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Center of Public and International Economics

**BILATERAL INVESTMENT TREATIES AND PORT-
FOLIO INVESTMENT**

January 2024

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Bilateral investment treaties and portfolio investment

by

Stefan Eichler¹ and Jannik Nauerth²

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Abstract

We analyze the effect of bilateral investment treaties (BITs) on bilateral foreign portfolio investment in equity and debt securities. We find that expropriation risk and the level of a BIT's investor protection are complementary. Applying a Poisson Pseudo-Maximum-Likelihood model to a panel of 60 home and 39 host countries from 2002 to 2017, we find that host countries receive 40% more bilateral equity investment when they protect foreign investors with a BIT. This effect almost doubles when investment protection of BITs is strong, and the political risk of the host country is high.

Keywords: Bilateral investment treaties, Bilateral portfolio investment, Political risk, Investor protection, Emerging markets.

JEL classification: F32; G15; K33

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1 Introduction

Bilateral investment treaties (BITs) have become a popular legal instrument to spur cross-border investment and regulate investor-state investment disputes.¹ Protected by a BIT, a foreign investor can sue the host country's government if foreign investment is expropriated or otherwise negatively affected by governmental interference. To enforce compensation claims, a foreign investor can go to international arbitration courts and does not have to rely on the jurisdiction of the destination country. In effect, a BIT reduces the country's risk for foreign investors by improving the enforceability of compensation claims. The latter is particularly relevant in countries where government immunity or a non-independent judiciary could prevent foreign investors from being compensated for their losses (UNCTAD, 2014).

We contribute to the literature by analyzing the complementarity of expropriation risk and the level of a BIT's investor protection for the impact of BITs on bilateral cross-border portfolio holdings of equity and debt securities. The current literature on portfolio investment finds that investor protection is an important determinant (Daude and Fratzscher, 2008; Kho et al., 2009; Leuz et al., 2009; Poshakwale and Thapa, 2011; Giofr , 2013, 2014; Fu et al., 2022; Kliatskova et al., 2023). Literature on foreign direct investment investigates the unconditional impact of BITs (see Egger and Pfaffermayr, 2004; Salacuse and Sullivan, 2005), the role of expropriation risk and institutional quality in the host country for the impact of BITs (see Busse et al., 2010; Tobin and Rose-Ackerman, 2011; Bhagwat et al., 2021), and the relevance of the level of investor protection of BITs in isolation (see Frenkel and Walter, 2019; Bengoa et al., 2020). We contribute to both strands of the literature by investigating the complementarity of the host country's expropriation risk and the country-pair-specific investment protection of BITs. The marginal impact of BIT-provided legal protection on portfolio investment should be higher when foreign investors engage in host countries with high expropriation risk. Legal protection by a BIT is less critical for low-risk countries and may not lead to significantly higher portfolio investment. Furthermore, we improve the identification of the impact of investor protection on foreign portfolio investment, as BITs

¹ By May 2023, around 2,800 BITs have been signed, most of them between developed countries and emerging markets (UNCTAD, 2023).

enable us to identify the level of investor protection at the bilateral country-pair level. Moreover, we distinguish BIT effects between foreign portfolio equity and portfolio debt investment and can show different effects for both types of investors.

In contrast to *unilateral* characteristics such as the general level of contract enforcement and property rights studied in the literature on portfolio investment so far, we exploit the *bilateral* level of legal protection for portfolio investors provided by a BIT. Using a hand-collected investor protection index for each BIT, we can distinguish between BITs offering comprehensive investor protection and lower-quality BITs. Taking the political risk of the host country into account, we can examine whether strong investor protection of a BIT is more valuable for host countries with high expropriation risk.

To analyze the impact of BITs on foreign portfolio investment, we apply a Poisson Pseudo-Maximum-Likelihood (PPML) model to an unbalanced annual panel dataset of bilateral foreign portfolio holdings of equity and long-term debt securities for 39 host and 60 home countries from 2002 to 2017. We find that BITs affect bilateral foreign equity holdings significantly positively. For country pairs with a BIT, bilateral portfolio equity holdings are 40% higher than for those without a BIT, suggesting that foreign portfolio shareholders appreciate the presence of a BIT.

We find no significant impact of BITs for bilateral portfolio long-term debt holdings. BITs offer investor protection against outright expropriation and in the more general case of unjustified government action or regulation, such as a change in environmental standards, mining concessions, product regulations, and other economic policies that might cause losses for firms. As a result, foreign equity investment will be more responsive to BITs than foreign bondholders since losses from unfavorable government actions or expropriation will always reduce shareholder value. In contrast, bondholders' claims will only be reduced in the case of severe solvency deterioration.

Furthermore, only a small fraction of portfolio debt are corporate bonds; most are government bonds. The latter are not necessarily protected against expropriation. Given the lack of precedents, it is not granted that the government will compensate foreign bondholders. Some authors even argue that

sovereign bonds are to be excluded from international arbitrations (Kleiner and Costamagna, 2018). Furthermore, the wording of BITs has changed after the Argentine and Greek debt crisis and related arbitral proceedings. Since then, many treaties have excluded sovereign debt (Hinz, 2023).

Using interaction models, we find that BITs with strong investor protection are associated with 60% higher bilateral portfolio equity holdings than BITs with weak investor protection. We further account for the host country's level of political risk as a proxy for the risk of expropriation. In countries with high political risk, bilateral portfolio equity investments will be 74% to 81% higher if the BIT's investment protection is strong. There is no significant difference between weak and strong BITs for host countries with low political risk. These results indicate that foreign investors reward legal protection provided by BITs, particularly in risky regimes.

Our results remain robust for a number of sensitivity checks lagging control variables, excluding regions, excluding EU countries, varying fixed effects, and the definition of the BIT's investor protection. We find a slight decrease in the value of BITs after the outbreak of the global financial crisis in 2008. Overall, our results suggest that foreign portfolio equity investment in politically risky regimes can be attracted by strong BITs.

The rest of this paper is organized as follows: In Section 2, we review the relevant literature. Section 3 presents data sources and the construction of the used variables. In Section 4, we introduce the method, present our empirical analysis, and perform robustness checks. Section 5 concludes.

2 Literature

2.1 Arbitral proceedings and foreign portfolio investment

Several investment disputes illustrate the practical applicability of BITs for portfolio investments. One example of an unsuccessful admission of arbitral proceedings is the 1999 dispute *Gruslin v. Malaysia (II)*. A Belgian investor claimed compensation for alleged losses on his securities listed on the *Kuala Lumpur Stock Exchange*. The legal proceedings were triggered by foreign exchange controls introduced

in 1999. The Malaysian government's action had allegedly devalued the claimant's assets. The claim was dismissed by a sole arbitrator, arguing that portfolio investments are not protected by the *BLEU (Belgium-Luxembourg Economic Union) – Malaysia BIT* from 1979 (ICSID, 2000).

In contrast, the proceedings were admitted successfully in the 1996 dispute *Lanco v. Argentina*. In arbitral proceedings, the plaintiff claimed compensation for an alleged breach of a concession agreement. The US-based investor held shares in a company owning a concession for developing and operating a port terminal. The arbitration tribunal admitted the case since the extensive definition of the term investor is in the *Argentina - United States of America BIT* from 1991. The tribunal further stated that an investor does not need control over a company's administration to be protected by the BIT (ICSID, 1998).

Risso (2020) provides a detailed discussion regarding the admission of portfolio investment in arbitral proceedings at the International Center for Settlement of Investment Disputes (ICSID). The author finds that arbitral tribunals are generally willing to admit portfolio investment in proceedings at the ICSID. However, he notes that arbitral tribunals consider the BIT's agreements to varying degrees. We conclude that at least equity investors have a good chance of asserting claims to arbitration.

For sovereign bond investors, admission to arbitration is less likely. The number of precedents is relatively low. In the aftermath of the sovereign debt crisis of Argentina and Greece, four prominent arbitral proceedings emerged regarding the restructuring of government bonds. In the 2007 dispute between *Abaclat and others v. Argentina*, the arbitral tribunal admitted proceedings (ICSID, 2011). The proceedings were terminated by a settlement agreement, which included compensation payments (ICSID, 2016). In the 2007 dispute *Alemanni and others v. Argentina*, the arbitral tribunal decided positive on jurisdiction (ICSID, 2014). However, the arbitral proceedings were discontinued later (ICSID, 2015a). The same holds for the 2008 dispute *Ambiente Ufficio and others v. Argentina* (ICSID, 2015b). In contrast, in the 2013 dispute, *Poštová banka and Istrokapital v. Greece*, the admission of an arbitral proceeding was dismissed. The arbitral tribunal argued that government bonds are not protected investment since they do not contain operational risk for the investor (ICSID, 2015c).

We conclude that sovereign debt-related investment disputes' chances of success are substantially worse than for equity-related investment disputes. Some authors even argue that sovereign bonds are to be excluded from international arbitrations (Kleiner and Costamagna, 2018). Furthermore, the wording of BITs has changed since sovereign debt disputes arose, and many treaties now exclude sovereign debt (Hinz (2023)).

2.2 Expropriation risk and foreign portfolio investment

In a seminal study, La Porta et al. (2000) establish that a country's legal system shapes the level of protection of minority shareholders. Several studies investigate how property rights affect foreign portfolio investment. Dahlquist et al. (2003) find that US investors reduce their home bias towards countries with lower expropriation risk. Bae et al. (2006) find that better property rights (measured by corruption, risk of expropriation, and the repudiation of contracts) increase foreign investment in portfolio debt securities. Kho et al. (2009) and Leuz et al. (2009) study the relevance of inside ownership and corporate governance for foreign portfolio investment. Kho et al. (2009) find that US investors' home bias falls towards countries with low inside ownership, indicating the relevance of good governance. On the company level, Leuz et al. (2009) find that foreign portfolio investment is lower in countries with higher levels of inside ownership. In addition, they find that poorer protection of outside investors and disclosure drives this effect.

Poshakwale and Thapa (2011) find that improved investor protection (measured by contract viability or risk of expropriation, payment delays, and repatriation of profits) is associated with increased bilateral portfolio equity investment. Giofr  (2014) finds that investors from countries with high levels of corporate governance invest more in countries with low corporate governance. A higher level of corporate governance at home allows investors to take more risk in foreign assets. Giofr  (2013) investigates the impact of investor protection rights targeting equity investors (the La Porta et al. (1998) anti-director rights index) and debtholders (the Djankov et al. (2007) creditor rights index) for foreign portfolio equity and debt investment. She finds that better equity and debt investor protection attracts foreign equity investment, suggesting that not only shareholder's protection rights matter for foreign

equity investors but also better protection of bondholders mitigating excessive risk-taking behavior of managers. Foreign portfolio debt investment is attracted by better creditor rights and distracted by more extensive shareholder rights. Fu et al. (2022) find that external investor protection and internal corporate governance are substitutes in attracting portfolio investment. Their results suggest that the government may counterbalance poor internal corporate governance by increasing external investor protection. Bremus and Kliatskova (2020) investigate the impact of legal harmonization and differences in institutional quality on bilateral equity and debt holdings. They find that common laws in financial services facilitate cross-border equity holdings, while portfolio debt holdings are not significantly affected by regulatory harmonization. Furthermore, the authors find that efficient institutions attract cross-border investment. Bilateral portfolio debt investment is attracted when the institutional quality of the issuer country is higher than in the holder country, while no significant impact is detected for portfolio equity.

Kliatskova et al. (2023) find that foreign investors are more likely to invest in a country with an efficient insolvency regime. While equity holders are sensitive to preventing and streamlining bankruptcies, debt holders consider restructuring tools. The authors argue that pre-insolvency regimes are crucial for shareholders as they increase a company's survival rate and value. Debt restructuring tools are essential for debt holders as they help to continue business operations and increase debt recovery rates.

While the papers above investigate the unilateral impact of investment protection on (bilateral) foreign portfolio investment, BITs provide the opportunity to study investor protection on the bilateral country pair level. Daude and Fratzscher (2008) investigate the pecking order between bilateral FDI, portfolio equity investments, portfolio debt investments, and loans. In general, they find that portfolio investment is more sensitive to the risk of expropriation than FDI or loans. For BITs, however, they find a robust and positive impact only for bilateral bank lending, while weak or no effects are detected for FDI and portfolio holdings. Mina (2015), in contrast, finds that BITs attract FDI but deter foreign bondholders. On foreign equity investments, he finds no significant effect. In a study on cross-border syndicated loans, Fotak et al. (2019) find that banks charge lower interest rates, lend out larger loans, and accept fewer collateral and covenants if loans are covered by a BIT. Bhagwat et al. (2021) investigate the

impact of BITs on cross-border mergers and acquisitions (M&A). They find a significantly positive impact of investment treaties on the volume of M&A. The effect is more prominent in medium-risk countries or for investments that are easy to expropriate.

These studies suggest that better investor protection attracts foreign portfolio investment. We contribute to this strand of the literature by investigating the interaction of expropriation risk in the host country and the level of legal protection provided by the BIT to study the impact of BITs on portfolio investment. Moreover, by coding the content of BITs, we can identify the level of investor protection at the bilateral country pair level.

2.3 Investor protection of BITs and FDI

The *unconditional* impact of BITs has been broadly examined for foreign direct investment (FDI) where mixed evidence is detected. Early papers find only weak or no effects of BITs on FDI (UNCTAD, 1998; Hallward-Driemeier, 2003; Tobin and Rose-Ackerman, 2005; Gallagher and Birch, 2006). However, the majority of studies find that positive effects prevail (Banga, 2003; Egger and Pfaffermayr, 2004; Neumayer and Spess, 2005; Salacuse and Sullivan, 2005; Egger and Merlo, 2007; Kim, 2007; Büthe and Milner, 2009; Kerner, 2009; Busse et al., 2010; Haftel, 2010; Allee and Peinhardt, 2011; Tobin and Rose-Ackerman, 2011).

A reason for the mixed evidence might be that these studies do not consider the level of investor protection. Few papers empirically investigate the impact of BITs on FDI conditional on the heterogeneity of investor protection offered by the individual BITs. Investment treaties are the results of bilateral negotiations. While some treaties substantially extend protection for foreign investors, others hardly affect it. Yackee (2008) provides the first attempt to take these differences empirically into account. The author categorizes a BIT's investor protection using a sovereign's pre-consent to investor-state dispute settlement to distinguish weak and strong investment treaties. Contracts with pre-consent to arbitration allow foreign investors to use arbitral tribunals to enforce compensation claims even if the respondent state refuses to participate. Yackee (2008) finds no significant impact of investor protection on bilateral FDI flows. Mina (2009) finds that the impact of BITs on FDI depends on the income level

of the investor's home country, suggesting that the investor protection offered by a BIT may be interpreted differently by investor groups.

By now, several approaches that take the differences between BITs into account. Berger et al. (2013) use the admission rules of the national treatment (NT) clause and a sovereign's pre-consent to arbitration to classify BITs and regional trade agreements (RTAs). Treaties that extend the NT clause to the pre-establishment phase of investments are considered liberal and are expected to attract more FDI. The definition of pre-consent to arbitral proceedings distinguishes comprehensive pre-consent to arbitration, partial pre-consent (only for certain obligations), and promissory consent to arbitration (no guarantee to bring a claim to international arbitration). Berger et al. (2013) find a significantly positive effect of liberal admission rules on bilateral FDI, while the sovereign's pre-consent to arbitration reveals no significant effect.

In a broader context, Dixon and Haslam (2016) use thirteen treaty provisions to categorize BITs, free trade agreements (FTAs), RTAs, customs unions, and common market agreements. Using information from the preamble, substantive provisions, the applicability, and the overall structure of the international investment agreement (IIA), the authors find that only strong agreements promote bilateral FDI flows. Frenkel and Walter (2019) consider eight treaty provisions concerning the dispute settlement mechanism to categorize treaties. The authors comprise information on the existence of dispute settlement mechanisms (state-state and investor-state), the scope of claims, the consent to arbitration, the forum of arbitration (UNCTRAL, ICSID, domestic courts of the host), and the permission to use provisional measures into an index of treaty strength. The empirical investigation using PPML estimations reveals that a BIT increases bilateral FDI inflows by roughly 32.1% (40.9% in developing countries). The effect in the treaty strength index is complex. Only in a reduced sample of developing countries does an increase of the treaty strength index increase bilateral FDI flows significantly (by 7%).

Bengoa et al. (2020) rely on fourteen treaty clauses to incorporate investor protection and dispute settlement of treaties in their analysis. They use information on national treatment clause, most favored nation (MFN) standard, fair and equitable treatment (FET), full protection and security (FPS), general security exceptions, indirect expropriation, transfer of funds (TOF), performance requirements,

umbrella clause (UC), state-state dispute settlement (SSDS), investor-state dispute settlement (ISDS), and alternatives to arbitration to assess strength of treaties². Using a PPML model, the plain existence of a BIT increases bilateral FDI stocks between 5.3% and 8.6 % per year. Estimates for the investor protection index ranged between 3.9% and 4.5%, indicating that strong BITs attract more FDI than weak BITs.

This branch of the literature has focused on different levels of investor protection in BITs and their relevance for determining FDI. We contribute to the literature by focusing on foreign portfolio investment and investigating the interaction of expropriation risk in the host country and the BIT's investor protection level. As there is yet to be a consensus in the literature on which treaty clauses to use, we determine the level of investor protection using the most frequently used treaty clauses in arbitration proceedings. For further details on the construction of the measure, see Section 3.2.

3 Data

We use an annual unbalanced panel dataset on bilateral portfolio investment positions from 2002 to 2017 of 60 home and 39 host countries. Table 1 presents summary statistics. Table A1 in the Appendix lists included host and home countries. Correlations between the variables are displayed in Table A2. Table A3 and Table A4 summarize data sources and definitions.

3.1 Bilateral portfolio holdings

Data on bilateral portfolio holdings is taken from IMF's Coordinated Portfolio Investment Survey (CPIS). This database comprises annual cross-border positions of tradeable equity and debt securities at market prices. Data is provided in US\$ million on an end-of-year basis and can be divided into equity, long-term debt, and short-term debt. We exclude home and host countries that did not implement a

² The index we use later is similar to this approach (see Section 3.2 for details).

single BIT from our analysis. Furthermore, we exclude financial hubs as host countries to avoid potential double counting of portfolio holdings.³

In the analysis, we focus on equity and long-term debt positions. Equity positions comprise company shares and trust units. Debt securities require principal or interest payments in the future, including government and corporate bonds. We do not investigate the effects on short-term debt positions. We use the US consumer price index to adjust the portfolio positions to real terms. A few observations with negative investment values are excluded.

3.2 Bilateral investment treaties

Data on BITs is taken from UNCTAD's Investment Polity Hub (UNCTAD, 2023). This database provides information on the dates of signature and entry into force of BITs and the treaty contents. We construct a dummy variable, which equals 1 if a BIT between the investor/home country and the investee/host country is in force and 0 otherwise. We do not account for BITs that have been signed but have not yet entered into force. If a treaty is terminated, the dummy variable will return to 0. Most BITs do not exclude portfolio investment from the definition of protection foreign investment. We disregard 31 of the approximately 2800 BITs that explicitly exclude portfolio investments.

To approximate the investor protection of BITs, we construct a hand-collected index of treaty clauses that have been breached most frequently in arbitral proceedings according to the *investment dispute settlement navigator* from UNCTAD (2020) (in descending order): *fair and equitable treatment, indirect expropriation, direct expropriation, prohibition of arbitrary, unreasonable or discriminatory measures (UAD), full protection and security, umbrella clause, transfer of funds clause, national treatment, and most favored nation treatment*.⁴ Figure 1 shows how often arbitral tribunals find these clauses broken. The most frequently breached contract clause is the obligation to provide *fair and equal treatment*. The

³ We exclude Bahrain, Costa Rica, Jordan, Lebanon, and Panama as host countries. We keep financial hubs as investing countries since many financial hubs have implemented BITs. In case of arbitration, the residence country of the investment vehicle is relevant and should drive portfolio investment.

⁴ We do not include treaty breaches based on *direct expropriation* since every BIT in our sample prohibits it.

other *reasons column* summarizes the least breached treaty clauses.⁵ As the latter breaches occur only occasionally, they are not included in the analysis.

[insert Figure 1]

For each of the above clauses, we create a binary dummy variable, which is 1 if it benefits foreign investors and 0 otherwise. Our *investor protection index* adds the 8 dummy variables to an overall score ranging from 0 to 8. From this overall score, we derive an *investor protection dummy*. This dummy variable equals 1 if a BIT's *investor protection index* scores above the sample median (strong investor protection) and 0 (weak investor protection) otherwise.

The most frequently breached treaty clause in arbitral proceedings concerns the *fair and equitable treatment (FET)* standard. This clause obligates the contracting countries to treat foreign investments reasonably without ambiguity, arbitrariness, or discrimination. The clause may enter a BIT, either qualified or unqualified. A qualified *FET* clause includes a reference to international law or a list specifying the elements of the obligation, while an unqualified *FET* clause does not. The latter benefits foreign investors in arbitral proceedings. The absence of references allows a broad interpretation of the obligation, which should increase the chances of success for foreign investors in arbitral proceedings (UNCTAD, 2012a). Thus, we assign a value of 1 to the *FET* dummy if the clause is unqualified and a value of 0 if it is referenced to international law, limited to specific elements, or absent.

Arbitral tribunals often deal with cases of expropriation. One can distinguish two types of expropriation: direct and indirect. The former refers to the mandatory transfer of private property to the state or a state-mandated party or its physical seizure. The latter refers to the deprivation of investments without a formal property transfer or outright seizure (UNCTAD, 2012b). Since the initial aim of BITs is the protection of investments in foreign countries, nearly all BITs include constraints for *direct*

⁵ It comprises breaches to *customary rules of international law* (1), *losses sustained due to insurrection, war, or similar events* (2), *Performance requirements* (1), and breaches labeled as *other* (4) (UNCTAD, 2020).

expropriations, and we cannot exploit this information. We instead focus on *indirect expropriations*. Due to its vague definition, protection against *indirect expropriation* is rugged, and only some treaties mention it explicitly. A reference to *indirect expropriation* should facilitate its application in arbitral proceedings. Therefore, we assign a value of 1 to the *indirect expropriation dummy* if *indirect expropriation* is mentioned in a treaty and a value of 0 otherwise.

Another frequently used treaty clause in arbitral proceedings aims to protect foreign investments by prohibiting *unreasonable, arbitrary, or discriminatory measures*. While there is no agreed definition of the treaty clause, it is considered to improve investor protection of BITs (Kriebaum, 2015). The corresponding *UAD dummy* indicates whether treaties contain a standalone provision prohibiting *unreasonable, arbitrary, or discriminatory measures*.

A commitment to *full protection and security* protects foreign investment against civil unrest, public disturbances, or similar situations. It obligates contracting countries to compensate for damages or losses resulting from those events (UNCTAD, 2005). The standard clause contains an unqualified obligation to provide full protection and security. Some treaties reference the obligation to domestic law or do not use such a clause. We assume an unqualified obligation to be most favorable for foreign investors. A reference to national law is likely to limit the scope of interpretation. The corresponding *FPS dummy* is 1 if a BIT contains a standard *FPS* clause and 0 if the treaty does not contain such an obligation or the clause references domestic law.

The *umbrella clause* obligates the contracting countries to respect commitments and obligations from investment-related contracts and other agreements. Although arbitral tribunals have used different interpretations, this standard turns a breach of an investment contract potentially into a breach of a BIT, which extends the applicability of BITs (UNCTAD, 2005). The corresponding *UC dummy* indicates treaties that contain such a clause.

The *transfer of funds* clause permits investors to transfer revenue from the host country (UNCTAD, 2000). The applicability of the standard differs due to its interpretation by arbitral tribunals. Some treaties restrict the free transfer of funds in case of serious difficulties concerning the balance of payments or in case of other specific circumstances, such as bankruptcy or criminal offenses. We assume that contracts will provide more investor protection if there are no exceptions from the transfer of funds. The corresponding *TOF dummy* indicates the existence of a *transfer of funds* clause without exceptions.

Some treaty clauses define terms and conditions for foreign investors relative to other investors. These relations are usually determined by *national treatment* or *most-favored-nation treatment*. *National treatment* provides that an investment made by a foreigner shall not be treated less favorably than an investment made by a domestic investor (UNCTAD, 1999). The *most-favored-nation* standard states that the treatment of an investment must be at least as favorable as it is for the most favored foreign investment (UNCTAD, 2010). Both clauses are commonly used in BITs. We do not exploit the mere existence of *MFN* or *NT* clauses but rather their applicability for different investment phases. We expect that coverage of pre- and post-establishment of the investment project is most favorable for foreign investors and define the *NT dummy* and *MFN dummy* accordingly.

3.3 Political risk variables

To proxy the risk of expropriation for the foreign investor, we consider four political risk indicator sets: the *Index of Economic Freedom (IEF)*, the *International Country Risk Guide (ICRG)*, the *State Fragility Index (SFI)*, and the *World Governance Indicators (WGI)*. We construct binary dummy variables based on these indicator sets, dividing the sample countries into high and low-risk counties. The split is based on the median value of the respective risk indicator. Table A2 in the Appendix presents correlations of the risk dummies with each other. An overview of the composition of the four dummy variables can be found in Table A3 in the Appendix.

3.4 Control variables

Our models control for various gravity variables, macroeconomic variables, and financial market characteristics frequently used in the literature. Table A4 in the Appendix lists the control variables' definitions, sources, and expected signs.

[insert Table 1]

4 Estimation

4.1 Baseline estimation

We test our hypotheses by using a gravity model on yearly bilateral equity and long-term debt positions. We use a PPML estimator, which has two advantages compared to the Ordinary Least Squares (OLS) estimator in our context. First, it can include observations with zero portfolio investment in the estimation. OLS estimations use log-linearization of the data, consequently excluding observations with a value of zero. Second, the PPML estimator is less sensitive to distortions from heteroskedasticity than the OLS estimator (Silva and Tenreyro, 2006). Furthermore, interpreting the PPML model's estimated parameters is relatively simple. If a variable enters the model in logs, the estimated parameter will be interpreted as an elasticity. Estimated parameters of untransformed variables are interpreted as semi-elasticities.

To investigate the unconditional effect of BITs on bilateral portfolio holdings, we estimate the following annual panel data model with PPML:

$$\begin{aligned} FPI_{ijt} = \exp[& \alpha_0 + \beta_1 * BIT\ dummy_{ijt} + \sum_k \gamma_k * Gravity_{kij} + \sum_l \delta_l * Controls_{lit} \\ & + \sum_m \theta_m * Controls_{mjt} + \gamma_i + \gamma_j + \eta_{year}] + \varepsilon_{ijt}, \end{aligned} \quad (1)$$

where *bilateral foreign portfolio investment* (FPI_{ijt}) in the host country i , originating from the home country j in year t , is regressed on the *BIT dummy* $_{ijt}$ (indicating a BIT between both countries in force), bilateral gravity variables, $Gravity_{kij}$, control variables for the host country i , $Controls_{lit}$, and

control variables for the home country j , $Controls_{ijt}$. We also control for home, and host country fixed effects, γ_i and γ_j , and year fixed effects, η_{year} . The error term is represented by ε_{ijt} . We use heteroscedasticity- and autocorrelation-robust standard errors clustered for country pairs.

Table 2 presents the results of the baseline estimation (Equation (1)). The first two specifications address the bilateral equity portfolio investment, while the latter two address bilateral long-term debt portfolio investment. We find a significantly positive effect of BITs on bilateral equity positions (see columns I and II) and no significant effect on long-term debt positions (see columns III and IV). For country pairs with a BIT in force, bilateral portfolio equity holdings are around 40% higher than for those without a BIT. This finding indicates that foreign equity investors consider the presence of a BIT in their portfolio allocation. Implementing BITs attracts foreign portfolio equity investment by reducing the risk of expropriation.

[insert Table 2]

The estimated coefficients for bilateral portfolio long-term debt holdings are not significantly different from zero. The insignificant effects of BITs on portfolio bond investment may result from a lower sensitivity towards expropriation risk. Equity acts as the buffer against losses, while bondholders only suffer in the case of severe solvency deterioration, such as debt renegotiation or outright bankruptcy. BITs do not only offer investor protection in the case of outright expropriation but also in the more general case of unjustified government action or regulation, such as a change in environmental standards, mining concessions, regulations on products, and various other economic policies that might cause losses for firms. Also, the government may expropriate some assets of a firm where foreign investors are invested, such as a mine or an oil field, but not the entire firm. Thus, losses from unfavorable government actions or expropriation will always reduce shareholder value. In contrast, bondholders' claims will only be reduced if the considered firm fails or gets severely distressed due to government action. Therefore, BITs should be more valuable for foreign shareholders than for foreign bondholders.

In addition, the insignificant effect of BITs on debt holdings may also be partly explained by the composition of instruments. Foreign portfolio debt is comprised of government bonds and corporate bonds. Table A5 reports the average share of government bonds as a percentage of the total foreign portfolio holdings of US residents in the period 2003-2017.⁶ With some exceptions (such as Chile, India, and the United Arab Emirates), the vast majority of the bilateral US bond holdings are invested in government bonds. We assume this bias is also present in the portfolio holdings of other investing countries. The high share of government bonds may also contribute to the insignificant results for long-term portfolio debt since not every BIT will protect sovereign bondholders from expropriation. It is not granted that a bankrupt country will compensate bondholders. The enforceability of such claims is complex, and precedents are scarce. Some authors even argue that sovereign bonds are to be excluded from international arbitrations (Kleiner and Costamagna, 2018). Moreover, given the enormous economic costs of a sovereign default, the likelihood of such an event is much lower than commonplace losses for shareholders resulting from direct or indirect expropriation. Overall, it seems plausible to assume that the perceived insurance value of a BIT is much larger for foreign shareholders than for foreign bondholders.

The results for the control variables are largely in line with previous research. Standard gravity variables, such as *contiguity*, *colonial ties*, and *common language*, imply higher bilateral portfolio holdings. The existence of a regional trade agreement increases bilateral portfolio holdings.

A larger host country's GDP attracts portfolio investment due to the more profitable investment opportunities of larger markets. Moreover, larger home countries invest more in foreign debt securities, while no significant effect is detected for equity. Inflation in the host countries deters foreign investment when we control for financial market characteristics. For home/investor countries, higher inflation rates push portfolio equity investment into foreign stock markets, seeking a hedge against the home country's

⁶ The CPIS data does not provide a comprehensive breakdown of corporate versus government bonds in the bilateral portfolio bond holdings. Therefore, we refer to data on bilateral bond holdings for US residents provided by the Treasury International Capital (TIC) database.

inflation. For exchange rates, we find insignificant results. Robust results for capital account openness are only detected for the equity positions and investing countries.

Specifications II and IV of Table 2 also control for financial market characteristics. Host countries with higher stock market returns or a larger stock market receive more equity investment from abroad. The stock market turnover ratio has a negative impact. Similarly, we find that portfolio holdings in debt instruments increase with bond returns and the market size for public debt. Due to the lower availability of bond market characteristics, regressions regarding long-term debt (columns III and IV) rely on fewer observations than those for equity (columns I and II).

4.2 The impact of BITs conditional on investor protection

A BIT with solid investor protection should attract more portfolio investment by mitigating the government's incentive to expropriate foreign property. Based on a BIT, an arbitral tribunal can order the government to pay damages in the event of expropriation. Accordingly, the impact of BITs on foreign portfolio investment should be higher for strong than for weak BITs. To investigate the effect of BITs conditional on investor protection, we expand the baseline model as follows:

$$FPI_{ijt} = \exp[\text{baseline variables} + \beta_2 * BIT \text{ dummy}_{ijt} * investor \text{ protection}_{ijt}] + \varepsilon_{ijt}, \quad (2)$$

where $investor \text{ protection}_{ijt}$ represents either the *investor protection index* or the *strong investor protection dummy*. The latter is equal to 1 if the *investor protection index* is equal or above the median for the considered BIT and 0 otherwise (see Section 3.2).

Table 3 presents selected estimation results for the interaction model in Equation (2). The first two columns report bilateral portfolio equity results, while columns III and IV show bilateral portfolio long-term debt results. The results for the control variables (not reported) align with the baseline results.

[insert Table 3]

The results for the *investor protection index* presented in columns I and III do not reveal a significant interaction effect. This might be due to a nonlinear impact of investor protection as it is unclear a priori how important individual treaty clauses are viewed by foreign investors. For the *strong investor protection* dummy used in columns II and IV, we find a significantly positive interaction effect for foreign equity holdings. Bilateral portfolio equity investment will be 60.7% higher if a BIT's investor protection is strong compared to weak investor protection. Treaties with weak investment protection yield no significant increase in foreign portfolio equity investment. Foreign investors appear to consider only BITs with strong investor protection into account when deciding on their portfolio equity investment destinations.

For long-term debt holdings, we neither find a significant unconditional effect of BITs nor a significant interaction effect of investor protection (column IV). Also, BITs with strong investor protection do not determine investment decisions on portfolio long-term debt.

4.3 The impact of BITs conditional on investor protection and political risk

In the previous model, we show that investor protection shapes the impact of BITs on bilateral portfolio equity investments. This section tests for a complementarity of investor protection and expropriation risk. In countries with high political risk, the risk of expropriations or other government interference should be higher (Jensen, 2008). A high investor protection BIT might mitigate the risk of expropriation and attract additional foreign investment. To test this hypothesis, we expand the previous model as follows:

$$\begin{aligned}
 FPI_{ijt} = \exp[& \text{baseline variables} + \beta_2 * BIT \text{ dummy}_{ijt} * Investor \text{ protection}_{ijt} \\
 & + \beta_3 * Politcal \text{ risk}_{it} + \beta_4 * BIT \text{ dummy}_{ijt} * Politcal \text{ risk}_{it} \\
 & + \beta_5 * BIT \text{ dummy}_{ijt} * Politcal \text{ risk}_{it} * Investor \text{ protection}_{ijt}] + \varepsilon_{ijt},
 \end{aligned} \tag{3}$$

which now includes a *Politcal risk_{it}* dummy for the host country. Additionally, we include the respective interactions terms for *Politcal risk_{it}*, *Investment protection_{ijt}* and the *BIT dummy_{ijt}*. We rely on the four risk dummies presented in Section 3.3 to measure political risk, where a value of 1 (0) indicates high (low) political risk.

Table 4 presents the results. In each specification, we use one of the four considered political risk dummies: *IEF dummy*, *ICRG Dummy*, *SFI dummy*, and *WGI dummy*. Each specification uses the same control variables and fixed effects as in the baseline models (see specification II or IV of Table 2). In the first three specifications presented in Table 4, we find evidence for our complementarity hypothesis as the triple interaction term has the expected positive and statistically significant coefficient. An insignificant effect is detected in specification IV. These results indicate that foreign portfolio equity investment in countries with high political risk is considerably higher with strong investor protection BITs than with weak investor protection BITs. The value of a strong BIT is larger in high political risk regimes where the BITs are more relevant for protecting foreign investors from expropriation.

[insert Table 4]

Table 5 reports the marginal effects of BITs on foreign portfolio equity holdings for the four country groups (high vs. low political risk; strong vs. weak investor protection of the BIT) separately for each political risk variable. Table 6 provides information on the number of BITs in each of the four groups. For countries with high political risk, the marginal effect of a strong BIT is positive and significant. For high political risk regimes, foreign investors hold 74% to 81% higher portfolio equity positions in countries with strong BITs than in countries with weak investor protection BITs. In countries with high political risk, foreign investors perceive a higher risk of expropriation and other unjustified government actions. A strong BIT protects foreign investment to a certain extent against such state interventions and facilitates the enforcement of compensation claims via arbitration tribunals. Such treaties thus reduce the risk for foreign investors and increase bilateral equity investments when political risk is high. We do not find robust evidence for low political risk regimes that the level of investor protection in BITs yields differences in foreign portfolio equity holdings. If a country's political risk is low, the risk of unjustified expropriation is remote, and the protection of a BIT is thus less valuable to foreign investors. Therefore, a strong treaty will hardly change the investment risk for foreigners. Overall, these results suggest that in high political risk regimes, foreign portfolio equity investment is attracted by BITs with

strong investor protection that compensate for the expropriation risk. In low political risk regimes, investor protection is not a major determinant of foreign portfolio equity holdings. Table 6 reports the number of BITs in the respective categories, which are split almost evenly.

[insert Table 5]

[insert Table 6]

Table A6 and Table A7 in the Appendix report the results for debt instruments. The estimations (Table A6) do not reveal significant effects of BITs on bilateral portfolio long-term debt holdings. Also, the marginal effects presented in Table A7 are mainly insignificant. Accordingly, these results suggest that foreign portfolio long-term debt investors do not consider the interplay of BITs, investor protection, and political risk when deciding on investment.

4.4 Robustness Checks

To test the robustness of our results, we re-estimate the effect of BITs on bilateral portfolio equity holdings conditional on investor protection and political risk. Unless otherwise specified, column I of Table 4 serves as the benchmark model.

The first robustness check uses lagged values for the control variables. Using lagged variables reduces concerns of reverse causality and allows foreign investors' investment decisions to be based on past economic data. Therefore, lagged variables might cover an investor's actual information set better than contemporaneous values. Table 7 presents the results using lagged control variables. The unconditional effect of BITs on bilateral portfolio equity holdings in column I (0.38) almost matches the value in our baseline results (0.4). Columns II and III present interaction effects with the investor protection index and the investor protection dummy. Both estimated interaction coefficients are relatively close to the respective benchmark results in Table 3. Column IV presents the results of the interaction of the investor protection dummy and the political risk dummy. Table 8 reports the marginal effects based on column

IV of Table 7. The corresponding marginal effect of a strong BIT on bilateral portfolio equity in countries with high political risk is at 82.8%, which is similar to the scenario with non-lagged control variables (84.4%). Overall, our baseline results remain robust when using lagged control variables.

[insert Table 7]

[insert Table 8]

Table 9 presents robustness checks for subsets of countries and years. The corresponding marginal effects are reported in Table 10. The first specification in Table 9 tests whether the global financial crisis of 2008 altered the value of BITs for foreign portfolio equity investors. The dummies for BIT, investor protection, and political risk are interacted with a post 2008 dummy. We find that the triple interaction term is negative and significant. The corresponding marginal effect reported in Table 10 shows that the value of strong BITs in risky political regimes was reduced from 90.9% before the crisis to 81.6% after the financial crisis. While BITs remain an essential determinant for equity investment in high political risk regimes, their relevance decreased somewhat after the outbreak of the financial crisis. One possible interpretation may be that foreign investors perceive expropriation risk as less important, given the spikes in market risk, default risk, and liquidity risk during the global financial crisis. Moreover, the relevance of environmental, social, and governmental (ESG) standards has increased since the Principles for Responsible Investment were launched by the United Nations in 2006. As more investors consider ESG standards in their investment decisions, politically risky regimes may have become less attractive for portfolio equity investment.

In a further robustness check we include country-year fixed effects for home and host countries (column II of Table 9). The estimated coefficients are roughly in line with the corresponding estimation results in column I of Table 4.

[insert Table 9]

[insert Table 10]

Moreover, we test for the sensitivity of results when country groups are excluded from the sample. The results in column III exclude EU member countries and the United Kingdom as home and host countries. Since EU countries share similar economic policies and regulations, their investment behavior may be correlated. The estimated coefficients are smaller than in the baseline model and not statistically different from zero. However, the corresponding marginal effect of a strong BIT on bilateral portfolio equity investments in countries with high political risk is at 94.5% and is highly significant. This suggests that the EU countries in our sample do not drive the results. Columns IV, V, and VI of Table 9 present the results of robustness checks, excluding either Latin American⁷, Eastern European⁸, or South-East Asian⁹ host and home countries from the sample. In these subsample regressions, the coefficients on the triple interaction are somewhat smaller than in the baseline regression. The associated marginal effects are similar to the baseline results (Table 10).

As a further robustness check, we use the raw values of the *investor protection* and *political risk indexes* instead of the dummy variables used in the baseline specifications. Column I of Table 11 presents the corresponding estimation results. As we cannot compare the results for the indices against our baseline results, we display in Figure 2 the marginal effects of an increase of the *investor protection index* by one on bilateral portfolio equity at specific values of the *Index of Economic Freedom*. The marginal effects are significantly positive for low values of the *IEF*. A low score in the *Index of Economic Freedom* indicates high political risk. In such countries, the impact of additional investor protection of BITs is relatively high. For higher *IEF* scores, the estimated marginal effects become insignificant. In countries

⁷Latin American countries: Chile, Colombia, Costa Rica, Ecuador, Jamaica, Mexico, Panama, Peru, and Venezuela.

⁸ Eastern European countries: Bulgaria, Croatia, Czechia, Estonia, Finland, Hungary, Latvia, Lithuania, Poland, Russia, Slovakia, Slovenia, Ukraine.

⁹ South-East Asian countries: China, Hong Kong, Indonesia, Japan, Korea, Malaysia, Mongolia, Philippines, Singapore, Thailand, Vietnam.

with low political risk (high *IEF* scores), additional investor protection of BITs has no significant impact.

[insert Table 11]

[insert Figure 2]

We further vary the composition of the *investor protection dummy*. So far, the dummy is based on eight treaty clauses and divides the 739 BITs in the sample into treaties with strong or weak investor protection. Some of the included treaty clauses are breached more often in arbitral proceedings than others (see Figure 1). Therefore, we omit the least breached treaty clauses, calculate a new investor protection dummy, and re-estimate the model. Summary statistics for the reduced investor protection indices with six, three, and two clauses are presented in Table 1. Column II of Table 11 presents results using an investor protection dummy based only on six treaty clauses. The *national treatment* clause and *most favored nation* clause are not considered. The estimated coefficients align with the results presented in the benchmark regression in column I of Table 4. The corresponding marginal effect presented in Table 12 is even higher than the effect estimated in the benchmark model (upper panel of Table 5). In countries with high political risk, a BIT with strong investor protection will increase bilateral portfolio equity holdings by 119% compared to a weak one. Column III of Table 11 presents results based on only three treaty clauses. The investor protection dummy is based on the *FET* clause, the mentioning of *indirect expropriation*, and the *prohibition of unreasonable, arbitrary, or discriminatory measures*. Also, this specification's regression results align with the benchmark results. The marginal effect of a strong BIT in a country with high political risk is roughly 74% (compared to weak BITs) positive and statistically significant. Only when the number of included treaty clauses is reduced further do the results collapse. In column IV of Table 11, the investor protection dummy is based on only two treaty clauses: *FET* and *indirect expropriation*. The estimated coefficients now differ noticeably from the benchmark results. Also, the positive effect of strong investor protection (compared to weak investor protection) in

countries with high political risk becomes insignificant (Table 12). The reason for the collapse of the results in this specification is the composition of the *investor protection index*. Since many Treaties use an *unqualified FET* clause and mention *indirect expropriation*, most treaties are classified as BITs with strong investor protection (596 out of 739). Distinguishing BITs based on only two treaty clauses is not sufficient. Overall, the sensitivity analysis indicates fairly robust results that confirm our benchmark findings.

[insert Table 12]

5 Conclusion

In this paper, we examine the effect of bilateral investment treaties on bilateral portfolio investment in emerging markets using an unbalanced panel dataset of 60 home and 39 host countries from 2002 to 2017. We find that BITs affect bilateral portfolio equity holdings significantly positively. For country pairs with a BIT, bilateral portfolio equity holdings are 40% higher than for those without a BIT. We do not find a significant impact of BITs on foreign portfolio long-term debt holdings mirroring bondholders' lower exposure to losses caused by unjustified government action or expropriation and a potentially lower legal protection for government bondholders.

Taking the heterogeneity in the levels of investor protection of BITs and political risk in the host countries into account, we find robust evidence that foreign investors consider their complementarity when deciding on the value of a BIT on their portfolio equity investments. We find a positive and significant effect of strong BITs on bilateral portfolio equity holdings. BITs with weak investor protection do not increase equity holdings since they are not considered to act as a hedge against the risk of expropriation. BITs with strong investor protection are associated with 60% higher bilateral portfolio equity holdings than BITs with weak investor protection.

Our findings add to two recent strands of the literature. First, expropriation risk and investor protection have been found to be important determinants of foreign portfolio investment (Daude and Fratzscher, 2008; Poshakwale and Thapa, 2011; Giofr , 2013, 2014; Fu et al. 2022; Kliatskova et al., 2023). We focus on BITs as a bilateral measure which enables us to identify investor protection and its impact on foreign portfolio investment on the country pair level. Moreover, we present conditional results of BITs for portfolio equity and portfolio debt investment. The literature on FDI has so far focused on the conditioning effects of expropriation risk and institutional quality (Busse et al., 2010; Tobin and Rose-Ackerman, 2011; Bhagwat et al., 2021) or investor protection of BITs (Frenkel and Walter, 2019; Bengoa et al., 2020) as pull factors for FDI in isolation. Our findings indicate a complementarity, i.e. a BIT will attract foreign portfolio investment only when it offers sufficient investor protection and when it is implemented by a risky host country.

Foreign portfolio equity investors appear to acknowledge the value of a strong BIT only when investing in politically risky regimes, as the insurance value of a strong treaty increases in the likelihood of expropriation. Strong BITs only attract foreign investment in politically risky regimes, while no effect is detected for low-risk regimes. For countries with high political risk, we find that a BIT with strong investor protection increases bilateral portfolio equity investments by 74% to 81%, compared to a BIT with weak investor protection.

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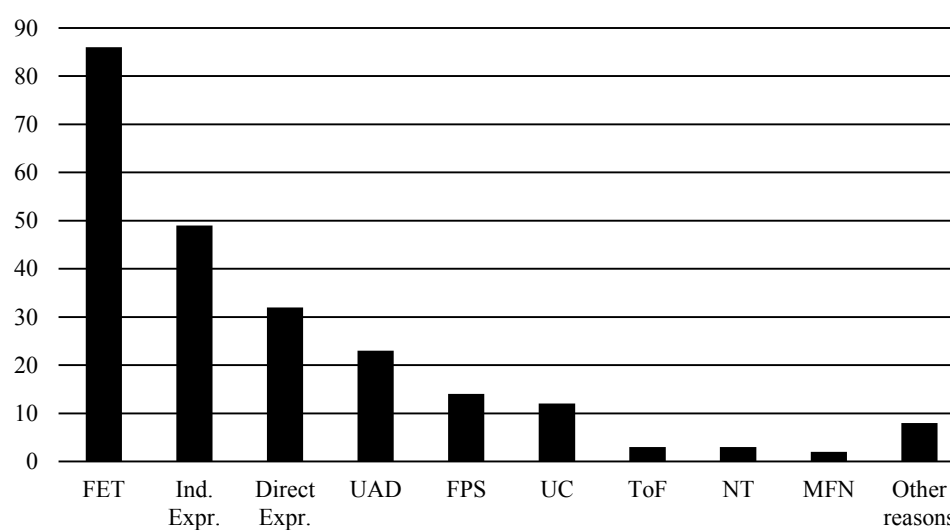
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Tables and Figures

Figure 1: Frequently breached treaty clauses in arbitral proceedings decided in favor of a foreign investor



Notes: The Figure displays the most frequently breached treaty clauses in descending order. The database contains 137 arbitral proceedings that have been decided in favor of the foreign investor from 1990-2020 (UNCTAD, 2020). The total number of clauses listed exceeds the number of disputes since an arbitration award may be based on several breached treaty clauses.

Table 1: Summary Statistics

	N	Mean	Median	SD	Min.	Max.
Equity	13536	1037.5	0.9	7707.8	0	203341.8
Long-term debt	8892	692.8	12.5	3247.4	0	85019.4
BIT dummy	13536	0.5	0.0	0.5	0	1
FET dummy	739	0.8	1.0	0.4	0	1
Indirect expropriation dummy	739	1.0	1.0	0.2	0	1
UAD dummy	739	0.6	1.0	0.5	0	1
FPS dummy	739	0.7	1.0	0.4	0	1
UC dummy	739	0.4	0.0	0.5	0	1
TOF dummy	739	0.8	1.0	0.4	0	1
NT dummy	739	0	0.0	0.2	0	1
MFN dummy	739	0.1	0.0	0.2	0	1
Investor protection index (8 clauses)	739	4.5	5.0	1.2	1	8
Investor protection dummy	739	0.5	1.0	0.5	0	1
Investor protection index (6 clauses)	739	4.4	4	1.2	1	6
Investor protection index (3 clauses)	739	2.4	3	0.7	0	3
Investor protection index (2 clauses)	739	1.8	2	0.4	0	2
IEF index	13536	60.8	61.4	7	37.1	79
ICRG index	13536	65.2	65.5	9.1	38.8	83.6
SFI index	13536	7.6	7.0	4.3	0	20
WGI index	13536	-0.1	-0.2	0.6	-1.3	1.3
Ln distance	13536	8.6	8.9	0.8	4.8	9.9
Contiguity dummy	13536	0	0.0	0.2	0	1
Colonial relationship dummy	13536	0	0.0	0.2	0	1
Common colonizer dummy	13536	0	0.0	0.2	0	1
Common language dummy	13536	0.1	0.0	0.3	0	1
RTA dummy	13536	0.4	0.0	0.5	0	1
Ln real GDP (host)	13536	26.2	26.2	1.4	22.3	30
Ln real GDP (home)	13536	26.8	26.7	1.6	22.7	30.5
Inflation rate (host)	13536	5.3	4.2	4.4	-5	37.1
Inflation rate (home)	13536	2.8	2.3	2.8	-4.6	25.9
Inflation rate volatility (host)	13536	1.7	1.2	1.6	.1	13.5
Inflation rate volatility (home)	13536	1	0.8	.9	.1	13.5
Exchange rate change	13536	2.4	1.4	13.9	-64.1	358.6
Exchange rate volatility	13536	25.1	0.1	135	0	3119.9
Capital account openness (host)	13536	0.5	0.4	.3	0	1
Capital account openness (home)	13536	0.8	1.0	.3	.2	1
Stock market return (host)	13536	14.7	8.6	34.3	-63.2	402.5
Stock market return (home)	13536	5.8	6.4	23.9	-86.7	169.9
Stock market volatility (host)	13536	20.8	19.0	11	4.7	141.6
Stock market volatility (home)	13536	21.1	19.3	9.9	3.9	99
Stock market to GDP (host)	13536	53	38.8	48.3	.4	328.4
Stock market to GDP (home)	13536	96	62.2	156.9	3.4	1098.9
Stock market turnover ratio (host)	13536	45.3	26.3	61.9	.3	556.9
Stock market turnover ratio (home)	13536	66.2	53.5	58.5	.3	556.9
EMBI return (host)	8892	7.6	6.6	8.4	-66	43.7
EMBI volatility (host)	8892	15.6	10.2	17.6	.2	227
Public debt to GDP (host)	8892	43	41.0	21.5	3.9	141.9
S&P ratings (host)	8892	11.7	12.0	3.1	2.7	18

Table 2: The unconditional effect of BITs on bilateral portfolio investment

	Equity		Long-term debt	
	I	II	III	IV
BIT dummy	0.401** (0.176)	0.408** (0.176)	0.0711 (0.159)	0.0647 (0.160)
Ln distance	0.110 (0.193)	0.117 (0.193)	-0.0136 (0.132)	-0.0187 (0.132)
Contiguity dummy	1.239*** (0.405)	1.248*** (0.404)	0.549** (0.265)	0.543** (0.260)
Colonial relationship dummy	-0.198 (0.324)	-0.164 (0.314)	0.0887 (0.168)	0.0975 (0.164)
Common colonizer dummy	1.128** (0.473)	1.133** (0.471)	0.497 (0.371)	0.501 (0.371)
Common language dummy	1.182*** (0.268)	1.177*** (0.267)	0.856*** (0.215)	0.839*** (0.214)
RTA dummy	0.822*** (0.205)	0.841*** (0.206)	0.838*** (0.178)	0.829*** (0.182)
Ln real GDP (host)	1.119*** (0.288)	1.404*** (0.274)	1.012** (0.475)	0.995** (0.433)
Ln real GDP (home)	0.317 (0.455)	0.468 (0.482)	1.900** (0.764)	1.841** (0.726)
Inflation rate (host)	-0.00871 (0.00732)	-0.0204*** (0.00610)	-0.00565 (0.00966)	-0.0258*** (0.00869)
Inflation rate (home)	0.0315*** (0.0122)	0.0312** (0.0147)	0.0209 (0.0230)	0.0197 (0.0215)
Inflation rate volatility (host)	-0.0204 (0.0278)	-0.00196 (0.0199)	-0.0573* (0.0293)	-0.00501 (0.0262)
Inflation rate volatility (home)	-0.0675*** (0.0229)	-0.0558** (0.0255)	-0.0477 (0.0549)	-0.0544 (0.0537)
Exchange rate change	-0.00424* (0.00223)	-0.00296 (0.00190)	-0.00233 (0.00208)	-0.00262 (0.00215)
Exchange rate volatility	-1.58e-05 (0.000178)	-1.23e-05 (0.000184)	0.000436 (0.000286)	0.000428 (0.000286)
Capital account openness (host)	-0.413** (0.209)	-0.0682 (0.192)	-0.397 (0.262)	-0.172 (0.267)
Capital account openness (home)	1.562*** (0.374)	1.360*** (0.316)	0.663 (0.870)	0.702 (0.865)
Stock market return (host)		0.00211*** (0.000626)		
Stock market return (home)		0.00205 (0.00167)		
Stock market volatility (host)		-0.000683 (0.00292)		
Stock market volatility (home)		0.000628 (0.00337)		
Stock market to GDP (host)		0.00633*** (0.00131)		
Stock market to GDP (home)		-0.000336 (0.000241)		
Stock market turnover ratio (host)		-0.000598** (0.000270)		
Stock market turnover ratio (home)		-0.00158** (0.000711)		
EMBI return (host)				0.0118*** (0.00422)
EMBI volatility (host)				0.00359 (0.00222)
Public debt to GDP (host)				0.0146*** (0.00428)
S&P ratings (host)				0.0565

Constant	-34.26** (14.39)	-46.66*** (14.21)	-74.86*** (26.96)	(0.0377) -74.24*** (24.74)
Observations	13,536	13,536	8,892	8,892
Pseudo R2	0.935	0.937	0.863	0.865

Notes: This Table presents the PPML estimation results of model (1): $FPI_{ijt} = \exp[\alpha_0 + \beta_1 * BIT\ dummy_{ijt} + \sum_k \gamma_k * Gravity_{kij} + \sum_l \delta_l * Controls_{lit} + \sum_m \theta_m * Controls_{mjt} + \gamma_i + \gamma_j + \eta_{year}] + \varepsilon_{ijt}$. All regressions include home and host country fixed effects as well as year fixed effects. Robust standard errors clustered on the country-pair level are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 3: The effect of BITs on bilateral portfolio investment conditional on investor protection

	Equity		Long-term debt	
	I	II	III	IV
BIT dummy	0.000579 (0.418)	-0.00587 (0.185)	-0.287 (0.359)	-0.105 (0.203)
BIT dummy * investor protection index	0.0830 (0.0826)		0.0727 (0.0639)	
BIT dummy * strong investor protection dummy		0.607*** (0.209)		0.269 (0.178)
Observations	13,536	13,536	8,892	8,892
Pseudo R2	0.937	0.939	0.865	0.866

Notes: This Table presents the PPML estimation results of model (2): $FPI_{ijt} = \exp[baseline\ variables + \beta_2 * BIT\ dummy_{ijt} * investment\ protection_{ijt}] + \varepsilon_{ijt}$. The regressions include control variables and fixed effects of the baseline model (see column II or IV of Table 2). Robust standard errors clustered on the country-pair level are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 4: The effect of BITs on bilateral portfolio equity investment conditional on investor protection and political risk

	I	II	III	IV
	Political risk dummy is based on:			
	IEF dummy	ICRG dummy	SFI dummy	WGI dummy
BIT dummy	0.148 (0.204)	-0.0401 (0.257)	0.186 (0.178)	0.244 (0.194)
BIT dummy * strong investor protection dummy	-0.0181 (0.301)	0.194 (0.293)	0.352 (0.220)	0.347 (0.240)
Pol. risk dummy	-0.330** (0.161)	-0.148** (0.0713)	-0.0359 (0.102)	-0.126** (0.0604)
BIT dummy * political risk dummy	-0.115 (0.248)	0.0348 (0.209)	-0.364* (0.221)	-0.352 (0.226)
BIT dummy * political risk dummy * strong investor protection dummy	0.829** (0.330)	0.591** (0.241)	0.465* (0.254)	0.392 (0.277)
Observations	13,536	13,536	13,536	13,536
Pseudo R2	0.940	0.940	0.939	0.939

Notes: This Table presents the PPML estimation results of model (3): $FPI_{ijt} = \exp[\text{baseline variables} + \beta_2 * BIT\ dummy_{ijt} * Investment\ protection_{ijt} + \beta_3 * Political\ risk_{it} + \beta_4 * BIT\ dummy_{ijt} * Political\ risk_{it} + \beta_5 * BIT\ dummy_{ijt} * Political\ risk_{it} * Investment\ Protection_{ijt}] + \varepsilon_{it}$. The regressions also include control variables and fixed effects of the baseline model (see column II of Table 2). Robust standard errors clustered on the country-pair level are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 5: The marginal effect of BITs on bilateral portfolio equity investment conditional on investor protection and political risk

Index of Economic Freedom (IEF)	Investor protection		Difference
	Weak	Strong	
High political risk	0.034 (0.219)	0.844*** (0.205)	0.810*** (0.235)
Low political risk	0.148 (0.204)	0.130 (0.282)	-0.018 (0.301)
<hr/>			
<i>International Country Risk Guide</i> (ICRG)	Investor protection		Difference
	Weak	Strong	
High political risk	-0.005 (0.173)	0.779*** (0.192)	0.785*** (0.192)
Low political risk	-0.040 (0.257)	0.154 (0.207)	0.194 (0.293)
<hr/>			
State Fragility Index (SFI)	Investor protection		Difference
	Weak	Strong	
High political risk	-0.178 (0.237)	0.639*** (0.224)	0.816*** (0.255)
Low political risk	0.186 (0.178)	0.538*** (0.199)	0.352 (0.220)
<hr/>			
World Governance Indicators (WGI)	Investor protection		Difference
	Weak	Strong	
High political risk	-0.108 (0.220)	0.631*** (0.210)	0.740*** (0.246)
Low political risk	0.244 (0.194)	0.592** (0.243)	0.347 (0.240)

Notes: This Table presents marginal effects based on the regression results of Table 4. Robust standard errors clustered on the country-pair level are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 6: The frequency of BITs with respect to strong investor protection and high political risk

Index of Economic Freedom (IEF)	Investor protection		Total
	Weak	Strong	
High political risk	214	223	437
Low political risk	153	149	302
Total	367	372	739
International Country Risk Guide (ICRG)	Investor protection		Total
	Weak	Strong	
High political risk	164	155	319
Low political risk	203	217	420
Total	367	372	739
State Fragility Index (SFI)	Investor protection		Total
	Weak	Strong	
High political risk	192	198	390
Low political risk	175	174	349
Total	367	372	739
World Governance Indicators (WGI)	Investor protection		Total
	Weak	Strong	
High political risk	179	179	358
Low political risk	188	193	381
Total	367	372	739

Notes: This Table displays the number of BITs with respect to the different dummies for political risk and the dummy for strong investor protection. The number of observations is limited to the 739 BITs in the sample. Reading example for the first number: in 214 cases, a country with a high political risk (measured by the *Index of Economic Freedom*) has a BIT with weak investor protection. The investor protection measure is based on the most frequently used treaty clauses in arbitral proceedings (see Section 3.3).

Table 7: Robustness analysis I: Lagged controls

	Equity			
	I	II	III	IV
BIT dummy	0.383** (0.170)	-0.017 (0.420)	-0.014 (0.188)	0.143 (0.208)
BIT dummy * investor protection index		0.082 (0.083)		
BIT dummy * investor protection dummy			0.592*** (0.210)	-0.034 (0.309)
IEF dummy				-0.411** (0.170)
BIT dummy * IEF dummy				-0.116 (0.255)
BIT dummy * IEF dummy * investor protection dummy				0.835** (0.335)
Ln distance	0.158 (0.196)	0.157 (0.199)	0.115 (0.199)	0.039 (0.178)
Contiguity dummy	1.294*** (0.408)	1.309*** (0.405)	1.333*** (0.402)	1.277*** (0.378)
Colonial relationship dummy	-0.193 (0.322)	-0.192 (0.322)	-0.209 (0.315)	0.038 (0.283)
Common colonizer dummy	1.122** (0.470)	1.123** (0.473)	1.103** (0.456)	0.996** (0.420)
Common language dummy	1.189*** (0.270)	1.180*** (0.273)	1.099*** (0.258)	0.916*** (0.234)
RTA dummy $t-1$	0.837*** (0.203)	0.832*** (0.206)	0.809*** (0.208)	0.919*** (0.180)
Ln real GDP (host) $t-1$	1.189*** (0.298)	1.184*** (0.297)	1.175*** (0.298)	1.228*** (0.294)
Ln real GDP (home) $t-1$	0.418 (0.499)	0.426 (0.500)	0.427 (0.503)	0.374 (0.520)
Inflation rate (host) $t-1$	-0.003 (0.007)	-0.003 (0.007)	-0.004 (0.006)	-0.006 (0.006)
Inflation rate (home) $t-1$	0.023* (0.013)	0.023* (0.013)	0.023* (0.013)	0.023* (0.013)
Inflation rate volatility (host) $t-1$	-0.005 (0.018)	-0.005 (0.018)	-0.004 (0.018)	0.001 (0.018)
Inflation rate volatility (home) $t-1$	0.043* (0.024)	0.043* (0.024)	0.043* (0.024)	0.038 (0.027)
Exchange rate change $t-1$	-0.003 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.002 (0.002)
Exchange rate volatility $t-1$	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Capital account openness (host) $t-1$	-0.349* (0.200)	-0.355* (0.198)	-0.340* (0.198)	-0.270 (0.209)
Capital account openness (home) $t-1$	1.203*** (0.290)	1.198*** (0.291)	1.173*** (0.294)	1.115*** (0.304)
Stock market return (host) $t-1$	0.002*** (0.001)	0.002*** (0.001)	0.002*** (0.001)	0.002*** (0.001)
Stock market return (home) $t-1$	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.003* (0.001)
Stock market volatility (host) $t-1$	-0.001 (0.003)	-0.001 (0.003)	-0.001 (0.003)	-0.001 (0.003)
Stock market volatility (home) $t-1$	0.010*** (0.003)	0.010*** (0.003)	0.010*** (0.003)	0.009*** (0.003)
Stock market to GDP (host) $t-1$	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)

Stock market to GDP (home) $t-1$	-0.000* (0.000)	-0.000* (0.000)	-0.000* (0.000)	-0.000* (0.000)
Stock market turnover ratio (host) $t-1$	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Stock market turnover ratio (home) $t-1$	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)
Constant	-39.437** (15.685)	-39.511** (15.692)	-38.870** (15.676)	-37.819** (15.837)
Observations	11,034	11,034	11,034	11,034
Pseudo R2	0.937	0.937	0.939	0.940

Notes: This Table presents the PPML estimation results of models (1)-(3) using lagged control variables. Column I presents baseline regression based on model (1). Column II and III shows results for the interaction model presented in model (2). Column II uses an investor protection index, while column III uses the corresponding dummy variable for strong investor protection. Column IV presents results on model (3). All regressions include home and host country fixed effects as well as year fixed effects. Robust standard errors clustered on the country-pair level are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 8: Marginal effects for Robustness analysis I

County-year fixed effects	Investor protection		Difference
	Weak	Strong	
High political risk	0.027 (0.222)	0.828*** (0.197)	0.800*** (0.235)
Low political risk	0.143 (0.208)	0.109 (0.284)	-0.034 (0.309)

Notes: This Table presents marginal effects based on the regression results in column IV of Table 7. Robust standard errors clustered on the country-pair level are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 9: Robustness analysis II: Post-crisis dummy, additional fixed effects, excluding regions

	I	II	III	IV	V	
	Add. Post fin. crisis dummy	Country- year fixed effects	Without EU and UK	Without Latin America	Without Eastern Europe	Without South-East Asia
BIT dummy	0.264 (0.252)	0.155 (0.218)	-0.123 (0.229)	-0.0560 (0.184)	0.309 (0.228)	-0.265* (0.154)
BIT dummy * investor protection dummy	-0.376 (0.390)	-0.0967 (0.314)	-0.082 (0.487)	0.142 (0.245)	-0.122 (0.383)	0.0991 (0.211)
IEF dummy	-0.512*** (0.165)		-0.386 (0.239)	-0.396** (0.175)	-0.324* (0.165)	-0.378** (0.155)
BIT dummy * IEF dummy	-0.207 (0.359)	-0.0504 (0.269)	0.289 (0.290)	0.222 (0.246)	0.133 (0.265)	-0.230 (0.238)
BIT dummy * IEF dummy * investor protection dummy	1.228*** (0.453)	0.953*** (0.345)	0.860 (0.565)	0.691** (0.308)	0.621 (0.393)	0.679** (0.271)
BIT dummy * post fin. crisis dummy	-0.140 (0.171)					
BIT dummy * investor protection dummy * post fin. crisis dummy	0.459** (0.204)					
IEF dummy * post fin. crisis dummy	0.251** (0.125)					
BIT dummy * IEF dummy * post fin. crisis dummy	0.108 (0.291)					
BIT dummy * IEF dummy * investor protection dummy * post fin. crisis dummy	-0.521* (0.311)					
Observations	13,536	13,536	6,526	10,365	9,610	8,739
Pseudo R2	0.940	0.950	0.949	0.942	0.945	0.956

Notes: This Table presents the PPML estimation results of model (3). The regressions include control variables and fixed effects of the baseline model (see column II of Table 2). Results presented in column I include interaction with a post-crisis dummy, which indicates years after 2008. The regression in column II also includes country-year fixed effects for both home and host countries. The latter reduces controls to gravity variables and exchange rate related variables. The other variables are incorporated by the country-year fixed effects. Column II presents results excluding EU members. The estimation results in column IV are based on a sample without Latin American countries: Chile, Colombia, Costa Rica, Ecuador, Jamaica, Mexico, Panama, Peru, and Venezuela. The estimation results in column V are based on a sample without Eastern European countries: Bulgaria, Croatia, Czechia, Estonia, Finland, Hungary, Latvia, Lithuania, Poland, Russia, Slovakia, Slovenia, and Ukraine. The estimation results in column VI are based on a sample without South-East Asian countries: China, Hong Kong, Indonesia, Japan, Korea, Malaysia, Mongolia, Philippines, Singapore, Thailand, and Vietnam. Robust standard errors clustered on the country-pair level are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 10: Marginal effects for Robustness analysis II

2002- 2008	Investor protection		Difference
	Weak	Strong	
High political risk	0.057 (0.321)	0.909*** (0.205)	0.852*** (0.331)
Low political risk	0.264 (0.252)	-0.112 (0.324)	-0.376 (0.39)
2009-2017	Investor protection		Difference
	Weak	Strong	
High political risk	0.026 (0.208)	0.816*** (0.214)	0.790*** (0.230)
Low political risk	0.124 (0.204)	0.207 (0.279)	0.084 (0.288)
County-year fixed effects	Investor protection		Difference
	Weak	Strong	
High political risk	0.105 (0.227)	0.962*** (0.222)	0.857*** (0.240)
Low political risk	0.155 (0.218)	0.059 (0.293)	-0.097 (0.314)
Without EU	Investor protection		Difference
	Weak	Strong	
High political risk	0.166 (0.284)	0.945*** (0.232)	0.778*** (0.293)
Low political risk	-0.123 (0.229)	-0.205 (0.517)	-0.082 (0.487)
Without Latin America	Investor protection		Difference
	Weak	Strong	
High political risk	0.166 (0.24)	0.999*** (0.193)	0.832*** (0.231)
Low political risk	-0.056 (0.184)	0.086 (0.27)	0.142 (0.245)
Without Eastern Europe	Investor protection		Difference
	Weak	Strong	
High political risk	0.443** (0.202)	0.942*** (0.217)	0.499** (0.205)
Low political risk	0.309 (0.228)	0.187 (0.337)	-0.122 (0.383)
Without South-East Asia	Investor protection		Difference
	Weak	Strong	
High political risk	-0.495** (0.209)	0.284* (0.168)	0.778*** (0.236)
Low political risk	-0.265* (0.154)	-0.166 (0.175)	0.099 (0.211)

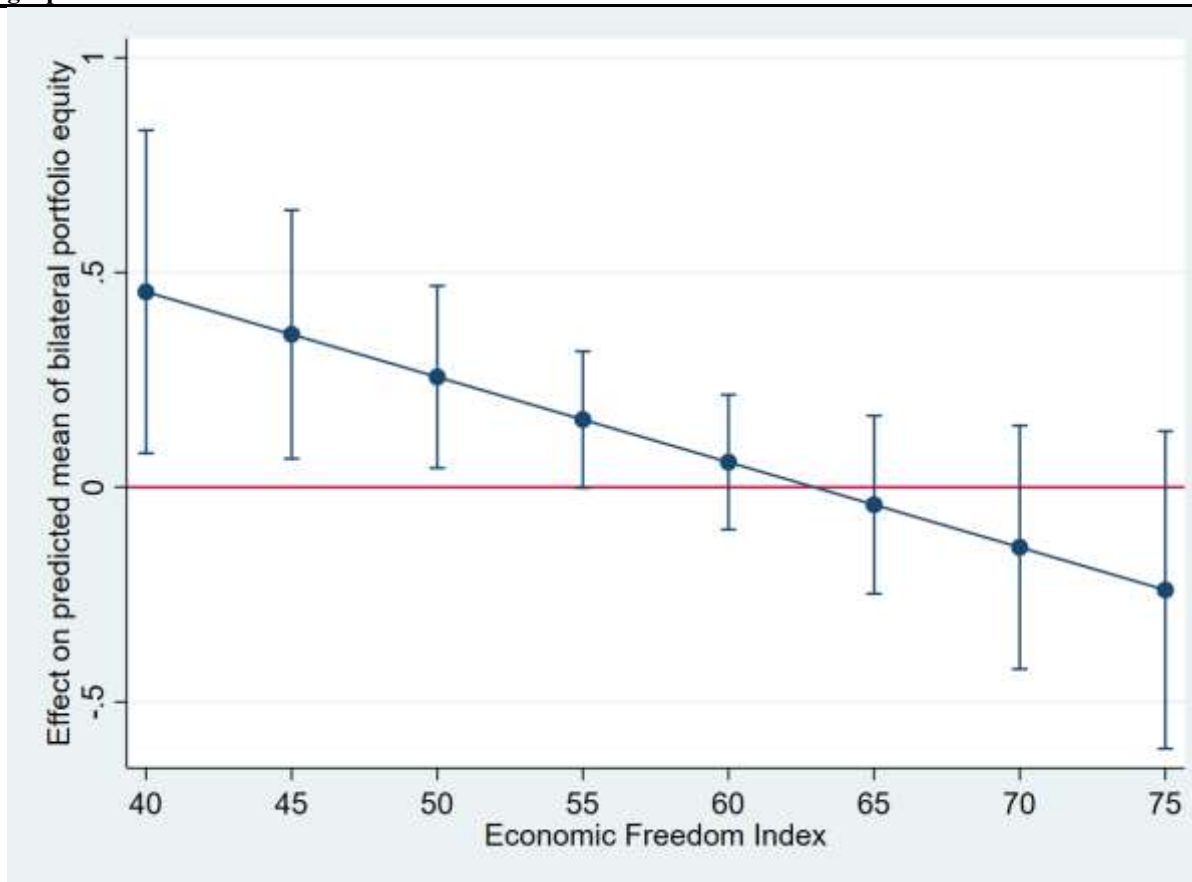
Notes: This Table presents the marginal effects based on regression results of Table 9. Robust standard errors clustered on the country-pair level are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 11: Robustness analysis III: Alternative definitions of investor protection

	I	II	III	IV
	Interaction of indices	Investor protection dummy based on:		
		6 treaty clauses	3 treaty clauses	2 treaty clauses
BIT dummy	-4.497* (2.577)	0.113 (0.278)	0.401** (0.159)	0.481*** (0.176)
BIT dummy * investor protection index	1.248** (0.579)			
IEF index	0.0101 (0.0112)			
BIT dummy * IEF index	0.0770* (0.0434)			
BIT dummy * IEF index * investor protection index	-0.0198** (0.00994)			
BIT dummy * investor protection dummy		0.0409 (0.361)	-0.495 (0.345)	-0.792*** (0.307)
IEF dummy		-0.319** (0.155)	-0.221* (0.134)	-0.228* (0.130)
BIT dummy * IEF dummy		-0.523 (0.374)	-0.0799 (0.226)	0.0908 (0.224)
BIT dummy * IEF dummy * investor protection dummy		1.150*** (0.423)	1.234*** (0.350)	0.740** (0.303)
Observations	13,536	13,536	13,536	13,536
Pseudo R2	0.938	0.940	0.941	0.939
Year fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes

Notes: This Table presents the PPML estimation results of model (3). The regressions include control variables and fixed effects of the baseline model (see column II of Table 2). Column I presents results using the investor protection index and the *Index of Economic Freedom* instead of the respective dummy variables. Column II includes an investor protection dummy based on only six treaty clauses: *FET*, *indirect expropriation*, *UAD*, *FPS*, *UC*, and *TOF*. The results in column III use an investor protection dummy based on only three treaty clauses: *FET*, *indirect expropriation*, and *UAD*. Column IV presents results based on an investor protection dummy, which relies on two treaty clauses: *FET* and *indirect expropriation*. Robust standard errors clustered on the country level are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Figure 2: Robustness analysis III: The marginal effect of BITs on bilateral portfolio equity investment conditional on investor protection index and different values of the Index of Economic Freedom - graphical illustration



Notes: This Table presents marginal effects based on the regression results in column I of Table 11. Reading example: Bilateral portfolio equity holdings will increase by roughly 45% if the index of investor protection increases by 1 and the Index of Economic Freedom scores 40.

Table 12: Marginal effects for Robustness analysis III

Investor protection dummy based on six treaty clauses	Investor protection		Difference
	Weak	Strong	
High political risk	-.410 (.307)	.781*** (.200)	1.191*** (.344)
Low political risk	.113 (.278)	.154 (.262)	.041 (.361)

Investor protection dummy based on three treaty clauses	Investor protection		Difference
	Weak	Strong	
High political risk	-.321* (.183)	1.06*** (.316)	.739** (.305)
Low political risk	.401** (.159)	.093 (.385)	-.495 (.345)

Investor protection dummy based on two treaty clauses	Investor protection		Difference
	Weak	Strong	
High political risk	.572*** (.211)	.520* (.241)	.052 (.269)
Low political risk	.481*** (.176)	-.311 (.339)	-.792*** (.307)

Notes: This Table presents marginal effects based on the regression results of Table 11. Robust standard errors clustered on the country-pair level are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Appendix

Table A1: Host and home countries

Host countries:
Botswana, Bulgaria, Chile, China, Colombia, Croatia, Ecuador, Egypt, Ghana, Hungary, India, Indonesia, Jamaica, Kenya, Kuwait, Malaysia, Mexico, Mongolia, Morocco, Namibia, Nigeria, Oman, Pakistan, Peru, Philippines, Poland, Qatar, Russian Federation, Saudi Arabia, South Africa, Sri Lanka, Tanzania, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, Venezuela, Vietnam
Home countries:
Australia, Austria, Bahrain, Belgium, Bulgaria, Canada, Chile, China, Colombia, Costa Rica, Cyprus, Czechia, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Korea, Kuwait, Latvia, Lebanon, Lithuania, Malaysia, Malta, Mauritius, Mexico, Mongolia, Netherlands, New Zealand, Norway, Pakistan, Panama, Peru, Philippines, Poland, Portugal, Russian Federation, Saudi Arabia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, United Kingdom, United States of America

Table A2: Correlations

	BIT Dummy	Investor protection index	Investor protection dummy	IEF dummy	ICRG dummy	SFI dummy	WGI dummy	Ln distance	Contiguity dummy	Colonial relationship dummy	Common colonizer dummy	Common language dummy	RTA dummy	Ln real GDP (host)	Ln real GDP (home)	Inflation rate (host)	Inflation rate (home)	Inflation rate volatility (host)	Inflation rate volatility (home)
BIT dummy	1.00																		
Investor protection index	0.94	1.00																	
Investor protection dummy	0.61	0.80	1.00																
IEF dummy	-0.12	-0.11	-0.07	1.00															
ICRG dummy	0.05	0.06	0.07	0.53	1.00														
SFI dummy	-0.07	-0.07	-0.07	-0.52	-0.82	1.00													
WGI dummy	0.03	0.03	0.03	0.73	0.84	-0.80	1.00												
Ln distance	-0.25	-0.24	-0.20	0.12	-0.12	0.17	-0.08	1.00											
Contiguity dummy	0.00	0.00	0.00	-0.02	0.03	-0.06	0.02	-0.37	1.00										
Colonial rel. dummy	0.10	0.11	0.11	-0.01	-0.01	0.02	0.01	-0.13	0.22	1.00									
Com. colonizer dummy	-0.08	-0.08	-0.06	0.01	-0.05	0.09	-0.01	-0.12	0.02	-0.03	1.00								
Com. language dummy	-0.11	-0.09	-0.04	-0.03	-0.12	0.19	-0.10	-0.10	0.16	0.16	0.19	1.00							
RTA dummy	0.17	0.15	0.10	0.17	0.12	-0.21	0.21	-0.32	0.14	0.04	-0.03	0.07	1.00						
Ln real GDP (host)	0.11	0.08	0.01	-0.19	-0.24	0.18	-0.23	0.04	0.05	-0.02	0.00	-0.01	0.04	1.00					
Ln real GDP (home)	0.20	0.20	0.15	0.01	0.00	0.01	0.01	0.15	-0.02	0.07	-0.22	-0.02	-0.07	-0.05	1.00				
Inflation rate (host)	0.01	0.01	0.02	-0.40	-0.41	0.39	-0.41	0.00	-0.02	0.03	0.04	0.08	-0.08	-0.05	0.01	1.00			
Inflation rate (home)	-0.04	-0.06	-0.08	-0.02	0.01	0.01	0.00	-0.04	0.04	0.02	0.01	0.05	0.02	-0.02	-0.11	0.09	1.00		
Infl. Rate volat. (host)	-0.01	-0.01	-0.02	-0.32	-0.44	0.39	-0.38	0.02	-0.03	0.01	0.08	0.14	-0.04	0.01	0.00	0.75	0.05	1.00	
Infl. Rate volat. (home)	-0.05	-0.08	-0.09	0.01	-0.01	-0.02	0.00	-0.05	0.03	0.01	0.06	0.09	0.05	0.02	-0.12	0.03	0.75	0.06	1.00
Exchange rate change	0.02	0.02	0.01	-0.10	-0.11	0.09	-0.10	-0.01	0.01	0.02	-0.02	0.03	0.03	-0.01	0.01	0.27	-0.13	0.29	-0.17
Exchange rate volatility	0.00	0.01	0.01	-0.16	-0.06	0.04	-0.11	0.10	-0.02	0.00	-0.04	-0.06	-0.10	-0.01	0.00	0.10	-0.05	0.06	-0.04
Cap. Acct. open. (host)	-0.02	-0.01	0.01	0.51	0.42	-0.45	0.42	-0.06	0.01	-0.01	-0.02	-0.09	0.02	-0.28	0.02	-0.18	0.01	-0.20	0.01
Cap. Acct. open. (home)	0.06	0.10	0.14	-0.02	0.04	0.00	0.01	-0.02	-0.08	0.05	0.01	-0.01	-0.11	-0.05	0.06	0.03	-0.38	-0.03	-0.37
Stock market return (host)	0.01	0.01	0.01	-0.16	-0.05	0.14	-0.12	0.04	-0.01	0.01	-0.02	0.00	-0.05	-0.07	0.03	0.10	-0.01	0.06	-0.04
Stock market return (home)	-0.02	-0.02	-0.02	-0.04	0.03	0.01	0.00	0.02	0.02	0.00	-0.03	0.02	0.02	0.00	0.02	-0.08	0.09	-0.08	0.01
Stock market volat. (host)	0.11	0.11	0.09	-0.24	-0.03	0.08	-0.13	-0.10	0.03	0.02	-0.07	-0.05	-0.06	0.07	-0.01	0.26	0.00	0.06	-0.02
Stock market volat. (home)	0.03	0.03	0.01	-0.02	0.04	-0.01	0.00	-0.07	-0.01	0.02	-0.02	-0.12	-0.04	-0.09	0.03	0.06	0.11	0.00	0.09
Stock market to GDP (host)	-0.06	-0.04	-0.02	0.30	0.21	-0.11	0.31	0.14	-0.01	0.00	0.02	0.10	0.04	0.19	-0.01	-0.20	0.00	-0.15	0.02
Stock market to GDP (home)	-0.11	-0.10	-0.04	-0.01	-0.01	0.00	-0.01	0.06	0.01	-0.02	0.18	0.14	-0.11	0.00	0.04	0.01	-0.05	0.02	-0.01
Stock market turnover ratio (host)	0.14	0.13	0.08	-0.19	-0.16	0.11	-0.17	-0.07	0.02	0.01	-0.02	-0.03	-0.04	0.47	-0.03	0.00	-0.01	-0.05	-0.01
Stock market turnover ratio (home)	0.25	0.25	0.17	0.00	0.05	-0.01	0.02	0.07	-0.03	0.05	-0.13	-0.01	-0.05	-0.07	0.67	0.04	-0.08	0.01	-0.10
EMBI return (host)	0.00	0.00	0.01	-0.14	-0.07	0.13	-0.11	0.00	0.01	0.01	-0.02	-0.01	-0.07	-0.01	0.00	0.08	-0.01	0.00	-0.06
EMBI volatility (host)	-0.04	-0.04	-0.02	-0.13	-0.23	0.08	-0.26	0.04	0.02	0.01	-0.07	-0.05	-0.11	-0.04	0.00	0.18	0.03	0.07	0.03
Public debt to GDP (host)	0.07	0.05	0.03	-0.05	0.02	-0.01	0.01	-0.19	-0.02	0.01	0.08	0.10	0.13	-0.29	0.02	0.04	-0.03	0.11	-0.02
S&P ratings (host)	0.07	0.05	0.00	0.51	0.63	-0.58	0.62	0.07	0.04	-0.03	-0.07	-0.11	0.17	0.38	-0.03	-0.45	0.00	-0.41	0.02

Notes: The table presents pairwise correlation coefficients.

Table A2: Correlations - continued

	Exchange rate change	Exchange rate volatility	Capital account openness (host)	Capital account openness (home)	Stock market return (host)	Stock market return (home)	Stock market volatility (host)	Stock market volatility (home)	Stock market to GDP (host)	Stock market to GDP (home)	Stock market turnover ratio (host)	Stock market turnover ratio (home)	EMBI return (host)	EMBI volatility (host)	Public debt to GDP (host)	S&P ratings (host)
Exchange rate change	1.00															
Exchange rate volatility	0.02	1.00														
Cap. Acct. open. (host)	-0.06	-0.04	1.00													
Cap. Acct. open. (home)	0.06	0.07	0.02	1.00												
Stock market return (host)	0.01	0.01	-0.06	0.04	1.00											
Stock market return (home)	-0.01	-0.02	-0.01	-0.10	0.35	1.00										
Stock market volat. (host)	0.05	0.05	-0.02	0.05	0.01	-0.10	1.00									
Stock market volat. (home)	-0.06	0.00	0.04	-0.03	-0.19	-0.37	0.25	1.00								
Stock market to GDP (host)	-0.08	-0.09	-0.13	-0.02	-0.04	0.04	-0.13	-0.05	1.00							
Stock market to GDP (home)	0.02	-0.03	-0.01	0.14	0.02	0.03	-0.01	-0.05	0.00	1.00						
Stock market turnover ratio (host)	0.00	0.01	-0.22	0.01	0.09	0.02	0.23	-0.01	0.03	0.01	1.00					
Stock market turnover ratio (home)	-0.01	0.00	0.04	0.05	0.01	0.02	0.07	0.15	0.00	0.04	-0.03	1.00				
EMBI return (host)	-0.01	-0.01	-0.09	0.03	0.30	0.09	0.16	0.06	-0.09	-0.02	-0.09	-0.03	1.00			
EMBI volatility (host)	0.05	-0.07	0.19	0.01	-0.09	-0.19	0.30	0.20	-0.20	-0.01	-0.10	0.03	-0.02	1.00		
Public debt to GDP (host)	0.07	-0.08	-0.04	-0.03	0.02	-0.02	-0.10	-0.04	-0.11	0.00	0.04	-0.03	-0.04	-0.26	1.00	
S&P ratings (host)	-0.13	-0.11	0.14	-0.01	-0.13	0.02	-0.12	-0.04	0.41	0.00	0.10	0.00	-0.13	-0.24	-0.33	1.00

Notes: The table presents pairwise correlation coefficients.

Table A3: Description of main variables

Variable	Definition	Source
CPIS		
Equity	The stock of bilateral portfolio equity of home country investors in a host country in US\$ million at an end-of-year basis, deflated by the US consumer price index.	Coordinated Portfolio Investment Survey (CPIS), The International Monetary Fund.
Long-term debt	The stock of bilateral long-term debt securities of home country investors in a host country in US\$ million at an end-of-year basis, deflated by the US consumer price index.	Coordinated Portfolio Investment Survey (CPIS), The International Monetary Fund.
BIT related Variables		
BIT dummy	A bilateral dummy variable that indicates whether a country-pair has an active Bilateral Investment Treaty (BIT). BITs that have been signed but not yet ratified are not considered. If a BIT is terminated, the dummy will be 0 in the years following the termination year.	Investment Policy Hub – International Investment Agreements Navigator, United Nations Conference on Trade and Development.
FET dummy	The dummy variable is 1 if a BIT contains an unqualified <i>fair and equitable treatment (FET)</i> clause. The variable is 0 if the <i>FET</i> clause references international law, is limited to specific elements, or is absent.	Investment Policy Hub – International Investment Agreements Navigator – Mapping of IIA Content, United Nations Conference on Trade and Development.
Indirect expropriation dummy	The dummy variable is 1 if a BIT's expropriation clause mentions <i>indirect expropriations</i> . The variable is 0 if indirect expropriations are not mentioned.	Investment Policy Hub – International Investment Agreements Navigator – Mapping of IIA Content, United Nations Conference on Trade and Development.
UAD dummy	The dummy variable is 1 if a BIT prohibits the <i>impairment of investments by unreasonable and/or arbitrary and/or discriminatory (UAD)</i> measures. The variable is 0 if the treaty does not contain such a clause.	Investment Policy Hub – International Investment Agreements Navigator – Mapping of IIA Content, United Nations Conference on Trade and Development.
FPS dummy	The dummy variable is 1 if a BIT contains a standard <i>full protection and security (FPS)</i> clause. If the BIT does not contain an <i>FPS</i> clause or the clause is referenced to the domestic law, the dummy variable will be 0.	Investment Policy Hub – International Investment Agreements Navigator – Mapping of IIA Content, United Nations Conference on Trade and Development.
UC dummy	The dummy variable is 1 if a BIT contains an <i>umbrella clause (UC)</i> . The variable is 0 if the treaty does not contain an umbrella clause.	Investment Policy Hub – International Investment Agreements Navigator – Mapping of IIA Content, United Nations Conference on Trade and Development.
TOF dummy	The dummy variable is 1 if the <i>transfer of funds (TOF)</i> clause in a BIT contains no exceptions. The dummy is 0 if the clause is restricted. Some treaties allow restricting the free transfer of funds due to balance-of-payments difficulties. Other treaties provide a list of specific exceptions.	Investment Policy Hub – International Investment Agreements Navigator – Mapping of IIA Content, United Nations Conference on Trade and Development.
MFN dummy	This dummy is 1 if the <i>most-favored-nation (MFN)</i> clause of a BIT applies at the pre- and post-establishment phase of an investment. The dummy is 0 if the clause only covers the pre-establishment phase or is absent.	Investment Policy Hub – International Investment Agreements Navigator – Mapping of IIA Content, United Nations Conference on Trade and Development.
NT dummy	This dummy is 1 if the <i>national treatment (NT)</i> clause of a BIT applies at the pre- and post-establishment phase of	Investment Policy Hub – International Investment

an investment. The dummy is 0 if the clause only covers the pre-establishment phase or is absent.

Agreements Navigator – Mapping of IIA Content United Nations Conference on Trade and Development.

Political Risk

IEF dummy	The <i>IEF dummy</i> is based on the <i>Index of Economic Freedom</i> provided by the Heritage Foundation. The index comprises information on the rule of law, government size, regulatory efficiency and open markets. It ranges from 0 to 100, while high values indicate high economic freedom. The binary <i>IEF dummy</i> indicates countries where the <i>IEF index</i> scores below the sample median.	Index of Economic Freedom, Heritage Foundation, Miller et al. (2020).
ICRG dummy	The <i>ICRG dummy</i> is based on the 12 risk components provided by the <i>International Country Risk Guide</i> (ICRG): government stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religious tensions, law and order, ethnic tensions, democratic accountability, and bureaucracy quality. The aggregated ICRG index (sum of the 12 subcomponents) ranges from 0 to 100, while low values indicate high risk. The binary ICRG dummy indicates countries where the ICRG index scores below the sample median.	International Country Risk Guide, The PRS Group.
SFI dummy	The <i>SFI dummy</i> is based on the <i>State Fragility Index</i> provided by the Center of Systemic Peace. The indicator set covers the effectiveness and the legitimacy of political regimes regarding security, politics, economy, and society. The overall SFI index ranges from 0 (no fragility) to 25 (extreme fragility). The binary SFI dummy indicates more fragile countries where the SFI index scores above the sample median.	State Fragility Index, Center for Systemic Peace, Marshall and Elzinga-Marshall (2017).
WGI dummy	The <i>WGI dummy</i> is based on the six WGI risk components: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. The components score from roughly from -2,5 up to + 2.5. Low values indicate high risk. The average of these six components serves as an overall risk indicator (WGI index). The binary WGI dummy indicates high-risk countries where the WGI index scores below the sample median.	World Governance Indicators, The World Bank, Kaufmann et al. (2010).

Table A4: Description of control variables

Variable (hypothesized sign)	Definition	Source
Ln distance (-)	Natural logarithm of the distance between the capitals of two countries.	CEPII GeoDist Dataset, Mayer and Zignago (2011).
Contiguity dummy (+)	This dummy variable indicates whether the home and the host country share a common border.	CEPII GeoDist Dataset, Mayer and Zignago (2011).
Colonial relationship dummy (+)	This dummy indicates whether the home and the host country have been in a colonial relationship.	CEPII GeoDist Dataset, Head et al. (2010).
Common colonizer dummy (+)	This dummy indicates whether the home and the host country had a common colonizer after 1945.	CEPII GeoDist Dataset, Head et al. (2010).
Common language dummy (+)	This dummy indicates if a common language is spoken by at least 9% of the population in the home and the host country.	CEPII GeoDist Dataset, Mélitz and Toubal (2014).
RTA dummy (+)	This dummy variable is 1 if the home and the host country are engaged in a regional trade agreement (Customs Union, Free Trade Agreement, Partial	Mario Larch's Regional Trade Agreements Database from Egger and Larch

	Scope Agreement, Economic Integration Agreement. (2008) Customs Union & Economic Integration Agreement, Free Trade Agreement & Economic Integration Agreement, and Partial Scope & Economic Integration Agreement).	
Ln real GDP host (+) /home (+)	Natural logarithm of the real GDP for host and home country.	World Development Indicators (WDI), The World Bank.
Inflation rate host (-) /home (~)	Inflation is the average annual consumer price index (CPI) change. Computation is based on quarterly CPI data provided by IFS.	International Financial Statistics (IFS), The International Monetary Fund.
Inflation rate volatility host (-) /home (~)	This variable represents the standard deviation of the inflation rate for a given year. Computation is based on quarterly CPI data provided by IFS.	International Financial Statistics (IFS), The International Monetary Fund.
Exchange rate change (~)	Yearly percentage change of average bilateral exchange rate. The bilateral exchange rate is quoted in host country currency units per home country currency.	International Financial Statistics (IFS), The International Monetary Fund.
Exchange rate volatility (-)	The standard deviation of bilateral exchange rate returns within a given year.	International Financial Statistics (IFS), The International Monetary Fund.
Capital account openness host (+) /home (+)	The Chinn-Ito index represents the first principal component comprising the presence of multiple exchange rates, restrictions on current account transactions, restrictions on capital account transactions, and the surrender of export proceeds. A high index indicates higher openness to international capital.	Chinn and Ito (2006)
Stock market return host (+)/home (~)	Yearly percentage change of average stock market index.	Global Financial Development Database (GFDD), The World Bank.
Stock market volatility host (-) /home (~)	The standard deviation of daily returns of the stock market index.	Global Financial Development Database (GFDD), The World Bank.
Stock market to GDP host (+) /home (+)	Stock market capitalization relative to the GDP.	Global Financial Development Database (GFDD), The World Bank.
Stock market turnover ratio (+)	Annual value of traded shares divided by the average market capitalization.	Global Financial Development Database (GFDD), The World Bank.
EMBI returns (+)	Yearly percentage change of JP Morgan's Emerging Market Bond Index Global (return index).	Datastream, own calculations
EMBI volatility (-)	The standard deviation of JP Morgan's Emerging Market Bond Index Global (return index) computed on a yearly basis.	Datastream, own calculations
Sovereign debt to GDP (+)	General government debt to GDP.	Historical Public Debt Database - October 2020, Abbas et al. (2011)
S&P ratings (+)	Country ratings are based on S&P's foreign currency ratings. Following Correa et al. (2014), we convert the ratings to a numerical scale from 0 to 21. A value of 21 represents the highest rating of AAA. The numeric ratings are adjusted for positive or negative outlook. We use yearly averages of the numeric ratings.	S&P's foreign currency ratings

Table A5: Average share of government bonds as a percentage of the total foreign bond portfolio of US residents in the period 2003-2017

Host country	Share of government bonds in US bond holdings
Botswana	NA
Bulgaria	93.1
Chile	14.9
China	44.9
Colombia	77.3
Croatia	94.9
Ecuador	92.3
Egypt	96.6
Ghana	76.1
Hungary	85.2
India	15.5
Indonesia	82.2
Jamaica	81.2
Kenya	82.5
Kuwait	NA
Malaysia	60.8
Mexico	51.6
Mongolia	87.0
Morocco	72.5
Namibia	87.0
Nigeria	73.1
Oman	NA
Pakistan	83.3
Peru	77.7
Philippines	83.1
Poland	96.6
Qatar	39.0
Russian Federation	93.7
Saudi Arabia	NA
South Africa	84.8
Sri Lanka	85.8
Tanzania	NA
Thailand	59.1
Tunesia	75.4
Turkey	87.3
Ukraine	91.2
United Arab Emirates	11.5
Venezuela	66.7
Vietnam	93.3

Notes: This Table reports the average share of government bonds in the US residents' foreign bond holdings (including government and corporate bonds) from 2003-2017. Data is taken from the Treasury International Capital (TIC) database. For Mongolia, Namibia, and the United Arab Emirates, the mean value is based on a shorter period based on data availability.

Table A6: The effect of BITs on bilateral portfolio long-term debt securities conditional on investor protection and political risk

	I	II	III	IV
	Political risk dummy is based on:			
	IEF dummy	ICRG dummy	SFI dummy	WGI dummy
BIT dummy	0.127 (0.217)	-0.101 (0.207)	-0.148 (0.227)	-0.0105 (0.204)
BIT dummy * strong investor protection dummy	0.265 (0.190)	0.305* (0.180)	0.348* (0.186)	0.281 (0.184)
Political risk dummy	0.366*** (0.132)	0.145 (0.0939)	-0.0888 (0.136)	0.158** (0.0788)
BIT dummy * political risk dummy	-0.601** (0.249)	0.00554 (0.227)	0.122 (0.196)	-0.226 (0.227)
BIT dummy * political risk dummy * strong investor protection dummy	0.0949 (0.225)	-0.0801 (0.227)	-0.208 (0.188)	-0.0199 (0.219)
Observations	8,892	8,892	8,892	8,892
Pseudo R2	0.868	0.866	0.866	0.866

Notes: This Table presents the PPML estimation results of model (3): $FPI_{ijt} = \exp[\text{baseline variables} + \beta_2 * BIT\ dummy_{ijt} * Investment\ protection_{ijt} + \beta_3 * Political\ risk_{it} + \beta_4 * BIT\ dummy_{ijt} * Political\ risk_{it} + \beta_5 * BIT\ dummy_{ijt} * Political\ risk_{it} * Investment\ Protection_{ijt}] + \varepsilon_{it}$. The regressions also include control variables and fixed effects of the baseline model (see column IV of Table 2). Robust standard errors clustered on the country-pair level are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table A7: The marginal effect of BITs on cross-border long-term debt securities conditional on investor protection and political risk

Index of economic freedom (IEF)	Investor protection		Difference
	Weak	Strong	
High political risk	-.474* (.256)	-.114 (.208)	.360* (.219)
Low political risk	.127 (.217)	.392** (.167)	.265 (.19)
<hr/>			
International Country Risk Guide (ICRG)	Investor protection		Difference
	Weak	Strong	
High political risk	-.096 (.255)	.129 (.19)	.225 (.239)
Low political risk	-.101 (.207)	.204 (.180)	.305* (.180)
<hr/>			
State Fragility Index (SFI)	Investor protection		Difference
	Weak	Strong	
High political risk	-.027 (.219)	.114 (.174)	.140 (.220)
Low political risk	-.148 (.227)	.200 (.193)	.348* (.186)
<hr/>			
World Governance Indicators (WGI)	Investor protection		Difference
	Weak	Strong	
High political risk	-.237 (.27)	.024 (.218)	.261 (.239)
Low political risk	-.011 (.204)	.27 (.169)	.281 (.184)

Notes: This Table presents marginal effects based on the regression results of Table A6. Robust standard errors clustered on the country-pair level are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.