Non-trade provisions in trade agreements and FDI

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Abstract:

Preferential trade agreements (PTAs) increasingly feature a variety of provisions related to economic and social rights (ESR), environmental protection (EP), and civil and political rights (CPR). In this paper we estimate the effect of the degree of legalization of PTAs in these non-trade provisions on the flow of bilateral greenfield FDI. We explore this relation in a structural gravity setting and find that all three types of non-trade provisions affect the flow of FDI negatively. This effect is driven by investments directed to middle- and low-income countries, in particular for more directly economically relevant (ESR and EP) provisions. These latter are also found to have a larger negative impact on FDI between origin-destination country-pairs which differ the most in their overall commitment on non-trade issues in PTAs with third parties.

Keywords: FDI, preferential trade agreements, non-trade provisions, gravity equations

JEL codes: F13, F15, F21

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1. Introduction

Preferential Trade Agreements (PTAs) have become increasingly complex instruments of economic integration. Other than to exchange reciprocal market access through tariff and non-tariff reductions, countries have used PTAs to regulate cross-border issues related to investment, competition, services, technical and sanitary standards, and intellectual property rights. In addition, more recently, non-trade issues related to economic and social rights (ESR), environmental protection (EP), and civil and political rights (CPR), have progressively become part of PTAs (Lechner, 2016; Morin et al., 2018; Raess and Sari, 2018). A prominent example is given by the EU, which in 1995 decided to include non-trade issue clauses in all its trade agreements (Borchert et al., 2021).

Due to the complexity of PTAs and the variety of motives for FDI, the relation between PTAs and FDI is not a simple one. PTAs are generally associated with an increase in trade between the parties, but the effect of a PTA on FDI can depend on whether trade and FDI complement or substitute each other. *Horizontal* FDI, with which firms replicate their domestic activities abroad, are a substitute for trade, and are likely to be affected negatively by a PTA (Bergstrand and Egger, 2007). *Vertical* FDI, performed by firms that seek to source inputs from abroad or that separate production stages across countries, are instead more likely to be complementary to trade, and are therefore likely to increase in response to a PTA (Anderson et al. 2019; Markusen 2002; Osnago et al., 2020). Further, there can be more complex FDI strategies such as export-platform FDI (Chen 2009; Ekholm et al., 2007) and "mixed-motives" characterized by various degrees of 'horizontal-ness' and 'vertical-ness' (Baldwin and Okubo, 2014).

This paper studies the effect of PTA provisions not directly related to trade (henceforth non-trade issues, or NTIs) on bilateral greenfield FDI flows. For-instance, the recent EU agreements with Georgia, Moldova and Ukraine, or the FTA between the US and Chile, feature, other than the elimination of tariffs and non-tariff barriers, also a substantial number of provisions related to

economic and social rights and environmental protection. Our aim is to explore to what extent these provisions affect the flow of FDI between the parties of such agreements. We exploit data on bilateral greenfield FDI from *fDi Markets* for a large number of countries, over the period 2003-17, matched with data on the 'NTI-content' of PTAs from Lechner (2016). We adopt a structural gravity setting and estimate the effect that the introduction of the various NTIs – economic and social rights, environmental protection, and civil and political rights – has on FDI.

We are not aware of previous works studying this issue in a gravity-type setting[1], hence the main contribution of this paper is to unveil robust empirical regularities, rather than testing a specific theoretical proposition. The expected relationship between NTIs and FDI is an empirical question, as there can be a variety of effects at work. On the one hand, stronger commitments on labour standards and environmental protection could hinder the entry of multinational enterprises (MNEs) into certain markets due to higher costs – both fixed and variable (Friedman et al., 1992; Becker and Henderson 2000; Javorcik and Spatareanu, 2005; Dean et al., 2009; Hanna, 2010; Olney, 2013; Chung, 2014; Cai et al, 2016; Moriconi et al, 2020; Dong et al, 2021).[2] On the other hand, progress on governance and the strength of institutions could signal a more stable and safe business environment and increase incentives to invest (Harms and Ursprung, 2002; Bénassy-Quéré el al., 2007; Busse and Hefeker, 2007; Lucke and Eichler, 2016; Yu, 2021), although the reverse has also been found (Li and Resnick, 2003; Adam and Filippaios, 2007; Kim, 2010).[3] Finally, there could also be a zero effect of NTIs on FDI, where NTIs primarily serve to prevent

[1] Lechner (2018) explores the effect of NTIs on sectoral FDI data for the US. We will refer more in detail to her contribution below. At the time of writing, there is also ongoing work by Hugo Rojas-Romagosa on the relation between NTIs and FDI. He exploits FDI data from UNCTAD (instead of fDI Markets), which include mergers and acquisitions besides greenfield investment, and preliminary results appear to differ from those reported in this paper.

[2] Effects could also differ across industries, with more polluting and low-skilled sectors being negatively affected by higher environmental and labour standards, and vice versa (Lechner, 2018). Our data prevent us from exploring industry-level effects, however.

[3] Egger and Winner (2005) and Lucke and Eichler (2016) also find corruption to be a stimulus for FDI.

the worsening of certain minimum environmental or labour standards, or simply lack effectiveness where they do not translate into credible commitments.

We find that the degree of *NTI legalization*[4] of PTAs has a negative effect on bilateral greenfield FDI. This is found for all three types of NTIs (ESR, EP, and CPR provisions) that we study, with the effect being robust to controlling for the overall depth of a PTA, the presence of substantive investment-specific provisions, the existence of a bilateral investment treaty, and EU single-market membership. This negative effect appears to be driven by FDI directed to middle- and low-income countries (henceforth referred to as 'South')[5], especially for ESR and EP provisions, which are likely to affect developing countries' competitive advantage (Busse, 2002; Blümer et al., 2019). The negative effect of ESR and EP provisions on FDI directed 'South' can be interpreted in light of the willingness of economies with high labour and environmental standards to use such provisions to level the playing field with competitors, and ensure they do not relax their standards to attract trade or investment (Bhagwati, 1995; George, 2014).[6] Our results, furthermore, are aligned with those of Berger et al. (2020) and Lopez-Vicente et al. (2020) about, respectively, the negative impact of environmental[7] and labour clauses in PTAs on 'South-North' trade.[8]

We then explore additional hypotheses, to qualify our findings and to help explain our empirical results. First, following the argument that cross-border cost-saving investments might be

[4] This measure, constructed by Lechner (2016), captures not only the presence of NTI provisions, but also their level of obligation, precision, and delegation. More details on the construction of this measure are provided in Section 2.
[5] Countries have been grouped according to the 2020 World Bank income per capita classification.
[6] This is the most important objective motivating the inclusion of environmental protection provisions in PTAs, according to an OECD survey of 31 member countries (George, 2014).
[7] Brandi et al. (2020) qualify the results of Berger et al. (2020), finding that environmental provisions in PTAs reduce exports from developing countries in 'dirty' sectors, and promote exports in 'green' sectors.
[8] In contrast to Lopez-Vicente et al. (2020), Carrère et al. (2021) find that labour clauses in PTA stimulate trade from developing to high-income countries. Conceptually, however, both results are compatible with our findings for FDI as, on the one hand, trade and FDI could be affected similarly by NTIs (in case trade and FDI complement each other), and other hand, labour clauses in PTAs could have a direct effect on FDI. Importantly, however, in support of the findings of Carrère et al. (2021) we also find that South-North FDI are affected positively by some NTIs (EP and CPR provisions), and unaffected by ESR provisions. More details on our findings are provided in Section 4.

stimulated by asymmetries in regulation between origin and destination countries (e.g. List et al., 2003; Davies and Vadlamannati; Olney, 2013, Cai et al., 2016), with NTIs often being directed at reducing such asymmetries (George, 2014), we investigate whether the effect of NTIs depends on the *difference* between the origin and the destination country's overall commitment on non-trade issues in PTAs with third parties. The rationale behind this exercise is to proxy a country's level of regulations in a certain non-trade area with its 'stock of NTIs' in PTAs with third parties, and to explore heterogeneity in *the difference in the 'stock of NTIs'* between origin and destination countries, to assess whether NTIs might be deterring FDI where the gap in regulation asymmetries is widest. In line with our expectations, we find that, for more directly economically relevant (ESR and EP) provisions, the negative effect of NTIs on FDI is largest for, and almost entirely driven by, country-pairs with the largest negative *difference* in the 'stock of NTIs', i.e. when the destination country has substantially lower 'stock of NTI' with third parties than the origin country. FDI in these latter pairs are likely to flow from stricter- to laxer-regulation countries, and might be relatively more deterred by non-trade commitments that reduce the profitability of such investments. This exercise indirectly suggests than NTIs in PTAs might have the role of closing the gap between countries' regulation asymmetries, and could counteract the tendency to a 'race to the bottom' which can result from countries' attempts to undercut each other's standards.

Next, and relatedly, we examine the role of a destination country's 'stock of NTIs' with third parties. FDI directed to a country whose existing PTAs contain several NTIs might respond less to NTIs in a *new* PTA, relative to FDI to countries whose PTAs contain fewer non-trade commitments. We find that, for ESR and EP provisions, it is FDI to countries with a below median stock of NTIs to be most negatively affected by NTIs in new PTAs. This suggest that NTIs might be introducing costs and barriers which are more FDI-deterring where such barriers are initially lowest. Results are less clear-cut than those for the difference in the stock of NTI between origin and destination, however, this pointing to the relevance of the *asymmetries* in regulations, rather than their *level*.

We also investigate whether FDI responds differently to PTAs of countries which, for both political and economic reasons, tend to leverage their economic and normative weight to demand the inclusion of more numerous and stricter NTIs in their agreements (e.g. the EU, the US, or the EFTA countries). We find that NTIs in PTAs of demanding countries have no effect on FDI (except for CPR provisions in EU PTAs), suggesting that these clauses might reflect already widespread practices in the demanding country, with no great influence on MNEs' activity.

Finally, we explore whether the NTI-FDI relation is of a bilateral nature, or whether the NTIs contained in the PTAs a country is a member of affect its *overall* inflow of FDI. To put this differently, suppose two countries sign a trade agreement containing some NTIs, e.g. Korea with the US: do these NTIs affect only Korea-US FDI, or also FDI from third countries directed to Korea and the US? To explore the latter effect, we aggregate the data from the bilateral to the country-year level and find, again, that a country's total FDI inflow is negatively affected by the average NTI legalization of its PTAs. The country-level estimates are, however, slightly less robust than those obtained at the bilateral level: so, even if we cannot exclude that NTIs might have an impact on FDI from third countries, we retain the bilateral-level the main dimension through which NTIs exert their effect on FDI.

Our findings unveil a potential risk for developing countries when entering into PTAs with NTIs. Against the view that NTIs constitute legal inflation of PTAs, or amount to 'symbolic regulation' (Peacock, 2018), we add to the body of evidence suggesting that non-trade provisions in PTAs have economic effects, in particular for developing countries, on which these clauses are often imposed, or that accept them in exchange for market access to high-income economies (Limão, 2007).[9] We do not intend to suggest that NTIs are undesirable elements of PTAs, as they could

[9] Being able to extract cooperation from a partner country, even if economically smaller, could be so relevant to induce large high-income countries such as the EU or the US to maintain higher multilateral tariffs: the latter allow to offer deeper PTA preference margins, in exchange for cooperation on non-trade issues (Limão, 2007).

lead to progress on human and labour rights (which we do not examine in this work), but being aware that there can be negative economic repercussions is certainly of relevance.

Although the research question that we explore is novel to the literature, this paper places itself at the intersection of three main strands of the literature, to which we contribute. First, we add to the studies investigating the economic effect of trade agreements[10] (among many others, Baier and Bergstrand, 2007; Egger et al., 2011; Heid et al, 2021; Olivero and Yotov, 2012) and the effect on FDI in particular (Bergstrand and Egger, 2007, 2010; Chen, 2009; Ramondo, and Rodríguez-Clare, 2013; Anderson et al, 2019; Kox and Rojas-Romagosa, 2020). Second, we contribute to the recent literature investigating the non-trade content of trade agreements (Lechner, 2016; Morin et al., 2018; Raess and Sari, 2018; Borchert et al., 2021) and its impact on trade (Berger et al., 2020; Brandi et al., 2020; Lopez Vicente et al., 2020; Osnago et al., 2020; Carrère et al., 2021) and FDI (Lechner, 2018). Third, we add also to a rich literature on the determinants of FDI[11], in particular to those studies concerned with how investors respond to labour and environmental regulations (among others, Friedman et al., 1992; Javorcik and Spatareanu, 2005; Dean et al., 2009; Hanna, 2010; Olney, 2013; Chung, 2014; Cai et al, 2016; Moriconi et al, 2020; Dong et al, 2021), as well as to the protection of political and civil liberties and the level of democracy (Harms and Ursprung, 2002; Li and Resnick, 2003; Adam and Filippaios, 2007; Guerin and Manzocchi, 2009; Ali et al., 2010; Lucke and Eichler, 2016).[12]

The two papers closest to ours are Kox and Rojas-Romagosa (2020) and Lechner (2018). Kox Rojas-Romagosa (2020) investigate the impact of PTAs and bilateral investment treaties on FDI: we follow their approach in specifying our empirical exercise and extend the analysis to how NTIs in PTAs affect FDI. Lechner (2018) uses the same NTI data we exploit in this paper to investigate

[10] For a recent survey on the economic effects of PTAs see Baccini (2019).
[11] See Blonigen (2005) and Paul and Singh (2017) for comprehensive reviews.
[12] Relatedly, we also speak to a political science and international business literature, which has investigated the relevance of higher or lower standards in attracting investors, both domestic and foreign, with mixed conclusions (e.g. Woods, 2006; Koniski, 2008, Rivera and Oh, 2013).

the effect of ESR and EP provisions in US FTAs on FDI, and distinguishes among sectors with heterogenous cost-sensitivities towards environmental and labour standards. Our dyadic bilateral FDI data lacks the sector dimension and therefore precludes us from exploring sector-heterogeneity; however, our data spans a large set of countries allowing us to perform rigorous structural gravity estimations, to explore various hypotheses as for how NTIs affect FDI, and to estimate separate effects for FDI directed to and originating from developing countries.

The remainder of this paper is organized as follows. Section 2 describes the data and provides some descriptive evidence of the growing role of NTIs in PTAs. Section 3 outlines our empirical strategy. Section 4 exposes the main results. In section 5 we perform additional exercises to help interpret and qualify our findings. Section 6 concludes.

2. Data

We exploit data on bilateral FDI from the *fDi Markets* Database, collected by the FDI Intelligence Unit of the Financial Times. This database reports accurate information on all (announced) greenfield investment projects since 2003, and covers all sectors and countries worldwide. Our main sample of analysis includes 71,572 greenfield investments directed to 172 destination countries and originating from 147 origin countries, over the 2003-2017 period. Where possible, *fDi Markets* also collects information on the value of the investment and the number of jobs associated with the FDI project undertaken by a firm. This information, however, is not very useful in practice, as it is available for only a small fraction of the projects[13] and is estimated by *fDi Markets*

[13] Breinlich et al (2020) estimate the fraction of investment in *fDi Markets* with information on the value invested to be about 20% of all projects. As the sample in Breinlich et al. includes only investment made by EU firms, this fraction is likely to be significantly lower in our sample, as we include all investment projects worldwide.

for the remaining cases. For this reason, similarly to other studies exploiting this dataset (Fiorini et al., 2017; Breinlich et al., 2020) we only rely on the count of FDI for our empirical analysis.

Figure 1 depicts the growth of greenfield FDI in our sample over time. We grouped the investments into four categories of flows, depending on the income per capita of origin and destination countries.[14] This allows us to inspect both the composition of the sample under analysis and its changes over time. The bulk of investments are performed among 'North' (high-income) countries, with the second largest group being 'North-South' investments. Investment originating in 'South' (middle and low-income) countries are considerably fewer. 'North-North' FDI also exhibit the fastest growth, in particular over the period leading up to the 2008-09 financial crisis, and over the last few years included in our data. This stark difference in FDI numbers and trends among these four categories is addressed in our empirical analysis, where we estimate the effect of NTIs on FDI separately by the four FDI groups.

Figure 1. Number of FDI projects over time, by country groups

Note: we separate the countries in our data in North countries (high-income) and South countries (middle- and low-income) according to the 2020 World Bank income-per capita classification.
Source: authors' elaboration on *fDI Markets* data.

[14] 'North' countries (high-income) and 'South' countries (middle- and low-income) according to the 2020 World Bank income per capita classification.

Data on non-trade related issues in PTAs are taken from Lechner (2016). Lechner codes the NTI-content of PTAs and derives a score of legalization for each PTA, separately for the three areas of economic and social rights, environmental protection, and civil and political rights.[15]

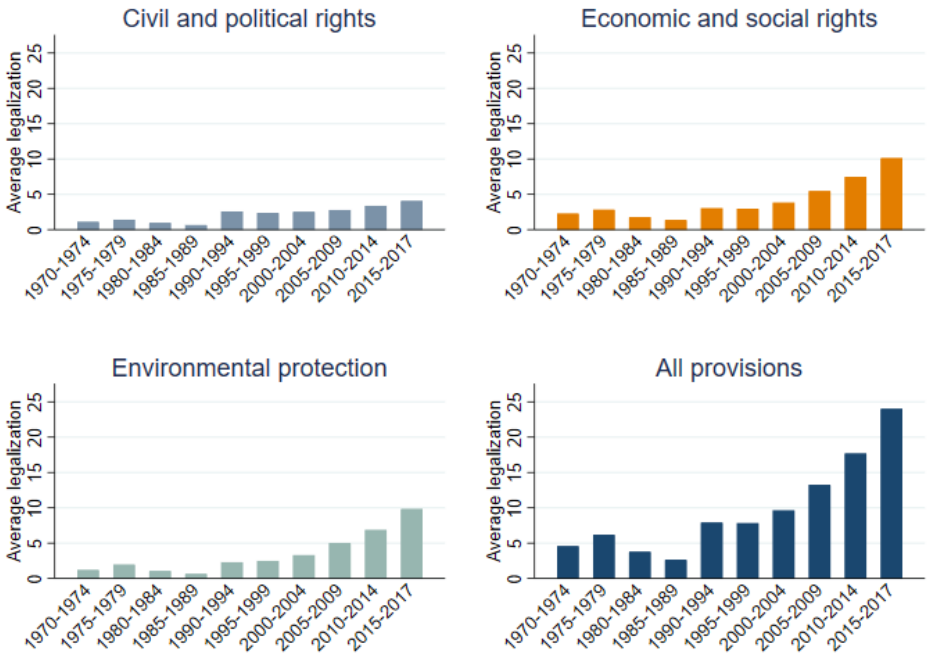
The legalization score is constructed following Abbot et al. (2001) and is defined along the three dimensions of *obligation*, *precision* and *delegation* of a PTA in a certain NTI area. *Obligation* refers to the extent to which trading partners are legally bound by rules or commitments; *precision* refers to the degree to which the rules are unambiguous; *delegation* refers to the degree to which third parties have been granted authority to implement, interpret, apply the rules and resolve disputes. For example, among environmental protection provisions, Lechner (2016) identifies whether a PTA contains a clause regulating air pollution, whether this clause is in the main text of the agreement (higher obligation), whether it refers to an international treaty regulating air pollution (higher precision), and whether the PTA foresees that the parties consult International Organizations, NGOs or experts (higher delegation). Other examples, among ESR provisions, are whether a PTA contains a clause on standards of living, or on minimum age at work, or on prohibition of forced labour.[16] The content of each PTA in terms of *obligation*, *precision* and *delegation* of various types of NTI clauses is coded and a legalization score is assigned by aggregating the three dimensions for each area of CPR, ESR and EP related provisions. A PTA characterized by extensive legalization demands greater commitment towards NTIs. There are alternative data sources on the content of PTAs (e.g. Hofmann et al., 2017), but we opted for Lechner (2016) as she includes information on the Civil and Political rights content of PTAs, which we consider a potentially relevant determinant

[15] Economic and social rights provisions include the right to education, the right to work, rights at work, the right to development, and the right to health. Environmental protection provisions concern the care for natural resources (water, soil, forest), the reduction of air pollution and waste, and the protection of wildlife. Civil and political rights provisions include human dignity, the right to political participation, the right to free movement, women's and children's rights, minority protection, and the rule of law (Lechner, 2016).

[16] The data structure of Lechner (2016) is very rich: she codes 262 data points, then aggregated in 101 variables, referring to various CPR, ESR and EP clauses that can be contained in PTAs and their degree of obligation, precision and delegation.

of FDI, other than providing a continuous legalization score (instead of a binary variable for the presence of NTIs), which allows us to exploit the extent to which NTIs are covered in PTAs.

Figure 2. Evolution of Non-Trade Issues, by type



Source: authors' elaboration on data from Lechner (2016).

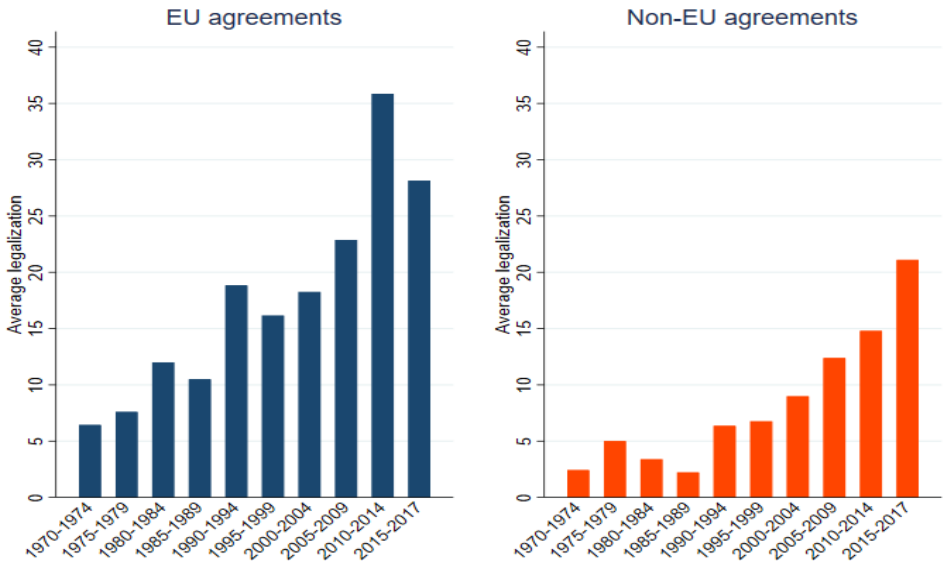
We also use data from Design of Trade Agreement (DESTA) database (Dür et al., 2014). In particular, we exploit the Depth Index, which captures the presence of seven different provisions in PTAs: full tariff reductions, provisions on common standards, services trade provisions, competition policy provisions, provisions on public procurement, investment and intellectual property rights. The index ranges from one to seven, depending on how many provisions are present in each trade agreement.[17]

Finally, we use data from UNCTAD on bilateral investment treaties (BITs), from which we are able to distinguish between BITs that were only signed and BITs that actually entered into force[18].

[17] The Depth Index captures content of PTAs which differs from that of the NTI provisions, with no overlap between the two variables.

[18] We thank Valentino De Silvestre from the World Trade Institute, who compiled and shared the data with us.

Figure 3. Evolution of Non-trade Issues, by EU and non-EU agreements



Source: authors' elaboration on data from Lechner (2016).

Figure 2 and 3 are constructed exploiting the full data from Lechner[19] (i.e. before merging them with the FDI data). Figure 2 shows the evolution of NTI legalization scores, across the three categories of CPR, ESR and EP provisions.[20] We average the legalization scores across PTAs which entered into force within 5-year intervals, from 1970 up to the most recent ones. All three types of NTIs saw an increase in legalization, in particular since the mid-1990s. The economic-related NTIs, ESR and EP provisions, saw a faster growth in legalization than CPR provisions, possibly signalling a growing tendency of exploiting PTAs to establish a level-playing field among trade partners through these NTIs.

The European Union has often been considered a key actor in pursuing non-trade policy objectives within its trade policy (see Borchert et al., 2021 for an analysis of NTIs in EU agreements). This is reflected in Figure 3, which shows the evolution of all NTIs in EU and non-EU PTAs: the average legalization scores are substantially higher in EU PTAs, across the entire time period.

[19] These data are available to download at http://www.lisalechner.com/data.html.
[20] The maximum possible legalization score varies across the three NTI categories, depending on the issues specific to each category included in the analysis: 31 for civil and political rights, 37 for economic and social rights, and 33 for environmental protection. Therefore, the maximum possible overall legalization score per agreement is 101.

However, even if the level of legalization is different, the growth of NTIs' legalization is comparable across EU and non-EU PTAs, with the latter showing a marked increase in the last decade.

Figure 2 and 3 still mask considerable heterogeneity across the various PTAs. Most PTAs, in fact, contain some NTIs, with only 111 agreements out of 663 having an overall legalization score of zero. The share of zero-score legalization agreements, furthermore, decreases sharply over time, with only 16 out of 281 PTA signed after 2000 having a zero score.

To provide more insights on NTI heterogeneity across PTAs which is more directly relevant to our empirical analysis, Table 1 provides some summary statistics calculated out the estimation sample.[21] We use data on 285 PTAs, in force between 2003 and 2017: these PTAs have an average ESR legalization score of 5.25, an average EP score of 4.68, and an average CPR score of 2.89. We also report the average depth of these PTAs (DESTA Depth Index), which is 3.6.

Table 1: legalization scores across groups of PTAs

	(1)	(2)	(3)	(4)
Sample	All FDI	North-North FDI	South-South FDI	North-South/South-North FDI
Mean ESR score	5.25	7.72	4.03	6.37
Mean EP score	4.68	6.97	3.36	5.72
Mean CPR score	2.89	3.35	2.57	3.44
Mean Depth (DESTA)	3.60	5.04	2.69	3.97
No. PTAs	285	68	123	141
No. PTAs with zero legalization	16	1	8	9

Source: authors' elaboration on Lechner (2016) and fDI Markets data.

These average scores vary considerably across agreements. In columns 2-4 of Table 1 we recalculate these statistics distinguishing between PTAs in force across countries belonging to the

[21] This sample arises from matching the NTI data from Lecher with the dyadic FDI data from fDI Markets, restricting the observations to country-pairs members of PTAs. More details on our empirical approach are in section 3.

North-North, South-South and North-South (or South-North) subgroups[22], with the average ESR, EP and CPR score being highest for the first subgroup, and lowest for the second.

3. Empirical strategy

We exploit a partial equilibrium[23] structural gravity approach to analyse the effect of NTIs in PTAs on the flow of bilateral FDI between the countries part of the agreement. Unlike a recent literature proposing complex models requiring data calibration exercises to explain the interrelation between trade, FDI and multinationals' behaviour (Bergstrand and Egger, 2007, 2010; Ramondo and Rodriguez-Clare, 2013; Anderson et al., 2019), we opt for following the approach of Kox and Romagosa (2020) in specifying our estimating equation. The main advantage of this partial equilibrium approach is that we explain bilateral FDI patterns with a very parsimonious model, which is less data demanding, and which can be accurately estimated.[24]

Our empirical model explains the main push and pull factors for FDI, which are directly and indirectly linked to countries' GDP, and also accounts for absolute and relative bilateral FDI frictions. An absolute FDI friction is a barrier to FDI inflows in the host country that does not depend on the home country of the firm performing the investment: it's an explicit restriction (e.g. a legal barrier) that constrains FDI. A relative FDI friction is a barrier that favours or hinders FDI in the host country, as opposed to other countries: this can consist in economic or fiscal factors which make a certain destination more or less attractive to foreign investors. The amount of

[22] Note that PTAs can belong to more than one of these subgroups, as some agreements include groups of countries with heterogenous income. This is evident from the figures at the bottom of Table 1, as the sum across columns 2-4 exceeds the total in column 1. EU agreements are an important example of PTAs entering all subgroups, as Romania and Bulgaria (EU members) are classified as South countries, while other EU members are classified as North countries.

[23] We focus on the direct effect of NTIs in PTAs on FDI, and are not concerned with the trade or the general equilibrium effects (i.e. welfare effect) of PTAs.

[24] The above-mentioned works aim to explain trade and FDI within the same model, which we do not do. We refer the reader to Kox and Romagosa (2020) for a discussion about advantages and shortcomings of large integrated models for trade and FDI.

bilateral FDI is expected to increase with lower absolute and relative FDI frictions. NTIs in PTA could either lower both types of frictions, or increase them. Hence, as mentioned above, there is no clear *a-priori* expectation of the impact of NTIs on FDI. This paper provides an empirical test of this relationship.

We face several choices and challenges in the empirical exercise we perform, due to the nature of the data and, mainly, because of endogeneity concerns that need to be addressed.

We exploit a 'rectangular'[25] dyadic country-pair-year dataset including a large number of countries, which is an advantage of the *fDI Markets* dataset. This also implies, however, that there is a large fraction of zero FDI flows in the data, and potentially important heteroskedasticity issues due to the presence of many small countries. We address these issues by estimating our models with a Poisson Pseudo Maximum Likelihood (PPML) estimator (Santos Silva and Tenreyro, 2006), in line with the recent literature (Yotov et al., 2016; Larch et al., 2019). Another obvious reason to exploit a Poisson estimator is that we have a count variable on the left-hand-side of our model.

Next, a positive or negative correlation between NTIs and bilateral FDI could be explained by reverse causality or omitted variable bias. Countries with large FDI flows could decide to sign agreements with a larger NTI content, or vice versa. Alternatively, there could be unobservable factors, either specific to a country or to a country-pair, affecting both the NTIs in a PTA and the flow of FDI. To address these endogeneity issues, we include a restrictive set of fixed effects at the destination country-year, origin country-year and destination-origin pair level, and estimate the model with the recent PPML estimator developed by Correia et al. (2019).[26]

The country-year fixed effects capture any time-variant country characteristic which could affect its FDI inflow and outflow such as its business cycle, labour market regulations, national policies, or the overall level of openness to FDI. Further, these fixed effects also account for the multilateral

[25] We expanded the data to include all country-pair combinations in all years.
[26] This estimator allows us to include these three sets of high-dimensional fixed effect in a PPML estimation.

resistance terms of the gravity equation, which capture the fact that the decisions made by multinationals to invest in a particular destination are not independent on their investment decisions into other countries (Olivero and Yotov, 2012; Kox and Romagosa, 2020).[27]

The country-pair fixed effects control for any country-pair specific time-invariant factor that could affect bilateral FDI, or the 'NTI-content' of a PTA, such as relative operating costs, relative labour costs, distance, former colonial ties, communication (language), or similarity in legal systems. Country-pair fixed effects have been proven to be a better measure of bilateral costs than a set of standard gravity variables (Egger and Nigai, 2015). Importantly, the use of country-pair fixed effects also eliminates or accounts for the time-constant unobservable linkages between the endogenous trade policy covariate (the NTIs) and the error term in gravity regressions (Baier and Bergstrand, 2007; Yotov et al., 2016).[28]

Although our specification with the three sets of fixed effects is already very strict, and absorbs a long list of FDI explanatory factors, we also add country-pair time-varying variables to our estimating equation, in the attempt to control for time-varying factors which could be relevant in explaining FDI patters: a dummy variable identifying country pairs with a bilateral investment treaty (BIT) in force, a dummy variable identifying country-pairs belonging to the EU single market, a dummy for the presence of substantive investment-related provisions in the agreement, and a measure of the depth of the PTA. The two latter controls, taken from DESTA (Dür et al., 2014), are of relevance as we want to avoid the NTI variables to capture the presence of a deeper agreement in general, or an agreement particularly suited at stimulating FDI.[29]

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[27] In other words, the multilateral resistance terms in a gravity equation for FDI capture the attractiveness of alternative locations for investors in a certain country (Fiorini et al., 2017).

[28] There are alternative methods, based on control functions and instrumental variables to account for endogenous trade policy variables (e.g. Egger et al. 2011, Osnago et al. 2020). However, in our panel data context characterized by a large fraction of zero FDI flows, we considered the option of a PPML estimator with country-pair fixed effect to be the preferred approach.

[29] The depth index from DESTA, ranging from 1 to 7 depending on how many areas are covered in the PTA, is a "count" indicator. This implies that PTAs with the same index value could feature different kinds of provisions. For this reason, we separately control for the existence of investment provisions.

We go beyond adding fixed effects and control variables, and restrict our sample to countries with bilateral PTAs in place.[30] This step is important for two reasons. First, when estimating the effect of NTIs on FDI, we limit the control group to countries with PTAs and, as we use country-pair fixed effect, we allow the effect of NTI on FDI to be identified only within pairs in PTAs whose number of NTIs changes over time. This allows us to avoid the reverse causality concerns coming from countries signing PTAs due to a large flow of FDI. Second, given the complex relation between PTA-formation and FDI (due to various FDI motives), and the impossibility to separate horizontal from vertical FDI in our data, restricting the sample to countries in PTAs allows us to focus on the impact of NTIs on FDI, rather than including also the PTA effect which could be of either sign.[31]

We also account for the effect of national non-discriminatory policies. These are policies which are not bilateral in nature, and might well not explicitly discriminate foreign investments, but might affect the overall level of FDI. To account for these policies, we follow Heid et al. (2021), which estimate the structural gravity model including both international and intra-national trade flows.[32] We mimic this approach by including in our data intra-national investment flows: as our bilateral FDI flow measure is the number of bilateral investment projects (rather than their value), we proxy domestic investment flows with the total number of FDI received by a country in a year (under the implicit assumption that domestic investment is at least as large as the total inward FDI).[33]

[30] We also exclude the few PTAs with a DESTA depth-index of zero. The same strategy is adopted by Carrere et al. (2021).

[31] Our main results are qualitatively (and mostly also quantitatively) upheld when we estimate the models presented in this paper by including country pairs without a PTA, and controlling for the existence of a PTA with a binary PTA-dummy (which takes a positive and significant coefficient in most specifications). These results are available upon request from the authors.

[32] Including both international and intra-national data in a gravity model also provides a theoretically consistent identification of bilateral policies, and resolves the "distance puzzle", as it accounts for both foreign and domestic distances (Yotov et al., 2016).

[33] Exploiting the mean number of inward FDI instead of the total makes no difference to our empirical findings.

Finally, we estimate our gravity models exploiting (alternatively) various lag-lengths of the policy variables, as well with yearly FDI, 2-year or 3-year averages of the FDI values. The use of lags is intended to address the possibility that FDI flows do not respond immediately to policy changes, but might present a delayed reaction (Trefler, 2004; Olivero and Yotov, 2012); the averages allow to smooth fluctuations in FDI from one year to another which might affect the results (the issue might be more severe for small countries).

Our main estimating equation by which we address all the above-mentioned points is the following:

$$FDI_{i,j,t} = \exp\left(\beta lnNTI_{i,j,t-2} + \gamma' \boldsymbol{z}_{i,j,t-2} + \delta_{i,t} + \vartheta_{j,t} + \varphi_{i,j}\right) + \varepsilon_{i,j,t} \qquad (1)$$

$FDI_{i,j,t}$ denotes the (flow) number of inward greenfield FDI in country *i* from country *j* in year *t*. As mentioned above, we alternatively exploit yearly FDI, 2 year or 3-year averages. $lnNTI_{i,j,t}$ denotes the (log) degree of NTI legalization of the PTA between *i* and *j*, in year t-2 (in our preferred specification). $\boldsymbol{z}_{i,j,t}$ denotes a vector of pair-wise time varying variables: the depth of the PTA, a dummy for PTAs with substantive investment provisions, a dummy for the presence of a BIT in force, and a dummy identifying country-pairs belonging to the EU single market. We exploit alternatively 1-, 2- and 3- year lags of the $lnNTI_{i,j,t}$ and policy variables $\boldsymbol{z}_{i,j,t}$.[34] $\delta_{i,t}$ and $\vartheta_{j,t}$ denote the country-year fixed effects; $\varphi_{i,j}$ denotes the country-pair fixed effects; $\varepsilon_{i,j,t}$ is an idiosyncratic error term.

Finally, we base our inference on very conservative two-way clustered of the standard errors, with clustering performed separately at the origin and destination country level.

[34] The use of various aggregations of the FDI variable and lags of the policy variables implies that we estimate 9 versions of specification (1), in total.

4. Results

This section presents the results from estimating specification (1) separately for the three categories of NTIs in our data: economic and social rights (ESR), environmental protection (EP), and civil and political rights (CPR).

Table 2: FDI and Economic and Social Rights provisions in PTAs

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable			Yearly flow of FDI			
Sample	All	All	All	Manuf.	All	Manuf.
$Ln(ESR)_{t-2}$	**-0.0474****	**-0.0507****	**-0.0958*****	**-0.133****		
	(0.0221)	**(0.0232)**	**(0.0323)**	**(0.0563)**		
$Ln(ESR)_{t-2}$ * NN					-0.0519	-0.161*
					(0.0427)	(0.0833)
$Ln(ESR)_{t-2}$ * SS					**-0.241*****	**-0.152***
					(0.0443)	**(0.0784)**
$Ln(ESR)_{t-2}$ * SN					0.0403	0.0373
					(0.0966)	(0.376)
$Ln(ESR)_{t-2}$ * NS					**-0.0947***	-0.0914
					(0.0551)	(0.0792)
BIT_{t-2}		0.101*	0.104*	-0.0500	0.111*	-0.0491
		(0.0577)	(0.0584)	(0.114)	(0.0616)	(0.113)
$EU\text{-}pair_{t-2}$		0.248'	0.105	0.882	0.0699	0.915
		(0.156)	(0.178)	(0.667)	(0.191)	(0.682)
$Depth_{t-2}$			0.0177	0.0321'	0.00866	0.0301
			(0.0134)	(0.0222)	(0.0139)	(0.0245)
$Investment_{t-2}$			0.0639*	0.0124	0.0673*	0.0113
			(0.0370)	(0.0928)	(0.0372)	(0.0900)
Destination-year FE	Y	Y	Y	Y	Y	Y
Origin-year FE	Y	Y	Y	Y	Y	Y
Destination-Origin FE	Y	Y	Y	Y	Y	Y
N	27684	27684	27684	13775	27684	13775

Notes: For the ESR variables, we flag in bold the coefficients which are robust to exploiting 2-year and 3-year FDI averages, one- and three-year lagged policy variables. Two-way clustered standard errors (at origin and destination level) in parenthesis. ' p<0.15, * p < 0.1, ** p < 0.05, *** p < 0.01.

As mentioned, we exploit various aggregations (i.e. yearly data, two- and three-year averages) of the left-hand side FDI variable and lags of the right-hand side variables. Here we present results for one specification only, which features yearly FDI data and two-year lags of the policy variables. We believe that this setting provides the right compromise that allows us to account for some of

the delayed reaction of FDI to changes in policy, while at the same time retaining a good number of observations and variability in the data.[35]

Table 2 presents the results for the effect of economic and social rights provisions in PTAs on FDI. Across all the specifications in Table 2, the effect of ESR provisions is negative. Since the ESR legalization variables are in logarithms, the coefficients can be interpreted as elasticities: in column (3), an 1% increase in the ESR legalization of a PTA leads to a decrease in the yearly number of bilateral greenfield FDI by 0.095%. This effect is robust to controlling for the presence of bilateral investment treaties (BIT), EU membership, the depth of the PTA and investment provisions in the PTA. Among these latter controls, only the coefficient on the BITs and the investment provisions dummies are significant, and take the expected positive sign. The result for BITs is in line with that of Kox and Rojas-Romagosa (2020), although it is not uncommon in the literature to find that BITs do not have a significant effect on FDI (Baker, 2012; Osnago et al., 2020).

We do not find a significant and positive association between deeper agreements and FDI, which would signal a complementarity relation between trade and FDI, arising from input-seeking vertical FDI (Markusen, 2002; Osnago et al, 2020). However, since we cannot distinguish between horizontal and vertical FDI in our data, a positive or negative PTA depth coefficient in our results should be interpreted with caution.

In Column 4 of Table 2 we restrict the sample of analysis to FDI whose activity was classified under manufacturing in fDi Markets.[36] Estimating our models separately for investments linked to

[35] The use of three alternative aggregation of the left-hand side variable and three alternative lag-lengths of the policy variables implies that we estimate each model presented in this paper nine times. We report in bold the NTI coefficients which are robust to using different data aggregations and policy variables lags, i.e. the coefficients that have the same sign and significance in at least 5 out of the 9 specifications we estimate.

[36] *fDi Markets* classifies each investment project according to its business activity by using a proprietary classification. The business activity, which we exploit to identify manufacturing investments, is defined as the actual function of the investment, regardless of the sector.

the actual manufacturing activity might reveal different effects of NTIs, in case the latter affected primarily production operations, or other activities undertaken by foreign investors abroad (e.g. headquarter, sales, logistics, R&D, services). For ESR provisions, the negative impact on manufacturing FDI is somewhat stronger than the average effect, with the elasticity increasing from 0.095 to about 0.133. This is an expected result, as provisions imposing the respect of higher labour standards (included in the ESR category) for instance, are likely to increase operation costs to which manufacturing activities could be relatively more sensitive (Olney, 2013).

The effect of NTIs on FDI could differ across economies at different levels of development, and depend on the direction of the investment flow. To investigate whether effects vary for developing countries, we separate the countries in our data into 'North' countries (high-income) and 'South' countries (middle- and low-income) and construct four mutually exclusive binary variables identifying 'North-North' (NN), 'South-South' (SS), 'North-South' (NS), and 'South-North' (SN) investments. We then interact these four variables with the NTIs legalization of PTAs and estimate the effect of NTIs separately on the four subgroups of investments. These results are presented in the last two columns of Table 2. The negative impact of ESR provisions is driven by investments directed 'South', and by 'South-South' investments in particular, with this result being confirmed on the subsample of manufacturing FDI. This finding is of interest, as it suggests that more economically relevant ESR provisions might be deterring FDI directed to countries which are likely to have laxer domestic regulations in this area (Carrère et al., 2021). Prompted by this finding, in the next section we explore additional hypotheses on the relevance of ESR provisions.

Table 3 presents the results for the effect of environmental protection provisions in PTAs on FDI. Similarly to ESR provisions, we find that a higher degree of EP provisions legalization of PTAs affects the flow of bilateral FDI negatively. The magnitude of the effect is slightly smaller than that found for ESR provisions, with the additional difference that the coefficient estimated for the manufacturing investments subsample is not statistically significant. This latter result is somewhat

surprising, as we would expect EP provisions to be of relevance for manufacturing activity: our results suggests, however, that these provisions matter less for FDI compared to ESR provisions. Furthermore, the coefficient in column 4 of Table 3 picks up the average effect across all the PTAs and countries in our sample, with substantial heterogeneity being detected for various subgroups of investment flows in further exercises.

Table 3: FDI and Environmental Protection provisions in PTAs

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable			Yearly flow of FDI			
Sample	All	All	All	Manuf.	All	Manuf.
$Ln(EP)_{t-2}$	**-0.0392***	**-0.0400***	**-0.0628***	-0.0673		
	(0.0233)	**(0.0235)**	**(0.0334)**	(0.0539)		
$Ln(EP)_{t-2}$ * NN					-0.0150	-0.0394
					(0.0374)	(0.0704)
$Ln(EP)_{t-2}$ * SS					**-0.267*** **	**-0.216***
					(0.0493)	**(0.111)**
$Ln(EP)_{t-2}$ * SN					**0.141***	0.261
					(0.0803)	(0.415)
$Ln(EP)_{t-2}$ * NS					-0.0517	0.00248
					(0.0564)	(0.0875)
BIT_{t-2}		0.0984*	0.100*	-0.0558	0.0982*	-0.0550
		(0.0567)	(0.0566)	(0.110)	(0.0595)	(0.112)
$EU\text{-}pair_{t-2}$		0.192	0.0739	0.859	0.109	0.922
		(0.146)	(0.183)	(0.650)	(0.198)	(0.664)
$Depth_{t-2}$			0.00906	0.0117	-0.00609	-0.00445
			(0.0147)	(0.0199)	(0.0141)	(0.0247)
$Investment_{t-2}$			0.0640*	0.0453	0.0851**	0.0522
			(0.0380)	(0.0951)	(0.0392)	(0.0914)
Destination-year FE	Y	Y	Y	Y	Y	Y
Origin-year FE	Y	Y	Y	Y	Y	Y
Destination-Origin FE	Y	Y	Y	Y	Y	Y
N	27684	27684	27684	13775	27684	13775

Notes: For the EP variables, we flag in bold the coefficients which are robust to exploiting 2- year and 3-year FDI averages, 1-year and three-year lagged policy variables. Two way clustered standard (separately at origin and destination level) in parenthesis. ' p<0.15, * p < 0.1, ** p < 0.05, *** p < 0.01.

For EP provisions, we again find that the negative impact on FDI is driven by 'South-South' investments and that this result is confirmed also for manufacturing investments only. Unlike ESR provisions, however, we find a positive effect of EP provisions for 'South-North' investments: this suggests that EP provisions might help firms in low- and middle-income countries to penetrate

high-income markets. This could be driven by supply-side effects, if EP provisions push firms in developing countries to become more productive (Porter and van der Linde, 1995; Brandi et al., 2020) or demand side effects, if consumers in the 'North' reward 'greener' production. The data at hand do not allow us to investigate which of these two effects is at work, however. Notice, finally, that this positive effect on 'South-North' FDI is not statistically significant on the manufacturing subsample, and is therefore driven by non-manufacturing activities (e.g. sales and marketing, construction, logistics, R&D, services).

Table 4: FDI and Civil and Political Rights provisions in PTAs

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable			Yearly flow of FDI			
Sample	All	All	All	Manuf.	All	Manuf.
$Ln(CPR)_{t-2}$	**-0.0928*** (0.0272)**	**-0.0975*** (0.0268)**	**-0.144*** (0.0320)**	-0.185*** (0.0707)		
$Ln(CPR)_{t-2}$ * NN					**-0.155*** (0.0406)**	**-0.275** (0.119)**
$Ln(CPR)_{t-2}$ * SS					**-0.242*** (0.0614)**	-0.219** (0.109)
$Ln(CPR)_{t-2}$ * SN					**0.194** (0.0759)**	0.162 (0.478)
$Ln(CPR)_{t-2}$ * NS					**-0.174*** (0.0586)**	-0.148* (0.0816)
BIT_{t-2}		0.111* (0.0605)	0.117* (0.0633)	-0.0296 (0.119)	0.125* (0.0661)	-0.0248 (0.121)
$EU\text{-}pair_{t-2}$		0.235' (0.160)	0.0707 (0.218)	0.860 (0.699)	0.146 (0.218)	0.0344 (0.0270)
$Depth_{t-2}$			0.0165 (0.0126)	0.0335 (0.0280)	0.0171 (0.0135)	-0.0373 (0.104)
$Investment_{t-2}$			0.0567' (0.0374)	-0.0345 (0.110)	0.0475 (0.0440)	0.975 (0.699)
Destination-year FE	Y	Y	Y	Y	Y	Y
Origin-year FE	Y	Y	Y	Y	Y	Y
Destination-Origin FE	Y	Y	Y	Y	Y	Y
N	27684	27684	27684	13775	27684	13775

Notes: For the CPR variables, we flag in bold the coefficients which are robust to exploiting 2-year and 3-year FDI averages, one- and three-year lagged policy variables. Two way clustered standard (separately at origin and destination level) in parenthesis. ' p<0.15, * p < 0.1, ** p < 0.05, *** p < 0.01.

The effect of Civil and Political Rights (CPR) provisions in PTAs is analysed in Table 4. We again detect a negative impact of the degree of NTI legalization on bilateral FDI, with effects of a similar magnitude to those of ESR and EP provisions. The differences with Tables 2 and 3 worth noting are that, on the one hand, the impact of CPR provisions is negative also on the subsample of manufacturing FDI, but this result is not robust to exploiting different FDI aggregations and/or lags of the policy variables (column 4). On the other hand, CPR provisions appear to affect negatively flows in all directions, except for South-North flows, for which we estimate a positive and significant coefficient (column 5). Finally, among manufacturing FDI, it is North-North investment that are negatively (and robustly) affected by a higher legalization in CPR provisions in PTAs.

The negative impact of CPR provisions on investments might appear surprising, as good governance and strong rule of law have generally been associated positively with FDI (Harms and Ursprung, 2002; Busse and Hefeker, 2007; Kolstad and Villanger, 2008; Lucke and Eichler, 2016). However, our results are in line which studies distinguishing between various institutional components (Li and Resnick, 2003; Adam and Filippaios, 2007; Kim, 2010) and finding that, after controlling for the level of protection of property rights and political liberties, multinationals prefer to invest in countries with lower civil liberties and levels of democracy, especially when FDI has a cost-saving motive. This could explain the negative coefficients for FDI directed 'South', and among 'North-North' countries[37], as stronger CPR commitments can reduce these investment incentives. 'South-North' investments, on the other side, are less likely to follow the above rationale, and are indeed found to be positively affected by CPR provisions in PTAs.

[37] There are 79 high-income (North) countries in our sample, among which we expect there to be a good degree of institutional heterogeneity.

4.1. Discussion

Overall, the results in this section point to a negative effect of NTI provisions in PTAs on the flow of bilateral greenfield FDI. This is found for all types of NTIs, across a variety of permutations to both the dependent and independent variables, and appears to be driven mostly by investments directed to middle- and low-income countries.

Finding a unique argument which can explain these effects can be challenging. This difficulty is compounded by the heterogeneity of design of NTIs in PTAs. The latter, in fact, differs not only over time, and across countries (e.g. between agreements signed by the EU with its partners, and he US with its partners), but it differs also within countries across partners. The EU and the US, for instance, have concluded agreements with varying legalization scores across partners, even though the agreements were signed at approximately the same time. The EU-CARIFORUM and the EU-Cote d'Ivoire agreements for instance, both signed in 2008, have a legalization score of 36 and 18, respectively. The US-Jordan and US-Vietnam agreements, both signed in 2000, have a legalization score of 15 and 4, respectively. The heterogeneity in the NTI design continues if one compares the different types of provisions, CPR on one side, ESR and EP on the other: The EU tends to demand the inclusion of more stringent CPR provisions in its agreements with small neighbouring countries such as Moldova, Ukraine and Georgia, mostly for political reasons, while it tends to negotiate a larger number of economic-related provisions with large trade partners such as Canada, South Korea and Japan (Borchert et al., 2021). [38]

A plausible explanation for our empirical findings is that non-trade provisions in PTAs deter FDI because they represent credible commitments, and translate into regulations that impose higher costs on the operations of foreign multinationals (Brandi et al., 2019). NTIs appear therefore to be more than a mere 'decoration' of PTAs. This argument applies rather easily to ESR and EP

[38] For an in-depth discussion of the design of NTIs in PTAs we refer the reader to Lechner (2016).

provisions, which concern various labour rights, as well as care for natural resources (e.g. they might impose compliance with international treaties against water and air pollution) which could affect the destination country's competitive advantage (Busse, 2002; Blümer et al., 2019) and make it a relatively less attractive location for FDI. This argument is in line with the literature on FDI determinants mentioned above (Friedman et al, 1992; Dean et al., 2009; Hanna, 2010; Olney, 2013; Chung, 2014; Cai et al, 2016). Further, foreign multinationals and exporters are often seen to lobby against the presence and strictness of NTIs, thereby degrading environmental and social issues in PTAs (Lechner, 2016).

The cost argument could be difficult to sustain in light of the negative impact estimated for CPR provisions, but this result becomes easier to understand if the preference of MNEs for countries with strong property rights protection but lower democracy levels is considered. Strong commitments on civil and political rights, which are often also the more enforceable provisions in case of violations, might deter efficiency-seeking investments which were attracted by a low level of civil liberties (Adam and Philippaios, 2007; Kim, 2010).

5. Additional exercises

In this section we exploit our rich data on the NTI legalization of PTAs to explore additional sub-hypotheses that can complement the interpretation of our main findings given so far.

5.1. Asymmetries in regulation between origin and destination country: do NTIs 'close the gap'?

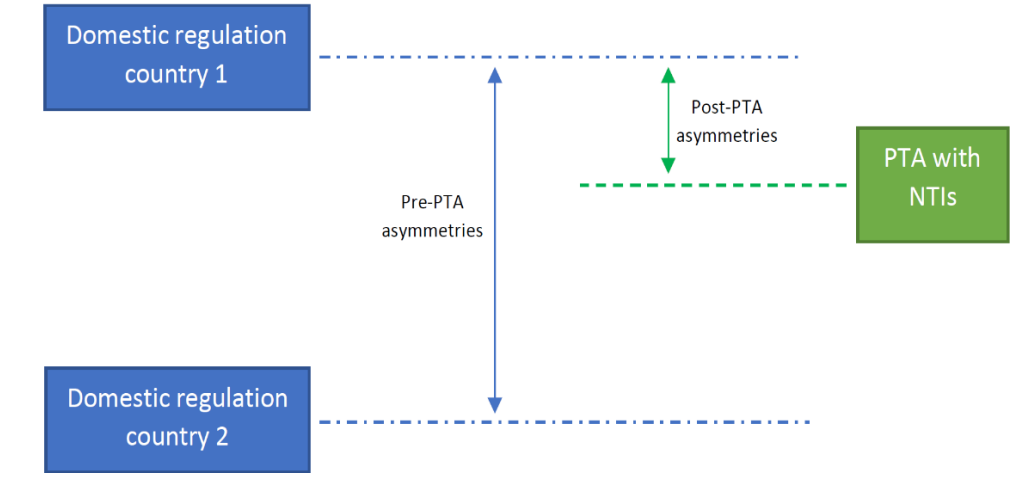
Efficiency-seeking or cost-reducing investments are often argued to be attracted by asymmetries in regulation, both within countries (Becker and Henderson, 2000; List et al., 2003) or across countries (Hanna, 2010; Cai et al., 2016; Lechner, 2018). For this reason, locations and countries may attempt to competitively undercut each other's standards in order to attract foreign capital, in

what has been defined a 'race to the bottom' (Davies and Vadlamannati, 2013; Olney, 2013). Testing these hypotheses is challenging, however, as it requires consistent measures of labour and environmental standards across countries[39], other than bilateral FDI data.

NTIs in PTAs might have an effect that counteracts that of regulation asymmetries, thereby hindering a 'race to the bottom', as NTI could be imposing standards that are higher than those applied domestically (in at least one of the agreement partners), especially in a North-South scenario where one country tries to push towards alignment of standards and regulation.

Figure 4 provides an illustration of this hypothesis. If NTIs in PTAs do indeed have the effect of 'closing the gap' between cross-country regulation asymmetries, we might expect FDI to be deterred by NTIs, and more so where the pre-PTA gap is largest.

Figure 4. Non-trade Issue in PTA 'close the gap' between regulation asymmetries



Source: Authors' elaboration

In the absence of internationally comparable data on standards across countries, we use an indirect strategy to test this hypothesis. For each country-pair, we construct the destination's and the origin's 'stock of NTIs' in PTAs with third parties, calculated as the total NTI legalization in all

[39] The above-mentioned works, in fact, exploit research designs based on heterogenous regulation within one country (e.g. List et al, 2013; Cai et al., 2016), or focus on OECD countries (Olney, 2013). Davies and Vadlamannati (2013) exploit a larger sample of 135 countries, but only test whether labour standards are interdependent across countries, without assessing the impact on investments.

PTAs a country is a member of, except for the PTA with the other country in the pair. This 'stock of NTI' can be thought of as summarizing a country's position in terms of NTI which have already been negotiated, and we exploit it as a proxy for the level of regulations and standards a country has already agreed to. To explore whether NTIs have an impact on FDI which depends on the asymmetry in regulations between country-pairs, we compute the *difference in the stock of NTIs with third countries* between the destination and the origin country.[40] Next, we divide the difference in NTI stock distribution in quartiles, and estimate a separate effect of NTIs on FDI for each of the quartiles.[41] Notice that the difference distribution ranges from negative values, when the destination's NTI stock is lower than that of the origin, to positive value, in the opposite case. This allows us to inspect whether NTIs have a stronger effect for larger negative differences (i.e., when the destination country has a substantially lower NTI stock than the origin country, first quartile of the distribution), or larger positive differences (fourth quartile). We expect NTIs to be more FDI deterrent for country-pairs with larger differences, in particular those in the first quartile, where the destination country has a lower 'NTI stock' than the origin country. FDI in these latter pairs are likely to flow from stricter- to laxer-regulation countries, and might be relatively more deterred by non-trade commitments reducing the profitability of such investments. Table 5 presents the estimation results.

For all three types of ESR, EP and CPR provisions, the negative impact of NTIs is almost exclusively driven by country pairs in the first quartile of the *difference in NTI stock distribution*. As mentioned, these are country pairs where the asymmetry in the 'stock of NTI' is largest, and negative, i.e. the destinations' stock is lower than the origins' stock.

[40] For expositional ease, we henceforth refer to this measure as difference in the 'NTI stock'.
[41] As we prefer to estimate these effects jointly in one model, we construct four binary variables identifying country-pairs belonging to each quartile, and then we interact these binary variables with the main measure of NTI legalization of PTAs.

Table 5: NTI FDI – Destination-origin *difference* in NTIs with others.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	Yearly flow of FDI					
Type of NTI	ESR		EP		CPR	
Sample	All	Manuf.	All	Manuf.	All	Manuf
$Ln(NTI)_{t-2}$ x Diff_NTIoth_q1	**-0.113*** (0.0382)**	**-0.157** (0.0765)**	**-0.0943** (0.0392)**	-0.0958' (0.0657)	**-0.165*** (0.0481)**	**-0.193** (0.0814)**
$Ln(NTI)_{t-2}$ x Diff_NTIoth_q2	-0.0292 (0.0429)	-0.0590 (0.0792)	-0.00784 (0.0373)	0.0184 (0.0647)	**-0.110** (0.0447)**	-0.154 (0.116)
$Ln(NTI)_{t-2}$ x Diff_NTIoth_q3	-0.0145 (0.0627)	-0.0759 (0.0680)	0.00368 (0.0627)	-0.0511 (0.0615)	-0.0393 (0.0591)	-0.154 (0.148)
$Ln(NTI)_{t-2}$ x Diff_NTIoth_q4	-0.00766 (0.0626)	-0.0207 (0.0915)	-0.0239 (0.0736)	-0.0785 (0.0952)	-0.0668 (0.0760)	-0.147 (0.155)
Destination-year FE	Y	Y	Y	Y	Y	Y
Origin-year FE	Y	Y	Y	Y	Y	Y
Destination-Origin FE	Y	Y	Y	Y	Y	Y
N	25505	12647	25505	12647	25505	12647

Notes: Country-pair time varying controls are included in all estimated models. For the NTI variables, we flag in bold the coefficients which are robust to exploiting 2- year and 3-year FDI averages, 1-year and three-year lagged policy variables. Two way clustered standard (separately at origin and destination level) in parenthesis. ' p<0.15, * p < 0.1, ** p < 0.05, *** p < 0.01.

Albeit only indirectly, this exercise suggests than NTIs in PTAs might have the important role of closing the gap between countries' regulation asymmetries (George, 2014), and could therefore counteract the tendency to a 'race to the bottom' which results from countries' attempts to undercut each other's standards.

5.1.1. Previous NTI commitments

In this sub-section we perform an additional exercise, related to the relevance of country's overall NTI position explored in section 5.1. Signing a new PTA featuring non-trade provisions might have an effect on the inflow of FDI that depends on whether similar agreements were signed in the past. If NTIs translate into changes in domestic legislation, and those in turn make a destination country less 'FDI-friendly' as foreign investors are asked to comply with stricter labour end environmental standards, the impact of NTIs in *new PTAs* might be smaller if a country had already agreed to similar NTI provisions with other (third) countries.

To explore this hypothesis, we exploit the *stock of NTIs with third parties* (described above) of destinations countries, and estimate whether destinations with a heterogeneous stock of NTIs with third parties respond differently to NTIs in a new PTA. Similarly to the procedure described above, we estimate the impact of NTIs on four quartiles of the NTI stock distribution jointly in one model.[42] Table 6 presents these results.

For ESR and EP provisions, we find that the negative effect of NTIs on FDI is driven by destination countries whose stock of NTIs with third parties is below median, with this distinction being clearer for EP provisions. These are countries which, possibly, are able to attract foreign investors thanks to laxer domestic regulations in areas covered by ESR and EP provisions in PTAs: once PTAs with such provisions are signed, a reduction in the flow of FDI directed to these countries is estimated. Notice, however, that this finding is not confirmed for the subsample of manufacturing FDI. Furthermore, for CPR provisions, the impact of stronger non-trade commitments appears to deter FDI across the entire CPR stock distribution: for manufacturing FDI the effect is significant on the first and third quartile, but for the aggregate sample of FDI a negative coefficient is estimated on all the quartiles.

The results in table 6 suggest that the overall NTI position of a country seems to matter, with a lower overall NTI legalization of PTAs being associated with a larger negative impact of NTIs on FDI, especially for the ESR and EP provisions. However, the lack of significant effects for manufacturing FDI, and the relevance of CPR provisions across the entire NTI stock distribution, hint at an important difference between the results in table 6 with those in table 5: rather than the overall 'stock of NTIs' with third parties, it is the *difference* in the 'stock of NTIs' between origin and destination countries to be relevant to detect a stronger effect of non-trade provisions on investment flows.

[42] Again, we construct binary variables identifying destination countries in the four quartiles, and interact them with NTI legalization in PTAs variable.

Table 6: NTI and FDI – Relevance of the stock of NTIs with third parties.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	Yearly flow of FDI					
Type of NTI	ESR		EP		CPR	
Sample	All	Manuf.	All	Manuf.	All	Manuf
$Ln(NTI)_{t-2}$ x DestNTIoth_q1	**-0.101****	-0.0993	**-0.108***	-0.0571	**-0.127****	**-0.200****
	(0.0469)	(0.0909)	**(0.0614)**	(0.116)	**(0.0509)**	**(0.0871)**
$Ln(NTI)_{t-2}$ x DestNTIoth_q2	**-0.126*****	-0.0844	**-0.0785'**	-0.0191	**-0.108****	-0.133
	(0.0434)	(0.0840)	**(0.0477)**	(0.0977)	**(0.0516)**	(0.103)
$Ln(NTI)_{t-2}$ x DestNTIoth_q3	**-0.0816***	-0.103	-0.0387	-0.0466	**-0.142*****	**-0.215****
	(0.0443)	(0.0779)	(0.0368)	(0.0720)	**(0.0524)**	**(0.107)**
$Ln(NTI)_{t-2}$ x DestNTIoth_q4	-0.0498	-0.109	-0.0537	-0.0300	**-0.156*****	-0.163*
	(0.0490)	(0.0827)	(0.0405)	(0.0630)	**(0.0507)**	(0.0986)
Destination-year FE	Y	Y	Y	Y	Y	
Origin-year FE	Y	Y	Y	Y	Y	Y
Destination-Origin FE	Y	Y	Y	Y	Y	Y
N	25505	12647	25505	12647	25505	12647

Notes: Country-pair time varying controls are included in all estimated models. For the NTI variables, we flag in bold the coefficients which are robust to exploiting 2- year and 3-year FDI averages, 1-year and three-year lagged policy variables. Two way clustered standard (separately at origin and destination level) in parenthesis. ' p<0.15, * p < 0.1, ** p < 0.05, *** p < 0.01.

5.2. Effects by groups of agreements

High-income countries such as the US and the EU have been observed to negotiate the inclusion of a large number of non-trade issue provisions in their PTAs.[43] In part this is due to political preferences, certainly motivated by their citizens' demand for products which are greener or satisfy better labour standards, but high-income countries can also use their economic weight to demand the inclusion of provisions which help maintaining a level playing field (Dunno and Neureiter, 2018; Di Ubaldo et al., 2019; Borchert et al., 2021).

On the one hand, NTIs in PTAs negotiated by 'NTI-demanding' countries could have a stronger FDI deterrent effect, due to them being imposed by one party on the other, rather than being the outcome of a more balanced negotiation. On the other hand, it could be that NTIs in such PTAs have less of an FDI deterrent effect, as these provisions reflect a widespread political consensus

[43] Other countries with an interest in strong environment and labour standards are Australia, Canada, New Zealand, and the EFTA countries (Lechner, 2018).

in the demanding country, such that MNEs activity would be less disrupted. To explore which of the two effects may be at work in our setting, we perform a simple disaggregation of the effect of NTIs on FDI by groups of PTAs: we divide our sample into 'demanding' (Australia, Canada, EFTA countries, EU, US, New Zealand) and 'non-demanding' countries, and estimate separate coefficients for the PTAs involving these groups.[44]

Table 7: NTI FDI – groups of PTAs

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	Yearly flow of FDI					
Type of NTI	ESR		EP		CPR	
Sample	All	Manuf.	All	Manuf.	All	Manuf
$Ln(NTI)_{t-2}$ x PTA EU	0.0444	0.0710	0.0358	0.104	**-0.0987****	-0.100
	(0.0673)	(0.0941)	(0.0443)	(0.0818)	**(0.0474)**	(0.101)
$Ln(NTI)_{t-2}$ x PTA Dem. no EU	0.0614	-0.138	0.0610	0.173'	-0.243	-0.217*
	(0.161)	(0.305)	(0.133)	(0.120)	(0.266)	(0.119)
$Ln(NTI)_{t-2}$ x PTA Not Dem.	**-0.190*** **	**-0.290** **	**-0.193*** **	**-0.297*** **	**-0.213*** **	**-0.375** **
	(0.0532)	**(0.128)**	**(0.0558)**	**(0.113)**	**(0.0759)**	**(0.182)**
Destination-year FE	Y	Y	Y	Y	Y	Y
Origin-year FE	Y	Y	Y	Y	Y	Y
Destination-Origin FE	Y	Y	Y	Y	Y	Y
N	25505	12647	25505	12647	25505	12647

Notes: Country-pair time varying controls are included in all estimated models. For the NTI variables, we flag in bold the coefficients which are robust to exploiting 2- year and 3-year FDI averages, 1-year and three-year lagged policy variables. Two way clustered standard (separately at origin and destination level) in parenthesis. ' p<0.15, * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 7 shows that NTIs in PTAs by 'demanding' countries have barely any effect on FDI. For ESR and EP provisions, both on the aggregate sample and for manufacturing investments, we estimate a negative effect of NTIs on FDI only for the subgroup of PTAs not involving any of the demanding countries. For CPR provisions, we find a negative impact on FDI from EU PTAs.

This latter effect can be explained by bringing together two considerations. First, the EU tends to negotiate a larger number of CPR provisions in PTAs with small neighbouring countries (e.g. Montenegro, Georgia, Moldova, Serbia, Ukraine) with whom there is a rather stark gap in the

[44] Due to the numerical relevance of the EU in our sample (it accounts for a large number of dyadic observations due to its several members) we estimate a separate effect for EU PTAs.

degree of protection of civil and political rights. Second, MNEs have been seen to prefer host countries with lower levels of democracy, once their property rights are guaranteed. The inclusions of CPR provisions in EU agreements could therefore have an FDI deterrent effect if such clauses result in a less favourable environment for foreign investors.

5.3. Country-level effects

The negative effect of NTIs in PTAs on FDI has so far been estimated at the bilateral level, as the NTIs contained in each PTA in force between two countries have been matched to the flow of bilateral FDI to estimate specification (1).

However, the NTI-FDI relation might not be purely bilateral, as non-trade related provisions can affect the overall inflow of FDI into a country. For example, more stringent standards contained in a trade agreement, say between the US and Korea, could affect US-Korea FDIs, but also FDI from third countries into the partners of the PTA. To explore this, we proceed as follows.

We aggregate the dyadic dataset into a country-year level dataset, summing over the number of FDI a country receives from all the origins in a certain year, and taking the mean NTIs legalization across all agreements a country is a member of in that year. We then estimate the following model:

$$totFDI_{i,t} = \exp\left(\beta ln(avgNTI_{i,t-2}) + \gamma' \boldsymbol{z}_{i,t-2} + \sigma' \boldsymbol{f}_{i,t} + \delta_i + \mu_t\right) + \varepsilon_{i,t} \qquad (2)$$

$totFDI_{i,t}$ denotes the sum of inward FDI in country *i* at time *t*. $ln(avgNTI)_{i,t-2}$ denotes the (log) mean NTI legalization of the PTAs country *i* is a member of in year *t-2*: we compute both a simple average, and an average weighted by the GDP of the partner country, and use them alternatively in estimation. $\boldsymbol{z}_{i,t-2}$ denotes a set of trade policy variables measuring the average depth of the PTAs (simple or GDP-weighted averages), the number of BITs in force for country *i* in year *t-2*, and the number of PTAs with substantive investment related provisions country *i* is a member of in year *t*. $\boldsymbol{f}_{i,t}$ denotes a set of controls varying at the country-year level: EU membership, GDP,

and GDP per capita. We also add a set of country fixed effects, δ_i and a set of year fixed effects, μ_t. $\varepsilon_{i,t}$ is the error term.

Similarly to the bilateral-level estimates presented in the previous section, we estimate specification (2) exploiting alternatively yearly FDI data, 2-year and 3-year averages, as well as 1-year, 2-year and 3-year lags of the policy variables.

Table 8: FDI and economic and social rights provisions in PTAs – country level estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable			Yearly-FDI			
Sample	All	All	Manuf.	All	All	Manuf.
Ln(avgESR)$_{t-2}$	**-0.140*** (0.0524)**	**-0.137*** (0.0477)**	-0.131*** (0.0474)			
Ln(avgESR_GDP)$_{t-2}$				**-0.0094*** (0.0030)**	**-0.0111*** (0.0029)**	**-0.0100*** (0.0036)**
Ln(Avg Depth)$_{t-2}$		-0.0261' (0.0163)	0.0471' (0.0325)			
Ln(Avg Depth_GDP)$_{t-2}$					-0.00025 (0.00075)	0.0024** (0.0011)
No. BITs$_{t-2}$		-0.0156** (0.0072)	-0.0080 (0.0073)		-0.0153** (0.0074)	-0.0077 (0.0072)
No. PTA Inv$_{t-2}$		-0.00288 (0.0038)	-0.0099*** (0.0033)		-0.0030 (0.0038)	-0.0099*** (0.0032)
EU$_{t-2}$		-0.782*** (0.168)	-0.604*** (0.0822)		-0.845*** (0.170)	-0.650*** (0.0984)
Ln(GDP)$_t$	0.305** (0.155)	0.206' (0.131)	0.398** (0.187)	0.321* (0.179)	0.215 (0.161)	0.418** (0.191)
Ln(GDP)pc$_t$	-0.649* (0.377)	-0.407 (0.337)	-0.828* (0.488)	-0.691' (0.433)	-0.436 (0.413)	-0.880* (0.500)
Destination FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
N	2561	2561	2340	2561	2561	2340

Notes: For the ESR variables, we flag in bold the coefficients which are robust to exploiting yearly 2-year and 3-year FDI averages, contemporaneous and two-year lagged policy variables. Robust standard errors clustered at the country level in parenthesis. ' p<0.15, * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 8 presents the results from estimating specification (2) for ESR provisions. The overall picture emerging from Table 8 is that, when the relation between CPR provisions and FDI is estimated at the country level, we again find a negative impact of the former on the latter. Results are similar in magnitude to those obtained with the dyadic dataset, and robust to exploiting

alternative aggregations of the right-hand-side variables and lags of the policy variables, both for the simple CPR average and the partner-GDP-weighted CPR average.

Table 9: FDI and environmental protection provisions in PTAs – country level estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable			Yearly-FDI			
Sample	All	All	Manuf.	All	All	Manuf.
Ln(EP)$_{t-2}$	**-0.131****	**-0.136****	-0.149**			
	(0.0632)	**(0.0581)**	(0.0695)			
Ln(EP_GDP)$_{t-2}$				**-0.0088*****	**-0.0106*****	**-0.0094*****
				(0.00289)	**(0.0028)**	**(0.0035)**
Ln(Avg Depth)$_{t-2}$		-0.0287*	0.0469			
		(0.0171)	(0.0329)			
Ln(Avg Depth_GDP)$_{t-2}$					-0.0003	0.0023**
					(0.0008)	(0.0011)
No. BITs$_{t-2}$		-0.0161**	-0.00830		-0.0154**	-0.0077
		(0.0072)	(0.0072)		(0.0074)	(0.0072)
No. PTA Inv$_{t-2}$		-0.00187	-0.00862***		-0.00297	-0.00995***
		(0.0038)	(0.0032)		(0.0038)	(0.0032)
EU$_{t-2}$		-0.805***	-0.618***		-0.847***	-0.649***
		(0.164)	(0.0809)		(0.171)	(0.0988)
Ln(GDP)$_t$	0.308*	0.201	0.391**	0.324*	0.217	0.423**
	(0.168)	(0.142)	(0.194)	(0.181)	(0.163)	(0.191)
Ln(GDP)pc$_t$	-0.667'	-0.398	-0.819'	-0.698'	-0.440	-0.896*
	(0.410)	(0.364)	(0.508)	(0.437)	(0.418)	(0.499)
Destination FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
N	2561	2561	2340	2561	2561	2340

Notes: For the EP variables, we flag in bold the coefficients which are robust to exploiting 2-year and 3-year FDI averages, contemporaneous and two-year lagged policy variables. Robust standard errors clustered at the country level in parenthesis. ' p<0.15, * p < 0.1, ** p < 0.05, *** p < 0.01.

Very similar results are obtained for EP provisions, as shown in Tables 9. A larger mean NTI legalization in PTAs appears to lead to a lower total number of FDI at the country level. Results are statistically significant when exploiting also the GDP-weighted average number of ESR provisions and are again confirmed when we exploit alternative FDI averages and policy variables lags.

Finally, Table 10 presents the estimates for CPR provisions, with results in line with those obtained for ESR and EP provisions.

Overall the results in this this section suggest that, a larger (average) NTI legalization across the PTAs a country is a member of, appears to affect negatively its overall inflow of FDI. This lends support to the intuition that NTIs could have an effect beyond the bilateral dimension and affect FDI originating from third countries too.

Table 10: FDI and civil and political right provisions in PTAs – country level estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable			Yearly-FDI			
Sample	All	All	Manuf.	All	All	Manuf.
$Ln(avgCPR)_{t-2}$	**-0.232*** (0.0805)**	**-0.235*** (0.0802)**	**-0.245*** (0.0716)**			
$Ln(avgCPR\_GDP)_{t-2}$				**-0.0075*** (0.0027)**	**-0.0089*** (0.0025)**	**-0.0075** (0.0031)**
Avg $Depth_{t-2}$		-0.0318* (0.0164)	0.0467' (0.0317)			
Avg $Depth\_GDP_{t-2}$					-0.0003 (0.0007)	0.0022** (0.0011)
No. $BITs_{t-2}$		-0.0153** (0.0071)	-0.0078 (0.0068)		-0.0151** (0.0073)	-0.0076 (0.0071)
No. PTA Inv_{t-2}		-0.0026 (0.0037)	-0.0093*** (0.0031)		-0.0032 (0.0038)	-0.0102*** (0.0032)
EU_{t-2}		-0.823*** (0.161)	-0.645*** (0.0752)		-0.847*** (0.171)	-0.652*** (0.1000)
$Ln(GDP)_t$	0.339* (0.176)	0.236' (0.150)	0.419** (0.182)	0.349* (0.182)	0.248' (0.164)	0.449** (0.191)
$Ln(GDP)pc_t$	-0.736* (0.426)	-0.486 (0.383)	-0.910* (0.489)	-0.751* (0.435)	-0.511 (0.414)	-0.953* (0.491)
Destination FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
N	2561	2561	2340	2561	2561	2340

Notes: For the CRP variables, we flag in bold the coefficients which are robust to exploiting 2-year and 3-year FDI averages, contemporaneous and two-year lagged policy variables. Robust standard errors clustered at the country level in parenthesis. ' p<0.15, * p < 0.1, ** p < 0.05, *** p < 0.01

Conclusion

This paper explores the impact of non-trade related provisions in PTAs (or non-trade issues – NTIs) on the flow of bilateral greenfield FDI. In a rigorous structural gravity setting, we find that the flow of FDI appears to be affected negatively by the degree of legalization of PTAs concerning

economic and social rights (ESR), environmental protection (EP), and civil and political rights (CPR). The effects are comparable in magnitude across the three types of provisions, although they are more robust and statistically strongest for ESR, and weakest for EP provisions, especially on the subsample of manufacturing FDI. We perform several robustness checks by estimating our model with alternative lags of the trade policy variables, and aggregating the FDI data over 2- and 3-year periods, to ensure our results take into account both the phasing-in effects of PTAs and are not influenced by the volatility of FDI flows.

If NTIs represent credible commitments between trade partners, and translate into changes in domestic regulation, as found by Brandi et al. (2019), a plausible explanation for the negative impact of NTIs on FDI can be found in the higher costs that tighter regulations in labour and environmental areas imply for MNEs' activity. This rationale is a particularly salient for ESR and EP provisions, imposing the adherence to international labour and environmental conventions, and which might decrease the attractiveness of a foreign country as a production location (Busse, 2002). In support of this hypothesis, we find that the negative NTI-FDI relation is driven by investments directed to middle- and low-income countries, and by investments between country-pairs which differ the most in terms of their overall level of commitment on non-trade issues in PTAs with third parties. We interpret this latter effect as evidence that NTIs in PTAs might have the role of closing the gap between origin and destination countries' regulation asymmetries, as cost-minimizing investments attracted by laxer norms on pollution or labour rights might be deterred the most by PTA provisions attempting to align each other's standards.

CPR provisions, related to human rights and democracy (among other things) can instead exert a negative impact on FDI because they reduce investment incentives for MNEs attracted by locations with a lower democracy level. In our results, this is particularly evident for 'North-South' and 'South-South' investments. The negative impact of CPR provisions on FDI is also found for the subgroup of EU PTAs. These latter have been observed to be demanding in terms of politically

relevant non-trade provisions, and particularly so in agreements with small neighbouring countries. Furthermore, in EU PTAs those related to CPR are the only NTIs which, in case of their violation, might lead to the suspension or termination of a trade agreement. Taken together, these factors can help explaining the negative effect on FDI estimated for CPR provision in EU PTAs.

Finally, we explore whether the negative impact of NTIs on FDI estimated at the bilateral level extends to third countries. Higher NTI legalization of a PTA, which translates into changes in the national legislation could, in fact, affect not only FDI from the PTA partner, but also from other countries. We explore this rationale by estimating the NTI-FDI relation with data aggregated at the destination country level, and find that the average NTI legalization of the PTAs a country is a member of is associated with a lower overall inflow of FDI.

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Data availability statement

The data underlying this article come from various sources. The *fDi Markets* data on FDI flows are owned by a third party (fDi Intelligence, Financial Times) and will be shared on request to the corresponding author with permission of fDi Intelligence. The remaining data have been arranged by the authors on the basis of publicly available sources, and will be shared on reasonable request to the corresponding author.

Declarations of interest: none

Appendix

Basic descriptive statistics:

Table A1: descriptive statistics of the country-pair-year estimation sample[45]

Variable	Observations	Mean	Standard Dev.	Minimum	Maximum
No. FDI	29,004	2.47	8.58	0	181
No. CPR provisions	29,004	5.39	3.21	0	12
No. ESR provisions	29,004	7.89	4.37	0	21
No. EP provisions	29,004	5.49	3.71	0	19
Depth	29,004	4.21	2.42	1	7
BIT	29,004	.433	.495	0	1
Investment provisions	29,004	.381	.485	0	1

Source: authors' elaboration

[45] This sample arises from restricting the observations to country-pairs members of PTAs, and dropping all the observations not used in estimation because of collinearity with the fixed effects. More details on our empirical approach are in section 3.

Main results with 3-year lags of policy variables:

Table A2: FDI and non-trade issue provisions in PTAs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent variable	Yearly flow of FDI											
Type of NTI	**ESR**				**EP**				**CPR**			
Sample	All	Manuf.	All	Manuf.	All	Manuf.	All	Manuf.	All	Manuf.	All	Manuf.
$Ln(NTI)_{t-3}$	**-0.0744****	-0.0583			**-0.0509'**	-0.0496			**-0.129*****	-0.0930		
	(0.0333)	(0.0520)			**(0.0353)**	(0.0600)			**(0.0290)**	(0.0744)		
$Ln(NTI)_{t-3}$ * NN			-0.0323	-0.0492			-0.0065	-0.0064			**-0.171*****	-0.0906
			(0.0440)	(0.0750)			(0.0382)	(0.0751)			**(0.0378)**	(0.137)
$Ln(NTI)_{t-3}$ * SS			**-0.192*****	**-0.143***			**-0.218*****	**-0.178***			**-0.181*****	-0.108
			(0.0335)	**(0.0742)**			**(0.0465)**	**(0.107)**			**(0.0580)**	(0.127)
$Ln(NTI)_{t-3}$ * SN			0.176***	0.288			**0.278*****	0.373'			**0.324*****	**0.595***
			(0.0591)	(0.203)			**(0.0459)**	(0.235)			**(0.0959)**	**(0.316)**
$Ln(NTI)_{t-3}$ * NS			**-0.0888'**	-0.0256			-0.0666	-0.0316			**-0.169****	-0.119
			(0.0608)	(0.0896)			(0.0631)	(0.108)			**(0.0695)**	(0.103)
BIT_{t-3}	0.207***	0.0571	0.215***	0.0651	0.203***	0.0526	0.202***	0.0554	0.219***	0.0681	0.222***	0.0700
	(0.0736)	(0.138)	(0.0755)	(0.141)	(0.0718)	(0.135)	(0.0736)	(0.136)	(0.0770)	(0.140)	(0.0775)	(0.143)
$EU\text{-}pair_{t-3}$	0.228**	1.863***	0.178	1.828***	0.200'	1.819***	0.226'	1.813***	0.198	1.860***	0.300*	1.809***
	(0.108)	(0.581)	(0.142)	(0.553)	(0.125)	(0.614)	(0.156)	(0.581)	(0.155)	(0.545)	(0.173)	(0.576)
$Depth_{t-3}$	0.0106	-0.0201	0.00164	-0.0263	0.0041	-0.0228	-0.0091	-0.0340	0.0128	-0.0175	0.0146	-0.0153
	(0.0119)	(0.0198)	(0.0129)	(0.0218)	(0.0135)	(0.0232)	(0.0129)	(0.0285)	(0.0097)	(0.0238)	(0.0105)	(0.0253)
$Investment_{t-3}$	0.0611***	0.111***	0.0618***	0.110***	0.0612**	0.114***	0.0788***	0.121***	0.0480**	0.0842	0.0381	0.0670
	(0.0234)	(0.0278)	(0.0227)	(0.0333)	(0.0260)	(0.0348)	(0.0257)	(0.0402)	(0.0230)	(0.0646)	(0.0320)	(0.0743)
Destination-year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Origin-year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Destination-Origin FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	25719	12660	25719	12660	25719	12660	25719	12660	25719	12660	25719	12660

Notes: For the NTI variables, we flag in bold the coefficients which are robust to exploiting 2-year and 3-year FDI averages, one- and three-year lagged policy variables. Two way clustered standard (separately at origin and destination level) in parenthesis. ' p<0.15, * p < 0.1, ** p < 0.05, *** p < 0.01.