

Working Papers | 70 |

September
2010

Neil Foster, Johannes Pöschl and Robert Stehrer

The Impact of Preferential Trade Agreements on the Margins of International Trade



wiiw Working Papers published since 2006:

- No. 70 N. Foster, J. Pöschl and R. Stehrer: The Impact of Preferential Trade Agreements on the Margins of International Trade. September 2010
- No. 69 L. Podkaminer: Discrepancies between Purchasing Power Parities and Exchange Rates under the Law of One Price: A Puzzle (partly) Explained? September 2010
- No. 68 K. Hauzenberger and R. Stehrer: An Empirical Characterization of Redistribution Shocks and Output Dynamics. August 2010
- No. 67 R. Stöllinger, R. Stehrer and J. Pöschl: Austrian Exporters: A Firm-Level Analysis. July 2010
- No. 66 M. Holzner: Tourism and Economic Development: the Beach Disease? June 2010
- No. 65 A. Bhaduri: A Contribution to the Theory of Financial Fragility and Crisis. May 2010
- No. 64 L. Podkaminer: Why Are Goods Cheaper in Rich Countries? Beyond the Balassa-Samuelson Effect. April 2010
- No. 63 K. Laski, J. Osiatynski and J. Zieba: The Government Expenditure Multiplier and its Estimates for Poland in 2006-2009. March 2010
- No. 62 A. Bhaduri: The Implications of Financial Asset and Housing Markets on Profit- and Wage-led Growth: Some Results in Comparative Statics. February 2010
- No. 61 N. Foster and R. Stehrer: Preferential Trade Agreements and the Structure of International Trade. January 2010
- No. 60 J. Francois and B. Hoekman: Services Trade and Policy. December 2009
- No. 59 C. Lennon: Trade in Services: Cross-Border Trade vs. Commercial Presence. Evidence of Complementarity. November 2009
- No. 58 N. Foster and J. Pöschl: The Importance of Labour Mobility for Spillovers across Industries. October 2009
- No. 57 J. Crespo-Cuaresma, G. Doppelhofer and M. Feldkircher: The Determinants of Economic Growth in European Regions. September 2009
- No. 56 W. Koller and R. Stehrer: Trade Integration, Outsourcing and Employment in Austria: A Decomposition Approach. July 2009
- No. 55 U. Schneider and M. Wagner: Catching Growth Determinants with the Adaptive Lasso. June 2009
- No. 54 J. Crespo-Cuaresma, N. Foster and R. Stehrer: The Determinants of Regional Economic Growth by Quantile. May 2009
- No. 53 C. Lennon: Trade in Services and Trade in Goods: Differences and Complementarities. April 2009
- No. 52 J. F. Francois and C. R. Shiells: Dynamic Factor Price Equalization and International Convergence. March 2009
- No. 51 P. Esposito and R. Stehrer: Effects of High-Tech Capital, FDI and Outsourcing on Demand for Skills in West and East. March 2009
- No. 50 C. Fillat-Castejón, J. F. Francois and J. Wörz: Cross-Border Trade and FDI in Services. February 2009
- No. 49 L. Podkaminer: Real Convergence and Inflation: Long-Term Tendency vs. Short-Term Performance. December 2008
- No. 48 C. Bellak, M. Leibrecht and R. Stehrer: The Role of Public Policy in Closing Foreign Direct Investment Gaps: An Empirical Analysis. October 2008
- No. 47 N. Foster and R. Stehrer: Sectoral Productivity, Density and Agglomeration in the Wider Europe. September 2008
- No. 46 A. Iara: Skill Diffusion by Temporary Migration? Returns to Western European Work Experience in Central and East European Countries. July 2008
- No. 45 K. Laski: Do Increased Private Saving Rates Spur Economic Growth? September 2007
- No. 44 R. C. Feenstra: Globalization and Its Impact on Labour. July 2007
- No. 43 P. Esposito and R. Stehrer: The Sector Bias of Skill-biased Technical Change and the Rising Skill Premium in Transition Economies. May 2007
- No. 42 A. Bhaduri: On the Dynamics of Profit- and Wage-led Growth. March 2007
- No. 41 M. Landesmann and R. Stehrer: Goodwin's Structural Economic Dynamics: Modelling Schumpeterian and Keynesian Insights. October 2006
- No. 40 E. Christie and M. Holzner: What Explains Tax Evasion? An Empirical Assessment based on European Data. June 2006
- No. 39 R. Römisch and M. Leibrecht: An Alternative Formulation of the Devereux-Griffith Effective Average Tax Rates for International Investment. May 2006
- No. 38 C. F. Castejón and J. Wörz: Good or Bad? The Influence of FDI on Output Growth. An industry-level analysis. April 2006

Neil Foster is Research Economist at the Vienna Institute for International Economic Studies (wiiw). Johannes Pöschl is Junior Researcher at wiiw. Robert Stehrer is wiiw Deputy Director of Research.

The present paper was prepared as part of the EU FP7 programme project 'World Input-Output Database: Construction and Applications' (WIOD). This project is funded by the European Commission, Research Directorate General as part of the Seventh Framework Programme, Theme 8: Socio-Economic Sciences and Humanities. Grant Agreement no. 225 281.

*Neil Foster,
Johannes Pöschl and
Robert Stehrer*

**The Impact of
Preferential Trade
Agreements on the
Margins of International
Trade**

Contents

<i>Abstract</i>	i
1 Introduction	1
2 Background	2
3 Method and data	5
3.1 Model specification	5
3.2 Data	8
4 Initial results	9
4.1. PTAs and the Margins of Trade	9
4.2 Determinants of PTA participation	12
4.3 Matching results.....	14
4.4 Non-linear effects of PTAs	17
5 Conclusions	19
References	21

List of Tables

Table 1	Gravity Results	10
Table 2	Gravity Results for Individual PTAs	11
Table 3	Probit results	13
Table 4	Matching results.....	14
Table 5	Matching results for individual PTAs.....	16
Table 6	Exogenous threshold on exporter's GDP	17
Table 7	Exogenous threshold on product of importer's and exporter's GDP	18
Table A1	Specific Preferential Trade Agreements.....	23
Table A2	List of PTAs and years considered in the matching analysis.....	24

Abstract

In this paper we consider the trade creating effects of Preferential Trade Agreements (PTAs) for a large sample of countries over the period 1960-2000. The paper builds upon the existing literature by examining whether any significant effects of PTAs occur through a change in the variety of exports (i.e. the extensive margin) or through a change in the volume of existing products (the intensive margin). To address this issue we employ the commonly used gravity equation as well as a matching approach to deal with potential self-selection problems. Our results indicate that exports respond positively to the formation of a PTA between countries, and that much of this increase in exports occurs along the extensive margin. We also show that the gains are strongest for larger trading partners, with again much of the benefits occurring along the extensive margin.

Keywords: *preferential trade agreements, intensive and extensive margin, matching, difference-in-difference*

JEL classifications: *F10, F15*

The impact of Preferential Trade Agreements on the margins of international trade

1 Introduction

In the last two decades there has been a proliferation in the number of Preferential Trade Agreements (PTAs).¹ According to Urata and Okabe (2007) the number of PTAs reported to the WTO was 25 in 1990, 91 in 2000 and 194 in 2007. For a long time most PTAs were regional in focus with members being geographically close to each other (e.g. EU, NAFTA). More recently however countries or regional blocs have signed PTAs with diverse and geographically distant partners.² Moreover, regional groupings have become more diverse (e.g. ASEAN).

As discussed in the literature (see for example Viner, 1950) there is a trade-off involved when discussing the benefits of PTA membership. On the one hand, there is a *trade creation* effect that comes from the elimination in distortions between the relative prices of domestic goods and those of other members. On the other hand, there exists the potential for a *trade diversion* effect due to the introduction of distortions between the relative prices of members and non-members good. A large number of empirical papers have addressed the issue of whether membership in a PTA creates trade between members and whether trade diversion is an outcome of the presence of a PTA (see Section 2 below). These issues have usually been addressed using the gravity equation, with the results being mixed depending upon the sample, the time period, the specification of the gravity equation and the particular PTAs considered.

To date the vast majority of papers considering PTAs have concentrated on the issue of whether trade creation and/or trade diversion effects of PTAs are present, usually using data on total bilateral trade or total exports as the variable of interest and dummies for the presence (or absence) of a PTA between two countries.³ In this paper we move beyond total trade data and look to disentangle the impact of PTAs on the volume and variety of a country's exports by examining the impact of PTAs on the intensive and extensive margins of trade. Trade between two countries can develop along two major margins. Along the so-called intensive margin the volume of trade in an existing set of goods may change, while along the extensive margin the set of traded goods may change. Understanding how the

¹ In what follows we take Preferential Trade Agreements (PTAs) to mean any preferential access for members of such an agreement.

² For example, the US has signed agreements with Australia (2004), Morocco (2005) and Peru (2009), while the EU has signed agreements with Chile (2004), Algeria (2006) and Cote d'Ivoire (2008).

³ There are a few papers that look at other impacts of PTAs, such as the impact on industry-level trade (Urata and Okabe, 2007) or on the structure of trade (Egger, Egger and Greenaway, 2008; Foster and Stehrer, 2010).

presence of a PTA affects trade is potentially interesting since the impact of increased trade on growth may be affected by the channels through which trade is increased. Many recent models of trade and growth emphasise the benefits of international trade in providing access to new products or new varieties of existing products (e.g. Rivera-Batiz and Romer, 1991; Grossman and Helpman, 1991). In these models, a country's access to foreign inputs raises productivity levels thereby generating static gains from trade. New foreign inputs also lower the cost of innovation, enabling the creation of new varieties, and this generates dynamic gains from trade.⁴ Using data from Feenstra et al. (2005) over the period 1962-2000 we construct the two margins of exports for up to 174 exporters⁵. We then examine the effects of PTAs in a simple gravity specification and using a matched difference-in-difference analysis, examining whether and to what extent membership in a PTA affects the margins of trade. Finally we test for potential non-linear effects of PTAs with respect to differences in the size of countries.

The remainder of the paper is set out as follows. Section 2 reviews the existing evidence on the impact of RTAs and discusses the empirical literature on the margins of trade, while Section 3 discusses our main hypotheses, our empirical approach and the data used. Section 4 discusses our main results, and Section 5 concludes.

2 Background

The gravity equation has developed as the standard tool to estimate the effects of PTAs on trade between members. As discussed by Baier and Bergstrand (2002), two common forms of the gravity equation have been estimated,

$$EXP_{ij} = \beta_0 + \beta_1 GDP_i + \beta_2 GDP_j + \beta_3 POP_i + \beta_4 POP_j + \beta_5 DIST_{ij} + \beta_6 LANG_{ij} + \beta_7 ADJ_{ij} + \beta_8 LOCK_{ij} + \beta_9 PTA_{ij} + \varepsilon_{ij}$$

or,

$$TRADE_{ij} = \beta_0 + \beta_1 (GDP_i \times GDP_j) + \beta_2 (POP_i \times POP_j) + \beta_3 DIST_{ij} + \beta_4 LANG_{ij} + \beta_5 ADJ_{ij} + \beta_6 LOCK_{ij} + \beta_7 PTA_{ij} + \varepsilon_{ij}$$

where EXP_{ij} is the value of merchandise trade flow imported by country j from exporter i , GDP_i (GDP_j) is the level of nominal gross domestic product of country i (j), POP_i (POP_j) is the level of population in country i (j), $DIST_{ij}$ is the distance between economic centres of countries i and j , $LANG_{ij}$ is a binary variable equal to one if countries i and j share a common language, ADJ_{ij} is a binary variable equal to one if countries i and j share a common border, $LOCK_{ij}$ is a variable accounting for whether none, one or both countries are landlocked, and PTA_{ij} is a binary variable equal to one if countries i and j have a preferential trade agreement. In the second specification the

⁴ Exporting a greater variety of products has also been found to have a positive effect on productivity (See Feenstra and Kee, 2008).

⁵ This number includes countries no longer in existence (e.g. Czechoslovakia, ex-Yugoslavia) along with the countries that replaced them (e.g. Czech Republic, Slovakia).

value of exports from i to j is replaced by the total level of trade between the country pair, $TRADE_{ij}$.⁶ All variables with the exception of the dummy variables are usually included in log-form.

Given one of these two specifications the coefficient on the PTA variable has been used as an indicator of the effect of PTA membership on trade flows between member countries (i.e. trade creation effects). An extension of this approach has been to consider specific PTAs rather than bundling them all into one dummy variable, by constructing PTA dummies for each of a number of specific PTAs. This allows one to examine the impact on trade flows of specific PTAs. Using such an approach has lead to mixed results. Aitken (1973), Abrams (1980) and Brada and Mendez (1983) for example found membership in the European Community to have a positive and significant effect on trade flows from among members, while Bergstrand (1985) and Frankel, Stein and Wei (1995) found insignificant effects. Frankel (1997) finds a positive impact from MERCOSUR membership, insignificant effects from membership in the Andean pact, and occasionally negative effects from membership in the European Community.

Following this earlier literature efforts have been made to refine the method. The use of alternative exogenous regressors (such as landlockedness and colonial history variables) has been considered along with the use of panel data (see for example Baier and Bergstrand, 2008). Studies have also attempted to examine the potential trade diversion effects of PTAs by including binary variables that take the value one if only one member of a country pair belongs to a PTA (see for example Frankel, Stein and Wei, 1996). A further extension of the literature has been to consider the potential endogeneity of the PTA variable: membership in PTAs is likely to be endogenous as countries self-select into PTAs for reasons related to the level of trade. Examples of such studies include Baier and Bergstrand (2002), Magee (2003), Baier et al. (2008). These studies tend to find that the impact of PTAs on trade volumes tends to be larger after controlling for heterogeneity.

A great deal of the recent literature on trade issues has employed highly disaggregated trade data (see for example Hummels and Klenow, 2005; Schott, 2004; Funke and Ruhwedel, 2002). The basic reasoning for this focus is the belief that concentrating simply on trade volumes ignores a great deal, in particular the structure and composition of trade. Of particular interest in recent years following the development of monopolistic competition trade models has been the issue of the quality and variety of trade with a number of papers constructing aggregate measures of such variables.

⁶ In the former case we are thus able to examine the coefficients on the level of GDP and population for both the exporter and importer, while in the latter case we consider the product of the GDPs and populations. Considering these variables separately in this case makes little sense as the decision on country i and j is determined by the ordering of the data.

A prime example of this approach is Hummels and Klenow (2005) who use highly detailed 1995 data on exports to assess the determinants of both the variety and volume of trade goods. They decompose the exports of 126 countries into the contribution of the intensive and extensive margin and then relate each margin to country size (GDP) and its components (workers and GDP per worker). They find that the extensive margin accounts for about 60 percent of the greater exports of larger economies. Other examples include Schott (2004) who finds that richer countries export higher quality goods, and Funke and Ruhwedel (2002) who find a positive association between the variety of exports and total export volumes.⁷

A further strand of this literature examines the impact of trade liberalisation on the volume and variety of traded goods. Klenow and Rodriguez-Clare (1997) consider the liberalisation of Costa Rica between 1986 and 1992 and show that liberalisation was accompanied by a surge in import variety. In particular, a 1% decrease in tariffs is associated with an increase in import variety of around 0.5%. Feenstra and Kee (2007) consider the effects of US tariff reductions on the variety of exports of Mexico to the US and find evidence supporting the view that tariff liberalisation due to NAFTA has increased export variety from Mexico. This result remains, and is indeed strengthened, after taking account of the market competition effect of China. Goldberg et al. (2008a and b) consider the liberalisation experience of India during the 1990s, showing that access to new input varieties from abroad enables the creation of new varieties in the domestic market. Trade liberalisation dramatically increased Indian firms' access to new imported inputs; two-thirds of the surge in imported inputs occurred in products not imported prior to the reforms. Additional results indicate that new imported varieties generated an additional annual 4.7 percent decline in the imported input price index, and firm's access to new imported inputs increased firms' ability to manufacture new products. Goldberg et al. (2009) decompose Indian import data at the HS6 level to dissect changes in the composition of Indian imports following its 1991 trade liberalisation. They find that trade reform spurred imports of previously unavailable products and varieties in many products that arguably can be characterised as important inputs for manufacturing firms. The new imported inputs were largely from more advanced countries and new imported varieties exhibited higher unit values relative to existing imports. In their analysis they distinguish between the extensive product margin, the extensive variety margin and the intensive variety margin.⁸

Debaere and Mostahshari (2005) examine whether changing tariffs and tariff preferences affect the variety of products imported to the US over the period 1989-2000. Their empirical set-up is based upon a Ricardian model of trade in a three-country setting that allows for both trade creation and diversion effects as developed by Viner (1950). Using a Probit

⁷ Others have examined the impact of export variety on productivity growth. Feenstra and Kee (2008) for example find that the increase in export variety is associated with a 3.3% improvement in average productivity for a group of 48 countries over the period 1980-2000.

⁸ A product is considered to be a particular HS6 category, while a variety is defined as a HS6-country combination, meaning that a particular product imported from two different countries is considered as a different variety.

model to explain the probability that a good is exported to the US at the end of the sample (controlling for whether or not it was exported at the beginning of the period) they show that tariff reductions influence the extensive margin by increasing the variety of goods exported to the US. In addition, the authors find that tariff preferences have a trade diverting effect on the extensive margin by reducing the variety of products exported to the US for excluded countries. While the authors find significant effects of tariffs and tariff preferences the authors note that the contribution of these two factors to export variety is quite small.

Kehoe and Ruhl (2002) consider the impact of six major trade liberalisations in 18 countries on the extensive margin of trade using bilateral data. They find using detailed trade data that the goods that were traded least before liberalisation account for a disproportionate share in trade following the reduction of trade barriers. They further show that large increases in the extensive margin of trade coincide with trade liberalisation.

Hillberry and McDaniel (2002) use the methodology of Hummels and Klenow (2005) to decompose the increased trade of the US with its NAFTA partners since 1993 to examine whether the increase is due to an increasing volume of existing products or to trading new products. The results provide evidence of both, though a substantial portion of US trade growth since 1993 can be explained by increases in the variety of products the US imports from Mexico.

3 Method and data

3.1 Model specification

We are interested in examining the contemporaneous effects of joining a PTA on exports for our sample of countries, and the effect of new membership on the intensive and extensive margin. To do this we present a number of pieces of evidence. Our starting point is the following gravity regression,

$$EXP_{ijt} = \beta_0 + \beta_1 GDP_{it} + \beta_2 GDP_{jt} + \beta_3 POP_{it} + \beta_4 POP_{jt} + \beta_5 DIST_{ij} + \beta_6 LANG_{ij} + \beta_7 ADJ_{ij} + \beta_8 LOCK_{ij} + \beta_9 PTA_{ijt} + \varepsilon_{ijt}$$

where EXP refers to total exports or to the intensive or extensive margin. In our analysis we are interested in the contemporaneous effects of PTA membership and so consider the average change in our measure of exports between the three years after and the three years prior to joining the PTA (i.e. $EXP_{ijt,t+2} - EXP_{ijt,t-3:t-1}$).⁹ Making use of the above gravity equation we can write,

$$[(EXP)_{ijt,t+2} - (EXP)_{ijt,t-3:t-1}] = \beta_1 [(GDP)_{it,t+2} - (GDP)_{it,t-3:t-1}] + \beta_2 [(GDP)_{jt,t+2} - (GDP)_{jt,t-3:t-1}] + \beta_3 [(POP)_{it,t+2} - (POP)_{it,t-3:t-1}] + \beta_4 [(POP)_{jt,t+2} - (POP)_{jt,t-3:t-1}] + \beta_5 [DIST_{ij} - DIST_{ij}] + \beta_6 [LANG_{ij} - LANG_{ij}] + \beta_7 [ADJ_{ij} - ADJ_{ij}] + \beta_8 [LOCK_{ij} - LOCK_{ij}] + \beta_9 [PTA_{ijt,t+2} - PTA_{ijt,t-3:t-1}]$$

⁹ We also tried comparing just the year before the formation of the PTA with the year after, but the results tended to be weaker. This may be due to variation in export volumes due to business cycle effects and other shocks not related to PTA formation, or because adjustment to the formation of a new PTA takes some time. These results are available upon request.

which we write as,

$$\Delta EXP_{ijt} = \beta_1 \Delta GDP_{it} + \beta_2 \Delta GDP_{jt} + \beta_3 \Delta POP_{it} + \beta_4 \Delta POP_{jt} + \beta_5 PTA_{ijt} + \varepsilon_{ijt} \quad (1)$$

where PTA_{ijt} will now equal one in the year of joining a PTA only. This is the starting point for our analysis below.¹⁰ In addition we also report results for a set of specific PTAs that were considered by Ghosh and Yamarik (2006) and Eicher et al. (forthcoming) (see Table A1) to examine whether there are differences in the response of exports and the margins across PTAs.

One issue – mentioned above – when estimating the effects of PTAs on trade using gravity models is a potential endogeneity problem, with countries potentially self-selecting into PTAs for reasons related to the level of trade. In the literature to date this has mainly been addressed through the use of fixed effects in a panel context, with a smaller number of studies using alternatives such as Heckman control functions or matching techniques. In this paper we use matching techniques to solve this potential endogeneity problem. The problem is as follows: let $\Delta EXP_{ijt}^1 = EXP_{ijt,t+2}^1 - EXP_{ijt,t-3}^1$ be the change in the average level of exports or the margins for country-pair ij after the formation of a PTA between the two, and $\Delta EXP_{ijt}^0 = EXP_{ijt,t+2}^0 - EXP_{ijt,t-3}^0$ be the change in the average level of exports or the margins for this country-pair if they had not joined a PTA. The causal effect of joining a PTA is then defined as the change in exports (or the margins) if a PTA were formed in time t minus the change in exports (or the margins) if a PTA were not formed in time t . The average expected effect can thus be written as,

$$E\{\Delta EXP_{ijt}^1 - \Delta EXP_{ijt}^0 | PTA_{ijt} = 1\} = E\{\Delta EXP_{ijt}^1 | PTA_{ijt} = 1\} - E\{\Delta EXP_{ijt}^0 | PTA_{ijt} = 1\}.$$

It is obviously the case however that the change in exports (or the margins) if the country-pairs had not formed a PTA is not observable. Causal inference therefore relies on the construction of this counterfactual, and this is where matching can be useful. The purpose of matching is to pair a country-pair that forms a PTA to a similar country-pair that did not form a PTA in time t based on a set of observable characteristics.¹¹ Once a country-pair has been matched we replace $E\{\Delta EXP_{ijt}^0 | PTA_{ijt} = 1\}$ in the above equation with $E\{\Delta EXP_{ijt}^0 | PTA_{ijt} = 0\}$.

Since matching involves comparing country-pairs joining a PTA and those not across a number of observable characteristics it is difficult to decide along which dimension to match the countries or what type of weighting scheme to use. We use propensity score

¹⁰ Adopting such a difference specification has the further advantage that we don't need to concern ourselves with which time-invariant country dummies to include. In the literature it has been suggested that importer and exporter dummies (Egger, 2000) and bilateral-pair dummies (Baldwin and Taglioni, 2006) be included in the gravity specification, both of which would drop out in our difference specification.

¹¹ For more details on matching econometrics see Blundell and Costas Dias (2000) and Heckman, Ichimura and Todd (1998).

matching (Rosenbaum and Rubin, 1983), which uses the probability of receiving a given treatment, conditional on the pre-entry characteristics of the country-pairs to reduce the dimensionality problem.

To identify the probability of forming a PTA we follow Baier and Bergstrand (2004) who develop and test a model identifying the determinants of PTAs. They find that pairs of countries tend to form PTAs: (i) the closer together geographically they are, (ii) the more remote a pair of natural trading partners are away from the rest of the world (ROW), (iii) the larger and more similar in economic size the countries are, (iv) the greater the difference in the capital-labour ratio between countries, and (v) the smaller the difference in the capital-labour with respect to the ROW. We therefore include in our analysis the following variables employed by Baier and Bergstrand:

- **NATURAL_{ij}** is the natural logarithm of the inverse of the distance between the centres of i and j . The authors argue that the welfare gains from a PTA increase as the distance between them decreases.¹²

$$\text{– } \text{REMOTE}_{ij} = \text{DCONT}_{ij} \left\{ \frac{\ln \left(\sum_{k=1, k \neq i, j}^N \frac{\text{DIST}_{ik}}{N-1} \right) + \ln \left(\sum_{k=1, k \neq i, j}^N \frac{\text{DIST}_{jk}}{N-1} \right)}{2} \right\}$$

- where **DCONT_{ij}** is a dummy taking the value one if countries i and j share a common continent. This variable captures how far two countries on the same continent are from other countries. The authors show that the welfare gains from an PTA for two natural trading partners increases as their remoteness from the rest of the world increases.

- **RGDP_{ijt}** measures the sum of the log of the real GDP of countries i and j
- **DGDP_{ijt}** measures the absolute value of the difference between the log of the real GDP of countries i and j . Baier and Bergstrand (2004) find that the probability of an PTA is higher the larger and more similar economically are the trading partners.
- **ROWGDP_{ijt}** is the average of the logs of the two countries Rest of the World (ROW) real GDP, where each country's ROW real GDP is the sum of the other country's GDP (divided by the number of other countries)¹³. Baier and Bergstrand (2004) argue that the probability of a PTA is lower the larger the ROW's economic size, since the potential for trade diversion is higher.

The matching strategy we employ is only valid on a cross-section by cross-section basis. When implementing the matching estimator therefore we perform the matching on each

¹² The abbreviation NATURAL is used since countries that are close to each other and form PTAs are said to form natural PTAs (see Frankel, Stein and Wei, 1995).

¹³ Note, in their analysis Baier and Bergstrand (2004) exclude this variable since it lacks variation. Given however our use of a panel there is more variation and so we include this variable. Baier and Bergstrand (2004) also included a measure of the difference in the capital stocks of the two countries (and a measure of the ROW capital stock) since they argue that the probability of a PTA is higher the larger the difference in the country's relative factor endowments. Given the lack of good quality time-series data on capital stocks for most countries we cannot include this variable in our analysis.

cross-section and then pool the matched observations to form a panel. Similarly, when performing the matching on separate PTAs we perform the matching for each PTA and for each year for which there was a change in the composition of the PTA (i.e. either the initial formation of a PTA or the expansion of a PTA) and then pool all observations for all PTAs. Once we have our propensity score we employ nearest neighbour matching where a country-pair that formed a PTA in time t is matched to the five closest country-pairs¹⁴ that didn't form a PTA in time t in terms of the propensity score.¹⁵ Once we have the matched sample we repeat the estimation of equation (1) above on the matched sample.

3.2 Data

Data on the GDP and population of the importer and exporter are from the World Development Indicators (2008) dataset. Data on distance, common language and adjacency are from CEPII¹⁶. The data on the landlocked variable is constructed based on data from Wikipedia¹⁷. Data on PTAs is taken from the WTO website¹⁸ (accessed at various dates) and complemented with information from Baier et al. (2008) and Wikipedia.¹⁹ The PTA dummy variable is defined as equal to one if exporter and importer were in any one of the PTAs listed on either the WTO website or one of the alternative sources. Finally, the trade data is taken from the dataset of Feenstra et al. (2005), which reports data on imports and exports at the SITC four-digit level over the period 1962-2000.

We follow the approach of Kehoe and Ruhl (2002) in adapting the decomposition of Hummels and Klenow (2005) to apply to a single bilateral trade relationship. In particular, the extensive margin (EM) is defined as,

$$EM_{jm} = \frac{\sum_{i \in I_{jm}} p_{kmi} x_{kmi}}{\sum_{i \in I} p_{kmi} x_{kmi}},$$

where I_{jm} is the set of observable categories in which the exporting country j has positive exports to m , p_{kmi} is the price of a unit of good i exported from reference country k to country m , and x_{kmi} is the quantity of good i exported from reference country k to country m . Reference country k has positive exports to m in all I categories (in our analysis, k is the sum of all countries considered as exporters in our

¹⁴ A country-pair that didn't form a PTA can be matched to more than one country-pair that did form a PTA.

¹⁵ We also tried using just one nearest neighbor. The results are very similar to those reported in the paper and are available upon request.

¹⁶ <http://www.cepii.fr/anglaisgraph/bdd/distances.htm>

¹⁷ <http://en.wikipedia.org/wiki/Landlocked>

¹⁸ <http://rtais.wto.org/UI/PublicAllIRTAList.aspx>

¹⁹ The reason for considering alternative sources is that the WTO dataset only includes PTAs in force, thus excluding a number of PTAs that are no longer in force, but that would have been in the period of interest, examples being the PTAs agreed between the EU-15 and Romania, Bulgaria and others in the 1990s, but which are no longer in force now that these countries are now members of the EU.

analysis). EM_{jm} can thus be thought of as a weighted count of j 's categories relative to k 's categories. If all categories are of equal importance then the extensive margin is simply the fraction of categories in which j exports to m .

The intensive margin (IM) compares nominal shipments for country j and k in a common set of goods. It is given by,

$$IM_{jm} = \frac{\sum_{i \in I_{jm}} p_{jmi} x_{jmi}}{\sum_{i \in I_{jm}} p_{kmi} x_{kmi}}$$

IM_{jm} equals j 's nominal exports relative to k 's nominal exports in those categories in which j exports to $m(I_{jm})$.

It can be shown that the ratio of country j to country k exports to m equals the products of the two margins, that is,

$$\frac{\sum_{i=1}^I p_{jmi} x_{jmi}}{\sum_{i=1}^I p_{kmi} x_{kmi}} = IM_{jm} EM_{jm}$$

In the regression analysis that follows therefore we use the value of exports of j to m relative to the value of exports of k to m as our dependent variable, rather than the more normal method of simply using the value of j 's exports to m . The reason for this is that because OLS is a linear operator it will decompose the effects of the explanatory variables on the margins of trade, thus allowing us to quantify the importance of the extensive and intensive margin on the relationship between trade flows and PTAs.

4 Initial results

The initial results are split into four sections. In the first section we report results of estimating equation (1) on the full sample of observations, considering both the general PTA dummy and the dummies for specific PTAs. In the second section we report some results from estimating the Probit model examining the probability of joining a PTA to give an impression of how well the matching estimator is likely to work. In the third section we report the results from estimating equation (1) on the matched sample only. In the final section we report results when considering the possibility of a non-linear relationship between PTA membership and the margins of trade.

4.1 PTAs and the Margins of Trade

We begin by reporting the results when including a PTA dummy in the gravity model in Table 1, with the first three columns reporting the results for the change in exports, the extensive and the intensive margin with no time dummies, and the final three columns

reporting the same results when time dummies are included. The coefficients on the change in the GDP of the exporter (ΔGDP_j) are consistent with those found using data for the aggregate margins by Hummels and Klenow (2005) and indicate that an increase in the size of the exporter is associated with greater exports, with the majority of these greater exports being due to an increase in variety, that is, the extensive margin.²⁰ The results also suggest that an increase in the importer's GDP is associated with a somewhat higher level of imports into that country, which is accounted for by a large increase in the extensive margin, and a (smaller) decrease in the intensive margin. An increase in the population of the importer is found to be associated with an increase in imports into that country, which is accounted for by an increase in the intensive margin of exports (the extensive margin actually falls), while an increase in the size of the exporter is associated with a decline in exports, which is driven mainly by a decrease along the intensive margin. Finally, and most importantly, we find for the PTA variable that establishing a PTA between two countries is trade creating, and most of this additional trade is due to an expansion along the extensive margin. When time dummies are excluded the extensive margin accounts for 166% (i.e. 0.089/0.0536) of the increase in exports (with the intensive margin declining), and when time dummies are included the extensive margin accounts for 73% (i.e. 0.0395/0.0538) of the increase in exports.

Table 1

Gravity Results

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	ΔEXP	ΔEXT	ΔINT	ΔEXP	ΔEXT	ΔINT
ΔGDP_j	0.0549** (0.0222)	0.768*** (0.0238)	-0.713*** (0.0237)	0.123*** (0.0229)	0.589*** (0.0241)	-0.466*** (0.0227)
ΔGDP_i	1.021*** (0.0269)	0.867*** (0.0207)	0.154*** (0.0254)	1.098*** (0.0282)	0.668*** (0.0203)	0.430*** (0.0253)
ΔPOP_j	0.568*** (0.0528)	-0.124*** (0.0473)	0.692*** (0.0516)	0.618*** (0.0528)	-0.145*** (0.0449)	0.763*** (0.0485)
ΔPOP_i	-0.575*** (0.0672)	-0.0356 (0.0498)	-0.540*** (0.0624)	-0.514*** (0.0675)	-0.0898* (0.0481)	-0.425*** (0.0610)
PTA	0.0536*** (0.00529)	0.0890*** (0.00478)	-0.0354*** (0.00517)	0.0538*** (0.00536)	0.0395*** (0.00470)	0.0143*** (0.00506)
Constant	-0.105*** (0.00497)	-0.140*** (0.00437)	0.0350*** (0.00487)	-0.148*** (0.0165)	-0.0711*** (0.0129)	-0.0769*** (0.0147)
Year Dummies	No	No	No	Yes	Yes	Yes
Observations	180742	180742	180742	180742	180742	180742
R-squared	0.015	0.027	0.009	0.019	0.119	0.109
F-Test	354.8***	734.3***	230.4***	64.14***	473.3***	448.9***

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

²⁰ When time dummies are excluded the extensive margin accounts for 85% of the change in exports and when including exports 61%.

Table 2

Gravity Results for Individual PTAs

VARIABLES	(1) <i>ΔEXP</i>	(2) <i>ΔEXT</i>	(3) <i>ΔINT</i>	(4) <i>ΔEXP</i>	(5) <i>ΔEXT</i>	(6) <i>ΔINT</i>
<i>ΔGDP_j</i>	0.0581*** (0.0222)	0.773*** (0.0239)	-0.715*** (0.0237)	0.130*** (0.0229)	0.594*** (0.0241)	-0.464*** (0.0227)
<i>ΔGDP_i</i>	1.024*** (0.0269)	0.872*** (0.0207)	0.152*** (0.0254)	1.105*** (0.0282)	0.673*** (0.0203)	0.432*** (0.0253)
<i>ΔPOP_j</i>	0.542*** (0.0526)	-0.168*** (0.0472)	0.710*** (0.0514)	0.601*** (0.0528)	-0.162*** (0.0448)	0.763*** (0.0484)
<i>ΔPOP_i</i>	-0.599*** (0.0673)	-0.0773 (0.0497)	-0.522*** (0.0624)	-0.528*** (0.0675)	-0.104** (0.0481)	-0.424*** (0.0610)
<i>ANZCERTA</i>	0.140** (0.0577)	-0.0791 (0.0732)	0.219* (0.131)	-0.0123 (0.0590)	0.554*** (0.0741)	-0.566*** (0.132)
<i>AFTA</i>	-0.0149 (0.0890)	-0.0631 (0.0727)	0.0482 (0.101)	-0.0223 (0.0888)	-0.119* (0.0709)	0.0970 (0.103)
<i>AP</i>	0.267** (0.126)	0.154 (0.101)	0.112 (0.113)	0.325** (0.127)	0.137 (0.101)	0.188 (0.114)
<i>APEC</i>	0.0547** (0.0270)	0.111*** (0.0240)	-0.0565** (0.0262)	0.0601** (0.0270)	0.0308 (0.0239)	0.0293 (0.0262)
<i>CARICOM</i>	0.318** (0.146)	0.0666 (0.0639)	0.252** (0.106)	0.377** (0.147)	0.0175 (0.0651)	0.359*** (0.108)
<i>EEA</i>	0.0287** (0.0121)	0.0600*** (0.00962)	-0.0313** (0.0130)	-0.000517 (0.0147)	-0.114*** (0.0124)	0.114*** (0.0152)
<i>EFTA</i>	0.0353 (0.0480)	-0.0105 (0.0387)	0.0459 (0.0366)	0.0508 (0.0489)	0.182*** (0.0394)	-0.131*** (0.0370)
<i>EU</i>	0.110*** (0.0183)	0.0680*** (0.0124)	0.0424*** (0.0162)	0.106*** (0.0200)	0.0109 (0.0207)	0.0949*** (0.0174)
<i>LAIA</i>	0.0783 (0.189)	0.193 (0.124)	-0.115 (0.180)	0.111 (0.189)	0.176 (0.124)	-0.0644 (0.180)
<i>MERCOSUR</i>	0.0296 (0.133)	0.326*** (0.0871)	-0.297* (0.178)	0.0863 (0.134)	0.214** (0.0901)	-0.128 (0.181)
<i>NAFTA</i>	0.119** (0.0567)	0.0418 (0.0261)	0.0773** (0.0377)	0.106** (0.0488)	-0.113*** (0.0200)	0.219*** (0.0371)
Constant	-0.0973*** (0.00487)	-0.127*** (0.00427)	0.0298*** (0.00476)	-0.146*** (0.0165)	-0.0690*** (0.0129)	-0.0770*** (0.0147)
Year Dummies	No	No	No	Yes	Yes	Yes
Observations	180742	180742	180742	180742	180742	180742
R-squared	0.015	0.025	0.009	0.019	0.119	0.109
F-Test	115.6	228.4	75.98	49.71	373.6	356.4

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 2 reports a similar set of results, but now includes dummies for a number of larger PTAs. As mentioned above, these PTAs were considered in the papers of Ghosh and Yamarik (2006) and Eicher et al. (forthcoming) and are listed in Table A1. In terms of the additional gravity variables the coefficients are consistent with those reported in Table 1

and so we move straight on to consider the coefficients on the PTA variables. What we see from these coefficients is a great deal of parameter heterogeneity across PTAs, as well as differences for specific PTAs when we include time dummies.²¹ For ANZCERTA and EEA we find a positive and significant coefficient for the change in exports when no time dummies are included, but the coefficients become insignificant when they are included. In addition, for ANZCERTA we find a positive effect on the intensive margin when time dummies are excluded, but when they are included we find a large negative coefficient on the intensive margin, which is offset by a large positive coefficient when time effects are included. For EEA we find a negative coefficient on the intensive margin when time dummies are excluded, and a positive one when time dummies are included (offset by an equivalent negative coefficient on the extensive margin). For AFTA, EFTA, LAIA and MERCOSUR we find no evidence of a significant impact of the PTA on exports, though there are significant shifts along the margins. For AFTA for example we find a significant decrease in the extensive margin (when time dummies are included), while for EFTA and MERCOSUR we find some evidence of an increase in the extensive margin at the expense of the intensive margin. For other PTAs we find evidence of significant increases in exports, examples being AP, APEC, CARICOM, EU and NAFTA, but again there are differences in the way that exports have responded to the PTA. For APEC the change is due largely to the extensive margin, while for CARICOM and most interestingly NAFTA we find that the change is due largely to the intensive margin. In the remaining cases there is either little difference in the importance of the intensive and extensive margin, or their importance differs depending upon whether time dummies are included or not.

4.2 Determinants of PTA participation

As mentioned above one potential problem with the use of gravity-type equations to examine the impact of PTAs on trade is that countries potentially self-select into PTAs for reasons related to the level of (bilateral) trade. In such cases, we have a potential endogeneity problem which can lead to biased results. Matching econometrics gets around this issue by choosing an appropriate control group of observations based on observable information. Following Baier and Bergstrand (2004) we match observations based on a number of variables related to countries size, closeness and remoteness that were described in Section 3.1. To perform the propensity score matching we estimate a probit model of the following form,

$$P(PTA_{ij} = 1) = F(REMOTE_{ij}, NATURAL_{ij}, RGDP_{ij}, DGDP_{ij}, ROWGDP_{ij})$$

In Table 3 we report a number of results from estimating such a Probit model that relates the probability of joining a PTA to observables. These results are not those used in the

²¹ One possibility is that the time dummies are capturing some of the effects of the PTAs, that is, there is likely to be a correlation between the individual PTA dummies and some of the time fixed effects.

matching analysis, since the matching is done on a cross-section by cross-section basis, but are included to give an impression of the importance of these observables in predicting the probability of two countries joining a PTA. The coefficient on NATURAL – the inverse distance measure – is positive and significant, suggesting that a decrease in distance between two countries (i.e. an increase in NATURAL) is associated with an increase in the probability of these countries joining a PTA as expected. Similarly, an increase in remoteness is also associated with an increase in the probability of two countries joining a PTA as expected. The coefficients on the difference in GDPs of two countries are found to be consistently negative and significant across specifications as expected: Baier and Bergstrand (2004) note that the probability of two countries joining a PTA is larger the more similar they are economically. Given this we would also expect a positive coefficient on the sum of the two countries GDP (RGDP). Here however we find that the coefficient differs in size, becoming negative and significant when time-invariant importer and exporter effects are included. According to Baier and Bergstrand (2004) we would expect a negative coefficient on the GDPs of the rest of the world, which is inconsistent with what we find (other than in the final column of Table 3). It should be noted however that in their analysis they exclude the GDP of the rest of the world from their model, while including a measure of the capital stock of the rest of the world, which we don't include because of a lack of long time-series data on this variable. Despite this latter result, overall the results are fairly consistent with those found by Baier and Bergstrand (2004).

Table 3

Probit results				
VARIABLES	(1) <i>PTA</i>	(2) <i>PTA</i>	(3) <i>PTA</i>	(4) <i>PTA</i>
<i>NATURAL</i>	0.247*** (0.00444)	0.238*** (0.00448)	0.740*** (0.00774)	0.737*** (0.0078)
<i>REMOTE</i>	2.230*** (0.0427)	2.429*** (0.0438)	3.176*** (0.0683)	3.379*** (0.0698)
<i>RGDP</i>	0.354*** (0.00515)	0.430*** (0.00583)	-0.0978*** (0.0152)	-0.142*** (0.0155)
<i>DGDP</i>	-0.260*** (0.00388)	-0.264*** (0.00389)	-0.0821*** (0.00611)	-0.0772*** (0.0062)
<i>ROWGDP</i>	0.876*** (0.00992)	3.287*** (0.0922)	1.935*** (0.0202)	-9.733*** (0.5541)
Constant	-28.68*** (0.303)	-101.4*** (2.785)	-52.60*** (0.553)	292.684*** (16.374)
Year dummies	No	Yes	No	Yes
Importer / Exporter dummies	No	No	Yes	Yes
Observations	290947	290947	233243	233243
Pseudo R^2	0.143	0.154	0.437	0.452
loglik	-80278	-79252	-48980	-47664
Standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

4.3 Matching results

Using the same specification for the Probit model as described above we performed matching on a cross-section by cross-section basis for each available year in our sample and pooled the data to give us a panel of matched countries. Using this dataset we re-ran the estimation of equation (1). Table 4 reports the results. The results on the additional gravity variables are largely consistent with those in Tables 1 and 2 – the main exception being the lack of significant coefficients on the population of the exporter – and so we skip over these results and turn to the coefficients on the PTA variable for which results are also very similar to those reported in Table 1. In particular, we find a positive impact of the establishment of a PTA on exports, albeit with the coefficient being somewhat smaller than that in Table 1. Once again, the majority of this increase is due to an expansion in exports along the extensive margin. In the case where no time dummies are included the extensive margin accounts for 100% of the increase in exports, while when time dummies are included the extensive margin accounts for 73.6% of the increase in exports.

Table 4

Matching results						
VARIABLES	(1) ΔEXP	(2) ΔEXT	(3) ΔINT	(4) ΔEXP	(5) ΔEXT	(6) ΔINT
ΔGDP_j	0.0298 (0.0423)	0.610*** (0.0445)	-0.580*** (0.0422)	0.0270 (0.0431)	0.528*** (0.0447)	-0.500*** (0.0405)
ΔGDP_i	0.992*** (0.0465)	0.766*** (0.0355)	0.227*** (0.0442)	0.989*** (0.0477)	0.674*** (0.0350)	0.316*** (0.0436)
ΔPOP_j	0.434*** (0.104)	-0.181** (0.0851)	0.615*** (0.0949)	0.510*** (0.104)	-0.255*** (0.0813)	0.765*** (0.0895)
ΔPOP_i	-0.0704 (0.117)	0.0402 (0.0910)	-0.111 (0.107)	0.00990 (0.118)	-0.0479 (0.0884)	0.0578 (0.104)
PTA	0.0377*** (0.00671)	0.0377*** (0.00599)	6.23e-05 (0.00651)	0.0390*** (0.00668)	0.0287*** (0.00577)	0.0103* (0.00621)
Constant	-0.0966*** (0.00813)	-0.0592*** (0.00703)	-0.0374*** (0.00756)	-0.0657 (0.0406)	-0.0455 (0.0325)	-0.0201 (0.0366)
Year Dummies	No	No	No	Yes	Yes	Yes
Observations	52510	52510	52510	52510	52510	52510
R-squared	0.017	0.021	0.006	0.020	0.096	0.095
F-Test	116.3	172.2	43.91	21.10	106.6	104.7
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

We also use the matching approach to examine the impacts of specific PTAs on exports. To do this we use the matching procedure for the year when each PTA was established (where possible) and each subsequent expansion of that PTA. Table A2 lists the specific

PTA “events” that are considered in our matching analysis. Once again we concentrate on the coefficients on the PTA variables given the similarity of the coefficients on the other gravity variables to those reported above. Considering the PTA variables we again find substantial heterogeneity across PTAs and differences across specifications. For those PTAs for which we find consistent evidence of a positive effect on exports, namely AP, APEC, CARICOM, EU, MERCOSUR and NAFTA, only in the cases of APEC and MERCOSUR do we find the increase to be caused by an increase along the extensive margin. For CARICOM, EU and NAFTA the major reason for the increase in exports is an increase in exports along the intensive margin (and in the case of NAFTA we observe a decrease in the extensive margin). In the remaining cases we find either no effect of the PTA on exports or an effect that differs across specifications. In both such cases we find evidence of shifts in the margins, though again these sometimes differ depending on whether time dummies are included or not. For ANZCERTA we find a positive coefficient for the intensive margin and a smaller negative one for the extensive margin when dummies are not included, but a negative and significant coefficient on the intensive margin when time dummies are included. Consistent with the results in Table 2 we find a negative effect of AFTA on the extensive margin (when time dummies are included). For EEA and EFTA we find no overall effect of PTA membership on trade, but some evidence of a negative impact on the extensive margin and a positive one on the intensive margin.

Summarising the above results we find that considering all PTAs there is a positive and significant effect of the formation of a PTA on (contemporaneous) exports. This is the case regardless of whether we use a standard least squares methodology or whether we use matching econometrics, suggesting that the self-selection problem may not be severe (despite the coefficient being somewhat lower in the matching analysis). When considering all PTAs as a whole we also find that the increase in exports is largely due to an increase in exports along the extensive margin, that is, an increase in variety traded. These results mask important differences across PTAs however. Considering individual PTAs we find that not all PTAs result in increased exports (a result consistent with others including Eicher et al., forthcoming). Moreover, the importance of the extensive margin for increasing exports is not pronounced for a number of PTAs. In particular, for a number of the more well-known PTAs, such as NAFTA and the EU, we often find that the intensive margin is the driver of increasing exports. This is largely against expectations, and in the case of NAFTA is inconsistent with some of the literature mentioned above (see for example, Feenstra and Kee, 2007; Hillberry and McDaniel, 2002). Such differences may be due to differences in methodology, data, variable definitions or to different countries within a PTA being affected differently. For example, in the case of NAFTA it could be that Mexico has gained through an increasing variety of exports, while the US and Canada have seen an increase in the intensive margin. To examine whether this is important in the following section we consider whether the effects of PTA formation differ for different countries within the PTA. In particular, we examine whether there are differential effects of the effects of

PTA formation due to a country's economic size. Given the similar results found using the standard gravity model and the matching approach we proceed by using just the simple gravity framework.

Table 5

Matching results for individual PTAs

VARIABLES	(1) ΔEXP	(2) ΔEXT	(3) ΔINT	(4) ΔEXP	(5) ΔEXT	(6) ΔINT
ΔGDP_j	0.0317 (0.148)	0.458*** (0.144)	-0.426*** (0.140)	-0.00238 (0.152)	0.455*** (0.145)	-0.457*** (0.141)
ΔGDP_i	0.768*** (0.195)	0.565*** (0.123)	0.203 (0.163)	0.724*** (0.196)	0.523*** (0.123)	0.201 (0.165)
ΔPOP_j	0.968** (0.421)	0.362 (0.367)	0.606* (0.336)	0.932** (0.432)	0.335 (0.372)	0.597* (0.347)
ΔPOP_i	-0.548 (0.564)	-0.197 (0.337)	-0.351 (0.474)	-0.633 (0.577)	-0.186 (0.347)	-0.447 (0.475)
ANZCERTA	0.118** (0.0590)	-0.169** (0.0764)	0.287** (0.133)	-0.403 (0.271)	0.0385 (0.215)	-0.442* (0.241)
AFTA	-0.0320 (0.0918)	-0.122 (0.0762)	0.0896 (0.105)	-0.0543 (0.102)	-0.133* (0.0803)	0.0784 (0.115)
AP	0.228* (0.131)	0.0536 (0.105)	0.174 (0.117)	0.197 (0.156)	0.0748 (0.127)	0.122 (0.132)
APEC	0.0423 (0.0337)	0.0572* (0.0295)	-0.0149 (0.0315)	0.102*** (0.0373)	0.0673** (0.0337)	0.0348 (0.0344)
CARICOM	0.292** (0.146)	-0.0405 (0.0642)	0.333*** (0.108)	0.394** (0.163)	0.0233 (0.0880)	0.371*** (0.121)
EEA	0.00880 (0.0198)	-0.0402** (0.0166)	0.0490** (0.0193)	-0.0146 (0.0285)	-0.0943*** (0.0248)	0.0797*** (0.0276)
EFTA	0.0370 (0.0570)	-0.0860* (0.0459)	0.123*** (0.0455)	-4.38e-05 (0.0647)	0.0354 (0.0514)	-0.0354 (0.0516)
EU	0.0954*** (0.0242)	-0.0214 (0.0182)	0.117*** (0.0213)	0.0756** (0.0312)	-0.00119 (0.0262)	0.0768*** (0.0264)
LAIA	0.0950 (0.198)	0.0219 (0.118)	0.0731 (0.158)	-0.00888 (0.205)	0.00237 (0.127)	-0.0112 (0.165)
MERCOSUR	0.132* (0.0677)	0.181** (0.0873)	-0.0490 (0.0640)	0.169** (0.0808)	0.175* (0.0934)	-0.00622 (0.0750)
NAFTA	0.0621 (0.0595)	-0.0800*** (0.0214)	0.142*** (0.0458)	0.101* (0.0533)	-0.0853** (0.0346)	0.186*** (0.0475)
Constant	-0.0656*** (0.0249)	0.00743 (0.0213)	-0.0730*** (0.0233)	0.467* (0.264)	-0.195 (0.202)	0.663*** (0.202)
Year Dummies	No	No	No	Yes	Yes	Yes
Observations	3074	3074	3074	3074	3074	3074
F-Test	4.918***	9.353***	5.130***	3.777***	7.837***	4.918***
R-squared	0.019	0.025	0.011	0.032	0.039	0.029

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

4.4 Non-linear effects of PTAs

In this section we consider whether the impact of PTAs on both total exports and the margins of trade differs depending upon the trade partners considered. To date there has been very little empirical research addressing such issues, though non-linear effects are suggested by Baier and Bergstrand (2007) who state that: “A related caveat to the conclusions is that the effect of an PTA on two members’ trade is likely influenced by the economic size, per capita incomes and even distance between the two countries.”

In this paper we concentrate on non-linear effects related to the economic size of the trade partners. Frankel, Stein and Wei (1995, 1996) show that the formation of a PTA between two large partners creates trade in more varieties than a PTA between two small partners, improving utility more in large countries relative to small countries. To address this issue we begin by examining whether the coefficient on the PTA dummy depends upon the size of the exporting country, measured using the level of GDP of the exporting country. In addition, we also consider non-linearities by examining whether the coefficient on the PTA dummy depends upon the product of the exporter’s and importer’s GDP. This latter method allows us to examine whether it is trade between two large partners that is an important determinant of the benefits of PTAs.

Table 6

Exogenous threshold on exporter’s GDP

VARIABLES	(1) ΔEXP	(2) ΔEXT	(3) ΔINT	(4) ΔEXP	(5) ΔEXT	(6) ΔINT
ΔGDP_j	0.0554** (0.0222)	0.769*** (0.0238)	-0.7139*** (0.0237)	0.1233*** (0.0229)	0.5893*** (0.024)	-0.4661*** (0.0227)
ΔGDP_i	1.019*** (0.0269)	0.864*** (0.0207)	0.1551*** (0.0254)	1.097*** (0.0282)	0.6647*** (0.0203)	0.4320*** (0.0254)
ΔPOP_j	0.575*** (0.0529)	-0.110** (0.0474)	0.6845*** (0.0517)	0.623*** (0.0529)	-0.1343*** (0.0449)	0.7572*** (0.0486)
ΔPOP_i	-0.5627*** (0.06754)	-0.011 (0.0500)	-0.5517*** (0.0627)	-0.505 (0.0678)	-0.0704 (0.0483)	-0.4345*** (0.0612)
PTA_{LOW}	0.0302*** (0.0113)	0.0425*** (0.0099)	-0.0124 (0.0113)	0.0343*** (0.0113)	-0.0002 (0.0095)	0.0346*** (0.0109)
PTA_{HIGH}	0.0650*** (0.0053)	0.1116*** (0.0049)	-0.0467*** (0.005)	0.0634*** (0.0113)	0.0592*** (0.00487)	0.0043 (0.0049)
Constant	-0.1054*** (0.0050)	-0.1412*** (0.0044)	0.0358*** (0.0049)	-0.1484*** (0.0165)	-0.0720*** (0.0129)	-0.0764*** (0.0147)
$H_0: PTA_{LOW} = PTA_{HIGH}$	8.20***	41.25***	8.11***	5.72**	32.54***	6.82***
Year Dummies	No	No	No	Yes	Yes	Yes
Observations	180742	180742	180742	180742	180742	180742
R-squared	0.015	0.027	0.010	0.019	0.119	0.109
F-Test	304.32***	638.36***	199.95***	63.87***	464.56***	438.53***

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

To do this we firstly split the sample of exporting countries into large and small countries, with large (small) countries having a level of GDP greater (smaller) than the median. Secondly, we split countries based on the product of the log of the trading partners GDP, with the product of the log of the trading partners GDP for large trading-pairs being above the median. The results when imposing the threshold based on the exporter's GDP are reported in Table 6, while those when considering the product of the importer's and exporter's GDP are reported in Table 7.

Table 7

Exogenous threshold on product of importer's and exporter's GDP

VARIABLES	(1) ΔEXP	(2) ΔEXT	(3) ΔINT	(4) ΔEXP	(5) ΔEXT	(6) ΔINT
ΔGDP_j	0.0546*** (0.0222)	0.768*** (0.0238)	-0.713*** (0.0237)	0.123*** (0.0229)	0.588*** (0.0203)	-0.4656*** (0.0227)
ΔGDP_i	1.021*** (0.0269)	0.8672*** (0.0207)	0.1536*** (0.0254)	1.098*** (0.0282)	0.6672*** (0.0203)	0.4305 (0.0253)
ΔPOP_j	0.5792*** (0.0530)	-0.1067** (0.0476)	0.6860*** (0.0519)	0.6263*** (0.0531)	-0.1311*** (0.0451)	0.7574*** (0.0487)
ΔPOP_i	-0.5635*** (0.0675)	-0.0183 (0.0501)	-0.5452*** (0.0627)	-0.5058*** (0.0677)	-0.07606 (0.0483)	-0.430*** (0.0612)
PTA_{LOW}	0.022* (0.013)	0.0420*** (0.0115)	-0.020 (0.0128)	0.0280** (0.013)	-0.0021 (0.0110)	0.030** (0.0123)
PTA_{HIGH}	0.0631*** (0.0055)	0.1033*** (0.0050)	-0.0401*** (0.0053)	0.0618*** (0.0055)	0.0524*** (0.0050)	0.0094* (0.0052)
Constant	-0.1057*** (0.0050)	-0.1412*** (0.0044)	0.0355*** (0.0049)	-0.1486*** (0.0165)	-0.0720*** (0.0129)	-0.0766*** (0.0147)
$H_0: PTA_{LOW} = PTA_{HIGH}$	8.76***	24-62***	2.19	5.91**	20.98***	2.47
Year Dummies	No	No	No	Yes	Yes	Yes
Observations	180742	180742	180742	180742	180742	180742
R-squared	0.015	0.027	0.010	0.019	0.119	0.109
F-Test	299.55***	621.43***	194.11***	63.00***	463.12***	437.73***

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Considering the results in the first three columns of Table 6 we find that coefficient on the PTA dummy is more than twice as big for large (PTA_{HIGH}) when compared with small exporters (PTA_{LOW}) when considering total exports, with the coefficients being significantly different at the 1 percent level. This result is driven by the extensive margin for which the coefficient in the large exporters is nearly three times as large as that for small exporters. When considering the intensive margin the coefficients on the PTA variable are negative for both regimes, but are smaller (i.e. more negative) for large exporters. All of these differences in coefficients in the two regimes are significant at the 1% level. In the final three columns of Table 6 where time dummies are included the results are

qualitatively similar. For total exports we find that the coefficient on the PTA dummy is around double the size for large exporters when compared with small exporters. Once again this is driven by the extensive margin for which we find a large positive coefficient on the PTA dummy for large exporters and an insignificant coefficient for small exporters. For the intensive margin we again find that the coefficient is smaller for large exporters when compared with small exporters, though in this case the coefficients are positive (and significant in the case of small exporters). These results suggest that in terms of trade in a fixed set of products the benefits of joining a PTA are strongest when the trading partners are economically relatively small. Overall however, our results indicate that the benefits of joining a PTA are strongest when the trade partners are economically large, with the benefits accruing largely through trading an increased variety of products, a result consistent with Frankel, Stein and Wei (1995, 1996). The results when considering the product of the importer's and exporter's GDP are similar to those reported in Table 6. In particular, we again find that the benefits of being in a PTA in terms of exports are larger for larger trading partners. Moreover, this difference is again driven by the extensive margin of trade.

5 Conclusions

In this paper we examine the effects of PTAs on exports in general and the extensive and intensive export margins in particular. We first report results using a simple gravity framework. To account for potential self-selection we then apply a matching technique as suggested in the literature. Finally, we address the issue of potential non-linear effects of PTAs with respect to country size.

The results for the gravity variables are in line with our expectations and also with the existing literature. With respect to PTAs our first set of results suggest that establishing a PTA is trade creating with most of this additional trade being due to an expansion along the extensive margin. When considering individual PTAs we observe large parameter heterogeneity across PTAs and for different specifications with respect to the inclusion of time dummies. Results also differ with respect to the relative importance of the extensive versus the intensive margin. Using matching techniques these results are broadly confirmed. This suggests that the self-selection of countries in PTAs is not a severe problem though the coefficients are somewhat lower in this exercise. Again we find large differences across individual PTAs however. Finally we test for non-linear effects of PTAs related to economic size of countries. PTAs seem to be more trade-creating for large compared to small exporters, a result which is driven by the extensive margin.

In this paper we have concentrated on the impact of PTAs on the *export* margins of trade. As an extension it may be interesting to consider the importance of PTAs, and trade liberalization more generally, on the *import* margins of trade. In the recent literature on

endogenous growth for example (see Grossman and Helpman, 1991), one of the major benefits of international trade is to provide access to new products and new varieties of existing products.

References

- Abrams, R.K., 1980. International trade flows under flexible exchange rates. *Federal Reserve Bank of Kansas City Economic Review*, 65(3), 3-10.
- Aitken, N.D., 1973. The effect of the EEC and EFTA on European trade: A temporal cross-section analysis. *American Economic Review*, 5, 881-892.
- Baier, S.L. and J.H. Bergstrand, 2002. On the endogeneity of international trade flows and free trade agreements. Mimeo.
- Baier, S.L. and J.H. Bergstrand, 2004. Economic determinants of free trade agreements. *Journal of International Economics*, 64(1), 29-63.
- Baier, S.L. and J.H. Bergstrand, 2007. Bonus Vetus OLS: A simple method for approximating international trade-cost effects using the gravity equation. Mimeo.
- Baier, S.L. and J.H. Bergstrand, 2008. Estimating the effects of free trade agreements on trade flows using matching econometrics. Mimeo.
- Baier, S.L., Bergstrand, J.H., Egger, P. and P.A. McLaughlin, 2008. Do economic integration agreements actually work? Issues in understanding the causes and consequences of the growth of regionalism. *World Economy*, 31(4), 461-497.
- Baldwin, R. and D. Taglioni, 2006. Gravity for dummies and dummies for gravity equations. NBER Working Paper no. 12516, National Bureau of Economic Research.
- Bergstrand, J.H., 1985. The gravity equation in international trade: Some microeconomic foundations and empirical evidence. *Review of Economics and Statistics*, 71(1), 143-153.
- Blundell, R. and M. Costas Dias, 2000. Evaluation methods for non-experimental data. *Fiscal Studies*, 21, 427-468.
- Brada, J.C. and J.A. Mendez, 1983. Economic integration among developed, developing and centrally planned economies: A comparative analysis. *Review of Economics and Statistics*, 67(4), 549-556.
- Debaere, P. and S. Mostahshari, 2005. Do tariffs matter for the extensive margin of international trade? An empirical analysis. CEPR Discussion Paper no 5260, Centre for Economic Policy Research.
- Eicher, T., Henn, C and C. Papageorgiou, forthcoming. Trade creation and diversion revisited: Accounting for model uncertainty and natural trading partner effects. *Journal of Applied Econometrics*.
- Egger, P., 2000. A note on the proper econometric specification of the gravity equation. *Economics Letters*, 66, 25-31.
- Egger, H., Egger, P. and D. Greenaway, 2008. The trade structure effects of endogenous regional trade agreements. *Journal of International Economics*, 74(2), 278-298.
- Feenstra, R.C., Lipsey, R.E., Deng, H., Ma, A.C. and H. Mo, 2005. World Trade Flows: 1962-2000. NBER Working Paper no. 11040, National Bureau of Economic Research.
- Feenstra, R.C. and H.L. Kee, 2007. Trade liberalisation and export variety: A comparison of Mexico and China. *World Economy*, 30(1), 5-21.
- Feenstra, R.C. and H.L. Kee, 2008. Export variety and country productivity: Estimating the monopolistic competition model with endogenous productivity. *Journal of International Economics*, 74(2), 500-514.
- Foster, N. and R. Stehrer, 2010. Preferential trade agreements and the structure of international trade. wiiw Working Paper no. 61, The Vienna Institute for International Economic Studies, Vienna, Austria.

- Frankel, J., 1997. *Regional Trading Blocs in the World Economic System*. Institute for International Economics, Washington. DC.
- Frankel, J., Stein, E. and S-J Wei, 1995. Trading blocs and the Americas: The natural, the unnatural, and the super-natural. *Journal of Development Economics*, 47, 61-95.
- Frankel, J., Stein, E. and S-J Wei, 1996. Regional trading arrangements: Natural or Supernatural? *American Economic Review Papers and Proceedings*, 86(2), 52-56.
- Funke, M. And R. Ruhwedel, 2002. Export variety and export performance: Empirical evidence for the OECD countries. *Review of World Economics*, 138(1), 97-114.
- Ghosh, S. and S. Yamarik, 2006. Are regional trading arrangements trade creating? An application of extreme bounds analysis. *Journal of International Economics*, 63(2), 369-395.
- Goldberg, P.K., Khandelwal, A.K., Pavcnik, N. and P. Topalova, 2008a. Multiproduct firms and product turnover in the developing world: Evidence from India. NBER Working Paper no. 14127.
- Goldberg, P.K., Khandelwal, A.K., Pavcnik, N. and P. Topalova, 2008b. Imported intermediate inputs and domestic product growth: Evidence from India. NBER Working Paper no. 14416.
- Goldberg, P.K., Khandelwal, A.K., Pavcnik, N. and P. Topalova, 2009. Trade liberalization and new imported inputs. *American Economic Review*, 99(2), 494-500.
- Heckman, J., Ichimura, H. and P. Todd, 1998. Matching as an econometric evaluation estimator. *Review of Economic Studies*, 65(2), 261-294.
- Hilberry, R. And C. McDaniel, 2003. A decomposition of North American trade growth since NAFTA. Working Paper no 15866, United States International Trade Commission.
- Hummels, D. And P.J. Klenow, 2005. The variety and quality of a nation's exports. *American Economic Review*, 95(3), 704-723.
- Kehoe, T.J. and K.J. Ruhl, 2002. How important is the new goods margin in international trade? Mimeo.
- Klenow, P. and A. Rodriguez-Clare, 1997. Quantifying variety gains from trade liberalization. Mimeo.
- Magee, C., 2003. Endogenous preferential trade agreements: An empirical analysis. *Contributions to Economic Analysis and Policy*, 2(1), Berkeley Electronic Press.
- Schott, P.K., 2004. Across-product versus within-product specialization in international trade. *Quarterly Journal of Economics*, 119(2), 646-677.
- Urata, S. and M. Okabe, 2007. The impacts of free trade agreements on trade flows: An application of the gravity model approach. RIETE Discussion Paper Series 07-E-052.
- Viner, J., 1950. *The Customs Union Issue*. Carnegie Endowment for International Peace, New York.
- World Bank, 2008. *World Development Indicators 2008*. World Bank, Washington DC.

Table A1

Specific Preferential Trade Agreements

Abbreviation	Name of PTA	Start	Member countries (year joined)
ANZCERTA	Australia – New Zealand Closer Economic Relations Trade Agreement	1983	Australia, New Zealand
APEC	Asia Pacific Economic Community	1989	Australia, Brunei, Canada, China (1991), Chile (1994), Taiwan (1991), Hong Kong (1991), Indonesia, Japan, South Korea, Malaysia, Mexico (1993), New Zealand, Papua New Guinea (1993), Peru (1998), Philippines, Singapore, Thailand, United States of America, Vietnam (1998)
AP	Andean Community / Andean Pact	1969	Bolivia, Colombia, Ecuador, Peru, Venezuela (1973), Chile (1969-76)
AFTA	Association of South East Asian Nations (ASEAN) Free Trade Area	1967	Brunei (1984), Cambodia (1988), Indonesia, Laos (1997), Malaysia, Myanmar (1997), Philippines, Singapore, Thailand, Vietnam (1995)
CARICOM	Caribbean Community / Carifta	1968	Antigua and Barbuda, Bahamas (1983), Barbados, Belize (1995), Dominica (1974), Guyana (1973), Grenada (1974), Jamaica, Montserrat (1974), St. Kitts and Nevis, St. Lucia (1974), St. Vincent and the Grenadines, Suriname (1995), Trinidad and Tobago
EEA	European Economic Area	1994	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Luxembourg, Iceland, Italy, Ireland, Liechtenstein, Netherlands, Norway, Portugal, Spain, Sweden, United Kingdom
EFTA	European Free Trade Area	1960	Iceland, Liechtenstein (1991), Norway (1986), Switzerland Former: Denmark (1960-72), United Kingdom (1960-72), Portugal (1960-85), Austria (1960-94), Sweden (1960-94), Finland (1986-94)
EU	European Union	1958	Austria (1995), Belgium, Denmark (1973), Finland (1995), France, Germany, Greece (1981), Luxembourg, Ireland (1973), Italy, Netherlands, Portugal (1986), Spain (1986), Sweden (1995), United Kingdom (1973)
LAIA / LAFTA	Latin American Integration Agreement	1960	Argentina, Bolivia (1967), Brazil, Chile, Colombia (1961), Ecuador (1961), Mexico, Paraguay, Peru, Uruguay, Venezuela (1966)
MERCOSUR	Southern Cone Common Market	1991	Argentina, Brazil, Paraguay, Uruguay
NAFTA	Canada-US Free Trade Arrangement / North America Free Trade Agreement	1988	Canada, United States of America, Mexico (1994)

Notes: This table is taken from Eicher et al. (forthcoming) who make some corrections to the table of Ghosh and Yamarik (2006). Excluded from this table is the Central American Common Market (CACM). Since this agreement began in 1960 with the final member joining in 1963 it is not possible to construct the average differences in exports in our sample of data.

Table A2

List of PTAs and years considered in the matching analysis

PTA	Year	PTA	Year
APEC	1989	CARICOM	1983
APEC	1991	CARICOM	1995
APEC	1993	EEA	1994
APEC	1994	EFTA	1986
APEC	1998	EFTA	1991
AP	1969	EU	1973
AP	1973	EU	1981
AFTA	1967	EU	1986
AFTA	1984	EU	1995
AFTA	1995	LAIA	1966
AFTA	1997	LAIA	1967
AFTA	1998	MERCOSUR	1991
CARICOM	1968	NAFTA	1988
CARICOM	1973	NAFTA	1994
CARICOM	1974		

Short list of the most recent wiiw publications (as of September 2010)

For current updates and summaries see also
wiiw's website at www.wiiw.ac.at

The Impact of Preferential Trade Agreements on the Margins of International Trade

by **Neil Foster, Johannes Pöschl and Robert Stehrer**

wiiw Working Papers, No. 70, September 2010
25 pages including 9 Tables
hardcopy: EUR 8.00 (PDF: free download from wiiw's website)

Discrepancies between Purchasing Power Parities and Exchange Rates under the Law of One Price: A Puzzle (partly) Explained?

by **Leoon Podkaminer**

wiiw Working Papers, No. 69, September 2010
18 pages including 5 Tables
hardcopy: EUR 8.00 (PDF: free download from wiiw's website)

An Empirical Characterization of Redistribution Shocks and Output Dynamics

by **Klemens Hauzenberger and Robert Stehrer**

wiiw Working Papers, No. 68, August 2010
47 pages including 6 Tables and 4 Figures
hardcopy: EUR 8.00 (PDF: free download from wiiw's website)

wiiw Monthly Report 7/10

edited by **Leon Podkaminer**

- A few reflections on fiscal and monetary policy in the euro area
 - Unit labour costs, exchange rates and responses to the crisis
 - Poland's presidential election: and the winner is ...
 - Statistical Annex: Selected monthly data on the economic situation in Southeast Europe, Russia and Ukraine
- wiiw, July 2010
28 pages including 9 Tables and 6 Figures
(exclusively for subscribers to the wiiw Service Package)
-

Ukraine, the European Union and the International Community: Current Challenges and the Agenda for Overcoming the Stalemate

by **Vasily Astrov, Igor Burakovsky, Grzegorz Gromadzki, Peter Havlik and Vasyl Yurchyshyn**

wiiw Research Reports, No. 364, July 2010
93 pages including 27 Tables and 15 Figures
hardcopy: EUR 8.00 (PDF: free download from wiiw's website)

Austrian Exporters: A Firm-Level Analysis

by **Roman Stöllinger, Robert Stehrer and Johannes Pöschl**

wiiw Working Papers, No. 67, July 2010
32 pages including 14 Tables and 4 Figures
hardcopy: EUR 8.00 (PDF: free download from wiiw's website)

Will Exports Prevail over Austerity?

by **Vasily Astrov, Mario Holzner, Kazimierz Laski, Leon Podkaminer et al.**

wiiw Current Analyses and Forecasts. Economic Prospects for Central, East and Southeast Europe, No. 6, July 2010
164 pages including 30 Tables and 33 Figures
hardcopy: EUR 80.00 (PDF: EUR 65.00)

Current State and Prospects of the Russian Energy Sector

by **Vasily Astrov**

wiiw Research Reports, No. 363, June 2010
36 pages including 3 Tables and 11 Figures
hardcopy: EUR 8.00 (PDF: free download from wiiw's website)

Tourism and Economic Development: the Beach Disease?

by **Mario Holzner**

wiiw Working Papers, No. 66, June 2010
31 pages including 9 Tables and 1 Figure
hardcopy: EUR 8.00 (PDF: free download from wiiw's website)

wiiw Monthly Report 6/10

edited by **Leon Podkaminer**

- Cohesion policy – does it have a future?
 - The great crisis and the American response
 - Export-led growth and trade among developing countries: tendencies and prospects
 - Statistical Annex: Selected monthly data on the economic situation in Central and Eastern Europe
- wiiw, June 2010
30 pages including 8 Tables and 2 Figures
(exclusively for subscribers to the wiiw Service Package)
-

European Energy Security in View of Russian Economic and Integration Prospects

by **Peter Havlik**

wiiw Research Reports, No. 362, May 2010
42 pages including 1 Table and 14 Figures
hardcopy: EUR 8.00 (PDF: free download from wiiw's website)

wiiw Database on Foreign Direct Investment in Central, East and Southeast Europe, 2010: FDI in the CEECs Hit Hard by the Global Crisis

by **Gábor Hunya**. Database and layout by **Monika Schwarzhappel**

wiiw Database on Foreign Direct Investment in Central, East and Southeast Europe
wiiw, Vienna, May 2010 (ISBN-978-3-85209-018-4)
107 pages including 86 Tables
hardcopy: EUR 70.00 (PDF: EUR 65.00), CD-ROM (including hardcopy): EUR 145.00

A Contribution to the Theory of Financial Fragility and Crisis

by **Amit Bhaduri**

wiiw Working Papers, No. 65, May 2010

18 pages including 2 Figures

hardcopy: EUR 8.00 (PDF: free download from wiiw's website)

wiiw Monthly Report 5/10

edited by **Leon Podkaminer**

- European energy security: a concern common to both the EU and Russia
- The current state and prospects of the Russian energy sector
- Short-run projections of patterns of job contraction in the Czech Republic, Hungary, Slovakia and Slovenia
- Statistical Annex: Selected monthly data on the economic situation in Southeast Europe, Russia and Ukraine

wiiw, May 2010

26 pages including 13 Tables and 5 Figures

(exclusively for subscribers to the wiiw Service Package)

Why Are Goods Cheaper in Rich Countries? Beyond the Balassa-Samuelson Effect

by **Leon Podkaminer**

wiiw Working Papers, No. 64, April 2010

20 pages including 2 Tables and 6 Figures

hardcopy: EUR 8.00 (PDF: free download from wiiw's website)

wiiw Monthly Report 4/10

edited by **Leon Podkaminer**

- Getting back to business in emerging Europe
- The crisis of the euro area and the need for a structural reform
- Real convergence and price levels in the enlarged European Union
- Hungary after the elections
- Statistical Annex: Selected monthly data on the economic situation in Central and Eastern Europe

wiiw, April 2010

28 pages including 10 Tables

(exclusively for subscribers to the wiiw Service Package)

The Government Expenditure Multiplier and its Estimates for Poland in 2006-2009

by **Kazimierz Laski, Jerzy Osiatynski and Jolanta Zieba**

wiiw Working Papers, No. 63, March 2010

15 pages including 2 Tables and 1 Figure

hardcopy: EUR 8.00 (PDF: free download from wiiw's website)

Crisis Is Over, but Problems Loom Ahead

by **Vladimir Gligorov, Peter Havlik, Michael Landesmann, Josef Pöschl, Sándor Richter et al.**

wiiw Current Analyses and Forecasts. Economic Prospects for Central, East and Southeast Europe, No. 5, February 2010

170 pages including 45 Tables and 27 Figures

hardcopy: EUR 80.00 (PDF: EUR 65.00)

wiiw Service Package

The Vienna Institute offers to firms and institutions interested in unbiased and up-to-date information on Central, East and Southeast European markets a package of exclusive services and preferential access to its publications and research findings, on the basis of a subscription at an annual fee of EUR 2,000.

This subscription fee entitles to the following package of **Special Services**:

- A free invitation to the Vienna Institute's **Spring Seminar**, a whole-day event at the end of March, devoted to compelling topics in the economic transformation of the Central and East European region (for subscribers to the wiiw Service Package only).
- Copies of, or online access to, **The Vienna Institute Monthly Report**, a periodical consisting of timely articles summarizing and interpreting the latest economic developments in Central and Eastern Europe and the former Soviet Union. The statistical annex to each *Monthly Report* contains, alternately, country-specific tables or graphs with monthly key economic indicators, economic forecasts, the latest data from the wiiw Industrial Database and excerpts from the wiiw FDI Database. This periodical is not for sale, it can only be obtained in the framework of the wiiw Service Package.
- Free copies of the Institute's **Research Reports** (including *Reprints*), **Current Analyses and Forecasts**, **Country Profiles** and **Statistical Reports**.
- A free copy of the **wiiw Handbook of Statistics** (published in October/November each year and containing more than 400 tables and graphs on the economies of Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Montenegro, Poland, Romania, Russia, Serbia, the Slovak Republic, Slovenia and Ukraine)
- Free online access to the **wiiw Monthly Database**, containing more than 1200 leading indicators monitoring the latest key economic developments in ten Central and East European countries.
- **Consulting**. The Vienna Institute is pleased to advise subscribers on questions concerning the East European economies or East-West economic relations if the required background research has already been undertaken by the Institute. We regret we have to charge extra for *ad hoc* research.
- Free access to the Institute's specialized economics library and documentation facilities.

Subscribers who wish to purchase wiiw data sets **on CD-ROM** or special publications not included in the wiiw Service Package are granted considerable **price reductions**.

**For detailed information about the wiiw Service Package
please visit wiiw's website at www.wiiw.ac.at**

To
The Vienna Institute
for International Economic Studies
Rahlgasse 3
A-1060 Vienna

- ☐ Please forward more detailed information about the Vienna Institute's Service Package
- ☐ Please forward a complete list of the Vienna Institute's publications to the following address

Please enter me for

- ☐ 1 yearly subscription of *Research Reports* (including *Reprints*) at a price of EUR 120.00 (hardcopy, Austria), EUR 135.00 (hardcopy, Europe), EUR 155.00 (hardcopy, overseas) and EUR 48.00 (PDF download with password) respectively
- ☐ 1 yearly subscription of *Current Analyses and Forecasts* a price of EUR 150.00 (hardcopy, Austria), EUR 155.00 (hardcopy, Europe), EUR 170.00 (hardcopy, overseas) and EUR 120.00 (PDF download with password) respectively

Please forward

- ☐ the following issue of *Research Reports*
- ☐ the following issue of *Current Analyses and Forecasts*
- ☐ the following issue of *Working Papers*
- ☐ the following issue of *Research Papers in German language*
- ☐ the following issue of *wiiw Database on Foreign Direct Investment*
- ☐ the following issue of *wiiw Handbook of Statistics*
- ☐ (other)

.....
Name

.....
Address

.....
Telephone

Fax

E-mail

.....
Date

.....
Signature

Herausgeber, Verleger, Eigentümer und Hersteller:

Verein „Wiener Institut für Internationale Wirtschaftsvergleiche“ (wiiw),
Wien 6, Rahlgasse 3
ZVR-Zahl: 329995655

Postanschrift: A-1060 Wien, Rahlgasse 3, Tel: [+431] 533 66 10, Telefax: [+431] 533 66 10 50

Internet Homepage: www.wiiw.ac.at

Nachdruck nur auszugsweise und mit genauer Quellenangabe gestattet.

P.b.b. Verlagspostamt 1060 Wien