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# 《Economic Integration and Trade Politics in East Asia》
# Rules of Origin and Production Sharing in East Asia

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## Abstract

Not only the expansion of preferential trade agreements (PTAs) in number but also the increasing fragmentation of trade/production sharing in the past decade made rules of origin (ROO) more important, whose both institutional and market-driven economic integration are on the high agenda in East Asia.

First of all, this paper identifies that the growing international integration of production, especially trade in intermediate inputs, has been significantly since late 20$^{th}$ century. This also explains why it is necessary to discuss the effects of ROO in terms of the linkage of final goods and intermediate goods. Even without ROO, the interaction in the final and intermediate goods markets results in two new effects, what we call the input price and the derived demand effects. That is to say, the usual trade creating-trade diverting classification used in the customs union literature is inadequate.

Secondly, by increasing the domestic content requirement, ROO can increase demand for local inputs, and divert trade from lower-cost, non-member suppliers. Krueger (1995) has argued that special interest pressures on the content requirements in ROO give them the potential to be used as non-tariff barriers (NTB) on imported intermediates, causing them to become an important but hidden source of trade diversion in PTAs.

In addition, Rodriguez (2001) argues that the ROO could bring the long-run misallocation of resources. That is, the distortions from the restrictive ROO could lead to "trade regression", the inefficient relocation of production among PTA members.

When the option of component trade is introduced into an MFN (non-discriminatory) system, components will be obtained from the lowest cost source. In PTAs, with their preferential tariff policies, such distortions may be further encouraged by ROO (Arndt, 2001). That is to say, ROO has the potential to restrain cross-border fragmentation.

This paper concludes therefore two policy implications:

1. Despite of the tariff in intermediate goods is lower than that of final goods in East Asia, ROO matters if the margin of preferences in tariff is not equal to zero. Besides, ROO should not to be employed as non-tariff measures (NTM) for trade protection.
2. With the increasingly globalized nature of production by the linkage of final goods (tends to be extra-regional) and intermediate inputs (tends to be intra-regional), East Asian countries should adopt more liberal ROO that maximize trade creation and minimize trade distortion.



Key Words: Rules of Origin (ROO), Preferential Trade Agreements (PTAs), production sharing/fragmentation, intermediate goods

## Contents

# 1. Introduction

As a late comer for regionalism,[1] East Asian trade diplomacy has focused recently on bilateral/regional preferential trade agreements (PTAs).[2] For instance, the Agreement of Japan-Singapore for a New Age Economic Partnership (JSEPA, 2002) and the ASEAN-China Comprehensive Economic Co-operation Framework Agreement (2002) for a Free Trade Area by 2010.

Despite of the benefits of economic integration, the proliferating web of PTAs is raising new barriers and trading costs due to the nature of partial/discriminatory trade preferences, above all in the form of "rules of origin". Its implications are bountiful for market access and regional integration in East Asia.

The economic justification for the preferential ROO is to curb trade deflection—to avoid products from non-PTA members from being transshipped through a low-tariff PTA partner to a high-tariff one.[3] (Definition of ROO, see 2.1 this paper)

ROO, to varying degrees, by itself can restrict trade, misdirect investment and distort decisions on production and location that reduce welfare from levels otherwise attainable.

However, the GATT/WTO does not place any discipline on the ROO used in the PTAs, i.e. the preferential ROO. There are being increasingly recognized as a hidden form of trade protection.

While non-preferential ROO are loosely governed by WTO and being harmonized under the Uruguay Round Agreements,[4] preferential ROO are a key element in the Doha Round on regional agreements (Estevadeordal and Suominen, 2005).

Actually, the "preferentiality" of preferential trade agreements consists of two related components. The first one is the "margin of preference" measures the difference between MFN (most-favored-nation treatment) and preferential tariff rates in a PTA economy. The second one refers to rules of origin which are the criteria used to define where a product was made and therefore used to determine goods that may enter a country under preferential

[1] PTAs here is the same in meaning as the terminology of WTO's "regional trade agreements" (RTAs), including free trade area (FTA) and customs union (CU). Some 250 RTAs have been notified to the GATT/WTO up to December 2002, of which 130 were notified after January 1995. By the end of 2005, if RTAs reportedly planned or already under negotiation are concluded, the total number of RTAs in force might well approach 300. See Regional trade agreements, http://www.wto.org/english/tratop_e/region_e/region_e.htm (accessed 10. October 2005).

[2] There are a great amount of literature about the emerging regionalism in East Asia and the Pacific. For a succinct survey please refer to Drysdale (2005) and World Bank (2005).

[3] ROO are an inherent feature of free trade agreements (FTAs) where the member states' external tariffs diverge and/or where the members wish to retain their individual policies vis-à-vis the ROW. However, ROO are also widely used in customs unions (CUs), either as a transitory tool in the process of moving toward a common external tariff (CET), or as a more permanent means of covering product categories where reaching on a CET is difficult. Thus, basically all PTAs contain rules for establishing the ROO. See Estevadeordal & Suominen (2005)

[4] Under the auspices of the GATT/WTO, tariffs on average were reduced to relatively low levels. However, trade protectionism shall never die. It now takes the form of NTMs (non-tariff measures) such as the ROO and will be therefore high on the agenda for all future international moves to liberalize trade (Jovanovic, 2001).

treatment.[5]

Furthermore, the proliferation of PTAs will result in the well-known "**spaghetti bowl phenomenon**" (Bhagwati, 1995), which for a given product there are several different tariff rates depending on what origin is assigned to it. The "spaghetti bowl effect" emphasizes the results of overlapping and diverse rules of origin which would add compliance and administrative costs incurred by business and government.[6] (See: Figure 1: "Spaghetti Bowl Effect of Preferential Trade Agreements in East Asia and Latin America)

Since ROO is an inherent part of PTAs, it is at the heart of many ongoing PTA negotiations. The design and implementation of PTAs especially the restrictiveness of ROO will to a certain extent decide whether PTAs complementary to a non-discriminatory multilateral system or not (World Bank, 2005).

Even the Asia-Pacific Economic Cooperation (APEC) forum, which is based on a principle of open regionalism, is now developing approaches to achieving simplified and consistent ROO in PTAs.[7]

Rules of origin are gaining concerns for the following reasons.

Firstly, ROO are widely considered a trade policy instrument beyond the efforts to avert trade deflection and can work to offset the benefits of tariff liberalization (Krueger, 1993; Estevadeordal & Suominen, 2005).

To a large degree, the development of "globalized" international economy should have rendered traditional notions of national origin of goods senseless. However, on the contrary, the ROO now are more arbitrary and generally do more harm than good.

Secondly, it's one of the side effects variations and innovation in "New Age" PTAs (often called "closer economic partnerships").[8] On one hand, it highlights comprehensive approach to liberalization. On the other hand, it also takes some approaches to treat the "sensitive sectors", especially restrictive rules of origin to make PTAs politically more acceptable (Scollay, 2005).

Lastly, not only the expansion of preferential trade agreements in number but also the increasing fragmentation of trade /production sharing in the past decade made rules of origin more important (Lloyd, 2001).

One of the reasons is that fragmentation is characteristic of intermediate goods trade

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[5] Non-preferential rules of origin are nonetheless important for a number of reasons, including the application of tariffs, quotas, anti-dumping actions, countervailing duty, and more.

[6] The cost of formalities to determine the origin of a good was between 3 and 5 per cent of the value of shipment. Many exporters did not find it worthwhile making use of the origin rules at all and opted for paying tariffs on their exports (Herin, 1986). Besides, the administration of rules of origin can also create incentives for rent-seeking and corruption. (Asian Development Outlook, 2002), by ADB.

[7] See "Best Practices for RTAs/FTAs in APEC."
http://www.apec.org/apec/apec_groups/other_apec_groups/FTA_RTA.html; and APEC/ Rules of origin: http://www.apec.org/apec/apec_groups/committees/committee_on_trade/rules_of origin_.html

[8] The "New Age" PTAs cover usually not only goods but also services and investment; they tend to have strong emphasis on facilitation, disciplines in new areas: intellectual property, government procurement, competition policy, sometimes labor and environment; strong focus on "behind-the-border" issues, and dispute settlement. See Scollay (2005).

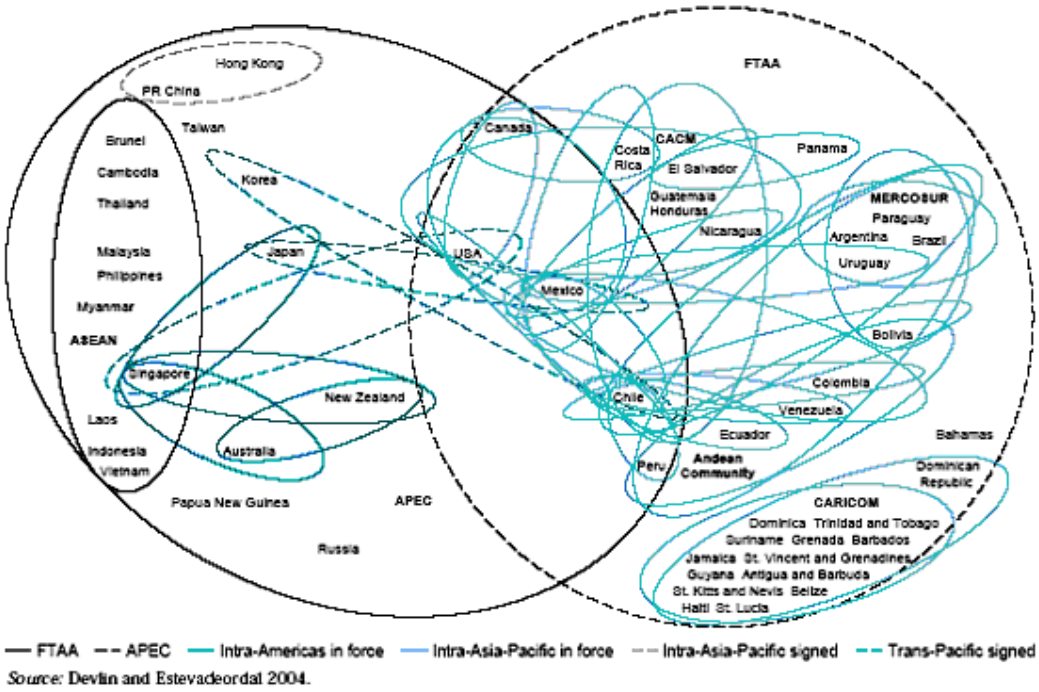
(Jones and Kierzkowski, 1990). The increasing production sharing/fragmentation that a product can be processed in several countries before it is ready for the market has made the determination of origin more complicated.

The growing international integration of production, especially trade in intermediate inputs, has been significantly since late 20th century, especially in East Asia.[9]

The growing international integration of production also explains why it is necessary to discuss the effects of ROO in terms of the linkage of final goods and intermediate goods.

This paper mainly surveys and analyzes recent works on the effects of rules of origin on fragmentation, and vice versa. It's a natural example to see how the institutional and market-driven integration interact themselves. Most importantly, the implications on East Asian integration will be explored.

**Figure 1: "Spaghetti Bowl Effect of Preferential Trade Agreements (PTAs) in East Asia and Latin America**



*Source:* Devlin and Estevadeordal 2004.

Source: Global Economic Prospects: Trade, Regionalism, and Development, 2005/World Bank

[9] See World Bank ( 2005), p.46.

**Table 1: Notifications of RTAs in Force to GATT/WTO (as of 8 July 2005)**

| | Accessions | New RTAs | Total |
|---|---|---|---|
| GATT Art. XXIV (FTA) | 4 | 113 | 117 |
| GATT Art. XXIV (CU) | 5 | 6 | 11 |
| Enabling Clause | 1 | 20 | 21 |
| GATS Art. V | 2 | 29 | 31 |
| Total | 12 | 168 | 180 |

Source: WTO (http://www.wto.org/english/tratop_e/region_e/summary_e.xls, (accessed on 20 October 2005)

**Table 2：The Features of Trade Policy (by Hong, Tsai-Lung/2005)**

| Category of Trade Policy | Negotiation /Reciprocity (Process) | MFN （outcome） | Notes |
|---|---|---|---|
| Unilateralism | × | ×<br>× | ● Liberalization for own sake<br>● **APEC** (Concerted Unilateralism )<br>● GSP, EBA (Everything but Arms) by EU<br>● Aggressive Unilateralism, Article 301 of USA |
| Bilateralism/Regionalism<br>**FTA**<br>Customs Union<br>Common Market<br>Economic (Monetary) Union | | × | Among the various stages of economic integration, the FTA and Customs Union are regulated under the framework of WTO; |
| Multilateralism<br>(including of Pluralism such the Government Procurement Agreement) | | | **WTO** |

## 2. The Effects of Preferential Rules of Origin

### 2.1 Approaches to Rules of Origin

*"In a world of no tariffs and no quotas — in a world of free trade — origin, apart from of consumer preferences, would no matter. But in a world far from free trade, rules of origin are used to enforce and enhance discriminatory regimes." (Palmeter 1993, p.338)*

Origin rules are necessary because goods may be subject to different discriminatory measures depending on their origin. Duties and restrictions connected to importation may vary according to the origin of the product imported. Rules of origin are used (WTO, 2005):

- To determine whether imported products shall receive most-favoured nation (MFN) treatment or preferential treatment;
- To implement measures and instruments of commercial policy such as anti-dumping duties and safeguard measures;
- For the purpose of trade statistics;
- For the application of labeling and marking requirements; and for government procurement.

The Agreement on Rules of Origin applies only to non-preferential rules of origin (i.e. origin rules for trade which is not taking place among members of free trade areas or customs unions, as well as for trade in preferential terms extended to developing countries). The program of harmonization applies only to the non-preferential rules of origin.

A "Common Declaration" annexed to the Agreement relates to preferential rules of origin. It stipulates that[10]

*"preferential rules of origin shall be defined as those laws, regulations and administrative determinations of general application applied by any Member to determine whether goods qualify for preferential treatment under contractual or autonomous trade regimes leading to the granting of tariff preferences going beyond the application of paragraph 1 of Article I of GATT 1994. (i.e. most-favored-nation treatment)"*

Some basic natures in ROO are as follows:

- **ROO can be non-preferential or preferential.** All economies use non-preferential ROO to determine the origin of goods imported under conditions that do not entail preferential market access.
- **Preferential ROO are divided further into reciprocal (or contractual) rules and non-reciprocal (or autonomous) rules.** The former are used in PTA (FTA or Customs

[10] http://www.wto.org/english/thewto_e/whatis_e/eol/e/wto03/wto3_66.htm

Union). The latter are employed in unilateral preference schemes, such as the Generalized System of Preferences (GSP).[11] This paper is concerned with the preferential and reciprocal ROO.

- **ROO can be restrictive or liberal (**Jovanovic, 2001)**:** For example, if the required value added within the area is, for example, 90 %, then very few commodities would qualify for duty-free treatment. Liberal rules of origin require that only a minor part of the value of goods should be added within the area. Commonly, rules of origin require that 50 % of value added should be within PTA area.

  In the case of NAFTA, Mexico and Canada were in favor of relatively liberal rules of origin because of the positive impact of such rules on the Japanese FDI in the two countries and the potential exports of goods to US. Initially, the required local content of goods for liberal treatment in the NAFTA was 50 %, but that will gradually increase to and stay at 62.5% from the year 2002.

- **ROO can have various forms:**

  The key concept is the "substantial transformation". The Kyoto Customs Convention (1973)[12] states that, unless a good is wholly produced (obtained) in a country, what determines the geographical origin of a commodity is the country where the last substantial manufacturing or processing took place. They should be deemed sufficient to give the commodity its essential character. Mainly, there are three different methods for the determination of these rules (Palmeter, 1993).

  1. Change in the tariff heading: even if the good made/assembled in country A has imported components, the goods can be regarded by foreign countries as a good that originated in country A, if that was sufficient to change the tariff classification of the imported materials. Opponents of this system say that the flaw is that the existing tariff schedules were not designed to determine the origin of the goods that the system may be abused by strong industrial lobbies. The Tariff classification used is normally the Harmonized Commodity Description and Coding System (usually known as the Harmonized System or HS).[13]
  2. Value-added method: a certain minimum added value must be incorporated in the good in country A. The trouble is that the method depends on controversial accounting systems and even a slight change in the exchange rate may produce a different result. The minimum area content requirement can be also criticized on the grounds that it shifts the production factor mix away from the optimum, it reduces rationalization in production and can reinforce market rigidities.

     Few PTAs in fact rely wholly on a value-added rule. The Australia-New Zealand

[11] See "Negotiating FTAs: a guide" (2005).
[12] Annex D.1 to the International Convention on the Simplification and Harmonization of Customs Procedures.
[13] See "Negotiating FTAs: a guide" (2005).

and the Australia-Singapore free trade agreements are among those that do.[14]

3. Specified technological processes: a good must pass through a certain technological transformation in country A in order to be regarded by foreign countries as having been produced in country A. The problems here are that technology changes rapidly and that it is impossible to draft and keep updated records on processes for all goods that enter into international trade.

The change-in-tariff classification method is more common than the others. No two agreements have the same rules. In practice, two and sometimes even all three of these methods are combined to furnish the criterion for substantial transformation. Most agreements, however, use the value-added criterion to supplement a change-in-tariff classification system.[15]

## 2.2 Intermediate Goods and Rules of Origin

Ju and Krishna (1998) point it out that as ROO necessarily involve intermediate inputs, it's necessary to discuss the issue in this way. Nevertheless, Hummels, Rapoport and Yi (1998) concluded that vertical trade in intermediates is the fastest growing component of global trade, doubling as a component of overall trade in the past 25 years.

This section begins with the role of intermediate goods in the preferential trade liberalization, subsequently exploring for the economic implications of ROO, emphasizing relationship with intermediate goods. At last, some preliminary conclusions will be made based on relevant literature about ROO.

The economic justification of preferential ROO is well explained by Balassa (1987).

*"In a free trade area, maintaining different tariffs among member countries on the products of non-members introduces the possibility of trade deflection. There will be trade deflection if imports enter the free trade area via the member country which applies the lowest tariff (which gets the tariff revenue). Transportation costs apart,[16] this is equivalent to adopting a tariff equal to the lowest tariff for each commodity in any of the member countries."*

In other words, a free trade area without rules of origin in effect is equivalent to custom unions.

Besides, Duttagupta and Panagariya (2001) put it more subtly, i.e. highlight the role of intermediate inputs in the trade deflection:

*"If inputs are imported from outside countries constitute a large part of the value added*

[14] See "Negotiating FTAs: a guide" (2005).
[15] See "Negotiating FTAs: a guide" (2005).
[16] Note that such re-exports need not be a good thing. If transportation costs are significant, such deflection also has real costs since trans-shipping wastes resources. ROO might prevent or reduce such waste, thereby raising welfare (Krishna, 2005). This footnote is made by the writer of this paper.

*of a product, producers in the member country with lowest tariffs on inputs can undercut producers in other member countries. To guard against these possibilities, FTAs are usually supplemented by rules of origin."*

Even without ROO, the interaction in the final and intermediate goods markets results in two new effects, what we call the input price and the derived demand effects. That is to say, the usual trade creating-trade diverting classification[17] used in the customs union literature is inadequate.

A fall in the tariff on the final good or intermediate good reduces its price and so reduces the quantity supplied and increases the quantity demanded at home. This creates trade as excess demand or imports rise. This is the familiar trade creation effect.

However, the fall in the domestic quantity supplied of the final good shifts the domestic derived demand for the intermediate good inward reducing its imports. This is the derived demand effect.

Moreover, a reduction in the tariff on the input reduces its price and shifts outward the domestic supply of the final good. This reduces imports of the final good. This is the input price effect. While the trade creation effect raises welfare, the input price and derived demand effects reduce it and their effect can predominate. With ROO further distortions arise.

From an analytical viewpoint, the basic effect of ROO is to raise the production costs of the product which meets the binding ROO. This is illustrated in Figure 2: Physical Content ROO and Costs. I draw from Krishna (2005) for the summary.

PTA inputs (L) and imported inputs K (intermediate goods) are used to make the good in question under some typical assumptions, for example constant returns to scale in technology.

ROO specify constraints that must be met in order to obtain origin. If these constraints are binding then the choice of inputs used in production different from the unconstrained ones and hence costs are higher if the ROO are met. Since more restrictive ROO constrain choices more than do less restrictive one, an increase in restrictiveness raises the minimized level of costs.

Overall, the literature on rules of origin relating intermediate good is sparse, but the following points have been made (Panagariya, 1999; Adams, Dee, Gali and G. Mcguire, 2003).

1. In the absence of traded intermediate inputs, rules of origin have an unambiguously harmful effect. Without them, a free trade area would operate like a custom union, with the lowest tariff among members being the external tariff. Rules of origin generate additional trade diversion.

[17] Trade creation would take place when producers in member countries reduced the output of their own industries previously protected against imports from CU (customs union) partners and the rest of the world, and instead imported from lower-cost member countries. Trade diversion would occur when countries replaced imports from low-cost non-member countries with higher-cost production from member countries (Krueger, 1993).

2. With traded intermediate inputs, rules of origin could reduce trade diversion. This can happen, if rules of origin require a producer to purchase inputs from a more expensive member source in order to qualify for a tariff concession on output. This can reduce the amount of trade diversion in the **final product**, **because such a purchase raises the cost of production above the tariff inclusive price of outside suppliers, harmful trade diversion in the final good will be avoided.**
3. But for the same reason, rules of origin can also counteract trade creation. The ability of a partner country to undermine an inefficient domestic industry is reduced by ROO which requires it to purchase inputs form less efficient internal sources.
4. In **intermediate goods production itself**, ROO is likely encourage trade diversion and thus be harmful.

Krueger's seminar paper (1993) has important implications for the intermediate goods trade. By increasing the domestic content requirement, ROO can increase demand for local inputs, and divert trade from lower-cost, non-member suppliers. Krueger points it out the protective effect of ROO on domestic intermediate. ROO can also provide an incentive for regional producers to buy intermediate goods from regional sources, even if their prices are higher than those of the identical import from outside the FTA, in order to make their product "originate" in the FTA and qualify for preferential treatment. This, in effect, protects FTA suppliers.[18] As a result, an FTA can profoundly affect trade patterns and the investment flows needed to sustain them (Krishna, 2005).

Rather than inducing Mexican firms to switch to U.S. tariff-free sources because they are then cheaper than low-cost but tariff ridden world sources—the traditional trade diversion case—an FTA could induce Mexican producers to shift their purchases of intermediate inputs knowingly from a low-cost supplier to a higher cost U.S. supplier in order to qualify for duty-free importation of the final product into the U.S. market.

In addition, Rodriguez (2001) develops more formal model with multistage production in the presence of ROO. He analyzes another type of distortions from the restrictive ROO that leads to "trade regression", the inefficient relocation of production among PTA members. This situation arises when ROO are applied intermediate goods traded directly between PTA members and occurs simultaneously with trade diversion from the non-member. Though trade regression is not present with final good trade among PTA members, it applies to the significant and growing proportion of vertical trade in intermediates.

Krishna (2005) emphasizes that ROO can insulate an industry from the consequences of an FTA and can provide hidden protection for intermediate inputs used by it. It may well be the ability to insulate an industry makes FTA easier to pass than Customs Unions.[19]

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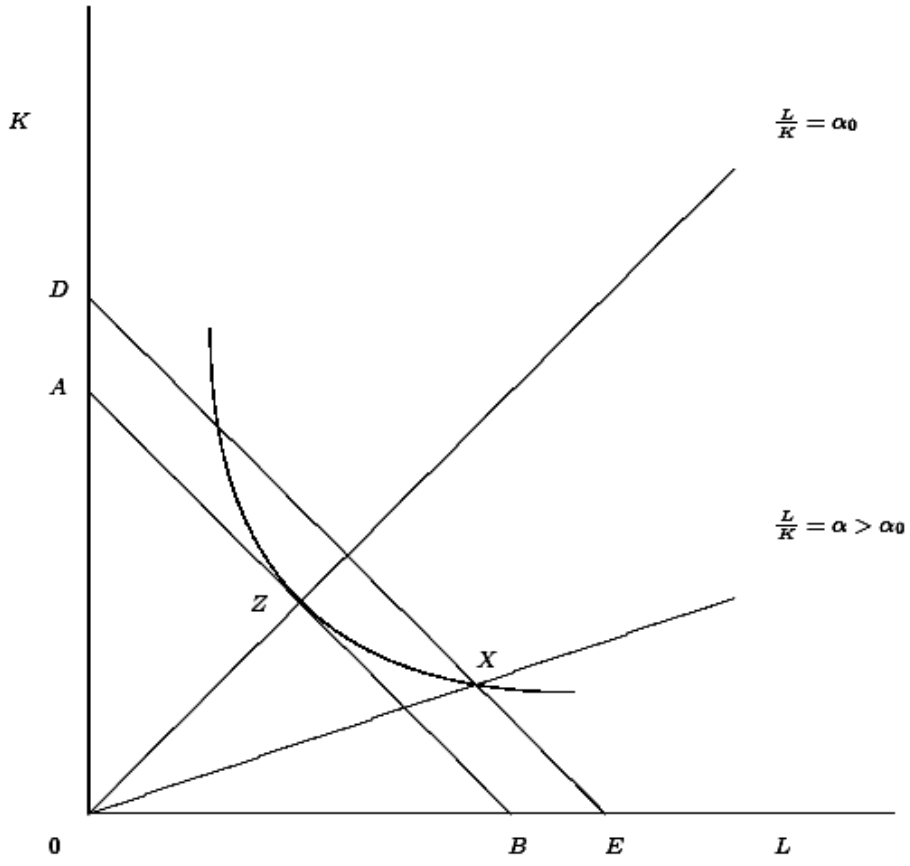
[18] Actually, the ROO in North-South (developed and developing countries) PTAs is more restrictive ROO than South-South PTAs. See "Benefiting from Regional Integration" by Bernard Hoekman, Maurice Schiff and Junichi Goto/WorldBank). Source: worldbank.org.egionalism_RU_eng.ppt (accessed on 25 October, 2005).

[19] Besides, the precise form of the ROO matters; the time period matters. Responses to ROO take time. Short run partial equilibrium effects can differ greatly from long run, general equilibrium ones. For example, in the short run the response to

Estevadeordal and Suominen (2005) summarize that ROO can be employed to favor intra-PTA industry linkages over those between the PTA and the ROW, and as such, to indirectly protect PTA-based input producers vis-à-vis their extra-PTA rivals. As such, ROO are akin to a tariff on the intermediate product levied by the importing country, and can be used by one PTA member to secure its PTA partners' input markets for the exports of its own intermediate products. Furthermore, given that ROO hold the potential for increasing local sourcing, governments can use ROO to courage investment in sectors that provide high value added and /or jobs.

**Figure 2: Physical Content ROO and Costs (Source: Krishna, 2005)**




ROO may be primarily in terms of trade flows while in the long run it may take the form of investment flows (Krishna, 2005).

## 3. The Characteristics of Production Sharing in East Asia

*Fragmentation: the splitting of production processes into separate parts that can be done in different locations, including in different countries (Jones and Kierzkowski, 1990).*

There is a great amount of literature about international fragmentation/production sharing since the thought-provocation article by Jones and Kierzkowski (1990), also many relevant papers focusing on East Asia (Cheng and Kierzkowski, 2001; IDE, 2005).

According to Deardorff, [20] there are many different Terms and Types about fragmentation, including;

1. Delocalization
2. Disintegration
3. Internationalization
4. Intra-mediate trade
5. Intra-product specialization
6. Kaleidoscope comparative advantage
7. Multistage production
8. Outsourcing
9. Slicing up the value chain
10. Splintering
11. Subcontracting
12. Vertical specialization

Sometimes, the following two terms stand also for the same phenomenon.

13. Offshore processing trade, and
14. Dispersed manufacturing

Fragmentation also has important theoretical considerations. [21] As for economic integration in East Asia, there are some desirable policy implications embodied in Figure 3, 4-1, 4-2 and outlined in Table 2, especially for the production and trade in intermediate goods. Indeed, there are some characteristics for the changing East Asian composition of production and trade (World Bank 2005), including[22];

- More specialization in manufactures.[23] Manufactured products as a share of exports

[20] Assembled by A.Deardorff: http://www-personal.umich.edu/~alandear/glossary/accessed on 18 October 2005.

[21] For example, this form of international exchange is much more sensitive to inter-country differences in cost of production (rather than relative cost differentials among production activities within a given) compared to trade in finished goods, and that increased reliance on firms on outsourcing of components has implications for the distribution of gains from trade between labor and capital. As for the study of international economic relations, it is predicted that the growing importance of fragmentation trade tends to erode the relevance of relative prices (normally of "final goods", in most empirical applications) and world income as explanatory variables in trade flow analysis and global trade modeling (Athukorala, 2003).

[22] Another feature is the "trade in new products" has also expanded, especially in East Asia.

[23] The evolution of production chains and finer division of production processes across countries, including developing countries, allows producers to exploit potential efficiency gains from: (1) local increasing returns to scale in the production

has increased strongly since 1980s. (Figure 5)

- A positive trend between parts and components in trade and FDI (Figure 6). As tariff barriers have come down in manufactures, market-seeking, horizontal FDI that once led the way in the import-substitution process has fade in importance relative to efficiency-seeking, vertical FDI that looks to locate fragmentation of production in the lowest-cost site.
- Trade in parts and components (intermediate goods) have increased since 1980s (Figure 7). The growing international integration of production, especially trade in intermediate inputs, has been significantly since late 20th century with the result of the combination of reduced barriers to trade, lowered transportation costs, increases in the market value to weight ratio of traded goods, and the remarkable ease of cross-border communication (Rodriguez, 2001), especially in East Asia.

One indicator of specialization is the important content of exports. According to the World Bank (2005) for measuring the role of imported intermediates in trade, an index of vertical specialization is calculated. This index measures the share of the value added of an export accounted for by imported intermediate inputs, either directly as imported inputs in the exporting sector or indirectly through the use of imported inputs in the domestic production of intermediate goods used by the exporting sector. They found that vertical specialization is most important in East Asia (Figure 8).

For East Asia as a whole, the "production chains" in which intermediate inputs are traded and transformed into more processed intermediate inputs, which are then moved across borders to the next stage in production— is one of the most important features in fragmentation of production and has been a major factor driving the surges in intra-regional trade in those areas (World Bank, 2005).

For example, in 2002 those countries had 42% of their exports to the region (against 36% in 1990) and had 50% of their imports coming from the region (against 42% in 1990).[24] More importantly, by distinguishing the final goods and intermediate goods in trade, Athukorla (2003) made it clear that the increase in intra-regional trade in East Asia comes from the dramatically increase in intermediate goods but not final goods in this region. (See Table 3)

These evidences imply that the de facto economic integration in East Asia has progressed so much in intermediate goods of parts and materials, but not in finished products (Hiratsuka, 2005).

This observation will have important implications for the institutional economic integration that is prevailing in East Asia, especially for the proliferation of PTAs and

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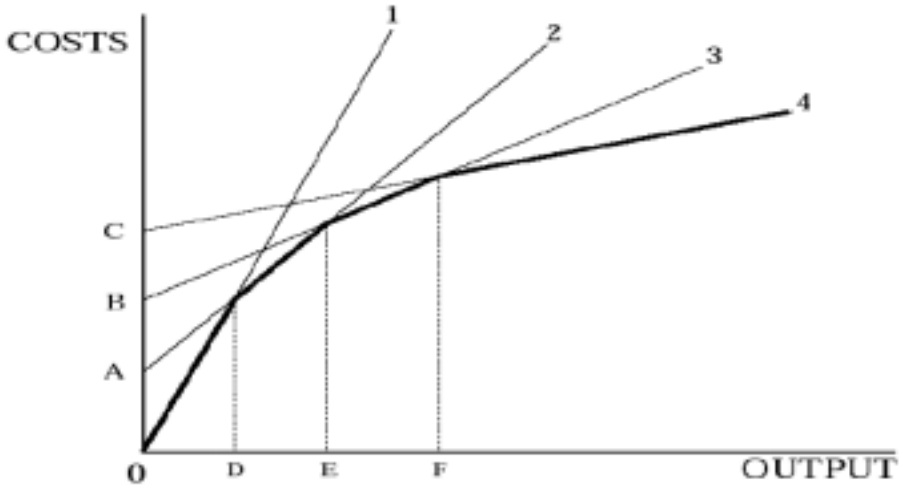
of intermediate inputs, (2) regional differences in factor costs for different parts of the production process, (3) increased competition from a wider market, and (4) technology transfer from developed countries embodied in imported intermediate inputs and backward linkages through exports (World Bank, 2005).

[24] For more details please refer to Lemoine and Ünal-Kesenci (2005) and Ng, F. and Yeats A. (2003).

associated ROO.[25]

**Figure 3: The Combination of Fixed Costs (e.g. Service Link) and Variable Costs (denoted by Production Blocks) Leads to (International) Fragmentation (Source: Jones and Kierzkowski, 2004)**




[25] However, the political-economic payoff to a marginally restrictive ROO, may be substantial. As Rodriguez (2001) points it out, like previous studies, this model shows how restrictive ROO will shift the margin of comparative advantage between an FTA member and non-member, thereby expanding the range of processes undertaken in the FTA. One implication of this effect is that restrictive ROO will lead to investment in the FTA in those stages of production lying just over the original margin of comparative advantage. And, though the welfare loss resulting from a slightly restrictive ROO may be quite small, it may correspond to a much larger flow of investment into the FTA. Just like to overcome the protection in trade, ROO also raises the "coordination problem" and "cooperation problem".

**Figure 4-1: The Pattern of Production/Trade in East Asia: Taking the IT Industry for Example: 1980s**
**(Source: China's Industrial Rise-East Asia's Challenge, Australian Government, Department of Foreign and Trade, 2003)**

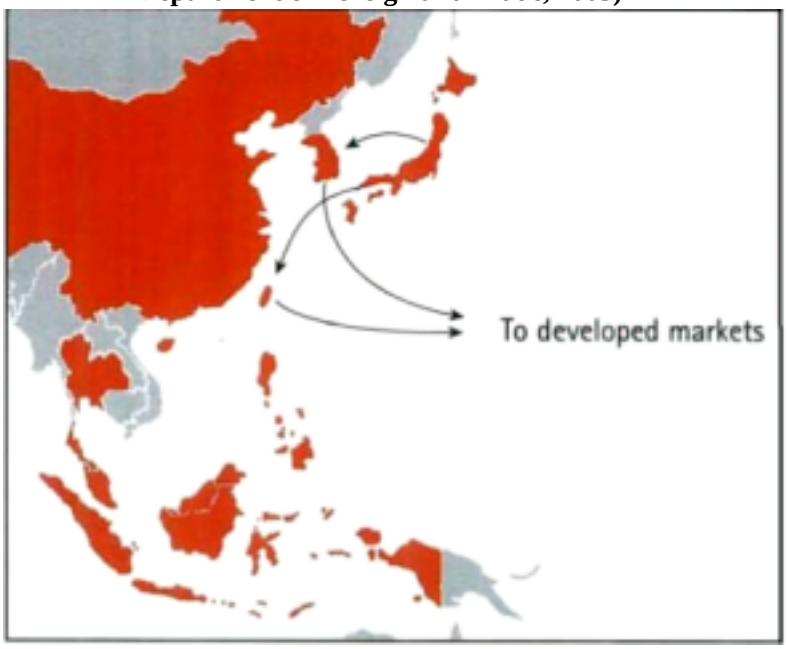



**Figure 4-1: The Pattern of Production/Trade in East Asia: Taking the IT Industry for Example: 1990s~**

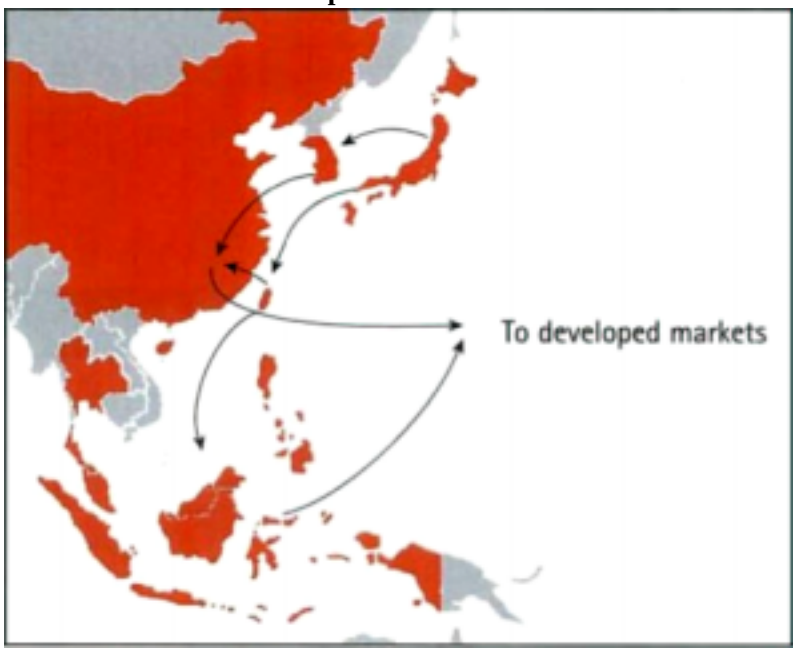


**Figure 5: Manufactures Have Become Increasing Important**
**(Source: World Bank, 2005)**

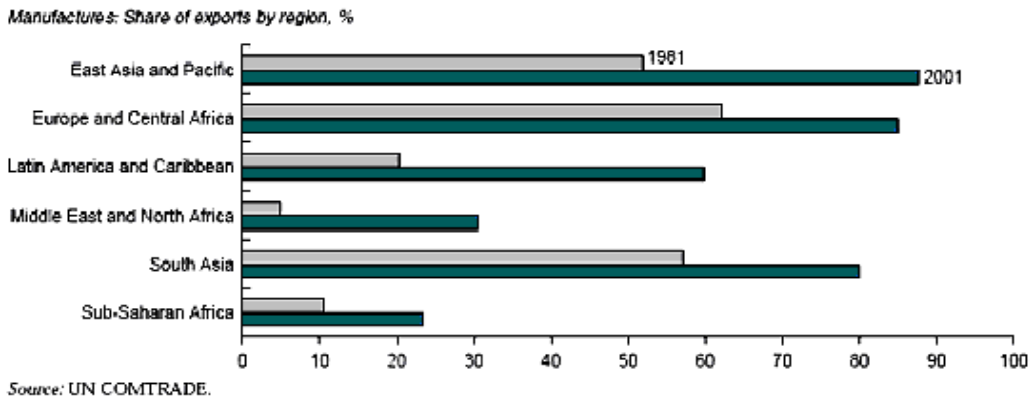
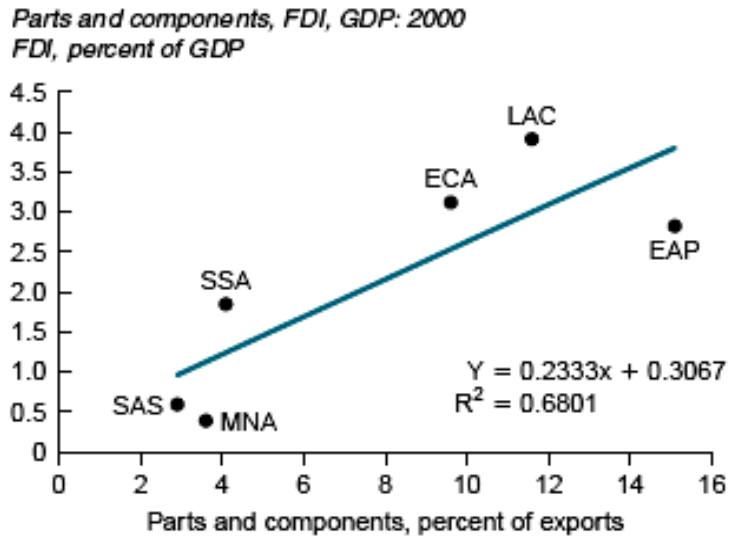
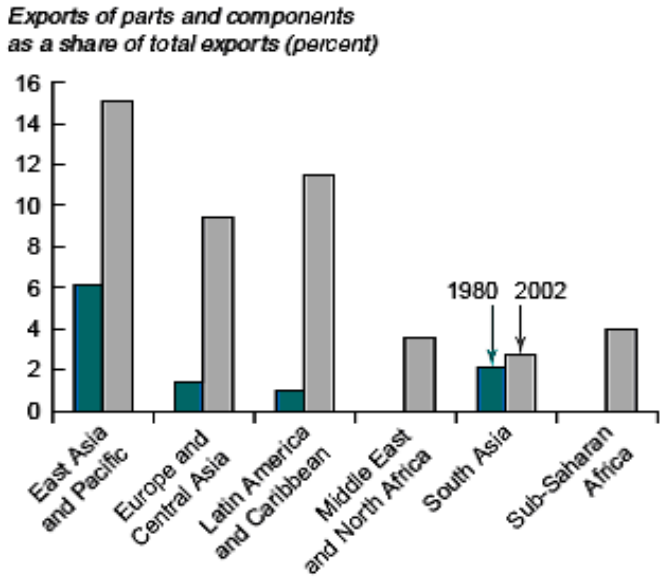



**Figure 6: A Positive Trend between Parts and Components in Trade and FDI**
**(Source: World Bank, 2005)**



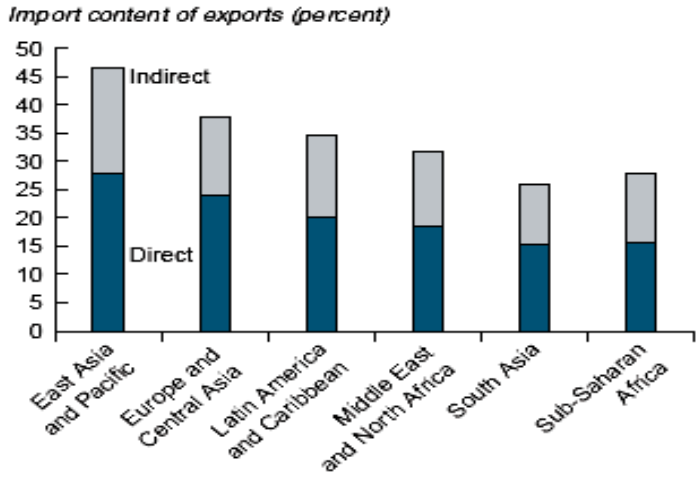

*Sources:* World Bank, WDI, and UN COMTRADE.

**Figure 7: Parts and Components Have Increased**
**(Source: World Bank, 2005)**




*Source:* UN COMTRADE.

**Figure 8: Vertical Specialization with the Global Economy Has Increased**
**(Source: World Bank, 2005)**




*Sources:* Data from GTAP (ver. 6.03) and World Bank for 2001.

**Table 2: The Policy Implications of Fragmentation in East Asia**
**(by Hong, Tsai-Lung/2005)**

| Implications | Notes |
|---|---|
| 1. Trade in intermediate goods | Rules of origin; Intra-industry trade vs. intra-product trade; opportunities of economic development for developing countries |
| 2. Trade facilitation | Services links, Masaru Umemoto(2005): Fragmented Production in East Asia: The Impact of Economic Integration and Network Quality. This line of thinking emphasizes the quality of production is more important questions. But how to accommodate the Quantity (costs?) |
| 3. Trade in services | Jones and Kierzkowski (1990) showed that, if trade in producer services occurs internationally, the production process will became fragmented and as a consequence, the efficiency of production will increase because of economies of scale; The share of producer services (in contrast with services for final consumption) in trade in services is large. |
| 4. For Trade in Multilateralism (trade politics)<br>(1) Goods （GATT）<br><br>(2) Trade in Services (GATS) | By strengthening the mutual independence of national economies and industries that operate within them, those trends have made many producers more sensitive to the costs of import restrictions and created new incentives to oppose them. That is why makers of semiconductors and information technology equipment, which undergo different stages of processing at plants all over the world, persuaded governments in the 1990s to eliminate duties on their products (Guy de Jonquieres, 2005)<br>Even services in developed countries is dominant, the liberalization will bring benefits for the developing countries because it pushes therefore the fragmentation/and chances for the latter, Jones and Kierzkowski (1990) |
| 5. Industry-specific issues | New Economic (IT) vs. Traditional Industries (Auto/Chemical/Plastics/Textiles)<br>What is the difference for economic development between this type of production and the flying geese?<br>The redistribution for the various industries? (Transportation costs) |
| 6. Growth theory/New Economic Geography | What is the effect of slower growth on the ‘spread’ effects that benefit peripheral regions? It’s implications for “convergence” due to integration? |
| 7. Financial dimension<br>8. Labor market<br>9. Business cycle transmission<br>10. Risk in production Management | |

**Table 3: Intra-Regional Trade Shares: Total Manufacturing, Parts and Components, and Final Goods Trade (%), 1992, 1996 and 2003 (Sources: Athukorla and Yamashita, 2005)**

| A: Total Manufacturing | | East Asia | Developing East Asia | AFTA | South Asia | CER | NAFTA | EU | CEEC | EFTA | MERCOSUR | ANDEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exports (X) | 1992 | 36.6 | 35.6 | 19.5 | 2.8 | 24.6 | 44.6 | 64.1 | 1.4 | 1.4 | 21.4 | 25.4 |
| | 1996 | 43.8 | 35.6 | 23.8 | 3.3 | 25.5 | 48.0 | 59.4 | 6.8 | 1.7 | 34.5 | 35.5 |
| | 2003 | 45.6 | 37.6 | 21.7 | 3.0 | 25.3 | 55.2 | 50.8 | 6.9 | 1.5 | 18.4 | 26.6 |
| Imports (M) | 1992 | 55.2 | 34.7 | 14.4 | 2.1 | 5.5 | 34.4 | 66.8 | 1.1 | 1.4 | 15.3 | 3.9 |
| | 1996 | 55.7 | 34.7 | 17.3 | 2.8 | 6.0 | 38.5 | 63.5 | 4.3 | 1.4 | 15.2 | 9.3 |
| | 2003 | 65.6 | 45.4 | 22.7 | 3.0 | 5.3 | 35.3 | 52.8 | 5.4 | 1.4 | 14.0 | 8.5 |
| Trade (X+M) | 1992 | 44.1 | 35.3 | 16.8 | 2.5 | 9.6 | 39.0 | 65.4 | 1.2 | 1.4 | 17.9 | 7.3 |
| | 1996 | 50.1 | 36.2 | 21.5 | 3.1 | 10.5 | 42.8 | 61.3 | 5.3 | 1.5 | 21.1 | 14.8 |
| | 2003 | 53.2 | 40.4 | 21.6 | 3.0 | 9.5 | 43.3 | 51.7 | 6.1 | 1.5 | 16.0 | 12.6 |
| **B: Parts and Components** | | | | | | | | | | | | |
| Exports(X) | 1992 | 44.4 | 46.9 | 29.3 | 4.8 | 24.2 | 46.2 | 62.1 | 1.7 | 1.3 | 23.6 | 24.3 |
| | 1996 | 52.3 | 46.8 | 32.7 | 4.6 | 22.5 | 43.5 | 55.9 | 5.5 | 1.5 | 36.8 | 24.4 |
| | 2003 | 64.9 | 58.9 | 28.5 | 3.8 | 19.0 | 48.6 | 49.1 | 5.1 | 0.9 | 15.4 | 20.0 |
| Imports (M) | 1992 | 59.3 | 31.4 | 21.0 | 0.9 | 4.4 | 42.7 | 67.4 | 1.0 | 1.2 | 14.7 | 1.5 |
| | 1996 | 59.7 | 32.0 | 21.7 | 0.7 | 3.0 | 39.5 | 59.7 | 3.6 | 1.1 | 12.4 | 2.5 |
| | 2003 | 69.7 | 45.9 | 24.9 | 1.2 | 3.5 | 41.5 | 52.8 | 3.8 | 1.0 | 6.6 | 3.6 |
| Trade (X+M) | 1992 | 50.9 | 38.1 | 24.6 | 1.6 | 18.9 | 44.5 | 64.6 | 1.3 | 1.2 | 17.9 | 3.1 |
| | 1996 | 55.7 | 38.8 | 26.7 | 1.5 | 9.2 | 41.5 | 57.7 | 4.4 | 1.3 | 18.7 | 4.6 |
| | 2003 | 67.3 | 52.5 | 27.0 | 1.9 | 7.9 | 45.0 | 50.9 | 4.4 | 1.0 | 9.3 | 6.2 |
| **C: Final goods Mfg** | | | | | | | | | | | | |
| Exports(X) | 1992 | 35.0 | 33.7 | 16.3 | 2.7 | 24.2 | 44.1 | 64.4 | 1.4 | 1.4 | 21.0 | 25.5 |
| | 1996 | 41.2 | 32.5 | 19.3 | 3.2 | 26.3 | 49.6 | 60.0 | 6.9 | 1.7 | 34.2 | 35.9 |
| | 2003 | 38.8 | 30.1 | 17.0 | 3.0 | 26.5 | 57.3 | 51.1 | 7.3 | 1.5 | 18.8 | 26.9 |
| Imports (M) | 1992 | 54.3 | 35.7 | 11.9 | 2.3 | 5.4 | 32.6 | 66.7 | 1.1 | 1.5 | 15.5 | 4.2 |
| | 1996 | 54.1 | 35.4 | 14.5 | 3.1 | 6.5 | 38.2 | 64.3 | 4.4 | 1.5 | 15.7 | 9.9 |
| | 2003 | 61.9 | 43.3 | 18.7 | 3.3 | 5.5 | 34.1 | 52.8 | 5.8 | 1.5 | 15.9 | 8.9 |
| Trade (X+M) | 1992 | 52.5 | 44.6 | 23.9 | 2.5 | 9.4 | 37.6 | 65.5 | 1.2 | 1.4 | 17.9 | 7.8 |
| | 1996 | 46.8 | 33.9 | 16.8 | 3.2 | 10.8 | 43.2 | 62.0 | 5.5 | 1.6 | 21.6 | 15.7 |
| | 2003 | 47.6 | 35.2 | 17.7 | 3.1 | 9.7 | 42.9 | 51.9 | 6.5 | 1.5 | 17.3 | 13.2 |

## 4. Implications for East Asian Regional Integration

Institutional features, such as the rules for determining the origin of goods traded among members (rules of origin), also are important determinants of specialization patterns and thus a potential source of distortion. Above all, this paper concludes that the problems of rules of origin will intensify as preferential trade and production sharing (fragmentation) increases, especially the intermediate goods.

ROO is to guard trade deflection that is a coherent part of PTAs and has the effects of distorting production and trade decisions, including;

1. The traditional trade-diversion in final goods. The strictness of ROO will decide the scale of trade diversion effect.
2. By increasing the domestic content requirement, ROO can increase demand for local inputs, and divert trade from lower-cost, non-member suppliers. Krueger (1995) has argued that special interest pressures on the content requirements in ROO give them the potential to be used as non-tariff barriers (NTB) on imported intermediates, causing them to become an important but hidden source of trade diversion in PTAs.
3. In addition, Rodriguez (2001) the ROO could bring the long-run misallocation of resources. That is, the distortions from the restrictive ROO could lead to “trade regression”, the inefficient relocation of production among PTA members.
4. When the option of component trade is introduced into an MFN (non-discriminatory) system, components will be obtained from the lowest cost source. In PTAs, with their preferential tariff policies, such distortions may be further encouraged by ROO (Arndt, 2001). That is to say, ROO has the potential to restrain cross-border fragmentation.

While 'fragmentation trade' has generally grown faster than total world trade in manufacturing, the degree of dependence of East Asia on this new form of international specialization is proportionately larger compared to North America and Europe. However, since the share of exports for “final goods” is reliant on extra-regional trade, the design and implementation of East Asian institutional integration regarding of trade and investment should avoid the inducing of close and restrictive kind of PTAs.

The observations mentioned above have some policy implications for the ongoing economic integration in East Asia.

1. The trade-diverting effects of the rules of origin could be mitigated by (the elimination of quotas and) multilateral tariff reductions.
2. A customs union automatically outlaws drawback and ensures no difference in tariff on inputs. Those conditions ensure efficiency, but there are few customs unions. Most of us have a range of bilateral FTAs. The members of FTAs have no common commercial policy, particularly it’s more comfortable when they value their sovereignty highly (Jovanovic, 2001).

3. Despite of the tariff in intermediate goods is lower than that of final goods in East Asia, ROO matters if the margin of preferences in tariff is not equal to zero. Besides, ROO should not to be employed as non-tariff measures (NTM) for trade protection.
4. It's essential to distinguish the final goods and intermediate inputs in PTA for minimizing the costs of ROO.[26]
5. With the increasingly globalized nature of production by the linkage of final goods (tends to be extra-regional) and intermediate inputs (tends to be intra-regional), East Asian countries should adopt more liberal ROO that maximize trade creation and minimize trade distortion.

[26] The fragmentation can render the intermediate goods more sensitive to tariff changes (under an PTA or otherwise) See Athukorla and Yamashita. Besides, the "effective protection" is one of issues that could happen. For input tariffs to be low relative to final goods tariffs, effective rates (protection) tend to be higher than nominal rates (Corden, 1971).

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## List of Major Works

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