

C. Causes and effects of PTAs: Is it all about preferences?

A vast literature in economics and political science focuses on the causes and effects of preferential trade agreements – and in particular on the way that border measures, such as tariffs, impact trade flows among countries both inside and outside such agreements. Often referred to as the “standard analysis of preferential trade agreements”, this literature is discussed in detail in Sections C.1 and C.2. However, many recent regional agreements have moved beyond border measures to include deeper forms of rules and institutions that can only be partly understood by the standard analysis of preferential trade. An examination of the economic motives – and the key issues – that lie behind these deeper integration agreements is discussed in Section C.3.

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Some key facts and findings

- PTAs now cover a wider number of issues – beyond tariffs – and involve more structured institutional arrangements.
- Global production networks increase the demand for deep agreements since they provide governance on a range of regulatory issues that are essential to the success of the networks.
- Deep integration agreements can complement rather than substitute for the process of global integration.
- Economic theory needs to go beyond the standard trade-creation and trade-diversion analysis of PTAs, which is about the impact of preferential tariffs.

1. Motives for PTAs

Economists and political scientists have identified several rationales for preferential trade agreements – a brief overview of which is provided below.

(a) Neutralizing beggar-thy-neighbour trade policies

Economists have long recognized that trade policy can have “beggar-thy-neighbour” effects. That is, protectionist trade measures can be unilaterally attractive but multilaterally destructive. Specifically, the beggar-thy-neighbour problem is based on the idea that trade policy decisions of one country affect the welfare of another country through an international externality (i.e. a cross-border effect). The economic literature has highlighted two main effects associated with trade policy: the terms-of-trade effect and the production relocation effect. These are discussed in more detail below. Independently of how one country's trade policy affects its trading partners, a trade agreement is a means of neutralizing negative cross-border effects.

The main logic of the terms of trade (or traditional) approach is that countries that have market power (i.e. that can influence their terms of trade) cannot resist the temptation to act non-cooperatively. As noted by Johnson (1953), each country sets trade policy in an attempt to improve its terms of trade (i.e. lower the costs of its imports relative to exports) and increase national income.¹ However, the resulting non-cooperative (Nash) equilibrium is inefficient, as each country's terms-of-trade-enhancing unilateral actions are cancelled out. More restrictive trade policies by all countries have little net effect on the terms of trade, but lead to a contraction of trade volumes which reduces aggregate welfare – a situation referred to as a terms-of-trade-driven Prisoners' Dilemma (Bagwell and Staiger, 1999).

The terms-of-trade effect may not be the only relevant externality associated with trade policy. Trade policy may also try to expand domestic production in a sector to the detriment of foreign production by changing relative prices. This is referred to as the “production relocation effect” (Venables, 1987). Like a terms-of-trade-driven Prisoners' Dilemma², if all governments choose trade policies aimed at attracting more production, no government actually succeeds. In equilibrium, production does not relocate across countries, but trade falls in response to the rise in restrictive trade measures. To put it differently, countries are stuck in a production relocation Prisoners' Dilemma.

These non-cooperative situations can be avoided through a trade agreement among countries which encourages them to cooperate rather than to act

unilaterally.³ An important question is whether such an agreement should be at the regional or at the multilateral level. Studies by Bagwell and Staiger (2003) and by Ossa (2010) show that a multilateral trade agreement based on simple rules that allow countries to coordinate tariff reductions and reciprocate market access is the first-best option to neutralize negative (terms-of-trade or production relocation) externalities.

If a multilateral trade agreement such as the GATT/WTO is in place, there is no rationale for signing a preferential trade agreement (PTA)⁴ – and WTO members would have little incentive to form PTAs to solve these types of coordination problems.⁵ However, in the absence of multilateral trade cooperation, countries may seek a preferential agreement to limit cross-border effects associated with trade policy.

(b) Gaining credibility

Aside from avoiding the temptation to adopt “beggar-thy-neighbour” trade policies, preferential agreements may also serve as instruments to stop governments from implementing “beggar-thyself” policies. By this it is meant that a government may choose to “tie its hands” and commit itself to trade openness through an international agreement in order to prevent future policy reversal that might be convenient in the short run, but inefficient in the long term. In other words, the government understands that an agreement can help it to make more credible policy commitments than it would otherwise be able to make.

Specifically, a government might sign a PTA to solve some form of time-inconsistency problem.^{6,7} The different mechanisms through which a time-inconsistent trade policy may lead to inefficiencies have been highlighted in a number of studies (Staiger and Tabellini, 1987; Matsuyama, 1990; Amin, 2003). In these models, the government wants to use discretionary trade policy to increase social welfare (for example, in response to an unexpected event, to allow temporary protection to an infant industry, etc.). However, the use of trade policy can alter the normal behaviour of participants in an economy since agents can anticipate the policy change, and react to it in ways that will reduce the policy's impact on them. This implies that the government will not be able to use discretionary trade policy as originally intended, resulting in a socially inefficient trade policy.

Similar credibility problems emerge when a government is exposed to political pressures from domestic interest groups lobbying for protection (Maggi and Rodriguez-Clare, 1998). The presence of import restrictions will reward import-competing producers and will divert investments from other economic activities. The cost of this distortion may be large in the long run, but in the short run domestic lobbying by the import-competing sector will prompt

the policy-maker to set high restrictions. In these circumstances, Maggi and Rodriguez-Clare (1998) identify two reasons why a government may want to commit to a PTA: first, to minimize the costly long-term distortions involved with protecting a politically organized sector, where the country has no comparative advantage and it is unlikely to gain it in the future; and, secondly, to avoid a costly delay in the adjustment process of the declining sector relying on government protection.

These theoretical results contain a clear normative implication: governments should undertake binding trade policy commitments concerning their future behaviour. A trade agreement, in addition to facilitating policy cooperation as emphasized above, may have precisely this commitment role, as it reduces or eliminates the signatory governments' discretionary power in setting tariffs, and raises the costs of resorting to unilateral trade protectionism. This provides a welfare-improving way to enforce domestic commitments to a policy of trade openness.⁸

An important question is whether a PTA may provide more credibility than a multilateral treaty – in other words, would a WTO member choose to sign a PTA to improve further the credibility of its policy *vis-à-vis* the private sector. One possibility is that a country may be too small in world markets for other countries to care about its GATT/WTO violations, whereas a country that has preferential access to that country has a particular stake in making sure that this preferential access is maintained. This provides a possible reason why a small country seeking to tie its hands through a trade agreement – and thereby increase its credibility with its own private sector – might naturally look to a PTA in addition to GATT/WTO commitments.

(c) Other economic motives

There are several other economic reasons why countries opt to form PTAs, some that mirror the motives discussed above and others that are sometimes referred to as “non-traditional” motives (Fernandez and Portes, 1998). These are briefly reviewed below. They include, but are not limited to, increasing market size, increasing policy predictability, signalling openness to investors and achieving deeper commitments.

Increasing market size can be a reason for establishing PTAs since it enables firms from signatory states to exploit economies of scale and to gain a relative advantage over excluded competing firms. In addition, preferential access to a larger market may increase a country's attractiveness as a destination for foreign direct investment (FDI). Both reasons are particularly valid for small economies, which may help to explain why these countries agree to make concessions on other more controversial issues, such as intellectual property rights or environmental standards, when negotiating PTAs with large economies.

Related to the time-inconsistency issues addressed above, a trade agreement may also be signed to reduce uncertainty on future trade policy, thus sending an important signal to investors. Since future administrations might have policy preferences that differ from those of the current administration, a government may sign a PTA in an attempt to lock-in its policies (for example, a pro-open trade policy) and to diminish the likelihood that they might be reversed. In this way, the government addresses not so much the issue of policy credibility as the issue of policy predictability (Fernandez and Portes, 1998).

A country with a reputation for protectionism might find it particularly valuable to signal its willingness to shift towards a more liberal and business-friendly policy. In this case, the precise provisions of a PTA are less relevant than demonstrating to investors that the current government is open to business. Alternatively, a country might want to enter into a PTA to signal that its economy, or a particular sector, is competitive.

Economic analysis often overlooks the simple fact that trade policy is decided in a political environment, and governments may face incentives that differ from simple welfare considerations. However, some recent economic literature has emphasized the role played by special interest groups in trade policy determination.⁹ Simply put, interest groups lobby to influence government decisions and, in turn, governments trade off the welfare effects of their trade policy choices (e.g. signing or not signing a PTA) with the political support of special interests. In this political context, the choice to sign a preferential agreement may be driven by the interests of an organized lobby rather than by social welfare considerations (Grossman and Helpman, 1995).¹⁰

A final argument for signing a PTA relates to the need to achieve a deeper form of integration which goes beyond traditional trade (i.e. border) measures such as tariffs (Lawrence, 1996). This deeper integration may require institutions and levels of policy coordination that can be more easily achieved at the regional than at the multilateral level.¹¹ This issue will be more extensively discussed in Section C.3.

(d) Political motives

The creation of PTAs cannot be fully understood without considering the political context within which they are formed. Political science has provided additional explanations for why states might engage in PTAs, focusing in particular on the role of political integration, domestic politics, forms of governments, institutions, diplomacy or the influence of power and ideas. Some of the most important “political” arguments for PTAs are discussed briefly below.

Preferential trade agreements have long been seen as playing a key role in regional political integration.

Perhaps the best modern example was the formation of the European Community (EC) in the 1950s which, at the time, was the most important PTA in the world and attracted considerable attention from political scientists. Initially, “functionalist” scholars, inspired by the logic of integration, emphasized the importance of bureaucratic actors as key drivers of integration, as well as the process by which national elites transferred loyalties to a supranational level (Mitrany, 1943; Haas, 1958; Sandholtz and Zysman, 1989).

It was postulated that a policy spill-over effect would incrementally drive integration from “low politics” (trade integration) to “high politics” (political integration). This “functionalist” school of thought was later challenged by political scientists who marshalled empirical evidence that cast doubt on the extent of spill-overs and helped explain the stagnation in the European integration process. Proponents of an “inter-governmentalist” theory argued that national preferences were more relevant in shaping the pace and content of political and economic integration, and questioned whether there had been a significant transfer of control from member states to Community institutions (Hoffmann, 1966; Moravcsik, 1998).

To help explain the increasing number of trade agreements elsewhere in the world, political theorists first attempted to apply the European integration models. However, the limits soon became obvious. Trade integration outside Europe proceeded according to different patterns and concomitant political integration was lacking. Additional strategic explanations emerged. These included a desire to increase influence in international negotiations by pooling resources (e.g. the Caribbean Community), see Andriamananjara and Schiff (2001), or the goal of resisting the threat of communism in South-East Asia, by strengthening cooperation among like-minded governments (e.g. the Association of Southeast Asian Nations) for an overview, see Ravenhill (2008). Another strategic motive for forming regional trade agreements was to counteract the growth of other regional arrangements. For example, Asia-Pacific Economic Cooperation was widely seen as an attempt by the US to send a pre-emptive trade policy signal to the European Community about the cost of building a “Fortress Europe”.

Existing research has shown that democracies are more likely to form PTAs among themselves (Mansfield et al., 2002). One explanation is that democratic governments use trade agreements as a signalling device vis-à-vis domestic constituents that they are implementing sensible policies. Related research looks at how governments calculate the political costs and benefits of PTAs, and how voters hold their political leaders accountable. The work by Mansfield et al. (2007) suggests that a country's decision to enter into PTAs is related to the number of internal veto players (i.e. lawmakers or parliamentarians). In addition,

Mansfield and Milner (2010) show that the number of veto players in a country affects the transaction costs of an agreement. As the number of veto players increases, ratification becomes less likely.

While veto players diminish the likelihood of entering PTAs, the regime type (democracy) affects the ratification rate positively. Mansfield and Milner (2010) argue that PTAs can serve as a strategic tool vis-à-vis voters. In other words, PTAs can act as a credible signal that governments can use to pursue trade objectives preferred by a majority of voters rather than by special interests. According to this view, the spread of democracy since the 1980s, especially across the countries of Latin America, Asia, and Central and Eastern Europe, may help explain the proliferation of PTAs.

The decision to negotiate and sign PTAs may also be affected by the extent to which countries use trade policy to reinforce wealth and empower relations. If governments distrust one another, they may form bilateral treaties in order to limit or to control the growth of other powers (e.g. to serve as counter-balances). Gowa and Mansfield (1993) and Gowa (1994) argue that trade integration stimulates trade flows between two countries, leads to a more efficient allocation of resources and thus frees up resources for military use. The increasing wealth and power of member countries should be of concern to excluded countries. An agreement between two countries may thus force other pairs of countries to follow suit, with the aim of retaining their current relative position (Gowa and Mansfield, 1993).

In a similar vein, the design of PTAs is also indicative of power relations. Stronger states can more easily dictate the terms of agreements in a bilateral or regional context. Other diplomatic and foreign policy considerations may influence the decision to form PTAs. For instance, some states use PTAs to reward allies and to reinforce key alliances. In this view, PTAs are an active part of foreign policy making (White, 2005; Rosen, 2004; Higgott, 2004; Capling, 2008).

PTAs might also serve as “diffusion mechanisms” – either directly, in the form of coercion, or more indirectly, in the form of learning. For example, a growing body of work treats the EU as a “conflicted power” (Meunier and Nicolaidis, 2006), which uses its market power (i.e. access to the EU's single market) to coerce weaker powers, including former colonies, into accepting new types of trade arrangements (Farrell, 2005) (for example, European Partnership Agreements with the African, Caribbean and Pacific group of states). Others consider that the European Community provided an example for economic integration among countries in Latin America and Africa in the 1960s (Pomfret, 2001), demonstrating how the perceived success of trade arrangements “teach” others to adopt similar policies (Krueger, 1997).

Finally, there may be a direct or indirect relationship between the formation of PTAs and the multilateral system, either reflecting a lack of progress at the multilateral level or a strategy to improve states' leverage in the WTO. Gridlock or stagnation in multilateral negotiations, for example, may create incentives for states to pursue preferential trade liberalization, and encourage exporters to lobby their governments for PTAs (for example, see case studies in Capling and Low (2010), where policy communities note both the "remoteness" and "slowness" of the WTO). Alternatively, states may sign PTAs in order to increase their bargaining power during multilateral trade talks (Mansfield and Reinhardt, 2003). The drawn-out negotiations in the Uruguay Round, and in the current Doha Development Round, may explain the current proliferation of PTAs.

(e) What explains the growth of PTAs?

Changes in the underlying dynamic of trade relationships across the globe may prompt countries to sign PTAs. Baldwin (1995) provided a model of the enlargement of Europe's economic integration which rested on a "domino theory" of regionalism – i.e. where the potential loss of market share induces non-members to join existing PTAs, creating a process of action and reaction or contagion. Exporters in non-member countries push their governments to join existing PTAs or create new ones to counteract the potential damage caused by preferential trade liberalization (Baldwin and Jaimovich, 2010). There is a set of studies which find broad empirical support for Baldwin's domino theory – formation of PTAs creates an incentive for outsiders to become members of an existing PTA or to form new PTAs (Egger and Larch, 2008; Baldwin and Jaimovich, 2010; Chen and Joshi, 2010). According to Egger and Larch (2008), these results are particularly useful to "predict" the process of regional integration in Europe.

The political science literature also focuses on the causal mechanisms behind the domino effect, in particular how decision-makers and interest groups react to discrimination. Pahre (2008) applies the idea of a competitive spread of trade agreements to the nineteenth century. Mattli (1999) makes this argument with respect to the enlargement of the European Union, while Gruber (2000) does so in the context of the North American Free Trade Agreement (NAFTA). In a similar vein, Dür (2010) explains the PTAs signed by the EU and the US in the 1990s and 2000s in terms of competition for market access in emerging economies. This empirical literature does not deny the importance of factors other than potential trade diversion in explaining the growth of PTAs. For example, Manger (2009) argues that investment discrimination as a result of the creation of NAFTA contributed to Japan's decision to conclude a trade agreement with Mexico.

The concluding part of this section emphasizes the importance of "deep" integration – arrangements that go beyond extending preferential tariff concessions to include areas such as investment – in PTA formation. Furthermore, Section D assesses the relative importance of tariff liberalization and "deep" integration in explaining the recent spread of PTAs.

In the literature, the influence of existing PTAs on subsequent PTA formations is often referred to as "endogenous regionalism". Such "endogenous regionalism", however, may also be influenced by trade liberalization at the multilateral level. For instance, Freund (2000) argues that as multilateral tariff levels fall, the formation of PTAs, and hence the domino effect, is strengthened. This may be explained by the effect of tariff reduction on competition, profits, and tariff revenue.

Lowering tariffs enhances competition, which leads to greater output. At high world tariff levels, this efficiency effect is large and multilateral tariff reduction, which has a greater effect on competition than preferential reduction, is better. However, lowering tariffs also means smaller profits and less tariff revenue. At low overall tariff levels, the efficiency effect is smaller, but preferential reduction is less costly – profits and tariff revenue fall by less. Preferential agreements effectively allow members to divert part of the profit loss that results from lower tariffs to the third country where output contracts. Hence, the welfare gain from joining a PTA is greater than the gain from a move to open trade when tariffs are low; the reverse is true when tariffs are high.¹² Empirical evidence confirms the above prediction. For example, Fugazza and Robert-Nicoud (2010) show that reductions in the US multilateral tariff of a given product in the Tokyo and Uruguay Rounds are systematically associated with lower preferential tariffs for that product, and with that product being included in more PTAs formed after the conclusion of the Uruguay Round.

Finally, there is an emerging literature which provides a systematic explanation of the timing of PTA formations and enlargements since the late 1950s using econometric duration analysis. This helps explain the pattern of PTA formation described in Section B. For instance, Bergstrand et al. (2010)¹³ identify three systematic relationships between the "timing" of PTA events and different economic characteristics. Specifically, natural trading partners (countries closer to each other in terms of physical distance), pairs of countries with larger gross domestic products (GDPs), and pairs of countries whose economic size is similar, have a higher probability of forming a PTA – or enlarging an existing PTA – sooner than countries that do not share these three characteristics.¹⁴ Liu (2010) draws similar conclusions.

Bergstrand et al. (2010) also outline conditions under which PTAs create the greatest incentives for non-

members to join existing agreements or to form new ones. First, the closer a potential entrant is to a PTA that another country is already a member of, the more likely that the two countries will form a PTA sooner, consequently enlarging the PTA. Second, the higher the “intensity of regionalism” a country pair faces, the more likely it is that the two countries form or enlarge an existing PTA sooner. Third, there is a “hump-shaped” relationship between the number of members of the nearest PTA and the likelihood of it enlarging sooner. At first, the probability that two countries enlarge an existing PTA sooner increases with the number of members of the nearest PTA – reflecting demand for membership by potential entrants. Beyond a certain threshold level of membership size, however, this probability declines as the utility loss from an expansion for the potentially “worst-off” existing member¹⁵ prevents infinite enlargement.¹⁶ This is important since the speed of regionalism has appeared to be “much slower” than the apparent growth in demand for membership by non-members suggests, given the domino theory of regionalism.¹⁷

Overall, Bergstrand et al. (2010) show that the relationships suggested by the six economic characteristics described above are sufficient to explain 62 per cent of the variation across 10,585 pairs of countries and 57 years of the timing of 1,560 PTA events. Furthermore, the model is able to predict the actual year of the PTA formation or enlargement by a country-pair correctly in nearly 50 per cent of the 1,560 PTA events. Liu (2010) also emphasizes the importance of certain political variables in explaining

the timing of PTA formation. For example, the author shows that countries with similar polity scores,¹⁸ lack of political hostility and a shared colonial history are more likely to form PTAs.

Based on answers provided by WTO members in the Trade Policy Reviews undertaken by the WTO Secretariat, Box C.1 contains a short discussion of the motives mentioned by WTO members for why they sign PTAs.

The above sections have covered in depth the determinants of the formation of preferential trade agreements. However, little mention has been made of those agreements that have been negotiated among countries but have never been implemented. For example, in the early 1990s discussions were begun to establish a Free Trade Area of the Americas (FTAA). This envisioned a hemispheric-wide free trade area in the continent. However, the initiative has largely fallen by the wayside. One way to look at the motives of preferential trade liberalization is that they provide a demand-side explanation of the creation and enlargement of PTA but assumes that there is an unlimited supply of membership. It is important though to also consider what constraints are operating on the supply-side of preferential liberalization. In the case of enlarging an already existing PTA, for example, the supply of new members would be determined at the margin by the potentially worst-off member (Bergstrand et al, 2010). Hence, there might be situations in which the determinants of the demand and the supply of preferential liberalization membership are so dissimilar that an agreement will very unlikely be reached. This issue merits further research.

Box C.1: PTA case studies

The WTO periodically examines the national trade policies of its members through Trade Policy Reviews (TPRs). The member being reviewed submits a Government Report that is published alongside the report prepared by the Secretariat. These official statements present the government's perspective on major developments in the country's trade policy, including the negotiation and conclusion of PTAs. Although there is no defined structure to the Government Reports, they occasionally provide insight into the motives behind preferential agreements.

There are certain limitations to this analytical approach. Given that each member decides what to include in the Government Reports, some explicitly address the motivation behind pursuing PTAs, while others avoid mentioning it altogether. Furthermore, several governments tend to repeat paragraphs from previous TPRs to explain their trade policy without describing motives that are specific to new PTA initiatives. Therefore, this survey of Government Reports is mostly anecdotal and far from exhaustive.

A survey of Government Reports shows that PTAs are predominantly about securing preferential market access and attracting investment, as these are the most commonly quoted motives. However, an array of additional motives is also mentioned, in particular the goal of addressing policy issues that go deeper or beyond WTO rules (see Section D for contents of PTAs). It also appears that PTAs are sometimes used as a means of promoting deeper commitments in new areas, with the aim of eventually incorporating them at the multilateral level.

For example, the United States stated in its Government Report that PTAs “challenge the multilateral system to keep pace with the interests and needs of members, and contribute to the WTO system by introducing innovation and strengthened disciplines”, and that “these agreements can become models for future multilateral liberalization in new areas, such as agriculture, services, investment, and environmental and labour standards” (World Trade Organization (WTO), 2008).

Similarly, the Government Report of Mexico acknowledged that PTAs “establish important precedents in some areas that could be included in future multilateral negotiations”, and that Mexico would “continue to negotiate regional trade agreements insofar as they go beyond multilateral liberalization” (World Trade Organization (WTO), 1997).

Political motivations that go beyond trade policy are also expressed in the official statements. Several Government Reports explicitly declare that PTAs aim to promote democracy and political stability. Peace and security is also said to be advanced through trade cooperation in PTAs.

In the TPR on the European Communities (EC), the EC places particular emphasis on the political cooperation dimension of its respective agreements. For example, in its region-to-region negotiations with the Andean Community and Central American countries, the EC “aim[ed] to reinforce the political and economic stability of each region” (World Trade Organization (WTO), 2009b).

Commenting on its PTA with the EC, Chile also asserts that the agreement “covers not only trade issues, but political and cooperation areas as well. In the political area, the agreement seeks to promote, disseminate and defend democratic values” (World Trade Organization (WTO), 2003).

The linkage between political stability and peace is more evident in the EC’s agreements with neighbouring partners: “The Euro-Med agreements concluded with eight Mediterranean countries continue to be the basis for intensifying bilateral and regional co-operation in support of an area of peace, stability and shared prosperity” (World Trade Organization (WTO), 2004).

Similarly, the US Government Report argues that the Dominican Republic-Central American Free Trade Agreement (DR-CAFTA) “supports regional stability, democracy and economic development” contributing to the “transformation of a region that was consumed by internal strife and border disputes just a decade ago” (World Trade Organization (WTO), 2006).

In several Government Reports, the slow pace at which multinational negotiations are currently advancing has been used as a justification for seeking PTAs.

The Government Report of Chile admits that “the pace of multilateral discussions is not rapid enough ... a relatively small economy like Chile has very limited capacity to exert any influence in the resolution of these problems. Bilateral initiatives are therefore useful as a supplementary way of achieving substantial outcomes more expeditiously than would be possible at the multilateral level” (World Trade Organization (WTO), 2009a).

The contagion or domino-theory, whereby the conclusion of a PTA acts as a catalyst to trigger other PTAs, also appears to be a central motive. There is evidence that countries are conscious of the effects PTAs have on third countries and the multilateral system. Some countries, such as Mexico, have pursued PTAs with the explicit goal of encouraging other trading partners to negotiate similar agreements. Other countries, such as Pakistan and Japan, have reacted to the proliferation of PTAs by concluding that they have no choice but to create their own network of PTAs (despite being initially opposed to preferential liberalization).

After concluding its first major PTA, Mexico stated in its Government Report that NAFTA “is very important for Mexico, not only owing to the participation of its biggest trading partner ... but also because it generated an incentive and interest among other trading partners for negotiating similar agreements” (World Trade Organization (WTO), 1997). This has been a successful strategy, considering that Mexico went on to conclude PTAs with the EC, the European Free Trade Association and Japan within a decade.

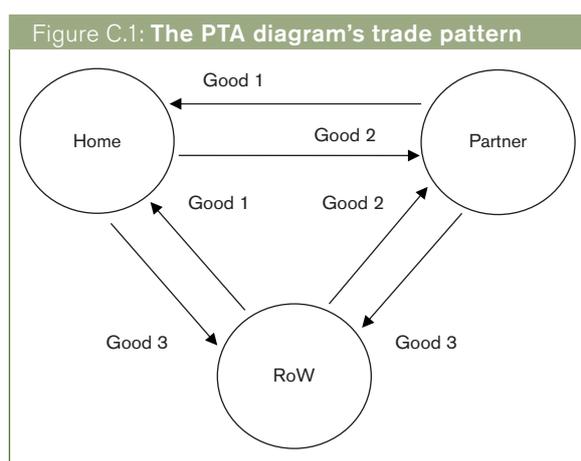
Fearing being left out of the preferential liberalization taking place outside the multilateral negotiations, countries such as Pakistan are “cognizant of the proliferation of regional and bilateral Preferential Trading Arrangements” and have reasoned that “many such arrangements place Pakistani exporters at a disadvantage vis-à-vis their competitors. In order to counter these negative effects, Pakistan has been actively involved in seeking such arrangements on bilateral or regional level” (World Trade Organization (WTO), 2007).

In its 2000 report, Japan remained “seriously concerned that some RTAs have raised trade barriers to trade with non-member countries, and that they have effectively weakened the free, non-discriminatory, and open multilateral system formed under the WTO”. It clarified it did not “belong to any preferential regional agreements” but that as a result of the proliferation of PTAs “the possibility and the desirability of free trade agreements [were] being examined by various sectors” (World Trade Organization (WTO), 2000). Two years later, in its next TPR, Japan noted that it had begun to pursue PTAs (World Trade Organization (WTO), 2002).

2. The standard economics of PTAs

(a) An overview of the economic effects of PTAs

The basic economic effects of preferential agreements can be illustrated in a simple model (Baldwin, 2009). Consider a world composed of three identical countries called Home, Partner and Rest of the World (RoW). Each country imports two goods from the other two nations, and exports one good to both destinations. The trade patterns of this model economy are depicted in Figure C.1 below. Further assume that in an initial situation, all countries impose on each other the same (non-discriminatory) tariff, referred to as the Most-Favoured Nation (MFN) tariff. In this scenario, the domestic price is higher than the border price faced by the two suppliers and imports are lower compared to open trade. Importantly, however, the two suppliers share equally the reduction in exports due to the imposition of an MFN tariff.



What are the effects of a preferential trade agreement? To help answer this question, consider the case where Home and Partner form a free trade area (or a customs union), so that Partner producers get duty-free access in the Home market, and Home producers get duty free access in the Partner market (a complete graphical analysis is contained in Technical Appendix C.1).

Focusing first on the market for good 1, the good that is imported by the Home economy, the following price and volume effects take place. The domestic price falls relative to the situation where there is a single MFN tariff as the supply of the good in the Home economy is increased, but now there are two distinct border prices. The border price faced by Partner is higher, as exporters no longer face a tariff in the Home market, while the border price faced by exporters in RoW is lower, as they still face a tariff but the domestic price in the Home economy is lower. As a result, exports from Partner expand, while exports from RoW contract.

As the PTA is reciprocal, the effects discussed above on the market for good 1 materialize symmetrically for good 2. The only difference, intuitively, is that in this market the Home economy is an exporter, while Partner is the importer. Therefore, in this market, Home gains from a higher border price and greater exports to Partner, while RoW loses from the drop in border price and the reduction in its exports in sector 2. Finally, the formation of a preferential arrangement has no effect on the market for good 3, where RoW is the importer, as that country is assumed to maintain the same MFN tariff.¹⁹

A PTA has two types of effects on the export side. First, exporters in member countries gain from improved market access as the tariff is removed. Secondly, these exporters also benefit from the fact that tariff discrimination reduces imports from RoW. The latter effect is sometimes referred to as the “preference rent”, as it would not exist if tariff liberalization were carried out in a non-discriminatory fashion.²⁰

On the import side, the preferential agreement has ambiguous effects on member countries. Consider the market for good 1, where the Home economy is the importer (the effects on Partner for good 2 are analogous). The formation of the PTA has offsetting volume and price effects.²¹ The increased imports allow the Home economy to benefit from the replacement of high-cost domestic production with more efficient imports. The terms of trade (i.e. the price of exports relative to imports) of Home improve relative to RoW and falls relative to Partner. Overall, whether the members of a PTA gain or lose depends on the level of the initial MFN tariff and on the elasticities of demand and supply (i.e. to what extent the demand and supply of a product is sensitive to changes in its price).

A final consideration relates to the welfare effect of a PTA on non-members. As discussed above, RoW suffers a reduction of its exports to the PTA member countries. In addition, the non-member is hurt by a negative terms-of-trade effect, as the price of its exports declines while the prices of its imports are unaltered. In other words, a preferential agreement can be interpreted as a negative externality that PTA members impose on non-members.

(b) Trade creation and trade diversion

The formal analysis of the economic impact of PTAs began with the work of Jacob Viner in the 1950s (Viner, 1950). He asked whether a PTA would make member countries better off, and concluded that this was not necessarily so. While his approach disregarded some of the effects discussed above, it had an important and enduring effect on the academic and policy debate surrounding preferential agreements.²² A review of the Vinerian theory is, therefore, useful to understand much of the debate on PTAs.

In this theory, preferential liberalization has two main effects – trade creation and trade diversion – and the net balance between the two determines whether a PTA increases welfare for its members. As tariffs on trade between partners fall, some domestic production is replaced by imports from more efficient producers from partners – thus resulting in trade creation and welfare gains. But since the PTA also discriminates against non-members, imports from partners replace imports from more efficient outside producers and the member countries end up paying more for the same good. This second effect which harms members' welfare is known as trade diversion. The interaction between trade creation and trade diversion has dominated much of the subsequent literature on PTAs and regionalism. Box C.2 provides a simple graphical analysis to illustrate trade creation and trade diversion effects.

found the conditions that would make a customs union – a PTA with a common external policy – necessarily welfare-improving. They concluded that a customs union will be welfare-enhancing if external tariffs are adjusted so as to leave world prices unchanged. In other words, if tariffs are such that external trade is not affected, any additional trade between members must be trade-creating and outsiders are not hurt. In this case, the PTA is Pareto improving.²³ This general principle has been extended to other forms of PTAs: free trade areas (Panagariya and Krishna, 2002) and partial liberalization (Neary, 2011). Furthermore, Kemp and Wan also found that it is possible to guarantee that all members of a PTA are better off if countries can compensate losing members through lump-sum transfers. Even if in reality the external tariffs are not fully adjusted and lump-sum transfers are not always present, the Kemp-Wan logic is important from a policy perspective because it proves that PTAs are not necessarily bad for world welfare.²⁴

Building on Viner's insight into the uncertain implications of PTAs' effect on welfare, Kemp and Wan (1976)

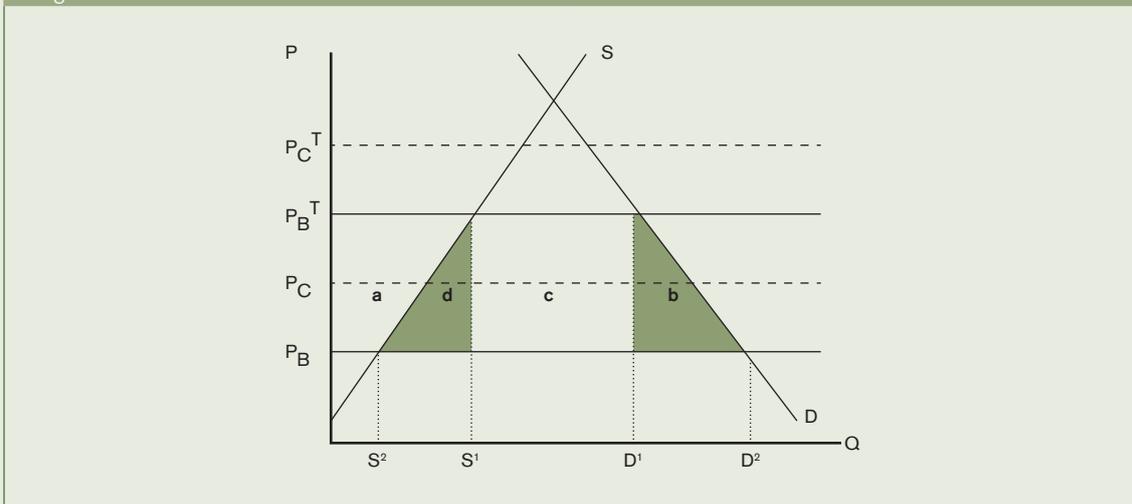
Box C.2: Trade creation and trade diversion effects

Consider a world composed of three countries: Home, Partner 1 and Partner 2, trading a homogeneous good. Assume Home is a small country that takes international prices as given, while Partner 1 and Partner 2 are large economies, meaning that Home could satisfy its entire national demand for the good by importing from either of them. If Home has no PTA in place and applies the same MFN tariff to both Partner 1 and Partner 2, it will get all its imports from the most efficient country.

Figure C.2 below shows the supply and demand curves for Home. The free-trade prices of the good from Partner 1 and Partner 2 are represented by P_B and P_C , respectively. Note that Partner 1 is the more efficient producer, as it is capable of supplying the product at a lower price than Partner 2. When Home applies the same tariff to both countries, the domestic prices increase equally for both and are denoted by P_B^T and P_C^T . Under these conditions, Home would import solely from Partner 1, at the price of P_B^T , a quantity of the good given by the segment $D^1 - S^1$.

Consider first the case in which Home signs a PTA with Partner 1. In such a situation, imports from Partner 1 are no longer subject to tariffs and the domestic price of the good falls to P_B . At this price, Home will import from Partner 1 the quantity $D^2 - S^2$. To measure the net effect of the PTA on national welfare, one must analyse how consumers, producers and the government are affected.

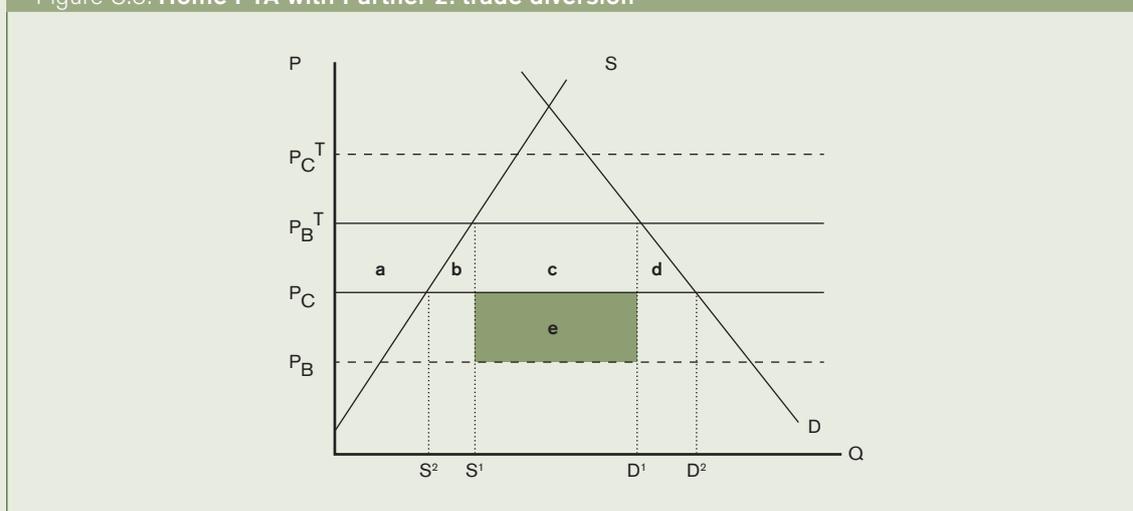
Figure C.2: Home PTA with Partner 1: trade creation



Since, in this case, Home concluded a PTA with the most efficient producer, the agreement results in pure trade creation. The gains of trade creation are measured by the shaded triangles "b", which represents gains in production efficiency, and "d", which represents gains in consumption efficiency. Consumers in Home benefit from the PTA because the domestic price of the good falls and consumption rises. Thereby, consumer surplus increases by areas a + b + c + d. Producer surplus is reduced by the area "a". As the price of the product on the domestic market decreases through competition from Partner 1, some domestic producers will be forced to reduce output or close down altogether. Government also loses all of the tariff revenue that had been collected on imports of the product depicted as area "c" in Figure C.2. Thus, the overall net effect of the PTA for national welfare is positive with a gain of b + d.

Now, consider the case in which that Home signs a PTA with Partner 2 instead. In this case, the price of imports from Partner 2 falls to P_C , which is below the import price from Partner 1. At this lower price, Home imports from Partner 2 rather than Partner 1. Figure C.3 below shows that, by giving preferential access to the least efficient producer, the PTA results in trade diversion.

Figure C.3: Home PTA with Partner 2: trade diversion



Before signing a PTA with Partner 2, Home would apply the same MFN tariff to all foreign producers and it would import from the most efficient country, Partner 1, the quantity $D^1 - S^1$ at the price P_B^T . When Home concludes the PTA, the price of goods imported from Partner 2 falls to P_C while imports from Partner 1 remain at P_B^T . As a result, Home will import only from Partner 2 the quantity $D^2 - S^2$ at the price P_C . Once again, to measure the net effect of this PTA on national welfare, one must analyse how consumers, producers and the government are affected.

After signing a PTA with Partner 2, as in the first case, consumers in Home are better off and consumer surplus gains compound to the area a + b + c + d. Note that while there is still some trade creation, the efficiency gains in production and consumption – triangles b and d – are smaller than in the previous scenario. Also, domestic producers suffer a reduction in producer surplus equal to area "a" and government loses tariff revenue equal to "c". The main difference between the two cases is in the shaded area "e" which represents trade diversion. This shaded area is the amount of trade the PTA diverts away from the more efficient producer, Partner 1, by giving preferential access to Partner 2. In other words, Home suffers this efficiency loss and pays a higher price for imports by not adopting open trade towards all countries.

To calculate national welfare, one must balance the efficiency gains against the efficiency loss. In Figure C.3, it is clear that the area "e" is larger than b + d; thus the PTA with Partner 2 has a negative net effect on national welfare in Home. However, this is not always the case. It is possible that a PTA is trade-diverting, but not welfare-reducing, if the gains from trade creation are larger than the loss from trade diversion – e.g. if $e < (b + d)$.

(i) *The effects of PTAs in services*

Up to this point, the analysis has focused on the welfare effects of preferential liberalization in goods trade. However, given the increasing importance of services in PTAs, it is useful to analyse the welfare implications of services liberalization. Does the former analysis also help us to understand the effects of PTAs in services?

The crucial difference between trade in goods liberalization and trade in services liberalization is that PTAs in services do not involve tariff reductions but changes to domestic regulations, and the removal of restrictions on the movement of foreign investment. Although protection in services sectors may assume

several forms, they can be grouped into three categories: (i) variable cost increasing measures (“frictional barriers”); (ii) fixed cost increasing measures; and (iii) quantitative restrictions on the number of foreign service providers. While regulatory measures are often non-discriminatory in nature, there are examples where this is not the case and countries employ measures that *de facto* liberalize preferentially.

The effects of PTAs in services are illustrated in Box C.3. This analysis is based on the work of Matoo and Fink (2002). Focusing on the first category of services protection, the authors study the trade and welfare effects of discriminatory services trade liberalization.

Box C.3: The effects of PTAs in services

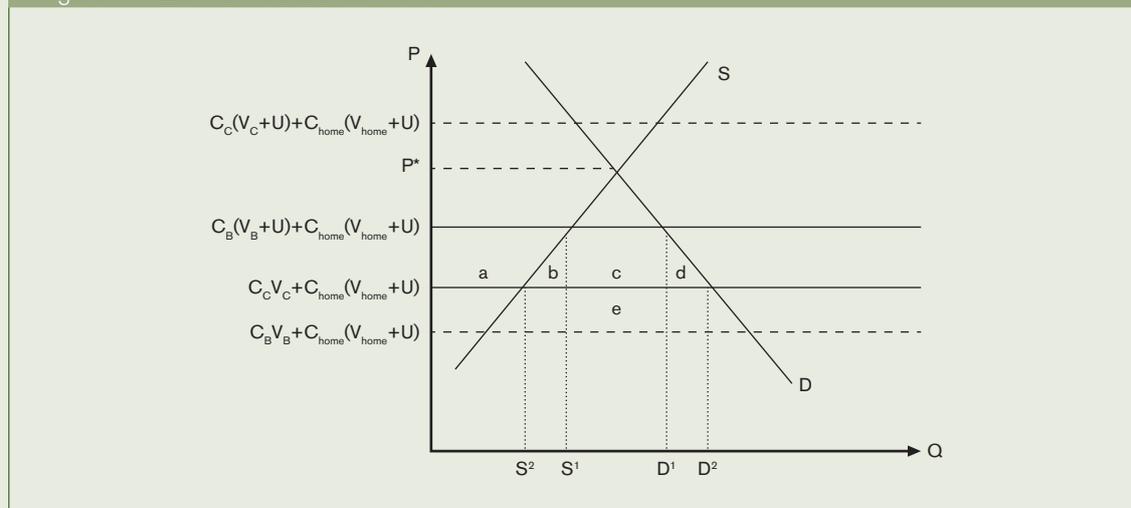
Consider a three-country model similar to the one in Box C.2, but assume now that the Home economy can impose (discriminatory) frictional barriers. This situation can be represented by assuming the quality of the service composed by a universal standard (U) which is equal across countries and a country-specific standard (V_i). If a foreign-service supplier wants to provide a service in the Home country, it has to face the cost of meeting the specific standard in the domestic country (C_i) so the variable cost increases by $C_i V_i$. It may also be the case that the Home country does not accept the universal standard component provided by the foreign supplier. Under these circumstances, if the foreign supplier wants to sell in the domestic country, it has to face an additional cost of $C_i(V_i+U)$, because it needs to adapt to both the universal and the country-specific standard.

Given this framework, the analysis of discriminatory regulation in services trade follows the same logic as trade in goods. Assume that the Home economy is small and that there are two foreign countries (Partner 1 and Partner 2, respectively indicated by subscripts B and C) potentially exporting services. As in the previous section, assume that Partner 1 is the more efficient producer. Suppose that the autarchy price for the service is P^* and that, before recognition, foreign firms have to meet the universal standard in the Home country. Initially the variable cost by foreign firms in the domestic market is $C_i(V_i + U) + C_{home}(V_{home}+U)$. When this cost is higher than P^* (for both Partner 1 and 2), no trade occurs. But if Home recognizes the universal component of quality by Partner 2 as equivalent to the domestic one, Partner 2 faces a reduction in its variable cost, now $C_c(V_c) + C_{home}(V_{home} + U)$. If this cost is lower than P^* , we observe trade in services from Partner 2 to the Home country (see Figure C.4). In this case, discriminatory recognition (liberalization) is necessarily trade creating.

Assume now that initially, when trade restrictions apply to both foreign countries, $C_B(V_B + U) + C_{home}(V_{home} + U) < P^* < C_c(V_c + U) + C_{home}(V_{home} + U)$ only Partner 1 sells its services in the Home economy (see Figure C.4). If the Home country recognizes the universal standard u provided by Partner 2 as equal to the domestic one, it may be the case that the only exporting country is Partner 2 and imports are higher than before. This is true when $C_c(V_c) + C_{home}(V_{home} + U) < C_B(V_B + U) + C_{home}(V_{home} + U) < P^*$.

The welfare effect of the discriminatory liberalization on the Home economy can be seen in Figure C.4: there is a gain in consumer surplus ($a + b + c + d$) partially offset by loss in producer surplus (a). An important point here is to understand the role of the area $c + e$. In the traditional trade in goods case, the area $c + e$ is a welfare loss for Home since it represents the fall in government tariff revenue. However, in this context, the area $c + e$ represents the additional cost that Partner 1 had to face when it supplied the Home economy ($C_B U$ times the pre-recognition value of imports). If this cost did not have any effect on the Home country (for instance, in the form of a regulatory rent), the area $c + e$ does not enter into the calculation of the total Home country's welfare. On the other hand, if a share (s) of the cost sustained by Partner 1 constituted a form of regulatory rent, the net welfare effect of services liberalization in the Home economy is $b + c + d - s(c + e)$.

Figure C.4: Effects of PTAs in services



(c) Natural partners, accumulation and location effects of PTAs

The effects of PTAs studied in the economic literature go well beyond the ones discussed in this section. Below, we briefly summarize three areas of research that provide additional insights into the welfare implications of preferential agreements.

It is possible that the trade effects of a preferential agreement depend on the economic characteristics of PTA members themselves. In particular, if trade agreements are more likely to be signed between countries that trade intensively with each other, PTAs should generally be expected to be trade creating. This idea is often referred to as the “natural trading partners” hypothesis.

Krugman (1991) shows that the costs of preferential trade agreements formed between “natural” trading partners are likely to be lower than for arrangements between countries that do not trade heavily with one another. He models a world where countries are spread over many continents and where variations in inter-continental transport costs determine whether the formation of regional trading blocs are globally welfare-improving. If inter-continental transport costs are high enough to ensure that the bulk of trade takes place regionally in the absence of PTAs, the formation of “natural” trading blocs within a region is welfare-improving as the gains from trade creation are likely to outweigh trade diversion.²⁵ The validity of the “natural trading partners” hypothesis is discussed in the empirical evidence subsection below.

The effects of PTAs are not necessarily limited to traditional trade effects (i.e. the allocation of resources in participating economies). Specifically, preferential agreements may influence welfare of member countries through accumulation (i.e. economies of scale) and location effects (Baldwin and Venables, 1995).

The trade creation, trade diversion debate focuses on the static effects of PTAs. However, it is reasonable to expect that preferential agreements will have dynamic implications (i.e. that change over time). The accumulation effect considers how a PTA affects growth. It does this through changes in the return on investment in member countries determined by changes in physical capital and human capital (management and technical expertise) or by changes in technology available to firms. In a sense, the redistribution of capital flows after the conclusion of a PTA can be seen as investment creation and diversion. If capital is internationally mobile, it is possible that there will be an increase in capital inflows within the PTA at the expense of non-members. In addition, there is a wide body of literature that studies the effects of trade on long-run growth (World Trade Organization WTO, 2008). This area of research generally does not consider the effects of preferential trade agreements as opposed to non-discriminatory trade opening. However, some of the mechanisms through which trade affects growth (international knowledge spillovers, enhanced competition, etc.) apply to PTAs as well as to multilateral trade liberalization.²⁶

The location effect looks at how the integration of a country into a PTA may alter the distribution of economic activity within the PTA and thereby lead to inequality among member countries. When trade barriers are reduced, firms can alter their location decisions. This decision depends on the balance between production costs and the trade costs that must be incurred to supply different markets. On the one hand, locations where economic activity is more concentrated can be efficient in the presence of external economies of scale that increase firms’ productivity. On the other hand, proximity to consumers reduces trade costs, particularly when trade policy restrictions are in place. Baldwin and Venables (1995) find that as trade costs decline, having close access to

consumers becomes less important. Thus, during a process of trade liberalization, firms would be drawn to “central” areas within the PTA. This agglomeration effect may exacerbate regional inequalities between members of an agreement.

(d) Effects of PTAs: the evidence

Several studies examine the impact of PTAs and test the traditional theories on trade creation and trade diversion. While this literature is not conclusive, it suggests that trade diversion may play a role in some agreements and in some sectors, but it does not emerge as a key effect of preferential agreements (Freund and Ornelas, 2010).²⁷

A first branch of the empirical literature analyses specific agreements and, using different methodologies, reaches mixed conclusions in terms of the net welfare effects of PTAs. For example, a first set of studies focus on the Canada-United States free trade agreement (CUSFTA). Clausing (2001) finds evidence that the agreement increased US imports from Canada, but did not divert US imports away from other US trading partners. Similarly, the CUSFTA study by Trefler (2004) confirms the finding that trade creation outweighs the trade diversion effect. In contrast, a study of NAFTA concludes that the agreement is overall trade diverting (Romalis, 2007).²⁸ Romalis uses changes in EU trade over the period to capture the counterfactual (i.e. what would have happened in the absence of the agreement), but finds that the welfare costs of NAFTA are small.

Chang and Winters (2002) evaluate the welfare impact of the Southern Common Market (MERCOSUR) from a different perspective, looking at the effect the customs union (between Argentina, Brazil, Paraguay and Uruguay) has had on export prices to Brazil. They find that Argentina's export prices increased while those of excluded countries have declined, suggesting the agreement is trade-diverting and that it has hurt non-members. Finally, Egger (2004) finds that joining a regional trading bloc does not exert any significant short-term impact on trade volumes, but that there is a considerable trade creation effect in the long-run. Hypothetically, removing the European Economic Area (EEA) would account for a 4 per cent reduction of trade within the EEA. A similar estimate for NAFTA yields a reduction in 15 per cent of volume trade.

Another branch of the empirical literature uses gravity models to infer the trade effects of an agreement. The key question is to what extent PTA partners trade more than would be predicted by standard bilateral trade determinants (e.g. income, geographical proximity, etc.). Magee (2008), for example, uses panel data for 133 countries in the 1980-1998 period and includes several fixed effects to capture the counterfactual: what would happen to trade if there were no PTAs. He finds that the average impact of

PTAs on trade flows is small – only 3 per cent – and that, on average, trade creation exceeds trade diversion. In contrast, an earlier gravity-model study covering 130 countries from 1962 to 1996 found that PTAs have generated a significant increase in trade between members, often at the expense of the rest of the world, suggesting evidence of trade diversion (Carrere, 2006).

Finally, focusing on East Asia, Lee and Shin (2006) find that PTAs in the region are likely to create more trade among members without diverting trade from non-members. Baier and Bergstrand (2007) estimate the impact of PTAs on trade flows, taking account of the “endogeneity”²⁹ problem – i.e. the possibility that countries join PTAs for unobservable reasons that may be correlated with the level of trade. They conclude that when taking into account the endogeneity of a PTA, the positive impact of the agreement on bilateral flows becomes statistically more robust and five times larger than in estimates that disregard the endogeneity problem.³⁰ Thus, it appears that countries generally opt for welfare improving PTAs when there are gains from liberalizing bilateral trade.

Acharya et al. (2011) analyse trade creation effects both within the PTA and outside of the PTA for a number of preferential trade agreements. They find strong evidence of intra-PTA trade creation, showing that PTAs increase the value of trade between member countries (for 17 out of the 22 PTAs considered). On the other hand, they do not find evidence of trade diversion effects. Differently from other studies in this area, Acharya et al. (2011) also consider the possible trade creation effect outside of the PTA. Most of the analysed PTAs increase exports from member countries to non-member countries. In particular, they find very strong and positive effects regarding MERCOSUR and the ASEAN Free Trade Area, with an increase of exports outside of the PTA by 109 per cent and 136 per cent respectively. Trade diversion effects outside of the PTA have been found in a number of cases, including the Caribbean Community (CARICOM), the Central European Free Trade Agreement (CEFTA), the Common Market for Eastern and Southern Africa (COMESA) and the Closer Economic Relations FTA between Australia and New Zealand.

A third approach in the empirical literature has been to test the “natural trading partner” hypothesis (Krugman, 1991). Also using a gravity model and concentrating on the Americas, Frankel et al. (1995) seek to identify trade diversion by testing whether regional trade is greater than could be explained by natural determinants of trade, such as proximity and market size. They find that multiple PTAs with partial liberalization among neighbours within a continent would raise welfare, and that this situation is preferable to a single continental free trade area. Thus, in their view, the formation of trading blocs, such as NAFTA and MERCOSUR, among “natural trading partners” is

preferable to the failed FTAA (Free Trade Area of the Americas). An opposing view is held by Bhagwati and Panagariya (1996), who argue that the volume of trade and transport cost criteria, tested by Frankel et al., are not sufficient to ensure that a PTA will raise welfare.

Addressing the points brought up by Bhagwati and Panagariya, Krishna (2003) uses detailed US trade data to estimate the welfare effects of hypothetical bilateral PTAs. He finds that neither geographical proximity nor trade volumes are significantly correlated with welfare gains, concluding that these are not good indicators for the formation of PTAs, as the literature supporting the “natural trading partner” hypothesis suggests. Baier and Bergstrand (2004) study which pair of countries would gain most from forming a PTA and whether these country-pairs are more likely to sign a preferential agreement. They develop a general equilibrium model with a sample of 53 countries, using data from 1996. Testing for several variables that predict 85 per cent of the bilateral PTAs in their sample,³¹ their results support the natural trading partner hypothesis.³²

(e) The political economy of PTAs and external tariffs

Section C.1 makes the point that the views of special interest groups may weigh heavily on governments and that a policy maker may sign a PTA to accommodate the interests of powerful lobby groups. In this political context, can inefficient PTAs be signed (or efficient ones be rejected)? More precisely, under what conditions will a trade-distorting PTA be endorsed by a government? Two influential studies addressing these questions reached a similar conclusion in that trade-diverting PTAs are more likely to be politically viable.³³

The work by Grossman and Helpman (1995) provides the basic structure for the so-called “new political economy” literature in trade. The key idea, which is embodied in all models discussed in this section, is that the interaction of governments in the international arena is a two-level game (Putnam, 1988). In the first stage, the policy preferences of a government are shaped by national welfare considerations and by the politically organized groups that represent different industrial sectors. In the second stage, governments negotiate a PTA under the constraints imposed by the domestic political environment. The outcome of this game is the politically viable preferential agreement.

A PTA naturally requires the assent of both governments involved. The question is, therefore, under what domestic conditions is such commonality of purposes more likely? As lobby groups tend to represent producers' interests, one needs to understand how a preferential agreement affects producers. Consider first a trade-diverting PTA (e.g. the one between Home and Partner 2 described in Figure C.3). In this case, the price in the Home

market falls by a small margin, and exporters in Partner 2 gain from the high domestic price in the partner's market. Hence, domestic import-competing producers are hurt slightly and would weakly oppose an agreement, while exporters in the partner country benefit largely and strongly support the agreement. Consider next the case of a trade-creating PTA (e.g. the one between Home and Partner 1, in Figure C.2). The domestic price falls substantially as a result of the agreement, the domestic import-competing sector suffers larger losses while foreign exporters receive little benefit. In this scenario, domestic political opposition to the PTA is strong, while foreign support is marginal.³⁴

The work by Grossman and Helpman (1995) is based on the assumption that markets are perfectly competitive (i.e. no supplier has sufficient market share to affect prices). A question, therefore, arises whether results would be different under imperfectly competitive markets. In an oligopolistic setting, where a small number of producers dominate the market, Krishna (1998) shows that it is still true that trade-diverting PTAs are politically viable, while trade-creating ones are not. Intuitively, trade diversion increases the oligopolistic incomes (rents) of producers in the partners' economies and, therefore, creates political support for the agreement. Specifically, Krishna (1998) posits that a political requirement for a PTA is that aggregate profits increase in the partners' economies. If trade is diverted away from third countries, it is more likely that firms from within the agreement gain market share in the partner's economy (to the disadvantage of third-market competitors) and increase their profits.³⁵

In brief, these earlier works conclude that the conditions needed for the political viability of a PTA may contradict those that ensure its social desirability. These studies, however, do not consider that external tariffs (i.e. the tariff that PTA members impose on non-members) may respond to the formation of a preferential agreement. For instance, Richardson (1993) first made the point that countries may have reason to lower their external tariffs after entering a PTA. Importantly, removing this assumption may radically change the implications of these models. Intuitively, considering the graph in Figure C.2, if Home lowers the external tariff to Partner 1 after signing a PTA with the less efficient Partner 2, it is entirely possible that the PTA will still be trade-creating.³⁶

Ornelas (2005a; 2005b) revisits the Grossman-Helpman and Krishna theory, which deals with the situation where the external tariff is allowed to change after a PTA has entered into force. Specifically, these papers allow tariffs on third countries to be set “endogenously”, that is, in a way that allows special interest groups to influence policy both before and after an agreement is signed. Ornelas shows that independently of the structure of markets (i.e. perfectly

competitive or not), welfare-decreasing preferential agreements are unlikely to be politically viable. However, Ornelas shows it is still possible that special interest pressures may persuade governments not to sign some preferential agreements that would improve social welfare.

The starting point for an accurate characterization of these findings is to consider the political determinants of external tariffs. The political demand for external protection is lower under a preferential agreement. After a PTA is formed, the domestic import-competing sector loses market share to the partners' producers. In this new environment, any increase in the domestic price that may result from an increase in the external tariff benefits domestic producers less than it would if a PTA was not in place. The reason is that the external protection granted by the tariff "leaks" to PTA partners and only partly benefits domestic producers.³⁷ Put differently, the incentive of import-competing sectors to demand protection is stronger in the absence of a PTA, as their share of the domestic market is larger. This is true both for perfectly competitive producers as well as for oligopolistic firms. Moreover, the cost of lobbying is not changed under a PTA, as this still reflects the cost of the external tariff to society at large.

The above reasoning has the following implications. First, a PTA weakens the impact of political economy forces on external tariffs in equilibrium. As the demand for external protection falls under a PTA while its cost is unaltered, the external tariff is predicted to fall. Secondly, if preferential agreements destroy protectionist rents, political support of organized sectors cannot be a strong rationale for a PTA. Politically viable agreements must, therefore, be those that improve aggregate social welfare.

To some extent, these recent works on the new political economy of preferential agreements should be seen as complementary. Grossman and Helpman (1995) and Krishna (1998) focus on the decision to sign or not a PTA, but they do not examine the effect that a PTA has on external tariffs, which is instead the focus of Ornelas (2005a; 2005b). If special interests could both lobby to influence the trade regime decision as well as the tariff formation, Ornelas' findings would be qualified. In this scenario, trade-diverting preferential agreements can be politically viable. However, this negative outcome is not as likely as one might think, as the political rent destruction caused by a PTA reduces governments' incentives to endorse welfare-reducing agreements (Freund and Ornelas, 2010).

The new political economy literature has also raised a related but distinct question. A number of PTAs go well beyond tariff arrangements and include "non-trade" issues, such as labour or environmental standards, provisions on intellectual property rights

and several other areas. As the next subsection discusses more extensively, there are a number of reasons that justify these developments. The question addressed here is not on the economic rationale for such arrangements, but rather whether one should expect external tariffs to fall when preferential agreements encompass more than the lowering of tariffs.

Limão (2007) provides an economic model that allows an analysis of the importance of non-trade issues in PTAs, and their effect on incentives to lower external tariffs. Specifically, he argues that, if preferential agreements include non-trade issues rather than just tariff reductions, governments may be more reluctant to reduce external tariffs. The reason is that a PTA may be valuable to a country precisely because tariff reductions encourage cooperation on other non-trade issues. However, in this case, a government may have little appetite to reduce tariffs on third-country imports, because a reduction in the external tariffs would lower the preference margin to partners and thus weaken the agreement.³⁸

Ultimately, the effect of PTAs on external tariffs is an empirical question. However, the literature appears to be discordant. In a first set of studies, Estevadeordal et al. (2008) and Calvo-Pardo et al. (2009) find that preferential agreements in Latin America and ASEAN countries had the effect of reducing external tariffs. Specifically, they find that external tariffs decline faster in those sectors where preferences have been granted and that, contrary to prevailing opinion, there is little evidence that preferences lead to higher external tariffs. In a second set of studies, Limão (2007) and Karacaovali (2008) show that the opposite pattern emerges from an analysis of PTAs signed by the United States and the European Union.

While these contrasting empirical findings suggest that more analysis is needed in this area, they may be less controversial at a closer look. Specifically, the difference in the sample of countries analysed may explain part of the differences. PTAs signed between developed and developing countries, such as those signed by the European Union and the United States with developing countries, may be more likely to include provisions that go beyond the lowering of tariffs than agreements between two developing countries. As this is generally the case (see Section B), it is not surprising, in light of the theory, to find that the PTAs between developed and developing countries tend to increase external tariffs, while agreements between two developing countries are likely to reduce them.

(f) Rules of origin and trade diversion

(i) Rules of origin: a source of trade diversion

In PTAs which are not customs unions, members maintain their own external tariffs. Consequently, in the absence of any rules, imports of particular products would enter the country in the PTA with the lowest import duty on the item in question and be re-exported to other countries in the PTA. Hence, rules which confirm the true "origin" of the goods are required to prevent such re-routing of goods – or "trade deflection". For example, suppose the preferential tariff on the exports of country A to country B is zero. Hence, when country A exports the good to country B, the latter needs to ensure that the good really does originate in country A, and is not simply being re-routed via country A by some third country which does not have the same degree of preferences in country B. Empirical evidence supports this hypothesis relating to the role of rules of origin (RoOs)³⁹ in preventing trade deflection. For instance, Estevadeordal (2000) finds that the higher the absolute spread between Mexican and US tariffs to third parties, the higher the restrictiveness built into the RoOs of NAFTA. In reality, however, RoOs may be used to protect certain favoured industries, thereby leading to trade diversion or trade suppression (Krishna and Krueger, 1995).

Consider the following scenario. Assume a production sharing network between countries B and C, whereby country B exports a final good to country A using intermediate goods from country C. Furthermore, assume that country A is a high-cost (relative to country C) producer of intermediate goods used in the production of this final good which is exported by country B to country A. Initially, country A signs a PTA with country B and another PTA with country C. Hence, a good produced in B would have preferential access to A, as would a good originating in C. Under the negotiated PTA, country A could impose stringent RoOs on country B with the result that the final product that country B exports to country A may not qualify as originating there – perhaps because the proportion of intermediate goods from C is too high. Hence, the firm in country B can either continue to import the intermediate good from country C and not gain preferential access to country A or shift its purchase of the intermediate good from C to A, in order to satisfy the RoOs and obtain preferential access on their exports to country A.

In other words, restrictive RoOs may make it profitable for firms in country B to engage in "supply switching" by using a more expensive intermediate good either from country A or a domestic firm, i.e. restrictive RoOs in final goods divert or suppress trade in intermediate goods. Supply-switching strengthens the trade link between countries A and B (hub-spoke), at the expense of trade between countries B and C (spoke-

spoke), i.e. country A benefits by using RoOs to protect exports of certain industries (Gasiorek et al., 2009). Furthermore, by influencing the sourcing of intermediate goods trade, RoOs are likely to increase firms' costs and hence have an adverse effect on final goods trade. This increase in cost strengthens the "spaghetti bowl" effect of PTAs analysed in Section B. Hence, supply-switching – or the non-utilization of preferences, as a result of RoOs – reduces the trade liberalizing impact of PTAs. Analysing import data for a sample of more than 150 countries during the period from 1981 to 2001, Estevadeordal and Suominen (2008) find that restrictive product-specific RoOs encourage the trading of intermediate goods within the PTA (thereby leading to trade diversion) and undermine aggregate trade flows among PTA partners.

In a survey of 345 firms in four Latin American countries carried out by the Inter-American Development Bank (IADB) in 2007-08, fewer than 10 per cent reported having changed their supply chain in order to adapt to rules of origin (Harris and Suominen, 2009). This suggests that most firms continue to import from the same source as before, even if this means foregoing preferential access to their PTA partner country market. Among the multi-national corporations (MNCs) in the sample, however, about 75 per cent (ranging from 50 per cent in Panama to nearly 90 per cent in Colombia) described RoOs as an important factor in determining where to invest in production facilities. However, when asked whether investment in a subsidiary was made explicitly to meet RoO requirements in one or more of the country's PTAs, the figure falls to less than 30 per cent⁴⁰ (Harris and Suominen, 2009). This firm-level evidence suggests that for MNCs, which rely heavily on flows of intermediate goods trade via production networks, RoOs significantly affect investment decisions. In particular, firms may switch their source of intermediate goods from a more efficient supplier in a non-member country to a less efficient supplier in a member country (where they establish production facilities), thereby resulting in trade diversion.

(ii) Reducing such trade diversion: the way forward

The hypothetical scenario described above showed that the final good originating in B has preferential access to A, as does the intermediate good originating in C. However, the final good from B, produced using intermediate goods from C, which does meet rules granting originating status for B's exporters to C, would not be eligible for preferential access. Such a system of bilateral hub-spoke agreements with constraining rules of origin is thus likely to enhance hub-spoke trade at the expense of spoke-spoke trade.

Gasiorek et al. (2009) have argued that this discrimination, which protects the exports of certain industries in country A and hence leads to trade diversion, can be resolved if country B signs a PTA

with country C and is thereafter allowed to add its own intermediate inputs (value added) with the intermediate inputs from country C in determining originating status on the exports of the final product sold to country A. This is the principle of “diagonal cumulation” of rules of origin. Under this arrangement, all participating countries agree bilaterally that in all PTAs concluded among themselves materials originating in one country can be considered to be materials originating in all the other countries. This makes it easier to import intermediate goods and still satisfy the RoOs.

Diagonal cumulation applies to trade between three or more trading partners normally linked by PTAs with identical RoOs. It builds on the concept of “bilateral cumulation” – materials originating in one country can be considered as materials originating in the other partner country – which is a feature of all PTAs. In addition, there is the concept of “total cumulation”, which again applies to trade between three or more countries, but involves greater flexibility than “diagonal cumulation”. This is because it allows intermediate processing to be split in any way among all the parties to the PTA, provided that when added together, the cumulative processing is sufficient to meet the origin rule. In the context of our hypothetical scenario, suppose for instance that the intermediate good from country C does not qualify as originating in that country. With total cumulation, the producer in country B can cumulate the

proportion of country C's value added together with its own value added in determining originating status.

Although total cumulation is rare, diagonal cumulation has been used by some PTAs. The EU is a good example in this regard. Box C.4 provides an overview of the EU experience in relaxing RoOs in PTAs.

3. Going beyond the standard analysis

As shown in Section B and Section D, over the past three decades trade agreements have gone beyond border measures, such as tariffs, and have integrated a number of domestic policies and regulations, including intellectual property rights, product standards, competition and investment policies. These developments are not inconsequential; once tariffs are removed, differing regulatory policies among nations become more salient, creating complex challenges of accommodation and coordination. Moreover, trade openness – along with the new forms of trade that technological development makes possible – creates new pressures to reconcile divergent national practices, and generates new forms of cross-border policy effects (spillovers). These developments produce demands for governance and the rule of law that transcend national borders.

Box C.4: Lessons from the EU experience in relaxing rules of origin (RoOs)

For the EU, the issue of multiple RoOs became increasingly significant in the 1990s, as agreements were concluded with a number of countries from Central and Eastern Europe and from the South Mediterranean. It became apparent that the EU's “spaghetti bowl” of criss-crossing agreements was restricting firms' ability to source intermediate goods from the cheapest source, i.e. there was trade diversion (Gasiorek et al., 2009).

To address this problem, the Pan-European (PANEURO) Cumulation System (PECS) was launched in 1997. It established identical protocols for product-specific and regime-wide RoOs across the EU's existing and future PTAs. This included arrangements with the European Free Trade Association (EFTA) countries, dating from 1972 and 1973, as well as those forged in the 1990s and later – i.e. PTAs with several Eastern European countries, the Euro-Mediterranean Agreements, the Stabilization and Association Agreements with Croatia and FYR Macedonia, as well as extra-regional PTAs with South Africa, Mexico and Chile (Esteveordal and Suominen, 2004). Hence, “diagonal cumulation” was a key principle introduced in pan-European rules. It enabled producers to use components originating in any of the participating countries without losing the preferential status of final product.

Empirical evidence reveals that the harmonization of RoOs, via diagonal cumulation in the PECS, has impacted trade flows since 1997. For instance, analysing the textile industry, Augier et al. (2004) find that trade between non-cumulating countries could be lower by up to 50 to 70 per cent. Similarly, using data on trade flows between 38 countries for three baskets – trade in all goods, trade in intermediate goods, and trade in manufactured goods – Augier et al. (2005) show that trade between countries that became part of the pan-European system of diagonal cumulation was higher relative to trade with other countries by about 43 per cent between 1995 and 1999. In addition, they show that the introduction of the PECS in 1997 increased trade between the spokes by 7 and 22 per cent. However, their methodology is based on using dummy variables in a gravity model to capture the role of cumulation. Hence, it is possible that these variables are capturing other factors.

At the same time, analysing data on trade flows between 38 countries, Gasiorek et al. (2009) find that the trade between newly cumulating countries (following the introduction of the PECS in 1997) rises by more than trade between these countries and third countries for some selected industries.⁴¹

The following subsection looks at the new forms of trade agreements that are emerging, using the concept of “deep” integration (Lawrence, 1996), and asks two main questions. First, what are the motives behind these agreements? Secondly, what determines the structure of deeper arrangements? Answers to these questions are essential to understanding the economic costs and benefits of deeper integration.

(a) The concept of deep integration

Trade agreements that deal mostly with border measures are often defined as “shallow” agreements. On the domestic side, these agreements accord non-discriminatory national treatment to foreign goods and firms (i.e. the same treatment that is accorded to domestic firms), but stop short of intervening in domestic economic policies beyond this requirement. In contrast, trade agreements that include rules on domestic policies that fall “inside the border” are referred to as “deep” agreements (Lawrence, 1996). There is no agreed definition of the scope of such deep agreements, and indeed the concept is widely used to refer to any arrangement that goes beyond simply extending preferential tariff concessions. However, there are at least two distinct dimensions – the “extensive” and “intensive” margins – to any deeper integration agreement.

The first dimension refers to increasing the coverage of an agreement beyond the lowering of tariffs (e.g. the harmonization of national regulations in financial services). Most discussions of deep integration focus on this dimension. The second dimension, the intensive margin of deep integration, refers to the institutional depth of the agreement, such as the extent to which

certain policy prerogatives are delegated to a supranational level of government (e.g. the formation of a customs or monetary union). These two dimensions are often related. That is to say, extending the coverage of an agreement may also require creating common institutions and new, more sophisticated ways of sharing sovereignty in order to administer it. The table below provides a schematic (but not exhaustive) picture of the diverse forms of integration.⁴²

Like shallow integration arrangements, deeper agreements can be among advanced economies (North-North), advanced and developing economies (North-South), or just developing economies (South-South). Similarly, membership in deep integration arrangements can be wide or narrow, ranging from regional agreements involving several neighbouring countries to bilateral agreements between two distant partners.⁴³

(b) Why is deep integration gaining momentum?

Deep economic integration and trade are intimately related (see Table C.1). Deep arrangements may be necessary to promote trade in certain sectors or across economies more broadly. For instance, harmonization of certain regulations may be a prerequisite for trade in services or common competition policy rules may be required to allow comparative advantage to materialize (see Section D.2(b)). Conversely, trade liberalization – and the evolving structure of trade (for example, the growth of production networks) – can make the need for deeper policy integration more pressing. In short, shallow and deep integration can be complementary processes, as the first generates a demand for

Table C.1: Shallow versus deep integration

Integration level	Type of PTA	Features	Example
<p style="text-align: center;">SHALLOW INTEGRATION</p> <div style="text-align: center;"> </div> <p style="text-align: center;">DEEP INTEGRATION</p>	Free trade agreement (FTA)	Members liberalize internal trade but retain their independent external tariffs	US-Israel FTA
	FTA+	An FTA that in addition harmonizes some beyond the border standards (e.g. environmental standards)	NAFTA
	Customs Union (CU)	Members liberalize trade within the union and adopt common external tariffs against the rest of the world	SACU
	Common Market	Establishment of the free movement of all factors of production within the PTA, including labour and capital	EU
	Monetary Union	Establishment of a common currency and completely integrated monetary and exchange rate policy	Euro Area
	Fiscal Union	Establishment of a common fiscal policy	US

Note: The depth of integration of PTAs might overlap across types of agreements in certain circumstances.

governance that the latter can provide. This relationship is underscored in the economic literature.

A number of authors argue that markets need non-market institutions (political, legal and social) if they are to function properly (Casella, 1996; Casella and Feinstein, 2002; Padoa-Schioppa, 2001; Rodrik, 2000). These non-market institutions are essentially public goods that the market itself fails to provide. Others make the point that trade openness increases policy externalities, rendering unilateral decision-making inefficient compared with cooperative decision-making (Broner and Ventura, 2006; Epifani and Ganica, 2006; Brou and Ruta, 2010; Antràs and Staiger, 2008).

In sum, the relationship between deep integration and trade works both ways – in the sense that one may be the cause and/or consequence of the other. The relationship is also dynamic – in the sense that it is likely to develop over time. The remainder of this section focuses on international production networks which exemplify the complementarity between trade and governance that lies at the root of the current proliferation of deep agreements.

(i) *International production networks and deep integration*

Twenty-first century trade, as defined by Baldwin (2010), is a much more complex phenomenon than trade prior to the early 1980s.⁴⁴ This complexity is the result of the increased role of international production networks in the global economy, which are characterized by the unbundling of stages of production across borders. Increasingly, multinational firms are not only distributing manufacturing stages to decrease costs and exploit comparative advantages; they are also unbundling and outsourcing services work, primarily office tasks, making global production networks even more sophisticated and complex.

These new forms of international trade require reconsideration and reconceptualization of preferential trade. Most of the PTA models above assume that countries trade final goods and that producers are protection seekers for these goods. However, there might be some economic sectors, increasingly dependent on imported intermediate inputs, that seek lower levels of protection to reduce their production costs (Yi, 2003). Some empirical evidence suggests that when countries have a significant number of firms involved in production networks there is more pressure for unilateral trade liberalization.⁴⁵

For similar reasons, countries that form part of supply chains involving multiple nations might be more inclined to sign PTAs with their trading partners than to unilaterally liberalize. As various stages of production may take place in a number of different countries, the effects of trade barriers, such as tariffs or other non-tariff barriers, on the cost of a particular

stage of production is proportional to the number of times the product crosses other national boundaries. In addition, countries may sign PTAs in order to secure or “lock in” trading relationships, thus reinforcing their position as the main provider of intermediate inputs.

Theoretical conclusions regarding the welfare effects of preferential trade liberalization also change with the presence of production networks. In fact, international production sharing can mitigate the trade-diversion effects of PTAs.⁴⁶ The possibility of dividing up the production of final goods into various stages or components alters the calculation of trade creation and trade diversion and, although the outcome is still uncertain, it leaves room for welfare-reducing PTAs, that trade only in final goods, to become welfare-improving PTAs, once members engage in trade of parts and components.⁴⁷

International production networks are not a new phenomenon, but their relevance is increasing in particular regions of the world (see Box C.5), and their pattern and composition has changed over time. Initially, countries engaging in production sharing were mainly rich countries.⁴⁸ From the mid-1980s, however, production networks between developed and developing countries started to increase (see Section B.3).

Is there any link between the recent growth of production networks and the demand for deeper agreements? The theoretical and empirical literature on FDI and offshoring highlights that despite the benefits of exploiting factor price differences and new technological developments, there are additional costs of international fragmentation of production – from the managerial and logistic costs associated with monitoring and coordinating international production to learning about the laws and regulations that are required to do business in another country. These costs might be particularly high for developing nations which are part of North-South production networks, and that may lack the kind of sophisticated business laws and the product and labour regulations which rich countries use to consolidate their trade in intermediate goods (Baldwin, 2010).

In this context, the expansion of production networks – and in particular of North-South production-sharing – should be related to the proliferation of deep agreements aimed at filling a governance gap between countries. Agreements that include provisions related to the institutional framework, competition policy, the product and labour-market regulations, infrastructure development, and other areas could make production-sharing activities more secure and less vulnerable to disruptions or restrictions (Yeats, 2001).

This pattern can be observed in agreements such as NAFTA which not only increase market access, through tariff reductions, but also include disciplines that reduce

Box C.5: Determinants of the regionalization of production networks

Standard elements of comparative advantage, such as variations in labour supply conditions, wages, or relative factor endowments, help explain not only the proliferation of North-South production networks but also the regionalization of such networks. Studies by Athukorala and Menon (2010) of East Asia, for example, show that even though wages in China; Hong Kong, China; the Republic of Korea; and Chinese Taipei have been rapidly approaching developed-country levels in recent years, wages in countries such as Malaysia, the Philippines, Thailand and Viet Nam remain lower than – or comparable to – wages in Mexico and countries on Europe's periphery.

The role of distance is also important in explaining the regionalization of production networks. Several economists have pointed out that despite technological advancements, distance still matters and certain countries still suffer from geographic remoteness (Venables, 2001).⁴⁹ In addition, there is evidence that geographical distance remains a key factor in determining international transport costs, especially shipping costs, and delivery time (Evans and Harrigan, 2005). Arguably, these types of costs are particularly relevant for production networks, where a good can cross borders several times in the various stages of production.

New geography models of economic agglomeration at the international level are also useful in explaining the regionalization of production sharing. Access to intermediate goods creates agglomeration of production, as firms gain from being close to customer and supplier firms.⁵⁰ As more and more firms move to a certain region, they create a demand for suppliers of intermediate goods and services, reinforcing the offshoring attractiveness of that region for other firms in the industry and related fields. In addition, because production networks are formed around centres of economic activity, the distance between these production centres and the periphery matters.⁵¹

Schatz and Venables (2000) show that major outward investors carry out much of their investment, which relies heavily on intermediate goods trade, close to home (the United States investing in Mexico; the EU in Central and Eastern Europe; Japan in Asia) and this trend captures an important share of FDI flows from developed to developing countries.⁵²

In the case of East Asia, Athukorala and Menon (2010) find that the region has benefited from a "first-mover" advantage in hosting assembly operations of multinational corporations. Established companies have attracted other key market players and, in turn, many have upgraded the technology employed by regional production networks and assigned greater global production responsibilities to local affiliates, reinforcing the agglomeration effects.

the risks – and increase the profitability – of investment in Mexico. Also the recent accession of eastern European economies to the European Union, as well as some of the euro-Mediterranean agreements, could be partly explained as a response to the demand for deep integration agreements associated with expanding international production-sharing.

The evolving nature of trade agreements in East Asia, where a significant and growing share of international production sharing takes place, also highlights the link between production networks and deep integration (see Section D.3 for a more detailed analysis). In this region, the growth of production sharing first took place through *de facto* economic integration.⁵³ However, more recent North-South agreements, such as Japan's economic partnerships with Malaysia, Indonesia, Thailand and Viet Nam, or ASEAN's push for deeper disciplines, clearly show that this region is moving towards deeper integration.

Lawrence (1996) was the first to highlight the systemic implications of international production networks and deep integration. With increased international competition flowing from reduced barriers to trade, the ability to operate abroad – and to locate complex

production in the most cost-efficient regions – becomes increasingly important to firms' competitiveness. In order for cross-border production networks to operate smoothly, certain national policies need to be harmonized across jurisdictions. This generates a demand for deep forms of integration.

The trade literature has largely failed to model the interaction between international production networks and deep integration. One significant exception is the recent work by Antràs and Staiger (2008). They show that the rise of offshoring creates new forms of cross-border policy effects that go beyond the standard trade policy externalities, when goods are produced in a single location (i.e. the terms-of-trade effect).⁵⁴ In this context, the objective of trade agreements is more complex than the standard theory would suggest, as negotiating market access is not sufficient to address distortions of unilateral policy-making. An implication of this model is that the changing nature of trade (from trade in final goods to trade in intermediate goods) is directly responsible for the growing demand for deep agreements that can address these new cross-border effects. Specifically, externalities associated with production offshoring are different from those associated with traditional market access, and cannot be easily

addressed with general rules, such as non-discrimination and reciprocity (Bagwell and Staiger, 2003). If this argument is correct and the GATT/WTO system is not well adapted to handle these non-market access issues, countries might turn to other available instruments, such as PTAs, to solve their coordination problems.

This presents the multilateral trading system with a difficult challenge. The recent wave of preferential agreements may (at least in part) be an institutional response to the new problems associated with the growth in offshoring. On the one hand, this suggests that PTAs are efficiency-enhancing rather than beggar-thy-neighbour agreements.⁵⁵ On the other hand, PTAs may make it more difficult for the WTO to perform its traditional role of providing reciprocal market access opening. In essence, the institutional challenge for the WTO is to find an approach that can facilitate the deeper integration that countries are seeking while at the same time upholding the core principle of non-discrimination.

(c) The trade-offs involved in deep integration

Unlike shallow integration, deep integration – regardless of the form it takes – requires common policies and regulations among member countries across a number of areas.⁵⁶ This raises a completely different set of questions. What are the costs and benefits of common policies? Which countries should form a deep agreement? Which policies should remain in the national domain, and which should be harmonized at – or assigned to – a supranational level of government? These questions are traditionally addressed in public economics, and have generated an extensive literature, mainly focused on fiscal federalism, which is briefly reviewed below.⁵⁷

Economists have developed a simple principle to understand the costs and benefits of common policies, known as the Oates' Decentralization Theorem (Oates, 1972). This theorem suggests that there is a basic trade-off between the benefits of common policies, which depend on the extent of cross-border policy spillovers, and their cost, which depends on the extent of policy preference differences across member countries. For individual countries, the cost of common decision-making is that it moves the common policy away from its preferred national policy (i.e. a loss in national sovereignty); the benefit is that policy spillovers are internalized.

This basic principle sheds an important light on the remaining two questions – i.e. which countries and which policies should undergo deep integration. Regarding the first question, countries that have similar policy preferences would benefit the most from deep integration, as this would limit the political cost of integration. Similarly, for a certain spectrum of national policy preferences, countries that are more

interconnected would also benefit more from deep integration. Regarding the second question, countries should take common policy decisions in areas characterized by large cross-border effects and maintain national policy prerogatives in areas with low cross-border impacts (and where policy preferences are dissimilar).

An interesting empirical issue is whether the fiscal federalism theory can explain observed patterns in deep integration arrangements. First, the theory predicts that countries sharing similar policy preferences and greater levels of interconnection are the ones that should choose deeper over shallow integration. While a direct test of this proposition is hard to verify, several deep PTAs are formed by geographically close members (the EU being a primary example). To the extent that policy preferences are correlated with geographic location, this provides indirect evidence in support of the theory.

Secondly, the fiscal federalism theory states that policies characterized by high cross-border spillovers and low heterogeneity of preferences for different countries should be centralized, while the provision of all other services should be decentralized. Alesina et al. (2005) contrast this benchmark with a set of indicators that measure the role of the EU in different policy areas. They find that there is a partial inconsistency between the resulting allocation of competencies to the EU and the Oates Theorem. In particular, their data suggest that the EU is active in certain areas where cross-border effects are low and that its intervention is too limited in some policy domains characterized by large spill-overs and similar preferences across countries.⁵⁸

Three further issues are relevant to the debate on deep integration: the welfare effects of deep agreements on member countries; the trade-offs of bilateral North-South deep agreements; and the systemic effects of deep regional arrangements.

As discussed in the preceding section, there is not a single definition of deep integration agreements, as this concept generally refers to any agreement that goes beyond shallow arrangements. As a result, there is not the same comprehensive analysis of the economic costs and benefits of deep integration as there is for preferential tariff liberalization. This is not surprising for two reasons: first, the effects of FTA-plus or customs union-plus agreements are likely to be different from the effects of standard FTAs or customs unions. Like shallow agreements, deep agreements reduce the costs of trade, and thus can be expected to increase trade among members (Section D provides an empirical analysis of the trade effects of deep integration). However, unlike shallow agreements, deep integration agreements may also provide supranational public goods (common rules, a stable monetary system, etc.) that the markets or national

governments cannot offer. The welfare effects of these public goods can go well beyond the trade effects, and are more complicated to measure.

From the perspective of developing countries, deep integration with advanced economies may create certain advantages and disadvantages (Birdsall and Lawrence, 1999). As regards advantages, for instance, developing countries can import international regulatory systems that are “pre-tested” and represent “best practices”, without having to pay the costs of developing them from scratch. As regards disadvantages, developing countries may be pressurized to adopt common rules which are inappropriate for their level of development, such as certain environmental and labour standards. This risk is higher the weaker the bargaining power of developing countries vis-à-vis their advanced trading partners (or when policies and regulations are imposed rather than developed cooperatively). Such standards could also be used by advanced economies to protect vested interests and to close markets to poor countries.

In a model of regional integration where special interest groups can manipulate the decision-making process, Brou and Ruta (2006) show that more advanced economies tend to be more politically organized and exert a stronger influence on common policies. While deep integration can still be a boon for developing economies, the theory supports concerns that the common policy will shift away from the interests of the less developed member.

What are the systemic effects of deep integration? There is a long-standing debate in the trade literature on whether preferential agreements are friends or foes of the multilateral trading system. Although this debate is extensively reviewed in Section E, some preliminary observations are worth noting. First, deep integration may, in some cases, have trade-diverting effects. Facchini and Testa (2009), in their work on common markets, show that mobile factors of production are more likely to experience an increase in returns, while immobile ones are more likely to be made worse-off compared with the status quo (i.e. no common market). If no form of wealth transfer across countries is possible, a common market is politically viable – i.e. it would be supported by the median voter in each member country – only if some factors remained protected vis-à-vis the rest of the world once the integration process is completed.

In an empirical study, Chen and Mattoo (2008) find that regional harmonization of standards significantly increases intra-regional trade in affected industries, but that the exports of excluded countries decline. This suggests that firms in the excluded countries are hurt more by an increase in the stringency of standards than by the scale benefit provided by integrated markets. In other words, standards harmonization in PTAs can be *de facto* restrictive.

A second important observation is that the process of deep regional integration may be a complement to rather than a substitute for the process of global integration. Deep agreements address behind-the-border measures that are more difficult to negotiate at the global level, because of the widely different policy preferences and needs among countries. Regional groupings may offer supranational public goods that governments – as well as multilateral arrangements – so far fail to supply (e.g. redistribution, infrastructures), giving them an appropriate intermediate level role in integration between the national and global levels (Padoa-Schioppa, 2001).

4. Conclusions

This section has reviewed the main reasons for establishing PTAs and what the consequences are for both members and non-members. Much analytical work in the past has focused on shallow trade arrangements, such as free trade areas, and the trade-creation/trade-diversion effects of PTAs. As preferential agreements have evolved over time, however, the lowering of tariffs is no longer the main focus of PTAs. Agreements now cover a wider number of issues – beyond tariffs – and involve more structured institutional arrangements. Traditional theories about PTAs fail to explain these new developments, both in terms of the causes and consequences of “deep” agreements. In particular, traditional theories are silent on the relationship between the growth of international production networks and the formation of deeper policy arrangements among countries. While the above discussion has shed some light on the causes and the structure of deep integration agreements – a discussion that falls mostly outside the domain of trade economics – there is clearly a need for further research in this area.

Endnotes

- 1 The empirical relevance of terms-of-trade effects in trade policy has been the subject of a recent debate in the empirical literature. Broda et al. (2008) and Bagwell and Staiger (2011) find evidence consistent with the view that governments set policy to exploit terms-of-trade gains.
- 2 In game theory, the Prisoners' Dilemma represents a situation where beneficial cooperation does not emerge. In the game it is assumed that players (the prisoners) can either cooperate or not and that cooperation involves higher joint welfare than non-cooperation. However, whenever others choose to cooperate, each player acting individually will be better off by deviating and choosing non-cooperation. Given that all players are trying to maximize their individual welfare, the only rational equilibrium implies the inferior situation of non-cooperation.
- 3 As it is well understood in the theoretical literature and in the practice of trade policy, cooperation among countries cannot be achieved in the absence of a trade agreement. The reason is that, if a country unilaterally reduces its tariff, the trading partners would still have an incentive to maintain its level of protection. A "trade war", on the other hand, is a stable (Nash) equilibrium, as once high protections are in place, no country has an incentive to reduce its tariff unilaterally.
- 4 As discussed in Bagwell and Staiger (1998), PTAs may even pose a threat to the functioning of the multilateral trading system. See Section E for a discussion of the relationship between preferential and multilateral agreements.
- 5 Section C.3 will, however, analyse cases where preferential agreements may address coordination problems beyond terms-of-trade or production relocation externalities.
- 6 Time inconsistency arises, for example, when a policy decision is separated through time from its implementation, with the result that for some reason (e.g. organized political opposition) the initial policy intention is no longer feasible.
- 7 Put simply, a time-inconsistency problem refers to a situation whereby a decision-maker's preferences change over time so that what is preferred at one point might be inconsistent with what is preferred at another point in time.
- 8 Whether an agreement can increase trade policy credibility and whether countries are likely to sign agreements to commit their trade policy are ultimately empirical questions. Staiger and Tabellini (1999) and Tang and Wei (2008) provide evidence that the GATT/WTO increased credibility of policy commitments. Arcand et al. (2010) find that the probability that two countries sign a PTA is larger when such agreement leads to credibility gains.
- 9 The key reference in the lobbying literature in trade is Grossman and Helpman (1994). Several studies have documented the role of lobbying groups in influencing trade policy outcomes. For a review of this empirical literature, see Gawande and Krishna (2003).
- 10 This political economy literature is more extensively discussed in Section C.2.
- 11 Levy and Srinivasan (1996) provide an example of this logic. A particular feature some PTAs have that the WTO system is lacking is private agents' access to dispute settlement mechanisms. In the multilateral system, private disputants have to rely on their governments to act on their behalf even though the ultimate incidence of the costs and benefits of the settlement fall largely on them. Meanwhile, a PTA like the European Union allows private parties indirect access to dispute settlement through the European Court of Justice. Levy and Srinivasan (1996) argue that this difference in the design of dispute settlement mechanisms might be a motive for preferring PTAs.
- 12 Naturally, this argument would only hold true when MFN rates are positive and non-negligible. With zero MFN rates, there would be no scope for using PTA preferences (as explained in Section B).
- 13 An empirical study motivated by a formal general equilibrium model of the demand for and supply of PTA membership.
- 14 These relationships become statistically insignificant when such fixed effects are controlled for. Dyadic variables such as bilateral distance are time-invariant and hence not de-measured following the differencing transformation.
- 15 Most agreements require all existing members to admit a new entrant.
- 16 This empirical finding is facilitated by the fact that unlike other models, Bergstrand et al. (2010) do not assume an infinitely elastic supply of PTA membership.
- 17 These three relationships are robust to the inclusion of country pair fixed effects introduced via a time de-measured differencing transformation.
- 18 This refers to a widely-used measure of the "political regime characteristics" of states. The polity score measures the governing authority of states ranging from fully institutionalized autocracies to fully institutionalized democracies. States are ranked on a 21-point scale ranging from -10 (hereditary monarchy) to +10 (consolidated democracy). See <http://www.systemicpeace.org/polity/polity4.htm>.
- 19 Depending on the assumptions on preferences, it would be possible to have effects also on the market for good 3 even in case RoW maintains the same non-discriminatory tariff. However, in this discussion we abstract from these additional effects.
- 20 In a model with more than three countries, the extent of this rent can be shown to depend on the number of countries that have preferential access to the market of the trading partner. Specifically, as this number increases, the preference rent decreases, a situation referred to in the literature as "preference erosion".
- 21 The next subsection provides a simple graphical analysis in the special case where the importing economy is small and does not alter the world price.
- 22 See Baldwin (2009) for a critical survey of Vinerian regionalism and for a discussion of the limits of the traditional graphical approach presented in Box C.2.
- 23 In neoclassical economics, a Pareto improvement is characterized by an action that makes at least one individual better off without making any other individual worse off. Pareto optimality describes a situation where no further improvements to welfare can be made. The Pareto optimum is indifferent to the distributional consequences of the outcome.
- 24 Dixit and Norman (1980) have shown that intra-PTA commodity taxes and subsidies are sufficient to obtain the same result without lump-sum transfers.

- 25 Schiff (1999) states that the volume of trade does not necessarily provide an objective measure of the extent to which trading partners are "natural" because the volume of trade is itself affected by policy. Instead, Schiff proposes to define countries as "natural trading partners" if they tend to import what the prospective partner exports.
- 26 For instance, Bustos (2011) studies the impact of MERCOSUR on technology upgrading by Argentinean firms. She shows that the increase in revenues produced by trade integration can induce exporters to upgrade technology. An empirical test of the model reveals that firms in industries facing higher reductions in Brazil's tariffs increase investment in technology faster. Similarly, there is evidence that NAFTA had positive effects on productivity and technology adoption for new exporting firms. In particular, Lileeva and Trefler (2010) find that lower-productivity Canadian plants that were induced by the tariff cuts to start exporting, increased their labour productivity, engaged in more product innovation, and had high adoption rates of advanced manufacturing technologies.
- 27 A summary of the main findings is provided in Appendix Table C.1.
- 28 Other studies analysing the welfare effects of NAFTA through a general equilibrium approach are Brown (1994); Brown et al. (1992); Brown et al. (1995); Cox (1994); Cox (1995); Cox and Harris (1992); Sobarzo (1992); Sobarzo (1994); Sobarzo (1995).
- 29 In an econometric model, a variable is said to be endogenous when there is a correlation between the variable and the error term, which is the unexplained deviation of sample data from their unobservable "true" value.
- 30 In a recent paper, Baier and Bergstrand (2009) provide evidence of the trade effect of PTAs by using non-parametric estimates. When the selection into a PTA is not random, as shown by Baier and Bergstrand (2004), and some non-linearities exist between co-variables in gravity equation and PTA dummies (see Frankel, 1997, and Brada and Mendez, 1985), parametric estimators can be biased. In this case, non-parametric estimators are needed. Using this econometric technique, the authors provide more economically plausible effects of PTAs on trade compared to previous estimates.
- 31 The likelihood of a PTA is shown to depend on: (i) geography (the closer the two countries are to each other and the further they are to the rest of the world); (ii) income (the larger their GDPs and the smaller the difference between their GDPs); and (iii) endowments (the larger their relative factor endowment difference and the wider absolute difference between their and the rest of the world's capital-labour ratios).
- 32 Bergstrand et al. (2010) find similar results considering the timing of all PTAs by using a duration analysis.
- 33 Other studies include Richardson (1994) and Panagariya and Findlay (1996).
- 34 The prospects for an agreement improve if politically sensitive sectors can be excluded from the agreement (Grossman and Helpman, 1995). This is because sectors that anticipate large losses from a PTA, and lobby for rejection, may be indifferent if the agreement would not alter the protection they are granted from the government. In other words, excluding some sectors may be a way to diffuse political opposition to an agreement and improve the chances of achieving an accord that is both politically viable and welfare improving.
- 35 The work by Krishna (1998) has also important implications for the regionalism versus multilateralism debate, as it implies that politically feasible PTAs are likely to hinder multilateral trade opening. This issue will be further taken up in Section E.
- 36 This would be the case if p_B^T , the border price faced by producers located in 1 that sell in the Home market, is lower than p_C , the price at which producers located in 2 can sell in Home.
- 37 Those analyses are restricted to non-cooperative multilateral settings (i.e. where a multilateral trade agreement such as the GATT/WTO is not in place). Ornelas (2008) studies how the formation of PTAs affects external tariffs and global welfare in a cooperative multilateral environment. This model shows that the complementarity between external and preferential tariffs found in the literature discussed in Section C.2(e) generalizes to the case where cooperation at the multilateral level is significant.
- 38 Other works that have made a similar point on the role of trade preferences in inducing cooperation in other policy domains are Jackson (1997); Perroni and Whalley (2000); and World Bank (2000).
- 39 Hereafter referred to as RoOs.
- 40 This is affected by the MNCs operating in Chile, of which 53 per cent responded that the RoOs had been the deciding factor. In the other three countries, less than 20 per cent of MNCs reported RoOs as the determining factor.
- 41 The authors control for other variables that changed between the pre-1997 and post-1997 periods, as well as for unobservable pair-specific factors.
- 42 Note that Table C.1 does not necessarily imply a linear progression between different stages of integration. For instance, a customs union can be formed even in the absence of FTA+ harmonizations or a monetary union does not necessarily imply that a common market has been preliminarily established.
- 43 See Section B.1 for data and a further discussion.
- 44 Systematic empirical analysis of the international fragmentation of production is missing due to lack of data. However, recent economic literature highlights three major trends. First, both merchandise and services offshoring has rapidly increased in the last two decades. Second, although international outsourcing of intermediate goods is quantitatively more important, services offshoring has been increasing at a faster pace in recent years. Third, these trends have been widespread across sectors and types of inputs (Helpman, 2006).
- 45 See Lipson (1982); Cantwell (1994); Cheng et al. (2000); Arndt and Kierzkowski (2001); Cheng and Kierzkowski (2001); Ando (2005); and Blanchard (2005).
- 46 See Arndt (2004a, 2004b).
- 47 Potential cost savings from intra-product specialization may be lowered by restrictive rules of origin in the case of a free trade area.
- 48 See Grunwald and Flamm (1985).
- 49 In addition, studies such as Anderson and van Wincoop (2004) have also shown that, following recent waves of liberalization, non-tariff barriers to trade like shipping costs have become more relevant.

- 50 See Fujita et al. (2001) for a theoretical analysis of clustering at the international level.
- 51 Several empirical papers using gravity models show that there is a positive relationship between proximity to international centres of economic activity and per capita income levels (Hummels, 1995; Leamer, 1997).
- 52 Horizontal FDI, on the other hand, is still determined mostly by market size and these investment flows are characterized by being between developed economies.
- 53 The lack of a deep Asian regional trade agreement has been compensated with other ways of liberalization such as bilateral investment treaties (BITs), which, according to UNCTAD, increased dramatically during the 1990s, and unilateral liberalization and pro-business reforms promoted by emerging markets to attract FDI. In addition, there is also evidence that several countries in East Asia have concentrated their public resources on the development of economic infrastructures that facilitate production-sharing (Ando and Kimura, 2005; Ando, 2005).
- 54 In the Antràs and Staiger (2008) model, final goods producers and input suppliers are located in different countries. Contracts are incomplete and investments are relation-specific. In this context, governments have an incentive to use trade policy beyond terms-of-trade effects, as it affects the conditions of *ex post* bargaining between foreign suppliers and domestic producers. This is at the root of the new cross-border spillover effect created by the rise in offshoring.
- 55 Beggar-thy-neighbour is an expression in economics describing policies that seek benefits for one country at the expense of others.
- 56 Common policies and regulations are seen here as the result of international cooperation. An alternative is that one country that has a higher bargaining power imposes its policy and regulatory framework on the other (possibly in exchange for market access or as a form of hegemonic imposition). The latter case is briefly discussed below.
- 57 For a survey of this literature, see Oates (1999). Ruta (2005) and Alesina and Spolaore (2005) provide extensive discussions of the related political economy literature on deep integration (i.e. the formation of international unions).
- 58 The Oates Theorem is based on the assumption that governments have no political motivations and maximize social welfare. A large body of literature has revisited this principle in models that account for political motivations of governments (Alesina and Spolaore, 1997; Bolton and Roland, 1997; Besley and Coate, 2003; Alesina and Spolaore, 2005; Alesina et al., 2005; Lockwood, 2008; Brou and Ruta, 2006). These political economy motivations can explain the departure from Oates' normative theory and the observed allocation of competencies in the EU (Ruta, 2010).

Technical Appendix: Systemic effects of PTAs

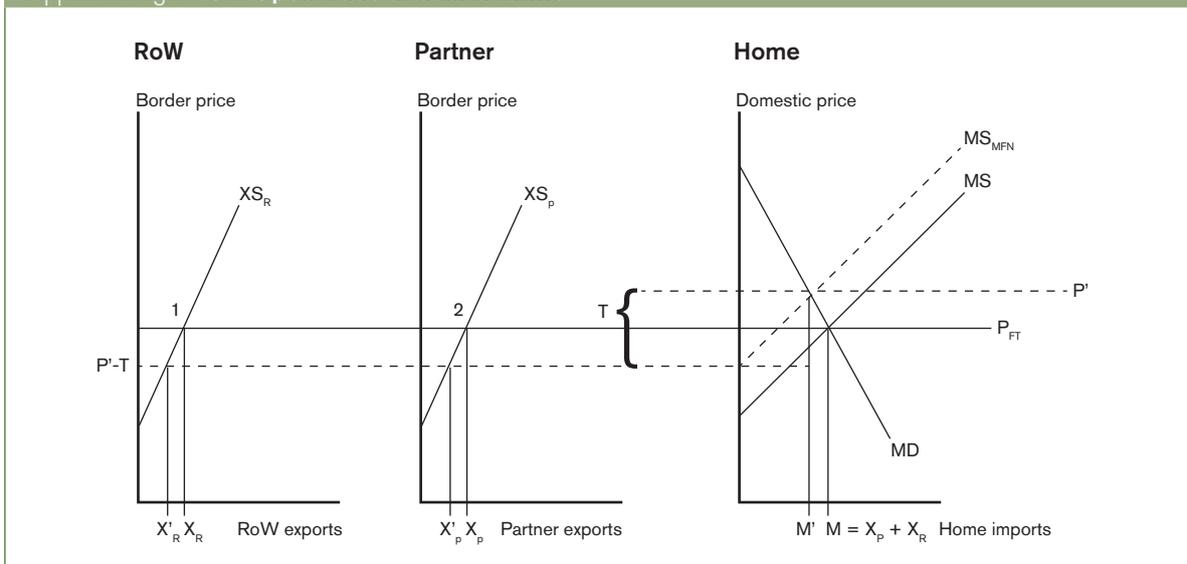
This appendix focuses on the systemic effects of PTAs – that is, on the consequences of preferential arrangements for members and non-members. The approach used is based on a graphical analysis and draws on the work of Baldwin and Wyplosz (2004).

Suppose that initially there is open trade across all countries. Under these conditions, Home imports the quantity M at a price of P_{FT} defined by the equilibrium of the import supply (MS) and import demand (MD) curves in Home (see Appendix Figure C.1). Note that M is the sum of the export quantities from RoW (X_R) and Partner (X_P) given by the intersection of the open trade price line P_{FT} , with each country export supply curve shown as points 1 and 2 in the diagram, respectively.

If Home moves from free trade to applying a uniform MFN tariff to all countries, the imposition of such a tariff shifts the import supply curve up to MS_{MFN} . As a consequence of the tariff T , the domestic price for the good at Home rises to P' and the quantity of imports is reduced to M' . Meanwhile, the new border price for countries exporting to Home is given by $P' - T$. At this lower price, producers from RoW and Partner are willing to supply less and exports are reduced to X'_R and X'_P , respectively.

After Home and Partner conclude a PTA, one of Home's import suppliers gets duty-free access while the rest still pay T . Therefore, the new import supply curve in Home, given by MS_{PTA} , will lie between the original open trade and MFN supply curves (Appendix

Appendix Figure C.1: Open trade and MFN tariffs



Appendix Figure C.2: PTA price and quantity effects

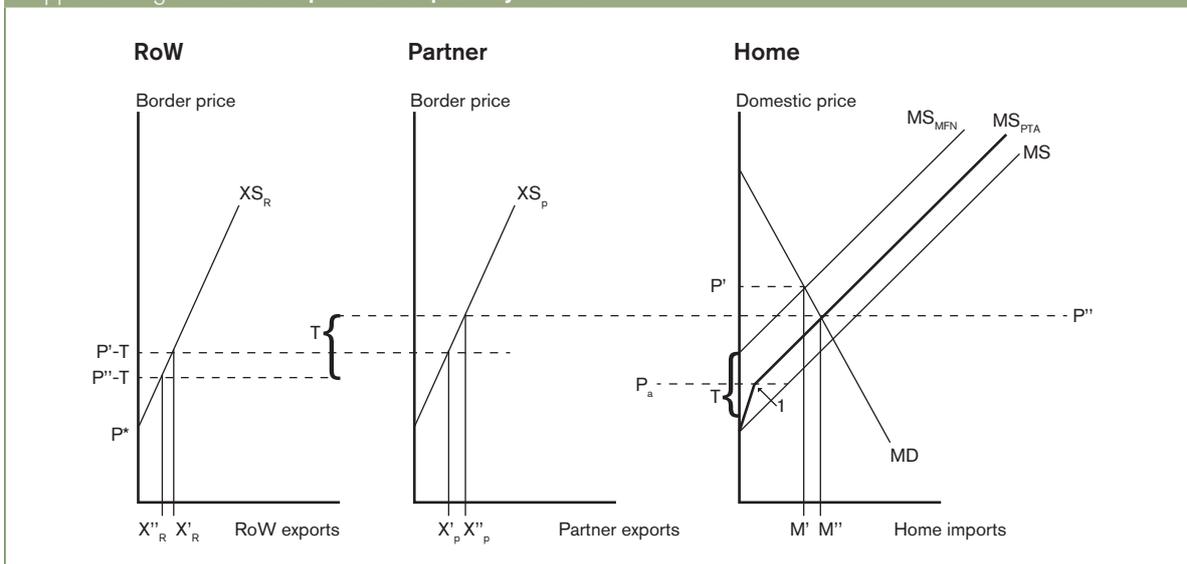


Figure C.2). MS_{PTA} is not a straight line because there is a threshold price below which only producers from Partner will be willing to export. The tariff prevents RoW firms from exporting until the domestic price at Home rises above the price marked P_a . This is so because when Home's domestic price is below P_a , the border price faced by RoW exports is below their zero-supply price marked as P^* . Consequently, Partner firms have an effective "monopoly" over the access to Home's market up to the quantity denoted by the point 1. After this point, firms from RoW will also supply imports to Home and MS_{PTA} resumes its normal slope.

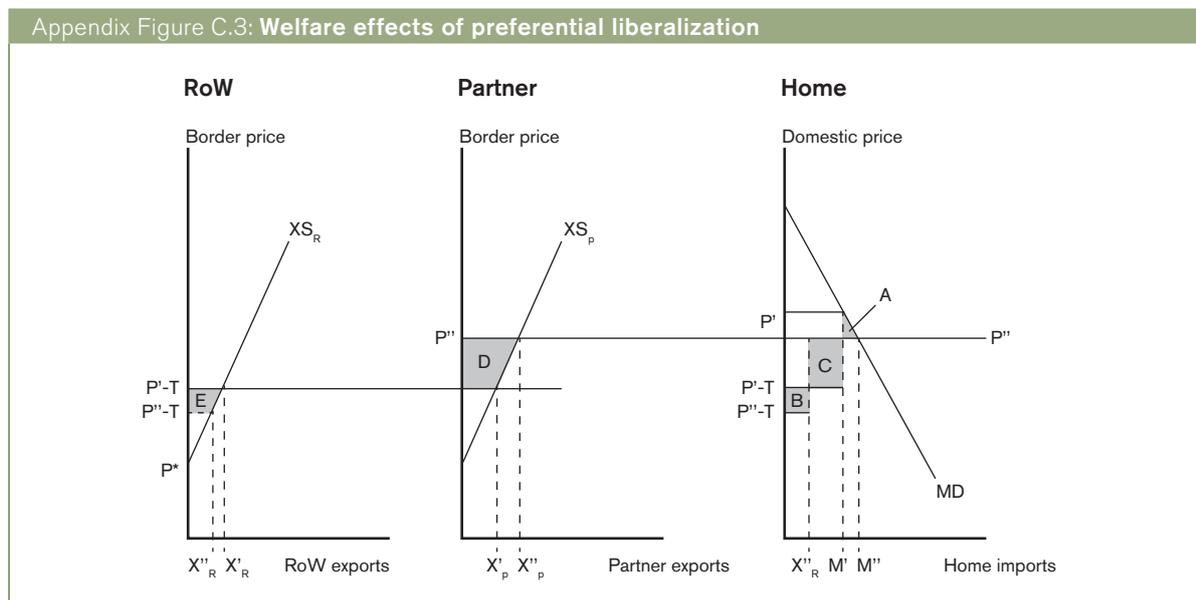
In the post-PTA equilibrium where MS_{PTA} meets MD, Home will import the quantity M'' and the new domestic price is P'' , which is lower than the MFN domestic price P' . The PTA's impact on border prices is more complex. For Partner-based producers, liberalization means that their border price rises from $P' - T$ to P'' , Home's new domestic price. For RoW-based producers, however, the border price falls from $P' - T$ to $P'' - T$. A way to understand this effect is to think that RoW firms must cut their border price so that they can enter Home's market and be competitive (be able to sell at a domestic price of P'') after the tariff T is added to their exports. As a result of this change in border prices, Partner exports increase to X''_P while those from RoW fall to X''_R .

The change in Home's import composition where goods from Partner are favoured over those of RoW is known as trade diversion. In other words, discriminatory liberalization induces Home to switch some of its purchases to import suppliers who benefit from the PTA and away from suppliers from nations that were excluded. The PTA has distorted price signals so that Home consumers are not aware that Partner goods may actually cost more than those from RoW. Home consumers ignore the border price of goods and only observe the domestic price P'' , which is the same for imports from any source.

To measure the welfare effects of the PTA, we must evaluate the impact it has on the foreign exporting countries (Partner and RoW) and on the importing country (Home). These effects are shown in Appendix Figure C.3. It is straightforward that the trade agreement has favoured Partner as it experiences a positive border price effect (from price $P' - T$ to P'') and a positive trade volume effect (from quantity X'_P to X''_P). Thus, Partner's gains are captured by the shaded area D. The opposite is true of RoW as it experiences equal but negative effects. RoW loses from the PTA because it faces a lower border price for its goods at $P'' - T$ and its trade volume also falls to the quantity X''_R . These losses are captured by the shaded area E.

The PTA has more ambiguous welfare effects on Home as it has created a positive trade-volume effect but also some conflicting terms-of-trade effects that stem from the differentiated (discriminatory) post-PTA border-prices Partner and RoW face. By lowering the domestic price, preferential liberalization has increased imports from M' to M'' , leading to a gain in consumption measured by the shaded area A. The positive trade-volume effect that has led to an efficiency gain in consumption can be seen as the trade creation effect of the PTA. In other words, the PTA has created trade by allowing Home to add the import quantity $M'' - M'$ that was not present before the agreement.

Turning to the price effects of the PTA, Home experiences an improvement in terms of trade against RoW as imports from this country have become cheaper. Thus, Home imports a quantity of X''_R from RoW at a lower cost and gains from this change in border price (the shaded area B). The area B can be seen as a production efficiency gain, as producers from RoW have to become more efficient to compete in Home's market while facing a lower border price. On the other hand, Home experiences a deterioration in terms-of-trade against Partner as imports from this country have become more expensive after the PTA.



The hike in the border price affects the quantity $M' - X'_R$ and yields a loss to Home equal to the shaded area marked C in the diagram. Since we have assumed Partner and RoW to be identical, and therefore there is not a more efficient producer, we concluded that under open trade Home imported an equal amount from both countries (50-50 share). After the PTA, however,

imports from Partner are favoured and represent a larger share of Home's imports. Thus, a portion of area C captures the trade-diversion effect of the PTA, namely the amount of imports that have been diverted away from RoW's original share in Home's market. The net welfare effects of the PTA on Home are given by $(A + B) - C$, which might be positive or negative.

Appendix Table C.1: Empirical findings on trade creation and trade diversion

Authors	Data and methodology	Trade creation	Trade diversion
Romalis (2007)	CGE approach on trade flows between the United States, Canada, Mexico and the rest of the world in the period 1989-1999. The paper focuses on Canada-US Free Trade Agreement (CUSFTA) and North America Free Trade Agreement (NAFTA)	Evidence of trade creation only for trade flows involving Mexico	Evidence of trade diversion by CUSFTA and NAFTA
Trefler (2004)	CGE approach on Canadian imports from US and the rest of the world in the period 1989-1996. The paper focuses on NAFTA	NAFTA raised Canadian imports from the United States	NAFTA lowered Canadian imports from the rest of the world
Clausing (2001)	CGE approach on US imports from Canada and the rest of the world between 1989 and 1994. The paper focuses on CUSFTA	The tariff liberalization by CUSFTA was responsible for USD 21 increase in US imports from Canada between 1989 and 1994	There is no evidence of trade diversion
Soloaga and Winters (2001)	Gravity model on bilateral imports for 58 countries from 1980 to 1996. The paper focuses on the European Union (EU), European Free Trade Area (EFTA), Association of Southeast Asian Nations (ASEAN), Gulf Co-operation Council (GULFSCOOP), NAFTA, Central American Common Market (CACM), Latin American Integration Association (LAIA), Andean Community (ANDEAN), Southern Common Market (MERCOSUR)	All the PTAs involving Latin American countries have a positive effect on intra-bloc trade	Trade diversion effect for EU and EFTA
Baier and Bergstrand (2007)	Gravity model on bilateral trade flows for 96 countries from 1960 to 2000	PTA increases trade between two member countries by about 100 per cent on average after 10 years	-
Frankel et al. (1995)	Gravity model on bilateral trade flows for 63 countries over the period 1965-1990. The paper focuses on East Asia Economic Caucus (EAEC), Asia-Pacific Economic Co-operation (APEC), European Community (EC), EFTA, NAFTA, MERCOSUR and ANDEAN	PTAs boost trade between member countries (exceptions are EFTA and NAFTA which do not have significant effect on trade flows)	-
Lee and Shin (2006)	Gravity model on bilateral trade flows for 175 countries from 1948 to 1999	Joining a PTA raises intra-bloc trade by 51.6 per cent	PTA members' trade with non-members rises by 6.5 per cent
Carrere (2006)	Gravity model on bilateral imports for 130 countries from 1962-1996. The paper focuses on EU, ANDEAN, CACM, LAIA, MERCOSUR, NAFTA and ASEAN	There is evidence of trade creation effect for 5 out of 7 PTAs analysed	The increase in intra-regional trade is coupled with a reduction in imports from the rest of the world in 6 out of 7 PTAs analysed
Egger (2004)	Gravity model on bilateral exports for OECD countries from 1986 to 1997. The paper focuses on EU, EFTA and NAFTA	Strong evidence of trade creation effect	-
Magee (2008)	Gravity model on bilateral trade flows for 133 countries from 1980 to 1998	The long run impact of a PTA is estimated to be an 89 per cent increase in trade flows	No evidence of trade diversion
Silva and Tenreyro (2006)	Gravity model on bilateral export flows for 136 countries in 1990	Strong evidence of trade creation	-

Appendix Table C.1: Empirical findings on trade creation and trade diversion (continued)

Authors	Data and methodology	Trade creation	Trade diversion
Ghosh and Yamarik (2004)	Gravity model on bilateral trade flows for 186 countries over the period 1970-1995	PTA membership raises intra-bloc trade by 39 per cent	PTA membership lowers trade outside the bloc by 6 per cent
Baier and Bergstrand (2009)	Non-parametric estimations on bilateral trade flows for 96 countries over the period 1965-2000	Average long run effect of PTAs on trade flows is 100 per cent	-
Aitken (1973)	Gravity model on bilateral trade flows for 12 countries over the period 1951-1967. The paper focuses on EFTA and EEC	Positive effect of PTAs on bilateral trade	-
Bergstrand (1985)	Gravity model on bilateral trade flows for 15 countries for years 1965, 1966, 1975 and 1976. The paper focuses on EFTA and EEC	PTAs had a positive effect on bilateral trade	-
Acharya et al. (2011)	Gravity model on bilateral trade flows for 179 countries over the period 1970-2008	The impact of PTAs on intra-PTA trade is positive for 17 out of 22 PTAs analysed. PTAs also increase imports and exports from member countries to non-member countries by 20 per cent and 21.5 per cent on average	Intra-PTA trade diversion has been found in 3 out of 22 PTAs analysed; 5 PTAs lower the extra-PTA exports from member to non-member countries