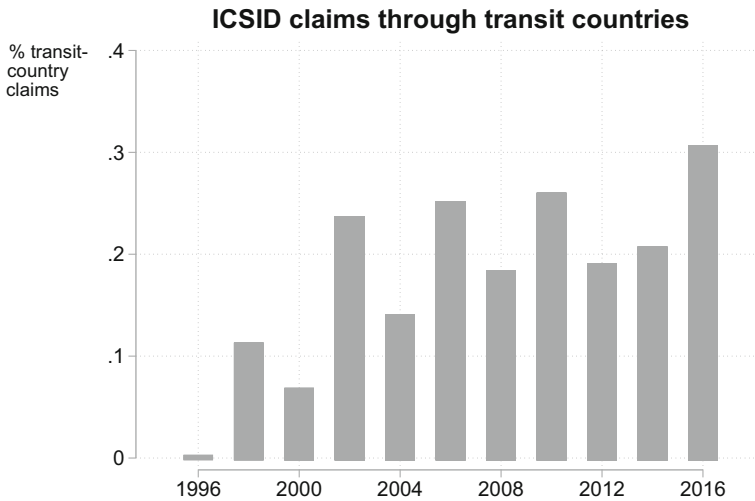
ICSID claims through transit countries

Fig. 4 Share of ICSID cases where the claimant is located in a different country than the ultimate parent. Source: Own calculations, based on data from ICSID and Orbis

baseline comparison, they have different agreement partners than the average OECD country. Transit countries offer access to investment agreements for about 30 partner countries that are not already covered by the parent's home country on average. By contrast, OECD countries that do not serve as the transit country in ICSID claims only offer access to investment agreements for, on average, 10 additional partner countries. The difference of about 20 partner countries is statistically significant with a p-value of .001. In short, transit country claims do not originate from countries that are members of disproportionately many investment agreements. They originate from countries that expand a firm's access to investment agreement partners.

That this behavior expands the access of firms to investment agreements, and as a consequence shifts the balance between firms and governments, beyond what governments initially envisioned is underscored by several observations. Governments have occasionally, and for the most part unsuccessfully, argued that this strategy creates an abuse of rights. What constitutes an abuse of rights remains vague and controversial. Such controversy can benefit firms. Ambiguity in the interpretation

Table 1 Transit country claims and BIT membership

	Total BITs	Different BITs (relative to home)
Home countries	61.6	–
Transit countries	63.5	29.9
Other countries	–	10.0
Difference	1.91	19.8
p-value	.759	.000

BITs: number of BITs in force (from UNCTAD). Own calculations, using Orbis and data on ICSID claims

of international law can suppress policy change (Bonnitcha 2014; Pelc 2017). Likewise, uncertainty over whether foreign investors will use arbitration in response to violations raises the costs of regulation for governments (Wellhausen 2016, p. 119). Firm-specific indirect access to investment agreements reinforces this latter type of uncertainty. Governments can no longer be certain which, let alone how many, firms can access international arbitration. To understand the actual prospects of litigation, governments would have to know the detailed corporate structure of all firms invested in their jurisdiction.

Moreover, setting up subsidiaries even for the presumed explicit purpose of gaining access to arbitration does not necessarily constitute an abuse of rights, as arbitration bodies have repeatedly pointed out. In a case brought by ADC, a Canadian construction and transportation company, against the Hungarian government, ICSID ruled that the company's subsidiaries in Cyprus provided coverage to the company under the Cyprus-Hungary BIT. During arbitration, the Hungarian government maintained that "the claimants constituted mailbox companies aimed at providing access to ICSID jurisdiction for nationals of a State non-Party [and] asked the tribunal to 'pierce the corporate veil' of the claimants" (Baumgartner 2017, p.109). The arbitration body dismissed the argument. It recognized ADC's subsidiaries as investors protected by the BIT, and ruled that the Hungarian government must compensate ADC for the losses.

Aguas del Tunarí (AdT) vs. Bolivia provides another example. Soon after AdT won a contract to provide water and sewage services in Bolivia, the company was restructured, granting a number of Dutch subsidiaries ownership of AdT. When the Bolivian government terminated the contract in 2000, AdT initiated arbitration through the Netherlands-Bolivia BIT. The Bolivian government contended that the restructuring constituted an abuse of rights, as it was done in anticipation of the loss of the contract, and that ICSID did not have jurisdiction, as the Dutch owners were merely shells and did not control AdT. ICSID accepted the case, stating that it is "not uncommon in practice, and – absent a particular limitation – not illegal to locate one's operations in a jurisdiction perceived to provide a beneficial regulatory and legal environment [...], including the availability of a BIT" (Decision on Respondent's Objections to Jurisdiction, p. 77). In 2006, the two parties reached a settlement.

Some governments have recently pushed to include treaty provisions that allow governments to deny treaty benefits to firms that lack a substantial business presence – for example, excluding mailbox firms from coverage (Baumgartner 2017, pp. 250-251). These attempts to curtail the firm-driven expansion of investment agreements underscore the importance of ownership structures for access to international arbitration and highlight government opposition to this practice. They also illustrate the challenge governments face in reasserting control over the investment regime. In several disputes, ICSID tribunals emphasized that the burden of proof rests with the government claiming a lack of substantial business, not with the firm bringing the case (Yannaca-Small and Liberti 2008). Firms may escape such restrictions, leaning on trust firms that "assist foreign shell companies in complying with the necessary substance requirements" (Verbeek and Knottnerus 2018).

We highlight two more points. First, the temporal sequencing of investment decisions in some cases is only a secondary concern for the purpose of gaining access to

investment agreements, and we remain largely agnostic about the timing of investment decisions. For example, in AdT's case against Bolivia, the Dutch subsidiaries were added shortly before the initiation of arbitration. In other cases, firms have created subsidiaries far in advance of the legal dispute. For example, Philip Morris sued Uruguay in 2010 through subsidiaries that were incorporated in Switzerland in 1943 and 1988 (the Switzerland-Uruguay BIT was signed in 1988). The Philip Morris subsidiary operating in Uruguay, Abal, was incorporated in 1945 and placed under a Swiss subsidiary's control in 1979.[11] The ultimate parent company is Philip Morris International, incorporated and headquartered in the U.S.

Second, the resulting ownership structures can be fairly complex. For example, in the Exxon Mobil case discussed above, "Mobil (Delaware) owns 100% of Venezuela Holdings (Netherlands) which owns 100% of Mobil CN Holding (Delaware) which owns 100% of Mobil CN (Bahamas) which finally owns 41.66% in the Cerro Negro project" (Venezuela). Additionally, "Venezuela Holdings (Netherlands) also owns 100% of Mobil Venezolana Holding (Delaware) which owns 100% of Mobil Venezolana (Bahamas) which finally owns 50% interest in the La Ceiba Association (Venezuela)."[12] The Cerra Negro project and the La Ceiba Association were the investments under consideration in the ICSID dispute. And, in response to the same wave of nationalizations that led to Exxon Mobil's case, a Venezuelan company brought a claim against its own government. While this is usually not possible in investment agreements, Empresas Polar, a private equity company, filed the claim through a holding company based in Barbados. Such round-tripping of investment flows indicates how firms use deep layers of ownership structure and how these layers create new complexities for governments, which may face arbitration claims even from, ultimately, domestic firms.

In short, we expect that the largest multinational corporations, which have both the means and the incentives, increase their access to investment agreements systematically. They do so by locating subsidiaries in countries that offer protections for investment locations not already covered by investment agreements of their home country; put differently, a country's portfolio of investment agreements, relative to a firm's home country, should influence a firm's decision of where to locate subsidiaries. We make no presumption that access to investment agreements is the only factor that influences firms in their investment decisions or that the access is free. Some firms may create subsidiaries in transit countries to access investment agreements. Others may couple these investment decisions with other considerations, such as access to domestic credit markets, the ability to serve the domestic market, a country's attractiveness as a hub in global value chains, or tax considerations. Empirically, we control for such alternative explanations and limit their influence by focusing on differences in investment agreement portfolios among high-income developed countries; conceptually, our argument is that, at the margin and holding constant these

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[11]The request for arbitration is available at https://www.italaw.com/sites/default/files/case-documents/ita0343.pdf and the award at https://www.italaw.com/sites/default/files/case-documents/italaw7417.pdf. Last accessed April 10, 2018.

[12]ICSID Decision on Jursidiction, Mobil Corporation, Venezuela Holdings B.V. et al. vs. Bolivarian Republic of Venezuela, ICSID Case No. ARB/07/27.

other considerations, a country's portfolio of investment agreement partners shapes the ownership structure of firms. We summarize our expectations in the following proposition.

Proposition 1 *Firms are more likely to locate subsidiaries in countries that expand their access to investment agreements, relative to their home country, for relevant target markets.*

We delineate two additional corollaries of such firm-specific access to investment agreements. First, the firm-specific access to investment agreements should also be evident in global investment flows. If firms route investments through transit countries, some countries may appear as 'hubs' in aggregate investment statistics, with both large inflows and large outflows of FDI. Thus, a country's portfolio of investment agreements relative to other countries emerges as a source of comparative advantage in receiving and sending FDI. These countries do not (just) receive FDI because they offer investment protections for assets in their jurisdiction to firms from many countries, as the existing literature emphasizes (Egger and Pfaffermayr 2004; Hallward-Driemeier 2003; Kerner 2009). They also receive FDI because they offer investment protections in *other* countries and which are not readily available to investors elsewhere. These activities should be captured by aggregate investment statistics, reflecting larger inflows and outflows of investment for transit countries.

Proposition 2 *Transit countries, which provide access to investment agreements that are not frequently available to firms located in other countries, should be associated with both more inward and more outward FDI.*

These investment flows may not carry the benefits typically ascribed to FDI, such as managerial and technological spillovers or employment and income effects. Because aggregate investment statistics are based on the immediate owner of an investment, not the ultimate owner,[13] such routed investments may distort the interpretation of the economic and political consequences of investment flows. Countries may appear as important source and destination countries for investment, and yet display remarkably little real economic activity associated with these flows.[14]

Access to investment agreements through subsidiaries also has implications for the effectiveness of investment agreements in attracting investment. Because the investment regime is limited to firms located in signatory countries, the existing literature has looked for evidence that investment agreements attract investment within these

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[13]UNCTAD's statistical training manual, for example, notes that "the accepted practice is to record the country of the immediate investor" (United Nations Conference on Trade and Development 2009, 77).

[14]Substantial business requirements, from this perspective, emerge as a strategy to encourage firms to make real investments in transit countries. To gain access to investment agreements, substantial business requirements force firms to make investments that generate tax benefits and employment in the transit country. By this logic, substantial business requirements are not necessarily created to limit firm influence over target countries. They also benefit the transit country itself.

countries (or, if the effects are broader, investment agreements should work through a signaling effect; see Kerner 2009). Yet, the firm-specific access to investment agreements suggests that the de facto coverage of investment agreements is much broader than what would be expected based on the home countries of multinational corporations and the existing set of investment agreements. Once we consider access through subsidiaries, new investment agreements become redundant for many firms. New agreements signed by a firm's home or target country may not affect investment flows if the firm already gained coverage through a subsidiary. The entry into force of new investment agreements should therefore have declining effects on attracting investment agreements.

Proposition 3 *Investment agreements should become less effective in attracting FDI as the ability of firms to rely on transit-country coverage increases.*

2 Empirical evidence

We present two sets of results. First, in a direct test of the first proposition, using data on the investment location choices of firms we show that firms are more likely to locate investments in countries that expand their access to investment treaties – relative to their home country – for relevant target markets. We also establish that these results are contingent on the substantive provisions of investment agreements. These results demonstrate that the fragmentation of firms across countries is a response to the fragmentation of the investment regime. The shortcoming is that the data do not allow us to speak to the internal organization of firms, that is, how individual subsidiaries relate to each other. We therefore supplement the analysis with cross-sectional data on the internal organization of firms, showing that the allocation of ownership rights and the creation of corporate layers within firms systematically expands access to investment agreements. Second, we provide additional evidence that this behavior has implications for aggregate investment flows and the effectiveness of international investment agreements in attracting foreign direct investment.

3 Evidence from subsidiary location choices

We obtain data on subsidiary location choices between 1980 and 2014 of the world's 500 largest firms, defined by operating revenue in 2016, from Orbis (Bureau van Dijk 2017).[15] Large firms are responsible for the vast majority of economic activity across borders (Bernard et al. 2007), and they plausibly have the resources to create subsidiaries for accessing investment agreements and initiating arbitration. Our

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[15]One of the firms was incorporated in 2016, which leaves an estimation sample of 499 firms.

dependent variable is a dummy variable for whether a firm creates a subsidiary in a country in a given year.

3.1 Independent variable

Our theory emphasizes how firms locate investments in countries that expand their access to investment agreements. Our independent variable therefore reflects differences in the portfolio of investment agreement partners between countries – specifically, to what extent a transit country provides a firm with new investment agreement coverage relative to what its home country provides. We create two independent variables: the number of additional treaty partners covered by a potential transit country, EXCESS PARTNERS, and the betweenness centrality of a potential transit country, BETWEENNESS.

To construct these variables, we identify the home country, potential transit countries, and target markets of each firm. Home countries are the location of each firm's ultimate owner. For potential transit countries, we consider any OECD country other than a firm's home country.[16] Target markets are non-OECD countries in which the firm has a presence through a subsidiary at some point before 2014. This setup mirrors the literature on FDI and investment agreements, which considers non-OECD countries as target markets and OECD countries as markets with relatively little political risk and where most capital originates (Jensen 2003; Kerner 2009; Allee and Peinhardt 2011). Moreover, OECD countries are attractive investment locations for many reasons, including their market size and political stability. By focusing on OECD countries as transit countries, our empirical strategy exploits differences in investment agreement portfolios within a relatively homogeneous group of countries in terms of their economic and political development. We consider below scenarios that allow OECD also as target countries and a distinction between transit and target countries based on a property rights index.

The resulting preliminary dataset combines firms, potential transit countries, target countries, and years. From this dataset, we construct our independent variables and our sample. On average, the companies in our dataset have fourteen target markets. Overall, they invested in 166 distinct target markets. China, Brazil, Singapore, Mexico, and India are the leading target destinations; each of these countries attracts subsidiaries from over 200 firms in our sample. We display the target countries in our sample and the number of firms with subsidiaries in each country in the Appendix.

Using data on BITs from UNCTAD, we identify the investment agreement partners of a firm's home country and of each potential transit country. We only consider treaties that are, in a given year, in force. Additional results also consider other agreements with investment provisions, such as trade agreements, and exploit differences in agreement design, such as delegation to ICSID. We highlight that no single country provides coverage for all target countries. For example, Germany is the country with the largest number of BITs in force. Yet Germany fails to provide comprehensive coverage for many firms. 47 firms in the sample have target markets not covered

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[16]To maintain the sample constant across years, we consider countries as OECD countries if they were OECD members throughout the sample period. The results are not sensitive to this choice.

by Germany's investment agreements, but for which firms could obtain coverage through transit countries.

To calculate EXCESS PARTNERS, we combine the investment agreement data with the firm data. We calculate, for each firm and transit country in any given year, the number of a firm's target markets that are covered by an investment agreement between the transit country and the target market but that are not covered by an investment agreement between the firm's home country and the target market. The variable indicates the number of additional target markets, relative to what its home country provides, for which the firm can gain coverage by investing in the transit country.

Concepts from network analysis offer an alternative for constructing the independent variable. Our theory maps closely onto betweenness centrality, which counts the shortest paths between any two nodes that pass through a transit node. We first identify the network for each firm and year, based on the firm's home country, potential transit countries, and the firm's target countries. For every firm and potential transit country, BETWEENNESS measures how many shortest paths pass from a firm through the transit country to the firm's target countries. If no direct path exists between the firm's home country and the target country, a transit country's BETWEENNESS increases for every target country that the firm can reach through the investment agreements of that transit country. Where several transit countries allow the firm to obtain coverage for a target country, BETWEENNESS only increases proportionally. BETWEENNESS thus captures the uniqueness of a transit country's portfolio of agreement partners both relative to a firm's home country (which EXCESS PARTNERS captures) and relative to other potential transit countries (which EXCESS PARTNERS does not capture).

Both EXCESS PARTNERS and BETWEENNESS are distinct from the total number of investment agreements of a transit country. The variables are also distinct from the difference in the total number of investment agreements signed by a firm's home country and a potential transit country (see the Appendix for details and correlations). Our independent variables instead reflect the overlap in the identity of investment agreement partners between countries; and, because they depend on a firm's home and target countries, they are specific to each firm. Both EXCESS PARTNERS and BETWEENNESS therefore vary by firm, transit country, and year. Accordingly, our unit of analysis is the firm-potential transit country-year, which results in a dataset of 317,092 observations.

3.2 Research design

Our research design exploits two sources of variation that are plausibly exogenous to the behavior of the transit country: differences across firms in their home and target markets, and differences over time in the portfolios of investment agreement partners of a firm's home and target countries (but not of the transit country). We hold constant the transit country's behavior by controlling for each transit country's total number of investment agreements and including transit country fixed effects. Any changes in EXCESS PARTNERS and BETWEENNESS that we use for identification are therefore not driven by, and exogenous to, the behavior of the transit country. Instead, we focus only on variation over time that is driven by the behavior of other countries

and variation across firms that is driven by differences in the firm home and target countries. Our research design thus ensures, in particular. that the results are not driven by the entry into force of new investment agreements by the transit country or by the overall attractiveness of the transit country to foreign investors.

To illustrate the source of identifying variation in our research design, in 2010, the Netherlands had 92 investment agreements in force, whereas the US had 40 investment agreements in force. Only some of these partners overlap. The Netherlands had 59 investment agreement partners beyond those already available to firms located in the US; the US had 7 investment agreement partners beyond those already available to firms located in the Netherlands. Whether these investment agreement partners are relevant to a firm depends on its target markets, which introduces heterogeneity across firms. Both Exxon Mobil and Chevron are headquartered in the US and operate in the petroleum industry, but they have subsidiaries in different target markets. In 2010, the Netherlands provided coverage for eleven markets that were not covered by US investment agreements and relevant to Exxon Mobil; for Chevron, the Netherlands provided coverage for twelve relevant target markets. Our research design exploits such differences across firms.

In addition to differences across firms, the independent variables vary over time. This variation arises from two sources. First, the number of a transit country's excess partners increases if a transit country signs an investment agreement with a target market of a firm. Because we control for a country's total number of investment agreements, our research design factors out, and does not rely on, this source of identification. Second, the number of a transit country's excess partners decreases when the home country of a firm signs a new investment agreement with a target market relevant to that firm (BETWEENNESS additionally decreases when a transit country's agreement portfolio becomes less unique because other transit countries sign investment agreements with the firm target country). Our research design exploits this source of variation, which is exogenous to the behavior of each transit country and driven by the behavior of the firm's home country and the firm's target markets (and, in the case of BETWEENNESS, the behavior of other potential transit countries).

Our empirical models control for the market size, wealth, and economic growth of the transit country, because these attract foreign investment (data from the World Bank). We also include the transit country's total number of investment agreements in force, transit country fixed effects, and year fixed effects. With these control variables, our dataset includes 315,332 observations.

Because the dependent variable is binary, we estimate logit models (the results are robust to using a penalized maximum likelihood estimator). Our dataset is composed of two non-nested sets of clusters: each firm is paired with each potential transit country, and each firm-transit country pair appears for every year. Not accounting for both clusters can lead to inflated measures of statistical significance. To account for the simultaneous non-independence of observations within firms and within transit countries, we implement two-way clustered standard errors (Cameron et al. 2011), which are more conservative than single clusters. We cluster standard errors by firm and transit country. We discuss additional control variables and modeling choices, such as duration models, below and in the Appendix.

3.3 Results

Table 2 displays coefficients and *p*-values. Columns 1 and 2 present the base model, with EXCESS PARTNERS in column 1 and BETWEENNESS in column 2. The results conform with expectations: firms are more likely to locate subsidiaries in countries that expand their access to investment agreement protections. This effect is different from the number of a country's investment agreements, and it is robust to the inclusion of country- and year-fixed effects.

Table 2 Investment agreement portfolios and subsidiary location

	Base model		Supply chains		Tax evasion	
	(1)	(2)	(3)	(4)	(5)	(6)
Excess partners	.094		.10		.11	
	(.000)		(.000)		(.000)	
Betweenness		.66		.75		.63
		(.000)		(.000)		(.000)
Log GDP	.23	−.036	−.31	−.42	−.096	−.37
	(.033)	(.791)	(.169)	(.067)	(.569)	(.028)
GDP per capita	1.00	1.37	.44	.51	1.66	2.11
	(.038)	(.001)	(.235)	(.217)	(.000)	(.000)
GDP growth	−.087	.029	−.24	−.022	.16	.29
	(.673)	(.893)	(.335)	(.935)	(.476)	(.234)
Total BITs	−.19	.47	-.30	.38	−.54	.14
	(.443)	(.131)	(.586)	(.483)	(.011)	(.631)
Vertical integration			.044	.067		
			(.269)	(.090)		
Export similarity			2.85	2.25		
			(.025)	(.046)		
Tariff rate			−.23	−.19		
			(.000)	(.000)		
Joint tax treaty					.96	.88
					(.000)	(.000)
Constant	−9.12	−2.27	4.87	7.77	−1.71	5.30
	(.001)	(.523)	(.419)	(.201)	(.690)	(.213)
Year FE	yes	yes	yes	yes	yes	yes
Country FE	yes	yes	yes	yes	yes	yes
Number Obs.	315,332	315,332	153,308	153,308	231,400	231,400

Logit, coefficient estimates and *p*-values. Standard errors clustered by firm and transit country

To facilitate the substantive interpretation of the results, Fig. 5 displays the average marginal effects, calculated at observed sample values and averaged across observations in the sample, of a one-standard deviation increase in each variable, based on column 1 and column 2 of Table 2. A one standard deviation increase in excess partners is associated with an increase in the probability of attracting a subsidiary of close to two percentage points, which represents a nearly 40% increase relative to the sample average. A one standard deviation increase in betweenness has a similarly sized effect. The control variables have the expected signs. Larger and wealthier countries attract more subsidiaries. The total number of investment agreements of a country is not significantly related to the creation of subsidiaries.

The remaining columns of Table 2 present results to rule out two major alternative explanations – the creation of supply chains and tax evasion. Table 3 and the Appendix provide additional results, discussed below.

Vertical and horizontal integration A main motivation for multinational corporations investing abroad is the creation of production networks. The importance of production networks has also been highlighted in the recent literature on trade politics (e.g., Jensen et al. 2015). Countries that offer access to an extensive portfolio of investment agreement partners may be attractive hubs for vertically integrated supply chains: through downstream participation in supply chains, firms can draw on a large set of countries for providing inputs. To rule out that our results are driven by a coincidence with vertical supply chains, we gather data from the OECD's Trade in Value
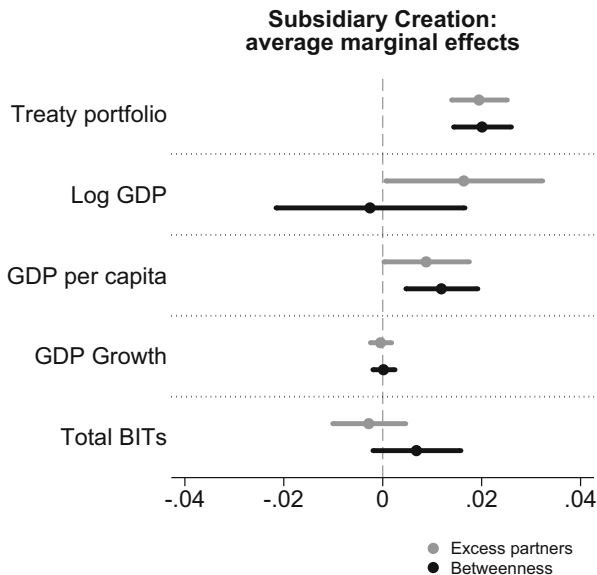

Fig. 5 Average marginal effect (at observed sample values, averaged across observations) of a one-standard deviation increase in each variable, with 95% confidence interval, for models with excess partners (grey) and betweenness centrality (black). Standard errors are derived with the Delta method. Results based on columns 1 and 2 of Table 2

Table 3 Additional results: timing and sample definition

	Timing			Sample definition	
	(1)	(2)	(3)	(4)	(5)
Excess partners (5-year window)	.21 (.000)				
Excess partners (previous 5 years)		.26 (.000)			
Excess partners			.056 (.000)		
Excess partners (OECD as transit)				.094 (.000)	
Excess partners (ICRG sample)					.12 (.000)
Log GDP	.22 (.087)	.25 (.047)	1.00 (.000)	.043 (.829)	.068 (.627)
GDP per capita	1.01 (.036)	.96 (.042)	−1.54 (.076)	1.39 (.012)	.80 (.145)
GDP growth	−.025 (.895)	−.029 (.881)	.17 (.185)	−.079 (.711)	.24 (.199)
Total BITs	−.046 (.854)	−.065 (.798)	−.27 (.042)	−.26 (.331)	−.27 (.317)
Constant	−8.79 (.008)	−9.58 (.003)	−27.6 (.000)	−4.34 (.392)	−5.04 (.155)
Year FE	yes	yes	no	yes	yes
Country FE	yes	yes	yes	yes	yes
Number Obs.	315,332	315,332	315,332	315,332	484,697

Logit, coefficient estimates and p-values. Standard errors clustered by firm and transit country. (1) Target markets defined with five-year window before and after subsidiary creation. (2) Target markets defined with five-year window after subsidiary creation. (3) Cubic polynomials. (4) OECD as target and transit country. (5) Transit countries defined by ICRG scores

Added Database on participation in vertical supply chains. These data are specific to industries, countries, and years. VERTICAL INTEGRATION captures a country's downstream participation in an industry's production network – that is, to what extent a country's industries rely on imported goods from abroad to produce final goods for exports. The variable covers all countries in our sample, but only from 1995 through 2011.[17]

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[17]The results are robust to also including a measure of upstream participation in an industry's value chain.

Firms may also use subsidiaries to produce in markets that are costly to serve through trade. We account for the similarity of export profiles of the firm home country and the potential target country by calculating the rank correlation coefficient between the two countries' SITC four-digit exports. Firms should be more likely to create subsidiaries for horizontal integration in countries that are competitive at producing similar goods. We also include the average applied bilateral tariff rate of the transit country toward the firm's home country to account for the creation of subsidiaries to jump tariff barriers (we obtain similar results when using the industry-specific tariff rate instead of the average tariff rate). The results, reported in columns 3 and 4 of Table 2, are robust to including these control variables.

Tax treaties and tax havens Multinational corporations frequently use subsidiaries abroad to reduce their tax liabilities (Arel-Bundock 2017). In columns 5 and 6 of Table 2, we include a variable for joint membership of a firm's home country and the transit country in a bilateral tax treaty (from Barthel and Neumayer 2012), which as expected is positively associated with the creation of subsidiaries. In the Appendix, we also include a control variable for tax havens from Gravelle (2013). Because the definition of tax havens does not change over time, we omit the country fixed effects. As expected, we find that tax havens are more likely to attract subsidiaries. The coefficients on excess partners and betweenness remain positive and retain their statistical significance.

Timing of investment decisions Our setup remains agnostic about the timing of investment decisions. In particular, we considered a country as a target market as long as a firm had an investment in the country at any point. Consequently, our main independent variable captures the relevant treaty portfolio potentially long after, but also long before, an eventual investment is made. In Table 3, we provide several results that refine the timing of investment decisions. In the first column, we consider target markets as relevant in a five-year window before and after a subsidiary is created. In the second column, we limit this to the five years after a subsidiary is created in the target market. In the thrid column, we revert to our original measure of excess partners, but instead estimate a logit model with cubic polynomials, following Beck et al. (1998) and Carter and Signorino (2010), who emphasize the similarities between such a model and a survival model.

Definition of target and transit countries We considered OECD countries as transit countries and non-OECD countries as target countries, leaning on the distinction in the literature. We modify this decision in two ways. In column 4 of Table 3, we consider OECD countries as both target and transit countries, allowing for the possibility that firms seek to gain access to investment agreements for their investments in other OECD countries. In column 5, we drop the distinction between OECD and non-OECD countries and, instead, define transit countries as those countries with strong investor protections. Specifically, we identify transit countries as those with an average ICRG score in the top quartile of countries (using updated data from PRS 2012). We consider the ICRG preferable over some alternatives because it explicitly considers the investment environment from the perspective of foreign investors and because

of its excellent temporal and cross-sectional coverage. In column 5 of Table 3, we replicate our main model with this new definition of transit countries.

Additional results The Appendix discusses additional results. These account for firm-specific variables (including total assets and firm age), industry fixed effects, firm fixed effects, home-country fixed effects, country-specific time trends, temporal dependence, capital account openness, a country's legal system and domestic institutions, European Union membership, and a country's financial market development. We also present tentative evidence that subsidiaries created for gaining access to investment agreements have less of a meaningful business presence: they are more likely to have missing data on economic fundamentals (for those with data, we find no meaningful difference in total assets or number of employees) and they are more likely to be classified as firms in the financial sector.

3.4 Differences in the design of investment agreements

Differences in the design of investment agreements allow for an additional test of our theory. If firms locate subsidiaries abroad to gain access to investment treaties, the effects should be largest for investment agreements that (i) provide relatively easy access to treaty provisions and that (ii) delegate arbitration to ICSID.

Some governments have started to restrict the coverage of investment agreements by including 'denial of benefits' clauses or requiring firms to engage in 'substantial business activities.' Denial of benefits clauses allow governments to deny treaty protection if "legal entities are owned/controlled by third-country nationals or host State nationals and that do not have real economic activity in the home Party ('mailbox' companies)" or if they have suspended diplomatic relations.[18] Loosely, these clauses are intended to preclude some of the patterns we described: the creation of subsidiaries in transit countries for access to investment agreements. While firms may find ways to work around such clauses, and the vague definition of 'real economic activity' can be contested, investment agreements containing such clauses should be less attractive to firms.

Similarly, while many investment agreements stipulate that claims are arbitrated at ICSID, the most prominent and institutionalized arbitration body, not all investment agreements do so. Investing in a country that provides a large number of excess partners through its investment agreements should be less valuable to a firm if those do not delegate to ICSID. According to Allee and Peinhardt (2010), ICSID is particularly attractive as it has established legal practices (Baker 1999; Shihata 1992), near universal membership (with 163 signatory and contracting countries as of July 9, 2020) (Sornarajah 2000), and close ties to the World Bank (Franck 2007). ICSID's decisions are as legally binding as decisions in domestic court decisions with few grounds for appeal (Hirsch 1992). Other tribunals, e.g., UNCTRAL, are more ad hoc and require the disputing parties to select arbitrators and hearing dates and to determine compensation (Slate 1996). Countries also frequently comply with ICSID's

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[18]https://unctad.org/en/PublicationsLibrary/diaepcb2015d5_en.pdf

decisions (Desai and Moel 2008). We also show above that claims are commonly filed through subsidiaries at ICSID, so firms know that ICSID will likely accept jurisdiction over their disputes.

To evaluate whether these design differences translate into transit country choice, we identify, using information from UNCTAD's International Investment Agreements Navigator, investment agreements with limited coverage (agreements that include denial of benefits clauses or requirements of substantial business activity), and investment agreements with limited delegation (agreements that do not stipulate arbitration at ICSID).[19] About 15 percent of agreements in our sample include clauses that limit their coverage, and about 15 percent of agreements do not delegate to ICSID. Less than 2 percent of all investment agreements in our sample do not delegate to ICSID and at the same time limit coverage. We re-calculate the variable EXCESS PARTNERS separately for agreements with limited coverage and all other agreements, and for agreements that do not delegate to ICSID and all other agreements.

As expected, the effects are largest for agreements that do not limit the access of firms to treaty provisions and that delegate to ICSID (see the Appendix for results). The marginal effect of a one-standard deviation increase in excess partners is about four times larger for agreements without restrictions than for agreements with restrictions. Consistent with the idea that firms find ways to work around these clauses, and perhaps have incentives to challenge contested rules, we still find significant effects for treaties that limit coverage. The results are similar when considering differences in access to ICSID. The effect of agreements that delegate to ICSID is about four times larger than the effect of agreements that do not delegate to ICSID. Moreover, the coefficient on excess partners fails to reach statistical significance for agreements that do not delegate to ICSID in two of the three models. Gaining access to these agreements is less attractive to firms.

3.5 Evidence from the internal organization of firms

In the Appendix, we further establish that firms structure the global ownership of their subsidiaries in a way that systematically expands the coverage of their subsidiaries under investment treaties.

We obtain data on the international organization of firms from the ownership module of the Orbis database (Bureau van Dijk 2017). We retain the same sample of the world's 500 largest firms. Data on the internal organization of firms is only available for the last reporting year for each firm, such that the data is cross-sectional. For each subsidiary, we determine its immediate owner and the location of that immediate owner, as well as the location of the ultimate owner, which is the parent firm.

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[19]If we cannot determine from UNCTAD or, where UNCTAD provides no information, from the agreement text whether an agreement delegates to ICSID, we code an agreement as not delegating to ICSID, unless all other investment agreements of both countries delegate to ICSID. In those cases, we assume the stickiness in countries' investment agreements carries over to missing observations (Alschner and Skougarevskiy 2016).

To evaluate whether firms structure their ownership to expand coverage for their investments, we draw on permutation inference: we compare the observed corporate structure, and statistics calculated from it, to a counterfactual corporate structure generated by allocating the ownership of subsidiaries randomly within each firm. Put differently, we compare the observed ownership structure of firms to the ownership structure that would arise if firms structured their subsidiaries randomly, not taking into account investment agreements and the possibility of structuring their ownership to gain indirect access to investment agreements. We create 10,000 corporate structures for each firm by randomly reallocating the location of each subsidiary's immediate owner. These randomly generated corporate structures serve as a counterfactual, to which we can compare the observed corporate structure. If firms do not extend coverage to their investments systematically through subsidiaries, then the coverage provided by the observed corporate structure should not differ from the coverage provided by these counterfactual, random structures. Comparing the randomly created corporate structures and the observed corporate structure, we can thus evaluate both by how much indirect access to investment agreements differs compared to random corporate structure, and we can evaluate whether that difference is likely driven by chance. This latter aspect is similar to a standard t-test of statistical significance (Erikson et al. 2014).

Observed transit country coverage is about 30 percent above what we would expect if firms allocated ownership of their investments randomly. The number of subsidiaries that provide indirect access to investment agreements increases by over 75 percent. The differences in both cases are statistically significant at the 1 percent level. The allocation of subsidiaries to immediate owners and the location of these immediate owners significantly expand the coverage of investments under investment agreements.

4 Consequences for global financial integration

Taking transit-country access into account, the largest firms now have access to investment agreements for the vast majority of their target markets. Figure 6 documents the access of firms to investment agreements in 2014. The horizontal axis represents each firm in our sample. The vertical axis represents the share of each firm's target countries for which the firm has coverage through an investment agreement between the target country and the firm's home country (in dark grey); and through an investment agreement between the target country and a transit country in which the firm has a subsidiary (in light grey). On average, firms have home-country coverage for 52% of their target markets. Once we consider transit-country coverage, firms have access to investment agreements for 86% of their target markets.

4.1 Transit countries and aggregate investment flows

We now turn to several implications for the distribution of aggregate investment flows across countries. As noted in Proposition 2 above, countries that provide access to investment agreement partners not available elsewhere should emerge as 'hubs'
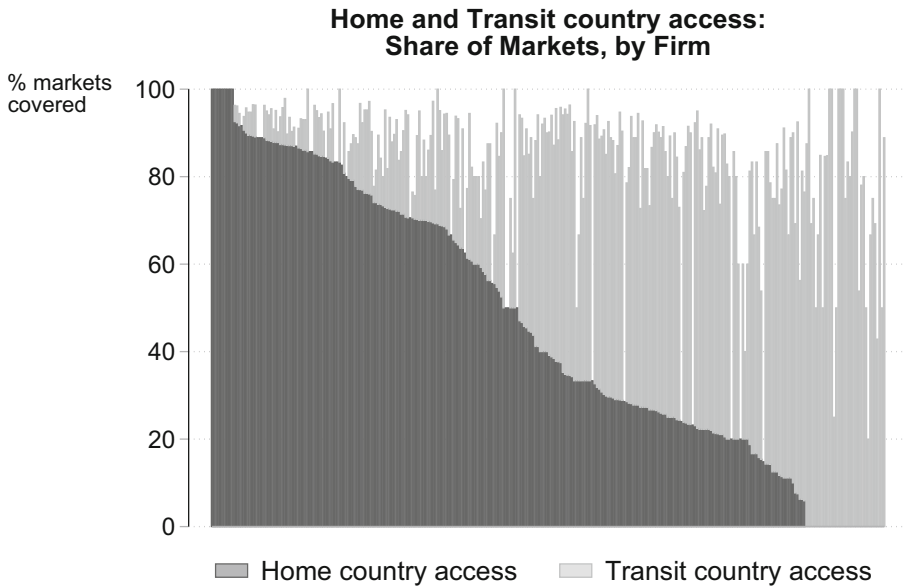
**Home and Transit country access:
Share of Markets, by Firm**

Fig. 6 Firms in the sample along the horizontal axis; share of target countries a firm can access through its home country (dark grey), and share of target countries a firm can access through a subsidiary (light grey)

in global investment flows, with higher inflows and outflows. Thus, the (reported) distribution of foreign direct investment should reflect the structure of investment agreement partners across countries. We further anticipate in Proposition 3 that for individual countries, the effect of investment agreements for attracting investment inflows should deteriorate over time and treaty partners, as firms are able to avail themselves of coverage through transit countries.

4.2 Investment inflows and outflows

Countries that offer agreement protections not available elsewhere can become hubs for global investment. Among OECD countries, those with more excess treaty partners on average (across firms) also have more investment inflows and outflows. Figure 7 reports the positive conditional correlation between a country's excess partners and its stock of inward foreign direct investment (in the left panel) and outward foreign direct investment (in the right panel; FDI data from UNCTAD). We additionally report regression results. The models are linear regression models with country and year fixed effects and standard errors clustered by country. The independent variable of interest is the extent to which a country offers a distinct set of agreement partners to firms: a country's average number of excess partners. The dependent variables are inward and outward FDI. We expect that a transit country's average number of excess partners is associated with both more inward and more outward foreign direct investment – even after controlling for a country's total number of investment

**Treaty Portfolios
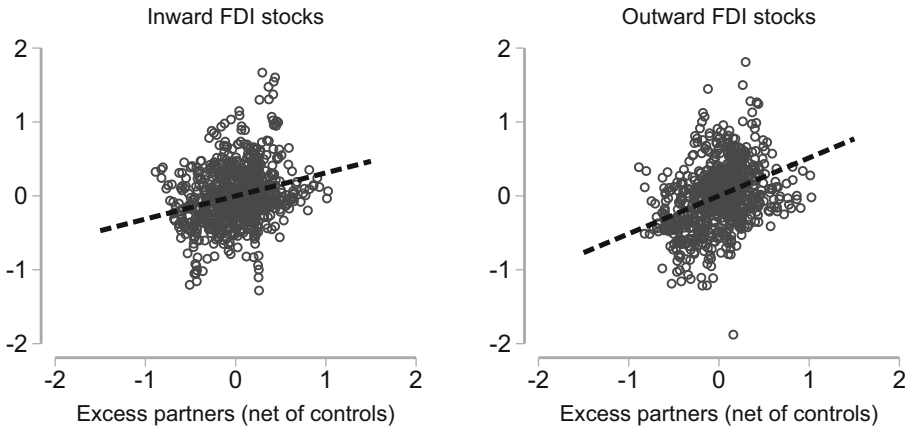and Comparative Advantage among OECD countries**

Fig. 7 Scatterplots of a country's average excess partners on the horizontal axis and, on the vertical axis, the logged inward stock of foreign direct investment as a percent of GDP (left panel) and the logged outward stock of foreign direct investment as a percent of GDP (right panel). All variables are reported net of GDP, GDP per capita, a country's total number of investment agreements, and year and country fixed effects. Data from 24 OECD countries, 1980-2014

agreements and country and year fixed effects. We include a standard set of control variables.

Table 4 presents the regression results. Countries that offer more excess partners have more inward and outward FDI, suggesting that these countries act as hubs in attracting and distributing global investment flows. These countries attract investment not just because their investment agreements protect assets in the country, but because they protect assets in other countries. These data mirror the firm-level results in the previous section and further establish that the behavior of firms in the investment regime has consequences for aggregate investment flows, as reported in economic statistics.

4.3 Effect of investment treaties over time and treaty partners

The effects of investment agreements on aggregate foreign direct investment should decline over time and in the availability of indirect routes to gain access to investment agreements. Figure 8 offers preliminary evidence consistent with this argument, drawing on aggregate foreign direct investment positions. We create a data set of non-OECD countries, with one observation for every country-year between 1980 and 2014. We match the data with the logged stock of inward foreign direct investment (as percent of GDP; data from UNCTAD). We identify for each country those OECD countries with which an investment agreement is in force in any given year. We then identify those OECD countries in which the firms in our sample created subsidiaries, and calculate the number of countries that are covered by an investment agreement through these subsidiaries. We allow for non-monotonic effects across the

Table 4 Investment agreement portfolios and aggregate investment

	Inflows (1)	Outflows (2)	Inflows (3)	Outflows (4)
Excess partners	.32	.54		
	(.014)	(.001)		
Betweenness			.20	.69
			(.582)	(.027)
Log GDP	−1.21	−.43	−1.24	−.51
	(.002)	(.179)	(.002)	(.140)
GDP per capita	1.41	1.07	1.33	.96
	(.056)	(.041)	(.058)	(.064)
GDP growth	.31	−.35	.25	−.38
	(.226)	(.128)	(.345)	(.166)
Total BITs	−.80	−1.93	.26	−.20
	(.329)	(.028)	(.657)	(.768)
Constant	33.4	12.0	34.3	14.1
	(.001)	(.146)	(.001)	(.111)
Year FE	yes	yes	yes	yes
Country FE	yes	yes	yes	yes
Number Obs.	811	789	811	789

Coefficient estimates and p-values. Standard errors clustered by country

distribution of the variable by splitting it into percentiles. We include a standard set of control variables (log GDP, GDP growth, GDP per capita, a dummy variable for whether a country is a democracy, and a property rights indicator to control for domestic property rights); standard errors are clustered by country.

Figure 8 presents the marginal effect of an increase in a country's number of investment agreements with OECD countries over time, using year dummies (left panel), and as the availability of indirect routes through access-expanding subsidiaries in OECD countries increases, using different percentiles of the variable for indirect access (right panel). Both panels of Fig. 8 indicate the same substantive trend: investment agreements increase foreign direct investment during the 1980s and when few access-expanding subsidiaries existed in OECD countries. The effect declines, and eventually becomes indistinguishable from zero, over time and as more firms gain indirect coverage.[20] In the Appendix, we report the same relationship, using the kernel estimator proposed by Hainmueller et al. (2018).

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[20] An alternative interpretation is that these results reflect signing incentives: countries may have signed the economically most important investment agreements first. While we cannot rule out this interpretation, some of the largest economies, including the U.S., entered many of their investment agreements after the drop in the effectiveness of investment agreements. Countries may also adopt other measures to protect foreign investments or political risk may have decreased over time, so investment agreements have become less important.
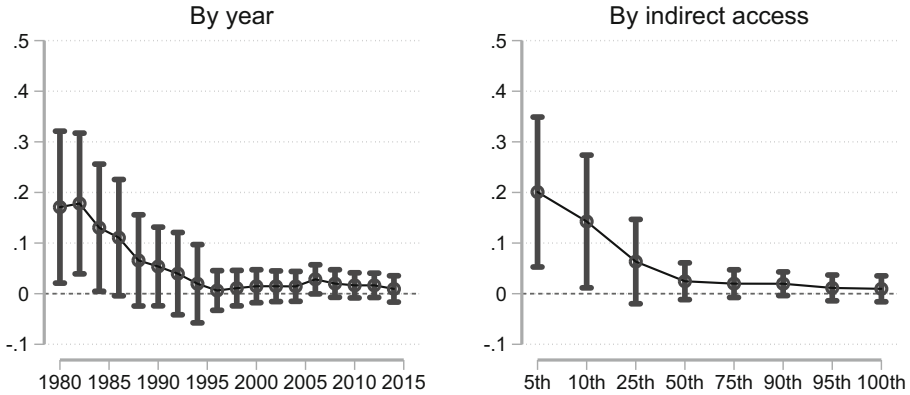
Fig. 8 Marginal effect of an increase in a country's number of investment agreements on logged foreign direct investment as a percent of GDP, together with 95% confidence intervals, as a function of time (left panel) and as a function of firms' indirect access to investment agreements (right panel). The figure shows that the effect of investment agreements declines as more firms are able to secure access to investment agreements through indirect routes. Data from 122 non-OECD countries, 1980-2014

5 Conclusion

We emphasize the fragmentation of firms across countries and their global ownership structure as an important aspect of the international investment regime. By creating subsidiaries in new markets, firms can access provisions in international investment agreements in places where their business interests motivate them to invest, but where their home government has not negotiated protections through investment agreements.

We suggest several directions for future research. First, we point to the importance of the global fragmentation of firm ownership. While a growing literature highlights the political consequences of the fragmentation of production, we emphasize the fragmentation of firm ownership as a theoretically important, and empirically tractable, topic for future research. Accounting for the ownership structure of firms is relevant to the political balance between firms and governments (e.g., Betz and Pond 2019), and it provides a perspective on global investment flows that is distinct from theories of capital mobility and exit threats. Moreover, we provide a new rationale for the global expansion of firm boundaries, based on differences across countries in the participation in investment agreements. In this view, domestic and international institutions can become a source of comparative advantage in explaining investment positions. More generally, if institutions matter for political and economic decisions, developing institutional theories of comparative advantage, and the distributional implications of such theories, offers a new understanding of the consequences of globalization across firms and across countries.

We also note the importance of indirect forms of investment, which create a distinction between the ultimate and the immediate owners of assets. Because data on aggregate FDI positions are typically based on immediate asset ownership, they provide a potentially biased measure of international financial ties and the distribution of asset ownership and investment risk. Ultimate, not immediate ownership, indicates where the investment risk and the firms that control these assets are located. This distinction is important for theories based on bilateral relations between countries, such as the consequences of investment ties for military conflict, the effects of shared investor nationality on political relations, or the role of institutional similarity for attracting investment. Where investment data fail to reveal the ultimate owners of investments, they also fail to reflect the underlying political dimension of that investment (Kerner 2018; Linsi and Mügge 2019).

Second, our paper highlights the distributional consequences of the investment regime. Both the reorganization of a firm's ownership structure and the use of investment agreements to challenge government policies are potentially costly, and prohibitively costly for some firms. Firms that already have operations in several countries face lower costs from adjusting their global ownership structure in a way that increases access to investment agreements. Investment agreements thus effectively lower production costs for some firms relative to others and endow these firms with an institutional, yet firm-specific source of comparative advantage over competitors. This might explain both the lack of corporate support for a multilateral investment regime after its failure in the 1990s and the slow-down in the creation of new investment treaties (Jandhyala et al. 2011): the largest multinational corporations already have access to investment treaties for most of their target markets or can relatively easily obtain such access. In facilitating the access of competitors to similar protections, large multinationals would forego these advantages. Large multinationals are accordingly less supportive of a multilateral regime than they would have been in the absence of an existing bilateral investment regime, and may even oppose a multilateral solution. This mirrors arguments about preferential trade agreements, which similarly create opposition to multilateral liberalization among beneficiaries (Mansfield and Milner 1999). Examining such differences across firms, and the implications for the political cleavages over the investment regime, remains a fruitful area for research.

The ability of firms to gain access to investment agreements also has new implications for the congruence of the interests of firms and their home governments. Because the portfolio of available agreement partners varies across firm home countries, substantial inequalities exist among firms in their access to investment treaties. Transit-country access to investment agreements erodes these home country effects, which has two contrasting implications. On the one hand, firms no longer depend on their home country's investment agreements, because the ownership of firm assets is decoupled from the home country of the firm. The increasing emancipation of firms from their home countries reinforces the departure of the contemporary investment regime from the initially state-centric customary international law in this area (Simmons 2009).

On the other hand, firms lose the privileges derived from their own government's investment agreements. Foreign firms can access the same agreement protections as domestic firms by locating subsidiaries in that market. This poses new limits to the ability of governments to privilege domestic firms. From the perspective of governments, the pattern reflects a common theme: the increasing volume and complexity of cross-border transactions limits their ability to selectively regulate domestic markets. At the same time, this creates an opportunity for international cooperation to revise the investment regime. Governments that have become the targets of claims based on transit-country coverage would like to restrict access to investment treaties; and governments that provide the routes for such claims may have incentives of their own to restrict such access.

Finally, the firm-specific access to investment agreements through subsidiaries has consequences for the evolution of the investment regime. Signing a single investment agreement can have outsized effects if that agreement offers expansive access through indirect routes. When the ability to ratify agreements is contested (Haftel 2013), a country's future ability to attract investment may hinge on getting just one agreement through; but a government may also, intentionally or not, grant rights to more firms than it anticipated. Conversely, where governments look to change their existing commitments (Haftel 2018), revisions to individual agreements, rather than the country's entire portfolio of investment agreements, become less effective, as firms can access treaty provisions through transit countries. Where private actors adapt to the complexity of international rules, created by governments, the distributional consequences of this behavior can have significant implications for the future design, reform, and contestation of such rules; understanding such feedback effects remains an important topic also beyond the investment regime.

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