IV.   Reciprocal liberalization: Bilateral, plurilateral or multilateral?

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1. Introduction

A country may opt for different type of reciprocal trade liberalization leading to either multilateral or bilateral/plurilateral negotiations. If it chooses a multilateral approach, it will focus on the big negotiations table of the World Trade Organization (WTO). If however it prefers to negotiate with a smaller number of partners, it will end up having petite comité rounds with one or several chosen countries. However, these are not either-or options, as it has been demonstrated that most countries have chosen both approaches.

Out of the 49 regional members of ESCAP (which covers the area of Asia and the Pacific, a focus of this study), only Mongolia has no preferential trade agreement. According to APTIAD, in December 2011 the rest – 48 economies (plus Hong Kong, China and Macao, China) were implementing 127 trade agreements and were contemplating many more.[28] This surge in preferential trade liberalization is compatible with the WTO rules, which provide for the exemptions to the non-discriminatory principle of the Most Favoured Nation (MFN) in Article XXIV of GATT (goods trade) and Article V of GATS (services trade) in the case of reciprocal agreements mostly between developed countries in goods and in services, or under the Enabling Clause in the case of unilateral (non-reciprocal) preferences given to developing countries and reciprocal agreements among developing countries themselves.

While policymakers in principle should follow the evidence-based policy making when making decisions on approach to trade liberalization, and use evidence from applied/ empirical and theoretical research, as well as experience and best practice, decisions often depend on political economy and socio-economic realities. Literature and practitioners, including negotiators and policymakers, have been debating the criteria for making a choice between multilateral and other approaches to liberalization since the early 1950's, given the importance of assessing the impact of these policy choices on trade. However, the literature yields mixed results. On the one hand, supporters of PTAs center their main arguments on the negotiation process, putting forward that bilateral/plurilateral negotiations are a faster (and more efficient) way towards liberalization, due to the inherent difficulty of negotiating when the number of parties and its diversity are too large (such as in WTO with 153 or more members). On the other hand, supporters of multilateralism center their arguments on the outcome of the negotiations, putting forward that even though the negotiation

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[28] See further details at www.unescap.org/tid/aptiad or ESCAP, 2011, chapter 8. Globally there were around 300 trade agreements in implementation in May 2011 (see more details in WTO, 2011 or http://www.wto.org/english/tratop_e/region_e/region_e.htm. While Mongolia currently has no preferential agreements, it does receive non-reciprocal preferential treatment by the EU under their GSP+ scheme. Furthermore it is engaged in negotiation of accession to APTA and is considering negotiation of an FTA with Japan.

process might be more difficult, the resulting welfare gains are larger than the outcome of separate PTAs. This conclusion is based on the fact that multilateral process is more likely to include the most efficient suppliers of any given product and therefore the possible trade diversion resulting from any preferential liberalization would be minimized.

In this context, LDCs should be especially sensitive about the way they will liberalize due to both their vulnerable economic structures and industries, at infant level of development, and their weak bargaining power (due to their small economic size). Multilateral liberalization in principle could have adverse effects for the industries that are still at an early stage of development, since the multilateral reduction of tariffs can expose them to the fierce international competition before they are ready to face it protection-less (and why normally countries do not open autonomously). However, since LDCs do not have to make many commitments on the liberalization front within the WTO system, this is not the concern.[29] Furthermore, the multilateral trading system (MTS) under the protectorate of the WTO is not only about trade liberalization, but also offers a dispute resolution forum that gives legal certainty to its members. This becomes very relevant in the case of LDCs, especially when trying to resolve disputes with a large trading partner. They become more protected than in a similar situation under a bilateral or regional trade agreement. The benefits of going via PTA route would arise from the opportunity to gradually introduce tailored liberalization (through partial scope agreements). On the other hand, drawbacks of such agreements are that they often would be shallow and not providing write incentives for efficiency seeking reforms.

2. Irresistible attraction of PTAs

There is no denying that the number of PTAs globally and regionally has risen exponentially since 1995. In Figure 1, the black line represents the cumulative number of active RTAs (PTAs), and the red line the number of notified RTAs to the WTO. Except for 2004 and 2007, when there was a statistical correction due to the enlargement of the European Union, the past 20 years have been characterized by a sharp increase of preferential trade agreements.[30]

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[29] See Chapter II for more details.
[30] Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia acceded in 2004. Bulgaria and Romania did it in 2007.

Figure 1. Trends in growth of PTAs
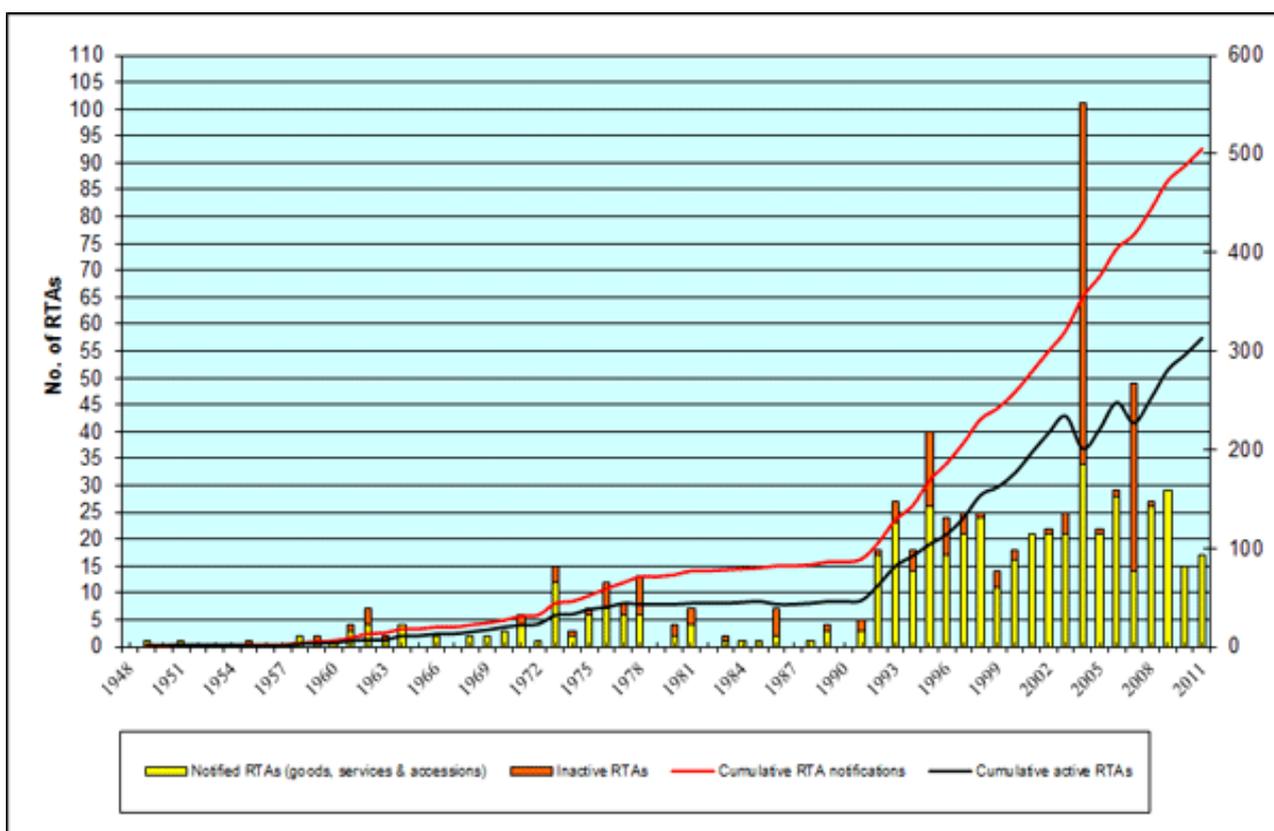
Source: WTO RTA-IS (www.wto.org) consulted in December 2011.

From a perspective of the Asia-Pacific LDCs the engagement in PTAs is not that buoyant, but it is important to note that all but one country are part of the process. Figure 2 shows the type of bilateral and regional trade agreements the LDCs are engaged with.[31]

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[31] A more comprehensive Asia-Pacific noodle bowl, that includes also all the developed and developing countries in the region, can be found in http://www.unescap.org/tid/aptiad/images/country_link.jpg

Figure 2: Asia-Pacific LDCs' noodle bowl of trade agreements
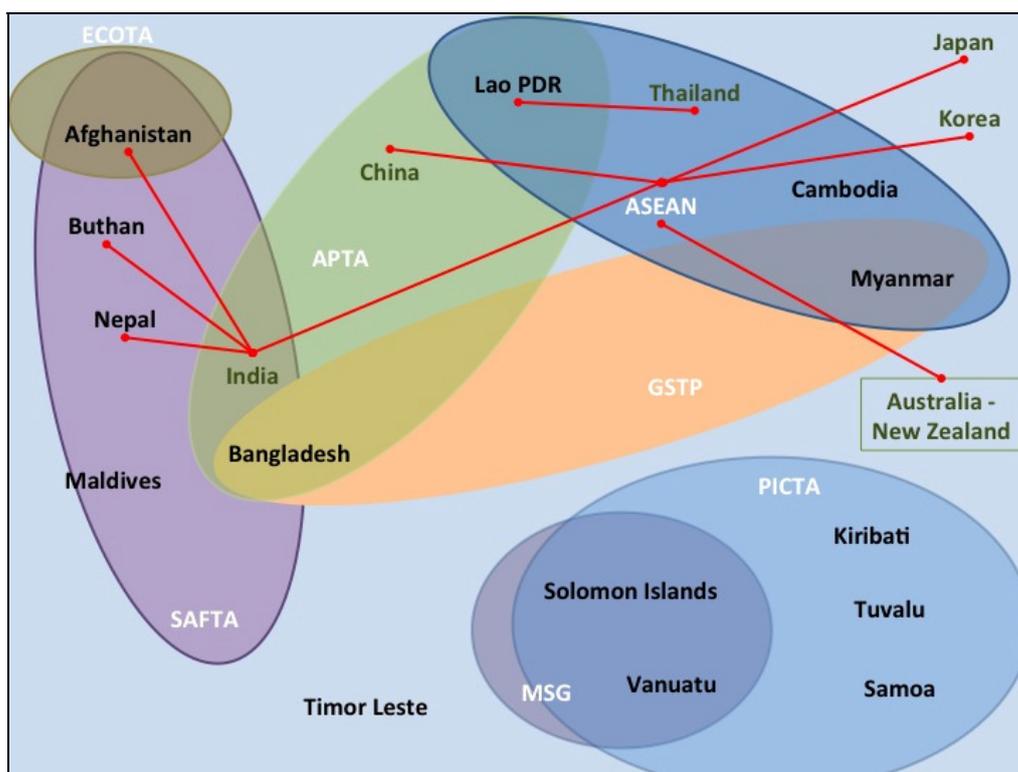
Source: Own construction based on data from APTIAD.

Figure 2 shows all 16 reciprocal PTAs that Asia-Pacific LDCs are involved with. The solid lines denote bilateral agreements, considering as bilateral not only country-country agreements but also country-bloc agreements (for example Lao PDR as part of ASEAN having agreements with Australia/New Zealand, China, India, Japan, and Republic of Korea. The ellipses denote regional agreements with the LDC members (APTA, ASEAN, MSG, PICTA and SAFTA).[32] The only Asia-Pacific country not involved in any of the PTAs is Timor Leste. India is the country that has the largest number of bilateral agreements signed with LDCs, ASEAN being the regional agreement with most bilateral connections with developed and fast-growing developing countries, and PICTA and MSG are isolated including only Pacific island LDCs and not being linked to the rest of the region except to Australia and new Zealand with whom they have been negotiating PACER and PACER plus.

2.1. Trade creation, trade diversion and welfare effects a brief review

The first group of reasons accounting for the rapid increase of the number of PTAs is economic in nature. Traditionally, the economic theory posited that tariff reduction under the conditions of perfect competition and no externalities would always result in welfare gains for the partner countries as a result of an intensification of their mutual trade. However, in 1950 Jacob Viner used the terms *trade creation* and

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[32] Reference to PACER and PACER plus

trade diversion to isolate positive and negative welfare effects of a preferential tariff reduction under the formation of a Customs Union (CU).[33] It has become customary to use the same terms in discussing effects of any form of a PTAs.[34]

PTAs usually lead to trade creation among its members, since certain goods that were produced locally can be now purchased from a more efficient producer in a partner country, thus lowering the market price. However, PTAs can also have trade diverting effects. Trade diversion is described as the negative effect derived from a shift in imports from an efficient supplier in a non-partner country to an inefficient source in a trading partner. So, do PTAs increase welfare or not? To answer, we have to look at the *net* effect they have on welfare. If there is a net trade creation effect, the PTA will imply global welfare gains, however, if the net effect is diverting, the PTA will cause welfare loses. Hence, the effect of PTAs even in this static and simplistic setting is ex-ante ambiguous.

Since Viner, there has been a wide range of literature analyzing the impacts of PTAs, including specific analysis for developing countries. Lipsey (1970) moved from the Vinerian partial and static equilibrium analysis to a multi-country general equilibrium framework; however, the ex-ante results remained ambiguous. Researchers have polarized into two groups in the debate of the effects of PTAs. On the one hand, there are those who support the idea that PTAs usually lead to a trade creation effect under certain conditions; Summers (1991), Lipsey (1957), Frankel (1997), Frankel and Wei (1997). The main condition that they use is that the more similar the signatory countries are, the lesser the risk of a net trade diverting effect. Kemp and Wan (1976) found that a customs union will be always welfare improving if their external tariffs were set in such level that world prices for nonmembers were not altered. However, in practice this cannot be achieved. Also, the similarity argument was used by Krugman (1991) applying it to transport costs, pointing out that with enough "inherent regionalism" ("natural trading partner" hypothesis), PTAs will have beneficial effects on welfare. Later on, Baier and Bergstrand (2004) would find support for the natural trading partner hypothesis using a general equilibrium model.

On the other hand, Bhagwati and Panagariya (1996) support the idea that the trade diverting effect is the likeliest to dominate. Given the multilateral nature of world trade, where countries have commercial relationships with not only the countries they have PTAs in force, but also with the rest of the world, trade diversion is then inevitable. What is more, if the size of the group forming the PTA is small compared to the world's economy, there will be almost no trade creation at all.

Moving from theoretical to more empirical literature, the effects of PTAs on trade have been studied in a number of papers using different approaches. A branch of the literature has analyzed specific agreements finding net trade creation effects (Clausing, 2001 and Trefler, 2004), while others have found net trade diverting effects

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[34] There are nuanced differences in analysis when different forms are involved, see Baldwin and Wyplosz, (2003) or Panagaryia (1999) for more details.

(Romalis, 2007 and Chang and Winters, 2002).[35] Another branch of the literature (the most extensive) uses gravity models. Magee (2008) finds that the overall impact of PTAs in trade is, though small, positive and significant and, on average, trade creation overcomes trade diversion. On the contrary, Carrere (2006), using also panel data finds that the trade creation generated by PTAs, *"has been often at the expense of the rest of the world"*, pointing towards trade diversion.

Although there have been mixed results depending on the model specification and estimation technique used, after undertaking a thorough literature review, Freund and Ornelas (2010) conclude that even though theoretically it is legitimate to raise concern about the potential trade diverting effect of PTAs, *"empirically, neither widespread trade diversion nor stalled external liberalization has materialized, while the undermining of multilateralism has not been properly tested."* Also, this finding is in line with Cipollina and Salvatici (2009) who used a meta-analysis approach on more than 1,827 estimates from a sample of 85 published papers to determine the average impact of PTAs on trade flows, finding positive and significant results.

So we know that PTAs increase trade among its members, but their welfare effects are not completely clear in the economic literature. It has to be noted, though, that PTAs can also generate dynamic gains among its members. First, by either the attraction of capital inflows or greater savings generated by the increase in exports and output, a country can see its stock of capital increased and thus improve its productive capacity. Second, the liberalization process increases competition among firms, causing an industrial restructuring that improves the efficiency of the surviving firms. Both effects yield beneficial results on economic growth and consumer surplus, respectively.

Another issue considered by the literature is related to relevance of PTAs in a context of them really providing a market access under better terms than in normal (that is, MFN) conditions. There are two aspects to be considered, one is about how much trade is going on among the countries that sign agreements, and another is about share of that trade being done under better trading terms (i.e. under concessions).

So how much trade is done among PTA members? Figure 3, shows the share of exports under PTAs in members' total exports to the world in 2008 (excluding the EU internal market), and figure 4 reflects the share of the Asia-Pacific LDCs intra-PTA exports in their total exports for the period of 2007-2009.

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[35] Clausing and Trefler studied CUSFTA, Romalis studied NAFTA and Chang and Winters studied MERCOSUR. Chang and Winters (2002) studied the impact of the formation of MERCOSUR on the terms of trade of countries excluded from the agreement, finding significant declines in the export prices of Brazil's major trading partners. They estimated the US and Germany losses at around 10% of their exports to Brazil.

**Figure 3. Share of intra-PTA exports in members' exports to the world
(excluding the EU internal market)**
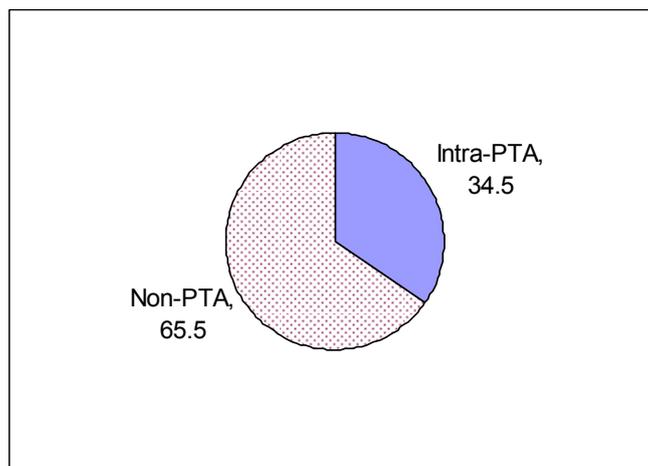
Source: own calculations using data from the World Trade Report 2011.

Comparatively, the share of the Asia-Pacific LDC's trade under PTAs is almost half of that of the rest of the world (18% vs. 35%), which means that their trade is heavily biased towards the countries with which they do not have PTAs, such as the European Union and other European countries, United States, or Canada. [36]

**Figure 4. Asia-Pacific LDCs' intra-PTA exports in total exports**
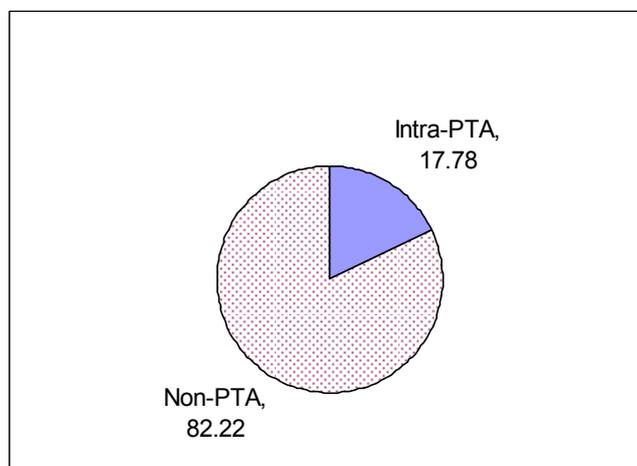
Source: own calculations using data from APTIR 2011.

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[36] It has to be noted, though, that these numbers are biased by the Bangladesh's patterns of trade (being heavily dependent on the European Union and the United States), since in the weighted average, Bangladesh represents around 50% of the LDCs trade done between 2007-2009. This weighted average masks wide heterogeneity of the share of trade with PTA partners for the Asian and the pacific LDCs: from about 2% for Vanuatu to 83% for Lao PDR, 88% for Myanmar, and 93% for Bhutan. Except for Bangladesh and Cambodia, Asian LDCs are much more oriented towards their PTA members than in case on Pacific LDCs (this will probably change when Australia and New Zealand conclude negotiating a reciprocal arrangement with those countries).

The shares of trade of PTA members in their total trade at the global level have increased substantially since 1990 (from 18% to 35% excluding EU-intra and from 28% to 51% including EU-intra). This almost doubling in the share of trade among PTA members in world trade (excluding EU-intra trade) is not surprising since the number of PTAs in force increased by around 300% (from 70 to 300 approximately) over the same period.[37] However, the key question is how much trade is really being done under trade preferences, that is, at lower tariff rates than those available at the MFN levels? Figure 5 shows that only 16% of world trade is done with positive preferential margins, while 84% is done under MFN rates. As only slightly more than ¾ of the 16% is attributed to reciprocal preferences, that would imply a preference utilization rate of 35% (or if all 16% were base on reciprocal preferences, this rate would be around 46%). What is more, only 1.8% of total trade has a margin of 10 percentage points and above, and the trade-weighted preferential margin (equivalent to the "saved duties" due to preferences)[38] is only 1.1% (Carpenter and Lendle, 2010).

Figure 5. Share of preferential trade in world exports
(Excluding the EU internal market)
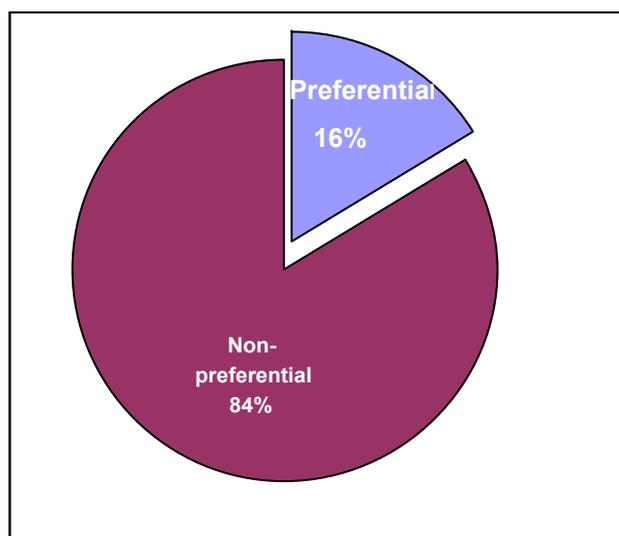
Source: World Trade Report 2011, WTO

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[37] WTO RTA database: http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx
[38] "Saved duties" is being identified with the difference between the MFN duties and the preferential duties for each product (this, margin of preference, MOP). The term "saved duties" is misnomer as it does not automatically follow that LDCs save that amount of money. Actually, under the perfect competition, it would be consumers in the importing countries pocketing this amount instead of their governments' treasury. In a more complex world, when there is a change in the tariff level (that is lesser tariff for an import from LDCs), importers, exporters and consumers share the effect depending on the price elasticity of their supply and demand. Hence, all three parties share the saved duties and it is not possible to know which party benefits the most without knowing their respective elasticities.

There are a few reasons that account for the low utilization of preferences:[39]

- Half of world trade is already subject to zero MFN rates.
- PTAs tend to exempt high MFN-tariff products from preferential treatment (Damuri, 2009).
- Complicated rules of origin (RoO) make the cost of compliance higher, which reduces appeal of potential savings under preferential trade since the preferential margins have been becoming smaller over time.
- Firm characteristics are also a factor that affects the utilization of preferences. The bigger the firms are, the higher the probability that they utilize the preferences. Similarly, the more experienced a firm is (measured by the number of years exporting), the more likely the utilization of preferences will be.

So does this mean that preferences don't matter at all? They perhaps matter a little on average, but do matter a lot to a few countries; specifically to those which main exports are subject to high MFN tariffs. Among the Asia-Pacific LDCs, the ones that benefit the most are Afghanistan and Nepal with a trade-weighted preferential margin of 11.2% and 10.6% respectively, followed by Maldives, Samoa and Bangladesh with a margin that ranges between 9.4% and 7.8%. The total "saved duties" of the exports of the 9 Asia-Pacific LDCs enjoying the highest preferential margins amounted to a total of US$1.67 billion in 2008.[40]

2.2. Battle in Seattle and the everlasting Doha

One reason that is often used to explain the increasing number of preferential agreements is the general dissatisfaction towards the multilateral system of negotiations. This dissatisfaction has been building up since the failure of the WTO Ministerial Conference in Seattle in 1999 to start the proposed "Millennium Round", and is continuing after 10 years of unsuccessful attempts to close the "Doha Development Agenda Round" deal. The main reasons that account for this frustration with the multilateral system are basically low speed of negotiation, reduced likelihood of finishing negotiations and lack of leadership/political will.

Krugman (1993) pointed that, when there are a large number of participants in the negotiations process, the cost of non-cooperation decreases, creating rigidities in the system and thus making bilateralism/regionalism a more appealing alternative. Basically, Krugman suggested that it is easier to negotiate tariff reductions with one party than with 153. If we also don't limit the example to tariffs and add on non-tariff and other barriers to the equation, the picture becomes clear: given the increasing complexity of applied policies and instruments to be negotiated on, the increasing number of parties and the already-low tariff level, the likelihood of reaching an agreement in the multilateral system's framework becomes lower over time.

A lack of political will and sufficient organization has also been one of the reasons behind the failure of some negotiation rounds. Seattle 1999 is an example of a

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[39] World Trade Report 2011 (pp. 72-86)

[40] See appendix table 1 based on data from Carpenter and Lendle (2010). The levels of the preferential margins in the text refer to all preferences (reciprocal and non-reciprocal) thus the amount attributable only to PTAs would be much less, because the trade under PTAs is less than under GSP and the level of preferences is higher under GSP.

Ministerial Conference where there was a lack of sufficient preparatory work on the WTO side (Jawara and Kwa, 2004). A too complicated agenda and a lack of willingness to reach an agreement by developed members impeded an agreement in Cancun in 2003. Fergusson (2008, p. 4) states that *"...it was questioned whether some countries had come to Cancun with a serious intention to negotiate. In the view of some observers, a few countries showed no flexibility in their positions and only repeated their demands rather than talk about trade-offs".* This lack of will was (is) derived from a major clash between developed and developing countries on sensitive issues, specially agriculture, textiles and services.

2.3. *Political- economy related issues*

We have seen that, on average, the utilization of trade preferences is rather low to the extent that, sometimes, firms decide not to use the preferences even when they are entitled to do so. For this reason, we have to go beyond tariffs to explain why countries have chosen to sign so many PTAs. In addition to rising dissatisfaction with the multilateral system, as already discussed, there are some political-economy related issues reviewed next.

The level of trade openness has been increasing continuously over time, following the globalization process. As shown in chapter 1, for the Asia-Pacific LDCs, the average annual growth rate of the trade openness index measured as total trade over GDP was 2.4% (in line with the world's average of 2.6%) from 2000 to 2008. The increased interconnectedness and interdependency between economies has fed back into increasing trade and investment. However at times of recessions and crises, the high degree of interdependency resulted in synchronized downturn and collapse of trade (like in 2008-2009) as well as spread of negative effects of any single country's protectionism. While the negative effects of any country's protectionism is best dealt with binding multilateral agreements, such as GATT Rounds, similar result could be achieved through PTAs, provided that one signs those with a sufficient number of trading partners and that the agreements adhere to the similar standards. Of course, one should not forget processes which rely on voluntary restrain or best endeavor with respect to use of protectionist policies, such as G20 or APEC. However, the most effective have been the binding agreements supported by the effective dispute settlement process, such as the WTO.

From a political point of view, international institutions provide a credible commitment device for political leaders (Mansfield and Pevehouse, 2006). By using the argument of "having their hands tied", leaders can implement unpopular economic reforms, like specific-sector liberalizations, at a lower political cost. This applies for any binding agreement, including the PTAs, which are basically contracts containing legally binding rules and enforcement mechanisms (Ethier, 2008; Kono, 2007). Reneging on international commitments would result in a contract breach, thus carrying adverse reputational consequences (Guzman, 2008) and even direct punishments by partners with greater economic and/or political powers. Baccini and Urpelainen (2011), using data on treaty negotiations and a structural break analysis, find a relationship between PTA formation and economic reforms. According to their findings, developing countries' leaders use PTAs with major powers (European Union

and United States) to promote liberal economic policies, surmounting domestic obstacles to reform. Furthermore, apart from the gains in policy credibility, PTAs can also provide gains in policy predictability (Fernandez and Portes, 1998) by means of improving the investment environment and thus making the countries more attractive to international investors.

The signing of PTAs can be influenced as well by countries' foreign policies in an attempt to maintain geopolitical stability. For example, a PTA could be signed between two or more countries in order to improve or empower their international position. As a consequence, a new agreement could be signed by other countries in order to counteract this move aiming to maintain their current relative positions (Gowa and Mansfield, 1993). In other words, excluded nations seek to sign PTAs as a means of redressing the new discriminatory situation. This is what Baldwin (1993) explained in his "domino theory of regionalism" applied to customs unions. Baldwin and Jaimovich (2008) also study the surge in bilateral and regional agreements from the perspective of agreements interdependence, using the concept of "contagion effect". By developing a new and improved model of the domino theory, they conduct an empirical analysis based on solid theoretical foundations, finding robust evidence that supports their hypothesis. In their own words: *"FTAs are contagious, and the degree of contagion is related to the importance of the partners' markets", meaning that the bigger the countries signing an FTA are, the higher the probability to find third countries signing their own FTAs"*.

2.4. International production networks and deeper integration

The last of the reasons (but not the least) is one that has been gaining momentum in the past years due to globalization, and more specifically, to the growth of international production networks and intra-industry trade. Lawrence (1996), states that, in order for international production networks to work smoothly and to support the participation of producing countries, there is a need to harmonize certain policies at the international level. This way, governments can facilitate business activities and create a good investment climate across borders. This can be achieved by the so called "deep agreements", which are PTAs that include some provisions outside the WTO coverage (e.g. competition policy, investment, movement of capital, labor market regulations and human rights, among others). The WTO, in its 2011 World Trade Report, makes an extensive and excellent analysis of the issue of "deep integration", which reveals the importance of non-tariff related reasons accounting for the proliferation of PTAs.

3. What about multilateralism?

Compared with the numerous papers on PTAs, little research has been done to assess the impacts of WTO as the guardian of the multilateral liberalization process (Evenett, 2005). The existing literature can be classified in two groups, one that studies country-specific accession to WTO, and another that analyses the economic effects of WTO membership. The first group has focused mainly on the accession of China and the Russian Federation, obviating other members that have accessed in the

last decades. The second group owes most contributions to Andrew Rose, who in a series of papers analyses whether WTO membership increases bilateral trade.

His early results (Rose, 2002a; 2004), where he used a standard gravity model and pooled data, indicated that membership in WTO/GATT, by itself, had not had any statistically significant impact on international trade. These results were criticized by Subramanian and Wei (2007), who, after accounting for the multilateral resistance as in Anderson and Van-Wincoop (2003), using a more solid set of dummies to isolate the effects of WTO, FTAs and GSP, and differentiating the effects by subsamples, found consistent evidence that WTO had done an excellent job promoting trade, estimating the impact at around 120% of additional world trade in year 2000 alone. However, according to the findings, the increase in trade had been uneven, being higher when the importer was a more industrialized economy (exports from developing countries to industrialized economies were estimated to be 150% higher when both of them were members of the WTO/GATT). Rose (2010), although acknowledging Subramanian and Wei (2007) and other works that criticized his previous findings,[41] contests some of the arguments used to criticize his work (only in a descriptive way), and concludes that, in his opinion, there is still a lack of evidence that membership in the WTO increases trade. Finally, the recent, relevant study that has attempted to estimate the trade effect of WTO membership is Chang and Lee (2011). The authors, using non-parametric econometric methods (pair matching, permutation tests and a Rosenbaum sensitivity analysis), find robust evidence of large trade-promoting effects that are consistent to several specifications, alternative WTO indicators, and potential hidden selection bias.

Thus, there is still no unanimous view on the impact of the WTO membership on a member's trade. However, one could broaden the inquiry here by asking if the sole (or main) objective of the membership in the WTO is indeed an increased level of trade. We have to remember that the concept of MTS goes beyond tariff cuts and market liberalization. Besides aiming at "making trade flow as freely as possible"[42], the WTO sets a rule-based system that provides legal certainty to its members. It improves the transparency of its member countries' trade policies through the trade policy review mechanism, by which member countries commit to provide regular notifications to the WTO secretariat about any changes on their respective trade policies, and the WTO also performs regular reviews on individual members. The MTS includes rules on many other issues related to trade: customs, environment, intellectual property rights, investment, subsidies, government procurement and non-tariff barriers, among others. It is also a dispute settlement forum where trade-related conflicts between members can be arbitraged impartially, applying the same rules to all the parties in a transparent framework of rules. All these are key factors in order to ensure that business sector perform transactions without fear of sudden changes of trade policy, which could potentially affect their participation in the international markets. Thus, it is an instrument for equality and stability across countries.

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[41] See Tomz, Goldstein and Rivers (2007).
[42] WTO website: http://www.wto.org/english/thewto_e/whatis_e/who_we_are_e.htm

4. MTS and PTAs: could they be mutually supportive?

Much has been said about the relationship between the MTS and PTAs. While some have described them as immiscible like oil and water, one would have to say it is a bit more complex.

Article XXIV of the GATT allows the formation of PTAs for the members of the WTO if certain conditions are met.[43] According to Bhagwati (1992a), the inclusion of article XXIV in the GATT, followed a 3-pillar rationale: first, full trade integration of a group of countries would give the group almost a "national" status that would be in line with the single-nation MFN obligations to other GATT members; second, the removal of all barriers would discard more limited preferential agreements; and third, the formation of a trading block might further the achievement of freer trade on a global level. Although some positive intentions are recognized in the article, it has been pointed out that the Article considers PTAs as a tolerable exception in the MTS (Deardorff and Stern, 1994).

The effects of bilateralism/regionalism on the MTS have been studied in a number of papers, more from a theoretical than from the empirical perspective. From the theoretical point of view, Krishna (1998) states that PTAs lower the incentives for any subsequent multilateral liberalization, given that producers in member countries of the PTA may oppose multilateral reform since they would lose the advantage provided by the preferential access. Baldwin combines his domino theory (1993) analyzed before, with his "Juggernaut" view (2004) that initial tariff cuts create an increased momentum for further cuts by changing the domestic political economy in favor of exporting lobbies and against import competing lobbies. According to this, PTAs may be a way to multilateralize free trade. Yi (1996) distinguishes between two PTA regimes: open membership (the PTA is open to any members that might want to join even after its creation), and unanimous membership (a third country can only join if all the current members agree to the accession). Following this classification, the theoretical outcome of the open membership PTAs is that they will accelerate the movement towards global free trade, while the unanimous membership PTAs will stop the expansion of the bloc before global free trade is reached. Finally, with regard to trade protectionism, Bhagwati (1996) and Bhagwati and Panagariya (1996) argue that PTA members may use measures of non-tariff protectionism against non-members more aggressively than against members.

The theory yields mixed conclusions about whether PTAs support or not multilateral liberalization. However, the empirical evidence is not that ambiguous. Regarding tariff liberalization, Limão (2006) examines MFN tariff cuts in the Uruguay round for a range of products and compares those cuts where a preferential agreement was in place to those where there was no preferential agreement. The results show that MFN tariff cuts were smaller in those cases where preferential agreements were in place, pointing towards the idea that trade preferences hamper the advance of multilateral liberalization. Karacaovali and Limão (2008) reach similar conclusions

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[43] One is advised to consult the full test of the Article XXIV, but the crucial language is provided here: "...the duties and other regulations of commerce...shall not be higher or more restrictive than...prior to the formation..." (GATT Article XXIV:5(a)(b)). The arrangement is to be concluded "within a reasonable length of time." (GATT Article XXIV:5(c)).

when studying the case of the EU. In the same line of work, Tovar (2010) studies the context of the formation of the Dominican Republic-Central America-United States Free Trade Agreement in 2004,[44] finding that the participating countries were prepared to lower MFN tariffs by less (and sometimes they even opted to raise them) in products where they had committed to large tariff reductions in preferential deals. Lastly, with regards to non-tariff barriers, Prusa (2011) trying to determine the validity of Bhagwati (1996)'s argument with an empirical exercise, examines the use of antidumping (AD) duties by PTA members, using a database with 5,000 antidumping dispute cases and separating the trends in two periods: pre-PTA formation period and after-PTA formation period. The results are displayed in figure 6.

Figure 6. Antidumping duties application
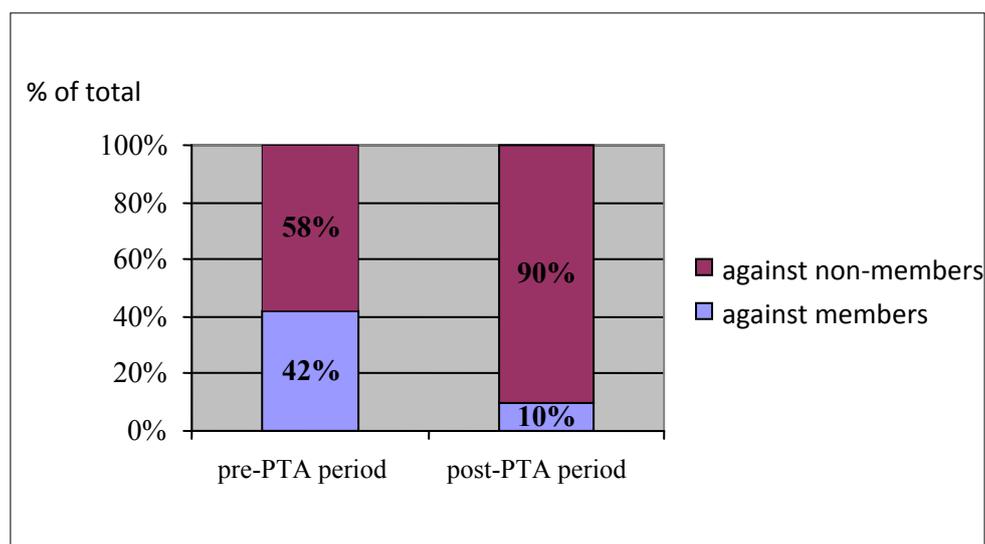
Source: Based on data from Prusa (2011).

It is clear that after the signing of a PTA, countries tend to increase the use of AD duties against non-PTA members relative to PTA-members, which indicates that there is a "trade protection diversion" that discriminates the countries that are outside the PTAs. These results provide empirical support to Bhagwati's argument.

Continuing with the empirical studies review, Krishna (2011) tests the argument that PTAs are a way to achieve deeper integration using data from the WTO's World Trade Report 2011, with over a hundred PTAs in force. Her findings are that, provisions that are out of the coverage of the WTO but are covered and deemed legally enforceable by PTAs, are not abundant. Just 4% of PTAs include legally enforceable provisions on anti-corruption measures, 11% on environmental regulations, 12% on labor regulations, 34% on intellectual property rights and 40% on movements of capital. According to the author, these numbers "…permit some skepticism on how much deeper PTAs, on average, have gone beyond the possibilities offered by the WTO".

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[44] Signatory countries are, in alphabetical order: Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua and the United States.

4.1. Preference erosion

One of the main issues of the interaction between PTAs and the MTS (and one of the most important for LDCs), is the issue of preference erosion. When a country receives preferential treatment under a PTA or unilateral preferential scheme,[45] the difference between the preferential tariff applied to this country and the MFN tariff, is called preferential margin (or margin of preference, often called MOP). If a bilateral or multilateral liberalization takes place (e.g. the signing of an FTA with other member or the hypothetical conclusion of the Doha round or some other form of multilateral trade liberalization), the preferential margin becomes smaller. This negative externality suffered by original preference beneficiaries is known as preference erosion.

Several papers have analyzed the expected impact of multilateral tariff liberalization on the preference margins of developing countries. Amiti and Romalis (2007) concluded that the tariff cuts predicted in the Doha round will lead to a net increase in market access for developing countries, which will be higher if the tariff cuts are in agricultural products. However, the picture for the LDCs that are benefiting from higher preferential margins than the rest of developing countries is not that optimistic. Limão and Olarreaga (2005) estimate significant losses to a number of LDCs due to a full erosion of preferences. Among the Asia-Pacific LDCs, the greatest losers would be Bangladesh (around US$200 million per year), followed by Cambodia (US$26.37 million per year) and Myanmar (US$22.46 million per year).

To counteract the problem of preference erosion, a few ideas have been brought up in the past years. Aid for Trade, which is discussed further in chapter 6, is one of the proposed solutions. Also, Limão and Olarreaga (2005) suggest replacing unilateral preferences by import subsidies as an alternative solution. The downside of this alternative is that it replaces one distorting mechanism with another one (Krishna, 2011). Lawrence and Rosito (2006) propose a more complex solution that combines delayed liberalization with a compensation mechanism. In their own words: "*Developed Countries should be granted a temporary and limited waiver from meeting their liberalization obligations in particular product categories on condition that the additional funds so raised are paid as compensation for preference erosion*".

4.2. Complementarity

Taking a look at the big picture and studying historical facts, there are opposed views about to what extent PTAs have affected the timely delivery of multilateral solutions, and vice versa. Bhagwati (2008) suggests that there is a negative correlation between the surge of bilateral and regional deals and the slow pace of the Doha Round. Freund (2000), however, finds that there is no correlation between the two, since, for example, regional initiatives didn't take off when the Uruguay round reached an impasse between 1990 and 1994, and only accelerated after the round's conclusion in 1994. Finally, the WTO (2011) points out that during or immediately

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[45] Examples of unilateral schemes are the Everything But Arms (EBA) initiative from the EU to LDCs, the US African Growth and Opportunity Act (AGOA) or the Canadian Least Developed countries' tariff (LDCT), among others.

after each wave of regionalism, there were significant advances in the GATT negotiations, concluding that regionalism and multilateralism have advanced together.

From a more empirical perspective and using tariff data, Baldwin and Seghezza (2010) studied the correlation between MFN and preferential tariffs for the 23 top exporters of the WTO. They found evidence that MFN and preferential tariffs are complements, since the preference margin is usually low or zero for products where nations apply high tariffs. The results were also confirmed by Joshi (2010a, 2010b) who undertook a similar study for the cases of NAFTA and the EU. These results support the WTO position.

4.3. So where do we go from here?

Let's try to summarize what we have discussed so far in order to draw some conclusions about the differences and relationship between multilateral and preferential trade liberalization.

Although there are many contradicting studies about whether these systems increase bilateral trade flows, the most recent findings using the latest econometric techniques show robust empirical evidence that both, membership in the WTO and membership in a regional/bilateral trade agreement, increase trade. Some of these studies have been conducted for developing countries as well; however there is a lack of literature in assessing the effects on LDCs. In the next section an empirical exercise is proposed in order to contribute to this particular research area.

The rapid increase of the number of PTAs is also due to non-economic reasons: 1) the current impasse of multilateral negotiations and the difficulty of reaching an agreement when many parties are involved in the negotiation process, 2) wish to gain political and policy credibility, as well as to lower the political cost of economic liberalization, 3) need to reduce negative externalities caused by trade policy spillovers, 4) a domino effect due to the aim of maintaining their international economic and political position and/or to maintain geopolitical stability in the region, and 5) need to achieve a deeper degree of integration in order to improve the efficiency of international production networks.

However, up to date, only 16% of world trade receives preferential treatment, due to rather low preferential margins and other reasons (WTO, 2011). Thus, most of world trade is still done under the MFN tariffs. Also, we have discussed that PTAs can cause negative externalities to non-members (trade diversion, relative rise of tariff and non-tariff protectionism) in addition to the finding that the deep integration, claimed to be achieved through PTAs, is not so deep. On the other hand, multilateralism also has a negative impact on preferential trade since, after a multilateral liberalization, the preference margins are reduced, including those for developing and LDCs.

The policy question is not which liberalization track or system one should choose, but how to make them work coherently in order to generate larger benefits for all. The following statement is made in the 2011 World Trade Report (p.54):

«...there is evidence that recent regional and multilateral initiatives have actually advanced in tandem. This adds weight to the view that they can, and do, represent complementary aspects of an increasingly complex and sophisticated global trade architecture – one in which bilateral, regional and multilateral agreements coexist and cohere in a kind of "multi-speed" or "variable geometry" system. »

In this almost-poetic stanza, we find a positive picture of current international trade relations. In reality, however, many issues have to be tackled and changes be made, both by the WTO as well as by individual countries, in order to give coherence to the complex current system of trading rules.

Deardorff and Stern (1994) argue that WTO (GATT in their paper) should recognize bilateral/regional agreements as a part of the MTS and not as a tolerable exception in the system, this way their presence will be seen as contributing to the system rather than tearing it apart. The authors also propose that the WTO should insist on the issue that preferential arrangements should have ways of accommodating new members (open regionalism) and that all countries (or at least all members belonging to the MTS) should have access to joining some trading bloc. This would prevent unanimous membership agreements (Yi, 1996) which are the ones with potential welfare reducing effects.

Baldwin (2006 and 2009) proposes a different approach: multilateralizing regionalism, this is, extending the existing preferential treatment to additional parties in a non-discriminatory way, and even merging different PTAs. The goal of this approach is to create more inclusive frameworks that would alight the already entangled spaghetti bowl and ultimately help to achieve a broader, less discriminatory trading system.

The last approach that has been discussed is to further liberalize trade at the multilateral level lowering MFN tariffs. This way, as preferential margins become smaller, the adverse effects of PTAs will have a lower impact on global trade and the economic incentive for trade discrimination will be reduced.

5. An empirical exercise on the impacts of WTO and PTAs membership on country's trade

In this section, we conduct an empirical exercise using the updated dataset of the ARTNeT gravity online tool to contribute to the existing literature that analyzes the impact of membership in the WTO and PTAs on trade. The objective is two-fold: first, to estimate the "handicap" of being an LDC, and second, to compare the impact of PTAs and WTO membership on trade for LDCs versus non-LDCs.

To undertake the analysis, a gravity model of trade is used. Gravity models are a good empirical tool to understand the determinants of bilateral trade flows. Since Tinbergen (1962) introduced it for first time, the model has undergone many transformations, moving from an intuitive non-theoretical formula that was an analogy to Newton's law of universal gravitation, to a general equilibrium model capable of performing comparative static analysis (Anderson and van Wincoop, 2003). More detailed explanation of the methodology is provided in the Appendix 1 to this chapter.

The first gravity models (Tinbergen, 1962; Lineman, 1966; Aitken, 1973) considered that trade between two economies was directly proportional to their "economic masses" (GDPs) and inversely proportional to trade costs, most often represented by the bilateral distance between the economies augmented by some other cost-associated variables (for example, cultural, language and legislative distance). Although much of trade was explainable by these models, they did not have any theoretical foundation. Anderson (1979) was the first to lay down the theory behind it using a constant elasticity of substitution (CES) expenditure function, however, the model which is now generally accepted as quintessential was the one developed in Anderson and van Wincoop (2003).

Anderson and van Wincoop used microeconomic theory as well as some macroeconomic assumptions to derive what is considered nowadays the most standard gravity model of trade.[46] This model (AvW), takes into account the importance of relative prices of countries i and j to the world, which are also called multilateral resistance to trade. The multilateral resistance (MR) concept can be easily pictured as how difficult (costly) is for a given country i to find an alternative market to j (outward MR), and how difficult is for a given importer j to find an alternative source of imports to those from i (inward MR). Hence, the higher the MR terms are, the more intense the trade flows between countries i and j will be. Failing to account for the MR terms would result in an omitted variable bias, which would make impossible to conduct comparative statics analyses, the main purpose of our empirical exercise.

5.1 Data description[47]

To conduct the exercise, a dataset is built which includes bilateral exports of 67 countries for the period 1994-2009. Among the countries included, the majority is from the Asia-Pacific region, and the rest includes Brazil, Canada, European countries, Mexico, South Africa and the United States, due to their weight in global trade. Also, 10 of the 14 regional LDCs are included.[48] The countries included in the dataset contribute 76% of total world trade on average over the observed period.

The data for bilateral exports is sourced from IMF's Direction of Trade Statistics (DOTS), August 2011 version. The observations are recorded in current United States dollars. In the sample, 78% of the observations report positive trade flows, 14% are reported as zero trade flows and 8% have not been reported and thus,

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[46] Although it is the most used, there are other gravity-like models with theoretical foundations.

[47] Baldwin and Taglioni (2006), summarize the three most common mistakes when estimating gravity equations, calling them "the three medal errors". The gold medal error appears when the MR terms are not taken into account, as we have just discussed. The silver medal error is earned by not using unidirectional trade data (e.g. instead using the arithmetic average of two-way trade). Since the CES expenditure function is multiplicative, the average used should be geometric. This mistake results in significant coefficient overestimation. Finally, the bronze medal error is attributed to the use of deflated data, since prices are important (they affect the trade costs). We believe that we have avoided earning these medals while doing this exercise.

[48] The other four LDCs from Asia-Pacific (Solomon Islands, Timor Leste, Bhutan and Kiribati) are not included due to the lack of data. See Appendix 2 for the complete list of countries.

encoded as missing.[49] GDP data is from the United Nations Statistics Division, which provides small countries' GDP data that in the World Development Indicators (the most frequently used source of GDP data for gravity modeling) is in some cases missing.

It has become a norm to use the CEPII gravity and distance datasets for the following: the bilateral distance (weighted by population) and the dummies of common border, common language and historical linkage. Since the original data coverage in the ARTNeT tool is up to 2006, we have extended it until 2009 for our own purposes.

Finally, bilateral tariff data comes from TRAINS dataset (World Integrated Trade Solution (WITS), The World Bank) and the LDCs, reciprocal preferential trade agreements (PTAs) and GATT/WTO dummies have been constructed with data from UNCTAD's website, Asia-Pacific Trade and Investment Agreements Database (APTIAD) and WTO's Regional Trade Agreements Information System, respectively.[50]

5.2. Methodology: model and estimation technique

The model proposed is a modification of Anderson and van Wincoop (2003). It differs from their specification in two main aspects: the time dimension and the vector of trade costs. Since we use panel data covering 16 years and AvW used cross-section data, we need to add a time dimension to the model. Also, our definition of trade costs is more comprehensive, since AvW only included the common border and distance variables. For full details on the derivation of the model are provided in Appendix 1.

$$\ln X\_ijt = C + \ln GDP\_it + \ln GDP\_jt + dist\_ij + contig\_ij* + comlang\_ij* + hist\_ij*$$
$$+ llc\_i* + llc\_j* + ldc\_i* + ldc\_j* + rta\_ijt* + rta\_ldc\_ijt* + gatt\_ijt* + gatt\_ldc\_ijt* +$$
$$\ln tariff\_jit* + d\_t \quad \textbf{(1)}$$

where *i* indicates exporter country and *j* indicates importer country; *X_ijt* are the exports from country i to country j in current United States dollars; GDP_it and GDP_jt are the Gross Domestic Product of countries i and j respectively, in current United States dollars; *dist* is the distance in kilometers between i and j, weighted by the population; *contig_ij* is a dummy that takes value 1 if countries have a common border, 0 otherwise; comlang_ij is a dummy that takes value 1 when i and j share a common official or ethnographic language (spoken by at least 9% of the population in both countries); *hist* is a dummy that reflects any historical linkages between i and j, taking value 1 if countries are or were in a colonial relationship, if they had a common colonizer or if they were ever part of the same country; *llc_i* and j are dummies that take value 1 if i or j, respectively, are landlocked; *ldc_i* and j are dummies that take value 1 if i or j, respectively, are a LDC; *rta_ijt* takes value 1 if countries i and j have a reciprocal PTA in force in year t and country i is not an LDC; *rta_ldc_ijt* takes value

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[49] Since IMF's guaranteed accuracy is at value of trade transaction of US$10,000, we consider observations below US$5,000 as 0 reported trade, similar as in Head, Mayer and Ries (2010).

[50] In the construction of the PTA dummy, Generalized System of Trade Preferences (GSTP) has not been included due to its poor implementation by many members. In the first run of regressions, we found that the statistical significance of the model was reduced with the inclusion of GSTP as the PTA dummy.

1 if i and j have a reciprocal PTA in force in year t and country i is an LDC; *gatt_ijt* takes value 1 if both i and j are members of the GATT/WTO in year t and i is not an LDC; and *gatt_ldc_ijt* takes value 1 if both i and j are members of the GATT/WTO in year t and i is an LDC; *tariff_jit* is 1 + the average tariff applied to i by j in parts per unit; and *d_t* are year dummies which will capture the world's GDP and other unobserved year-specific heterogeneity.

To remove the multilateral resistance terms we use two different techniques: a first order Taylor series expansion (Baier and Bergstrand, 2007), and exporter-year and importer-year fixed effects (Ruiz and Vilarrubia, 2006). On the one hand, the fixed effects estimation removes all the monadic variables, including ldc_i and ldc_j which have the coefficients of interest for one of our objectives, to assess the handicap of being an LDC in terms of trade, however it is the most consistent with the theory, and thus, it should yield more accurate results. It takes the next form:

$$\ln X\_ijt = C + d\_it + d\_jt + d\_t + dist\_ij + contig\_ij + comlang\_ij + hist\_ij + rta\_ijt + rta\_ldc\_ijt + gatt\_ijt + gatt\_ldc\_ijt + \ln tariff\_jit \quad \textbf{(2)}$$

Following Ruiz and Vilarrubia (2006), we have included exporter-year (*d_it*) and importer-year (*d_jt*) dummies, and since our data has a time dimension, we have included year dummies (*d_t*) as well. This estimation is done using OLS, and the results are given in column 1 of Appendix 3. [51]

5.3. Results and discussion

Table 1 extracts the estimated coefficients of interest from all results presented in Appendix 3. The results are robust across specifications as only slight changes can be appreciated from one estimation method to another.

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[51] Note that the Baier and Bergstrand method uses a first order Taylor series expansion to approximate the multilateral resistance terms. Once the approximate terms are calculated, they are subtracted to the trade costs vector. The coefficients of the new trade cost variables (indicated with stars) are free from the multilateral resistance bias. As it can be seen in the estimation results (appendix 3), Baier and Bergstrand's approximation yields coefficients very close to those of the more-theoretically-sound fixed effects. The estimation is done using OLS (as in Baier and Bergstrand, 2007) as well as the Heckman selection sample model and Poisson, the latter two in order to account for the presence of zero trade observations in the data. Results can be found in columns 2, 3 and 5, respectively, of Appendix 3.

Table 1. Selected coefficients showing strength of linkages between membership in WTO and PTAs for the LDCs and the rest of sample

Variables	(1)	(2)	(3)	(4)
	FE	OLS (B&B)	Heckman(B&B)	Poisson(B&B)
LDC exporter	-	-0.524***	-0.525***	-1.290***
	-	(0.112)	(0.112)	(0.298)
LDC importer	-	-0.300***	-0.301***	-0.661***
	-	(0.0969)	(0.0972)	(0.210)
PTA non LDC	0.207***	0.417***	0.417***	0.424***
	(0.0396)	(0.0400)	(0.0401)	(0.0609)
PTA LDC	0.146	0.220	0.226	-0.389
	(0.287)	(0.339)	(0.340)	(0.693)
GATT non LDC	0.671***	0.596***	0.593***	0.676***
	(0.0912)	(0.0941)	(0.0940)	(0.150)
GATT LDC	2.353***	2.765***	2.784***	1.921***
	(0.361)	(0.415)	(0.416)	(0.513)
R-squared	0.846	0.767	-	0.867 (pseudo)

*** significant at the 1% level ; no stars means not significant at the 10% level

Coefficients in Table 1 offer answers to the questions we posed. First, regarding the assessment of the trade handicap of the Asia-Pacific LDCs, or in other words, how much less the LDCs trade compared to non-LDC countries, the results show that being an Asia-Pacific LDC makes such country export around 41% less, on average, than if it were not. Similarly, when the importing country is an LDC, the other exporter country trades, on average, 26% less than if the importer was not an LDC.[52] We have to note that the Poisson results are almost twice as big as the OLS results (72% and 48%, respectively), which indicates that the LDC variable is very sensitive to the treatment of zeroes. The two coefficients are very significant in all the regressions and the signs are negative as expected.

As we have seen in Chapter 1, LDCs are less export-dependent compared to the world average. Our findings are consistent with this fact, since the ldc_i dummy has a negative value, indicating that they export less than they should compared to other countries, accounting for their specific economic, geographic and historical characteristics. This fact points towards the need of addressing the specific challenges they are facing, in order to tap their trade potential. Aid for Trade, further discussed in the next chapter, is one of the proposed tools to reach that potential. On the other hand, LDCs are more import dependent than the world average, however, according to our model they still import less than the average given their specific characteristics. Our findings can be explained by several factors, including much lower purchasing power than the world's average (almost 16 times lower)[53] or a deficient soft and hard

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[52] The marginal effect of a dummy variable is calculated by e^(coefficient) – 1.
[53] In 2009, the weighted average of the group's GDP per capita was US$553 compared to the world's average US$8,585 (own calculations using data from UN Statistics Division)

infrastructure system necessary for trade across the borders, reflected in the average time to import (35 days versus the world's average of 26 days), among others.[54]

With regards to the comparative analysis of the impact on trade of PTAs and WTO membership for LDCs versus non-LDCs, the estimations yield some interesting results. The preferential trade agreement dummy (PTA) has a positive and significant impact on trade for non-LDC countries across all the regressions. Countries that have a PTA in force trade, on average, around 23%-52% more that those who do not have a PTA in force. The coefficient of this variable in the fixed effects estimation is half of that of the other regressions, revealing that there is probably some country-year specific unobserved heterogeneity that has been captured by the exporter-year and importer-year dummies, and that is not part of the multilateral resistance terms. However, when the exporter is an LDC, the coefficient is not significant in any of the regressions. This finding indicates that PTAs don't matter much for LDCs in terms of increasing trade. This result can seem contradictory with the stylized fact that LDCs benefit from preferential tariffs more than other developed countries. However, it has to be noted that the model's PTA variable represents *only reciprocal* trade agreements. Hence, this shows that LDCs are actually benefiting from unilateral GSP schemes provided by developed countries (and some developing countries, as discussed in Chapter 2) than from actual regional/preferential reciprocal agreements. These agreements are, according to the results, not very effective when it comes to trade creation. As was discussed earlier, the PTAs that LDCs typically sign are mostly shallow and do not deliver much on liberalization front.

The WTO membership variable is also positive, significant and robust across specifications. For LDCs, the impact is roughly 10 times higher than for non-LDCs (950% versus 95%, respectively). LDCs that are members of the WTO trade with other WTO members, on average, nearly 10 times more than those who are not WTO members, while non-LDCs trade twice as much under the same conditions. The magnitude of the coefficient for LDCs is surprisingly high compared to that of non-LDCs. This could be explained by the fact that being a member of the WTO means, not only benefiting from S&DT of the multilateral system, but also being more integrated in the world market (i.e. WTO membership as a seal of stable and transparent trade and investment regime). When taking a closer look at the dataset, it is found that the amount of observations where LDC exporters are not members of the WTO is roughly 50%. In contrast, the amount of observations where non-LDCs exporters are not members of the WTO is just 14%. Among this latter group, almost all countries are oil and gas exporters (for example, Russian Federation, Islamic Republic of Iran, Azerbaijan, Kazakhstan and Tajikistan). It is easily deduced that, for this particular group, the WTO membership has not mattered much so far, which explains the relatively low coefficient compared with that of LDCs. With a dataset covering a longer time span, more observations with non-LDCs-non-WTO/GATT members in years prior to 1994 would be included, which, together with the inclusion of dummies to capture the effects of unilateral preferences schemes (e.g. EBA, GSP, AGOA) would probably yield coefficients estimates with lower differences.

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[54] Trade weighted average for the group calculated using data from the World Bank Ease of Doing Business (2012) and World Development Indicators databases.

Summarizing, we have to note that the impact of PTA-membership on trade creation is positive for non-LDCs but lower than that of the impact of WTO membership across all regressions. Also, reciprocal PTAs do not have a significant impact on LDCs trade, indicating that unilateral preferences provided by other trading partners and membership in the WTO have been more effective in fostering trade.

References

Andriamananjara, S. (2003). "On the Relationship between Preferential Trade Agreements and the Multilateral Trading System". Remarks prepared for the PECC Trade Forum Meetings at the Institute for International Economics, Washington, DC. April 22, 2003.

Aitken, N.D. (1973). "The Effect of the EEC and EFTA on European Trade: A Temporal Cross-Section Analysis", *American Economic Review*, 63(5), 881-892.

Amiti, M. and J. Romalis (2007). "Will the Doha Round Lead to Preference Erosion?" CEPR Discussion Papers 6372, C.E.P.R. Discussion Papers.

Anderson, J. (1979). "A theoretical foundation for the gravity equation". *American Economic Review* 69(1): 106-116.

Anderson, J. and E. VanWincoop (2003). "Gravity with gravitas: A solution to the border puzzle", *American Economic Review* 93(1): 170-192.

Baccini, L. and J. Urpelainen (2011). "International Institutions and Domestic Politics: Can Preferential Trading Agreements Help Leaders Promote Economic Reform?", APSA 2011 Annual Meeting Paper. Available at SSRN: http://ssrn.com/abstract=1900239

Baier, S. L. and J. Bergstrand (2004). "Economic Determinants of Free Trade Agreements". *Journal of International Economics*, vol. 64, pp. 29-63.

_____ (2007). "Do Free Trade Agreements Actually Increase Member Countries Trade". *Journal of International Economics*, 71, pp. 72-95.

Baldwin, R. (1993). "A domino theory of regionalism," NBER Working Papers 4465, National Bureau of Economic Research.

_____ (2004), "Stepping stones or building blocs? Regional and Multilateral Integration", Mimeo, Graduate Institute of International Studies, Geneva.

_____ (2009). "Integration of the North American economy and new-paradigm globalisation," CEPR Discussion Papers 7523, C.E.P.R.

Baldwin, R. and D. Taglioni (2006). "Gravity for dummies and dummies for gravity equations', NBER Working Paper No. 1251

Baldwin, R. and C. Wyplosz (2003). "The Economics of European Integration". McGraw-Hill

Baldwin, R. and D. Jaimovich (2009). "Are Free Trade Agreements Contagious?" CCES Discussion Paper Series 12, Center for Research on Contemporary Economic Systems, Graduate School of Economics, Hitotsubashi University.

Baldwin, R., and E. Seghezza, (2010), "Are Trade Blocs Building or Stumbling Blocs," *Journal of Economic Integration*, 25(2): 276-297

Bhagwati, J. (1992). "Regionalism and Multilateralism: An Overview". In Jaime de Melo and Arvind Panagariya (eds.), "New Dimensions in Regional Integration". New York: Cambridge University Press.

_____ (2008). "Termites in the Trading System: How Preferential Agreements Undermine Free Trade". New York: Oxford University Press.

Bhagwati, J. and A. Panagariya, (1996). "Free Trade Areas or Free Trade?" In J. Bhagwati and a. Panagariya, eds., *The Economics of Preferential Trade Areas*. Washington, DC.: AEI Press.

Carpenter, T. and A. Lendle (2010). "How Preferential is World Trade?", CTEI Working Paper 2010-32, Geneva: The Graduate Institute Centre for Trade and Economic Integration.

Carrere, C. (2006). "Revisiting the Effects of Regional Trading Agreements on trade flows with Proper Specification of the Gravity Model," Working Papers A2006.03, CERDI

Chang, P. L. and M. J. Lee, (2011). "The WTO Trade Effect". *Journal of International Economics* 85(1).

Chang, W., and A. Winters, (2002). "How Regional Trade Blocs Affect Excluded Countries: The Price Effects of MERCOSUR," *American Economic Review* 92: 889-904.

Cipollina, M. and L. Salvatici (2009). "Reciprocal trade agreements in gravity models: a meta-analysis," Economics & Statistics Discussion Papers esdp07035, University of Molise, Dept. SEGeS.

Clausing, K., (2001). "Trade Creation and Trade Diversion in the Canada-United States Free Trade Agreement". *Canadian Journal of Economics*, 34: 678-96

Deardoff, A. V. and R. M. Stern (1994). "Multilateral Trade Negotiations and Preferential Trading Arrangements", in A. V. Deardorff and R. M. Stem, eds., *Analytical and Negotiating Issues in the Global Trading System*. Ann Arbor: University of Michigan Press

ESCAP (2011). "Asia-Pacific Trade and Investment Report 2011: Post-crisis Trade and Investment Opportunities". Bangkok: ESCAP.

Ethier, W. J. (1998): "Regionalism in a Multilateral World". *Journal of Political Economy* 106(6): 1214-45

Evenett, S. (2005) "What is known about the Effects of WTO Accession on Developing Countries? A brief Overview of the Literature". In S. Trumm, *Accession to the WTO: Country Experiences and Technical Assistance by GTZ.* Eschborn, August 2005.

Fergusson, I. (2008). "World Trade Organization Negotiations: The Doha Development Agenda", US Congressional Research Service, Report for Congress RL32060.

Frankel, J. and S. J. Wei (1997). "Regionalization of World Trade and Currencies: Economic and Politics", Chicago: University of Chicago Press.

Freund, C. (2000). "Multilateralism and the Endogenous Formation of Preferential Trade Agreements". *Journal of International Economics* 52, 359-376.

Freund, C. and E. Ornelas (2010). "Regional trade agreements", *Annual Review of Economics* 2: 136-167

Gowa, J. and E. D. Mansfield (1993). "Power Politics and International Trade", *American Political Science Review* 87(2), 408-420.

Guzman, A. T. (2008). "How International Law Works: A Rational Choice Theory". New York: Oxford University Press.

Head, D., H. Mayer and Ries (2010). "The erosion of colonial trade linkages after independence". *Journal of International Economics*, Volume 81, Issue 1, Pages 1-14.

Jawara and Kwa, (2004). "Behind the scenes at the WTO: the real world of international trade". New York: Zed Books.

Joshi, V. (2010a). "Preferential Tariff Formation: The Case of the European Union," Working Paper, Graduate Institute of International and Development Studies, Number 05/2010.

_____ (2010b). "Preferential Tariff Formation in the United States," Working Paper, Graduate Institute of International and Development Studies, Number 06/2010.

Karacavaoli, B. and N. Limao (2008). "The Clash of Liberalizations: Preferential vs Multilateral Trade Liberalization in the European Union". *Journal of International Economics*, 74: 299-327.

Kemp, M. C. and H. Wan, Jr. (1976). "An Elementary Proposition Concerning the Formation of Customs Unions". *Journal of International Economics* 6: 95-97.

Kono, D. Y. (2007). "Making Anarchy Work: International Legal Institutions and Trade Cooperation". *Journal of Politics* 69 (3): 746–759.

Krishna, P. (1998). "Regionalism and Multilateralism: A Political Economy Approach," *Quarterly Journal of Economics.*

_____ (2011). "Preferential Trade Agreements and the Multilateral Trading System", In forthcoming R. C. Feenstra and A. M. Taylor, eds., *Globalization in an Age of Crisis: Multilateral Economic Cooperation in the Twenty-First Century*, Conference held September 15-16, 2011. NBER, University of Chicago Press.

Krugman, P. (1991). "Is Bilateralism Bad?" in E. Helpman and A. Razin (eds.), *International Trade and Trade Policy*, Cambridge, Mass.: MIT Press

_____ (1993). "Regionalism versus Multilateralism: Analytical Notes" in J. de Melo and A. Panagariya, eds., *New Dimensions in Regional Integration*, Cambridge: Cambridge University Press.

Lawrence, R. (1996). "Regionalism, Multilateralism and Deeper Integration", Washington D.C.: Brookings Institution.

Lawrence, R. and T. Rosito (2006). "A New Compensation Mechanism for Preference Erosion in the Doha Round," Working Paper, Kennedy School of Government, Harvard University, RWP 06-044

Limão N. (2006). "Preferential Trade Agreements as Stumbling Blocs for Multilateral Trade Liberalization: Evidence for the US," *American Economic Review*, 96: 896-914

Limão N. and M. Olarreaga (2005). "Trade Preferences to Small Developing Countries and the Welfare Costs of Lost Multilateral Liberalization," World Bank Policy Research Working Paper, WPS3565.

Linemann, H. (1966). "An econometric syudy of international flows". North-Holland Publishing Company, Amsterdam.

Lipsey, R. G. (1970). "The Theory of Customs Unions: A General Equilibrium Analysis", Weidenfeld and Nicholson, London.

Magee, C. (2008). "New Measures of Trade Creation and Trade Diversion," *Journal of International Economics*, 75: 340-362

Mansfield, E. D. and J. C. Pevehouse (2006). "Democratization and International Organizations." *International Organization* 60 (1): 137–167.

Ornelas, E. (2005a). "Trade Creating Free Trade Areas and the Undermining of Multilateralism", *European Economic Review*, 49: 1717-1735

_____ (2005b). "Rent Destruction and the Political Viability of Free Trade Agreements" *Quarterly Journal of Economics,* 120: 1475-1506

Panagaryia, A. (1999). "Preferential trade liberalization: The traditional theory and new developments," February, revised September, mimeo, graphed.

Prusa, T. (2011). "Trade Remedy Provisions," in Chaffour and Maur, eds., *Preferential Trade Agreement Policies for Development,* World Bank, Washington DC.

Romalis, J. (2007). "NAFTA's and CUSFTA's effects on International Trade", *Review of Economics and Statistics*, 89(3): 416-435.

Rose, A. K. (2002). "Do WTO members have more liberal trade policy?" NBER Working Paper # 9347

_____ (2004). "Do we really know that the WTO increases trade?" *American Economic Review* 94 (1): 98–114.

_____ (2010). "The effect of membership in the GATT/WTO on trade: Where do we stand?" In Z. Drabek, ed., *Is the World Trade Organization Attractive Enough For Emerging Economies?* Palgrave Macmillan.

Ruiz J. and J. M. Vilarrubia (2007). "The wise use of dummies in gravity models: export potentials in the Euromed region," Working Papers 0720, Banco de España.

Subramanian, A. and S-J. Wei (2007). "The WTO promotes trade, strongly but unevenly". *Journal of International Economics* 72 (1), 151-175.

Tinbergen, J. (1962). "Shaping the World Economy: Suggestions for an International Economic Policy", New York: The Twentieth Century Fund.

Tomz, M., J. Goldstein, and D. Rivers (2007). "Do we really know that the WTO increases trade?" *American Economic Review* 97 (5), 2005{2018.

Tovar, P. (2009). "Preferential Trade Agreements and Unilateral Liberalization: Evidence from CAFTA", Mimeo, Brandeis University

Trefler, D. (2004). "The Long and the Short of the Canada-United States Free Trade Agreement," *American Economic Review*, 94: 870-895.

UNCTAD (2011). "The Least Developed Countries Report 2011", Geneva, Switzerland.

Viner, J. (1950). "The Customs Union Issue". London: Carnegie Endowment for International Peace.

World Bank (2005), "Global Economic Prospects", Washington DC.

WTO (2011). "World Trade Report 2011: The WTO and preferential trade agreements: from co-existence to coherence", Geneva: World Trade Organization.

Yi, S. (1996). "Endogenous Formation of Customs Unions under Imperfect Competition: Open Regionalism is Good", Journal of International Economics 41(1-2): 153-177.

DATABASES

APTIAD (Asia-Pacific Trade and Investment Agreements Database), Trade and Investment Division, United Nations ESCAP: http://www.unescap.org/tid/aptiad/agg_db.aspx

CEPII, Gravity (http://www.cepii.fr/anglaisgraph/bdd/gravity.htm) and Distance (http://www.cepii.fr/anglaisgraph/bdd/distances.htm) datasets

International Monetary Fund, Direction of Trade Statistics (DOTS), August 2011. http://www.imf.org/external/data.htm

United Nations Statistics Division, National Accounts Main Aggregates http://unstats.un.org/unsd/snaama/Introduction.asp

World Bank, WITS (World Integrated Trade Solution), TRAINS online tool http://wits.worldbank.org/wits/

WTO, Regional Trade Agreements Information System (RTA-IS) http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx

Appendix Table 1 – Asia-Pacific LDCs preferential trade and "saved duties"

Group Rank	World Rank	Exporter	Total exports in 2008 (Million US$)	Saved duties (Million US$)	Trade-weighted preferential margin (%)
1	12	Afghanistan	190	20	11.2
2	16	Nepal	710	80	10.6
3	18	Maldives	170	20	9.4
4	22	Samoa	70	10	8.1
5	23	Bangladesh	14,400	1,120	7.8
6	42	Cambodia	4,250	210	4.9
7	43	Bhutan	280	10	4.8
8	54	Lao PDR	1,000	40	3.5
9	57	Myanmar	4,960	160	3.3
-	-	**Total**	26,030	1,670	-

Source: Data extracted from Carpenter and Lendle (2010)

Appendix 1 – Technical notes about the model

We start from the Anderson and van Wincoop (2003) model that has solid foundations on micro and macroeconomic theory, and takes into account the multilateral resistance terms or price indexes (Pi and Pj) which represent how hard is for a given exporter i to find an alternative market to j, and how hard is for a given importer j to find an alternative source of exports to i

$$Xij = [(GDPi * GDPj)/ GDPw] * [Tij /(Pi * Pj)] \wedge (1-\sigma)$$

$$Pi = [\Sigma j \ (\theta j \ / \ Tij \wedge (1-\sigma)) \ Pj \wedge (1-\sigma)]\wedge[1/(1-\sigma)]$$

$$Pj = [\Sigma i \ (\theta i \ / \ Tij \wedge (1-\sigma)) \ Pi \wedge (1-\sigma)]\wedge[1/(1-\sigma)]$$

where Xij are bilateral exports from country i to country j, GDPw is the world's GDP, Tij are the trade costs and θi (θj) is the share of country i's (j) GDP in the world. If we linearize the model taking logs and also add a temporal dimension, we obtain the following expression:

$$Ln \ Xijt = -ln \ GDPwt + ln \ GDPit + ln \ GDPjt \ + (1-\sigma) \ [\ ln \ T\_ijt - ln \ Pit - ln \ Pjt \ ] \quad \textbf{(1)}$$

We define, then, the trade costs vector as:

$$T\_ijt = dist\_ij * e \wedge (contig\_ij* + comlang\_ij* + hist\_ij* + llc\_i* + llc\_j* + rta\_ijt* +$$
$$rta\_ldc\_ijt* + gatt\_ijt* + gatt\_ldc\_ijt*) \ tariff\_jit* \quad \textbf{(2)}$$

where:

dist is the distance in kilometers between i and j, weighted by the population

contig_ij is a dummy that takes value 1 if countries have a common border, 0 otherwise

comlang_ij is a dummy that takes value 1 when i and j share a common official or ethnographic language (spoken by at least 9% of the population in both countries).

hist_ij is a dummy that reflects any historical linkages between i and j, taking value 1 if countries are or were in a colonial relationship, if they had a common colonizer or if they were ever part of the same country.

llc_i and j are dummies that take value 1 if i or j, respectively, are landlocked.

ldc_i and j are dummies that take value 1 if i or j, respectively, are an LDC

rta_ijt is a dummy that takes value 1 if countries i and j have a PTA in force AND country i is NOT a LDC

rta_ldc_ijt is a dummy that takes value 1 if i and j have a PTA in force AND country i

is and LDC.

gatt_ijt is a dummy that takes value 1 if both i and j are members of the GATT/WTO

AND i is NOT an LDC

gatt_ldc_ijt is a dummy that takes value 1 if both i and j are members of the

GATT/WTO AND i is and LDC.

tariff_jit is 1 + the average tariff applied to i from j in parts per unit

Since Pit and Pjt are unobservable and cannot be included as explanatory variables, we need to remove them from the equation in order to be able to estimate without incurring in an omitted variable bias. Thus, we use two different methods that will, at the same time, help us to check the robustness of the model.

First, we apply country-year fixed effects, adding exporter-year (d_it) and importer-year (d_jt) dummy variables to the equation as in Ruiz and Vilarrubia (2006), and also adding year dummies in order to capture the world's GDP (d_t = ln GDPwt + …). This way we obtain an equation that can be estimated using OLS:

$$\text{Ln } X\_ijt = C + d\_it + d\_jt + d\_t + dist\_ij + contig\_ij + comlang\_ij + hist\_ij + rta\_ijt + rta\_ldc\_ijt + gatt\_ijt + gatt\_ldc\_ijt + \ln tariff\_jit \quad \textbf{(3)}$$

Note that we have effectively removed Pit and Pjt, but we have also lost the monadic terms exporter and importer GDPs and landlocked dummies. In this case, it does not matter to our purpose, which is to determine the magnitude of the rta and gatt variables, which depend on country pairs (dyadic variables). However, for the handicap assessment we will not be able to use this specific method.

For the second estimation method, we apply a modified version of Baier and Bergstrand (2007) to remove the multilateral resistance terms. From [1], using a first order Taylor expansion on Pit and Pjt, and after some algebra, we obtain:

$$\text{Ln } X\_ijt = -\ln GDP\_wt + \ln GDP\_it + \ln GDP\_jt + (1-\sigma) \ln T\_ijt - (1-\sigma) \Sigma jt \, (\theta jt \, \ln\_T\_ij) - (1-\sigma) \Sigma it \, (\theta it \ln T\_ijt) + (1-\sigma) \, x \, \Sigma it \, \Sigma jt \, (\theta it \, \theta jt \, \ln T\_ijt)$$

We also define:

$$(\ln T\_ijt)^* = \ln t\_ijt - \Sigma jt \, (\theta jt \, \ln T\_ij) - \Sigma it \, (\theta it \, \ln T\_ijt) + \Sigma it \, \Sigma jt \, (\theta it \, \theta jt \, \ln T\_ijt)$$

where the vector of trade costs T_ijt is defined by [2]. Capturing the world's GDP and other year-specific unobserved heterogeneity with year dummies (d_t = ln GDPwt + …), and rearranging terms, we obtain the second equation that can also be estimated with OLS:

$$\ln X\_ijt = C + \ln GDP\_it + \ln GDP\_jt + dist\_ij + contig\_ij* + comlang\_ij* + hist\_ij*$$
$$+ llc\_i* + llc\_j* + rta\_ijt* + rta\_ldc\_ijt* + gatt\_ijt* + gatt\_ldc\_ijt* + \ln tariff\_jit* +$$
$$d\_t \quad \textbf{(4)}$$

Equation [4] is a good approximation to the theoretical model and has the advantage of not losing the monadic variables while effectively removing the multilateral resistance terms and being computationally less demanding. However, coefficients from [3] are more accurate since they are derived directly from the microeconomic theory. Both equations are estimated with OLS with robust standard errors clustered by country-pair, allowing for intra-group correlation and correcting for potential heteroskedasticy (which has been detected since the differences between the standard errors of the clustered and non-clustered estimations are very significant).

We also estimate [4] using the Heckman selection sample model to take into account the observations with zero trade. The selection equation is estimated with a probit model as follows:

$$SEL = C + \ln GDP\_it + \ln GDP\_jt + dist\_ij + contig\_ij* + comlang\_ij* + hist\_ij* +$$
$$llc\_i* + llc\_j* + rta\_ijt* + rta\_ldc\_ijt* + gatt\_ijt* + gatt\_ldc\_ijt* + \ln tariff\_jit* +$$
$$\ln\_pop\_it + d\_t$$

Where SEL is a binary variable that takes value 1 if exports from i to j are higher than zero (we treat exports below US\$5,000 as zero trade as in Head, Mayer and Ries (2010), and value 0 if exports are 0 or missing. The model is estimated in two steps, running first the selection equation with a probit method, and then running equation [4] for those cases with positive trade flows. According to the literature, we add one extra variable to the selection equation, which in our case is the log of the population of the exporter, which has an expected negative sign indicating that the bigger the internal market is, the lower the need to export.

The estimation of the Poisson model uses also equation 4, however, in this case the dependent variable is not log-linearized:

$$X\_ijt = C + \ln GDP\_it + \ln GDP\_jt + dist\_ij + contig\_ij* + comlang\_ij* + hist\_ij* +$$
$$llc\_i* + llc\_j* + rta\_ijt* + rta\_ldc\_ijt* + gatt\_ijt* + gatt\_ldc\_ijt* + \ln tariff\_jit* + d\_t$$
$$\textbf{(5)}$$

Appendix 2 – List of countries (LDCs in bold letters)

Afghanistan	Hungary	New Zealand
Armenia	Indonesia	Pakistan
Australia	India	Philippines
Austria	Iran, Islamic	Papua New
Azerbaijan	Republic of	Guinea
Belgium	Iceland	Poland
Bangladesh	Italy	Portugal
Brazil	Japan	RUSSIAN
Brunei	Kazakhstan	Federation
Darussalam	Kyrgyz Republic	Singapore
Canada	**Cambodia**	**Solomon Islands**
Switzerland	Korea	Slovak Republic
China	**Lao PDR**	Sweden
Czech Republic	Sri Lanka	Thailand
Germany	Luxembourg	Tajikistan
Denmark	Macau (China)	Turkmenistan
Spain	**Maldives**	Tonga
Finland	Mexico	Turkey
France	Mongolia	United States
United Kingdom	**Myanmar**	Uzbekistan
Georgia	Malaysia	Viet Nam
Greece	Netherlands	**Vanuatu**
Hong Kong	Norway	**Samoa**
(China)	**Nepal**	South Africa

Appendix 3 - Regression results for GATT/WTO membership vs PTAs comparison

VARIABLES	(1) Fixed effects+	(2) OLS B&B	(3) Heckman B&B	(4) Selection equation	(5) Poisson B&B
ln_gdp_o		1.172***	1.181***	0.470***	0.818***
		(0.0160)	(0.0161)	(0.0181)	(0.0283)
ln_gdp_d		1.059***	1.064***	0.316***	0.880***
		(0.0145)	(0.0144)	(0.0152)	(0.0307)
ln_distw_star	-1.156***	-0.827***	-0.832***	-0.129***	-0.428***
	(0.0430)	(0.0350)	(0.0352)	(0.0353)	(0.0454)
contig_star	0.309**	0.462***	0.462***	0.396	0.699***
	(0.120)	(0.120)	(0.120)	(0.237)	(0.117)
comlang_star	0.198**	0.181	0.184	0.404***	0.558***
	(0.0854)	(0.102)	(0.102)	(0.102)	(0.106)
hist_star	0.878***	0.917***	0.923***	0.332***	0.322**
	(0.0944)	(0.104)	(0.105)	(0.106)	(0.135)
landlocked_o_star		-0.164**	-0.159**	0.0496	-0.368***
		(0.0677)	(0.0680)	(0.0486)	(0.123)
landlocked_d_star		-0.141**	-0.140**	0.0172	-0.157
		(0.0641)	(0.0643)	(0.0576)	(0.117)
ldc_o_star		-0.487***	-0.487***	0.201***	-1.018***
		(0.111)	(0.112)	(0.0594)	(0.218)
ldc_d_star		-0.291***	-0.291***	-0.0304	-0.663***
		(0.0969)	(0.0972)	(0.0874)	(0.211)
rta_n_ldc_star	0.207***	0.413***	0.414***	0.275***	0.424***
	(0.0396)	(0.0395)	(0.0396)	(0.0540)	(0.0609)
gatt_n_ldc_star	0.671***	0.608***	0.606***	-0.0600	0.676***
	(0.0912)	(0.0913)	(0.0912)	(0.0786)	(0.150)
rta_ldc_o_star	0.146	0.412	0.414	0.185	-0.389
	(0.287)	(0.332)	(0.333)	(0.157)	(0.693)
gatt_ldc_o_star	2.353***	2.613***	2.633***	0.714***	1.921***
	(0.361)	(0.421)	(0.423)	(0.255)	(0.513)
ln_tar_ji_sa_star	-0.542	-0.729	-0.742	-0.375	-1.541
	(0.481)	(0.553)	(0.553)	(0.354)	(1.499)
Constant	16.71***	-39.50***	-40.75***	-17.10***	-24.89***
	(0.683)	(0.632)	(0.648)	(0.646)	(1.185)
Observations	47,114	47,114	52,365	52,365	52,365
Adjusted R-squared	0.846	0.767			0.867(pseudo)

Robust standard errors in parentheses clustered by country pair.
*** p<0.01, ** p<0.05, * p<0.010
+Variables are not starred but they are at the same position to facilitate comparison.
Year dummies have been used in all estimations.