Rising Protectionism and Foreign Direct Investment*

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Abstract

This paper investigates the impact of the changing international investment regime on foreign direct investment (FDI). Since the late 2000s, hundreds of international investment agreements (IIAs) have been renegotiated or terminated. We study the impact of these shifts in the global investment regime using a novel FDI dataset based on transaction-level investment data and detailed information on IIA provisions. Relying on a stand-alone partial equilibrium modeling framework, we hypothesize that rising IIA protectionism increased investment frictions and harmed FDI. We operationalize this hypothesis in the parsimonious three-way gravity framework and find that reformed and newly enforced IIAs have no impact on FDI flows. Utilizing a data-driven IIA stringency index, we provide evidence that decreasing investment openness in recently implemented IIAs is the driving mechanism behind these findings. We also show that the effects of IIA termination differ by FDI type, being more pronounced for brownfield than greenfield FDI and larger for horizontal than vertical FDI. Lastly, we find evidence for considerable treatment heterogeneity across industries, with capital-intensive sectors benefiting more from IIAs than labor-intensive ones. Our findings highlight the need to reconsider the benefits and costs of IIAs under an increasingly protective international investment regime.

Keywords: Foreign direct investment, international investment agreements, rising protectionism, three-way gravity model, vertical and horizontal, brownfield and greenfield

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1. Introduction

The international investment regime is undergoing extensive reform in response to a regime-wide legitimacy crisis and a rift over the investor-state dispute settlement (ISDS) system (Waibel et al., 2010; Abebe and Ginsburg, 2019). In particular, the rise of legal drafting caused a debate regarding the role of the international judiciary and international investment law (Goldstein et al., 2000; Johns, 2015; Berge, 2020). These concerns are exacerbated among partner states of international investment agreements (IIAs) that lack clarity on ISDS, making unpredictable and riskier environments (Bonnitcha et al., 2017). Not surprisingly, the United Nations Conference on Trade and Development (UNCTAD) reported in their 2022 World Investment Report that countries terminated more than 390 IIAs, with the number of IIA terminations exceeding that of newly signed IIAs in the last five consecutive years (UNCTAD, 2022). This alteration of the IIA landscape goes hand in hand with a substantial decline in global foreign direct investment (FDI). Hit hard by the 2008 financial crisis, global FDI flows recovered to $2 trillion in 2015 but dropped sharply to less than $1 trillion at the height of the pandemic (UNCTAD, 2022). The coincidence of rising IIA protectionism and falling FDI flows raises the question of how IIA termination and renegotiation contributed to the FDI collapse and whether the newly enforced IIAs effectively promote FDI.

IIAs propagated during the 20th century decolonization period, when newly independent countries started to assert their regulations and laws, leading to anxiety among foreign investors (Vandevelde, 2005; UNCTAD, 2015). IIAs address that anxiety through clauses granting foreign investors fair and equitable, national and most-favored-nation treatment, and transparent expropriation rules. Only a few IIAs entered into force before 1990, when a massive surge of new IIAs swept across the globe, induced by the wish of many developing countries to increase capital inflows in response to their collapsing import-substitution economies (Haftel, 2010; Dixon and Haslam, 2015). The expansion rate was such that more than 100 agreements were signed each year until 2010, with over 2,500 IIAs in force today (UNCTAD, 2023). Most of those treaties include binding ISDS provisions, which protect foreign investors from potential violations of agreement clauses by hosting states. They also allow investors to bring forward claims to an international arbitration institution (Neumayer and Spess, 2005). Not surprisingly, including ISDS provisions via investment treaties has been vital in promoting FDI, as evidenced by several empirical studies (e.g., Berger et al.,

2011; Dixon and Haslam, 2015; Frenkel and Walter, 2018). However, many countries have raised concerns about the provisions as the investor settlement procedure potentially involves considerable interference in domestic policy, with practically any public policy being challenged (Falvey and Foster-McGregor, 2017a). Consequently, they have attempted to reclaim legal sovereignty since the late 2000s, particularly to limit the propagation of the ISDS mechanism, which has spurred growing concerns about the cost of arbitration (Thompson et al., 2019). Notably, the number of ISDS cases reached more than 1,000 in 2019, with about 70 percent of the open arbitration decisions favoring investors (UNCTAD, 2021). As a result, domestic stakeholder groups voiced opposition to their government on seemingly investor-friendly provisions in existing investment agreements that could compromise their legal sovereignty. This regime-wide legitimacy crisis has caused a sharp rise in the number of terminated and renegotiated IIAs since 2010 (Lavopa et al., 2013; Voon et al., 2014; Haftel and Thompson, 2017).

The proliferation of IIAs with ISDS provisions led to a growing interest in the international economics literature regarding their potential effects on FDI flows. Interestingly, the literature is ambiguous regarding the FDI implications of ISDS provisions. For example, Berger et al. (2011) evaluate IIA effectiveness in promoting FDI flows, incorporating ISDS provisions contained in Bilateral Investment Treaties (BITs).[1] Their empirical results for Central Europe show that most of the BIT effects can be attributed to ISDS provisions, while the mere existence of a BIT is unsupportive of higher FDI flows. In a follow-up study, Berger et al. (2012) extended their research design by including additional countries and accounting for regional trade agreements (RTAs), showing that ISDS provisions play a minor role in promoting FDI. In contrast, Dixon and Haslam (2015), who incorporated several types of ISDS provisions in a more comprehensive empirical analysis, provide evidence for a positive association between BITs with strong ISDS provisions and FDI for Latin America. Supportive of these findings, Frenkel and Walter (2018) find that more comprehensive ISDS provisions in BITs are associated with higher FDI activity using a more robust measure of IIA stringency (more liberal) that relies on eight ISDS provisions. These contradictory results may be

[1] BITs are the most common type of IIAs, along with treaty investment provisions (TIPs), which are part of economic integration agreements. BITs were more prevalent until 2008, but TIPs became more common under the current international trade and investment policy regime (UNCTAD, 2015).

due to insufficiently robust or imprecise identification obscuring the actual FDI effects of investor protection, which has become a growing issue with the shift in the IIA regime (Brada et al., 2021).

This paper assesses the FDI effects of rising IIA protectionism, manifested by the rising number of IIA terminations and the declining stringency of newly enforced IIAs. First, we use a stand-alone partial equilibrium modeling framework to assess the impact of rising IIA protectionism on FDI flows. The model allows us to hypothesize that rising IIA protectionism increases FDI frictions and reduces incentives for multinational enterprises (MNEs) to invest in foreign markets. Second, we construct a comprehensive dataset on global FDI activities from transaction-level investment data for 2003 to 2018, a considerable improvement over publicly available datasets that report net FDI flows (Levy Yeyati et al., 2007). We compiled this FDI dataset with other explanatory variables, including detailed information on IIA enforcement, termination, stringency, and additional covariates. Third, we test our hypotheses, building on the parsimonious three-way gravity model, which allows us to control for multilateral investment resistances and time-invariant bilateral investment frictions with high-dimensional fixed effects (Baier and Bergstrand, 2007; Egger and Nigai, 2015; Agnosteva et al., 2019). Our empirical results show that IIAs enforced before 2010 increased FDI by 10.4 percent, while IIAs implemented after 2010 have no impact at conventional levels of statistical significance. Along these lines, IIAs with more stringent provisions attract 9.7 percent more FDI but no evidence of such treatment effects for less stringent IIAs. These findings suggest that IIAs enforced under the new IIA regime no longer promote FDI activities. We also assessed the impact of IIA termination on FDI flows. We find that a terminated IIA reduces FDI flows by 10.6 percent. The termination effects are more pronounced than the enforcement effects, especially when countries mutually agree to discontinue IIAs. This finding supports the view that changes in the IIA regime contributed to the recent FDI collapse. We also tested for heterogeneity in the IIA effects according to FDI type and industry characteristics. We find that IIA termination affects more brownfield than greenfield FDI. Moreover, we show that the termination effects are more potent for horizontal FDI than vertical FDI. Lastly, the effects are minor for manufacturing and mining and more substantial for agriculture, construction, and trade.

This paper offers four contributions to the growing literature on rising IIA protectionism and FDI flows. First, our work speaks to the literature concerned about the rise in protectionist foreign

policies (e.g., Fajgelbaum et al., 2019; Fetzer and Schwarz, 2020; Cavallo et al., 2021; Fetzer and Schwarz, 2021; Fajgelbaum and Khandelwal, 2022). Although a large body of literature discusses the global trade implications of rising protectionism, no study has yet explored the FDI implications of the protectionist wave. Previous research on FDI protectionism has focused on unilateral and multilateral regulations related to patent and intellectual property rights (Glass and Saggi, 2002; Naghavi, 2007; Leahy and Naghavi, 2010). Our paper expands this work by quantifying the effects of rising IIA protectionism on FDI flows. Second, the paper offers new insights regarding the FDI effects of IIAs. The existing literature has not reached a consensus about this association (e.g., Hallward-Driemeier, 2009; Busse et al., 2010; Berger et al., 2011, 2012; Dixon and Haslam, 2015; Falvey and Foster-McGregor, 2017a; Frenkel and Walter, 2018; Li et al., 2021). Leaving out the recent IIA regime shift has led to inconsistencies across studies regarding the true FDI effects of IIAs. We show that numerous IIAs have been renegotiated and terminated and that governments have enforced less stringent IIAs since the late 2000s. Third, we provide evidence for substantial heterogeneity in IIA effects on the entry choice of MNEs. Brownfield and greenfield FDI differ regarding the incentives for MNEs to enter a foreign market. MNEs take into account various factors, such as administrative, economic, geographic, and political characteristics, when making investment decisions (e.g., Helpman et al., 2004; Nocke and Yeaple, 2007; Stepanok, 2015; Davies et al., 2018). Because IIAs aim to reduce such barriers, the IIA effects are stronger for one FDI type than the other. We also show that the IIA effects differ for horizontal and vertical FDI. A substantial literature studied the determinants of each FDI type, such as trade costs and the demand structure for horizontal FDI (e.g., Markusen, 1984; Helpman et al., 2004; Fajgelbaum et al., 2014) or factors affecting production costs for vertical FDI (e.g., Helpman, 1984; Antrás and Helpman, 2004; Braconier et al., 2005). Our empirical findings suggest that investment uncertainty affects vertical and horizontal FDI differently, consistent with the theory developed by Aizenman and Marion (2004). Fourth, our paper provides evidence for substantial sectoral heterogeneity in the FDI response to IIA shifts. While the previous literature has examined the various industrial characteristics that determine FDI (Crespo and Fontoura, 2007; Mayer-Foulkes and Nunnenkamp, 2009; Wang, 2010), we show that the FDI effects of IIAs vary considerably across industries. This analysis has important policy implications as some governments consider a particular type of FDI more desirable than others (Blomström et al., 2003; Crespo and Fontoura, 2007). Our

results suggest that IIAs are ineffective in achieving such goals, explaining the recent rise in IIA protectionism.

2. Rising Protectionism and the International Investment Regime

There has been a remarkable change in the global investment landscape during the last two decades, reinforced by an evolving understanding of the benefits and costs of hosting foreign investors. As a result, governments have become more cautious when hosting foreign investors. In an effort to address concerns about the excessive power granted to investors and the limitation of the government's ability to regulate in the public interest, many countries have attempted to reform the IIA regime. The regime-wide legitimacy crisis caused a sharp rise in the number of terminated and renegotiated IIAs since 2010 (Lavopa et al., 2013; Voon et al., 2014; Haftel and Thompson, 2017). As depicted in Panel (A) of Figure 1, IIA terminations have exceeded newly enforced IIAs since 2017, with 55 terminations in 2017 alone. IIAs can be either unilaterally denounced (one country claims to end the treaty after the initial contract period) or terminated by consent (both parties agree to cease the treaty before the initial contract period ends). Until 2009, most countries renewed the initial contracts, but more countries have denounced the agreements unilaterally since 2010 (UNCTAD, 2023). Considering that the IIA contract period is ten to fifteen years, significantly more IIAs will likely be terminated moving forward (Thompson et al., 2019).[2] Accordingly, the UNCTAD predicts that the recent trends in the IIA regime will continue to accelerate as more treaties reach their expiration date and are terminated either unilaterally or by mutual agreement before the contract expires (UNCTAD, 2020).

Before terminating IIAs, treaty partners can renegotiate their contracts to ensure they are fair and protect the interests of both investors and the host country. This can involve updating existing IIAs to reflect changes in the global economy and international law or creating new agreements more tailored to fit the specific needs of the host country. IIA renegotiation can also be used to ensure that investors have clear rules on dispute resolution and that safeguards are in place to protect the host country's rights and interests. Moreover, the successful reform of IIAs can set a strong precedent for

[2] IIA termination continued after the study period ended in 2018, as the number of terminated IIAs exceeds the one of newly enforced IIAs during the last five years (UNCTAD, 2023).

other agreements, as hundreds of existing IIAs are written based on the templates of a few standard agreements historically. Thompson et al. (2019) show that the recent IIA renegotiations focused on 48 provisions. Using this information, we construct an index indicating the IIA stringency level between 1958 and 2018.[3] Following the previous literature (e.g., Dixon and Haslam, 2015; Frenkel and Walter, 2018; Thompson et al., 2019), we use the term stringency to describe the degree of openness. As shown in Panel (B) of Figure 1, the index was highest between 1990 and 2010, when more progressive provisions were prevalent in newly enforced IIAs. Since then, the IIA stringency has fallen drastically, indicating rising IIA protectionism caused by reforms that got underway due to the regime-wide legitimacy crisis.[4]

3. Empirical Strategy and Data

3.1 Theoretical Framework

We rely on a stand-alone partial equilibrium modeling framework to assess the impact of rising IIA protectionism on FDI flows. Our model builds on Kox and Rojas-Romagosa (2020) to explain FDI patterns in light of bilateral investment policy changes.[5] Different from the more traditional knowledge-capital model of the multinational firm (e.g., Carr et al., 2001; Bergstrand and Egger, 2007; Baltagi et al., 2008; Blonigen et al., 2014; Anderson et al., 2019), we evaluate IIA effects directly in the following gravity-type FDI model:

$$FDI_{ij} = \omega_{ij} * \frac{A_i Y_i}{\rho_i} * \frac{B_j Y_j}{\pi_j}\,, \tag{1}$$

where i stands for the source and j for the destination country, leaving out the year subscript t for brevity. We denote bilateral FDI flows between the source and destination with FDI_{ij}. Because we intend to assess the FDI effects of rising IIA protectionism, we define the model in terms of

[3] We provide a detailed discussion on how we constructed the IIA stringency index in Appendix A.

[4] The average index score rebounded in 2018 due to two delayed IIA enforcement signed in the 2000s, which had formed before the recent rise in protectionism (i.e., *Guyana - Switzerland BIT, 2005* and *Finland - Kazakhstan BIT, 2007*). However, the other two enforced IIAs in the same year have an index score of around 0.65, consistent with the downward trends in the 2010s (i.e., *Republic of Korea - Myanmar BIT, 2014* and *Mexico - United Arab Emirates BIT, 2016*).

[5] We exclude internal investment flows from the analysis because we do not observe them for most countries in our data sample. Such data is only available for a few developed countries and a shorter period.

flows instead of stocks. Note that the FDI stock measure would be more appropriate in a general equilibrium setting (Blonigen and Piger, 2014; Anderson et al., 2019). We indicate FDI frictions with ω_{ij}, which account for how open the destination country j is for the entry of MNEs from the source country i. The parameters A_i and B_j measure how strongly bilateral FDI flows react to the economic mass of the source (Y_i) and destination country (Y_j). We expect the economic masses to be positively correlated with bilateral FDI flows because larger economies invest more and have a larger market to receive such investments (di Giovanni, 2005; Busse et al., 2010; Blonigen and Piger, 2014). We denote multilateral FDI resistances with ρ_i and π_j. Similar to the traditional structural gravity trade model setting (e.g., Anderson and van Wincoop, 2003; Anderson, 2011; Anderson et al., 2020), we define the multilateral FDI resistance terms using constant elasticity of substitution (CES) preferences (σ), where $\rho_i = \left[\sum_{j=1}^{N} \left(\frac{\theta_{ij}}{\pi_j}\right)^{1-\sigma} \frac{Y_j}{Y}\right]^{\frac{1}{1-\sigma}}$ and $\pi_j = \left[\sum_{i=1}^{N} \left(\frac{\theta_{ji}}{\rho_i}\right)^{1-\sigma} \frac{Y_i}{Y}\right]^{\frac{1}{1-\sigma}}$. The iceberg investment costs that affect FDI flows between the source i and destination country j are denoted by θ_{ij} (Egger and Nigai, 2015; Yotov et al., 2017; Kox and Rojas-Romagosa, 2020). Among others, investment frictions account for physical and legal investment barriers and administrative and financial incentives provided by the host and source countries.

The stand-alone FDI gravity model allows us to conjecture that rising IIA protectionism affects investment frictions. Building on the substantial literature on the FDI creation effects of IIAs (e.g., Hallward-Driemeier, 2009; Berger et al., 2011; Busse et al., 2010; Falvey and Foster-McGregor, 2017a), we hypothesize that amending IIA provisions or terminating existing IIAs will increase investment frictions. To illustrate that impact, let IIA_{ij} be one if an IIA is in force between source country i and destination country j and zero otherwise. Then, if IIAs are effective in promoting FDI flows, we can expect that the partial derivatives of θ_{ij}, $\frac{\theta_{ij}}{\pi_j}$ and $\frac{\theta_{ji}}{\rho_i}$, are negative with respect to IIA_{ij}. Consequently, the partial derivative of FDI_{ij} is positive for IIA_{ij}. Assume now that $I(k)$ indicates more ($k = m$) or less ($k = l$) stringent IIAs, then we can conjecture that the positive IIA effects only apply to more stringent IIAs, primarily enforced in the late 1990s and the early 2000s, and not to the less stringent IIAs enforced after 2010.

3.2 Empirical Specification

We assess the FDI implications of the rising IIA protectionism in the parsimonious three-way gravity regression framework (Baier and Bergstrand, 2007; Egger and Nigai, 2015; Agnosteva et al., 2019):

$$Y_{ijt} = \exp\Big(\alpha_{it} + \alpha_{jt} + \alpha_{ij} + \sum_{k=m,l} \beta_k (IIA_{ijt} \times I(k)) + \delta Z_{ijt}\Big)\mu_{ijt}\,, \tag{2}$$

where we denote the source country with i, the destination country with j, and the year with t. We restrain ourselves from including a subscript for the economic sector for brevity. The exponential regression model exploits the panel nature of our data to account for multilateral FDI resistances and time-invariant unobserved investment frictions with source-year (α_{it}), destination-year (α_{jt}), and country-pair fixed effects (α_{ij}) following standard practice in the three-way gravity literature (Egger and Nigai, 2015; Yotov et al., 2017). We also include a set of time-variant dyadic control variables (Z_{ijt}) to account for potential pathways of indirect causation. These covariates are income difference, capital tax treaty, and income tax treaty. We denote the outcome of interest with Y_{ijt}, which measures FDI flows between source i and destination country j in year t. We use both the FDI count and amount as outcome variables to assess differences in the IIA effects according to the extensive and intensive FDI margins (Eicher et al., 2012). The interaction of IIA_{ijt} and $I(k)$ measures the impact of IIA stringency on FDI flows. Here, the parameter of interest (β_k) captures the partial derivatives of FDI with respect to IIAs with more ($k = m$) or less ($k = l$) stringent provisions. Because our preferred empirical model uses annual FDI data, we could underestimate the treatment effect by lagging the treatment variable by one year as the IIA effective dates can vary within the calendar year, potentially masking short-run treatment effects (Hallward-Driemeier, 2009). To account for these within-year differences in the treatment month, we weigh IIA by the number of months the IIA policy change was effective. We also estimate the previously proposed simple lag model to test the robustness of our approach (Neumayer and Spess, 2005).[6]

To test our hypothesis that less stringent IIAs do not affect FDI flows, we utilize the IIA stringency

[6] We provide the results of this analysis in Appendix B. We tested the lag model using monthly FDI data. The results are consistent with our preferred model.

index and measure the heterogeneous response of FDI flows by interacting the IIA variable with a dummy that indicates the level of IIA stringency. We established a cutoff for categorizing IIAs as either more or less stringent by referring to the bimodal distribution of the IIA index. The index is classified into two groups at the cutoff score of 0.75. In our dataset, 90% of all enforced agreements fall between the score range of 0.75 to 0.9, categorized as more stringent IIA. Additionally, we propose a simpler approach: comparing the impact of IIAs implemented before and after 2010 on FDI flows. Given the significant difference in stringency levels between the two, we hypothesize that IIAs implemented after 2010 may have a less significant impact on FDI flows than those implemented before.

To identify the parameters of interest in Equation 2, we follow standard practice in the gravity model literature and rely on the Poisson pseudo-maximum likelihood (PML) estimator (Gong and Samaniego, 1981; Gourieroux et al., 1984). Silva and Tenreyro (2006) showed that Poisson PML consistently estimates the gravity equation while being robust to different patterns of heteroskedasticity and measurement error, which makes it preferable to alternative estimation procedures, such as ordinary least squares (using the log of FDI flows) and non-linear least squares (in levels) (Anderson and Yotov, 2010; Anderson, 2011; Cameron and Trivedi, 2013). The estimator is also consistent in the presence of zero FDI flows, which are highly prevalent in disaggregated FDI data (Busse et al., 2010; Berger et al., 2012). We require zero FDI flows to identify the IIA effects for the extensive FDI margin. Finally, Poisson PML enables us to account for multilateral FDI resistances and unobserved dyadic investment frictions by including high-dimensional fixed effects, which fulfill the adding-up constraints of the FDI gravity model (Silva and Tenreyro, 2006; Fally, 2015; Weidner and Zylkin, 2021). We account for these high-dimensional fixed effects by using a modified version of the iteratively re-weighted least-squares (IRLS) algorithm that is robust to statistical separation and convergence issues (Correia et al., 2019, 2020). Lastly, following standard practice in the gravity model literature, we suspect that the standard errors are correlated within country-pair, prompting us to cluster them at this level (Cameron and Miller, 2015; Yotov et al., 2017).

3.3 Data

We compiled a comprehensive dataset on global brownfield and greenfield FDI activities at the individual project level.[7] Brownfield FDI data come from Refinitiv (2023) and greenfield FDI data from fDi Intelligence (2023). The combined dataset consists of 347,155 foreign direct investment (FDI) projects executed across 176 host countries by 165 source countries from 2003 to 2018. For both datasets, we have information on the investment year and month, project value, and industry classification, which we use to create our final dataset that includes the project count and amount for brownfield and greenfield FDI at the country-pair level. Our newly compiled dataset has several advantages over existing and publicly available FDI databases, such as the ones maintained by UNCTAD (2023) and OECD (2023). First, we can overcome inconsistencies in collecting methods and standards raised as a concern in earlier studies (Stephan and Pfaffmann, 2001; Fujita, 2008; Beugelsdijk et al., 2010). Because the collecting procedures and standards differ across countries, publicly available data lack credibility, especially for smaller countries with limited budgets to construct such statistics (Sutherland and Anderson, 2015; O'Mahony and Barry, 2019). We circumvent this data challenge and obtain a more precise measure of global investment patterns by constructing FDI flows from the bottom up. Second, the project-level dataset allows us to draw subsamples and investigate heterogeneity in the IIA treatment effects. This feature is particularly useful since it allows us to explore the heterogeneity in the FDI response to IIA renegotiation and termination. Lastly, the data allows us to explore the extensive and intensive investment margins by distinguishing project numbers and values. The project numbers tend to be more reliable, particularly for brownfield FDI, since Refinitiv (2023) either estimates or does not report project values for about 30 percent of the brownfield activities.

We constructed the IIA policy dataset with treaty-level information from UNCTAD (2023). For each IIA, we know the status and provisions from 1957 onward. Overall, the dataset covers 2,905 IIAs in force between 2003 and 2018. We used the treaty information to construct IIA enforce-

[7] Brownfield and greenfield FDI differ according to the ownership structure. While Greenfield FDI implies that a company builds a new facility or establishes a subsidiary from the ground up, brownfield FDI entails acquiring or merging with an existing facility or company in the destination market.

ment and termination binary variables and an IIA stringency index. The database includes 101 mapped treaty elements based on the IIA provisions. Thompson et al. (2019) broadly categorized these elements into *Preamble, Scope and Definition, Non-Discrimination and other Standards of Treatment, Expropriation and other Substantive Obligations, Good Governance, Flexibility, Institutional Issues, and Final Provisions*, and *Procedural Provisions*. Among the 101 treaty elements, we selected 48 elements targeted in the recent IIA amendments directly related to the level of IIA stringency. We followed the regulatory space framework proposed by Thompson et al. (2019) and created an index that ranges from zero to one to measure IIA stringency. The regulator space framework is a reliable measure of IIA stringency because it accounts for the trade-off between investment promotion and sovereignty (Wellhausen, 2014; Bonnitcha et al., 2017).[8] Using factor analysis as described in Appendix A, we obtained the IIA stringency index. We use that index to measure how IIA amendments moderate the IIA treatment effects.

We included several time-varying covariates to account for investment frictions. First, we constructed a measure of income difference. Fajgelbaum et al. (2014) show that the demand for non-homothetic quality of goods drives the positive relationship between FDI and income similarity. In addition, IIAs are a tool for developing countries to attract capital and knowledge from developed countries, which might be negatively related to income difference (Neumayer and Spess, 2005). To account for this endogeneity source, we include the absolute difference in log per-capita income between the source and destination country as a covariate. Second, we account for double taxation treaties (DTTs). The treaties provide both incentives (e.g., the elimination of double-taxation of multinationals) and disincentives (e.g., decreasing the ability for multinationals to "dodge" taxes by investing abroad) for FDI (di Giovanni, 2005). Previous studies show that DTTs led to higher FDI flows (e.g., di Giovanni, 2005; Neumayer, 2007; Blonigen and Piger, 2014). We include dummies for active capital tax treaty and income tax treaty to account for this correlation. Data for the GDP per capita comes from The World Bank (2023) and for the tax treaties from Tax Notes

[8] Note that one could alternatively use indicator variables for specific IIA provisions. This approach could cause multicollinearity bias due to highly collinear IIA provisions. Hence, the IIA index is a more reliable approach to account for the heterogeneity in IIA provisions without using feature selection methods (Breinlich et al., 2021).

(2023).[9] Summary statistics of all variables are provided in Table 1. The balanced panel includes FDI and IIA data for 180 source and destination countries from 2003 to 2018. Note that because the brownfield information is less reliable regarding the project value, we primarily discuss findings for the extensive FDI margin.

4. Results and Discussion

4.1 IIA Stringency and FDI Flows

Table 2 summarizes the Poisson PML estimates for the FDI effects of IIA stringency separately for the intensive and extensive investment margins. Columns (1) and (3) measure the IIA stringency effects by separating IIAs enforced before 2010 from those implemented after 2010. We chose 2010 as the cutoff year because IIA stringency decreased considerably after that year, as illustrated by the sharp drop in the IIA index after 2010 in Panel B of Figure 1.[10] The IIA estimates provide evidence for a positive association between IIAs enforced before 2010 and FDI flows, while there is no evidence for such a treatment effect for IIAs enforced after 2010. The positive FDI impact of IIAs enforced before 2010 exists for both investment margins, with an average treatment effect of 10.4 percent for the intensive and 22.0 percent for the extensive margin. The treatment effects for IIAs implemented after 2010 are four times smaller and statistically insignificant at conventional significance levels. These estimates lend empirical support for earlier legal studies arguing for adverse impacts of the recently reformed IIAs on the cross-border investment environment (e.g., Poulsen and Aisbett, 2013; Haftel and Thompson, 2017; Manger and Peinhardt, 2017; Thompson et al., 2019). We compare these treatment effect estimates with a different treatment variable specification that utilizes the IIA stringency measures in Columns (2) and (4). We classified all IIAs according to IIA stringency into *more stringent* and *less stringent* using a cutoff according to the bimodal distribution of the IIA index. Note that most IIAs enforced after 2010 are *less stringent*

[9] Unlike earlier studies that investigate the FDI effects of bilateral investment treaties (BITs), we consider both BITs and other treaties with investment provisions (TIPs). Therefore, we exclude regional trade agreements (RTAs) from the set of control variables, which would otherwise lead to multicollinearity issues.

[10] We investigate the robustness of our analysis using alternative cutoff years in Appendix B using 2008 and 2012 as alternative cutoff years. The results support our hypothesis that IIAs signed after 2010 drive the insignificant FDI effects.

according to this classification.[11] The estimates indicate a positive relationship between FDI flows and IIA stringency for the extensive but not for the intensive investment margin. There are 9.7 percent more FDI projects for countries that have enforced a *more stringent* IIA. These results are consistent with previous work arguing for a positive association between IIA stringency and FDI flows (Frenkel and Walter, 2018). Considering that the number of *less stringent* IIAs tripled from 2003 to 2018, our findings for both investment margins are not surprising, as the considerable shift in the IIA regime drives them.[12] The baseline estimates indicate that rising IIA protectionism adversely affects FDI flows. Considering that about 300 IIAs are currently up for renegotiation and that all 26 amended IIAs since 2018 have either limited or removed the ISDS feature (UNCTAD, 2021), the shifting IIA regime is likely to accelerate the current FDI collapse.

4.2 IIA Termination Effects

Table 3 presents the estimated results for the impact of IIA termination on FDI flows. We modified Equation 2 by including a measure of IIA termination in addition to the IIA enforcement variable. The IIA termination measure is constructed based on the termination month, which is why we weigh the treatment variable by the number of months the IIA policy change is in force.[13] Our estimation strategy accounts for the overall impact of IIA termination by identifying the enforcement and termination effects simultaneously, relying on variation between never treated, always treated, and not yet treated units (de Chaisemartin and D'HaultfŒuille, 2017; Callaway and Sant'Anna, 2021). Columns (1) and (3) compare the IIA termination effects for the extensive and intensive FDI margins. We find that countries receive 10.6 percent less FDI after IIA termination, while countries with an enforced IIA attract 9.4 percent more FDI. The IIA termination effect is more pronounced for the intensive margin. We find that FDI volumes fall by 27.3 percent after IIA termination, while an active IIA attracts 17.5 percent more FDI. These results indicate that IIA

[11] The newer IIAs replace older treaties, implemented before 1990, so that 90 percent of active treaties are *more stringent*, with the index ranging from 0.75 to 0.9 for this category.

[12] A potential limitation of these findings relates to the availability of credible data for the intensive investment margin, particularly for brownfield FDI before 2010, since there is considerable uncertainty regarding the investment volume as the share of missing or estimated values is about 30 percent from the data source (Refinitiv, 2023).

[13] Note that some country pairs have several IIAs. In this case, we define them as treated because of the terminated IIA. This approach is appropriate because terminating IIAs signals a riskier investment environment to the MNE regardless of other IIAs between those countries (Thompson et al., 2019).

termination causes adverse reputation effects that outweigh the benefits of having an active IIA between two countries (Voon et al., 2014; Bonnitcha et al., 2017).

To tease out the FDI effects of mutual consent and unilateral IIA terminations, we also interact the IIA termination variable with the termination type in Columns (2) and (4). The adverse termination effects are more pronounced under mutual consent, the more prevalent IIA termination type. The estimates indicate that countries receive 20.5 percent fewer FDI projects after terminating an IIA by mutual consent. Because the IIA enforcement effect is, with 9.4 percent, substantially smaller than the IIA termination effect, the investment uncertainty is considerably higher for IIAs terminated under mutual consent than unilaterally. We find a similar pattern for the intensive investment margin. This pattern is explained by the fact that countries can override IIA 'survival' clauses if they mutually agree, thereby excluding all future rights and claims under the treaty, affecting the MNE expectations regarding the future business environment (Voon et al., 2014). In contrast, a unilateral IIA termination occurs after the initial IIA term ends, with the 'survival' clause of the initial IIA protecting MNEs for 15 years on average (Bonnitcha et al., 2017). Moreover, because most terminated IIAs results from the failure to negotiate an IIA reform (UNCTAD, 2021; Voon et al., 2014), more mutual consent terminations will likely occur with potentially adverse FDI implications.

5. Heterogeneity Analyses

5.1 Brownfield and Greenfield FDI

The two entry modes of FDI have different economic consequences for the host economies. MNEs can establish a new subsidiary (greenfield) or acquire ownership of an existing company in the destination market (brownfield). Due to the varying costs associated with different entry modes, the MNE entry strategy depends on the IIA regime. Table 4 compares the IIA termination effects for brownfield and greenfield FDI. We find that IIA enforcement increases the number of brownfield FDI projects by 12.7 percent, while IIA termination leads to a decrease in this number by 15.0 percent. At the same time, we find no evidence that IIA termination hurts greenfield FDI. According to Meyer and Estrin (2001), transaction costs are higher for brownfield FDI because such investments bring together assets from companies with different management structures, incurring transaction

costs either in the market for corporate control or for a complementary asset in the host markets. Thus, the merger or acquisition would be more affected by temporary shocks and destination factors (Davies et al., 2018). Furthermore, in an unstable legal and institutional environment, MNEs benefit more from setting up greenfield FDI projects because they do not entail high administrative costs and political obligations (Cheng, 2009). These factors imply that brownfield FDI is more sensitive to IIA regime changes than greenfield FDI. We find similar patterns for the intensive margin. The project size decreases regardless of entry due to IIA termination. In contrast to our findings for the extensive margin, we also observe a decrease in the intensive margin for greenfield FDI, but with a lower magnitude than for brownfield FDI. The results imply that MNEs prefer smaller FDI projects in an uncertain investment environment (Colen et al., 2016). Most policymakers believe greenfield FDI is more desirable as it brings higher economic benefits than brownfield FDI, so they offer additional subsidies and incentives to MNEs (Blomström et al., 2003). Our results show that IIAs are to achieve this goal of FDI promoted by decision-makers.

5.2 Horizontal and Vertical FDI

We explore the heterogeneity in the IIA termination effects according to horizontal and vertical FDI in Table 5. This distinction is insightful because an MNE seeks to remove the costs of entry barriers and sell products to foreign markets directly through local subsidiaries rather than trade when pursuing a horizontal FDI project. In contrast, vertical FDI occurs when an MNE wants to benefit from lower factor prices in the foreign market by expanding its value chain internationally. Because the investment uncertainty could be different for both FDI type (Aizenman and Marion, 2004), we distinguish horizontal from vertical FDI by matching the 2-digit Standard Industrial Classification (SIC) code of the mother company with that of the affiliate's primary industry.[14] Following Alfaro and Charlton (2009), we assign a project the horizontal FDI label if the source and host industry are identical and use the vertical FDI label otherwise. We find that IIA enforcement increases the number of horizontal FDI projects by 11.9 percent, while IIA termination decreases this by 16.5 percent. At the same time, we find no evidence that IIA termination hurts vertical

[14] Note that we rely on company profile from Dun & Bradstreet to complement the missing industry information of the mother company from fDi Intelligence (2023).

FDI projects at conventional levels of statistical significance, while the enforcement effect is about 6.5 percent. This finding implies that horizontal FDI has responded more to the IIA regime shift. The pattern is explained by higher bilateral investment frictions, which play a more significant role in horizontal FDI as the MNEs choose between entering and exporting to the market. Thus, assuming trade frictions remain fixed, changing the investment costs via an IIA regime shift will affect the strategic decisions of MNEs. In contrast, vertical FDIs are firmly integrated into global supply chains, meaning that such investments are more complex than horizontal FDI and more vulnerable to other factors than bilateral investment frictions, such as trade costs between the supply networks, property rights, and even the relationship with third countries (Desbordes and Vauday, 2007; Bergstrand and Egger, 2007; Slangen and Beugelsdijk, 2010; Osnago et al., 2019).

5.3 Industry Differences

We assess the degree of industry heterogeneity in Figure 2. FDI contributes more to economic and employment growth when targeted at sectors with stronger links across the economy, maximizing their ability to create jobs and other spillover effects (Walsh and Yu, 2010). Although most IIAs are not specific to a sector, they could cause substantial treatment heterogeneity across industries (Crespo and Fontoura, 2007; Mayer-Foulkes and Nunnenkamp, 2009; Wang, 2010).[15] To measure the degree of industry differences, we interact the IIA enforcement and termination variables with the industry classification. We classified all FDI projects into eight industries using the subsidiary's primary 2-digit SIC codes. We observe considerable differences in the IIA enforcement and termination effects across industries. First, regarding the IIA enforcement effects for the extensive FDI margin, we find that the IIA enforcement effect is most pronounced for the construction industry, followed by trade, finance, and agriculture. Our findings suggest that IIAs are more beneficial for capital-intensive industries than labor-intensive industries. This result differs from Colen et al. (2016), who studied a selection of countries in Central and Eastern Europe, arguing that sectors with higher capital-labor ratios (thus, higher sunk costs) benefit more from BITs, which finds

[15] Because we find considerable heterogeneity across industries, the average FDI effects of IIA enforcement and termination could differ when we account for such heterogeneity. As shown in Appendix B, the average FDI effects are smaller than that for the baseline model but still statistically significant, providing further robustness to our regression results.

no support in our empirical findings. The regional scope of this analysis is likely to drive these inconsistencies, implying considerable treatment heterogeneity among IIAs. Our results for the manufacturing and mining sectors align with earlier studies, which provide evidence for small or insignificant IIA enforcement effects on FDI flows (Hallward-Driemeier, 2009; Busse et al., 2010; Berger et al., 2011). Second, we find strong evidence that the IIA termination effect varies by industry. Our results show that sectors with larger IIA enforcement effects also experience more substantial IIA termination effects. Moreover, these effects are more extensive than the actual IIA enforcement effects, indicating considerable investment uncertainty caused by IIA termination.

6. Conclusions

The global investment regime has experienced significant changes during the last two decades. Remarkably high compensation decisions in favor of investors from international arbitration associated with ISDS clauses are one of the drivers of this shift in the global investment landscape (Thompson et al., 2019). As a result, newly enforced IIAs contain less stringent ISDS provisions under the new regime. In addition, the number of terminated IIAs has markedly increased as countries failed to renegotiate existing IIAs. Several studies have addressed the more general question of how BITs affect FDI (e.g., Hallward-Driemeier, 2009; Busse et al., 2010; Berger et al., 2012; Egger and Merlo, 2012; Falvey and Foster-McGregor, 2017b; Kox and Rojas-Romagosa, 2020; Brada et al., 2021), while our paper is the first to assess the FDI effects of rising IIA protectionism. We observe a shift in the IIA regime in 2010, with empirical evidence indicating that IIAs enforced before 2010 effectively promoted FDI flows, while IIAs enforced after 2010 had no significant impact on FDI at conventional levels of statistical significance. We also show that IIA provision stringency is critical in explaining these remarkable differences. The IIA stringency level has dropped significantly since 2010, which had considerably adverse implications for FDI flows. Moreover, we show that IIA termination deterred FDI. The impact is immediate as the survival clause no longer protects MNEs after an IIA ends under mutual consent. The provision reforms affect more than 300 additional IIAs undergoing renegotiation (UNCTAD, 2023). As the need for systematic reform of the global IIA regime becomes increasingly evident, additional IIAs will likely be renegotiated. Therefore, the probability that more IIAs become less effective or terminated increases, with potentially adverse FDI effects and negative consequences for MNEs.

The rising economic protectionism received considerable attention due to its impact on international trade in light of recent tariff increases (e.g., Fajgelbaum et al., 2019; Fetzer and Schwarz, 2020; Cavallo et al., 2021; Fetzer and Schwarz, 2021; Fajgelbaum and Khandelwal, 2022). At the same time, little is known about protectionist investment policies and the recent shift of the IIA regime. While the related literature investigates the FDI effects of intellectual property rights (Glass and Saggi, 2002; Naghavi, 2007; Leahy and Naghavi, 2010), these studies cannot explain the implications of the recent IIA protectionism (Lavopa et al., 2013; Voon et al., 2014; Haftel and Thompson, 2017). Our paper expands on these studies by assessing the consequences of the IIA regime shift on FDI flows. A potential caveat of our research design relates to unobserved trade flows between the subsidiary and the mother company. According to the knowledge-capital model, FDI activities also relate to trade flows, especially if MNEs choose between exporting or investing horizontally (Carr et al., 2001; Bergstrand and Egger, 2007). Considering that rising protectionism is also prevalent in trade policies, its impact on the foreign activities of MNEs is worth examining further. In addition, our heterogeneity analysis holds critical policy implications. Some policymakers consider a particular type of FDI more desirable than others. For instance, previous studies have argued that greenfield FDI is more desirable as it offers higher economic benefits than brownfield FDI, incentivizing countries to provide additional subsidies and incentives to MNEs that pursue such investment (Blomström et al., 2003; Harms and Méon, 2018; Davies et al., 2018). Host countries expect high spillover effects and economic growth by inviting foreign capital, often targeting FDI in high-skilled and technology-intensive industries (Crespo and Fontoura, 2007). However, as we show, IIAs are ineffective in achieving these goals. The IIA enforcement effects are less pronounced for manufacturing, vertical, and greenfield FDI than for other FDI types and industries. This pattern could explain the protectionist wave that is transforming the global IIA regime.

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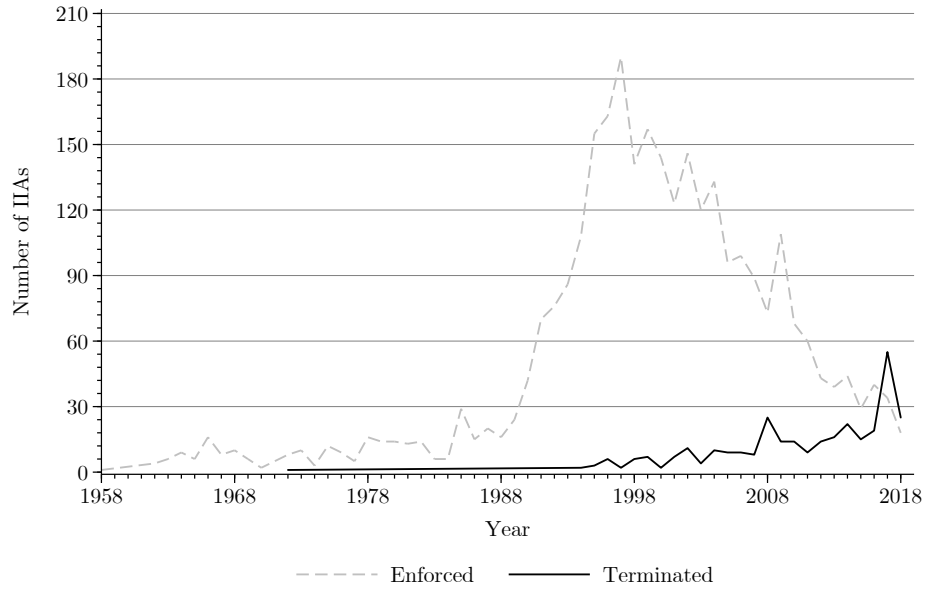
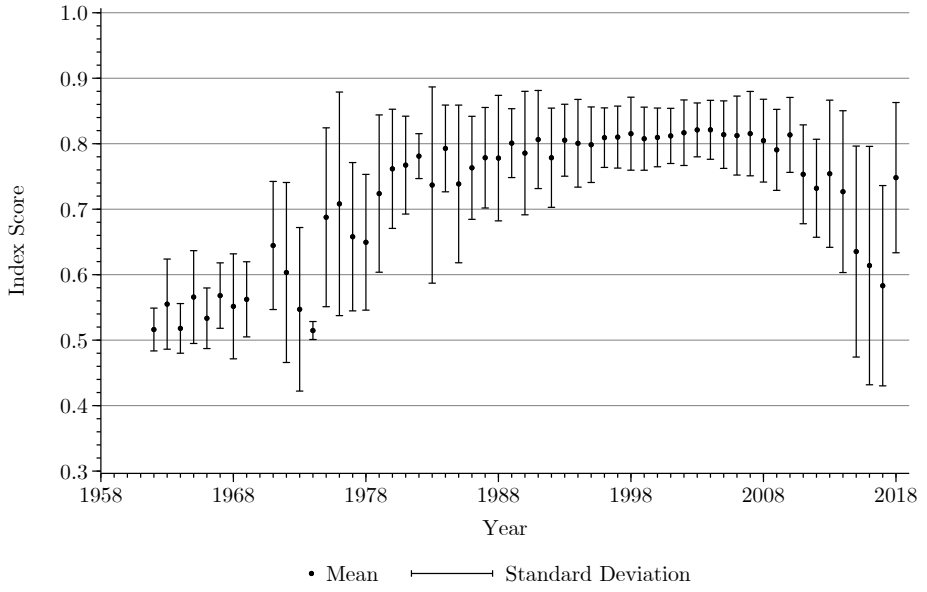
Figures and Tables



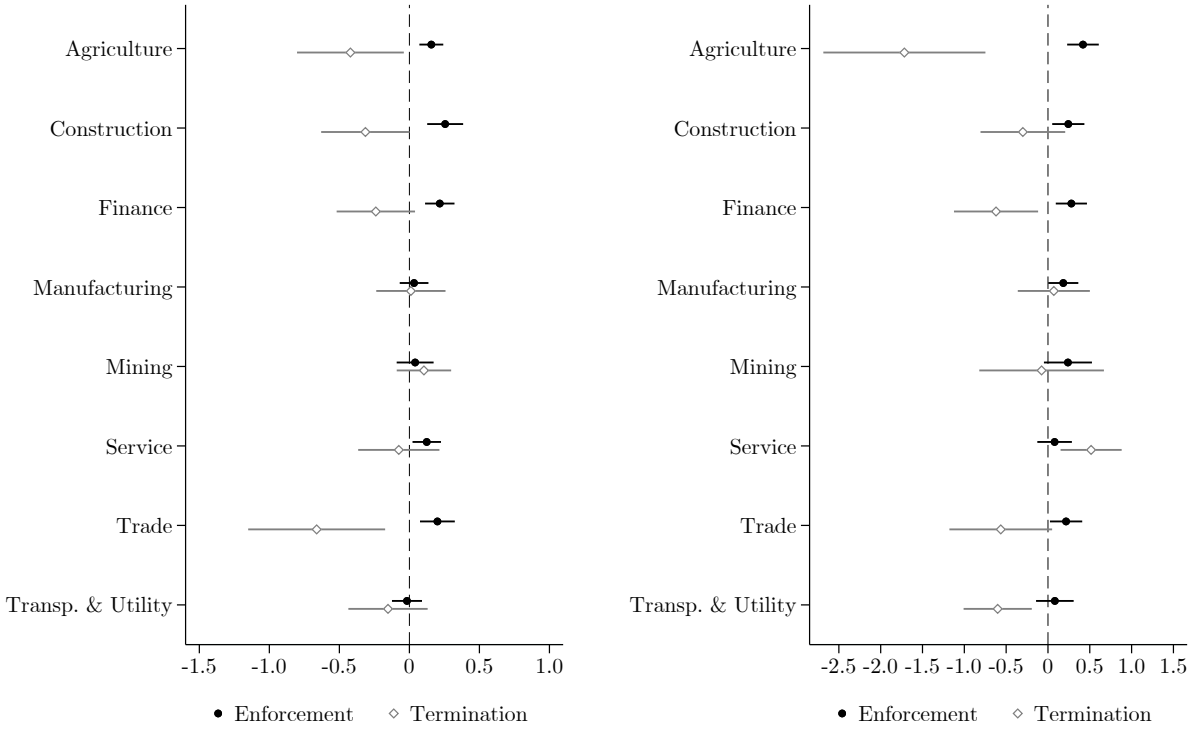
Panel (A): IIA Enforcement and Termination



Panel (B): IIA Stringency

Figure 1: IIA Enforcement, Termination, and Stringency from 1958 to 2018

Notes. The figure shows the number of newly enforced and terminated IIAs in Panel (A) and depicts the mean and standard deviation of the index scores for newly enforced IIAs in Panel (B) from 1958 to 2018.



Panel (A): Extensive Margin

Panel (B): Intensive Margin

Figure 2: Industry Heterogeneity

Note. The figure plots the IIA enforcement and termination effects at the industry level for the extensive and intensive investment margins. All regressions include industry-source-year, industry-destination-year, and country-pair fixed effects. The points indicate parameter estimates and the bars the 95-percent confidence intervals.

Table 1: Descriptive Statistics

Variables	Mean	Std. Dev.	Min	Max
FDI Count	0.634	7.724	0	778
- Greenfield	0.386	4.556	0	426
- Brownfield	0.249	3.791	0	386
FDI Amount (*in* million US$)	21.734	277.089	0	40,000
- Greenfield	20.242	273.857	0	40,000
- Brownfield	1.307	25.039	0	2,009
IIA Enforced	0.453	0.498	0	1
IIA Terminated	0.003	0.05	0	1
Income Difference	1.342	0.979	0	5.727
Capital Tax Treaty	0.049	0.216	0	1
Income Tax Treaty	0.106	0.307	0	1

Note. The table presents the descriptive statistics. The calculation is based on data for 180×179 country-pairs and 2003 to 2018.

Table 2: IIA Stringency and FDI Flows

	Extensive Margin		Intensive Margin	
	(1)	(2)	(3)	(4)
IIA Enforced *before 2010*	0.099**		0.199*	
	(0.043)		(0.114)	
IIA Enforced *after 2010*	0.012		0.057	
	(0.035)		(0.111)	
IIA Enforced *more stringent*		0.093*		-0.128
		(0.053)		(0.136)
IIA Enforced *less stringent*		0.003		-0.146
		(0.061)		(0.144)
Income Difference	-0.019	0.025	-0.061	0.096
	(0.055)	(0.062)	(0.165)	(0.181)
Capital Tax Treaty	-0.020	0.057	0.177**	0.271**
	(0.036)	(0.041)	(0.076)	(0.115)
Income Tax Treaty	0.021	0.059**	-0.072	-0.117*
	(0.029)	(0.026)	(0.056)	(0.066)
Observations	510,592	334,906	505,666	332,095
Pseudo R-squared	0.918	0.916	0.875	0.894

Note. This table shows the impact of IIA stringency on FDI flows. Columns (1) and (3) compare IIA effects before and after 2010, and Columns (2) and (4) compare these effects according to the IIA stringency. All regressions include source-year, destination-year, and country-pair fixed effects. Standard errors are clustered at the country-pair level and provided in parentheses. Asterisks denote statistical significance: < 0.10 (*), < 0.05 (**), and < 0.01 (***).

Table 3: IIA Termination Effects

	Extensive Margin		Intensive Margin	
	(1)	(2)	(3)	(4)
IIA Enforced	0.090**	0.090**	0.161**	0.161**
	(0.041)	(0.041)	(0.080)	(0.080)
IIA Terminated	-0.101**		-0.241*	
	(0.050)		(0.132)	
– Mutual		-0.230**		-0.750*
		(0.098)		(0.397)
– Unilateral		-0.084		-0.167
		(0.055)		(0.142)
Income Difference	-0.018	-0.020	-0.051	-0.057
	(0.055)	(0.055)	(0.166)	(0.166)
Capital Tax Treaty	-0.020	-0.020	0.174**	0.174**
	(0.036)	(0.036)	(0.075)	(0.076)
Income Tax Treaty	0.021	0.021	-0.071	-0.070
	(0.029)	(0.029)	(0.056)	(0.056)
Observations	510,592	510,592	505,666	505,666
Pseudo R-squared	0.918	0.918	0.875	0.875

Note. This table shows the impact of IIA termination on FDI flows. Columns (1) and (3) compare IIA enforcement and termination effects, and Columns (2) and (4) compare these effects according to the IIA termination type. All regressions include source-year, destination-year, and country-pair fixed effects. Standard errors are clustered at the country-pair level and provided in parentheses. Asterisks denote statistical significance: < 0.10 (*), < 0.05 (**), and < 0.01 (***).

Table 4: IIA Termination Effects for Brownfield and Greenfield FDI

	Extensive Margin	Intensive Margin
Panel A: Brownfield FDI		
IIA Enforced	0.120**	0.156*
	(0.037)	(0.084)
IIA Terminated	-0.162*	-0.381***
	(0.087)	(0.126)
Panel B: Greenfield FDI		
IIA Enforced	0.097***	0.118
	(0.035)	(0.088)
IIA Terminated	-0.008	-0.269**
	(0.090)	(0.114)
Panel C: Control Variables		
Income Difference	-0.024	-0.049
	(0.072)	(0.188)
Capital Tax Treaty	-0.041	0.138**
	(0.087)	(0.057)
Income Tax Treaty	0.031*	-0.058
	(0.018)	(0.044)
Observations	1,085,624	1,065,188
Pseudo R-squared	0.857	0.856

Note. This table shows the impact of IIA termination on brownfield and greenfield FDI. Columns (1) and (2) compare IIA enforcement and termination effects for the extensive and intensive investment margins. All regressions include source-year, destination-year, and country-pair fixed effects. Standard errors are clustered at the country-pair level and provided in parentheses. Asterisks denote statistical significance: < 0.10 (*), < 0.05 (**), and < 0.01 (***).

Table 5: IIA Termination Effects for Horizontal and Vertical FDI

	Extensive Margin	Intensive Margin
Panel A: Horizontal FDI		
IIA Enforced	0.112***	0.151
	(0.030)	(0.116)
IIA Terminated	-0.181***	-0.273***
	(0.040)	(0.068)
Panel B: Vertical FDI		
IIA Enforced	0.063**	0.113
	(0.031)	(0.112)
IIA Terminated	-0.021	-0.172***
	(0.053)	(0.058)
Panel C: Control Variables		
Income Difference	-0.017	-0.087
	(0.052)	(0.076)
Capital Tax Treaty	-0.021	0.158*
	(0.016)	(0.093)
Income Tax Treaty	0.021	-0.060***
	(0.014)	(0.017)
Observations	1,085,624	1,080,539
Pseudo R-squared	0.882	0.83

Notes. This table shows the impact of IIA termination on horizontal and vertical FDI. Columns (1) and (2) compare IIA enforcement and termination effects for the extensive and intensive investment margins. All regressions include source-year, destination-year, and country-pair fixed effects. Standard errors are clustered at the country-pair level and provided in parentheses. Asterisks denote statistical significance: < 0.10 (*), < 0.05 (**), and < 0.01 (***).

Rising Protectionism and Foreign Direct Investment

Dongin Kim Sandro Steinbach

Appendices

Appendix A: IIA Stringency Index

Factor analysis is a statistical technique aimed at finding the minimum number of latent variables (factors) that explain the maximum amount of the overall variance of the observed variables (Rummel, 1988). Factors are the broader categories of the linearly combined observed variables. Each factor contains a set of coefficients (loadings) for the observed variables that express the correlation with the factor. The interpretation is a crucial step for the index, so a purely data-driven approach has limitations (Gönenç and Nicoletti, 2000). We used a two-stage method to construct the liberalization index to address this issue, combining the data-driven techniques and experts' knowledge for interpreting values.

We obtained the mapped contents of each IIA from the United Nations Conference on Trade and Development (UNCTAD). Among 3,300 IIA records, 2,571 agreements are mapped and available with detailed information (UNCTAD, 2023).[16] Thompson et al. (2019) was the first to use the mapped content to evaluate the content of IIAs. Following their approach, we selected 48 elements for our index calculation. These elements can be grouped into eight broader categories, which may explain the degree to which foreign investors can protect their rights through ISDS. Investment treaties are presumed to be a credible commitment device only if foreign investors have direct and guaranteed access to international arbitration, which allows investors to challenge the host country for breaches of treaty obligations (Berger et al., 2011). Therefore, we interpret a treaty with a higher degree of ISDS as a more stringent agreement. The assigned values to the elements ranged from zero for less stringent to one for more stringent. The complete list of elements with the assigned values is in Table A1.

[16] We accessed the database in November 2020 to collect the dataset. As of January 2023, the total IIAs reached 3,389, and 2,584 agreements are mapped and compiled in the database.

Based on this classification, we generated eight components by grouping the relevant elements into broader categories as depicted in Table A1. The eight components (categories) are *Preamble, Scope and Definition, Non-Discrimination and other Standards of Treatment, Expropriation and other Substantive Obligations, Good Governance, Flexibility, Institutional Issues and Final Provisions*, and Procedural provisions. Each component consists of one or more elements and is calculated by the weighted sum of its elements. The weights are the proportion of the factor loadings distributed to one element in a component and the total sum of loadings for all components. We first conduct the factor analysis at the sub-component level to get the ratio of each element's share of explanation in the component. Here, we follow Kaiser's rule to filter out statistically inappropriate factors. [17] The variance explained by the factors is different for components, allowing us to assign different weights to each component. This data-driven approach has the advantage of better explaining how to assign the weights than the typical fixed weight approach.[18]

The factor analysis at the component level extracts three factors that together explain 67.4 percent of the overall variation in the data. The result of this analysis is depicted in Table A2. The magnitude of each loading represents the correlation with the factors. In my result, Factor 1 captures *Preamble, Scope and definition, Good governance*, and *Flexibility* while Factor 2 captures *Non-discrimination, Expropriation* and *Procedural provisions*, and Factor 3 captures *Institutional Issues*. Each component receives a weight that reflects the proportion of the variance explained by the factor. The weight calculation is based on the work of Nicoletti et al. (2000). If i denotes an indicator of liberalization and w_i its weight, j a factor and W_j its weight, V_{ij} weight of indicator i within factor j and $T_j = \sum_{k=1}^{8} loading_{kj}^2$, then $V_{ij} = \frac{loading_{ij}^2}{T_j}$, $W_j = \frac{T_j}{\sum_{l=1}^{3} T_l}$, and $w_i = \sum_{l=1}^{3} V_{il} W_l$.

[17] We also used parallel analysis to check further whether the remaining factors should be retained or not. Three of the eigenvalues for the index are greater than the average eigenvalues calculated with the parallel data set.

[18] We find that using fixed weights exaggerates one element over another if the number of elements varies to a large degree. The two-stage approach is designed to reduce such variances.

Table A1: List of Elements for Index Calculation

Elements	Score
Preamble	
1. Preamble (*cumulative*):	
- Right to regulate	0.25
- Sustainable development	0.25
- Social investment policy	0.25
- Environmental investment aspects	0.25
Scope and definition	
2. Def. of investment (*ordinal*):	
- Asset-based	1
- Enterprise-based	0
3. Def. of investment − limitations (*cumulative*):	
- Excluding portfolio investment	0.2
- Excluding other specific assets	0.2
- Characteristics of investment	0.2
- Host state laws	0.2
- Closed list	0.2
4. Def. of investor − specifying a natural person (*cumulative*):	
- Exclusion of permanent resident	0.25
- Exclusion of dual nationality	0.25
- Substantial business activity required	0.25
- Owner and control defined	0.25
5. Limiting substantive scope of the treaty (*cumulative*):	
- Taxation	0.25
- Subsidies and grants	0.25
- Government procurement	0.25
- Other subject matters	0.25
Non-discrimination and other standards of treatment	
6. Most favoured nation (MFN) establishment (*ordinal*):	
- Pre- and post-establishment	1
- Post-establishment	0.5
- No MFN	0
7. MFN exceptions (*cumulative*):	
- Regional and international organisation (REIO)	0.25
- Taxation	0.25
- Procedural investor state dispute settlement (ISDS)	0.25
- No MFN	1

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Table A1: *Continued from previous page*

Elements	Score
8. National treatment (NT) establishment (*ordinal*):	
- Pre- and post-establishment	1
- Post-establishment	0.5
- No NT	0
9. NT like circumstances (*ordinal*):	
- No	1
- Yes	0.5
- No NT	0
10. Fair and equitable treatment (FET) − international law qualification (*ordinal*):	
- Non-qualified FET	1
- International law	0.75
- Customary international law (CIL)	0.5
- CIL + minimum standard of treatment	0.25
- No FET	0
11. FET elements listed (*ordinal*):	
- No	1
- Yes	0.5
- No FET	0
12. Full protection and security (FPS) (*ordinal*):	
- Unqualified FPS	1
- FPS with reference to domestic laws	0.5
- No FPS	0
13. Prohibition on unreasonable, arbitrary, discriminatory measures (*ordinal*):	
- Yes	1
- No	0
Expropriation and other substantive obligations	
14. Scope of expropriation clause (*ordinal*):	
- Direct and indirect expropriation	1
- Only direct expropriation	0.5
- No expropriation clause	0
15. Limitations on expropriation (*cumulative*):	
- Indirect expropriation defined	0.25
- General regulatory measures	0.25
- Compulsory licenses	0.25
- No expropriation clause	1
16. Compensation − relative rights to compensation (*ordinal*):	

Continued on next page

Table A1: *Continued from previous page*

Elements	Score
- MFN and NT	1
- MFN or NT	0.5
- No compensation clause	0
17. Compensation − absolute right to compensation (*ordinal*):	
- Absolute rights to compensation	1
- No compensation clause	0
18. Prohibition on performance requirements (*ordinal*):	
- Clause exists	1
- No clause	0
19. Umbrella clause (*ordinal*):	
- Clause exists	1
- No clause	0
20. Entry and sojourn of personnel (*ordinal*):	
- Clause exists	1
- No clause	0
21. Senior management and/or boards mandatory clause (*ordinal*):	
- Clause exists	1
- No clause	0
22. Free transfers (*cumulative*):	
- Balance of payment (BoP) exception	0.25
- Regional and international organisation (REIO) exception	0.25
- Other specific exceptions	0.25
- No free transfers clause	1
23. Subrogation clause (*ordinal*):	
- Clause exists	1
- No clause	0
24. Non-derogation clause (*ordinal*):	
- Clause exists	1
- No clause	0
Good governance	
25. Good governance (*cumulative*):	
- No good governance provisions	0
- NO transparency clauses directed at States	0.15
- Transparency clauses directed at investors	0.15
- Health and environment	0.14
- Labor standards	0.14

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Table A1: *Continued from previous page*

Elements	Score
- Corporate social responsibility	0.14
- Corruption	0.14
- Not lowering standards	0.14
Flexibility	
26. Denial of benefits (DoB) (*cumulative*):	
- Substantive business operations	0.33
- Diplomatic relations	0.33
- Unilateral discretionary DoB	0.33
27. Scheduling and reservations (*ordinal*):	
- No scheduling and reservations	1
- Reservations (negative list)	0
28. Essential security exception (ESE) (*cumulative*):	
- ESE clause exists	0.2
- ESE defined	0.2
- ESE self-judging	0.4
- ESE derived from REIO	0.2
29. Public policy exceptions (*cumulative*):	
- Public health and environment	0.5
- Other	0.5
30. Prudential carve-out (*ordinal*):	
- No clause	1
- Clause exists	0
31. Right to regulate (*ordinal*):	
- No clause	1
- Clause exists	0
Institutional issues and final provisions	
32. Mechanism for consultations between state parties (*ordinal*):	
- No	1
- Yes	0
33. Institutional framework (*ordinal*):	
- No	1
- Yes	0
34. Limiting temporal scope of bilateral investment treaty (BIT) (*ordinal*):	
- Silence or pre-existing investment	1
- Post-BIT investment only	0
35. Pre-existing disputes covered (*ordinal*):	

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Table A1: *Continued from previous page*

Elements	Score
- Silence	1
- No	0
36. Treaty duration (*ordinal*):	
- No duration specified	1
- 15 years or more	0.66
- 10 years	0.33
- Less than 10 years	0
37. Automatic renewal (*ordinal*):	
- Yes, indefinite	1
- Yes, fixed term	0.5
- No	0
38. Modalities for denunciation (*ordinal*):	
- No	1
- A year or more	0.5
- Less than a year	0
39. Survival clause Length (*ordinal*):	
- 15 years or more	1
- 10 years	0.66
- Less than 10 years	0.33
- No survival clause	0
Procedural provisions − investor state dispute settlement (ISDS)	
40. Alternatives to arbitration (*ordinal*):	
- No clause (compulsory ISDS)	1
- Clause exists − voluntary recourse to alternatives	0.75
- Clause exists − mandatory recourse to alternatives	0.25
- No ISDS	0
41. Scope of claims (*ordinal*):	
- Any dispute relating to investment	1
- Listing specific basis of claim beyond treaty	0.66
- Limited to treaty claims	0.33
- No ISDS	0
42. Limitation on provisions subject to ISDS (*ordinal*):	
- No limitations	1
- Limitation of provisions subject to ISDS	0.25
- No ISDS	0
43. Limitation on scope on ISDS (*cumulative*):	

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Table A1: *Continued from previous page*

Elements		Score
- No Limitations		0
- Exclusion of policy areas from ISDS		0.33
- Special mechanism for taxation or prudential measures		0.33
- No ISDS		1
44. Type of consent to arbitration (*ordinal*):		
- Expressed or implied consent		1
- Case-by-case consent or no ISDS at all		0
45. ISDS rules: domestic courts forum selection (*ordinal*):		
- No mention of domestic courts or investor option		1
- Yes, pre-condition for international arbitration		0.5
- No ISDS		0
46. Particular features of ISDS (*cumulative*):		
- None		0
- Limitation period		0.25
- Provisional measures		0.25
- Limited remedies		0.25
- No ISDS		1
47. Interpretation (*cumulative*):		
- None		0
- Binding interpretation		0.25
- Renvoi	0.25	
- Rights of non-disputing contracting party	0.25	
- No ISDS	1	
48. Transparency in arbitral proceedings (*cumulative*):		
- Making documents publicly available	0.25	
- Making hearings publicly available	0.25	
- Amicus curiae	0.25	
- No ISDS	1	

Note. This table lists all elements used in the factor analysis. There are two types of elements: *ordinal* and *cumulative*. For the 33 *ordinal* elements, I assigned values ranging from zero for a less liberal agreement to one for a more liberal agreement based on the choice of an option. An ordinal element can take one option with its assigned value. For the 15 *cumulative* elements, each element is initially assigned the value one and is reduced by the sum of the values assigned to the options. A cumulative element can take one or more options. Like the ordinal elements, the cumulative elements' final values range from zero for a less liberal agreement to one for a more liberal agreement.

Table A2: The Liberalization Index Factor Loadings and Weights

	Factor 1		Factor 2		Factor 3		Total
Explained variance	36.1%		18.7%		12.7%		67.5%
Eigenvalues	2.892		1.496		1.013		
	Loadings	Weights	Loadings	Weights	Loadings	Weights	Weights
Preamble	0.900	0.150	-0.131	0.003	0.082	0.001	0.154
Scope and definition	0.895	0.148	-0.159	0.005	0.069	0.001	0.154
Non-discrimination	0.015	0.000	0.746	0.103	0.015	0.000	0.103
Expropriation	-0.195	0.007	0.704	0.092	0.437	0.035	0.134
Good governance	0.643	0.077	0.346	0.022	-0.086	0.001	0.100
Flexibility	0.789	0.115	0.047	0.000	-0.204	0.008	0.123
Institutional issues	0.340	0.021	-0.094	0.002	0.799	0.118	0.141
Procedural provisions	0.303	0.017	0.521	0.050	-0.351	0.023	0.090

Note. This table shows the results of factor analysis at the component level. The eight components are generated based on the sub-component factor analysis. The magnitude of each loading represents the correlation with the factors.

Appendix B: Robustness Checks

This appendix reports several robustness checks. First, we test the reliability of our threshold choice. We argued that the stringency level has dropped since 2010. To check the robustness of this assumption, we estimate the preferred model again with 2008 and 2012 as the threshold. Table B1 shows no statistical significance on both old and new IIAs if we choose 2008 or 2012 as the threshold. The magnitude of these estimates is smaller than the initial threshold. Second, we account for heterogeneity across industries in the average treatment effects. We categorized the FDI data into eight sectors using the subsidiary's industry information to construct an industry-level dataset. For the regressions, we include industry-country-time fixed effects to consider industry heterogeneity. Table B2 shows that the IIA effects are less significant due to the sectoral differences, but the average effect estimates support the baseline findings. Even if we account for sectoral heterogeneity, the results show that IIAs attract more FDI if enforced before 2010, and the positive impact disappears after IIA termination. Third, we used a lagged treatment variable instead of the weighted approach for the first year of treatment to account for the difference of enforcement dates within a year, following previous work (e.g., Berger et al., 2011; Busse et al., 2010; Hallward-Driemeier, 2009). However, this model specification ignores the immediate effects and underestimates the treatment effects for the annual outcome analysis. Taking advantage of our dataset, we constructed monthly-level data and lagged the treatment variable by one month, allowing us to account for the within-a-year bias. Table B3 shows that enforcing IIA in the previous month leads to 12.2 percent more FDI only if enforced before 2010. The termination effects are also similar to the baseline results. These consistent estimates support the robustness of our empirical analysis.

Table B1: IIA Stringency with Different Thresholds

	Enforced in 2008		Enforced in 2012	
	Extensive Margin	Intensive Margin	Extensive Margin	Intensive Margin
IIA $_{before}$	0.082	0.173	0.048	0.119
	(0.058)	(0.121)	(0.057)	(0.129)
IIA $_{after}$	0.003	-0.002	-0.025	-0.136
	(0.052)	(0.121)	(0.070)	(0.125)
Income Difference	0.177	0.164	0.182	0.155
	(0.159)	(0.160)	(0.158)	(0.161)
Capital Tax Treaty	-0.008	0.107	-0.011	0.090
	(0.048)	(0.071)	(0.047)	(0.069)
Income Tax Treaty	0.090**	0.020	0.092***	0.032
	(0.037)	(0.055)	(0.035)	(0.053)
Observations	1,026,916	1,026,916	1,026,916	1,026,916
Pseudo R-squared	0.974	0.937	0.974	0.937

Note. This table shows the impact of IIA stringency on FDI flows. The two left columns compare IIA effects before and after 2008, and the two right columns compare IIA effects before and after 2012. All regressions include source-year, destination-year, and country-pair fixed effects. Standard errors are clustered at the country-pair level and provided in parentheses. Asterisks denote p-value < 0.10 (*), < 0.05 (**), or < 0.01 (***).

Table B2: Industry-level IIA Stringency and Termination Effects

	IIA Stringency		Termination Effects	
	Extensive Margin	Intensive Margin	Extensive Margin	Intensive Margin
IIA Enforced *before 2010*	0.088*	0.113	0.083**	0.144
	(0.045)	(0.076)	(0.039)	(0.088)
IIA Enforced *after 2010*	0.008	-0.043		
	(0.037)	(0.098)		
IIA Terminated			-0.131**	-0.192
			(0.065)	(0.146)
Income Difference	-0.026	-0.195**	-0.024	-0.185*
	(0.053)	(0.098)	(0.054)	(0.097)
Capital Tax Treaty	-0.014	0.217*	-0.015	0.216*
	(0.034)	(0.112)	(0.034)	(0.112)
Income Tax Treaty	0.016	-0.034	0.016	-0.035
	(0.031)	(0.053)	(0.031)	(0.055)
Observations	5,970,932	5,939,026	5,970,932	5,939,026
Pseudo R-squared	0.867	0.804	0.867	0.804

Note. This table shows the impact of IIA stringency and termination on FDI flows. The left two columns compare IIA effects before and after 2010. The right two columns compare IIA enforcement and termination effects. All regressions include source-year, destination-year, and country-pair fixed effects. Standard errors are clustered at the country-pair level and provided in parenthesis. Asterisks denote p-value < 0.10 (*), < 0.05 (**), and < 0.01 (***).

Table B3: IIA Stringency and Termination Effects with Monthly Lags

	IIA Stringency		Termination Effects	
	Extensive Margin	Intensive Margin	Extensive Margin	Intensive Margin
IIA Enforced *before 2010*	0.115***	0.165	0.109***	0.196**
	(0.043)	(0.121)	(0.039)	(0.079)
IIA Enforced *after 2010*	0.009	-0.044		
	(0.036)	(0.112)		
IIA Terminated			-0.101**	-0.225
			(0.051)	(0.141)
Income Difference	-0.051	-0.201**	-0.051	-0.194**
	(0.035)	(0.098)	(0.035)	(0.097)
Capital Tax Treaty	0.007	0.208***	0.006	0.205***
	(0.033)	(0.065)	(0.033)	(0.065)
Income Tax Treaty	-0.019	-0.092*	-0.019	-0.094*
	(0.029)	(0.049)	(0.029)	(0.050)
Observations	6,127,104	6,105,099	6,127,104	6,105,099
Pseudo R-squared	0.76	0.673	0.761	0.673

Note. This table shows the impact of IIA stringency and termination on FDI flows. The left two columns compare IIA effects before and after 2010. The right two columns compare IIA enforcement and termination effects. All regressions include source-year, destination-year, and country-pair fixed effects. Standard errors are clustered at the country-pair level and provided in parenthesis. Asterisks denote p-value < 0.10 (*), < 0.05 (**), and < 0.01 (***).