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MSc in Development Management 2023

Dissertation submitted in partial fulfilment of the requirements of the degree.

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Abstract

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Contents

Abbreviations

AI	Artificial Intelligence
API	Application Programming Interface
CPU	Central Processing Unit
GPU	Graphics Processing Unit
IoT	Internet of Things
ML	Machine Learning
NLP	Natural Language Processing
RAM	Random Access Memory
UI	User Interface
UX	User Experience

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1 Introduction

This is the introduction

The organization of this article is as follows: Section II provides a brief literature review of the PTAs, South–South trade and the importance of the structure of trade. Section III introduces the methodology and data. Section IV presents the empirical results fol- lowed by a discussion of the robustness tests. Section V concludes. This is the introduction section. Here is a citation: [1]

2 Literature Review

This section reviews the literature on the theoretical and empirical effects of PTAs on exports and situates the analysis in the relevant field of research.

Theoretical Framework

Comparative advantage and trade creation and diversion

Traditional trade theory emphasizes trade creation (allowing cheaper products from PTA members to substitute for more expensive domestic products) and trade diversion (substituting products from non-PTA members that were cheaper before the PTA with products from PTA members that are cheaper now due to the PTA reducing tariffs) (Schiff, Winters and Schiff, 2003) and argues that the impact of PTAs depends on the comparative advantage of member countries. In particular, it argues that PTAs magnify the impacts of a country's comparative advantage, relative to the world and to other member countries signatories of a common PTA. If member countries of a PTA have a comparative advantage on a factor endowment relative to the world, but one country also has a comparative advantage on the same factor endowment relative to the other member countries, the country with the "extreme" advantage will be more vulnerable to trade diversion effects, while countries with "intermediate" advantages will gain from trade creation effects, predicting divergence of trade outcomes, and winners and losers among member countries. (Venables, 2003). This emphasis on the trade creation and trade diversion effects among member countries with significant differences in the comparative advantage of their factor endowments relative to the world and to each other, suggests that, when the country with the "extreme" comparative advantage is a high-income country, relative to a lower-income country with an "intermediate" comparative advantage, the lower-income country should seek a PTA with the other country as it will gain more. On the contrary, if both members are lower-income countries, the country with the "extreme" comparative advantage, should not seek a PTA with the other low-income member country as it will be vulnerable. (Sanguinetti, Siedschlag and Martincus, 2010). This logic can be easily extended to the North-South and South-South types of PTAs, as North countries will reasonably have an "extreme" comparative advantage in skill-intensive goods relative to South countries, while South countries will reasonably have an "extreme" comparative advantage in labour-intensive goods relative to North countries. Furthermore, it is also argued that benefiting from economies of scale through South-South economic integration is more difficult because member countries do not have complementary production and trade structures nor high interpenetration of each other's markets on intra-industry trade. (Schiff, Winters and Schiff, 2003). Also, South countries can benefit from greater technological diffusion from North-South PTAs as the North countries have higher industrial development as well as investment in research (Schiff and Wang, 2008). Finally, as the trend in manufacturing has been in favour of vertical specialization or value chain fragmentation (Krugman, 1995), North-South PTAs are preferable as developing countries strive to capture a greater portion of the value added. For these arguments, developing countries should therefore be better off entering into North-South rather than South-South agreements.

Economies of Scale and Input-Output linkages

In contrast, classical development theory and new trade literature go beyond the static welfare gains from trade creation and diversion effects when analysing the effect of PTAs.

"Preferential trade arrangements between developing countries can lead to industrialization of the region as a whole as a consequence of the effective market enlargement induced by reducing intra-South barriers." (Puga and Venables, 1998)

Other arguments

- Infant industry development

- Economies of scale
- Decoupling

"Trade can also arise from product differentiation and from economies of scale that reduce costs as production grows. In these circumstances competition between firms is weakened, and consumers lose. International trade then offers an important means of increasing competition by allowing new suppliers to enter markets." (Schiff, Winters and Schiff, 2003)

Stumbling block vs building block dichotomy

Discussions on SS PTAs

"*The trade literature long argued that PTAs can benefit member states through economies of scale and comparative advantage and higher competition (Schiff, 2003). However, these arguments are generally reserved for North–North and South–North but not South–South PTAs. First, it is argued that similar production and trade structures in the South make it more difficult to benefit from economies of scale. Second, given the lower industrial development and research and development activities in the South, greater technology diffusion for the Southern country can be reaped from South–North integration (Schiff and Wang, 2008).3 Third, the more advanced members are argued to be the likely winners in South–South integration, thanks to their higher industrial and institutional development. As a result, lower income Southern countries might be better off entering South– North PTAs. It is also claimed that industries with long term development potential are more likely to move to the bigger and richer members, leading to divergence once the barriers are lowered under South–South PTAs (Puga and Venables, 1997; Schiff, 2003; Venables, 2003). Last but not the least, North–South PTAs are argued to facilitate increasing vertical specialization or value chain fragmentation, what Krugman (1995) referred to as the slicing up of the value added.4*

In contrast, the classical development theory and new trade literature has a more positive view of South–South PTAs, focusing on their developmental benefits through infant industry development, economies of scale and decoupling rather than on the static welfare gains (from trade creation and diversion) or the 'stumbling block/ building block' dichotomy. Myrdal (1956), for example, suggested that regional integration in the South can help developing countries overcome local market size limita- tions during industrialization. Accordingly, given the strongly skill biased structure of output expansion in inter- national trade (Antweiler and Trefler, 2002), increasing market size can help developing countries enjoy scale effects and increase the skill content of their exports while reducing the cost of intermediaries, which in return may help stimulate export penetration into Northern mar- kets in industrial goods (Fugazza and Robert-Nicoud, 2006). Likewise, Lewis (1980), and more recently UNCTAD (2005) and World Bank (2008), also pointed out that South–South trade can reduce the growth depen- dence of the South on Northern growth, leading perhaps to decoupling from Northern business cycles (thus helping the recovery from current global downturn (ESCAP, 2009)). Furthermore, the structure of South–South trade is argued to have dynamic and long term benefits for developing countries because of its comparatively higher technology and human capital intensive factor content (Amsden, 1987; Lall et al., 1989; Demir and Dahi, 2011). Besides, similarity in production pattern and resource base may facilitate appropriate technology trans- fer (Amsden, 1980, 1987; UNIDO, 2005; World Bank, 2006).

It is also possible that South–North PTAs can yield more benefits to Northern countries than the Southern ones because of asymmetries in bargaining power, nego- tiating capacity and retaliatory capability. Even though these asymmetries are also present between Southern countries, the gap is likely to be smaller.

Thrasher and Gallagher (2008), for example, show that South–South PTAs leave the greatest policy space available to 'deploy effective policy for long-run diversification and develop- ment' than South–North PTAs. We should also note that structuralist North–South models have long discussed how interactions between countries with asymmetrical economic structures, patterns of specialization, and devel- opment can lead to uneven development (Findlay, 1980; Darity, 1990; Dutt, 1992; and also see the survey articles Findlay, 1984; Dutt, 1989; Darity and Davis, 2005).

In addition to the debate above, the effects of PTAs on the structure of trade are of particular importance for long term development and growth. Development economics and the new trade theory provide strong evidence that not all trade is equal and what you export might matter for long term economic performance (Kaldor, 1967; An and Iyigun, 2004; Hausmann et al., 2007). Exports in more technology intensive industries are likely to generate lar- ger spillovers (such as innovation and physical and human capital accumulation) and linkages for development than lower technology and labour intensive ones (Hausman et al., 2007). Earlier on, this point was also raised by Kaldor (1967) in his three growth laws; which stated that there is a strong

positive relationship between the growth of manufacturing output and (i) the growth of GDP, (ii) the growth of labour productivity in manufacturing (i.e. the Verdoorn's law) and (iii) the growth of productivity in nonmanufacturing sectors.

Note that the question we raise here is different than the one usually discussed in the literature, which is whether PTAs are trade creating or diverting.5 To the extent that PTAs enhance manufactures exports, we can then start evaluating the success or failure of PTAs according to their potential long term developmental impact. Much of the traditional PTA literature, both theoretical and empiri- cal, is taken up by trade creation versus trade diversion debate. These questions are not unimportant; however, there is reason to question the disproportionate attention still given to the classic Vinerian dichotomy.

(...)

Second, since North–North, South–North and North–South trade barriers appear to be significantly lower than the ones present in South–South trade (Kowalski and Shepherd, 2006, also see Kee et al., 2009; Medvedev, 2010), it is unlikely that South–South PTAs are trade diverting from the North, which has retrospectively been the main point of contention among trade theorists on the relative costs and benefits of South–South PTAs. In fact, consistent with Mundell (1968)'s assertion that 'a member's gain from a free-trade area will be larger, the higher are the initial tariffs of partner countries', South–South trade barrier reduction is found to generate a significant increase in South–South exports, while no such effect is reported in the case of North–South, South–North or North–North trade (Kowalski and Shepherd, 2006). Besides, there is also some empirical evidence showing that South–South PTAs are no more trade diverting than other PTAs (Cernat, 2001). Third, since higher transportation costs and former colonial linkages with Northern countries (which always appear to be significant in gravity models of trade), in addition to higher trade barriers (Kee et al., 2009), con- tinue to limit South–South trade expansion, PTAs might be seen as a way of compensating for such trade barriers that are lower in South–North, North–South or North– North trade.6 Last but not least, in the case of industrial development, what matters are dynamic not static gains. That is to say, if South–South PTAs are found to enhance industrial development, the long term gains may very well outweigh the static short term losses." (Dahi and Demir, 2013)

Significance of Exports

Defining South and North

Empirical literature

"Turning to the empirical work on PTAs, the majority of research reports a significantly positive effect of PTAs on member trade. Cipollina and Salvatici (2010) review 85 papers on the effects of PTAs and find that the mean effect is 0.59 (or an 80% increase in trade), while the median is 0.38 (or a 46% increase in trade). Although the range of coefficient estimates is quite large (–9.01 to 15.41), only 312 out of 1827 coefficient estimates are reported as negative. Nevertheless, despite the diversity of research, there are only few studies that compare heterogeneous effects of PTAs within and between developing and developed countries. Among the few, Medvedev (2010), using a cross sectional analysis, reports that while North–North PTAs are insignificant in stimulating preferential trade, North–South PTAs increase trade by 40% and South– South PTAs increase them by 163%.

Cipollina, M. and Salvatici, L. (2010) Reciprocal trade agreements in gravity models: a meta analysis, Review of International Economics, 18, 63-80.

Medvedev, Denis, Preferential Trade Agreements and Their Role in World Trade (October 1, 2006). World Bank Policy Research Working Paper No. 4038, Available at SSRN: https://ssrn.com/abstract=938031"

The empirical work on the structure of trade under PTAs has also been scarce. Sanguinetti et al. (2010) examine the impact of PTAs on South–South manufacturing production patterns in the case of MERCOSUR for the period of 1985–1998 and find that South–South PTAs cause a spatial regional reorganization of production along the lines of internal comparative advantage.

Sanguinetti, P., Siedschlag, I., & Martincus, C. V. (2010). The Impact of South-South Preferential Trade Agreements on Industrial Development: An Empirical Test. Journal of Economic Integration, 25(1), 69–103. http://www.jstor.org/stable/23000966

Stylised facts

Ideas:

Total number of SS, NS and NN PTAs

Share of SS, NS and NN PTAs

Total exports by S and N countries
Share of total exports by S and N countries
Total exports of manufactured by S and N countries
Share of total exports of manufactured by S and N countries
Number of products exported by S and N countries

References

Dahi, O.S. and Demir, F. (2013) 'Preferential trade agreements and manufactured goods exports: does it matter whom you PTA with?', *Applied Economics*, 45(34), pp. 4754–4772. Available at: https://doi.org/10.1080/00036846.201

Krugman, P. (1995) 'Growing World Trade: Causes and Consequences', *Brookings Papers on Economic Activity* [Preprint].

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Venables, A.J. (2003) 'Winners and Losers from Regional Integration Agreements', *The Economic Journal*, 113(490), pp. 747–761. Available at: https://doi.org/10.1111/1468-0297.t01-1-00155.

3 Methodology

The Gravity Model of Trade

Often referred as the "workhorse" of international trade, the gravity model is prominent in the empirical literature of applied international trade analysis. Among the arguments that could explain/support the use of the gravity model, there are four that are particularly relevant for our purposes. First, the gravity model of trade is intuitive to understand. Following the metaphor of Newton's Law of Universal Gravitation, it predicts that international trade between two countries is directly proportional to the product of their economic size, and inversely proportional to trade frictions between them. In simpler words, the bigger (smaller) the economies of two countries, and the easier (harder) it is for them to trade with each other, the more (less) we expect them to trade. Second, it is referred to as a structural model with solid theoretical foundations, which makes it appropriate for counterfactual analysis, such as measuring the effects of trade policies as we aim to do with the effects of South-North versus South-South agreements. Third, model has a flexible structure, which will allow us to construct a specification tailored to our research. Finally, fourth, it holds consistent and remarkable predictive power, both with aggregate and sectoral data (Yotov et al. 2016).

Through the decades, the gravity equation has been regularly upgraded in the theoretical and empirical literature. Of relevance, the simple intuition of the gravity model was theoretically extended by Anderson to note that, after controlling for size, the increase or decrease is *relative* to the average barriers of the two countries with all their partners, which are referred as "multilateral resistance" (Anderson 1979). The more trade barriers or resistance to trade exists with other countries relative to a given partner, the more a country is pushed to trade with said partner. Anderson also introduced the assumptions of product differentiation by place of origin, and Constant Elasticity of Substitution (CES) expenditures ,or the Armington-CES assumption (Yotov et al. 2016; Chatzilazarou and Dadakas 2023), which led us to today's generalized form of the gravity equation, as developed and popularised by Anderson and van Wincoop (Anderson and van Wincoop 2003).

Do I need to add more on the theory underlying the Gravity Models of Trade?

Equally important, several empirical developments have strengthened the gravity model and inform our choice of methodology: Exporter-time and importer-time fixed effects are used to account for the multilateral resistance terms in a gravity estimation with panel data (Olivero and Yotov 2012); As the gravity model

is often estimated with an OSL estimator, zero-trade flows were dropped from the sample when trade was transformed into a logarithmic form. Also, trade data is recognized to suffer from heteroscedasticity (Yotov et al. 2016). To solve for zero-trade flows and heteroscedasticity, the Poisson Pseudo Maximum Likelihood (PPML) estimator has been proposed to estimate the gravity model, avoiding potential biases (Silva and Tenreyro 2006; Santos Silva and Tenreyro 2011); Country-pair fixed effects has been proposed to account for the unobserved endogeneity of trade policy (Baier and Bergstrand 2007). It is worth nothing that the inclusion of exporter-time and importer-time fixed effects will absorb all observable and unobservable time-varying country-specific characteristics that could affect the dependent variable, while the country-pair fixed effects will absorb observable and unobservable bilateral time-invariant characteristics that could affect trade costs; The inclusion of intra-trade flows as well as international trade flows is proposed to correctly estimate the effects of non-discriminatory trade policy, allowing for consumers to choose products from both international and domestic sources (Dai, Yotov, and Zylkin 2014; Heid, Larch, and Yotov 2017); Year-intervals instead of data pooled over consecutive years should be used to allow for adjustment of trade flows to policies that might not have immediate effects (Baier and Bergstrand 2007; Anderson and Yotov 2016); And finally, to account for the effects of globalization forces that may biased the estimates of trade policies, a set of globalization dummies are recommended to control for the effects of globalization in the gravity model (Yotov 2012; Bergstrand, Larch, and Yotov 2015). Based on the theoretical and empirical best-practices found in the relevant literature, we employ the following gravity equation using a PPML estimator and a balanced panel data approach with multiple exporters, multiple importers and time as our benchmark model:

$$(1) \qquad X_{ij,t} = \ exp(\eta_{i,t} + \psi_{j,t} + \gamma_{\binom{-}{ij}} + \beta_1 PTA_{ij,t} + \beta_2 PTA_{ij,t-5} + \sum_t b_t) + \epsilon_{ij,t}$$

Where $X_{ij,t}$ denotes the value of exports from an origin country i to a destination country j; $\eta_{i,t}$ and $\psi_{j,t}$ are, respectively, exporter-time and importer-time fixed-effects; $\gamma_{\binom{-}{ij}}$ is a country-pair fixed-effect; $PTA_{ij,t}$ and $PTA_{ij,t-5}$ are our main variables of interest, which, respectively indicate if i and j are members of a PTA at time t and, to account for potential "phase-in" effects over time of the PTA, at time $t-5$; $\sum_t b_t$ is a set of dummies that equal 1 for international trade and 0 for domestic trade observations at each time t; and $\epsilon_{ij,t}$ is an error term.

In contrast with our main interest of research, which are the potential heterogenous effects of PTAs on different members for different types of agreements, this benchmark model, specifically $\beta = \beta_1 + \beta_2$, would provide the average "total" partial effect of PTAs on trade after accounting for lagged effects, but it cannot provide the effects for a given agreement, country-pairs o specific country members to a specific agreement. As such, three successive expansions can be implemented to capture heterogeneity in PTA effects as proposed by Baier *et al.* (Baier, Yotov, and Zylkin 2019):

$$(2) \qquad X_{ij,t} = \ exp(\eta_{i,t} + \psi_{j,t} + \gamma_{\binom{-}{ij}} + \sum_A \beta_{1,A} PTA_{ij,t} + \sum_A \beta_{2,A} PTA_{ij,t-5} + \sum_t b_t) + \epsilon_{ij,t}$$

Equation (2) can be implemented to account for heterogeneous effects of PTAs at the level of the specific agreement, by allowing for distinct average partial effects for each individual agreement, using superscript A to index by agreement and also allowing for agreement-specific lags: $\beta_A = \beta_{1,A} + \beta_{2,A}$.

Extended Benchmark Model with PTA Types

You want to modify the benchmark model to allow for different types of PTAs (NN, NS, SS) while still keeping the same overall structure. Here's how you can adjust the model:

Equation (1) with PTA Types:

$$(3) \quad X_{ij,t} = \ exp(\eta_{i,t}+\psi_{j,t}+\gamma_{\binom{-}{ij}}+\beta_{1NN} PTA\_NN_{ij,t}+\beta_{2NN} PTA\_NN_{ij,t-5}++\beta_{1NS} PTA\_NS_{ij,t}+\beta_{2NS} PTA\_NS_{ij,t-5}+$$

Where:

- $X_{ij,t}$ denotes the value of exports from country i to country j at time t.

- $\eta_{i,t}$ and $\psi_{j,t}$ are exporter-time and importer-time fixed effects, respectively.
- $\gamma_{(\bar{ij})}$ is a country-pair fixed effect.
- β_{1NN} and β_{2NN} are the coefficients for the immediate and lagged effects of a North-North PTA (PTA_NN).
- β_{1NS} and β_{2NS} are the coefficients for the immediate and lagged effects of a North-South PTA (PTA_SN).
- β_{1SS} and β_{2SS} are the coefficients for the immediate and lagged effects of a South-South PTA (PTA_SS).
- $\sum_t b_t$ is a set of time dummies accounting for international trade-specific effects at each time t.
- $\epsilon_{ij,t}$ is the error term.

Extended Model with PTA Heterogeneity and Types

Next, you want to extend the model allowing for PTA heterogeneity to also distinguish between different types of PTAs.

Equation (2) with PTA Types:

$$(4) \quad X_{ij,t} = exp(\eta_{i,t}+\psi_{j,t}+\gamma_{(\bar{ij})}+\sum_A (\beta_{1,A,NN}PTA\_NN_{ij,t} + \beta_{2,A,NN}PTA\_NN_{ij,t-5})+\sum_A (\beta_{1,A,NS}PTA\_NS_{ij,t} + \beta_2$$

Where:

- $X_{ij,t}$ denotes the value of exports from country i to country j at time t.
- $\eta_{i,t}$ and $\psi_{j,t}$ are exporter-time and importer-time fixed effects, respectively.
- $\gamma_{(\bar{ij})}$ is a country-pair fixed effect.
- The summations $\sum A$ denote the sum over different agreements A for:
  - $\beta_{1,A,NN}$ and $\beta_{2,A,NN}$: Coefficients for the immediate and lagged effects of North-North PTAs (PTA_NN).
  - $\beta_{1,A,NS}$ and $\beta_{2,A,NS}$: Coefficients for the immediate and lagged effects of North-South PTAs (PTA_SN).
  - $\beta_{1,A,SS}$ and $\beta_{2,A,SS}$: Coefficients for the immediate and lagged effects of South-South PTAs (PTA_SS).
- $\sum_t b_t$ is a set of time dummies accounting for trade-specific effects at each time t.
- $\epsilon_{ij,t}$ is the error term.

Variables:

1. $PTA\_NN_{ij,t}$: Dummy variable that takes the value of 1 if the trade pair (i, j) is part of a North-North PTA at time t, and 0 otherwise.
2. $PTA\_NN_{ij,t-5}$: Dummy variable that takes the value of 1 if the trade pair (i, j) was part of a North-North PTA at time *t-5*, and 0 otherwise.
3. $PTA\_NS_{ij,t}$: Dummy variable that takes the value of 1 if the trade pair (i, j) is part of a North-South PTA at time t, and 0 otherwise.
4. $PTA\_NS_{ij,t-5}$: Dummy variable that takes the value of 1 if the trade pair (i, j) was part of a North-South PTA at time *t-5*, and 0 otherwise.

5. $PTA\_SS_{ij,t}$: Dummy variable that takes the value of 1 if the trade pair (i, j) is part of a South-South PTA at time t, and 0 otherwise.

6. $PTA\_SS_{ij,t-5}$:: Dummy variable that takes the value of 1 if the trade pair (i, j) was part of a South-South PTA at time *t-5*, and 0 otherwise.

These models allow you to capture the differentiated impacts of PTAs depending on whether they are between two developed countries (NN), between a developed and a developing country (NS), or between two developing countries (SS).

References

4 Findings

These are the findings

4.1 Benchmark Estimation Results by Region

4.1.1 Benchmark Model Results by Region

Table 1: Benchmark Model Regional Results

	(1)	(2)	(3)	(4)	(5)
Variables					
	PPML	PPML	PPML	PPML	PPML
	Africa	Americas	Asia	Europe	Intercontinental
PTA	0.578***	0.287***	0.064	0.237***	0.015
	(0.154)	(0.071)	(0.083)	(0.019)	(0.093)
PTA Lag	-0.278	0.146	-0.167***	0.238***	0.188***
	(0.300)	(0.149)	(0.056)	(0.022)	(0.043)
PTA + PTA Lag	0.301	0.433***	-0.103	0.475***	0.203*
	(0.295)	(0.140)	(0.094)	(0.025)	(0.106)
Exporter-Year FE	Yes	Yes	Yes	Yes	Yes
Importer-Year FE	Yes	Yes	Yes	Yes	Yes
Country-Pair FE	Yes	Yes	Yes	Yes	Yes
R-Squared	0.997	0.999	0.999	0.997	0.998
Observations	5838	10997	25308	28168	73930

Notes: Robust standard errors clustered at the country-pair in parentheses. Significance levels are indicated as follows: *p<0.1; **p<0.05; ***p<0.01.

4.2 PTA Estimation Results by Region

4.2.1 PTA Model Results by Region

Table 2: PTA + PTA Lag Coefficients for Africa Region

Statistically Insignificant		
PTA ID	Estimate	SE
670	0.326	(0.410)
787	0.304	(0.233)

Notes: Robust standard errors clustered at the country-pair level in parentheses.
Significance levels are indicated as follows: *p<0.1; **p<0.05; ***p<0.01.

Table 3: PTA + PTA Lag Coefficients for Americas Region

Positive and Statistically Significant		
PTA ID	Estimate	SE
213	1.342***	(0.434)
218	0.879***	(0.173)
716	0.732**	(0.358)
239	0.571***	(0.173)
201	0.545**	(0.265)
612	0.515**	(0.251)
616	0.488***	(0.044)
168	0.410***	(0.113)
163	0.342***	(0.096)
141	0.265***	(0.024)
Statistically Insignificant		
PTA ID	Estimate	SE
185	0.291	(0.376)
645	0.117	(0.141)
Negative and Statistically Significant		
PTA ID	Estimate	SE
188	-0.774***	(0.144)

Notes: Robust standard errors clustered at the country-pair level in parentheses. Significance levels are indicated as follows: *p<0.1; **p<0.05; ***p<0.01.

4.3 NS Estimation Results by Region

4.3.1 NS Model Results by Region

4.4 NS PTA Estimation Results by Region

4.4.1 NS PTA Model Results by Region

Table 4: PTA + PTA Lag Coefficients for Asia Region

Positive and Statistically Significant		
PTA ID	Estimate	SE
683	1.080***	(0.237)
675	1.360**	(0.655)
70	0.472***	(0.150)
100	0.376***	(0.105)
67	0.342***	(0.125)
475	0.636**	(0.298)
598	0.166**	(0.083)
Statistically Insignificant		
PTA ID	Estimate	SE
474	0.419*	(0.243)
72	0.254	(0.178)
116	0.256	(0.703)
492	0.041	(0.180)
640	0.183	(0.217)
223	-0.014	(0.203)
71	-0.138	(0.091)
456	-0.209	(0.165)
534	-0.165	(0.370)
667	-0.049	(0.241)
Negative and Statistically Significant		
PTA ID	Estimate	SE
221	-2.955***	(0.727)
220	-1.215***	(0.093)
599	-0.967***	(0.191)
1	-0.732**	(0.359)

Notes: Robust standard errors clustered at the country-pair level in parentheses. Significance levels are indicated as follows: *p<0.1; **p<0.05; ***p<0.01.

Table 5: PTA + PTA Lag Coefficients for Europe Region

Positive and Statistically Significant		
PTA ID	Estimate	SE
5	3.812***	(0.278)
128	2.712***	(0.211)
13	2.256***	(0.262)
132	2.241***	(0.252)
192	1.107***	(0.163)
7	1.153***	(0.272)
328	0.671***	(0.175)
8	0.667***	(0.161)
621	0.618***	(0.186)
135	0.615***	(0.217)
254	0.565***	(0.084)
394	0.745***	(0.202)
335	0.472***	(0.025)
9	0.580**	(0.285)
11	0.656**	(0.307)
131	0.615**	(0.281)
129	0.553***	(0.206)
Statistically Insignificant		
PTA ID	Estimate	SE
6	0.355	(0.358)
150	0.247	(0.687)
153	0.614	(0.633)
154	0.592	(0.409)
255	0.167	(0.237)
389	0.412	(0.323)
331	0.142	(0.201)
594	0.474*	(0.251)
12	-0.246	(1.208)
156	-0.441	(0.445)
Negative and Statistically Significant		
PTA ID	Estimate	SE
133	-0.772***	(0.248)

Notes: Robust standard errors clustered at the country-pair level in parentheses. Significance levels are indicated as follows: *p<0.1; **p<0.05; ***p<0.01.

Table 6: PTA + PTA Lag Coefficients for Intercontinental Region

Positive and Statistically Significant		
PTA ID	Estimate	SE
627	2.372***	(0.345)
415	1.853***	(0.201)
206	1.539***	(0.180)
75	1.366***	(0.493)
263	1.426***	(0.115)
4	1.254***	(0.268)
626	1.099***	(0.121)
543	1.090*	(0.707)
657	0.705***	(0.082)
637	0.667***	(0.102)
202	0.658***	(0.123)
208	0.763***	(0.129)
136	0.744***	(0.185)
490	0.843***	(0.181)
17	0.811***	(0.242)
304	0.770***	(0.120)
628	0.484***	(0.142)
207	0.516***	(0.114)
518	0.627***	(0.135)
330	0.315***	(0.086)
Statistically Insignificant		
PTA ID	Estimate	SE
242	0.050	(0.294)
386	-0.092	(0.168)
524	0.102*	(0.045)
512	-0.458*	(0.266)
84	-0.059	(0.120)
330	0.314***	(0.086)
15	0.313*	(0.179)
227	0.348*	(0.186)
521	0.101*	(0.045)
Negative and Statistically Significant		
PTA ID	Estimate	SE
104	-0.338***	(0.112)
323	-0.338**	(0.138)
677	-1.366***	(0.385)
679	-1.429***	(0.430)

Notes: Robust standard errors clustered at the country-pair level in parentheses. Significance levels are indicated as follows: *p<0.1; **p<0.05; ***p<0.01.

Table 7: Regional Results by PTA Type

	Africa	Americas	Asia	Europe	Intercontinental
Variables					
NN PTA				0.207***	0.013
				(0.021)	(0.072)
NN PTA Lag				0.192***	0.016
				(0.023)	(0.073)
NN PTA + NN PTA Lag				0.399***	0.029
				(0.026)	(0.102)
NS PTA		0.199***	-0.089	0.374***	0.013
		(0.069)	(0.089)	(0.041)	(0.144)
NS PTA Lag		0.234	-0.067	0.349***	0.231***
		(0.190)	(0.060)	(0.041)	(0.061)
NS PTA + NS PTA Lag		0.434**	-0.156*	0.723***	0.244
		(0.200)	(0.090)	(0.046)	(0.156)
SS PTA	0.578***	0.476***	0.153	0.530***	0.004
	(0.154)	(0.139)	(0.117)	(0.107)	(0.121)
SS PTA Lag	-0.278	-0.023	-0.208***	0.575***	0.204***
	(0.300)	(0.133)	(0.063)	(0.119)	(0.073)
SS PTA + SS PTA Lag	0.301	0.453***	-0.055	1.105***	0.208
	(0.295)	(0.112)	(0.130)	(0.092)	(0.128)
Exporter-Year FE	Yes	Yes	Yes	Yes	Yes
Importer-Year FE	No	Yes	Yes	Yes	Yes
Country-Pair FE	Yes	Yes	Yes	Yes	Yes
R-Squared	0.997	0.999	0.999	0.997	0.998
Observations	5838	10997	25308	28168	73930

Notes: Robust standard errors clustered at the country-pair level in parentheses.
Significance levels are indicated as follows: *p<0.1; **p<0.05; ***p<0.01.

Table 8: Africa PTA + PTA Lag Coefficients by Type

PTA ID	**NS PTA + Lag**	**SS PTA + Lag**	**NN PTA + Lag**
Agreements with NS and SS (or only NS)			
No agreements in this category			
Agreements with only SS			
670		0.326	
787		0.304	
Agreements with NN and NS			
No agreements in this category			

Notes: Robust standard errors clustered at the country-pair level in parentheses.
Significance levels are indicated as follows: *p<0.1; **p<0.05; ***p<0.01.

Table 9: Americas PTA + PTA Lag Coefficients by Type

PTA ID	NS PTA + Lag	SS PTA + Lag	NN PTA + Lag
Agreements with NS and SS (or only NS)			
163	0.346***		
168	0.410***		
188	-0.811***	0.685**	
218	0.879***		
645	0.117		
Agreements with only SS			
141		0.265***	
201		0.545**	
213		1.342***	
239		0.572***	
612		0.517**	
616		0.488***	
716		0.732**	
Agreements with NN and NS			
No agreements in this category			

Notes: Robust standard errors clustered at the country-pair level in parentheses.
Significance levels are indicated as follows: *p<0.1; **p<0.05; ***p<0.01.

Table 10: Asia PTA + PTA Lag Coefficients by Type

PTA ID	NS PTA + Lag	SS PTA + Lag	NN PTA + Lag
Agreements with NS and SS (or only NS)			
1		-0.732**	
67		0.342***	
70		0.472***	
71	-0.138		
72	0.254		
220		-1.215***	
221		-2.955***	
Agreements with only SS			
100		0.376***	
475		0.636**	
640		0.183	
675		1.360**	
683		1.080***	
Agreements with NN and NS			
No agreements in this category			

Notes: Robust standard errors clustered at the country-pair level in parentheses.
Significance levels are indicated as follows: *p<0.1; **p<0.05; ***p<0.01.

Table 11: Europe PTA + PTA Lag Coefficients by Type

PTA ID	NS PTA + Lag	SS PTA + Lag	NN PTA + Lag
Agreements with NS and SS (or only NS)			
8	0.663***	0.783***	
9	0.581**		
254	0.568***	0.323	
328	0.738***	0.354	
335	0.727***	1.099***	0.399***
Agreements with only SS			
5		3.811***	
7		1.153***	
11		0.663**	
13		2.303***	
128		2.773***	
129		0.556***	
132		2.241***	
135		0.696***	
150		0.444	
153		0.817	
192		1.199***	
621		0.614***	
394	0.747***		
Agreements with NN and NS			
335	0.727***	1.099***	0.399***
6	0.411		
132	0.738***	2.241***	

Notes: Robust standard errors clustered at the country-pair level in parentheses.
Significance levels are indicated as follows: *p<0.1; **p<0.05; ***p<0.01.

Table 12: Intercontinental PTA + PTA Lag Coefficients by Type

PTA ID	NS PTA + Lag	SS PTA + Lag	NN PTA + Lag
Agreements with NS and SS (or only NS)			
17	0.800***	1.055***	
75	1.366***		
96	0.271***		
202	0.660***	0.612**	
207	0.516***		
208		0.763***	
323	-0.335**	-0.360	
330	0.286***	0.662***	
512	-0.458*		
518	0.627***		
624		0.384**	
626		1.099***	
627		2.372***	
628	0.484***		
637	0.667***		
657		0.705***	
679	0.546*	-1.636***	
Agreements with only SS			
4		1.255***	
104		-0.338***	
136		0.744***	
164		0.288***	
181		1.288***	
206		1.540***	
263		1.426***	
304	0.787***	0.591**	
466		0.710***	
490		0.843***	
521	0.102**		
543	1.090		
677		-1.366***	
679	-1.636***		
Agreements with NN and NS			
84		-0.059	-0.059
15		0.313	
17		0.800***	
164		0.288***	0.343***
715		0.102*	0.516***

Notes: Robust standard errors clustered at the country-pair level in parentheses.
Significance levels are indicated as follows: *p<0.1; **p<0.05; ***p<0.01.

4.4.2 Additional Findings

Here you can include additional findings and discussions.

5 Analysis and Discussion

This is the analysis and discussion

6 Conclusion

This is the conclusion

7 References

References

[1] Omar S. Dahi and Firat Demir. "Preferential trade agreements and manufactured goods exports: does it matter whom you PTA with?" In: *Applied Economics* 45.34 (Dec. 2013). Publisher: Routledge, pp. 4754–4772. ISSN: 00036846. DOI: 10.1080/00036846.2013.804169. URL: https://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=89600898&site=ehost-live (visited on 06/01/2024).

8 Appendix

8.1 Subsection in Appendix

Content in the appendix should not be counted in the word count.