

# Tax Arbitration and Foreign Direct Investments: A Comparison between Developed and Developing Countries

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## Abstract

Tax arbitration, a treaty-based mechanism to resolve cross-border tax disputes via an independent arbitral panel when tax authorities fail to reach agreements through mutual agreement procedures (MAP), has become increasingly important in resolving international tax disputes. Yet little is known about its economic consequences. We examine whether tax arbitration clauses in bilateral tax treaties affect foreign direct investment (FDI). Exploiting the staggered adoption of arbitration clauses we find in country-level FDI analyses that investments from developed OECD countries increase in developing destination countries following the adoption of tax arbitration. The effect is concentrated among middle-income countries and countries with weaker institutional environments where we observe increases around and above 70 percent. Additionally, firm-level evidence indicates that tax arbitration encourages particularly smaller- and medium-sized multinationals to establish foreign subsidiaries. Overall, our findings suggest that tax arbitration enhances cross-jurisdictional investments by improving the predictability of cross-border tax outcomes.

**Keywords:** foreign direct investment, tax arbitration, developing destination countries

**JEL Classification:** F23, H25, O57

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## **1 Introduction**

The ability of countries to attract foreign direct investment (FDI) depends not only on market fundamentals and tax rates but also on the predictability of the institutional environment in which firms operate. A growing literature demonstrates that uncertainty can discourage investment by increasing the risks associated with irreversible capital commitments (Bernanke 1983; Dixit and Pindyck 1994). Consistent with this view, prior research finds that uncertainty surrounding taxation not only affects corporate investment decisions but also shapes organizational structures and can redesign cross-border capital allocation (e.g., Edmiston 2004; Gulen and Ion 2016). For multinational enterprises (MNEs), uncertainty regarding the taxation of cross-border income may be particularly important because international investments are frequently exposed to multiple tax authorities, competing interpretations of tax rules, and the possibility of double taxation (Jacob, Michaely, and Müller 2019).

One particular area in which such uncertainty manifests is the resolution of international tax disputes. As cross-border business activity has expanded and international tax rules have become increasingly complex, disputes concerning transfer pricing, permanent establishments, fiscal residency and treaty interpretation have become more common (Duffy and Bailey 2017; Haslehner et al. 2023; Hoppe et al. 2023). At the same time, governments have intensified efforts to combat base erosion and profit shifting (BEPS), increasing both the frequency and complexity of cross-border tax controversy (OECD 2017b). Consequently, policymakers have devoted growing attention to mechanisms that improve tax certainty while preserving effective tax enforcement.

An important institutional feature of international tax dispute resolution is tax treaty arbitration. Tax arbitration is a treaty-based mechanism that supplements the mutual agreement

procedure (MAP), the primary process through which competent authorities seek to resolve disputes arising under bilateral tax treaties. Under MAP, tax authorities negotiate in an attempt to eliminate double taxation and reconcile competing interpretations of treaty provisions. However, MAP does not guarantee that disputes will be resolved. In practice, negotiations between competent authorities may extend over several years or fail to produce agreement, generating uncertainty regarding the ultimate tax treatment of cross-border income and the risk of unresolved double taxation (IMF/OECD 2019; Owens 2018). For instance, recent OECD statistics show that the average MAP closure time was 27 months in 2023, with transfer pricing cases averaging 32 months and other cases 23 months.<sup>1</sup> Tax arbitration addresses this issue by allowing unresolved disputes to be submitted to an independent arbitral panel after competent authorities fail to reach agreement within a specified period (Owens 2018).

The policy relevance of arbitration has increased considerably over time. Arbitration provisions were incorporated into Article 25 of the OECD Model Tax Convention in 2008 and subsequently reflected in the United Nations Model Convention. More recently, the OECD/G20 BEPS initiative and the Multilateral Instrument (MLI) have expanded opportunities for countries to adopt mandatory binding arbitration provisions across treaty networks (OECD 2017b; Owens 2018). These developments have occurred against a backdrop of increasing MAP inventories and growing concerns regarding the timeliness of international tax dispute resolution (OECD 2023). As a result, arbitration has become an increasingly visible component of discussions surrounding tax certainty and the design of international tax institutions.

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<sup>1</sup> In some extreme cases, the average time to close MAP cases is often much longer and reaches 5 to 6 years. As one extreme example, refer to Belgium where in 2023 the average MAP time was approaching 118 months or close to 10 years to close (OECD MAP Statistics, 2023).

Despite growing policy attention, little evidence exists regarding the economic consequences of tax arbitration. Existing studies primarily examine the effects of tax certainty on investments (e.g., Barrios et al. 2012; Buettner et al. 2018) and tax treaties and investment in particular (Blonigen and Davies 2004; Egger et al. 2006; Neumayer 2007; Barthel, Busse, and Neumayer 2010), while a related literature investigates the consequences of tax uncertainty for corporate investment behavior (Edmiston 2004; Jacob et al. 2019). Comparatively little is known about whether specific treaty provisions designed to resolve international tax disputes influence investment decisions. This omission is important because tax arbitration directly addresses one of the principal concerns highlighted in both the tax-certainty literature and policy discussions, namely uncertainty regarding the ultimate tax treatment of cross-border income. More in particular, when negotiations between competent authorities fail to produce agreement within a reasonable period, tax arbitration provides a final and binding mechanism for resolving disputes, ensuring that uncertainty surrounding the taxation of cross-border income does not persist indefinitely (Owens 2018).

Since tax arbitration stimulates tax certainty and predictability for investors by solving tax disputes in a timelier fashion, it is also expected to foster investment. Moreover, tax arbitration may be superior to commercial arbitration since the latter can entail high procedural costs and requires enforcement by national court systems ex post (Owens 2018; United Nations 2021). By offering a more structured and cost-effective resolution mechanism within the tax system, tax arbitration can further strengthen the investment climate by reducing uncertainty and mitigating risks associated with cross-border taxation.

However, there are also reasons to believe why the positive effects of tax arbitration under bilateral tax treaties (BTTs) on FDI might not manifest. First, the expected benefits of tax arbitration (i.e., the increase in FDI) may not outweigh the costs borne and perceived fiscal risks

associated with adopting binding arbitration provisions.<sup>2</sup> Second, FDI decisions may be driven primarily by non-tax factors, such as labor costs, market size, and market access, with tax arbitration exerting only a second-order influence on firms' location choices (Blonigen and Piger 2014). Finally, the adoption of tax arbitration clauses is unlikely to be random. Countries facing relatively frequent or complex international tax disputes may have stronger incentives to adopt arbitration provisions, raising concerns that the observed association between arbitration and investment reflects endogenous treaty design. Accordingly, the investment effects of tax arbitration are ultimately an empirical question.

We address this issue by examining whether tax arbitration clauses in bilateral tax treaties affect foreign direct investment. Exploiting the staggered adoption of arbitration provisions and employing stacked-regression estimators, we investigate whether investors respond to the availability of a binding mechanism for resolving unresolved treaty disputes. Our analysis combines macro-level evidence on bilateral FDI stocks with firm-level evidence on multinational subsidiary-location decisions. To construct our tax certainty proxy, we collect granular data on bilateral tax treaties, mutual agreement procedures, and tax arbitration data by from the International Bureau of Fiscal Documentation (IBFD) and identify information on 174 unique country-pairs adopting tax arbitration clauses between 2003 and 2020.<sup>3</sup>

Our results show that adoption of tax arbitration clauses is not associated with FDI on average. However, this average effect masks substantial heterogeneity: tax arbitration is associated with around 70% higher FDI from OECD countries into developing destination countries, consistent with investors responding positively to greater certainty in the resolution of cross-border tax disputes between OECD member countries and developing destination

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<sup>2</sup> See <https://www.ciat.org/ciatblog-analyzing-mandatory-binding-arbitration-and-the-map/?lang=en>.

<sup>3</sup> In untabulated tests, we find consistent results when we exclude the pandemic year (2020).

countries. The positive association is concentrated in middle-income destination countries and countries with relatively weak institutional environments, consistent with tax arbitration providing the greatest incremental value where investment opportunities are substantial yet uncertainty surrounding the resolution of cross-border tax disputes remains relatively high.

We next examine whether the investment response documented at the country-level is reflected in firms' location decisions. Using firm-level Orbis data, we find that the adoption of tax arbitration clauses is associated with a 14.8% increase in the number of foreign subsidiaries established by OECD-based MNEs in developing destination countries. Cross-sectional analyses indicate that this response is concentrated among unlisted parent firms and smaller- and medium-sized MNEs, suggesting that improvements in tax certainty are particularly valuable for firms with more limited resources to manage cross-border tax disputes. These additional results suggest that smaller-sized MNEs as well as unlisted MNEs may benefit disproportionately from improvements in dispute-resolution certainty because they are less able to absorb the costs and uncertainty associated with prolonged cross-border tax disputes internally. Collectively, the findings are consistent with arbitration enhancing investment by improving the predictability of cross-border tax outcomes and reducing uncertainty surrounding the resolution of international tax disputes.

*First*, we contribute to the literature examining how tax uncertainty shapes corporate investment decisions (Fox et al. 2022; Jacob, Wentland, and Wentland 2022). While prior studies document that tax uncertainty discourages investment, we examine tax arbitration as a specific treaty-based mechanism designed to enhance tax certainty. At the country level, we show that tax arbitration clauses are associated with higher FDI from OECD source countries into developing destination countries. Complementing this evidence, our firm-level analyses

show that tax arbitration is associated with greater multinational expansion through the establishment of foreign subsidiaries, particularly among smaller- and medium-sized MNEs.

*Second*, our study contributes to the literature examining how institutional dispute-resolution mechanisms influence foreign direct investment. Prior studies show that international commercial arbitration can facilitate cross-border investment by reducing contractual uncertainty (Myburgh and Paniagua 2016), while evidence on investment treaty arbitration remains mixed (Wong 2006; Yackee 2012). We extend this literature by providing the first large-sample evidence on whether tax arbitration clauses under bilateral tax treaties influence FDI.

*Third*, we extend the literature examining the effects of bilateral tax treaties on foreign direct investment (Barthel, Busse, and Neumayer 2010; Castillo-Murciego and López-Laborda 2019). While prior evidence on the investment effects of tax treaties remains mixed (Egger et al. 2006; Petkova, Stasio, and Zagler 2020a), we move beyond treating tax treaties as homogeneous agreements by isolating the role of tax arbitration clauses. In doing so, we show that the investment effects of treaty design depend on the economic environment in which these provisions operate and are concentrated in middle-income developing destination countries.

## **2 Background and Hypothesis Development**

### *2.1. Institutional Setting on Tax Arbitration under Bilateral Tax Treaties (BTTs)*

Bilateral tax treaties exist to eliminate double taxation and to prevent tax evasion and avoidance (OECD 2017a). The elimination of double taxation attracts FDI by attenuating tax uncertainty, while the prevention of tax evasion and avoidance fosters regulation and enforcement, leading to increased compliance costs, which, in return, may deter FDI (Egger et al. 2006). As one article of BTTs, mutual agreement procedures outline the process for resolving international tax disputes related to double taxation and discrepancies in the application or interpretation of BTTs. However, MAPs frequently take a long time to resolve tax disputes and are criticized for the incapability of competent authorities to conclude agreements on time

(Jones et al. 1980). Given the long-pending MAP cases, taxpayers increasingly consider alternative approaches, e.g., arbitration, to facilitate the prevention and resolution of international tax disputes (Sundaravelu 2021).<sup>4</sup>

Given the increase in cross-border tax disputes, countries supplement MAP with tax arbitration to resolve disputes where competent authorities cannot reach an agreement, using independent arbitrators. Specifically, in 2008, the OECD model convention adopted mandatory and binding arbitration<sup>5</sup> to address unresolved issues within two years, and in 2011, the UN model convention adopted voluntary arbitration<sup>6</sup> to address unresolved issues within three years. For instance, paragraph 5 of article 25 (mutual agreement procedures) in the tax treaty between Albania and Switzerland states in part that:

*“...any unresolved issues arising from the case shall be submitted to arbitration if the person so requests. Unless a person directly affected by the case does not accept the mutual agreement that implements the arbitration decision or..., the arbitration decision shall be binding on both States and shall be implemented notwithstanding any time limits in the domestic laws of these State....”*<sup>7</sup>

The crucial elements of tax arbitration are that it is the last resort for resolving “any unresolved issues” from previous MAP stages and that arbitral opinions are binding and final on the involved countries. The use of tax arbitration to supplement MAPs offers several advantages. First, to avoid the surrender of government sovereignty to independent arbitrators, the adoption of tax arbitration clauses may force competent authorities to cooperate and ‘put

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<sup>4</sup> <https://www.internationaltaxreview.com/article/2a6a8wu0dxxc0tngcx14w/how-taxpayers-approach-alternatives-to-map-for-dispute-resolution>.

<sup>5</sup> Following article 25(5) of the OECD model, taxpayers request to submit the unresolved issues to arbitration. Therefore, arbitration is not conditional on the agreement of the competent authorities and thus is mandatory.

<sup>6</sup> Following article 25(5) of the UN model, one competent authority requests to submit the unresolved issues to arbitration. Therefore, arbitration is conditional on the agreement of the competent authorities and thus is voluntary.

<sup>7</sup> See [https://research.ibfd.org/#!/doc?url=/data/treaty/docs/html/tt\\_al-ch\\_02\\_eng\\_1999\\_tt\\_td2.html%23tt\\_al-ch\\_02\\_eng\\_1999\\_tt\\_td2\\_a25](https://research.ibfd.org/#!/doc?url=/data/treaty/docs/html/tt_al-ch_02_eng_1999_tt_td2.html%23tt_al-ch_02_eng_1999_tt_td2_a25).



more efforts in resolving tax disputes under MAP' (Mooij 2019). This effect may arise even in the absence of actual arbitration use and thus enhance timely tax dispute resolution. Second, when competent authorities cannot reach agreements, tax arbitration provides legal certainty by timely resolving tax disputes. Third, tax arbitration alleviates taxpayers' reliance on unilateral and inefficient domestic remedies (Owens 2018).

However, given various concerns, countries may be reluctant to adopt tax arbitration (Owens 2018). First, tax arbitration surrenders taxing sovereignty to independent arbitrators. Second, tax arbitration may involve expensive costs, such as hearing costs and potential revenue losses.<sup>8</sup> Additionally, countries may lack experience and resources in implementing tax arbitration. Finally, under the UN model, countries may use domestic remedies to overrule arbitral opinions in MAP agreements, raising questions about the enforceability of arbitral opinions. Given tight budgets, a small number of tax disputes, inexperience in arbitration, and the limitation on sovereignty, developing countries are more reluctant to accept arbitration than developed countries. Therefore, a positive association between FDI and tax arbitration may help alleviate countries' concerns about adopting tax arbitration.

Tax arbitration differs from commercial and investment arbitration (Owens 2018; United Nations 2021). First, involved parties independently resolve business disputes through commercial arbitration, while tax arbitration merely supplements MAP to tackle unresolved issues over a fixed period. Second, commercial arbitration results require enforcement through the court system, while competent authorities implement tax arbitration results. Finally, commercial arbitration involves high costs, but the UN model convention deliberates guidelines to alleviate costs. Given the differences between tax arbitration and commercial arbitration, tax arbitration may affect investment differently than commercial arbitration.

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<sup>8</sup> See <https://www.ciat.org/ciatblog-analyzing-mandatory-binding-arbitration-and-the-map/?lang=en>.

## 2.2. *Tax Treaties and FDI*

Existing literature provides inconclusive evidence of BTTs' effects on FDI positions. For instance, (Blonigen Bruce A. and Davies Ronald B. 2000) document a positive effect of the existence of BTTs on U.S. FDI from 1966 to 1992. In contrast, Egger et al. (2006) find that the formation of new treaties negatively affects bilateral OECD outbound FDI from 1985 to 2000. Using firm-level data, (Egger and Merlo 2011) find a positive effect of BTTs on the location probability of German MNEs in destination countries.

Recent studies highlight possible reasons for mixed evidence, including the selected sample, the content of BTTs, and the development level of partner countries. For instance, (Barthel et al. 2010) find a positive effect of BTTs on bilateral FDI stocks and attribute the positive effects to the large sample size, which mitigates the sample selection bias. They attribute the negative effect of BTTs on FDI in prior literature to the small sample size (Blonigen and Davies 2004; Egger et al. 2006).

An important explanation for the mixed evidence is that most studies treat bilateral tax treaties as homogeneous agreements. Prior literature typically proxies BTTs by a single indicator value, which averages FDI-attracting factors (e.g., the relief of double taxation) and FDI-detering factors (e.g., the exchange of information) in BTTs. Such an approach implicitly assumes that all treaty provisions affect investment similarly, despite the fact that bilateral tax treaties contain numerous provisions that may influence investment in different—and potentially offsetting—directions (Blonigen and Davies 2004; Petkova, Stasio, and Zagler 2020b). Recent studies therefore increasingly examine specific treaty provisions rather than the mere existence of a treaty. For instance, Azémar and Dharmapala (2019) focus on the tax sparing provision in BTTs and find a positive association between the tax sparing provision and FDI stocks from developed OECD countries in developing destination countries from 2002 to 2012. Regarding the content of BTTs, Castillo-Murciego and López-Laborda (2019) find a

positive association between the adoption of the territorial tax system in Spain and its outbound FDI, with a larger effect in the subsample of developing destination countries. Barrios et al. (2012) find a negative effect of parent country taxation on the location probability of EU firms in destination countries.

The economic development level of the contracting countries may affect the effects of BTTs on FDI. Developed countries can resolve cross-border tax disputes of MNEs through unilaterally domestic tax laws and hence attenuate the benefits (e.g., legal certainty) of BTTs (Baker 2014). In contrast, the legal certainty provided by BTTs is more vital for developing countries to attract FDI. Castillo-Murciego and López-Laborda (2019) highlight the dependence of BTTs' effects on the development level of partner countries. They find a positive association between new BTTs and FDI stocks from Spain to developing destination countries but fail to observe a positive association between new BTTs and FDI stocks from developing countries to Spain. These results indicate different FDI responses to BTTs between developing and developed destination countries.

BTTs between developed and developing countries differ in nature from those between two developed countries. Developing countries may be more cautious when adopting treaty provisions perceived to constrain their tax policy discretion, including tax arbitration (Owens 2018). Furthermore, prior studies show that pooling developed and developing countries in a single study may obscure the true determinants of FDI, as developed and developing countries attract FDI flows by different factors (Blonigen and Wang 2004; Neumayer 2009). For instance, Blonigen and Wang (2004) identify fundamentally different determinants of MNEs activities between the U.S. and developing countries in contrast to those between the U.S. and developed countries. If investors rely more heavily on institutional safeguards when investing in developing economies, treaty provisions that improve the predictability of tax outcomes should have greater economic value in these settings than in developed economies. Given these

distinctions, further research is needed to understand whether specific treaty provisions, such as tax arbitration clauses, influence FDI in developing and developed countries separately.

### *2.3. Tax Uncertainty and FDI*

Existing literature provides consistent evidence that tax uncertainty deters FDI at aggregated and firm levels. Using aggregated unilateral country-level FDI, Edmiston, Mudd, and Valev (2005) find that tax uncertainty (i.e., the number of changes in tax parameters and tax parameters in opposing directions) negatively affects FDI inflows across 25 transition countries. Using firm-level data, Hoppe et al. (2020) find a positive association between tax code complexity, in which a high code complexity captures the uncertainty in the tax system, and location decisions of MNEs from 69 countries. Tax code complexity fosters tax arbitrage opportunities and thus attracts investment. Additionally, Gulen and Ion (2016) find that tax uncertainty, proxied by the number of temporary tax provisions, negatively affects capital investments of U.S. MNEs. Similarly, Diller et al. (2017) find that tax uncertainty deters investment.

### *2.4. Hypothesis Development (Arbitration and FDI)*

Our study builds on the deterrent effect of tax uncertainty on trade and investment. MNEs rank transfer pricing as the highest tax risk, and transfer pricing MAP cases are increasing over time (Cooper 2021; Duffy and Bailey 2017; Hoppe et al. 2023).<sup>9</sup> As a supplement to MAP, tax arbitration enhances tax certainty and predictability for MNEs by timely resolving tax disputes where competent authorities cannot reach an agreement over a fixed period. The increased tax certainty, in return, promotes investment and trade (Hoppe et al. 2023; Markham 2005; Owens 2018). Literature suggests a positive association between well-functioning dispute resolution mechanisms (i.e., increased tax certainty) and FDI (Blonigen,

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<sup>9</sup> See OECD, MAP Statistics 2020, available at <https://www.oecd.org/tax/dispute/mutual-agreement-procedure-statistics-2020-inventory-trends.htm>.

Oldenski, and Sly 2014; Petkova et al. 2020a). Indeed, many countries<sup>10</sup> deem tax arbitration as ‘the best way of ensuring that tax treaty disputes are effectively resolved through MAP’ and implement mandatory binding arbitration (OECD 2023). From 2021 to 2023, 31 countries adopted mandatory binding tax arbitration through Part VI of the Multilateral BEPS Convention (MLI)<sup>11</sup>. The investment implications of arbitration are of increasing importance, as well as policy relevance.

Based on the arguments above, we predict that investors, such as MNEs, are more likely to invest in countries with tax arbitration than countries without tax arbitration. Moreover, since the investment effects of tax arbitration are unlikely to be uniform across countries because developing economies in general exhibit greater institutional uncertainty and attract FDI through different determinants than developed economies (Blonigen and Wang 2004; Neumayer 2009), the certainty-enhancing effects of tax arbitration are expected to be particularly valuable in these environments. This reasoning motivates our hypotheses:

**H1:** Tax treaty arbitration is positively associated with FDI stocks (corporate investment) from OECD-origin countries in destination countries.

**H2:** The association between tax treaty arbitration and FDI stocks (corporate investment) from OECD-origin countries in developing destination countries is of a larger magnitude than in developed destination countries.

### **3 Tax Arbitration and Inward FDI**

We begin with a country-pair-level analysis and investigate the differential effect of tax arbitration clauses on FDI from OECD countries in both developing and developed destination countries. To do so, we exploit the staggered adoption of arbitration clauses in bilateral tax

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<sup>10</sup> Australia, Austria, Belgium, Canada, France, Germany, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Slovenia, Spain, Sweden, Switzerland, the United Kingdom and the United States.

<sup>11</sup> MLI provides countries with flexible provisions on the adoption of mandatory binding arbitrations in BTTs.

treaties and estimate stacked difference-in-differences models following (Baker, Larcker, and Wang 2022).

### 3.1. Empirical Method

Following prior literature (Azémar and Dharmapala 2019), we use a Poisson pseudo-maximum-likelihood (PPML) model and include country-pair fixed effects and year fixed effects in the baseline specification. To address concerns about potential error correlation, we cluster standard errors at the country-pair level. The model provides consistent estimators in the presence of fixed effects, zero values of FDI stocks, heteroskedasticity of error terms in the log-linearized model, and a non-Poisson distribution of data (Santos Silva and Tenreyro 2006; Shepherd 2016). Our baseline DID model, as a PPML fixed effect regression, is as follows:

$$FDI_{ijt} = \exp(\alpha Tax Arbitration_{ijt} + \beta Control_{ijt-1} + \delta_t + \gamma_{ij}) + \varepsilon_{ijt} \quad (1)$$

Where  $FDI_{ijt}$  is the total inward FDI stocks from origin country (i.e., one OECD country)  $i$  in destination country  $j$  in year  $t$ . Since FDI stocks are measured in levels, the coefficients from the PPML estimator should be interpreted as semi-elasticities — meaning that a one-unit increase in the regressor leads to a percentage change in the dependent variable, calculated as  $100 \times (\exp(\beta) - 1)$ .

$Tax Arbitration_{ijt}$  is a dummy variable that equals 1 in the first year in which the origin-country  $i$  adopts an effective arbitration clause with the destination country  $j$ , and all subsequent years. All other years are coded to 0. We define  $Tax Arbitration_{ijt}$  based on the effective year of adopting bilateral tax arbitration clauses.  $Tax Arbitration_{ijt}$  is equivalent to an interaction term between a post variable and a treatment variable in a traditional DID model. Our control group sample includes (1) country-pair-years prior to the first year the country-pair adopts the tax arbitration clause, and (2) country-pair-years for the country-pair that never adopts the tax arbitration clause.  $\gamma_{ij}$  represents the country-pair fixed effects, which account for

time-invariant country-pair characteristics, such as common language or distance.  $\delta_t$  represents year fixed effects that absorb time shocks and limit counterfactual observations to the same year. Consequently,  $Tax\ Arbitration_{ijt}$  captures the effect of a within-country-pair change in the adoption of tax arbitration clauses on inward FDI stocks.  $Control_{ijt}$  is a vector of time-varying origin-country, destination-country, and country-pair control variables. We cluster standard errors at the country-pair level. We lag control variables by one year to alleviate endogeneity biases (Egger et al. 2009) and to capture past information on country-level characteristics.

Recent methodological research shows that conventional two-way fixed-effects estimators may produce biased treatment effects in staggered adoption settings when treatment effects are heterogeneous across cohorts or over time (Baker et al. 2022). To address this concern, we estimate stacked difference-in-differences models following Baker et al. (2022). Specifically, we construct an event-specific dataset for each adoption of a tax arbitration clause, combining the treated country-pair with country-pairs that are never treated. For each event, we retain observations from three years before to three years after the adoption of tax arbitration. Country-pairs adopting arbitration before 2006 or after 2017 are excluded because a complete event window cannot be observed. We then stack all event-specific datasets and estimate our regression including dataset-specific country-pair and year fixed effects. Standard errors are clustered at the dataset-specific country-pair level.

### 3.2. Data and Control Variables

We collect 2,383 (English-language) bilateral tax treaties associated with OECD countries from the International Bureau of Fiscal Documentation (IBFD). We then code the MAP article and the arbitration clause by searching the context of OECD-related bilateral tax treaties. Specifically, we use Python to search for ‘mutual agreement procedure’, ‘MAP’, ‘arbitration’, and ‘arbitrator’. We then manually check all treaties containing those words to

confirm the accuracy and relevance of selected treaties. We construct the bilateral tax treaty (i.e., BTT), MAP, and tax arbitration clause based on the “Effective Date” of the bilateral tax treaty. The variable *Tax treaty* equals 1 in the first year in which the country-pair has an effective BTT and all subsequent years. All other years are coded to 0. *MAP (Tax Arbitration)* equals 1 in the first year in which the BTT (MAP article) between the origin country and destination country adopts an effective MAP article (tax arbitration clause) and all subsequent years. All other years are coded to 0.

We collect bilateral inward FDI stocks from 38 OECD countries in destination countries from 2003 to 2020.<sup>12</sup> FDI stocks measure the accumulated value of cross-border investment positions rather than new investment flows, retrieved from the United Nations Conference on Trade and Development (UNCTAD), measured in millions of US dollars. Using the income classification from World Bank in 2003, the sample consists of inward FDI stocks from 38 OECD countries in 33 low-income countries, 37 lower-middle-income countries, 23 upper-middle-income countries, 37 high-income destination countries, and 3 destination countries with missing income classification. World Bank refers to “low and middle-income countries” as “developing countries” and “high-income countries” as “developed countries”(Fantom and Serajuddin 2016). Consequently, we first classify low-income, lower-middle-income, and upper-middle-income developing countries, and high-income countries as developed countries.<sup>13</sup>

UNCTAD identifies inward FDI stocks at the country-pair-year level. Specifically, each observation lists the FDI stocks received by one destination country  $i$  from one origin country

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<sup>12</sup> In untabulated tests we find consistent results when excluding the pandemic year of 2020.

<sup>13</sup> In 2003, the World Bank classifies countries with a gross national income per capita of 765 or less US dollars as low-income countries, of 766 to 3,035 US dollars as lower-middle-income countries, of 3,036 to 9,385 US dollars as upper-middle-income countries, and of 9,386 or more US dollars as high-income countries. 3 countries have a missing categorization (Kosovo, Montenegro and Serbia), which we code into the developing countries bucket as they all have a GDP per capita lower than the minimum GDP per capita of developed countries.



$j$  in year  $t$ . Consistent with prior literature, we restrict the set of origin countries to capital exporting developed countries economies (Azémar and Dharmapala 2019; Shehaj and Zagler 2024). We therefore exclude 12 developing OECD countries (i.e., middle-income countries) with limited FDI data.<sup>14</sup> Our sample covers inward FDI stocks from 26 developed OECD countries (i.e., high-income countries) in 37 developed and 96 developing destination economies during the period 2003–2020. We require non-missing controls and non-negative inward FDI stocks. To capture variance in FDI stocks, we drop country-pairs with singleton observations or where no country-pairs variations occur.

To identify the effects of adopting tax arbitration, we exclude country-pairs for which arbitration was already effective before 2004. We further require treated country-pairs to have at least one observation both before and after adoption, ensuring that treatment effects are identified from within-country-pair changes over time. Country pairs that do not satisfy this requirement are excluded. The control group consists exclusively of country-pairs that never adopt tax arbitration. We identify 174 instances in which tax arbitration clauses are adopted over the studied period 2003–2020 (i.e., 43 instances with developing destination countries and 131 instances with developed destination countries).

These restrictions result in 33,035 observations at the country-pair-year level, involving 2,312 distinct country-pairs. The subsample of developing destination countries comprises 22,110 observations across 1,841 distinct country-pairs, while the subsample of developed destination countries comprises 10,925 observations across 471 country-pairs.<sup>15</sup> The sample of

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<sup>14</sup> The 12 omitted developing OECD countries include Chile, Colombia, Costa Rica, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Mexico, Poland, Slovakia, and Turkey. The sample descriptives show a mean inward FDI stock of 6.56 billion from 26 developed OECD countries and 0.26 billion from 12 developing OECD countries. Therefore, omitting these 12 developing OECD economies is unlikely to affect the results.

<sup>15</sup> It is worth noting that the same OECD country may appear as both the origin and destination country. For instance, inward FDI stocks from origin country  $j$  in destination country  $i$  in year  $t$  may represent a separate observation from inward FDI stocks from origin country  $i$  in destination country  $j$  in year  $t$  (Azémar and Dharmapala 2019).

developed destination countries includes 170 zero values of inward FDI stocks, while the sample of developing destination countries includes 809 zero values of inward FDI stocks.<sup>16</sup>

\*\*\*Insert Table 1 here\*\*\*

Table 1 reports data on 133 destination countries, categorized by their development level, the number of BTTs, the number of MAPs, and the number of tax arbitration clauses signed between 38 OECD countries and each destination country in Panel A. Canada, Japan, Switzerland, and the United Kingdom are among destination countries with the highest number of arbitration clauses. Meanwhile, Mexico, Armenia, Chile, and Uruguay are developing destination countries with the largest number of arbitration clauses. Panel B reports data on the number of tax arbitration clauses adopted per year between 26 developed OECD countries and all, developed, and developing destination countries respectively.

Figure 1 presents the annual adoption of tax arbitration clauses separately for developing and developed destination countries. While adoption is spread relatively evenly over time among developing destination countries, most adoptions involving developed destination countries occur in 2019 and 2020 following the implementation of arbitration provisions through the Multilateral Instrument (MLI).

\*\*\*Insert Figure 1 here\*\*\*

Following prior literature that employs the gravity model to investigate bilateral FDI activity across countries, we control for a set of time-varying unilateral and bilateral country-level variables associated with FDI (Helpman 1984; Markusen 2018). We capture market size

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<sup>16</sup> The Poisson pseudo-maximum-likelihood (PPML) model is well executed with a large number of zeros with inward FDI stocks (Santos Silva and Tenreiro 2006; Shepherd 2016).

by including origin-country GDP, destination-country GDP, and destination-country population growth (Azémar and Dharmapala 2019; Buettner, Overesch, and Wamser 2018). We use the natural logarithm of GDP. To account for population wealth, we control for destination-country and origin-country GDP per capita. Additionally, we include consumer price inflation numbers to reflect financial market conditions that are negatively associated with investments (Blonigen et al. 2014). Further, we control for differences in statutory corporate tax rates, calculated by subtracting the destination-country tax rate from the origin-country tax rate (as reported on the World Tax Database), as the tax burden difference is positively associated with FDI (Azémar and Dharmapala 2019).<sup>17</sup> To capture the destination country's overall tax dispute resolution environment, we use the number of tax arbitrations adopted between the destination country and the other 37 OECD countries, excluding the origin country. Furthermore, we collect destination countries' degree of regulatory quality, control of corruption, political stability and absence of terrorism, and rule of law from the Worldwide Governance Indicators to capture institutional governance. Good institutional quality attracts corporate investment (Baker, 2014; Fox et al., 2020).

We then incorporate a set of bilateral control variables. We include *bilateral EU membership* to account for the presence of the European Union (EU), which offers the arbitration convention and tax dispute resolution directive to resolve tax disputes within the EU. Bilateral EU membership equals 1 if both involved countries are EU members and 0 otherwise. Further, We control for the bilateral investment treaty from World Bank to capture commercial arbitration and bilateral economic ties (Coupé, Orlova, and Skiba 2009). We also control for *Tax treaty* to capture other characteristics of tax treaties that affect FDI (Egger and Merlo 2011).

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<sup>17</sup> We exclude effective tax rates as a control variable to avoid substantial reduction in the sample countries.

We do not control for *MAP*, as it is highly correlated with bilateral tax treaties. Appendix A reports the definition of variables.

Table 2 presents descriptive statistics for developed and developing destination countries, indicating notable differences between them. Inward FDI stocks have a mean value of around 14.6 (2.0) billion USD among developed (developing) destination countries. These values perhaps unsurprisingly indicate that, on average, developed destinations attract more capital than developing ones. Table 3 reports the Pearson correlation matrix for all destination countries. We find initial evidence of a positive and significant association (at the one percent level) between tax arbitration clauses and bilateral FDI stocks in destination countries. Furthermore, we opt to exclude MAP from the regressions due to the high correlation between MAP and bilateral tax treaties.

\*\*\*Insert Tables 2 and 3 here\*\*\*

### 3.3. Main results

Table 4 presents the results from the stacked difference-in-differences analysis examining the association between the adoption of tax arbitration clauses and bilateral inward FDI stocks from OECD source countries into developing and developed destination countries. Columns (1), (3), and (5) report specifications without additional control variables. We pool all destination countries in Columns (1) and (2) and find insignificantly positive coefficients on *Tax Arbitration*, inconsistent with hypothesis 1. We next focus on developed destination countries in Columns (3) and (4) and find insignificant and positive coefficients on *Tax Arbitration*. By contrast, when focusing on developing destination countries in Columns (5) and (6), results are highly significant and positive on *Tax Arbitration*. The inclusion of covariates based on the gravity model yields consistent results. The magnitude (significant level) of the coefficient changes from 0.567 ( $p < 0.05$ ) to 0.562 ( $p < 0.05$ ). Economically, the estimated coefficient of 0.567 implies that the adoption of tax arbitration clauses is associated with

approximately 76% (i.e.,  $100[\exp(0.567)-1]$ ) higher bilateral FDI stocks. While economically large, this magnitude is comparable to that reported for other treaty provisions. For example, Azémar and Dharmapala (2019) find that tax sparing provisions are associated with approximately 97% higher FDI stocks from OECD source countries into developing destination countries. Together, these findings suggest that specific provisions embedded in bilateral tax treaties can have economically meaningful effects on international investment, particularly in developing destination countries. Consistent with hypothesis 2, we find a larger investment effect in developing destination countries than in developed destination countries.

\*\*\*Insert Table 4 here\*\*\*

To address concerns that other non-arbitration events might drive our results for developing destination countries, we incorporate dataset-specific origin country by year fixed effects, dataset-specific destination country by year fixed effects, and dataset-specific country-pair fixed effects (Baier and Bergstrand 2007). These fixed effects absorb most covariates in the baseline regression. For instance, dataset-specific destination country by year fixed effects and the dataset-specific origin country by year fixed effects absorb dataset-specific time-varying destination and origin country characteristics, such as tax complexity. Column (7) of Table 4 shows that the coefficient on arbitration is positive and significant at the five percent level.

Another potential concern relates to reverse causality, where inward FDI stocks affect the adoption of arbitration clauses. For instance, destination countries might only negotiate arbitration clauses with origin countries as they observe increasing FDI stocks. Moreover, the causal interpretation of a DID model requires a parallel trend between country-pairs adopting arbitration clauses and those rejecting arbitration clauses. Following (Wooldridge 2013; Yotov

et al. 2016), we employ stacked event-study regressions and plot estimators for three years before and after the adoption of the tax arbitration clause in Figure 2. Specifically, we replace tax arbitration with 3 leads (i.e., arbitration t-3, arbitration t-2, and arbitration t-1), the contemporaneous arbitration (i.e., arbitration t), and 3 lags (i.e., arbitration t+1, arbitration t+2, and arbitration t+3). We code arbitration t-3, arbitration t-2, arbitration t-1, arbitration t, arbitration t+1, arbitration t+2, and arbitration t+3 to 1 for country-pairs with arbitration clauses in year t-3 to t+3 and 0 otherwise. For instance, t-3 represents three years before the adoption of the tax arbitration clause. We exclude arbitration t-1, which is the benchmark in the regression.

Figure 2 focuses on developing destination countries in Panel A. We find insignificant coefficients in years before the treatment and significantly positive coefficients in years after the treatment. Specifically, insignificant coefficients on arbitration t-3 and arbitration t-2 alleviate concerns about reverse causality and support for the parallel trend. The significantly positive coefficients on arbitration and lags show that the positive effect of tax arbitration clauses on FDI stocks is long-lasting, and investors do not reverse their investments.

\*\*\*Insert Figure 2 here\*\*\*

### 3.4. Additional Tests

#### i. FDI Response to Different Types of Developing Destination Countries

In the first cross-sectional analysis, we examine FDI responses to the adoption of tax arbitration clauses in developing destination countries at different income levels. Specifically, in Column (1), we add to the baseline specification, which includes exogenous tax arbitration, with an interaction between *Tax Arbitration* and a dummy variable for middle-income destination countries. *Middle-Income Destination* equals 1 if the destination country is

categorized as upper-middle-income or lower-middle-income destination countries by World Bank, and 0 otherwise. In Column (2), we add to the baseline specification, which includes exogenous tax arbitration, with an interaction between tax arbitration and a dummy variable for low-income destination countries. *Low-Income Destination* equals 1 if the destination country is categorized as low-income destination countries by World Bank, and 0 otherwise. In Columns (1) and (2), to address omitted variable bias, we include controls, dataset-specific origin country by year fixed effects, destination country by year fixed effects, and country-pair fixed effects.

In Table 5, we observe a positive and significant coefficient on the interaction between *tax arbitration* and *Middle-Income Destination*. In contrast, the estimate of the interaction between *tax arbitration* and *Low-Income Destination* is positive but insignificant. These results show that FDI stocks from OECD countries increase following the adoption of tax arbitration clauses in middle-income countries.

\*\*\*Insert Table 5 here\*\*\*

## ii. *Worldwide Tax Systems, Institutional Quality, and Tax Sparing*

The main tests measure FDI responses to the adoption of tax arbitration clauses, focusing on different development levels of destination countries. Next, we identify FDI responses for origin countries classified as having worldwide tax systems and destination countries classified as having high institutional quality. To address omitted variable bias, we estimate a new model incorporating dataset-specific origin country by year fixed effects, destination country by year fixed effects, and country-pair fixed effects.

A worldwide tax system is characterized by including the foreign profits of a resident corporation in its domestic tax base. In contrast, a territorial tax system exempts the foreign profits of a resident corporation from its domestic tax base. A worldwide tax system may

involve more cross-border tax disputes than a territorial tax system, in which the origin country and destination countries share taxing rights of foreign profits. If tax arbitration clauses foster FDI stocks by resolving tax disputes in a timely way, we expect a stronger effect on FDI stocks stemming from origin countries with worldwide tax systems. The 26 developed-origin countries consist of 4 countries with worldwide tax systems, 16 countries with territorial tax systems, and 6 countries that experienced tax reforms from worldwide to territorial tax systems over the sample period.<sup>18</sup>

In Column (3) of Table 5, we add to the baseline specification, which includes exogenous tax arbitration, an interaction term between *Tax Arbitration* and a (time-varying) dummy variable for origin countries with worldwide tax system.<sup>19</sup> *Worldwide Tax System* equals 1 if the origin country has worldwide tax system in year  $t$ . All other years are coded to 0. The positive coefficient on the interaction term is statistically insignificant but of moderate magnitude, suggesting a 12.5 percent relative increase in inward FDI stocks. The results show no significant difference in the FDI responses between worldwide and territorial origin countries.

Next, we exploit differences in institutional quality to explore heterogeneous FDI responses across destination countries with varying levels of certainty. (Shevlin, Shivakumar, and Urcan 2019) find that effective tax policies mainly foster economic development in countries with poor governance quality. In Column (4) of Table 5, we add to the baseline specification, which includes exogenous tax arbitration, an interaction term between *Tax Arbitration* and a dummy variable for destination countries with low institutional quality. *Low Institutional Quality* equals 1 if destination countries are at the bottom 2 quintiles of *rule of law*,

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<sup>18</sup> The 4 countries with worldwide tax system are Ireland, Israel, South Korea, and Greece. Slovenia and Norway (United Kingdom, Japan, and New Zealand) transformed from a worldwide to a territorial tax system in 2004 (2009). The United States experienced the most recent tax reforms in 2017.

<sup>19</sup> The origin country by year fixed effects absorb a dummy variable for worldwide residence countries.



and 0 otherwise.<sup>20</sup> The significantly positive coefficient on the interaction term suggests a 94.5 (100[exp(0.665) – 1]) percent relative increase in FDI stocks.

### iii. *Tax Sparing*

Tax sparing, a clause in bilateral tax treaties, ensures that tax incentives offered by developing countries to foreign investors are not reduced by taxation in their origin countries (Dharmapala and Hines 2009; Hines 2013). While tax sparing can drive foreign direct investment (FDI), it may also increase tax disputes due to its complexity and potential misuse for tax avoidance, leading to double non-taxation and discouraging investment (OECD 1998). (Shehaj and Zagler 2024) report a negative impact of tax sparing on FDI, particularly in very poor countries with limited FDI inflows. Therefore, we expect tax sparing, an important determinant of FDI. In Column (5) of Table 5, we modify the baseline specification by adding *Tax Sparing*, and an interaction term between *Tax Arbitration* and *Tax Sparing*.<sup>21</sup> *Tax Sparing* equals 1 in the first year in which the origin country  $i$  adopts an effective tax sparing clause with the destination country  $j$ , and all subsequent years. All other years are coded to 0.

Data for tax sparing clauses comes from (Shehaj and Zagler 2024) and IBFD, covering inward FDI stocks between 26 developed OECD countries and 67 developing destination countries from 2005 to 2016, with 223 country-pairs having tax sparing clauses and 14 country-pairs having tax arbitration clause. Notably, no tax treaty includes both clauses. Therefore, the interaction term will be absorbed by fixed effects. We find a robust, significantly positive coefficient on Tax Arbitration at the five percent level. Additionally, the significantly positive coefficient on Tax Sparing indicates that tax sparing clauses help attract FDI.

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<sup>20</sup> We then repeat the analysis focusing on *control of corruption* and find consistent results.

<sup>21</sup> We define *Tax Sparing* based on the effective year of adopting bilateral tax arbitration clauses.

#### 4 Tax Arbitration and MNE- specific investment decisions

The above country-pair-level analysis does not distinguish between ultimate and immediate FDI stocks and, hence, is restricted to the direct investment effects of tax arbitration clauses. Using inward FDI stocks as the dependent variable does not determine whether FDI stocks ultimately originate in OECD countries (i.e., ultimate FDI) or merely flow through conduit OECD countries to destination countries (i.e., indirect FDI). To shed light on the location of the ultimate owners of FDI stocks, we use micro-level data to examine whether tax arbitration clauses affect the cross-border investment of OECD firms. Specifically, we focus on MNEs in OECD countries and exploit changes in the number of foreign subsidiaries following the adoption of tax arbitration clauses. In line with the FDI tests, we use a PPML model as follows:

$$Nr\_Subsidiary_{pjt} = \exp(Tax\ Arbitration_{ijt} + \beta Control_{ijt-1} + \delta_t + \gamma_{ij})\varepsilon_{ijt} \quad (2)$$

Where  $Nr\_Subsidiary_{pjt}$  is the number of subsidiaries held by firm  $p$  in destination country  $j$  in year  $t$ .  $Tax\ Arbitration$  and  $Controls$  are the same as in the equation (1). In line with FDI tests, we adopt a ‘stacked regression’ to address economic concerns in staggered DID regression estimators (Baker et al. 2022). We create a dataset for each event and use never-treated country-pairs as controls. As we focus on three years around treatment (i.e., three years before treatment and three years after treatment), we exclude country-pairs that adopted tax arbitration before 2010 and after 2016. We stack these event-specific datasets together and re-run the regression with dataset-specific year and country-pair fixed effects. Standard errors are clustered by dataset-specific country-pair. These fixed effects absorb time-invariant country-pair characteristics and time-specific shocks. By including these fixed effects,  $Tax\ Arbitration_{ijt}$  captures the effect of tax arbitration on OECD MNEs within each country-pair. We lag control variables by one year to alleviate endogeneity biases (Egger et al., 2009) and to accommodate the time that corporates require to make investment decisions.

#### *4.1. Data and Sample*

We obtain firm-level historical ownership data from Historical Orbis, which provides historical ownership data, historical financial data, and current descriptive data of firms covered by Orbis. The data tracks the global ultimate owners (GUOs) of subsidiaries per year. A GUO owns at least 50.01 percent shares of another independent firm. We collect GUO and foreign subsidiaries between 2007 and 2019. We keep observations if a GUO is in the type of corporate, active, with industry information, and in the form of private limited companies and public limited companies. In line with the sample selection for the FDI tests, we focus on parent corporations (i.e., GUOs) in 26 developed OECD and exclude foreign subsidiaries that are not in the FDI sample. Additionally, we require parent corporations and foreign subsidiaries to be in the form of private limited companies and public limited companies. Foreign subsidiaries are restricted to the corporate type. We aggregate the number of subsidiaries of a specific parent company in a destination country and keep observations at the parent-destination country level. We then merge ownership information with country-level variables from the FDI tests. We exclude observations with missing control variables. To capture variance in MNEs' investments, we drop parent-destination countries with only one observation or no within-parent-destination country variations.

The final unstacked ownership sample includes 395,432 observations at the parent-destination country level, comprising 246,881 observations of developed destination countries and 148,551 developing destination countries. Additionally, the sample consists of 243,126 observations with listed MNEs, 25,868 observations with delisted MNEs, and 126,438 observations with private MNEs. We observe a high number of parent firms in the United States (88,566) and the United Kingdom (32,707), while most subsidiaries are located in the United Kingdom (29,658) and Germany (27,709).

#### *4.2. Main Results*

Table 6 reports the results by estimating equation (2) in a stacked regression. We focus on developed (all) destination countries in Column (1) (Column (4)) and find insignificant and positive coefficients on *Tax Arbitration*. In Column (2), we focus on developing destination countries and find significantly positive coefficients on *Tax Arbitration*. These results suggest that OECD parent firms react to the adoption of tax arbitration clauses by establishing more subsidiaries in developing countries. The coefficient of 0.138 suggests a 14.8 ( $=100[\exp(0.138) - 1]$ ) percent increase in the number of foreign subsidiaries. The results corroborate the FDI findings by showing increased foreign subsidiaries in developing countries.

\*\*\*Insert Table 6 here\*\*\*

In line with FDI tests, we replace dataset-specific year fixed effects with dataset-specific origin country by year fixed effects, destination country by year fixed effects, industry defined at the first-digit NACE industry level by year fixed effects, and country-pair fixed effects to address concerns that other, non-arbitration events may drive our findings for developing destination countries. Moreover, we replace data dataset-specific country-pair fixed effects with data-specific parent-destination-country fixed effects to absorb time-invariant parent-destination-country characteristics in Column (5) of Table 6. Those fixed effects absorb most covariates in the baseline regression. The coefficient on *Tax Arbitration* remains positive and significant at the ten percent level.

To address another concern regarding reverse causality and test for parallel trends, we adopt a stacked event study design (Wooldridge 2013; Yotov et al. 2016). Following FDI tests, we plot coefficients for years before and after the adoption of tax arbitration clauses in Panel B of Figure 2. Specifically, we replace *Tax Arbitration* with 3 leads (i.e., arbitration t-3, arbitration t-2, and arbitration t-1), the contemporaneous arbitration (i.e., arbitration t), and 3 lags (i.e.,

arbitration t+1, arbitration t+2, and arbitration t+3). We code lags and leads the same as in the FDI tests. We omit arbitration t-1, which is the benchmark in the regression. We find significantly positive coefficients on arbitration t as well as on its lagged values, and insignificant coefficients on leads. Overall, these findings suggest a long-lasting positive association between the adoption of tax arbitration clauses and MNEs' cross-border investments.

#### 4.3. Additional Tests

##### i. Parent Firm Characteristics

Next, we leverage parent size data from Orbis to distinguish between very large parent firms and other parent firms.<sup>22</sup> We use a triple difference setting to compare investments of OECD MNEs in developing to developed destination countries (first difference) around the adoption of effective tax arbitration clauses (second difference), across very large versus non-very large parent firms (third difference). For this test, we add to Equation (2) by dummy variables for small & medium sized parent firms (*Small-Medium Size Parent*), developing destination countries (*Developing Destination*), their interaction, interaction with tax arbitration, and the corresponding triple interaction in Column (1) of Table 7.<sup>23</sup> *Small-Medium Size Parent* equals 1 if Orbis does not classify parent firm as very large companies and 0 otherwise. The variable of interest is the triple interaction  $Tax\ Arbitration \times Developing\ Destination \times Small-Medium\ Size\ Parent$ .

The significantly positive coefficient on the triple interaction suggests that the adoption of effective tax arbitration has a stronger positive effect on the number of foreign subsidiaries for small and medium size parent firms investing in developing destination countries relative

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<sup>22</sup> Orbis classifies companies to be very large when they meet at least one of four criteria, including 1) operating revenue of 140 million US dollars or more, 2) total assets of 280 million US dollars or more, 3) employees of 1,000 or more, and 4) listed companies.

<sup>23</sup> The data-specific destination country by year fixed effects absorb a dummy variable for developing destination countries.

to very large parent firms. In economic terms, the coefficient estimate shows 48.9 ( $100[\exp(0.398) - 1]$ ) percent relative increase in the number of foreign subsidiaries for non-very large parent firms investing in developing destination countries.<sup>24</sup> The results show that all but very large parent firms drive the positive effect of *Tax arbitration*. One possible explanation is that the top-end of very large firms have more experience and knowledge in cross-border investment. Therefore, the enhanced tax certainty by tax arbitration clauses is less beneficial for them (Hoppe et al. 2020). This result also suggests that smaller and midsize firms can only accommodate higher FDI when tax uncertainty is resolved at the bilateral country level.

\*\*\*Insert Table 7 here\*\*\*

We further examine how the effects of the tax arbitration clause differ between listed and non-listed MNEs. Using a triple difference setting, we add to the baseline specification, which includes exogenous tax arbitration, with dummy variables for non-listed parent firms (*Private parent*), developing destination countries (*Developing Destination*), their interaction, interaction with tax arbitration, and the corresponding triple interaction in Column (2) of Table 7.<sup>25</sup> *Private parent* equals 1 if Orbis classifies parent firms as unlisted or delisted companies and 0 otherwise. Results also here confirm that the result is mainly stemming from private MNEs in developing destination countries. In untabulated results, we confirm that the effect is driven by private MNEs in middle-income destination countries, which are highly correlated with developing destination countries.

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<sup>24</sup> We compute the effect for non-very large parent firms in developing destination countries by summing up the relevant coefficients ( $0.025 - 0.058 - 0.216 + 0.647 = 0.398$ ).

<sup>25</sup> The data-specific destination country by year fixed effects absorb a dummy variable for developing destination countries.

Finally, we focus on the content of cross-border tax disputes. OECD MAP statistics show that most cross-border tax disputes cases involve transfer pricing cases, which generally take longer to resolve than other cases.<sup>26</sup> Consequently, the adoption of effective tax arbitration clauses is particularly important for parent firms that are more exposed to transfer pricing disputes. Prior literature shows that intangible-intensive firms exhibit higher transfer pricing aggressiveness (Taylor, Richardson, and Lanis 2015). We therefore predict that intangible-intensive firms face a higher likelihood of transfer pricing disputes and benefit more from the adoption of effective tax arbitration clauses. To examine this prediction, we employ a triple difference setting. Specifically, we add to the baseline specification, which includes exogenous tax arbitration, with dummy variables for parent firms in intangible-intensive industries (*intangible-intensive parent*), developing destination countries (*Developing Destination*), their interaction, interaction with tax arbitration, and the corresponding triple interaction in Column (3) of Table 7.<sup>27</sup> *Intangible-intensive parent* equals 1 if Orbis classifies parent firms as operating in an intangible-intensive industry and 0 otherwise.<sup>28</sup>

The significantly positive coefficient on the triple interaction suggests that the positive effect of effective tax arbitration on the number of foreign subsidiaries is driven by intangible-intensive MNEs in developing destination countries.

## ii. Institutional Quality

To investigate whether the tax arbitration clause has heterogeneous effects across developing destination countries with varying levels of institutional quality, we add to the

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<sup>26</sup> See OECD, MAP Statistics 2023, available at <https://www.oecd.org/en/data/datasets/2023-mutual-agreement-procedure-statistics.html>

<sup>27</sup> The data-specific destination country by year fixed effects absorb a dummy variable for developing destination countries.

<sup>28</sup> We identify intangible-intensive firms based on their primary NACE Rev. 2 core codes. Intangible-intensive parents include those operating in pharmaceuticals, information technology and software, media and publishing, telecommunications, research and development, advertising, and other knowledge-intensive professional and technical services.

baseline specification, which includes exogenous tax arbitration, with dummy variables for destination countries with low institutional quality (*Low Institutional Quality*), developing destination countries (*Developing Destination*), their interaction, interaction with tax arbitration, and the corresponding triple interaction in Column (4) of Table 7.<sup>29</sup> *Low Institutional Quality* equals 1 if destination countries are at the bottom 2 quintiles of *rule of law*.<sup>30</sup> All other years are coded to 0. The positive coefficient on the triple interaction term, however, is statistically insignificant.

## 5 Conclusion

In this paper, we investigate the association between tax arbitration—timely tax dispute resolution between two countries by independent arbitrators—and foreign direct investment. Regulatory efforts highlight the role of tax arbitration clauses in enhancing tax certainty for investors (Dyck, Lorenz, and Sureth 2022; Owens 2018). Using a stacked DID model, we provide novel evidence of how corporate investment responds differently to tax treaty arbitration in developed and developing destination countries. In our first set of FDI tests, we fail to observe an association between the adoption of tax treaty arbitration clauses and FDI stocks from OECD countries in developed destination countries. In contrast, we find a positive association between the adoption of tax treaty arbitration clauses and FDI stocks from developed OECD countries in developing destination countries. The effect is driven by middle-income developing destination countries. Besides the development level of destination countries, we also document evidence of a significant increase in FDI among destination countries with low institutional quality.

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<sup>29</sup> The data-specific destination country by year fixed effects absorb *Developing Destination*, *Low Institutional Quality* and the interaction between *Developing Destination* and *Low Institutional Quality*.

<sup>30</sup> We then repeat the analysis, focusing on *control of corruption*, and find consistent results.



In our second set of tests, the results suggest that the adoption of tax arbitration clauses is associated with an increase in the number of foreign subsidiaries in a developing destination country, held by a multinational enterprise in a developed OECD country. The positive association is driven by non-very large parent companies. The results show that multinationals located in developed OECD countries are more likely to own subsidiaries in developing destination countries in response to the adoption of tax arbitration clauses.

Overall, the findings are consistent with the hypothesis that the tax treaty arbitration clause, as an effective mechanism for developing countries, attracts corporate investment by enhancing tax certainty. Developed countries usually have good institutional quality and provide investors with domestic laws to address cross-border tax disputes (Castillo-Murciego and López-Laborda 2019; Osswald and Sureth-Sloane 2018) making this tax arbitration mechanism perhaps less ideal to foster incremental corporate investments.

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## 7 Figures

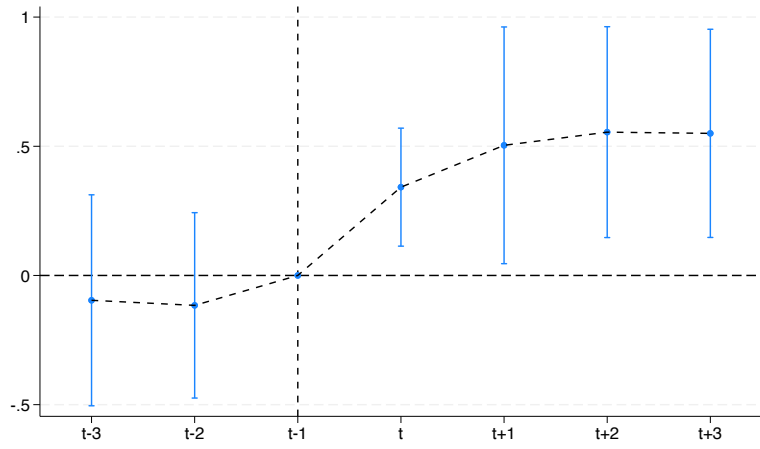
Figure 1 Number of Tax Arbitration Clauses Adopted by Year



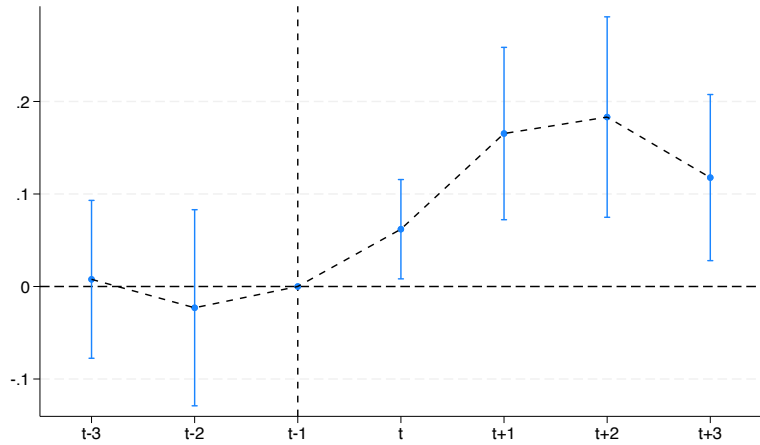
This figure graphs the number of tax arbitration clauses between 26 developed OECD countries and destination countries adopted by year.

Figure 2 Treatment Effects (Stacked Event Study Design)

Panel A: FDI Responses to Tax Arbitration in Developing Destination Countries



Panel B: MNEs' Responses to Tax Arbitration in Developing Destination Countries



Note: This figure plots coefficients together with the 90% confidence intervals for three quarters before and after the treatment. We obtain these coefficients from regressions of FDI on binary variables coded to 1 for year  $t-3$  to  $t+3$ , and 0 otherwise. We include controls, dataset-specific year fixed effects and dataset-specific country-pair fixed effects. Specifically, it plots the point estimates for the stacked subsample of developing destination countries with FDI tests in Panel A and with MNEs' foreign subsidiaries in Panel B.



## 8 Tables

Table 1

Panel A: Number of Tax Treaties, Mutual Agreement Procedures, Tax Arbitration Clauses Signed with 38 OECD Countries (Per Destination Country)

| Destination country    | GNI | Treaty | MAPs | Arbitration | Destination country             | GNI | Treaty | MAPs | Arbitration |
|------------------------|-----|--------|------|-------------|---------------------------------|-----|--------|------|-------------|
| Albania                | LM  | 25     | 25   | 3           | Luxembourg                      | H   | 32     | 32   | 9           |
| Algeria                | LM  | 15     | 15   | 2           | Macau                           | H   | 1      | 1    | 0           |
| Armenia                | LM  | 27     | 27   | 6           | Macedonia, Republic of          | LM  | 25     | 25   | 2           |
| Aruba                  | H   | 6      | 6    | 0           | Madagascar                      | L   | 2      | 2    | 1           |
| Australia              | H   | 28     | 28   | 15          | Malawi                          | L   | 5      | 3    | 0           |
| Austria                | H   | 35     | 35   | 11          | Malaysia                        | UM  | 26     | 26   | 0           |
| Azerbaijan             | LM  | 29     | 29   | 0           | Mali                            | L   | 1      | 1    | 0           |
| Bahrain                | H   | 15     | 15   | 5           | Malta                           | H   | 33     | 33   | 11          |
| Bangladesh             | L   | 17     | 17   | 0           | Mauritius                       | UM  | 9      | 9    | 6           |
| Barbados               | UM  | 16     | 16   | 3           | Mexico                          | UM  | 36     | 36   | 7           |
| Belarus                | LM  | 28     | 28   | 1           | Moldova                         | L   | 28     | 28   | 4           |
| Belgium                | H   | 35     | 35   | 11          | Mongolia                        | L   | 15     | 15   | 2           |
| Benin                  | L   | 2      | 2    | 0           | Montenegro                      | ..  | 22     | 22   | 0           |
| Bhutan                 | L   | 0      | 0    | 0           | Morocco                         | LM  | 28     | 28   | 0           |
| Bolivia                | LM  | 5      | 5    | 0           | Mozambique                      | L   | 2      | 2    | 0           |
| Bosnia and Herzegovina | LM  | 20     | 20   | 1           | Myanmar                         | L   | 2      | 1    | 0           |
| Botswana               | UM  | 6      | 6    | 0           | Namibia                         | LM  | 4      | 4    | 0           |
| Brazil                 | LM  | 24     | 24   | 0           | Nepal                           | L   | 3      | 3    | 0           |
| Brunei Darussalam      | H   | 4      | 3    | 0           | Netherlands                     | H   | 35     | 35   | 19          |
| Bulgaria               | LM  | 31     | 31   | 0           | New Zealand                     | H   | 25     | 25   | 8           |
| Burkina Faso           | L   | 1      | 1    | 0           | Niger                           | L   | 1      | 1    | 0           |
| Cambodia               | L   | 2      | 2    | 0           | Nigeria                         | L   | 9      | 9    | 0           |
| Canada                 | H   | 36     | 36   | 19          | Norway                          | H   | 31     | 31   | 3           |
| Cape Verde             | LM  | 2      | 2    | 0           | Oman                            | UM  | 13     | 13   | 0           |
| Chile                  | UM  | 23     | 23   | 7           | Pakistan                        | L   | 24     | 23   | 2           |
| China                  | LM  | 36     | 36   | 0           | Palestinian Territory           | LM  | 0      | 0    | 0           |
| Costa Rica             | UM  | 3      | 3    | 0           | Panama                          | UM  | 12     | 12   | 0           |
| Croatia                | UM  | 32     | 32   | 2           | Papua New Guinea                | L   | 5      | 5    | 0           |
| Cyprus                 | H   | 28     | 28   | 2           | Paraguay                        | LM  | 2      | 2    | 2           |
| Czech Republic         | UM  | 36     | 36   | 0           | Peru                            | LM  | 8      | 8    | 2           |
| Côte d'Ivoire          | L   | 9      | 9    | 0           | Philippines                     | LM  | 25     | 25   | 0           |
| Denmark                | H   | 31     | 31   | 8           | Poland                          | UM  | 35     | 35   | 4           |
| Djibouti               | LM  | 0      | 0    | 0           | Portugal                        | H   | 34     | 34   | 4           |
| Dominican Republic     | LM  | 2      | 2    | 0           | Qatar                           | H   | 21     | 21   | 2           |
| El Salvador            | LM  | 1      | 1    | 0           | Romania                         | LM  | 34     | 34   | 1           |
| Estonia                | UM  | 32     | 32   | 4           | Russian Federation              | LM  | 35     | 35   | 1           |
| Fiji                   | LM  | 5      | 5    | 0           | Rwanda                          | L   | 3      | 3    | 1           |
| Finland                | H   | 30     | 30   | 11          | Samoa                           | LM  | 2      | 2    | 0           |
| France                 | H   | 36     | 36   | 13          | Saudi Arabia                    | UM  | 21     | 21   | 0           |
| Georgia                | LM  | 31     | 31   | 2           | Senegal                         | L   | 10     | 10   | 0           |
| Germany                | H   | 35     | 35   | 10          | Serbia                          | ..  | 29     | 29   | 0           |
| Ghana                  | L   | 9      | 9    | 2           | Seychelles                      | UM  | 2      | 2    | 1           |
| Greece                 | H   | 31     | 30   | 9           | Singapore                       | H   | 33     | 33   | 18          |
| Guatemala              | LM  | 0      | 0    | 0           | Slovakia                        | UM  | 34     | 34   | 1           |
| Guinea                 | L   | 1      | 1    | 0           | Slovenia                        | H   | 31     | 31   | 17          |
| Guinea-Bissau          | L   | 1      | 1    | 0           | Solomon Islands                 | L   | 1      | 0    | 0           |
| Honduras               | LM  | 0      | 0    | 0           | South Africa                    | LM  | 31     | 31   | 3           |
| Hong Kong, China       | H   | 21     | 21   | 6           | Spain                           | H   | 37     | 37   | 7           |
| Hungary                | UM  | 33     | 33   | 10          | Sri Lanka                       | LM  | 21     | 21   | 0           |
| Iceland                | H   | 27     | 27   | 7           | Swaziland                       | LM  | 1      | 1    | 0           |
| India                  | L   | 37     | 37   | 0           | Sweden                          | H   | 31     | 31   | 3           |
| Indonesia              | LM  | 27     | 27   | 1           | Switzerland                     | H   | 36     | 36   | 22          |
| Ireland                | H   | 35     | 35   | 17          | Tajikistan                      | L   | 18     | 18   | 1           |
| Israel                 | H   | 32     | 32   | 3           | Tanzania, United Republic of    | L   | 6      | 6    | 0           |
| Italy                  | H   | 36     | 36   | 6           | Thailand                        | LM  | 29     | 29   | 0           |
| Japan                  | H   | 35     | 35   | 24          | Togo                            | L   | 1      | 1    | 0           |
| Jordan                 | LM  | 9      | 9    | 2           | Trinidad and Tobago             | UM  | 12     | 12   | 0           |
| Kazakhstan             | LM  | 27     | 27   | 5           | Turkey                          | LM  | 33     | 33   | 0           |
| Kenya                  | L   | 8      | 8    | 0           | Uganda                          | L   | 5      | 5    | 2           |
| Korea, Republic of     | H   | 36     | 36   | 0           | Ukraine                         | LM  | 33     | 33   | 2           |
| Kosovo                 | ..  | 16     | 16   | 6           | United Arab Emirates            | H   | 31     | 31   | 1           |
| Kuwait                 | H   | 25     | 25   | 1           | United Kingdom                  | H   | 36     | 35   | 21          |
| Kyrgyzstan             | L   | 23     | 23   | 1           | United States                   | H   | 35     | 35   | 11          |
| Latvia                 | UM  | 32     | 32   | 3           | Uruguay                         | UM  | 14     | 14   | 7           |
| Lebanon                | UM  | 5      | 5    | 1           | Venezuela (Bolivarian Republic) | UM  | 18     | 18   | 1           |
| Lesotho                | L   | 1      | 1    | 1           | Zambia                          | L   | 13     | 13   | 2           |
| Lithuania              | UM  | 32     | 32   | 2           |                                 |     |        |      |             |

Panel B: Number of Tax Arbitration Clauses Between 26 Developed OECD countries and Destination Countries Adopted Per Year

| Year  | Number of Tax Arbitration Clauses |                                     |                                    |
|-------|-----------------------------------|-------------------------------------|------------------------------------|
|       | 133 Destination Countries         | 96 Developing Destination Countries | 37 Developed Destination Countries |
| 2004  | 2                                 | 2                                   | 0                                  |
| 2005  | 2                                 | 2                                   | 0                                  |
| 2006  | 5                                 | 3                                   | 2                                  |
| 2008  | 3                                 | 2                                   | 1                                  |
| 2009  | 3                                 | 2                                   | 1                                  |
| 2010  | 9                                 | 2                                   | 7                                  |
| 2011  | 6                                 | 0                                   | 6                                  |
| 2012  | 15                                | 5                                   | 10                                 |
| 2013  | 6                                 | 1                                   | 5                                  |
| 2014  | 10                                | 2                                   | 8                                  |
| 2015  | 4                                 | 0                                   | 4                                  |
| 2016  | 5                                 | 4                                   | 1                                  |
| 2017  | 6                                 | 3                                   | 3                                  |
| 2018  | 8                                 | 6                                   | 2                                  |
| 2019  | 41                                | 6                                   | 35                                 |
| 2020  | 49                                | 3                                   | 46                                 |
| Total | 174                               | 43                                  | 131                                |

Note: Panel A shows the number of tax treaties (treaty), mutual agreement procedures (MAPs), tax arbitration clauses (arbitration) signed with the 38 OECD countries (per destination country). Based on the gross national income (GNI) in 2003, World bank split countries into lower-middle-income countries (LM), upper-middle-income countries (UM), low-income countries (L), and high-income countries (H). The sample include 3 countries that World bank fails to offer a category (..). Panel B lists the number of tax arbitration clauses adopted per year.

Table 2 Descriptive Statistics

|                                   | Developed Destination Countries |          |              |        |        | Developing Destination Countries |         |              |        |           |
|-----------------------------------|---------------------------------|----------|--------------|--------|--------|----------------------------------|---------|--------------|--------|-----------|
|                                   | N                               | Mean     | Std.<br>Dev. | min    | max    | N                                | Mean    | Std.<br>Dev. | min    | max       |
| Inward FDI Stock                  | 10925                           | 14599.06 | 43063.17     | 0.00   | 647718 | 22110                            | 2013.64 | 8239.07      | 0.00   | 251590.28 |
| Tax Arbitration                   | 10925                           | 0.08     | 0.27         | 0.00   | 1.00   | 22110                            | 0.01    | 0.12         | 0.00   | 1.00      |
| MAP                               | 10925                           | 0.85     | 0.36         | 0.00   | 1.00   | 22110                            | 0.58    | 0.49         | 0.00   | 1.00      |
| Nr Arbitration Other              | 10925                           | 5.09     | 7.68         | 0.00   | 45     | 22110                            | 0.98    | 1.76         | 0.00   | 10.00     |
| Tax treaty                        | 10925                           | 0.85     | 0.35         | 0.00   | 1.00   | 22110                            | 0.58    | 0.49         | 0.00   | 1.00      |
| Bilateral Investment Treaty       | 10925                           | 0.15     | 0.35         | 0.00   | 1.00   | 22110                            | 0.55    | 0.50         | 0.00   | 1.00      |
| Bilateral EU membership           | 10925                           | 0.38     | 0.48         | 0.00   | 1.00   | 22110                            | 0.09    | 0.29         | 0.00   | 1.00      |
| Ln destination GDP                | 10925                           | 26.61    | 1.76         | 21.62  | 30.7   | 22110                            | 24.84   | 1.73         | 20.26  | 30.29     |
| Ln origin GDP                     | 10925                           | 27.23    | 1.46         | 22.96  | 30.7   | 22110                            | 27.31   | 1.46         | 22.96  | 30.70     |
| Ln destination GDP per capita     | 10925                           | 10.58    | 0.44         | 9.37   | 11.73  | 22110                            | 8.35    | 1.01         | 4.98   | 10.12     |
| Ln origin GDP per capita          | 10925                           | 10.68    | 0.41         | 9.37   | 11.73  | 22110                            | 10.70   | 0.41         | 9.37   | 11.73     |
| Destination population growth     | 10925                           | 0.93     | 1.25         | -1.85  | 19.36  | 22110                            | 0.88    | 1.27         | -2.88  | 10.68     |
| Origin Inflation                  | 10925                           | 1.67     | 1.44         | -4.45  | 12.69  | 22110                            | 1.61    | 1.38         | -4.45  | 12.69     |
| Destination Inflation             | 10925                           | 1.84     | 1.67         | -4.86  | 15.05  | 22110                            | 5.24    | 5.86         | -16.86 | 62.17     |
| Rate Difference                   | 10925                           | 2.31     | 9.97         | -27.72 | 39.54  | 22110                            | 4.62    | 9.31         | -29.00 | 39.54     |
| Destination Political Stability   | 10925                           | 74.84    | 20.22        | 7.11   | 100.00 | 22110                            | 42.29   | 23.20        | 0.47   | 93.36     |
| Destination Regulatory Quality    | 10925                           | 88.31    | 9.50         | 46.19  | 100.00 | 22110                            | 53.21   | 19.96        | 0.00   | 93.33     |
| Destination Rule of Law           | 10925                           | 88.23    | 10.58        | 53.81  | 100.00 | 22110                            | 45.81   | 20.16        | 0.47   | 88.46     |
| Destination Control of Corruption | 10925                           | 86.56    | 12.36        | 43.33  | 100.00 | 22110                            | 44.25   | 21.35        | 0.49   | 92.89     |

Note: All variables are defined in Appendix A. We use bilateral inward FDI stocks from developed OECD countries in developed destination countries and in developing destination countries from World bank. This This table reports descriptive statistics for the FDI tests.

Table 3

## Panel A: Pearson Correlation for FDI Stocks

| Variables                              | (1)    | (2)    | (3)    | (4)    | (5)    | (6)    | (7)    | (8)    | (9)    | (10)   | (11)   | (12)   | (13)   | (14)   | (15)   | (16)  | (17)  | (18)  | (19) |
|----------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|------|
| (1) Inward FDI Stock                   | 1.00   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |       |      |
| (2) Tax Arbitration                    | 0.17*  | 1.00   |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |       |      |
| (3) MAP                                | 0.13*  | 0.13*  | 1.00   |        |        |        |        |        |        |        |        |        |        |        |        |       |       |       |      |
| (4) Nr Arbitration Other               | 0.26*  | 0.32*  | 0.20*  | 1.00   |        |        |        |        |        |        |        |        |        |        |        |       |       |       |      |
| (5) Tax treaty                         | 0.13*  | 0.13*  | 0.99*  | 0.20*  | 1.00   |        |        |        |        |        |        |        |        |        |        |       |       |       |      |
| (6) Bilateral Investment Treaty        | -0.12* | -0.04* | 0.19*  | -0.17* | 0.18*  | 1.00   |        |        |        |        |        |        |        |        |        |       |       |       |      |
| (7) Bilateral EU membership            | 0.14*  | 0.03*  | 0.29*  | 0.18*  | 0.30*  | -0.05* | 1.00   |        |        |        |        |        |        |        |        |       |       |       |      |
| (8) Ln destination GDP                 | 0.28*  | 0.12*  | 0.43*  | 0.36*  | 0.44*  | -0.11* | 0.18*  | 1.00   |        |        |        |        |        |        |        |       |       |       |      |
| (9) Ln origin GDP                      | 0.09*  | 0.03*  | 0.02*  | -0.05* | 0.03*  | 0.03*  | -0.09* | -0.09* | 1.00   |        |        |        |        |        |        |       |       |       |      |
| (10) Ln destination GDP per capita     | 0.22*  | 0.16*  | 0.37*  | 0.38*  | 0.37*  | -0.23* | 0.39*  | 0.50*  | -0.05* | 1.00   |        |        |        |        |        |       |       |       |      |
| (11) Ln origin GDP per capita          | 0.09*  | 0.06*  | -0.05* | 0.00   | -0.05* | -0.05* | -0.05* | -0.02* | -0.07* | 0.01   | 1.00   |        |        |        |        |       |       |       |      |
| (12) Destination population            | -0.03* | -0.03* | -0.28* | -0.08* | -0.27* | -0.14* | -0.23* | -0.07* | 0.10*  | -0.21* | 0.05*  | 1.00   |        |        |        |       |       |       |      |
| (13) Origin Inflation                  | -0.01* | -0.05* | -0.02* | -0.04* | -0.02* | -0.02* | -0.02* | 0.03*  | -0.16* | 0.02*  | -0.05* | -0.04* | 1.00   |        |        |       |       |       |      |
| (14) Destination Inflation             | -0.08* | -0.08* | -0.10* | -0.15* | -0.10* | 0.10*  | -0.20* | -0.10* | 0.02*  | -0.33* | 0.01   | 0.12*  | 0.13*  | 1.00   |        |       |       |       |      |
| (15) Rate Difference                   | -0.06* | -0.05* | -0.04* | -0.10* | -0.05* | 0.16*  | -0.02* | -0.33* | 0.34*  | 0.03*  | -0.09* | -0.19* | -0.03* | -0.04* | 1.00   |       |       |       |      |
| (16) Destination Political Stability   | 0.10*  | 0.11*  | 0.18*  | 0.24*  | 0.18*  | -0.19* | 0.35*  | 0.06*  | -0.03* | 0.70*  | -0.04* | -0.18* | 0.03*  | -0.30* | 0.06*  | 1.00  |       |       |      |
| (17) Destination Regulatory Quality    | 0.19*  | 0.15*  | 0.33*  | 0.37*  | 0.33*  | -0.19* | 0.40*  | 0.36*  | -0.07* | 0.85*  | -0.05* | -0.24* | 0.04*  | -0.43* | 0.06*  | 0.74* | 1.00  |       |      |
| (18) Destination Rule of Law           | 0.20*  | 0.15*  | 0.33*  | 0.35*  | 0.33*  | -0.25* | 0.40*  | 0.35*  | -0.06* | 0.83*  | -0.04* | -0.18* | 0.03*  | -0.40* | -0.02* | 0.79* | 0.92* | 1.00  |      |
| (19) Destination Control of Corruption | 0.20*  | 0.14*  | 0.27*  | 0.34*  | 0.27*  | -0.27* | 0.36*  | 0.32*  | -0.04* | 0.81*  | -0.03* | -0.15* | 0.03*  | -0.37* | -0.03* | 0.79* | 0.89* | 0.95* | 1.00 |

## Panel B: Pearson Correlation for MNEs' Investments

| Variables                          | (1)    | (2)    | (3)    | (4)    | (5)    | (6)    | (7)    | (8)    | (9)    | (10)   | (11)   | (12)   | (13)  | (14)  | (15) | (16) | (17) | (18) | (19) |
|------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|------|------|------|------|------|
| (1) Nr subsidiaries                | 1.00   |        |        |        |        |        |        |        |        |        |        |        |       |       |      |      |      |      |      |
| (2) Tax Arbitration                | 0.05*  | 1.00   |        |        |        |        |        |        |        |        |        |        |       |       |      |      |      |      |      |
| (3) MAP                            | 0.04*  | 0.12*  | 1.00   |        |        |        |        |        |        |        |        |        |       |       |      |      |      |      |      |
| (4) Nr Arbitration Other           | 0.09*  | 0.32*  | 0.18*  | 1.00   |        |        |        |        |        |        |        |        |       |       |      |      |      |      |      |
| (5) Tax treaty                     | 0.04*  | 0.11*  | 0.99*  | 0.18*  | 1.00   |        |        |        |        |        |        |        |       |       |      |      |      |      |      |
| (6) Bilateral Investment Treaty    | -0.06* | -0.17* | 0.08*  | -0.30* | 0.08*  | 1.00   |        |        |        |        |        |        |       |       |      |      |      |      |      |
| (7) Bilateral EU membership        | 0.02*  | 0.02*  | 0.13*  | 0.17*  | 0.13*  | -0.08* | 1.00   |        |        |        |        |        |       |       |      |      |      |      |      |
| (8) Ln destination GDP             | 0.12*  | 0.12*  | 0.27*  | 0.26*  | 0.27*  | -0.28* | -0.08* | 1.00   |        |        |        |        |       |       |      |      |      |      |      |
| (9) Ln origin GDP                  | 0.02*  | -0.02* | -0.05* | -0.11* | -0.05* | -0.13* | -0.39* | 0.01*  | 1.00   |        |        |        |       |       |      |      |      |      |      |
| (10) Ln destination GDP per capita | 0.08*  | 0.22*  | 0.01*  | 0.41*  | 0.01*  | -0.50* | 0.24*  | 0.19*  | -0.10* | 1.00   |        |        |       |       |      |      |      |      |      |
| (11) Ln origin GDP per capita      | 0.00   | 0.09*  | -0.11* | 0.05*  | -0.11* | -0.10* | -0.11* | -0.02* | -0.17* | 0.09*  | 1.00   |        |       |       |      |      |      |      |      |
| (12) Destination population        | 0.01*  | -0.02* | -0.21* | -0.05* | -0.21* | -0.16* | -0.32* | -0.07* | 0.17*  | -0.02* | -0.02* | 1.00   |       |       |      |      |      |      |      |
| (13) Origin Inflation              | -0.04* | -0.14* | -0.06* | -0.22* | -0.06* | 0.26*  | -0.23* | -0.09* | 0.05*  | -0.46* | -0.01* | 0.11*  | 1.00  |       |      |      |      |      |      |
| (14) Destination Inflation         | -0.00* | -0.09* | -0.05* | -0.06* | -0.05* | -0.03* | 0.04*  | -0.03* | 0.07*  | 0.03*  | -0.03* | 0.02*  | 0.19* | 1.00  |      |      |      |      |      |
| (15) Rate Difference               | -0.04* | -0.12* | -0.12* | -0.10* | -0.12* | 0.20*  | -0.15* | -0.37* | 0.52*  | -0.12* | -0.09* | -0.02* | 0.07* | 0.05* | 1.00 |      |      |      |      |

|                                        |       |       |        |       |        |        |       |        |        |       |       |        |        |       |        |       |       |       |      |
|----------------------------------------|-------|-------|--------|-------|--------|--------|-------|--------|--------|-------|-------|--------|--------|-------|--------|-------|-------|-------|------|
| (16) Destination Political Stability   | 0.01* | 0.14* | -0.12* | 0.23* | -0.12* | -0.29* | 0.26* | -0.21* | -0.10* | 0.75* | 0.10* | -0.05* | -0.45* | 0.06* | 0.01*  | 1.00  |       |       |      |
| (17) Destination Regulatory Quality    | 0.07* | 0.22* | -0.03* | 0.40* | -0.03* | -0.43* | 0.28* | 0.01*  | -0.08* | 0.87* | 0.08* | 0.00   | -0.49* | 0.04* | -0.03* | 0.81* | 1.00  |       |      |
| (18) Destination Rule of Law           | 0.07* | 0.21* | -0.02* | 0.36* | -0.02* | -0.50* | 0.27* | 0.06*  | -0.07* | 0.83* | 0.08* | 0.03*  | -0.50* | 0.03* | -0.10* | 0.80* | 0.94* | 1.00  |      |
| (19) Destination Control of Corruption | 0.07* | 0.22* | -0.05* | 0.37* | -0.05* | -0.51* | 0.25* | 0.09*  | -0.07* | 0.84* | 0.07* | 0.06*  | -0.49* | 0.05* | -0.10* | 0.80* | 0.94* | 0.97* | 1.00 |

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Note: We add \* to all correlations that are statistically significant at the 0.01 level or better (two-tailed).

Table 4 Tax Arbitration and Inward FDI Stocks

|                                      | (1)<br>All<br>Destination<br>Countries | (2)<br>All<br>Destination<br>Countries | (3)<br>Developed<br>Destination<br>Countries | (4)<br>Developed<br>Destination<br>Countries | (5)<br>Developing<br>Destination<br>Countries | (6)<br>Developing<br>Destination<br>Countries | (7)<br>Developing<br>Destination<br>Countries |
|--------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------------|----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Inward FDI stocks                    |                                        |                                        |                                              |                                              |                                               |                                               |                                               |
| Tax Arbitration                      | -0.004<br>(0.042)                      | -0.007<br>(0.039)                      | -0.024<br>(0.043)                            | -0.011<br>(0.040)                            | 0.567**<br>(0.239)                            | 0.562**<br>(0.254)                            | 0.457**<br>(0.213)                            |
| Nr Arbitration Other                 |                                        | 0.005**<br>(0.002)                     |                                              | 0.003<br>(0.002)                             |                                               | -0.016<br>(0.010)                             |                                               |
| Tax treaty                           |                                        | 0.024<br>(0.038)                       |                                              | -0.068<br>(0.052)                            |                                               | 0.098**<br>(0.050)                            | 0.030<br>(0.043)                              |
| Bilateral investment treaty          |                                        | 0.022<br>(0.040)                       |                                              | 0.302**<br>(0.146)                           |                                               | 0.008<br>(0.038)                              | 0.041<br>(0.027)                              |
| Bilateral EU membership              |                                        | 0.136***<br>(0.032)                    |                                              | 0.338*<br>(0.181)                            |                                               | 0.041<br>(0.033)                              | 0.015<br>(0.054)                              |
| Ln destination GDP                   |                                        | 1.976***<br>(0.287)                    |                                              | 2.159***<br>(0.524)                          |                                               | 1.755***<br>(0.249)                           |                                               |
| Ln origin GDP                        |                                        | 1.312***<br>(0.437)                    |                                              | 1.269**<br>(0.564)                           |                                               | 1.107***<br>(0.337)                           |                                               |
| Ln destination GDP per<br>Capita     |                                        | -1.729***<br>(0.296)                   |                                              | -1.840***<br>(0.557)                         |                                               | -1.603***<br>(0.267)                          |                                               |
| Ln origin GDP per Capita             |                                        | -0.974**<br>(0.456)                    |                                              | -0.821<br>(0.589)                            |                                               | -0.917***<br>(0.344)                          |                                               |
| Destination population<br>growth     |                                        | -0.005<br>(0.007)                      |                                              | -0.005<br>(0.009)                            |                                               | -0.009<br>(0.011)                             |                                               |
| Origin Inflation                     |                                        | 0.008**<br>(0.004)                     |                                              | 0.008<br>(0.006)                             |                                               | 0.015***<br>(0.005)                           |                                               |
| Destination Inflation                |                                        | -0.006***<br>(0.002)                   |                                              | -0.000<br>(0.008)                            |                                               | -0.008***<br>(0.001)                          |                                               |
| Rate Difference                      |                                        | -0.005***<br>(0.001)                   |                                              | -0.006***<br>(0.002)                         |                                               | -0.002<br>(0.001)                             |                                               |
| Destination Political<br>Stability   |                                        | 0.002**<br>(0.001)                     |                                              | 0.001<br>(0.001)                             |                                               | 0.002***<br>(0.001)                           |                                               |
| Destination Regulatory<br>Quality    |                                        | 0.006***<br>(0.001)                    |                                              | 0.001<br>(0.002)                             |                                               | 0.010***<br>(0.001)                           |                                               |
| Destination Rule of Law              |                                        | -0.005***<br>(0.002)                   |                                              | -0.004<br>(0.004)                            |                                               | -0.005***<br>(0.002)                          |                                               |
| Destination Control of<br>Corruption |                                        | 0.005***<br>(0.001)                    |                                              | 0.004<br>(0.002)                             |                                               | 0.003***<br>(0.001)                           |                                               |
| Observations                         | 131,166                                | 131,166                                | 34,488                                       | 34,488                                       | 96,678                                        | 96,678                                        | 96,617                                        |
| Event*Year FE                        | Yes                                    | Yes                                    | Yes                                          | Yes                                          | Yes                                           | Yes                                           | -                                             |
| Event*Country-Pair FE                | Yes                                    | Yes                                    | Yes                                          | Yes                                          | Yes                                           | Yes                                           | Yes                                           |
| Event*OriginCountry<br>Year FE       | -                                      | -                                      | -                                            | -                                            | -                                             | -                                             | Yes                                           |
| Event*DestinationCountry<br>Year FE  | -                                      | -                                      | -                                            | -                                            | -                                             | -                                             | Yes                                           |

Note: The table presents results of estimating the effect of tax arbitration on inward FDI stocks from OECD countries in all destination countries (Columns (1) and (2)), in developed destination countries (Columns (3) and (4)), and in developing destination countries (Columns (3), (4), and (5)). We employ a PPML estimator to account for the zero values of FDI stocks. Standard errors are clustered at the dataset-specific country-pair level in parentheses. \*, \*\*, and \*\*\* represent significance levels of 0.10, 0.05, and 0.01, respectively (two-tailed).

Table 5 FDI Response for Different Country Characteristics

|                                           | (1)                       | (2)                       | (3)                       | (4)                       | (5)                              |
|-------------------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|----------------------------------|
| Inward FDI stocks                         | All Destination Countries | All Destination Countries | All Destination Countries | All Destination Countries | Developing Destination Countries |
| Tax Arbitration                           | -0.084**<br>(0.041)       | -0.058<br>(0.042)         | -0.060<br>(0.042)         | -0.062<br>(0.042)         | 0.632**<br>(0.314)               |
| Tax Arbitration#Middle-Income Destination | 0.650***<br>(0.237)       |                           |                           |                           |                                  |
| Tax Arbitration#Low-Income Destination    |                           | 0.081<br>(0.133)          |                           |                           |                                  |
| Tax Arbitration#Worldwide Tax Systems     |                           |                           | 0.117<br>(0.128)          |                           |                                  |
| Tax Arbitration#Low Institutional Quality |                           |                           |                           | 0.664***<br>(0.128)       |                                  |
| Tax Sparing                               |                           |                           |                           |                           | 0.120***<br>(0.035)              |
| Observations                              | 131,068                   | 131,068                   | 131,068                   | 131,068                   | 35,679                           |
| Event*OriginCountry Year FE               | Yes                       | Yes                       | Yes                       | Yes                       | Yes                              |
| Event*DestinationCountry Year FE          | Yes                       | Yes                       | Yes                       | Yes                       | Yes                              |
| Event*Country-Pair FE                     | Yes                       | Yes                       | Yes                       | Yes                       | Yes                              |

Note: We present results for the effect of tax arbitration on inward FDI stocks conditional on origin-country characteristics and destination-country characteristics. In Columns (1), we differentiate between middle-income destination countries and other destination countries. In Column (2), we differentiate between low-income destination countries and other destination countries. In Column (3), we differentiate between origin countries with territorial tax systems and origin countries with worldwide tax systems. In Column (4), we differentiate between destination countries at the bottom 2 quintiles of *rule of law* and destination countries at the top 2 quintiles of *rule of law*. In Columns (5), we include *Tax Sparing* as one control variable. We employ a PPML estimator to account for the zero values of FDI stocks. Standard errors are clustered at the dataset-specific country-pair level in parentheses. \*, \*\*, and \*\*\* represent significance levels of 0.10, 0.05, and 0.01, respectively (two-tailed).

Table 6 Tax Arbitration and MNEs' Investments

| Nr subsidiaries                    | (1)<br>All<br>Destination<br>Countries | (2)<br>Developed<br>Destination<br>Countries | (3)<br>Developing<br>Destination<br>Countries | (4)<br>Developing<br>Destination<br>Countries |
|------------------------------------|----------------------------------------|----------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Tax Arbitration                    | -0.021<br>(0.025)                      | -0.016<br>(0.022)                            | 0.138***<br>(0.024)                           | 0.102*<br>(0.055)                             |
| Nr Arbitration Other               | -0.004***<br>(0.002)                   | -0.005***<br>(0.002)                         | 0.014*<br>(0.007)                             |                                               |
| Tax treaty                         | 0.125***<br>(0.025)                    | 0.196***<br>(0.032)                          | -0.004<br>(0.021)                             | 0.050***<br>(0.019)                           |
| Bilateral investment treaty        | -0.066***<br>(0.023)                   | -0.089*<br>(0.048)                           | -0.065***<br>(0.020)                          | -0.019<br>(0.016)                             |
| Bilateral EU membership            | 0.054**<br>(0.022)                     |                                              | 0.018<br>(0.020)                              | 0.054*<br>(0.029)                             |
| Ln destination GDP                 | 1.205***<br>(0.151)                    | 0.709**<br>(0.309)                           | 1.307***<br>(0.099)                           |                                               |
| Ln origin GDP                      | 0.822***<br>(0.204)                    | 1.127***<br>(0.268)                          | 0.149<br>(0.200)                              |                                               |
| Ln destination GDP per Capita      | -0.974***<br>(0.157)                   | -0.274<br>(0.327)                            | -1.216***<br>(0.105)                          |                                               |
| Ln origin GDP per Capita           | -0.657***<br>(0.212)                   | -0.979***<br>(0.284)                         | -0.046<br>(0.208)                             |                                               |
| Destination population growth      | 0.012***<br>(0.004)                    | -0.001<br>(0.005)                            | 0.030***<br>(0.007)                           |                                               |
| Destination Inflation              | 0.005***<br>(0.001)                    | 0.020***<br>(0.004)                          | 0.002***<br>(0.001)                           |                                               |
| Origin Inflation                   | 0.003<br>(0.003)                       | 0.008**<br>(0.003)                           | 0.001<br>(0.002)                              |                                               |
| Rate Difference                    | -0.005***<br>(0.002)                   | -0.009***<br>(0.003)                         | -0.000<br>(0.001)                             |                                               |
| Destination Political Stability    | -0.001*<br>(0.000)                     | 0.001<br>(0.001)                             | -0.000<br>(0.000)                             |                                               |
| Destination Regulatory Quality     | 0.000<br>(0.001)                       | -0.003*<br>(0.002)                           | 0.000<br>(0.001)                              |                                               |
| Destination Rule of Law            | -0.002**<br>(0.001)                    | -0.008***<br>(0.003)                         | -0.000<br>(0.001)                             |                                               |
| Destination Control of Corruption  | 0.001<br>(0.001)                       | 0.015***<br>(0.003)                          | -0.002***<br>(0.000)                          |                                               |
| Observations                       | 1,230,607                              | 658,798                                      | 571,809                                       | 563,752                                       |
| Event*Year FE                      | Yes                                    | Yes                                          | Yes                                           | -                                             |
| Event*Country Pair FE              | Yes                                    | Yes                                          | Yes                                           | -                                             |
| Event*Year*Industry FE             | -                                      | -                                            | -                                             | Yes                                           |
| Event*DestinationCountry*Year FE   | -                                      | -                                            | -                                             | Yes                                           |
| Event*OriginCountry*Year FE        | -                                      | -                                            | -                                             | Yes                                           |
| Event*Parent*DestinationCountry FE | -                                      | -                                            | -                                             | Yes                                           |

Note: The table presents results of estimating the effect of tax arbitration on the number of foreign subsidiaries in a destination country which are held by a parent firm from one OECD country. We focus on the subsample of all destination countries in Column (1), the subsample of developed destination countries in Columns (2), and the subsample of developing destination countries in Columns (3) and (4). We employ a PPML estimator to account for the countable dependent variable. Standard errors are clustered at the dataset-specific country-pair level in Columns (1), (2), and (4), at the dataset-specific parent-destination country level in Column (3). \*, \*\*, and \*\*\* represent significance levels of 0.10, 0.05, and 0.01, respectively (two-tailed).



Table 7 Additional Tests on All Destination Countries

| Nr subsidiaries                                                            | (1)                               | (2)                               | (3)                            | (5)                               |
|----------------------------------------------------------------------------|-----------------------------------|-----------------------------------|--------------------------------|-----------------------------------|
| Tax Arbitration                                                            | 0.025<br>(0.017)                  | 0.088*<br>(0.046)                 | -0.011<br>(0.015)              | -0.009<br>(0.024)                 |
| Non-very large parent                                                      | -0.728***<br>(0.026)              |                                   |                                |                                   |
| Tax Arbitration#Developing Destination                                     | -0.058<br>(0.092)                 | -0.187*<br>(0.110)                | 0.111*<br>(0.065)              | 0.012<br>(0.060)                  |
| Tax Arbitration#Non-very large parent                                      | -0.216***<br>(0.076)              |                                   |                                |                                   |
| Non-very large parent#Developing Destination                               | 0.354***<br>(0.033)               |                                   |                                |                                   |
| <b>Tax Arbitration#Non-very large parent#Developing Destination</b>        | <b>0.647***</b><br><b>(0.100)</b> |                                   |                                |                                   |
| Private parent                                                             |                                   | -0.530***<br>(0.020)              |                                |                                   |
| Tax Arbitration#Private parent                                             |                                   | -0.243**<br>(0.119)               |                                |                                   |
| Private parent#Developing Destination                                      |                                   | 0.139***<br>(0.025)               |                                |                                   |
| <b>Tax Arbitration#Private parent#Developing Destination</b>               |                                   | <b>0.676***</b><br><b>(0.155)</b> |                                |                                   |
| Tax Arbitration#Low Institutional Quality                                  |                                   |                                   | 0.082**<br>(0.041)             |                                   |
| <b>Tax Arbitration#Low Institutional Quality#Developing Destination</b>    |                                   |                                   | <b>0.041</b><br><b>(0.106)</b> |                                   |
| Intangible-Intensive parent                                                |                                   |                                   |                                | -0.301***<br>(0.011)              |
| Intangible-Intensive parent#Developing Destination                         |                                   | -0.117***<br>(0.043)              | 0.093**<br>(0.038)             | 0.084***<br>(0.017)               |
| Tax Arbitration#Intangible-Intensive parent                                |                                   |                                   |                                | 0.013<br>(0.102)                  |
| <b>Tax Arbitration#Intangible-Intensive parent# Developing Destination</b> |                                   |                                   |                                | <b>0.540***</b><br><b>(0.121)</b> |
| Observations                                                               | 1,230,336                         | 1,230,336                         | 1,230,336                      | 1,230,336                         |
| Controls                                                                   | Yes                               | Yes                               | Yes                            | Yes                               |
| Event*DestinationCountry*Year FE                                           | Yes                               | Yes                               | Yes                            | Yes                               |
| Event*OriginCountry*Year FE                                                | Yes                               | Yes                               | Yes                            | Yes                               |
| Event*Country Pair FE                                                      | Yes                               | Yes                               | Yes                            | Yes                               |

Note: We present results for the effect of tax arbitration on the number of foreign subsidiaries conditional on destination-country characteristics in the subsample of developing destination countries. In Column (1), we differentiate between very large parent firms and parent firms that are not very large in size. we differentiate between destination countries at the bottom 2 quintiles of *rule of law* and destination countries at the top 2 quintiles of *rule of law* in Column (2). We employ a PPML estimator. Standard errors are clustered at the dataset-specific country-pair level in parentheses. \*, \*\*, and \*\*\* represent significance levels of 0.10, 0.05, and 0.01, respectively (two-tailed).

## 9 Appendix

### Appendix A Variable Definition

| Variable                          | Definition                                                                                                                                                                                                                                                                                                       | Source                                 |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Inward FDI stocks                 | Bilateral inward FDI stocks in millions of US dollars.                                                                                                                                                                                                                                                           | UNCTAD                                 |
| Nr Subsidiaries                   | Continuous variable that equals to the number of foreign subsidiaries held by one parent firm $i$ in the destination country $j$ .                                                                                                                                                                               | Historical Orbis                       |
| Tax treaty                        | Dummy variable equals one if there is an effective treaty between the destination country and the origin country in year $t$ , and zero otherwise.                                                                                                                                                               | IBFD                                   |
| MAP dummy                         | Dummy variable equals one if the tax treaty includes mutual agreement procedures in year $t$ , and 0 otherwise.                                                                                                                                                                                                  | IBFD                                   |
| Tax Arbitration                   | Dummy variable equals one if the tax treaty includes MAP and the MAP includes arbitration provision in year $t$ , and 0 otherwise.                                                                                                                                                                               | IBFD                                   |
| Nr Arbitration Other              | Continuous variable that equals to the number of effective tax arbitrations between the destination country $j$ and the other 37 OECD countries, excluding the origin country in year $t$                                                                                                                        | IBFD                                   |
| Bilateral Investment Treaty       | Dummy variable equals one if the bilateral investment treaty between the destination country and the origin country are taken into effect in year $t$ , and zero otherwise.                                                                                                                                      | UNCTAD                                 |
| Rate difference                   | Statutory tax rates of origin country $j$ minus statutory tax rate of destination country $j$ .                                                                                                                                                                                                                  | Tax Foundation                         |
| Ln origin GDP                     | The logarithm of gross domestic product in current US-Dollar of origin countries.                                                                                                                                                                                                                                | World Bank                             |
| Ln destination GDP                | The logarithm of gross domestic product in current US-Dollar of destination countries.                                                                                                                                                                                                                           | World Bank                             |
| Ln origin GDP per Capita          | The logarithm of gross domestic product per capita in current US-Dollar of origin countries.                                                                                                                                                                                                                     | World Bank                             |
| Ln destination GDP per Capita     | The logarithm of gross domestic product per capita in current US-Dollar of destination countries.                                                                                                                                                                                                                | World Bank                             |
| Origin inflation                  | Continuous variable that measures inflation (consumer prices) in percentage of origin countries.                                                                                                                                                                                                                 | World Bank                             |
| Destination inflation             | Continuous variable that measures inflation (consumer prices) in percentage of destination countries.                                                                                                                                                                                                            | World Bank                             |
| Bilateral EU membership           | Dummy variable that equals 1 if the origin country and the destination country both are members of the EU in year $t$ , and 0 otherwise.                                                                                                                                                                         | IBFD                                   |
| Destination population growth     | Continuous variable that measures annual population growth rate per year of destination countries.                                                                                                                                                                                                               | World Bank                             |
| Destination Political Stability   | Continuous variable that measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism, in destination countries.                                                                                                                                   | WGI                                    |
| Destination Regulatory Quality    | Continuous variable that captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development, in destination countries.                                                                                           | WGI                                    |
| Destination Rule of Law           | Continuous variable that captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence, in destination countries. | WGI                                    |
| Destination Control of Corruption | Continuous variable that captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests, in destination countries.                                                | WGI                                    |
| Low Institutional Quality         | Dummy variable that equals 1 if destination countries are at the bottom 2 quintiles of rule of law, and 0 otherwise.                                                                                                                                                                                             | Author's calculation                   |
| Middle-Income Destination         | Dummy variable that equals 1 if the destination country is categorized as upper-middle-income or lower-middle-income countries, and 0 otherwise.                                                                                                                                                                 | World Bank                             |
| Low-Income Destination            | Dummy variable that equals 1 if the destination country is categorized as lower-income countries, and 0 otherwise.                                                                                                                                                                                               | World Bank                             |
| Developing Destination            | Dummy variable that equals 1 if the destination country is categorized as lower-income countries, upper-middle-income, lower-middle-income countries, or with a GDP per capita lower than the minimum GDP per capita of high-income countries, and 0 otherwise.                                                  | World Bank                             |
| Worldwide Tax Systems             | Dummy variable that equals 1 if the origin country has worldwide tax system in year $t$ , and 0 otherwise.                                                                                                                                                                                                       | Azmar and Dharmapala (2019); Kohlhasse |

|                             |                                                                                                               |                              |
|-----------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------|
|                             |                                                                                                               | And Pierk (2020);<br>EY 2013 |
| Non-very large parent       | Dummy variable that equals 1 if Orbis does not classify parent firm as very large companies, and 0 otherwise. | Historical Orbis             |
| Private parent              | Dummy variable that equals 1 if parent firms are unlisted or delisted companies and 0 otherwise.              | Historical Orbis             |
| Intangible-Intensive parent | Dummy variable that equals 1 if parent firms operate in an intangible-intensive industry, and 0 otherwise.    | Historical Orbis             |

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## Appendix B: Methodology for Collecting Treaty-Related Data

- 1) **Extracting all bilateral tax treaties (BTTs) on income and capital**  
We focus on 38 OECD member countries and extract 2,341 BTTs from IBFD. Treaties were collected by selecting one OECD member country at a time and retrieving all treaties in English version involving that country.
- 2) **Extracting mutual agreement procedures (MAPs)**  
We extract MAP articles from all treaties and download them in Excel format from IBFD.
- 3) **Automated text filtering and data extraction using Python**  
Using Python-based text filtering with regular expressions (`re.findall()`), we extract relevant treaty content. Specifically, we extract key terms, including 'mutual agreement procedure', 'MAP', 'arbitration', and 'arbitrator', count their appearances per treaty, and store each count as a separate variable in a pandas DataFrame. Additionally, we extract metadata such as effective date, country-pairs, termination date, status, ensuring that each extracted value is stored as a distinct column (feature) in the DataFrame. Finally, we merge all extracted values into a single structured dataset, where each treaty is represented as one row, and all extracted features—including keyword counts and treaty metadata—are stored as distinct columns. The final dataset is then exported to CSV format for further analysis.
- 4) **Manual verification of arbitration-related provisions**  
We manually review all treaties mentioning "arbitration" or "arbitrator" to verify the accuracy of automated extraction and to identify the effective adoption year of tax arbitration clauses.
- 5) **Manual review of treaties without MAPs**  
For treaties that do not explicitly mention mutual agreement procedure' or 'MAP', we manually review the full text and all treaties involving the same country-pair to determine the adoption or termination year of MAP provisions.
- 6) **Determining effective and termination years**  
We refine the extracted data to extract effective and termination year for each bilateral tax treaty, MAP provisions and tax arbitration clauses.
- 7) **Merging extracted treaty data with macro- and micro-level investment data**  
We map treaty provisions to inward FDI stocks at the country-pair level and number of subsidiaries at the parent firm level date based on the parent and subsidiary countries.