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Trade effects of non-economic provisions in trade agreements*

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Abstract

We assess the relationship between non-trade provisions (NTPs) pertaining to labor standards and the environment in preferential trade agreements (PTAs) and bilateral exports of environment and labor-intensive products between PTA partners, controlling for aid-for-trade, development assistance for labor and environment-related projects, and the enforceability of NTPs. NTPs are associated with greater exports of environment- and labor-intensive goods from high-income PTA members, while there is a negative relationship between NTPs and labor-intensive exports from developing countries. Bilateral exports of donors granting aid for trade are strongly associated with a higher propensity of recipients to participate in deep PTAs. Results are consistent with arguments that NTPs may increase trade costs for developing countries and that NTPs in part reflect commercial interests of high-income countries.

JEL classification: F1, F15

Key words: Trade; labor; environment; deep trade agreements; structural gravity; aid-for-trade

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1 Introduction

There has been a steady rise in the coverage of non-trade provisions (NTPs) pertaining to labor standards and protection of the environment in preferential trade agreements (PTAs), notably those involving the EU and the US (Mattoo et al., 2020). The purported motivation for including NTPs in trade agreements is to ameliorate non-trade conditions in partner countries. The effectiveness of NTPs in doing so has been a focus of recent research. Baghdadi et al. (2013); Abman and Lundberg (2020) find that environmental provisions in PTAs are associated with reductions in some types of environmental degradation. In contrast, no clear-cut evidence has been found on labor-related NTPs improving labor market outcomes (see, e.g., Francois et al. (2022); Raess (2022)).

Independent of whether NTPs improve non-trade outcomes, they may affect cross-border trade between partner countries. Firms located in a PTA member may see their competitiveness lowered if the NTPs increase production or trade costs for developing countries. Alternatively, NTPs may enhance the competitiveness of firms by facilitating access to markets with strong labor and environmental standards. Breinlich et al. (2022) and Carrère et al. (2022) find that labor-related NTPs are associated with more trade.

The mixed empirical evidence on the effectiveness of NTPs in North-South PTAs may in part reflect an omitted variable problem. Assessments of the relationship between NTPs and non-trade outcomes or bilateral trade flows generally do not consider the prevalence of instruments such as technical and financial support. In practice, high-income nations allocate substantial amounts of development assistance to developing countries that include projects to improve labor standards and environmental protection as well as aid that is specifically aimed at bolstering trade by enhancing productive capacity in recipient countries.(Younas, 2008; Bayramoglu et al., 2022).

This paper contributes to the literature by using a structural gravity framework to explore if PTAs that include environment- and labor-related NTPs affect bilateral trade between high-income and developing country members of PTAs, conditional on bilateral disbursement of official development assistance. We distinguish between Aid-for-Trade (AfT), which is designed to support trade, and aid allocated to improving labor and environmental protection, which may enhance the effectiveness of NTPs. Following Francois et al. (2022), we also consider whether NTPs are enforceable through dispute settlement mechanisms.

Controlling for PTA membership, we find that (i) PTAs that include legally enforceable environmental provisions enhance bilateral trade (exports and imports) of products that are energy-intensive ("environment-intensive") between high-income and developing country

members of PTAs; (ii) enforceable labor-related NTPs are positively correlated with exports of labor-intensive goods from high-income (aid granting) countries, but are negatively associated with bilateral exports of labor-intensive products from developing countries, suggesting a production cost effect; (iii) AfT has a positive relationship with trade in labor-intensive goods, but not environment-intensive products; (iv) aid for environmental projects is positively related with trade in environment-intensive goods, independent of the enforceability of NTPs ; and (v) donors' bilateral exports and aid for trade are strongly associated with a higher propensity to negotiate PTAs that encompass NTPs, suggesting that the inclusion of such provisions may in part reflect commercial interests of high-income countries.

The remainder of the paper proceeds as follows. Section 2 presents the empirical framework. Section 3 discusses the results. Section 4 concludes.

2 Empirical model

We examine the effect of labor and environment provisions in PTAs on bilateral trade in labor-intensive and and environment-intensive products in a structural gravity framework. Bilateral trade data are sourced from the International Trade and Production Database for Estimation (ITPDE) (Borchert et al., 2021). Products are defined as labor- or environment-intensive based on UNCTAD and OECD classifications, respectively.[1] Information on NTPs in PTAs is obtained from the World Bank "Deep Trade Agreements" database (Mattoo et al., 2020), which provides granular data on the coverage of NTPs in PTAs negotiated through 2016. ODA data come from the OECD's Creditor Reporting System and are classified as AfT and Non-AfT on the basis of the associated CRS code (see for instance Hoekman and Shingal (2020)). The data are organized in a panel spanning 2000-2016 for 24 reporting DAC donors and 94 recipient partner countries (reported in the Annex).

The baseline estimating equations take the following form:

$$X_{ijt}^{L/E} = exp(\beta_1 PTA_{ijt} + \beta_2 PTA_{ijt}^{L/E} + \beta_3 \ln AfT_{ijt-1} + \beta_4 \ln(ODA_{ijt-1}^{L/E}) + \mu_{it} + \gamma_{jt} + \chi_{ij}) + \epsilon_{ijt} \quad (1)$$

$$M_{ijt}^{L/E} = exp(\beta_1 PTA_{ijt} + \beta_2 PTA_{ijt}^{L/E} + \beta_3 \ln AfT_{ijt-1} + \beta_4 \ln(ODA_{ijt-1}^{L/E}) + \mu_{it} + \gamma_{jt} + \chi_{ij}) + \epsilon_{ijt} \quad (2)$$

where $X_{ijt}^{L/E}$ ($M_{ijt}^{L/E}$) denotes the nominal value of exports (imports) of labor- or environment-

[1] Environment-intensity is determined by embodied CO2 emissions as defined in Yamano and Guilhoto (2020). The classification of labor-intensive goods draws from UNCTAD (2002). The two categories are not mutually exclusive.

intensive goods from (into) country i to (from) country j at time t; PTA_{ijt} is a binary dummy denoting membership of a preferential agreement liberalizing bilateral trade in goods; $PTA_{ijt}^{L/E}$ is a dummy with value equal to 1 if a PTA includes provisions on labor or the environment of any type (we use $PTA.LE_{ijt}^{L/E}$ to denote legally enforceable NTPs in the regressions), AfT_{ijt-1} is the nominal value of total bilateral AfT disbursed by country i in country j at time $t-1$; $ODA_{ijt-1}^{L/E}$ is the nominal value of bilateral aid allocated to labor or environmental projects disbursed by country i in country j; and ϵ_{ijt} is the error term.

To accommodate zero AfT flows in the analysis (the incidence of which is pronounced at the bilateral level), we follow Wagner (2003), defining aft_{ijt} as $ln(max1, AfT_{ijt})$ and include a $NAfT_{ijt}$ dummy in the estimating equations taking the value of 1 when $AfT = 0$ and zero otherwise. The coefficient of aft_{ijt} measures the elasticity of exports (or imports) where AfT is positive while the coefficient of $NAfT_{ijt}$ serves as an adjustment to the constant in cases where AfT is zero. A similar treatment is accorded to zero $ODA_{ijt}^{L/E}$ flows. We also allow trade flows to respond to AfT and ODA with a one-period lag.[2]

The use of three-way fixed effects ($\mu_{it}, \gamma_{jt}, \chi_{ij}$) mitigates endogeneity-related concerns (Baier et al., 2014). The time-varying exporter and importer fixed effects also account for multilateral resistance (Anderson and van Wincoop, 2003) and time-varying exporter- and importer-specific observable and unobservable characteristics that could influence bilateral trade flows. Similarly, pairwise fixed effects absorb both observable and unobservable time-invariant determinants of bilateral trade costs. We use the Pseudo-Poisson Maximum Likelihood (PPML) estimator (Santos Silva and Tenreyro, 2006) to account for zero trade flows in sector-specific data and for heteroskedasticity-related concerns in estimation.

In secondary analysis, we examine the joint effect of trade and AfT on the propensity to negotiate labor and environmental provisions in PTAs by using a linear probability model to estimate:

$$PTA_{ijt}^{L/E} = \beta_1 ln(X_{ijt-1}^{L/E}) + \beta_2 ln(AfT_{ijt-1}) + \beta_3 ln(ODA_{ijt-1}^{L/E}) + \mu_{it} + \gamma_{jt} + \chi_{ij} + \epsilon_{ijt} \quad (3)$$

$$PTA_{ijt}^{L/E} = \beta_1 ln(M_{ijt-1}^{L/E}) + \beta_2 ln(AfT_{ijt-1}) + \beta_3 ln(ODA_{ijt-1}^{L/E}) + \mu_{it} + \gamma_{jt} + \chi_{ij} + \epsilon_{ijt} \quad (4)$$

In addition to the control variables included in these equations, the fixed effects account for all (time-varying) exporter- and importer-specific and dyadic observed and unobserved economic, political, geographic and cultural factors likely to influence the propensity to negotiate labor and environmental provisions in PTAs.

[2] Our findings are robust to allowing for alternative lag structures.

3 Results

Table 1 reports the results from estimating Eq. (1) and (2). Columns (1) to (4) report estimates for trade in labor-intensive goods with data organized in a panel spanning the full time period, 2000-2016.[3] Labor-related NTPs in general are not associated with trade in labor-intensive goods, but those that are legally-enforceable ($PTA.LE_{ijt}^{L/E}$) significantly reduce donor (high-income) countries' bilateral imports of labor-intensive goods from recipients (column 4). In contrast, legally-enforceable labor provisions in PTAs enhance bilateral exports of donor countries to partner nations, with a treatment effect of 11.2%.[4] Both PTA membership and bilateral aid for trade are positively associated with bilateral trade in labor-intensive goods, with the association relatively more pronounced for donors' bilateral exports.

Table 1: NTPs and trade in environmental and labor-intensive goods

	(1) X_{ijt}^{L}	(2) M_{ijt}^{L}	(3) X_{ijt}^{L}	(4) M_{ijt}^{L}	(5) X_{ijt}^{E}	(6) M_{ijt}^{E}	(7) X_{ijt}^{E}	(8) M_{ijt}^{E}
$\ln AfT_{ij,t-1}$	0.032***	0.016***	0.033***	0.016***	0.002	0.01	0.004	0.011
	(0.007)	(0.005)	(0.007)	(0.005)	(0.006)	(0.008)	(0.005)	(0.008)
$\ln ODA_{ij,t-1}^{L/E}$	-0.011	0.002	0.01	0.002	0.028***	0.029***	0.029***	0.028***
	(0.018)	(0.01)	(0.019)	(0.01)	(0.007)	(0.009)	(0.007)	(0.009)
PTA_{ijt}	0.249***	0.217***	0.223***	0.218***	0.039	-0.164***	0.088**	-0.217***
	(0.056)	(0.03)	(0.054)	(0.029)	(0.036)	(0.045)	(0.035)	(0.046)
$PTA_{ij,t}^{L/E}$	-0.014	-0.079			0.226***	0.059		
	(0.077)	(0.051)			(0.037)	(0.043)		
$PTA_LE_{ij,t}^{L/E}$			0.106**	-0.111***			0.080***	0.123***
			(0.051)	(0.043)			(0.028)	(0.037)
Observations	56,006	55,547	56,006	55,547	55,788	53,907	55,788	53,907
Pseudo R^2	0.979	0.995	0.979	0.995	0.987	0.976	0.986	0.976

Notes: * = $p < 0.1$ ** = $p < 0.05$ *** = $p < 0.01$. PPML Estimates; standard errors, clustered by dyad-year, are reported in parentheses. All specifications include exporter-year, importer-year and bilateral fixed effects. The estimates for $NoAfT_{ij,t-1}$ and $NoODA_{ij,t-1}$ are not reported. Legend: X = Donor bilateral exports; M = Donor bilateral imports; L = Labour; E = Environment; LE = Legally-enforceable.

Turning to environment-related NTPs, legally-enforceable provisions in PTAs enhance both exports and imports of environment-intensive goods (columns 7-8). Coefficient estimates suggest that the positive effect ranges from 8.3% on donors' bilateral exports to 13.1% on their bilateral imports. NTPs in general (i.e., of any type) do not have a statistically significant association with aid recipients' bilateral exports, while the relationship with donor countries' bilateral exports of environment-intensive products is positive and statistically

[3] Results are not sensitive to organizing the data in five-year intervals over 2000-2016 to allow for adjustment of trade flows to PTA membership.

[4] Calculated as $[exp(\widehat{coefficient}) - 1] * 100$.

significant. No relationship is observed using lagged bilateral aid for trade. PTA membership reduces aid recipients' bilateral exports of environment-intensive goods, but there is a strong positive relationship between ODA allocated to environmental projects and trade in environment-intensive goods. This is an unexpected finding that merits further research. Aid given to environmental projects may result in tangible environmentally-positive outcomes (including a reduction in the carbon-intensity of production) but not in a reduction in bilateral trade in environment-intensive products.

Summarizing, legally enforceable provisions on labor and environmental protection in PTAs enhance high-income (donor country) exports of labor- and environment-intensive goods to recipient countries. This is not observed for bilateral exports of labor-intensive goods from developing countries (aid recipients), where we find a statistically significant negative relationship between trade and binding labor provisions. Moreover, aid for trade and ODA have diametrically opposite effects on trade in labour- and environment-intensive products, suggesting these two types of development assistance have distinct objectives and drivers, and should be distinguished from each other in assessments of the effects of aid.[5]

Results from estimating equations (3) and (4) reveal that bilateral AfT allocated in a previous period is a strong determinant of the propensity to negotiate NTPs in PTAs, including legally-enforceable ones, in the following period. In contrast, development assistance for labor and environmental projects does not affect the propensity to negotiate NTPs. The likelihood of inclusion of non-binding NTPs in PTAs is associated with donors' bilateral exports of labor- and environment-intensive products, although trade does not affect the probability of signing legally-enforceable NTPs in either domain. Aid recipients' bilateral exports of labor- and environment-intensive products do not affect the likelihood of adopting NTPs. The results suggest that donors' commercial interests, including aid targeted at enhancing trade, may be a factor driving inclusion of non-trade provisions in PTAs. These findings are consistent with a carrot-and-stick approach to NTPs in PTAs, in that NTPs may be demanded by donors in exchange for Aid for Trade (Baccini and Urpelainen, 2012; Vijl, 2014), while such conditionality does not figure for ODA, which is not primarily directed at stimulating trade. Given their non-correlation with bilateral donor imports from recipients, the inclusion of NTPs in PTAs may not emanate from protectionist pressures to establish a level playing field.

[5]This finding is not due to multicollinearity in the dataset.

Table 2: Propensity to negotiate labour and environmental provisions in PTAs

	(1) PTA^{L}_{ijt}	(2) PTA^{L}_{ijt}	(3) $PTA_LE^{L}_{ijt}$	(4) $PTA_LE^{L}_{ijt}$	(5) PTA^{E}_{ijt}	(6) PTA^{E}_{ijt}	(7) $PTA_LE^{E}_{ijt}$	(8) $PTA_LE^{E}_{ijt}$
$\log AfT_{ij,t-1}$	0.0043***	0.0038***	0.0099***	0.0090***	0.0100***	0.0085***	0.0080***	0.0093***
	(0.001)	(0.001)	(0.0016)	(0.0017)	(0.0014)	(0.0015)	(0.0017)	(0.0018)
$\log ODA^{L/E}_{ij,t-1}$	0.0001	-0.0001	0.0076	0.0074	0	0.0008	-0.0003	0.0027
	(0.0074)	(0.0075)	(0.015)	(0.0152)	(0.0033)	(0.0034)	(0.0038)	(0.0038)
$\ln X^{L/E}_{ij,t-1}$	0.0005**		0.0004		0.0005**		0.0004	
	(0.0002)		(0.0004)		(0.0003)		(0.0003)	
$\log M^{L/E}_{ij,t-1}$		0.0001		0.0002		0.0004		0
		(0.0002)		(0.0005)		(0.0003)		(0.0004)
Observations	51,714	46,194	51,714	46,194	50,371	43,748	50,371	43,748
R^2	0.814	0.809	0.831	0.827	0.869	0.841	0.819	0.819

Notes: * = $p < 0.1$ ** = $p < 0.05$ *** = $p < 0.01$. Estimates from a Linear Probability Model; standard errors, clustered by dyad-year, are reported in parentheses. All specifications include exporter-year, importer-year and bilateral fixed effects. The estimates for $NoAfT_{ij,t-1}$ and $NoODA_{ij,t-1}$ are not accommodated using Wagner's (2003) methodology which accounts for the much smaller sample size compared to Table 1. Legend: X = Donor bilateral exports; M = Donor bilateral imports; L = Labour; E = Environment; LE = Legally-enforceable; LPM = Linear Probability Model.

4 Conclusion

Preferential trade agreements increasingly incorporate provisions on environmental protection and labor standards. These comprise a mix of soft law, best endeavors commitments and legally enforceable provisions (Mattoo et al., 2020). Recent research assessing whether NTPs are effective in improving non-trade outcomes has found little evidence they do so (Francois et al., 2022) and concludes it is important to consider other policy instruments focusing on non-trade issues, particularly official development assistance (Yildirim et al., 2021).

Controlling for the amount of bilateral AfT and aid allocated to labor and environmental projects, we find that enforceable NTPs in PTAs enhance bilateral exports of environmental- and labor-intensive products from donor countries, as well as exports of environment-intensive goods from aid recipients to donor nations, but not exports of labor-intensive goods from aid receiving PTA partner countries. The latter finding is consistent with the idea that NTPs might impact export competitiveness in labor-intensive goods, a long standing concern of many developing country policymakers. The positive relationship between NTPs and trade in environment-intensive products is surprising and calls for further research to better understand the determinants of trade in these types of products.

Our results also suggest that, controlling for country-specific and bilateral determinants, efforts by high-income countries to include NTPs in PTAs may reflect commercial interests, underlining the endogeneity existing in the relationship (which we attempt to mitigate

econometrically). This inference is corroborated by the strong positive association between bilateral aid for trade and the propensity to include NTPs in PTAs.

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Annex

DAC Donor countries (Reporters)
Australia, Austria, Belgium, Canada, Switzerland, Czech Republic, Germany, Denmark, Spain, Finland, France, United Kingdom, Greece, Ireland, Italy, Japan, Korea, Luxembourg, The Netherlands, Norway, Poland, Portugal, Sweden, United States
ODA Recipient countries (Partners)
Afghanistan, Angola, Albania, Argentina, Armenia, Burundi, Benin, Burkina Faso, Bangladesh, Bosnia & Herzegovina, Bolivia, Brazil, Botswana, Chile, China, Cote d'Ivoire, Cameroon, Democratic Republic of the Congo, Colombia, Cape Verde, Costa Rica, Cuba, Dominican Republic, Algeria, Ecuador, Egypt, Eritrea, Ehiopia, Fiji, Gabon, Georgia, Ghana, Guinea, Guinea-Bissau, Guatemala, Honduras, Haiti, Indonesia, India, Iraq, Jamaica, Jordan, Kazakhstan, Kenya, Kyrgz Republic, Cambodia, Laos, Lebanon, Liberia, Sri Lanka, Morocco, Moldova, Mexico, Macedonia, Mali, Myanmar, Mongolia, Mozambique, Mauritania, Malawi, Malaysia, Namibia, Niger, Nigeria, Nicaragua, Nepal, Pakistan, Panama, Peru, The Philippines, Paraguay, Palastine, Rwanda, Senegal, Sierra Leone, El Salvador, Somalia, Serbia, Sao Tome & Principe, Eswatini, Togo, Thailand, Timor-Leste, Tunisia, Turkey, Tanzania, Uganda, Ukraine, Uruguay, Venezuela, Vietnam, South Africa, Zambia, Zimbabwe

Notes: Countries were selected among DAC (Development Assistance Committee) donors and the countries reported to receive ODA at least once in in the period considered.