

# Understanding the Effects of Preferential Trade Agreements: A Theoretical Overview

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## Abstract

In recent years, the number of preferential trade agreements (PTAs) increases rapidly. In tandem with the evolution of the new trade theory, the economic analysis of PTAs has also been developed drastically. This paper intends to organize a complicated mass of existing theories of PTAs and places special emphasis on their relationship with multilateral trade liberalization. Some new topics such as the effects of internal market integration or those of rules of origin are also discussed.

## 1 Introduction

In recent years, the world trading system has experienced a remarkable and worldwide proliferation of Preferential Trade Agreements (PTAs). PTAs that are noticed in force to the General Agreement on Tariffs and Trade (GATT) and its successor, the World Trade Organization (WTO), increased rapidly from 1990s (see Figure 1).<sup>1</sup> As for the scope, almost all WTO members were participating in one or more PTAs at the end of 2004. The deepened integration and the expanding membership of the European Union (EU), the North American Free Trade Agreement (NAFTA), the South American Common Market (MERCOSUR), the Australia-New Zealand Closer Economic Relations Trade Agreement (ANZCERTA) are major examples. While the Asian nations have taken a passive attitude towards PTAs until recently, they have begun to conclude many bilateral agreements with the arrival of the new century.

Preferential trade agreements (PTAs) are agreements by which participating countries discriminatorily remove trade barriers among their countries, with protection against nonparticipants being maintained.<sup>2</sup> The

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1 The first agreement was the 1957 Treaty of Rome to form the European Economic Community (EEC). It went into effect in 1958.

2 Many terms are used to represent the same type of agreements. The WTO refers to them as Regional Trade Agreements (RTAs). They are also often referred to as Regional Integration Arrangements (RIAs), Regional Trading Blocs (or trading blocs), or as Regional Economic Integration. Many recent agreements have been concluded between countries not in geographical proximity, and the recent wave of overlapping FTAs should be considered as networks of countries, rather than the “blocs” of countries. Hence, this study adopts the term “preferential” and “agreements” rather than “regional” and “blocs”. In this article, however, we sometimes use those terms interchangeably.

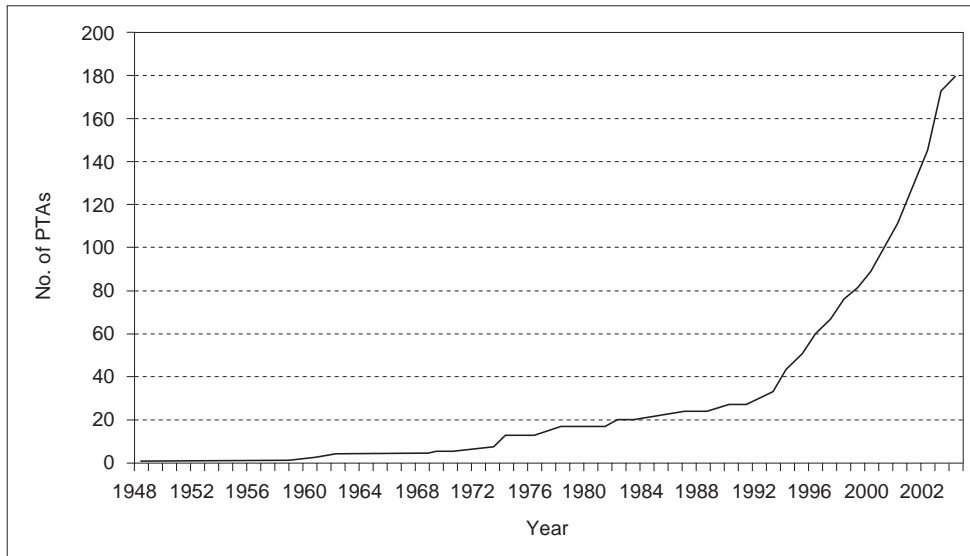


Figure 1: PTAs in force by date of entry into force (Source: WTO Secretariat)

GATT/WTO defines three basic categories of regional trade agreements: Free Trade Area (FTA), Customs Union (CU), and interim agreements to implement FTAs or CUs. A Free Trade Area (FTA), or a Free Trade Agreement, is a PTA in which each member country independently sets its own external tariff against non-members. A Customs Union (CU) is a PTA where member countries set a common external tariff (CET). The NAFTA and European Free Trade Association (EFTA) are examples of FTAs. The EU and MERCOSUR are examples of CUs.

Although discriminatory policies violate the Most-Favored-Nations (MFN) principle in the GATT/WTO, PTAs are admitted as an exception under Article XXIV of the GATT. The Article states conditions under which members of GATT/WTO may form PTAs. The main conditions are: (i) trade barriers against non-members must not be higher than pre-PTA levels on the whole, (ii) members must eliminate trade barriers among members on 'substantially all trade', (iii) interim agreements to schedule the process of internal trade liberalization must be completed within a reasonable time.

During the period 1985-2005, countries also engaged in multilateral trade liberalization in the negotiation round of the GATT/WTO. The members of GATT/WTO have experienced long-standing trade negotiations under the Uruguay Round (1986-1994), the establishment of the WTO (January 1995), the breakdown in negotiations in the WTO Seattle Ministerial Conference (November 1999), the launch of the Doha Development Agenda (2001-), and so on. The proliferation of PTAs around the world, which has occurred in tandem with the development of a multilateral regime in trade cooperation, has led to an interest in the economic effects of this proliferation as well as its implications for the world trading system. A concern about PTAs has been that they may become a "fortress", amplify trade protection, and undermine the multilateral trading system. A positive view has also been expressed, namely, that PTAs can be stepping stones to realize worldwide trade liberalization. To make a judgment, extensive economic analyses are essential. What are the effects of PTAs? Do they harm countries outside PTAs? Are there differences between FTAs and CUs?

Under what conditions does a proliferation of PTAs promote further trade liberalization? These are questions that have been addressed in the literature.

Theoretical investigation of PTAs has a history of more than half a century. This paper gives a short review of the theory of PTAs, with a focus on the topics that most concern the analysis provided in the paper.<sup>3</sup>

## 2 The traditional theory

### 2.1 Trade creation and trade diversion

The traditional theories of PTAs mainly examine the static effects of PTAs. A seminal work, Viner (1950), introduces a concept of “trade creation” and “trade diversion” and shows that if the partner countries are less efficient than those outside the PTA, the formation of a PTA causes members’ welfare to deteriorate if their respective external tariffs are maintained. Meade (1955) and Lipsey (1957) generalize Viner’s result, and show that even if PTAs are trade-diverting, they may improve member’s welfare since a benefit from less distorted consumption can outweigh the loss of production efficiency.<sup>4</sup> Corden (1972) introduces scale economies and shows that the concepts of trade creation and trade diversion are still relevant, but there are additional effects stemming from cost reduction by production specialization.

In the case of a large country, the formation of PTAs also influences terms of trade among countries. Mundell (1964) shows that, even if external tariffs are unchanged before and after the formation of a PTA, the PTA may have the beggar-thy-neighbor effect by improving terms of trade for member countries vis-à-vis nonmembers. This is because, as long as goods are substitutes, the increased trade among member countries will decrease demand for goods originating outside the PTAs, and the world price of those goods will have to fall in order to clear the market. The same result is obtained in the monopolistic competition model (see for instance, Goto and Hamada, 1999). In fact, Winters and Chang (2000) and Chang and Winters (2002) provide evidences that the creation of a PTA is associated with declines in the prices of nonmembers’ exports to the region.<sup>5</sup>

### 2.2 A Pareto-improving PTA

Thus, a Pareto-improving PTA requires adjustments of external tariffs to eliminate the terms of trade changes. Vanek (1965) states, and Ohyama (1972) and Kemp and Wan (1976) prove that a CU that elimi-

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3 Baldwin and Venables (1995), Panagariya (2000), and Krishna (2005) provide a more detailed survey of the literature.

4 Thus, the trade-creation and the trade-diversion taxonomy cannot provide strictly accurate results on the welfare implications of PTAs. Kowalczyk (2000) disaggregates the welfare changes in general equilibrium models under perfect competition into terms-of-trade effect and volume-of-trade effect. Furusawa and Konishi (2004) propose a new decomposition of welfare effects when consumers have quasi-linear utility functions. They suggest that social welfare is decomposed into the sum of consumers’ gross utilities and trade surplus of nonnumeraire commodities. The latter decomposition is applicable to economies under imperfect competition with constant-returns-to-scale production technologies.

5 Wintes and Chang (2000) show that when Spain joined the EC, prices of its imports from OECD countries fell, while Chang and Winters (2002) show that the creation of MERCOSUR has had the same result.

nates internal trade barriers and sets its common external tariff to fix a net trade vector with outside countries necessarily improves the welfare of the CU as a whole and does not hurt the outside countries.<sup>6</sup> With a compensation scheme within the union, every individual member is better off (or no worse off) and it is always feasible if the compensation to each member is determined by its pre-union trade vector (Grinols, 1981). The argument is also applicable to CU formation under imperfect competition. For example, Long and Soubeyran (1997) prove the existence of the Vanek-Ohyama-Kemp-Wan tariff under Cournot oligopoly.

As for FTAs, Panagariya and Krishna (2002) prove the existence of a Pareto-improving FTA, for which net trade vectors of individual members are fixed at the pre-FTA level and Rules of Origin (ROOs) are set to prevent transshipment of goods from a low external-tariff country to a high external-tariff country.

### 3 Endogenous external tariffs

Although traditional analysis proved the existence of Pareto-improving PTAs with the adjustment of external tariffs, this does not automatically mean countries have incentives to set Pareto-improving tariffs. Many studies have examined the endogenous determination of external tariffs, when members set them to maximize their individual social welfare.

#### 3.1 FTA vs. CU

In general, members of a CU set a common external tariff that is higher than the external tariffs of an FTA set by individual members. Whenever two member countries import the same good, increase in the external tariff of one member benefits not only producers of the tariff-increasing country, but also producers of the other members. Since a CU must set a common external tariff, members are able to internalize the externality and the equilibrium external tariff becomes higher than that of an FTA. The effect is referred to as the *externality-internalizing effect* (Kennan and Riezman, 1990). The opposite result is obtained by Panagariya and Findlay (1996) and Richardson (1994b), who argue that because of the free-rider problem in lobbying activities, the external tariffs of CUs are lower than those of FTAs.

As for the comparison with the pre-PTA level, members of an FTA would set external tariffs below the pre-FTA level. Compared to a nondiscriminatory increase in tariffs, a discriminatory tariff increase promotes, rather than prevents, imports from the FTA partner. As a result, the tariff elasticity of import demands becomes lower, reducing the optimal level of tariffs towards nonmembers. This effect is referred to as the *tariff-complementarity effect* (Bagwell and Staiger, 1999). The trade-liberalizing nature of FTAs is also suggested by Richardson (1993) in a different mechanism. He shows in a political-economy model that a trade diversion by an FTA contracts domestic inefficient industry and reduces the support for high protection against nonmembers. Richardson (1995) also argues that the formation of an FTA brings about indirect trade deflection, the redirection of internal goods from domestic sales in low-tariff members to exports to high-tariff members. The trade deflection induces tariff-revenue competition among member countries, and leads to

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6 Thus, if import barriers against nonmembers take the form of quotas and they are initially binding, CU formation does not hurt nonmembers (Yeh, 1998).

lower external tariffs.<sup>7</sup>

Whether the CET of a CU exceeds the pre-CU tariffs is, on the other hand, uncertain and it depends on the relative magnitude of two opposing effects: the externality-internalizing effect and the tariff-complementarity effect. Krugman (1991) shows that the formation of CUs leads to higher external tariffs in the context of a monopolistic competition model. Syropoulos (1999) uses a model in which trade patterns are based on comparative advantage and shows that the optimal CET may be lower than the pre-CU level.

What is more important are the welfare consequences of external tariff changes. Surprisingly, almost all previous analyses have shown that the tariff-complementarity effect is large enough to make the equilibrium external tariffs of FTAs below the Kemp-Wan (or Panagariya-Krishna) tariff (e.g., Bagwell and Staiger, 1999; Yi, 2000; Bond, Riezman, and Syropoulos, 2004). Thus, the FTA with endogenously determined external tariffs benefits both members and nonmembers. Ornelas (2005) shows that the Pareto-improving nature of FTAs is amplified rather than reduced when governments have political motivations and are significantly concerned about producers' interests. The CU with an endogenously determined common external tariff, on the other hand, usually hurts nonmember countries (Kennan and Riezman, 1990; Yi, 1996; Kose and Riezman, 2000). Even if Article XXIV of the GATT restrains CU members from raising their common external tariff, the CU constitutes a beggar-thy-neighbor effect, irrespective of whether the constraint is binding or not (Syropoulos, 1999).

### 3.2 Reactions from nonmembers

Changes in external tariffs may provoke reactions from nonmembers. Previous analyses suggest that external tariffs of PTAs are strategic substitutes for nonmembers' tariffs. This is because an increase in the external tariff of a PTA reduces the PTA's import demands for goods produced outside the PTA, thereby increasing price elasticity of import demands and mitigating outside countries' market powers in world trade. By combining with the aforementioned result that members of an FTA reduce external tariffs, it is anticipated that nonmembers of FTAs will behave more aggressively in their tariff determinations whereas those of CUs may or may not increase their tariffs. In fact, Kennan and Riezman (1990) show by numerical examples that a nonmember increases tariffs in the case of FTA formation and decreases tariffs in the case of CU formation. Gatsios and Karp (1991) suggest that the members of a CU can be better off by delegating the tariff-setting to the more 'aggressive' member. Bond et al. (2004) show that members of an FTA may experience welfare loss since the loss from the nonmember's tariff-increase is large enough to offset gains from FTA formation.

In summary, when external tariffs are endogenously determined, Pareto-improvement following the formation of a PTA depends on the type of PTA, and it is more likely when the PTA is an FTA. FTAs may, however, backfire in that they lead to aggressive reactions from nonmembers and harm member countries.

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7 Cadot, de Melo, and Olarreaga (1999) model political process explicitly à la Grossman and Helpman (1994) and show the intra-bloc trade deflection reduces the lobby's influence on the trade policy and makes external tariffs of an FTA lower than those of a CU.

## 4 The decision to form PTAs

As is shown above, traditional literature suggests that formation of a PTA may or may not increase welfare of member countries, and a welfare-reducing PTA is more likely when the exporters of partner countries are less efficient. In either case, however, the first-best policy for a country seems to be to pursue free trade rather than to form a PTA. In fact, Johnson (1965) and Cooper and Massell (1965) show that a policy of nondiscriminatory, unilateral tariff reduction is superior to discriminatory reforms. They suggest that discriminatory arrangements can be justified only by noneconomic objectives (the Johnson-Cooper-Massell proposition). Although Wonnacott and Wonnacott (1981) argue that reciprocal tariff reduction by a partner or the existence of transport costs may justify the superiority of a CU over unilateral tariff reduction, the CU is nevertheless dominated by multilateral free trade in their model.

Thus, the theory of PTAs is inherently of a second-best nature. PTAs can improve national welfare when the economy begins at an equilibrium in which the market has distortions or imperfections. The presence of market imperfections or distortions being presumed, exploration of why countries choose to form PTAs or who they will choose as partners have been the central questions of the modern theories of PTAs.

### 4.1 Terms of trade externality

The existence of monopoly power at country level, namely the existence of the terms of trade effect, provides one explanation. Riezman (1985) integrates the optimal tariff theory and countries' coalition formation decisions between three countries. A CU can be an equilibrium even when all members would have higher welfare with free trade. As is shown in Kennan and Riezman (1988), a big country could earn higher welfare in optimal tariff equilibrium than that attained in free trade equilibrium. Small countries become 'big' by forming a CU and vie with the big country. As a result, all countries become worse off than with free trade. A CU intensifies the tariff war and yields an outcome like the Prisoners' Dilemma game. There is also a case in which all members benefit from a CU relative to free trade if countries are of similar size. This approach is also developed by Kennan and Riezman (1990), and their results are examined in different settings (see Kose and Riezman, 2000; Abrego, Riezman, Whalley, 2004).

### 4.2 Imperfect competition

Another explanation is the existence of monopoly power at firm level. As in the standard literature of strategic trade policy, PTA formation may have a rent-shifting effect under international monopoly or oligopoly. The distributive effect makes PTAs attractive for each country. Kiyono (1993) and Raff (2001) consider a country's choice of partners. In contrast to the Vinerian scenario, both papers show that countries with the *higher* marginal costs of production are chosen as partners. It has been suggested that, when there are more than two countries exporting the same good, an importing country has an incentive to impose higher tariffs on imports from low-cost countries since it can extract more monopoly rents from exporting firms (Gatsios, 1990). The MFN principle of GATT/WTO precludes such a tariff discrimination, but countries are allowed to do so by PTAs. Although member countries become better off, the world welfare becomes worse off with

the inefficient PTAs.

### 4.3 Politically motivated policy makers

The other explanation of PTA formation is the existence of politically motivated policy makers. Even though free trade generally maximizes welfare of every country, it may hurt specific individuals about which policy-makers have particular concern. In this case, PTAs can be chosen to remove or to mitigate the loss of special interest groups. Grossman and Helpman (1995) show that in a perfect competition model an FTA is most likely to be feasible when trade between members is balanced, tariff levels are similar, and particularly when trade diversion outweighs trade creation. In their model, governments are influenced by political contributions from lobbies representing production sectors. Krishna (1998) uses an imperfect competition model and also finds that trade-diverting PTAs are more likely to be adopted when governments care only about profits of domestic producers. Panagariya and Duttagupta (2002) extend Grossman and Helpman (1995) model and show that an FTA that is rejected by one of the countries under a tariff may be feasible under a voluntary export quota or an import quota for a given level of initial protection.

### 4.4 Krugman's simulation

Putting it all together, countries tend to form a PTA when the PTA increases the monopoly power of member countries in world trade, or generates a rent-shifting effect to some domestic industries. The latter effect is important when there are imperfectly competitive industries or governments are politically motivated. Clearly, the relative attractiveness of PTAs compared to free trade derives from their discriminatory nature. From this standpoint, the recent increase in PTAs seems to shake the foundations of the world trading system. Actually, Krugman (1991) shows that world welfare is minimized when the number of symmetric blocs is three, which indicates that the current trends of expanding European integration, a move towards a Free Trade Area of the Americas (FTAA), and growing connections among East Asian nations brings about the worst-case scenario.<sup>8</sup>

The striking result of Krugman (1991) sets off a debate on the impact of PTAs on the stability of the world trading system. Specifically, most of the recent analyses argue over whether the proliferation of PTAs helps or hampers the ongoing process of trade liberalization in the world. The conventional static settings are inadequate to answer the question, and dynamic perspectives that explicitly incorporate the process of preferential trade liberalization as well as the feasibility of multilateral trade liberalization are needed. The next section reviews the results of recent studies on the "dynamic time-path" issue.

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8 Krugman (1991) simultaneously divides the world consisting of  $N$  countries into blocs with symmetric size. Even if the symmetric blocs are sequentially formed, Krugman's result still holds (see Haveman, 1996). Bond and Syropoulos (1996a) allow asymmetry in bloc size. They examine the welfare consequence of the expansion of one trading bloc by drawing members symmetrically from the other trading blocs, and show that the large bloc realizes welfare above the free-trade level at the expense of the small blocs. World welfare may increase monotonically with the expansion, though the welfare of members of the large bloc may not.

## 5 The dynamic time-path analysis

While economists of this field have reached a ‘multilateral agreement’ over static effects of PTAs, much controversy exists over the dynamic time-path issue of PTAs proposed by Bhagwati (1993). Some think that PTAs slow down or even stop the process of multilateral liberalization. Others believe that they facilitate worldwide free trade when multilateral negotiations of trade liberalization fail to reach an agreement. In Bhagwati’s phrases, the former are called “stumbling blocks” and the latter “building blocks”.

### 5.1 Stumbling blocks by new membership

To date, the dynamic time-path issue has been analyzed in many papers. Overall, theoretical studies incline toward the view that PTAs are likely to undermine the attainment of multilateral trade liberalization. Burbidge, DePater, Myers, and Sengupta (1997) show that because of terms of trade improvement for members, multilateral free trade may not be an equilibrium coalition structure even if international transfers are possible. In an oligopoly model, Yi (1996) shows that although expansion of a customs union leads to multilateral free trade under the *open membership rule*, under which every country is able to participate in a bloc if it wants, free trade is stopped under the *unanimous membership rule*, that is, all countries included must share a mutual interest in the formation or expansion of the bloc. Because of the rent-shifting effects of PTAs under an international oligopoly, incumbent members may oppose the inclusion of potential new members. In a monopolistic competition model, Goto and Hamada (1999) show that sequential participation in a PTA may stop even if the level of external tariffs is constrained by Article XXIV of the GATT. McLaren (2002) argues that expectation of the formation of a future PTA induces irreversible regional specialization by sunk investment of private agents, reducing the ex post gains from multilateral liberalization.

The political economy of trade policy also magnifies concerns of PTAs becoming stumbling blocs. In a median-voter framework, Levy (1997) shows that initially feasible multilateral free trade becomes infeasible with a PTA. He integrates the Heckscher-Ohlin model and a monopolistic competition model that is based on consumers’ love of variety. A PTA among countries with similar capital-labor ratios provides large variety gains for all member countries keeping losses of voters from income redistribution minimal. Then, the subsequent multilateral liberalization becomes unattractive since gains from greater variety are limited. In an oligopoly model, Krishna (1998) assumes governments’ concerns only about producers’ profits and shows that a PTA lowers incentives for multilateral liberalization, since discriminatory liberalization by the PTA works as a device to extract rents from nonmembers’ producers and the redistributive effect may dominate gains from free access to nonmembers’ markets.

Yi (2000) and Ornelas (2005) show that nonmembers may also withdraw their support for a multilateral agreement if the PTA takes the form of an FTA. In their models, external tariffs are endogenously determined and each member of an FTA sufficiently reduces its own external tariffs to the level that benefits nonmembers. Consequently, the nonmembers’ extra gains from global free trade are reduced. In either case, the option of forming PTAs does not promote free trade at a multilateral level. Rather, it results in the fragmentation of the world trading system, which is harmful to excluded countries.



### 5.2 Expansion by overlapping FTAs

Mukunoki and Tachi (2005) consider expansion of trading blocs by overlapping FTAs in a three-country model of intra-industry trade. The paper is the first to study dynamic incentives to form overlapping FTAs and their effects on the feasibility of multilateral trade liberalization. In FTAs, member countries can set their external tariffs independently so that each member has an option to form a new FTA with outside countries without the consent of the partner countries. For example, if Country A that is a member of A-B FTA concludes a new FTA with the outside Country C, there emerges a hub-and-spoke system where Country A is a hub and Countries B and C are spokes. In CUs, on the other hand, members must set a common external tariff so that they can expand the existing bloc only through expansion by new membership, that is, the simultaneous participation of nonmember countries.

Figure 2 represents welfare ranking and a possible dynamic time-path expansion. We let  $W_H$ ,  $W_I$ ,  $W_N$ ,  $W_S$ , and  $W_O$  denote welfare by being a hub, an insider of a single PTA, no agreements, a spoke, and the outsider of a single PTA respectively. Suppose there are no agreements. Since the differences in payoff before and after the formation is  $W_I > W_N$ , the PTA between two countries (country A and country B) increases welfare of the inside countries. By contrast, the bloc worsens the outside country (country C) because

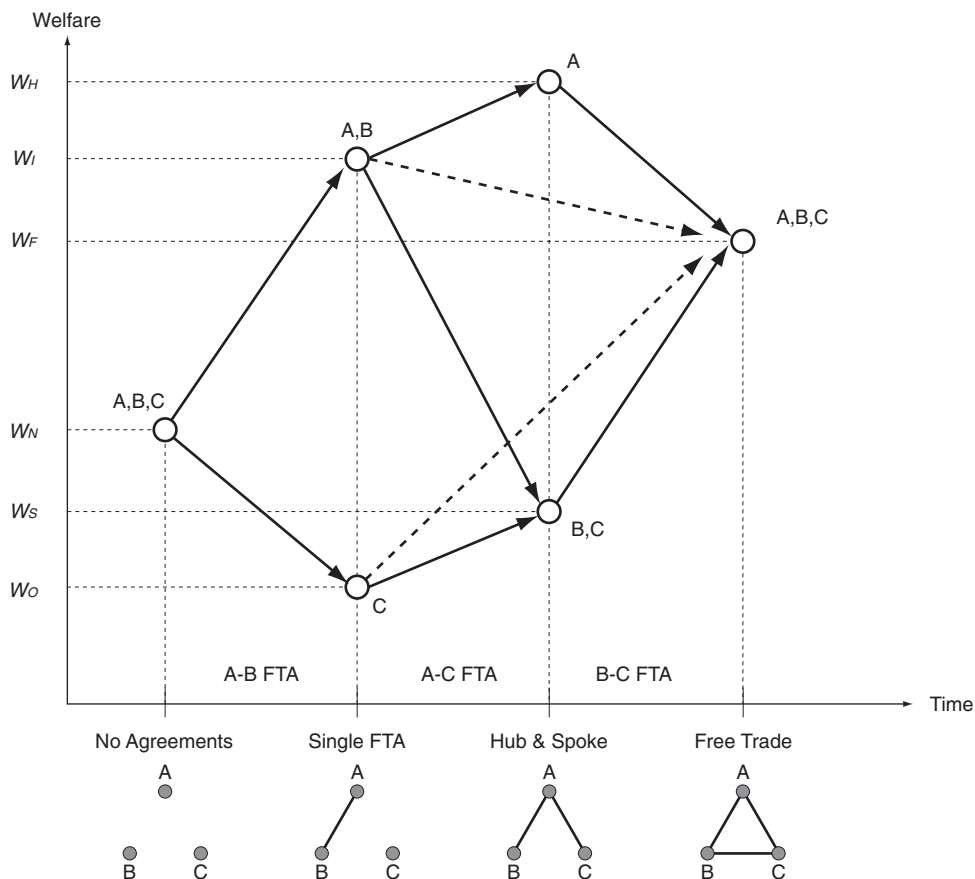


Figure 2: Welfare Ranking

$W_N > W_O$ . While greater competition lowers the profit of firm  $C$  in the bloc the profit in the domestic country, consumer surplus, and tariff revenue are unchanged as long as markets are segmented. Next, let us consider incentives to expand a bloc between  $A$  and  $B$  to multilateral free trade. We can confirm that multilateral free trade is preferred to no agreements by all countries since  $W_F > W_N$ . The trade liberalization increases the profit in foreign countries and consumer surplus more than it decreases the profit in the domestic market and tariff revenue. However, this may not be true if a PTA exists. It is obvious that an outside country would like to join in the bloc because  $W_F > W_N > W_O$ . On the other hand, it depends on the initial tariff whether inside countries prefer multilateral free trade. We can confirm  $W_F \geq W_I$  if the initial tariffs of three countries are high, and  $W_I > W_F$  otherwise. This indicates that if expansion of a trading bloc takes the form of new membership, it depends on the initial tariff whether the expansion arrives at multilateral free trade.

We alternatively investigate the situation of overlapping FTAs. A *hub-and-spoke system* arises if an outside country  $C$  does not join an existing bloc, but instead signs a bilateral agreement with only one member, for example, country  $A$ . In this case, country  $A$ , called a *hub*, has two overlapping free trade agreements with countries  $B$  and  $C$ , called *spokes*. The FTAs are assumed to be supported by rules of origin in order to prevent 'trade deflection', the situation in which each product enters through a hub country and is transhipped to another spoke. While all countries can export freely to the hub, only the hub is treated duty-free in spoke markets. We can confirm that  $W_H > W_I$  and  $W_H > W_F$ . Similarly,  $W_N > W_S$  and  $W_S > W_O$ . Hence, a hub-and-spoke system would be preferred by the hub because of its strong position. Though the abolition of protective tariffs decreases the profit of the firm in the domestic country and his tariff revenue, it increases consumer surplus and the hub benefits from free access to a new partner. These gains dominate losses. It is obvious that the hub is also preferred to multilateral free trade because the trade barrier between spokes gives the hub advantages in the spoke's markets. A new partner is willing to form the overlapping FTA since the profit in the hub market and consumer surplus increases more than the profit in domestic market and tariff revenue decreases. Meanwhile, another member  $B$  suffers damage in his partner's market without gains and therefore the overlapping FTA makes a victim of the other inside country. The only reaction  $B$  can take afterwards is to seek a spoke-spoke arrangement. Spokes would actually ratify the new FTA since the resulting multilateral free trade brings larger payoffs than the hub-and-spoke system.

The result suggests that the option of a hub-and-spoke system always achieves multilateral free trade as the equilibrium path, and it is a unique equilibrium outcome as long as time discounting is not too low. Specifically, it is the case when

$$\delta > \bar{\delta} \equiv \frac{\sqrt{W_H - W_I}}{\sqrt{W_H - W_F}}$$

is satisfied. Results suggest that FTAs tend to expand more than CUs. Mukunoki and Tachi (2005) also show that incorporating endogenous lobbying activities by producers can either enhance or hamper expansion by overlapping FTAs although these activities always make expansion by new membership less likely. In contrast to Freund (2000a), multilateral free trade can be realized even if initial tariffs are low enough and the lower initial tariffs may make expansion by overlapping FTAs more likely when governments are very concerned about political contributions.

### 5.3 Building blocks under political pressures

There are analyses that explore the advantages of PTAs for worldwide trade liberalization, but they are relatively few. Baldwin (1995) shows that new participation of an outside country further increases gains from participation and induces further expansion, which he calls the ‘domino effect’. Ethier (1998) argues that the progress of multilateral trade liberalization among industrial countries spurs a regional trade agreement between an industrial country and a particular developing country, and the agreement assures the developing country of successful reform as well as an inflow of foreign direct investment that improves domestic productivity. The reformed countries then come to take a proactive stance on multilateral trade liberalization. Freund (2000a) considers the firm’s irreversible investment and shows that the multilateral free trade attained through the PTA path generates greater world welfare than that is realized through the MTA path. Her analysis, however, concentrates on the welfare comparison *given* the two paths realize multilateral free trade, and does not consider endogenous formation of a PTA. Ederington and McCalman (2002) consider the situation where each country’s discount factor is private information, and show that a PTA promotes multilateral liberalization since countries are able to signal their commitment to trade negotiation by their participation in the PTA.

Mukunoki (2005) also investigates the dynamic time-path problem in a three-country, three-good perfect competition model. The paper applies the political economy model of trade agreements developed by Grossman and Helpman (1995). In each country, owners of the good in the import sector decide whether they will form a lobby and make political contributions. I compare two paths to the realization of multilateral free trade: nondiscriminatory trade liberalization by a multilateral trade agreement (the MTA path) and step-by-step trade liberalization through formation and expansion of a PTA (the PTA path).

Figure 3 shows possible equilibrium outcomes. In region NN, the equilibrium outcome is no trade liberalization in both paths. In region NP, the MTA is blocked by the lobby but the PTA is formed. The equilibrium outcome is no trade liberalization in the MTA path and preferential trade liberalization in the PTA-path. Although the PTA cannot attain MFT, it has an advantage over the MTA since it can partially liberalize trade when the MTA-path cannot liberalize trade. The non-member becomes worse off, the world welfare is higher in the PTA-path in this case. It should be emphasized that this result has not been explored in the existing literature. In region FP, governments are free from political pressure in both paths. The MTA-path realizes MFT but the PTA-path comes to a dead end at the preferential liberalization in equilibrium. The PTA is a ‘stumbling block’ in that it can make feasible MFT infeasible. Among them, Region NF should be emphasized. In this region, the MTA-path evokes political opposition but the PTA-path is free from political pressure. Trade liberalization via PTAs weakens strong political pressures by dividing the liberalization process into multi-steps and different periods. The outsider of the PTA also tends to be free from political influences since the PTA-formation generates a negative impact on the welfare of the outsider and it raises the necessary amount of contribution the lobby must pay the government. Hence, only the PTA-path realizes MFT. In region FF, both paths can attain MFT since neither the PTA-path nor the MTA-path faces political pressure.

The advantage of the PTA path over the MTA-path is still valid even if trade liberalization in the MTA-path proceeds gradually. Hence, the PTA path is free from political pressures and attains multilateral free trade, even when the MTA-path faces political opposition and reaches no agreements under some conditions.

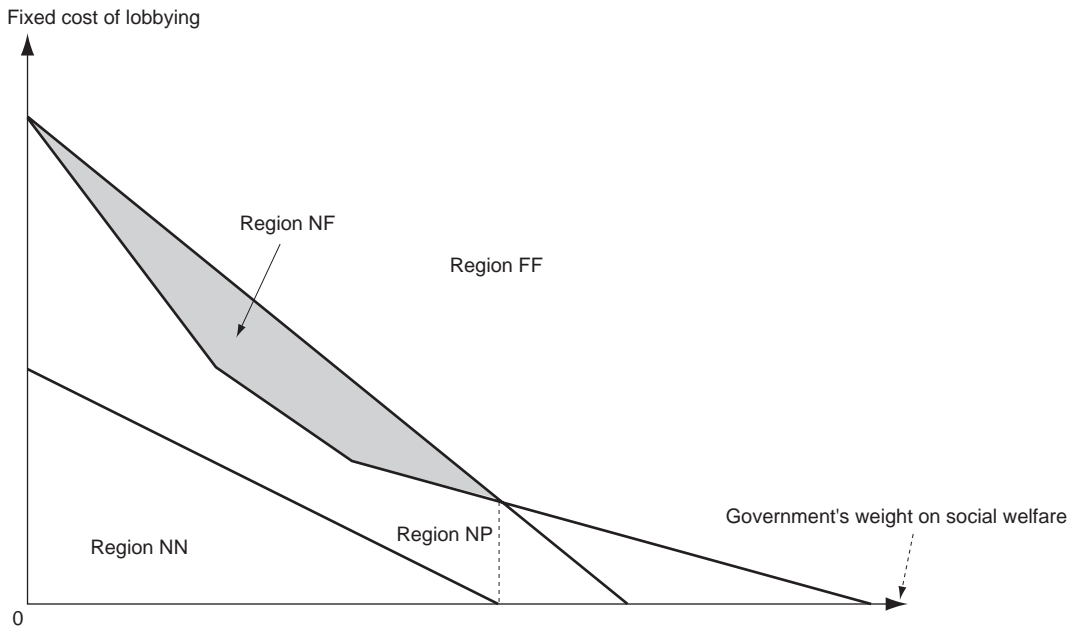


Figure 3: Comparison between the MTA-path and the PTA-path

#### 5.4 PTAs and multilateral tariff co-operation

Another branch of the literature examines how PTAs affect the level of multilateral tariff that is sustained in repeated interactions among countries wavering between cooperation and defection. In general, PTAs increase the attractiveness of deviation from multilateral tariff cooperation. As has been seen, however, PTAs change optimal noncooperative tariffs between members and nonmembers and alter the severity of the punishment for deviation. Thus, overall effects are ambiguous. Bond and Syropoulos (1996b) show that the former effect dominates the latter and the formation of CUs makes cooperation more difficult while also raising the sustainable level of tariffs. Bagwell and Staiger (1999) suggest that, due to the tariff-complementarity effect of PTAs, a possible trade war after PTA formation has less severe consequences for nonmembers, so that the nonmembers may fail to maintain low tariffs. Because of the externality-internalizing effect of CUs, CUs realize more cooperation than FTAs can.<sup>9</sup> Bond, Syropoulos, and Winters (2001) suggest that the progress of internal trade liberalization within CU changes the threat point in favor of member countries and members can obtain concessions from nonmembers. The members may, however, lose interest in multilateral cooperation.

## 6 Internal market integration

In parallel with the evolution of modern economics presuming scale economies and product differentiation,

<sup>9</sup> Bagwell and Staiger (1997a,b) also show that the formation of CUs results in lower multilateral tariffs in the transition period, while the formation of FTAs leads to higher multilateral tariffs in this period.

many recent studies use imperfect competition models to study PTAs. For example, Krugman (1991), Levy (1997), and Goto and Hamada (1999) use monopolistic competition models of international trade introduced by Krugman (1980). Many recent papers such as Krishna (1998), Yi (1996, 2000), Freund (2000b), and Ornelas (2004, 2005) employ the reciprocal dumping model of international oligopoly developed by Brander and Krugman (1983). These analytical frameworks seem appropriate in investigating PTAs especially among developed countries, since many firms in the countries have some power to influence prices of products that they supply, and intra-industry trade is common.

One of the important effects accompanying intra-bloc trade liberalization is the integration of internal markets. An international oligopoly model usually assumes international markets are separated by borders, and prices of the same good can differ across countries. Under this assumption, as long as their marginal costs of production are constant, firms compete independently in different markets and no changes of economic environment in one country can affect the markets of other countries. It is natural to think that the progress of trade liberalization will reduce international resale costs and facilitate international arbitrages. As a result, internal markets are integrated rather than segmented and firms by no means make price discrimination. In fact, one of the objectives of the Single Market Programme of the EC is to remove nontariff barriers and move the industries of EC members from segmented national markets into a fully integrated market.

Although the assumption of market segmentation is supported by some evidence,<sup>10</sup> recent studies indicate that international markets are moving slowly but steadily towards an integrated market, and the trend is remarkable among members of PTAs.<sup>11</sup> Hence, it becomes increasingly important to incorporate changes from segmented markets to integrated markets into the analysis of PTAs. Some studies consider market integration and trade liberalization simultaneously as the effects of economic integration in the framework of imperfect competition. Smith and Venables (1988) examine by numerical example how the reduction in trade barriers, and the change from market segmentation to full market integration, affect welfare. Venables (1990) and Haaland and Wooton (1992) also explore the pro-competitive or anti-competitive effects of market integration in different settings. Ishikawa (2004) shows in a monopoly model that under certain conditions, neither consumer nor the monopolist gains from economic integration when trade liberalization entails endogenous market integration by facilitating price arbitrages.

These papers, however, assume trade policies are exogenous. It is natural to think that the endogenous integration of internal markets also affects each government's incentives to set trade or trade-related policies. The relationship between endogenous market integration and endogenous trade policy is an important subject to be explored.

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10 Flam and Nordström (1995) provide the evidence of market segmentation in the European car market during 1982-1992. Based on the trade data of 1988, McCallum (1995) has found that trade within Canadian provinces was 22 times higher than trade between Canadian provinces and U.S. states.

11 For instance, Wei (1996) and Okubo (2004) show that the border effect in many countries has been declining. Moreover, the border effect of Canada is now lower than McCallum's estimate, using data after the US-Canada Free Trade Agreement came into force (Helliwell, 1998), price convergence is observed in the EU car market (Goldberg and Verboven, 2005), and membership in the EU reduces the effects of borders (Evans, 2003).

For example, Mukunoki (2004) introduces internal market integration into the argument of external tariff settings under Cournot competition in which products are horizontally differentiated. Intra-bloc tariff elimination entails a move from segmented to integrated markets for internally produced products. With the internal market integration, changes in external tariffs of one member country influences markets in another member country through the effect that will be referred to as the *sales allocation effect*. This effect gives rise to a strategic relationship in external tariff settings between member countries. Specifically, they become strategic complements of each other.

Figure 4 depicts the ranking of tariffs, where  $\tau^N$ ,  $\tau_s^F$ ,  $\tau_i^F$ , and  $\tau^K$  are the optimal tariff under pre-FTA, FTA without internal market integration, FTA with internal market integration, and the Kemp-Wan tariff which makes the non-member indifferent between the pre-FTA and the post-FTA situation, respectively. We have  $\tau_s^F < \tau_i^F < \tau^N$  and hence internal market integration increases the equilibrium level of external tariffs. Besides that, when  $\gamma$  which represents the substitutability of products is low enough ( $\gamma < \hat{\gamma}$ ), we have  $\tau^K < \tau_i^F$  and so the FTA with internal market integration hurts the non-member country. In contrast to Richardson (1995), who shows that internal price arbitrages within an FTA bring about tariff-reducing competition, the paper shows that internal market integration causes tariff-increasing competition between members. As a result, the tariff-complementarity effect of the FTA is weakened, and nonmembers may become worse off through the formation of the FTA.

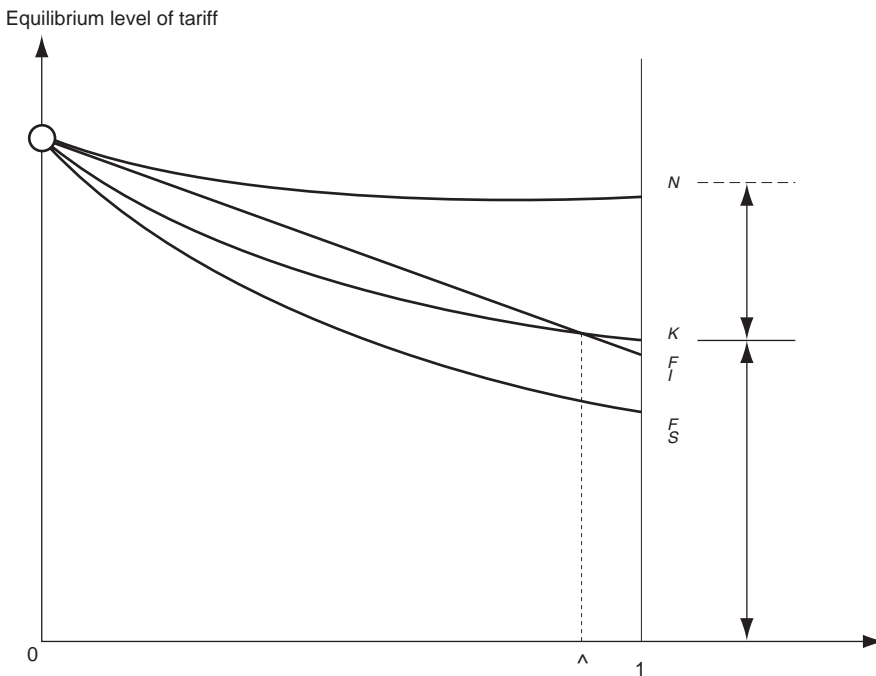


Figure 4: Ranking of tariffs

## 7 Rules of origin

Although PTAs remove trade restrictions, some new regulations or other protective measures can accompany the formation of PTAs. For example, many developing countries depend greatly on trade taxes as a source of government revenue and these countries may need to compensate for the loss of tariff revenue as a result of PTA formation by raising their domestic taxes. The increase in domestic taxes may offset the effects of elimination of internal tariffs and make the PTA meaningless (Richardson, 1994a).

Above all, Rules of Origin (ROO) is the most common example of a newly established regulation. ROOs stipulate conditions by which goods are to be regarded as produced within the FTA.<sup>12</sup> Since each member of an FTA independently chooses its own external tariffs, were it not for any regulation in an FTA and in the absence of transport costs, imports from outside of the FTA would be made through the countries with the lowest tariffs. To prevent such tariff circumvention and trade deflection, ROOs are indispensable to FTAs. To qualify as originating within the FTA and obtain duty-free treatment, ROOs require the product to be either wholly obtained or have undergone "substantial transformation" as a manufactured product. The products are authorized to be "transformed substantially" when any or all of the following criteria are satisfied: (i) tariff headings of the products are changed within the FTA (the change in tariff heading criterion), (ii) the products go through certain production processes (the process criterion), or (iii) the products derive a certain proportion of their value added within the FTA (the value-added or percentage criterion).

The NAFTA's rules of origin, for instance, require that textile and clothing products exported to the US must satisfy a "triple transformation" rule requiring that three transformation stages (fiber to yarn, yarn to fabric, and fabric to garment) are conducted within the territories of NAFTA parties. They also require 62.5 percent local content in the automobile industry. The Japan-Singapore FTA adopts the change of tariff heading criterion. The ASEAN Free Trade Area (AFTA) requires not less than 40 percent of its content have to originate within member countries.

It is suggested that ROOs pose significant administrative costs. Herin (1986) estimates the costs of obtaining appropriate documentation at 3 to 5 percent of Free on Board values of goods for the FTA between the EC and EFTA. NAFTA devotes 200 pages of print to the subject in an annexure that deals with ROOs (Krueger, 1997). Perhaps due to high compliance costs, only some Mexican firms follow the ROOs and obtain duty-free access to U.S. and Canada in NAFTA (Anson, Cadot, Estevadeordal, de Melo, Suwa-Eisenmann, Tumurchudur, 2003). Under the "spaghetti bowl phenomenon" where each country concludes many bilateral FTAs, a complex web of ROOs and crisscrossing tariff concessions increase the burden of administrative costs and require resources, which makes the world trading system complex and inefficient.

The imposition of ROOs may also lead to economic inefficiency. In perfectly competitive markets, higher tariffs with ROOs would reduce the overall welfare of an FTA, since the loss in consumer surplus outweighs

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12 Strictly speaking, ROOs are divided into two categories: nonpreferential and preferential origin rules. The former are used for statistical purposes, while the latter are used to judge whether advantageous tariff treatments should be provided. Preferential origin rules are divided into two more categories: rules on general preferential treatment for developing countries (i.e. ROOs for the Generalized System of Preferences) and rules relating to regional trade agreements.

the gain in tariff revenue and producer-surplus gains. Krueger (1999) points out that ROOs result in an important protectionist bias, which stems from distortions in the intermediate-good markets, since ROOs often induce producers to use a certain amount of intra-bloc intermediate goods even if the prices for these goods are high or quality is low. Ju and Krishna (2005) attribute the reason for noncompliance of producers to the price increases of the intermediate goods produced within FTA. Duttagupta and Panagariya (2003) add an intermediate input to the Grossman and Helpman (1995) model and show that ROOs can make FTAs more politically feasible agreements, although they are welfare-reducing.

Some studies, however, suggest ROOs may increase overall welfare when transshipment costs are significant or markets for intermediates are considered (see for example, Krishna and Krueger, 1995). Falvey and Reed (2002) assume a large country and show that ROOs could improve terms of trade of both final and intermediate goods, which increases welfare.

Compared with their practical importance, the theoretical as well as empirical examination of ROOs is still in its infancy. In particular, most of the analyses are conducted by assuming perfect competition in the final good markets, and their results are basically analogous to the studies of local content requirements.

For instance, the effects of ROOs in imperfectly competitive final-good markets or in general equilibrium settings are the subjects of future studies. For instance, Ishikawa, Mukunoki, and Mizoguchi (2005) consider internal market integration to investigate the effects of ROOs under international oligopoly. We direct our attention to the final good market, rather than the intermediate good market. Even if traded within the FTA, tariffs are still imposed on goods that do not satisfy ROOs. As a result, an FTA entails market integration for internally produced goods, but internal markets for goods produced outside the FTA are segmented in the presence of ROOs. In this situation, ROOs have two effects. Suppose external tariffs are different between members and the difference is given by  $\Delta t$ . On the one hand, ROOs prevent the transshipment of goods produced outside the FTA from the member with the lowest external tariff to other members with higher external tariffs. This effect, which we call the *anti-circumvention effect*, hurts the extra-bloc firms and benefits intra-bloc firms. On the other hand, the ROOs also prevent arbitrage activities so that the extra-bloc firms can make price discrimination within the FTA, which we call the *price discrimination effect*. The effect benefits extra-bloc firms and benefits or hurts intra-bloc firms depending on the relative substitutability of products. It is shown that under some conditions, ROOs benefit the firm producing outside the FTA and hurt the firm producing inside the FTA. Under some other conditions, ROOs benefit both firms at the expense of consumers. Overall social welfare of FTA members may or may not improve with ROOs.

Table 1 shows a numerical example. We can confirm that there actually exist the case where ROOs benefit

$t$	The Substitutability of products is identical		The substitutability is higher in high tariff country		The substitutability is lower in high tariff country	
	Inside firm	Outside firm	Inside firm	Outside firm	Inside firm	Outside firm
0.0	0.000	0.125	0.043	0.169	-0.032	0.088
0.5	0.094	-0.472	0.157	-0.445	0.043	-0.492
1.0	0.189	-0.946	0.272	-0.937	0.119	-0.948
0.5	0.285	-1.297	0.388	-1.307	0.195	-1.280
2.0	0.382	-1.525	0.506	-1.555	0.272	-1.489
2.5	0.480	-1.629	0.626	-1.680	0.349	-1.574

Table 1 : Numerical Example of Profit Changes (Without ROO      With ROO)



both firms and the case where ROOs hurt the inside firm but benefit the outside firm.

## 8 Concluding remarks

The present paper summarizes a number of theoretical studies on preferential trade agreements. It should be emphasized that the theory of PTAs is of a second-best nature, and the welfare consequences of their formation as well as their expansion are inherently ambiguous. In particular, PTAs can be either building blocks or stumbling blocks for multilateral trade liberalization, and they have some additional effects on economic environment such as internal market integration, the imposition of ROOs, and so on.

Although theoretical studies on PTAs are numerous, there is still a room for further research. For example, previous studies assumed that only final-good producers based in member countries of a PTA secure the duty-free access within the PTA. In practice, producers in nonmember countries can also get preferential access by establishing plants within the PTA via foreign direct investment, as long as they comply with rules of origin. Also, producers of intermediate inputs and consumers of final goods can freely export and import goods within PTAs. By considering a wider scope of trade liberalization and in a multi-layered stage, we would obtain some additional effects that are overlooked in the existing literature. It is remarkable when markets are characterized by imperfect competition because trade liberalization may change the economic environment as well as the market structure each firm faces.<sup>13</sup>

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13 For example, Motta and Norman (1996) show that a PTA induces outside firms to invest in the bloc, reduces profits of intra-bloc firms, and increases social welfare. Incorporating markets for intermediate goods may complicate the effects of tariff elimination, as indicated by Ishikawa and Lee (1997).

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