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Trade / Investment Policies and Development Assistance Policies of Japan: A Note on Policy Coherence

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This paper offers an analysis of Japan's trade/investment and development assistance policies and the dynamic between them. A primary concern is whether these policies are "coherent" in the sense that they do not undermine the economic development of developing countries. One of the main focuses of Japan's trade policies in recent years has become the negotiation of FTAs (free trade agreements) with a number of countries, especially Asian countries. FTAs increase the welfare of the countries involved but can create negative effects for countries that are not included in the agreement. This paper looks at the relationship between trade and development[1] with an emphasis on FTAs. It reviews theories and empirical studies and, using computer simulations, analyzes the welfare impact for its trading partners, including developing countries, of trade policies pursued by Japan. From this, it draws conclusions and offers policy recommendations on how most effectively to pursue both trade and development assistance efforts.

Trade/investment policies and development assistant policies have different underlying objectives. Development assistance policies aim at furthering the development of the partner countries. Trade/investment policies on the other hand — whether multilateral, bilateral or regional — are intended to have domestic benefit. Trade/investment policies, however, may also have a strong impact on the economic development of the trade/investment partner, as well as third countries. This means that increased coherence between the two policies might well enhance the overall development impact on poor countries. Disregard for coherence and to the development impact on partners has tended to characterize the trade/investment policies of advanced countries, including Japan. This is changing as part of international strategies to reach the Millennium Development Goals by 2015. Consensus has emerged that attention to coherence is important and creating coherence is currently a priority among developed, aid-donor countries.

The first section of this paper reviews trends and perspectives in trade and overseas investment in Japan. The second section surveys the literature on the relationship between trade openness, growth and income disparity. The third section discusses Japan's trade/investment policies. Quantitative analysis is conducted in the fourth

[1] "Development" here refers principally to economic development — economic growth, industrialization and reduced income disparity.

section on the impact on developing countries under six trade/investment policy scenarios. The final section concludes the analysis with policy recommendations.

1. Japan's Trade and Direct Investment

Historically, Japan's predominant trade and investment partners have been the United States among developed countries and East Asia[2] among the less developed ones. Geographic proximity and economic complementarity, as well as historic connection, have predetermined a close relationship of Japan with these regions (Table 1). By contrast, the South Asian and African shares in Japanese trade and investment have been less significant, even negligible. This section examines trends and perspectives in Japan's trade and investment, focusing on those with the developing economies in East Asia.

Table 1: Export and Import Share of Japanese Trade

(percent)

	Exports						Imports					
year	1980	1985	1990	1995	2000	2003	1980	1985	1990	1995	2000	2003
World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
United States	24.5	37.6	31.7	27.5	30.2	24.8	17.4	20.0	22.5	22.6	19.2	15.6
EU (EEC)	9.4	7.8	13.1	10.2	10.7	9.8	3.9	4.8	11.5	9.3	7.5	8.2
Other Industrial	11.5	12.1	13.4	11.2	9.5	9.6	12.3	14.7	16.1	15.0	12.2	12.3
China	3.9	7.1	2.1	5.0	6.4	12.1	3.1	5.0	5.1	10.7	14.6	19.7
ASEAN10	10.2	6.5	11.6	17.6	14.4	12.9	17.5	15.6	12.7	14.4	15.5	15.3
ASEAN5	10.0	6.4	11.5	17.3	13.9	12.3	15.1	14.1	11.9	13.5	14.3	13.9
South Asia	1.5	1.6	1.1	0.9	0.7	0.8	0.9	1.3	1.1	1.1	0.7	0.6
Africa	4.0	1.7	1.6	1.4	0.9	1.0	2.8	2.3	1.6	1.3	1.3	1.7
Middle East	10.8	6.8	3.3	2.2	2.2	2.9	31.6	23.0	13.3	9.4	13.1	13.4
Rest of World	20.5	15.1	17.6	17.7	19.4	19.8	10.2	12.6	15.2	15.3	15.4	12.8

(Source) IMF "Direction of Trade Statistics"

1.1 *Establishment of Production Networks in East Asia in the 1980s and 1990s*

Japan recorded a high rate of economic growth in the 1960s and early 1970s and exports, particularly those to the United States, were important contributors to that growth. This growth trend continued until the early 1980s, when it began to slow. Appreciation of the real yen exchange rate against the United States dollar after 1985 brought significant changes in Japan's trade and direct investment. Its share of world

[2] In this paper, the term "East Asia" is used to include Southeast Asian countries.

exports declined from 9.3 percent in 1985 to 8.3 percent in 1990 and to 7.5 percent in 2000 (See Table 2). Meanwhile, after the mid-1980s, the developing economies of East Asia experienced remarkable expansion in their trade. The ASEAN10[3] excluding Singapore increased their share of world exports from 2.7 percent in 1985 to 4.5 percent in 2000 and their share of imports from 1.9 percent to 3.5 percent (see Table 2).

Table 2: Exports and Imports of the Countries and Region (Shares in the World)

	Exports (Shares in world (percent))						Imports (Shares in world (percent))					
	1980	1985	1990	1995	2000	2003	1980	1985	1990	1995	2000	2003
World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
United States	11.6	11.5	11.4	11.4	12.3	9.8	12.7	17.8	14.6	14.8	19.2	17.0
EU (EEC)	24.4	23.3	27.1	27.7	23.5	26.1	25.6	21.7	25.3	25.0	21.8	22.8
ASEAN10+3	12.0	16.0	16.0	20.1	20.8	20.6	12.3	13.5	14.6	18.2	17.3	17.9
China	0.9	1.4	1.8	2.9	3.9	5.9	1.0	2.1	1.5	2.5	3.4	5.4
Japan	6.7	9.3	8.3	8.6	7.5	6.4	7.0	6.6	6.6	6.5	5.8	5.0
Korea	0.9	1.6	1.9	2.4	2.7	2.6	1.1	1.6	2.0	2.6	2.4	2.3
ASEAN10	3.4	3.6	4.0	6.1	6.7	5.7	3.2	3.2	4.5	6.6	5.6	5.2
ASEAN5	3.4	3.6	4.0	6.1	6.4	5.4	3.1	3.2	4.5	6.6	5.3	4.8
Indonesia	1.1	1.0	0.7	0.9	1.0	0.5	0.5	0.5	0.6	0.8	0.5	0.5
Malaysia	0.7	0.8	0.9	1.4	1.5	1.3	0.5	0.6	0.8	1.5	1.2	1.1
Philippines	0.3	0.2	0.2	0.3	0.6	0.5	0.4	0.3	0.4	0.5	0.6	0.5
Thailand	0.3	0.4	0.7	1.1	1.1	1.1	0.5	0.5	0.9	1.4	0.9	1.0
Singapore	1.0	1.2	1.5	2.3	2.2	2.0	1.2	1.3	1.7	2.4	2.0	1.7
Vietnam	-	-	-	-	-	0.02	-	-	-	-	0.2	0.3

(Source) IMF "International Financial Statistics"

East Asia trade consisting of Japan and the developing economies of that region was characterized by an expansion of intra-regional trade. Trade between ASEAN5 and Japan (ASEAN5+J) increased the share of intra-regional exports in total exports from 21.4 percent in 1980 to 25.1 percent in 1995, and the share of intra-regional imports from 21.3 to 27.5 percent. Since 1995 the share of intra-regional trade has declined, due partially to the Asian financial crisis of the late-1990s and the emergence of China as a large trading partner of Japan. (See Table 3)

The increasing trend toward intra-regional trade was reflected in the relocation of Japanese production bases to East Asia, including both Southeast Asia, and also Northeast Asia, i.e., China, Korea and Taiwan. The gradual establishment there of production and procurement networks contributed to regional economic integration.

[3] ASEAN (Association of South East Asian Nations) is an international body established in 1967 to accelerate economic growth, social progress and cultural development in the region, and to promote regional peace and stability. There are now ten member countries (ASEAN10): five original members (ASEAN5) -- Indonesia, Malaysia, Philippines, Singapore and Thailand; and five newer members -- Brunei Darussalam, Vietnam, Laos, Myanmar and Cambodia.

Table 3: Exports and Imports Shares of Regions in East Asia

	Exports Shares (percent)					Imports Shares (percent)				
	1980	1990	1995	2000	2003	1980	1990	1995	2000	2003
ASEAN10+3	31.75	36.66	44.93	42.60	37.52	33.55	32.99	45.69	48.39	49.71
ASEAN10	18.64	18.87	24.64	23.00	22.06	14.45	9.27	18.30	23.32	22.57
ASEAN5+ Japan	21.35	19.65	25.08	23.50	21.89	21.28	19.80	27.52	27.29	25.28
ASEAN5	16.71	18.14	22.39	21.63	20.41	13.25	8.30	16.67	21.73	20.69

(Source) IMF "Direction of Trade Statistics"

Japanese multinational firms invested heavily in ASEAN economies — and more recently in China — by means of Foreign Direct Investment (FDI)[4]. FDI inflows to East Asian developing economies expanded rapidly after the early 1980s (Table 4). FDI inflows to the ASEAN5 increased more than six fold between 1985 and 2003 and FDI inflows to China increased remarkably by more than 15 fold during the 1990s.

Table 4: Outflows and Inflows of Foreign Direct Investment

	Outflows (million US$)					Inflows (million US$)				
	1980	1990	1995	2000	2003	1980	1990	1995	2000	2003
World	53,683	242,057	358,235	1,186,838	612,201	54,986	208,646	335,734	1,387,953	559,576
United States	19,230	30,982	92,074	142,626	151,884	16,918	48,422	58,772	314,007	29,772
EU(EEC)	14,651	87,835	93,613	408,319	201,044	2,963	8,015	43,549	63,532	407,494
ASEAN10+3	2,720	52,233	37,462	44,989	41,871	2,767	18,816	67,127	80,988	82,682
China	0	830	2,000	916	1,800	57	3,487	37,521	40,715	53,505
Japan	2,385	48,024	22,630	31,558	28,800	278	1,753	41	8,323	6,324
South Korea	26	1,052	3,552	4,999	3,429	17	759	1,249	8,572	7,523
ASEAN10	309	2,328	9,280	7,516	7,841	2,415	12,817	28,316	23,379	19,100
ASEAN5	309	2,328	9,260	7,345	7,751	2,433	12,403	25,396	21,150	15,407
Indonesia	6	-11	1,319	150	130	180	1,092	4,346	-4,550	-597
Malaysia	201	129	2,488	2,026	1,370	934	2,611	5,815	3,788	2,474
Philippines	1	22	98	-108	158	-106	550	1,574	1,345	319
Thailand	3	154	887	-22	557	189	2,575	2,070	3,350	1,802
Singapore	98	2,034	4,467	5,298	5,536	1,236	5,575	11,591	17,217	11,409
Viet Nam	0	0	0	0	0	0	180	1,780	1,289	1,450
Other ASEAN	0	0	20	171	90	-18	414	2,920	2229	3694

(Source) UNCTAD "World Investment Report" various issues.

After 2002, when it acceded to the World Trade Organization (WTO), China experienced another FDI boom. By 2003, the developing economies in East Asia had jointly become one of the largest FDI recipients in the world. This apparently was a consequence of liberalization and facilitation measures on capital transactions which

[4] Their increased intra-firm trade is shown in the growth in the region of components and partly assembled goods (Urata 2003).

allowed higher returns on capital due to increased efficiency in the allocation of factors. The resulting higher potential for profitability was attractive to FDI.

1.2 *China's Accession to the World Trade Organization*

China's accession to the World Trade Organization (WTO) in November 2002 had a dramatic impact on trade and investment in East Asia. China produces the world's sixth largest GDP[5] and receives one of the largest single country FDI inflows. The massive FDI — mainly from Japan and South Korea[6] — prompted a reorganization of production networks in East Asia where the core production base began to shift toward China. With its trade growing rapidly, China has become an important destination for exports from the rest of the region, including Japan. For developing countries, China has emerged as a fierce competitor in third-country markets. No policymaker in East Asia can ignore the presence of China.

As China emerged as a core production base in the reorganized production networks, the trade profiles of East Asian countries have become more complementary. The degree of complementarity for ASEAN10+3 — a designation for ASEAN plus Japan, China and South Korea — is now becoming comparable to that within the EU or NAFTA[7].

1.3 *Trade and Investment with South Asia and Africa*

Japan's trade with South Asia and Africa has been small, each region accounting for about one percent of the total (see Table 1). Moreover, their shares of Japan's exports and imports both have trended down over time. These regions are remote from Japan and they lack markets large enough to attract Japanese FDI. Many gravity model estimates empirically show that remoteness of potential trading partners discourages bilateral trade and investment[8]. Although India has recently emerged as a good FDI recipient, its trade and investment relationship with Japan remains weak.

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[5] IMF World Economic Outlook Data Base, April 2005. Estimate for 2005.

[6] Bilateral data on FDI is not available, except for the national sources. However, the national data of Japan and Korea shows that the two countries emerged as the major FDI suppliers to China.

[7] In this context, political cooperation and competition between Japan and China co-exist within the ASEAN10 +3 process.

[8] See Frankel (1992), Abe (2005).

2. Role of Trade in Development: Survey

2.1 *Free Trade Is Crucial for Development*

Most recent research appears to agree that trade openness has a positive effect on economic growth[9]. In principle, trade openness means more efficient use of resources. Moreover, recent research on trade liberalization stresses the importance of dynamic economies of scale and the pro-competition effects of trade liberalization, especially in the context of regional economic integration through trade. Trade liberalization and integration of markets enhances competition, stimulates domestic investment, encourages the international transmission of innovation and knowledge and promotes more rational international specialization of production. As indicated in the previous section, FDI acts as an engine to promote trade integration. Expanded markets can also mean expanded returns to innovation, and hence greater incentive for it. In addition, trade liberalization can create a healthier environment for savings and investment. These effects can, in turn, have important medium-run and long-run implications for the economic development and growth. *As such, trade is crucial to the economic development of the trade partners*.

A number of empirical studies have identified a significant positive trade-growth relationship, including a path from economic integration to strengthened growth[10]: Economic integration (i) provides strong incentive to mobilize inputs and to improve their quality; (ii) expands potential markets by allowing economies of scale and lower cost production; (iii) provides incentive to increase management efficiency through the increased pressure of competition; and, (iv) provides incentive to enhance technological innovation. This list, of course, is not exhaustive.

2.2 *Static Effects of Trade Liberalization*

Liberalization of trade has a wide range of impacts, the core one of which is static efficiency gain. Baldwin and Venables (1995) present varied economic effects by decomposing an indirect utility function with respect to consumption expenditure. Assuming that all trade barriers cause rents only to domestic agencies[11], that all related

[9] A recent survey of the relation between trade and growth is Borensztein et. al (1998).
[10] APEC Economic Committee (1997).
[11] In contrast, some trade barriers may be real trade costs or quotas under which foreigners capture the quota rents.

countries are small, and that only constant returns to scale prevail, the sole effect of trade volume is improved national welfare. That is the "trade volume effect"[12].

The trade volume effect is defined as the sum of tariff wedges multiplied by changes in trade volume caused by the reduction of tariffs and other non-tariff measures (NTMs). As Meade (1955) demonstrates, the welfare of a country improves if the tariff-weighted change in the country's trade volume is positive. This effect is related to the famous literature of Viner (1950) in which he divides the effects of regional trade liberalization — typically taking the form of an FTA — into two types: trade creation and trade diversion effects. The sum of the two effects produces mixed results. The trade diversion effect reduces imports from non-FTA nations while the trade creation effect increases total imports from both FTA and non-FTA countries.[13] Trade diversion results from discriminatory tariff reduction that causes private agents to import goods from a supplier that is not the lowest cost source. Effectively this means that the importing country government is subsidizing the exports of the FTA partner.

If bilateral tariffs are reduced only on imports from countries that are already the lowest-cost supplier, trade diversion does not occur. FTAs are likely to be beneficial if the FTA partners initially account for large shares of each other's imports, as would be the case if they were low cost suppliers. In the cases of FTAs between East Asian countries, the countries account for large shares of their trade partners' imports, so that the trade diversion effects may be small.

2.3 *The Medium-term Effects of Trade Liberalization: FDI and Capital Accumulation*

Trade liberalization will affect growth if it changes the return on investment in capital — including human and knowledge capital — due to the accumulation effect of spurring capital formation. According to Baldwin and Venables (1995), the change may be transient if increased accumulation reduces the return to the accumulated stock or it may be permanent if diminishing returns to accumulation are not encountered.

In the case of NAFTA, and as many in Mexico had hoped, a surge of foreign investment was attracted to that country as the agreement became a reality. In the more recent

[12] For a more formal analysis, see Appendix 1.
[13] According to Kowlczyk (1992), there are many other definitions of trade creation and diversion.

case of China, WTO accession accompanied by massive trade liberalization was followed by a kind of direct investment boom from Japan and South Korea. China has recently declared its intention of entering into FTAs with other Asian economies, perhaps for the purpose of drawing FDI as well as ensuring external markets to maintain growth. *Trade liberalization and promotion of FDI are a set of strategies by developing countries for pursuing outward oriented policies.*

Trade liberalization will usually affect factor productivity and, therefore, factor prices, including the rate of return on capital. When trade liberalization increases the demand for capital in FTA member countries, this will stimulate an inflow of investment from non-FTA countries under the assumption of perfect international capital mobility. These capital flows will raise GDP in the trading partners through higher savings and investment rates, and lower it elsewhere.

According to Baldwin (1989; 1992), the improved efficiency brought about by trade liberalization raises the rates of return of domestic capital stock. This makes domestic investment more attractive and draws in foreign capital, some of which may be FDI. The static efficiency effects will themselves increase welfare; but if the capital inflow is also taken into account, the total welfare gain becomes even larger. A multiplier, the ratio of total gain to static gain[14], can describe the magnitude of these changes.

2.4 *Empirical Studies on Trade Openness and Long-term Growth*

A standard approach to estimating dynamic impact of trade openness on growth is to assume a growth function and adopt econometric methods to estimate the function. A study by Barro (1991) first provided an empirical estimate for the growth function of per capita income and gave an empirical foundation to the convergence hypothesis[15]. Subsequently, many studies confirmed empirical linkages between long-term growth rates and a variety of political, institutional and economic policy indicators.

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[14] In the case of the EU this multiplier, takes the empirical values of 1.2 – 2.4 In the case of APEC trade liberalization, this multiplier was estimated at approximately 3.5 (APEC Economic Committee (1997)).

[15] Convergence in neoclassical growth theory applies when the growth rate of an economy is positively related to the difference between the economy's income level and its own "steady state". Absolute convergence, one of the two major definitions of convergence, means that poor economies tend to grow faster than rich ones.

Overall, a policy of trade openness will stimulate domestic investment and induce policy improvements, leading to higher per capita GDP; a process called "convergence"[16]. The implication is that the governments of developing countries should willingly open their trade in order to accelerate growth in their economies. Multilateral and bilateral trade negotiations provide opportunities for them to accomplish this while ensuring the market openness of their trading counterparts.

2.5 *Trade Liberalization and Income Inequality between Trading Partners*

In addition to increasing national income, achieving fair income distribution — or more narrowly, reducing poverty — is an important purpose of economic development. In this regard, there is concern at the potential posed by trade liberalization to widen income inequality between trading partners. This is one of the concerns raised by anti-globalization activists.

In a perfectly competitive environment, lower trade barriers will reduce factor price differences on average, as was proved in the "factor price equalization theorem". As long as the countries' endowments lie inside the same cone of diversification, economic integration will equalize factor prices in the long run. For example, China and Japan have widely differing endowments, but the integration of their economies will eventually increase internationally traded goods and factors, which will increase the size of the cones of diversifications. Actually, average real wages in China have been increasing rapidly, while those in Japan have somewhat declined.

However, if the "small country assumption"[17] is inapplicable to one or both of the trading partners, trade liberalization may aggravate their terms of trade and worsen their levels of welfare. This is the reason why some countries may fear that lowering their tariffs will bring more imports at inflated prices.

Currently, among some economists, a dynamic location effect is causing concern about widening income disparity between trading partners. Economic geography often assumes imperfect competition and scale economies, which may imply undesirable outcomes. Scale economies and economies of agglomeration mean that firms will not distribute productive capacity evenly throughout a country or region; rather, the location

[16] See Appendix 2 for an example the author undertook for the APEC Economic Committee (1999).
[17] This assumes that a volume of trade may be so small that it does not affect world prices.

decision of a firm will depend on the balance between production costs and trade costs. This balance is dynamic and it changes as trade barriers are reduced but it is possible that industry will be drawn to high wage locations, increasing wage differentials between trading partners. Large regional free trade areas, such as the EU and NAFTA, take this problem quite seriously because the location effect affects their wider regions.

In the context of coherence between trade and development assistance policies, the economic effects of NAFTA on Mexico are relevant. A recent comprehensive study by the World Bank (2003) concluded that NAFTA has helped Mexico approach the development levels of its NAFTA partners, the US and Canada. The research suggests, for example, that Mexico's global exports would have been about 25% lower without NAFTA and that FDI would have been about 40% less. Also, the amount of time required for Mexican manufacturers to adopt US technological innovations was cut in half. This underscores the importance of FDI and technology transfers between trading partners. Regional trade liberalization may most effectively further the development of the lower income trade partners when improvement in the trade environment stimulates FDI along with technology transfers.

2.6 *Trade Liberalization and Domestic Income Disparity*

Another serious concern about trade liberalization has been its potential for widening domestic income disparity within both (or all) trading partners; although this may apply mainly to the more advanced ones. Under the standard classical trade model, unskilled labor in the advanced country will experience mainly a negative effect on real wages. A more dynamic North-South model with innovation and monopoly (Krugman 1979) implies that technology transfer — perhaps caused by trade and investment liberalization — leads to reduced rents paid to unskilled workers in the more innovative country.

By contrast, in a developing country such theories suggest trade liberalization contributes to an increase in real wages among both skilled and unskilled labor. In the case of NAFTA, trade probably deserves some credit for moderate declines in Mexican poverty and likely has had a positive impact on the number and quality of Mexican jobs (World Bank (2003)). Technical progress and increased GDP brought about the increase in real wages and the national poverty rate seems to closely follow their evolution.

Trade liberalization may also create adverse effects, increasing geographic income disparity and aggravating poverty in the short- and medium-run. China's WTO accession recorded the most successful case of development in an economy. However, one important byproduct has been a sharp widening of rural-urban income disparity as well as geographical income disparity. This reflects the fact that the trade liberalization under WTO attracted FDI inflows mainly to coastal cities, where extremely rapid technical progress took place in manufacturing sectors. The benefits did not extend to rural agricultural areas. Rural farmers constitute the major portion of the impoverished in China and their situation deteriorated in some cases because their nominal income was fixed by regulation while the general price level was allowed to inflate. Recently, the Chinese government has adopted more rural-friendly policies, increasing the relative prices of agricultural products and the budget expenditures on rural health and education.

Sectoral and social policies such as these may be appropriately and effectively implemented with development assistance. Development assistance policies may provide measures to remediate adverse effect on income disparity. Trade and investment liberalization policies can effectively improve economic efficiency and national income as a whole, but income disparity issues can more appropriately be allocated to the sectoral and social policies addressed by development assistance.

3. Japan's Trade Policy

3.1 *Trends in World Trade Policy*

In spite of serious concerns in terms of environmental and cultural sustainability, trade liberalization or "globalization" is a major trend in the world economy. On the multilateral front, the WTO is seeking to conclude a new round of negotiations. The developing countries have tended to argue for continued protection for their industrial sectors through higher tariffs. Protection is also a major issue for the agriculture sector. Japan and South Korea, among others[18], have tended to be protectionist toward their agricultural products[19]. The Uruguay Round of trade negotiations (which created the

[18] Both Japan and South Korea are members of the Group of 10 net agricultural importing countries

[19] The import tariff rates of agriculture goods of Japan and Korea are well above average in the world. For example, the tariff rates for rice of these countries are around 400 percent. This contrasts in a striking way with their low tariff rates for industrial goods.

WTO) tried to achieve greater agriculture sector liberalization, but the eventual commitments — incorporating various compromises and exemptions — reflect the many arguments raised by protectionist interests. After the failed attempt in Seattle in late 1999, the WTO Ministerial Meeting in Doha in November 2001 launched an agenda for a new comprehensive round of multilateral trade negotiations that emphasizes development, named the "Doha Development Agenda" (DDA).

On the bilateral and regional fronts FTAs are spreading rapidly throughout the world. At present, a significant proportion of world trade is conducted under the rules of regional integration agreements, notably the two mega-blocs of EU and NAFTA, which are continuing to expand their memberships. Historically, East Asia, including Japan, focused multilaterally on trade liberalization under the GATT/WTO regime. Regional integration arrangements — such as the ASEAN Free Trade Area (AFTA), established in 1992 with the objective of realizing free trade area in ASEAN by the year 2008 — were the exception. However, this traditional approach shifted around the year 2000 toward a "two-track" approach which gave increased emphasis to regional agreements. This is evident in the Framework Agreement on ASEAN China Comprehensive Economic Cooperation, signed in November 2002; in the effort to conclude an East Asia–wide free trade agreement; in a recent proposal by Japan for an ASEAN+J free trade agreement; and in bilateral agreements under negotiation, in particular by Japan, Singapore, South Korea, and Thailand. Except for China and some ASEAN countries, almost all the natural FTA/EPA counterparts of Japan are developed, industrialized or wealthy countries.

3.2 *Shift of Japan's Trade Policy: From Multilateralism to Regionalism*

Until 2000, the Japanese government espoused the strategy of liberalizing trade through the open multilateral system, namely GATT and its successor WTO. However, in 2000, several years after the United States approved the North American Free Trade Agreement (NAFTA), Japan's trade strategy became more ambiguous and began switching to a two-track approach. The Japan-Singapore Economic Partnership Agreement (JSEPA), Japan's first FTA, became effective in November 2002. The Japanese government promulgated the basic principles of FTA/EPA in December 2004 (Decision by Ministers Meeting to Promote Economic Partnership Agreements (2004)). Japan's shift in basic strategy was reflected in a worldwide trend toward regionalism.

Japan made the shift in its approach out of intense concern regarding trade and investment diversion in Europe and North America. FTAs are exclusive, favoring signatories only with negotiated (zero) tariffs. To reiterate Viner's analysis of the trade creation and trade diversion effects of regional trade arrangements (discussed above), the trade diversion effects of an FTA reduce imports from non-FTA nations while the trade creation effects increase the sum of imports from both FTA and non-FTA countries[20]. Trade diversion invariably reduces the welfare of non-FTA countries by raising the cost to them of consuming such goods. Regional trade arrangements also will lead to more FDI activity in the region. As a result, FTA non-members will be at serious disadvantage.[21] This was the Japanese concern.

3.3 *Japan's FTA/EPA Policies Were Development- Neutral*

In the context of coherence with development assistance, the Japanese government's FTA/EPA policies appear to have been adopted in the absence of analytic input about their impact on the trading partners. EPA principles mainly emphasize the political and economic benefits to Japan. The Decision of the Ministers to Promote EPA (2004) contains no reference to development of the FTA/EPA partner. Trade negotiations assume no provision for favoring the counterpart. And in principle, in the absence of international guidelines, each party to the FTA/EPA may consider only its own interest. While ostensibly an FTA accord confers favor on the signatories, in reality the countries tend to seek their own benefits.

Nonetheless, and despite apparent indifference to development, Japan's trade and investment activity in developing countries, particularly those in East Asia, has historically promoted their industrialization. Japan's trade liberalization in 1980s and 1990s — both multilateral and unilateral — helped establish international production networks in East Asia, as detailed above in the first section of this paper. This, in a sense, demonstrated de facto coherence between trade policy and the development path of the trading partners.

In the context of current WTO multilateral negotiations, the Japanese government is officially paying attention to the interests of developing countries as a group. The

[20] According to Kowlczyk (1992), there are many other definitions of trade creation and diversion.
[21] In addition to this economic effect, enterprises whose country does not have an FTA relationship with its trading partner sometimes suffer from discriminatory treatments in government procurements, etc.

Doha Development Agenda explicitly attends to development, mandating that the industrialized countries accept the principle that the developing countries will benefit from the eventual agreement. The definition of "benefit" may differ among the different perspectives. "Benefit" to a county may refer to maintaining protection through high tariffs even though empirical studies show that protectionism poses an obstacle to development rather than a benefit to the country.

3.4 *East Asia Is Japan's Priority for Trade and Investment*

In terms of regions, the Japanese government has placed the greatest importance on trade and investment with East Asia. As shown above, historically Japanese multinational firms looking for bases for their production networks have preferred the countries of ASEAN. Recently, China and Japan appear to be competing in offering to establish FTAs with ASEAN members.

Japanese trade policies have placed considerably less importance on Africa and South Asia. The Japanese government has no serious plans to establish FTAs with countries in these regions in the short- or medium-run. However, in terms of development assistance focus, Africa and South Asia have become the most important geographic areas in the world.

4. Quantitative Analysis of the Impact of Trade Policies on Developing Countries

This section explores the impact of six trade liberalization scenarios using a computable general equilibrium (CGE) model as a simulation framework.[22] The simulation allows us to examine the benefits and disadvantages of trade liberalization for the economies of development countries. The Global Trade Analysis Project (GTAP) at Purdue University in the United States provides a standard international database for the CGE model whose latest version is version 6-beta. The simulations focus on assessing the sectoral impacts on developing countries. See Appendix 3 for country/sector classification in detail.

[22] There are other approaches to quantify the relations between trade liberalization and poverty, including cross-country regression, partial equilibrium/cost of living analysis, and the combination of CGE and partial equilibrium analyses (see Reimer, J. (2002)).

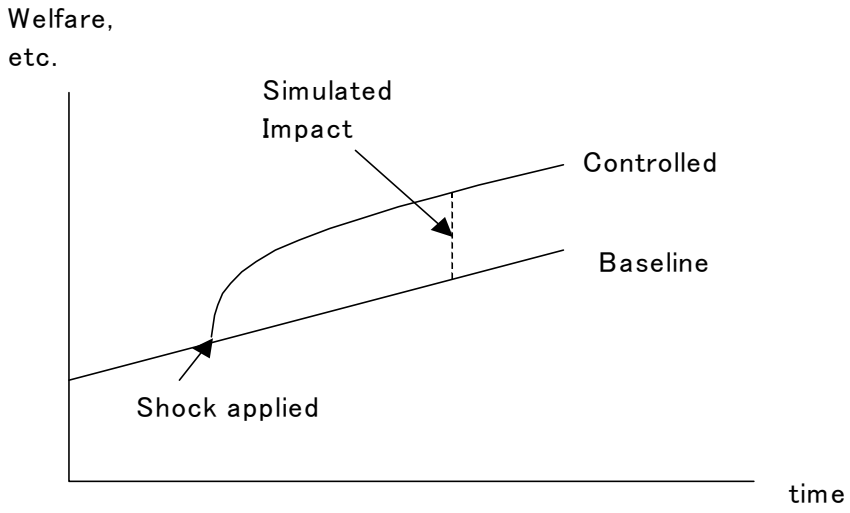
4.1 *Model Structure and Simulation Methodology*

The CGE model is essentially an application of neoclassical economic theory and, in its international trade dimension, of classical trade theory. A CGE model consists of equations that represent demand and supply conditions of sectors of the economies. The industrial sectors are explicitly linked together in value-added chains from primary goods, through higher stages of processing, to the final assembly of consumer goods for households and governments. The sectors in the model are linked through various economy-wide constraints. For example, because firms in different sectors compete for a limited supply of labor, capital and land, an expansion in one sector will be accompanied by a contraction in another sector, except when the expansion is the result of resource accumulation or technological improvements that economize on the use of resources.

Reflecting the nature of the classical framework, competition and resource allocation are adjusted through the flexible movement of relative prices. Unemployment rates are assumed to be constant, as the model reflects the changes between two equilibrium states in each of which the unemployment rate would be at its "natural" level. Because the main interest of the project is international trade, the CGE model used here includes multiple countries and allows for linkage between the countries. While in principle a change in one part of the world economy has repercussions throughout, the effects normally are greatest in the sector and economy where the policy change or shock is initiated. The effects then spread through linkages to adjacent sectors at home and into the markets of trading partners.

The policy measures to simulate are quantified as "shocks" applied to the model. Generally, a model simulation requires a pair of inputs: the baseline data and the control data reflecting the impacts of the shock. Each data set is fed to a model and, based on each input, the model feeds back an output; for example, income, exports and imports, welfare levels and production on a macroeconomic and sectoral base. The final result — i.e. the impact of the shock — is obtained by taking the differences between the two hypothetical model outputs. Chart 1 illustrates a model simulation.

Chart 1: Conceptual Illustration of a Model Simulation



The model specification is the Baldwin type dynamic model that incorporates a capital accumulation process. Trade liberalization will usually affect factor productivity and the rate of return on capital. When trade liberalization raises the demand for capital in FTA member countries, this will stimulate an inflow of investment from non-FTA member countries — assuming perfect international capital mobility. These capital flows will raise GDP through higher savings and investment rates in the trading partners and lower it elsewhere.

4.2 *Simulation Scenarios and Model Specifications*

This section examines the possible impact of Japanese trade policies on the economies of development countries. Our CGE simulation may provide us with rough estimates of the effects of various hypothetical trade policy agenda on the sector base. Our policy scenarios include the following six:

i). (Scenario I) The programmed trade policy agenda for the next few years, represented by Japan's FTA with ASEAN5 countries — ASEAN5+J.

ii). (Scenario II) Reflecting the medium-term target of its FTA policy, Japan establishes an FTA with ASEAN5 plus China and South Korea — ASEAN5+3.

iii). (Scenario III) As an extreme hypothetical case, Japan grants most-favored status to all developing countries, opening up all sectors including agricultural and processed food sectors by eliminating unilaterally all the import tariffs for the developing countries.

iv). (Scenario IV) As an extension of the former scenario, all the developing countries also eliminate their import tariffs to Japan. In other words, Japan establishes an FTA with all developing countries.

v). (Scenario V) In a variation on Scenario III, the EU and NAFTA members and Japan open up all sectors by eliminating unilaterally all import tariffs for the developing countries.

vi). (Scenario VI) In a variation on Scenario IV, the EU and NAFTA members and Japan establish an FTA with all developing countries.

In all the simulation scenarios described above, the exogenous shocks to the model are the lowering of the import tariff protection levels to zero. We aggregate the dataset into 22 regions multiplied by 23 sectors (see Appendix 2)[23]. Because we focus on the effects of trade policies on developing countries, as many developing regions as possible are disaggregated.

According to a number of analyses, trade liberalization will be the most effective in stimulating growth if it is accompanied by active FDI inflows. As mentioned above, we adopt the Baldwin dynamic specification that incorporates the medium-term capital accumulation effects of trade liberalization. This specification partially simulates the mechanism by which trade liberalization in the economy improves efficiency and draws FDI and other capital inflows.

4.3 *Simulation Results – Scenarios I and II*

In trade policy simulations, the change in economic welfare — usually measured by equivalent variation (EV) — represents one of the most important macroeconomic indicators of impact. EV is expressed in terms of nominal incomes denominated in US dollars, showing how much money the people could expect to obtain from the policy changes. In addition to the EV, changes in real production and real exports also represent important indicators. Gross Domestic Product (GDP) represents macroeconomic real production. Sector base changes in real production have an

[23] The original dataset of GTAP version 6-beta consists of 87 regions and 57 sectors.

important implication, particularly in the context of industrial adjustment that might be necessary in developing countries who have an abundance of unskilled labor and limited mobility between sectors.

Table 5: Welfare Gains from Various Combinations of FTAs

EV (million US$), GDP (percent)

	A5+J All Items		A5+J Without Grains		A5+CJK All Items		A5+CJK Without Grains	
	EV	GDP	EV	GDP	EV	GDP	EV	GDP
CHN	-413	0.0	-505	0.0	9062	1.3	9385	1.4
JPN	3491	0.1	2882	0.1	12565	0.3	11557	0.2
KOR	-262	0.0	-349	0.0	19274	5.6	10600	2.9
XEA	-38	0.0	-132	0.0	-2498	-0.3	-2649	-0.4
IDN	2578	1.9	2547	1.8	3817	2.7	3775	2.7
MYS	3772	3.9	2707	4.1	4827	4.9	3844	5.2
PHL	1218	2.1	1176	2.1	1403	2.5	1365	2.5
SGP	1561	1.6	1634	1.6	2605	2.5	2695	2.5
THA	9439	9.6	9438	9.6	11738	11.7	11981	12.3
VNM	-33	0.0	-35	-0.1	-333	-0.8	-295	-0.7
XSEA	137	0.2	121	0.2	15	0.1	-6	0.0
IND	116	0.1	85	0.0	-379	0.0	-423	0.0
XSAS	38	0.1	33	0.0	-259	-0.1	-280	-0.1
CAN	272	0.1	230	0.0	217	0.0	215	0.0
USA	3031	0.0	1981	0.0	-1529	0.0	-2640	0.0
MEX	740	0.1	512	0.1	520	0.1	186	0.0
EU15	3413	0.1	2403	0.1	181	0.0	-1205	0.0
SACU	14	0.0	16	0.0	-41	0.0	-28	0.0
SADC	28	0.1	19	0.0	-57	-0.1	-47	-0.1
NAFK	123	0.1	101	0.0	110	0.0	94	0.0
XSSA	7	0.0	2	0.0	-1	0.0	-4	0.0
XRW	1572	0.0	1011	0.0	-1853	-0.1	-2249	-0.1
World	30804	--	25877	--	59384	--	45871	--

(Source) Author's simulation, using GTAP version 6-beta and GEMPACK.

1. See Appendix 3 for the abbreviation of the country/regions.
2. "All Items" indicates that the tariffs on all the imported items are eliminated under the FTA. "Without Grains" indicates that the tariffs on imported grains are not eliminated.

We first conduct simulations under Scenarios I and II. At present, they are on the political agenda in the ASEAN5+3 process. Theoretically, an FTA will raise national welfare in all the FTA members because of the trade creation effect. The removal of bias allows the economies to expand trade volume and to use limited domestic resources more efficiently. However, negative trade diversion effects may possibly emerge in non-FTA member countries. Table 5 below summarizes the simulation result, showing

the welfare gain for each country/region in terms of equivalent variation (EV) and change in macroeconomic production in terms of GDP.

As already mentioned, an FTA generally accords welfare and production increases to all the members. ASEAN5+J (Scenario I) would increase the EV of all the membesr by US$ 1bn –9bn, the US$ 9bn benefit going to Thailand. If the FTA is expanded to include China and South Korea, establishing an ASEAN5+3 FTA (Scenario II), the welfare gains would increase. The result would be similar in cases where grains have been exempted from the list of tariff to be eliminated under the FTA. This exemption will reduce welfare gains for countries with higher protection for grains, Japan in particular.

In the case of an ASEAN5+J FTA (Scenario I), the welfare of non-FTA-member countries would also increase because the trade volume effect is favorable for non-members; however, China and South Korea, the countries having the closest trade relations with Japan, are exceptions to this. An ASEAN5+3 FTA (Scenario II) on the other hand, would create negative impacts on many non-member countries, particularly the United States, because the combination of Japan and China would result in a strong division of labor, and a very strong trade diversion effect would emerge for non-member countries. In addition, most developing countries, as well as the world economy as a whole, would experience a reduction in welfare because of the trade diversion effects of an ASEAN5+3 FTA (Scenario II).

The simulated impact on sectors clearly illustrates the effects of FTAs on the economies of developing countries. Table 6 below indicates the percentage change in the real production of the industrial sectors of the countries under Scenario II (ASEAN5+3 FTA). Among the FTA members, the competitive industries of each country tend to expand, while the weak, protected sectors tend to shrink. It is interesting that the developing member countries foresee expansion of some assembly manufactures, including transportation equipment (TRN), electronic equipment (ELE) and other equipment (OME). The expansion of these manufacturing sectors reflects anticipated FDI inflows. Although not reflected in the simulation, inflows of FDI in these sectors usually accompany technological progress, which ensures sustainable dynamic growth. We may conclude that the FTA under Scenario II will bring about development in the member countries.

Table 6: Sector-base Impacts on Industrial Real Output of ASEAN5+3 FTA (selected countries)

(Percentage Change)

	CHN	JPN	KOR	IDN	MYS	PHL	SGP	THA	VNM	IND	XSAS	CAN	USA	EU15	SACU	SADC	NAFK	XSSA	XRW
GRN	12.4	-10.0	-80.8	1.6	204.5	-3.0	16.2	17.6	-1.6	-0.1	-0.1	-0.9	-2.7	-0.3	-3.6	-0.2	-0.3	-0.3	-0.6
AGR	1.5	-1.2	13.5	-0.2	-36.2	3.6	-0.9	-0.7	1.0	-0.1	-0.1	-0.5	-0.4	-0.1	-0.1	0.0	-0.1	0.2	-0.2
FRS	-0.2	-0.5	4.9	5.3	2.4	2.7	-0.9	8.0	0.3	0.2	-0.1	0.0	0.2	0.1	0.1	0.0	0.1	0.0	0.3
FSH	0.7	-0.5	8.5	2.2	2.6	1.4	0.9	5.7	-0.9	-0.1	-0.1	-0.2	0.0	0.0	-0.2	-0.1	0.0	0.0	-0.1
MIN	0.2	0.0	-2.6	0.8	1.3	1.8	2.0	3.4	0.7	0.5	0.7	0.3	0.3	0.4	0.4	0.3	0.3	0.4	0.4
PFD	1.9	-1.9	43.1	2.8	12.0	-0.3	21.0	7.8	-2.2	-0.5	-0.3	-0.7	-0.3	-0.3	-0.6	-0.3	-0.2	-0.4	-0.6
TEX	-3.3	13.4	31.8	4.8	40.3	2.0	5.3	4.4	-7.1	-0.8	-1.7	-1.8	-0.7	-1.7	-0.8	-1.2	-1.0	-1.6	-1.0
APP	6.5	-6.4	20.6	0.4	21.6	9.5	-3.6	9.3	-3.9	-0.5	0.1	-0.8	-0.5	-1.5	-1.4	-1.1	-0.7	-1.2	-0.7
PPP	-0.9	-0.1	6.3	6.9	5.1	3.0	2.8	9.7	0.6	0.2	0.3	-0.1	0.0	0.0	0.0	-0.1	0.0	-0.2	-0.1
CHM	-2.5	1.3	7.3	5.8	9.5	4.3	8.1	20.6	-1.4	-0.2	0.0	-0.5	0.0	0.0	-0.2	-0.2	-0.4	-0.1	-0.5
MTL	0.5	1.9	1.6	3.1	5.2	3.5	7.7	13.0	-0.2	0.3	0.4	0.1	0.2	0.0	0.1	-0.6	-0.1	0.1	-0.3
TRN	-4.9	1.6	-1.8	-0.9	3.2	26.2	-9.0	11.1	-0.3	0.2	0.8	0.7	0.2	0.2	0.7	1.4	0.3	0.6	0.0
ELE	11.6	-1.5	0.8	7.6	2.6	2.3	2.4	28.5	1.3	0.3	-0.8	-1.1	-0.4	-0.8	0.0	-0.6	-1.0	-0.8	-0.4
OME	-0.7	2.3	-1.2	9.9	15.0	13.5	13.1	27.2	0.5	0.3	0.7	0.3	0.2	-0.2	0.1	-0.1	0.0	-0.5	0.0
OMF	0.5	0.0	6.6	-1.5	7.7	2.5	1.4	8.6	-0.5	0.3	0.5	-0.3	0.0	-0.1	-1.0	-0.2	-0.3	-0.3	-0.1
EGW	0.1	0.5	5.9	3.3	6.3	3.0	4.2	11.3	-1.3	0.0	-0.4	0.0	0.0	0.0	-0.1	-0.2	0.0	-0.1	-0.2
CNS	2.9	0.5	7.9	4.3	5.7	3.9	4.5	17.4	-1.2	0.0	-0.3	0.1	0.0	0.1	-0.1	-0.2	0.0	0.0	-0.1
TRD	0.5	0.2	6.3	3.4	1.5	3.0	1.7	12.9	-0.2	0.0	-0.1	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.0
TRS	0.7	0.0	0.5	3.1	3.2	2.6	0.5	8.1	0.6	0.1	0.1	0.2	0.2	0.6	0.2	0.1	0.3	0.2	0.4
CMN	0.8	0.1	3.6	3.0	1.7	1.8	1.9	11.3	0.7	0.0	0.2	0.1	0.0	0.1	0.0	-0.1	0.1	0.0	0.0
FIN	0.4	0.1	3.7	2.5	4.3	2.7	0.0	11.9	1.4	0.0	0.1	0.1	0.0	0.1	0.1	-0.1	0.0	-0.1	0.0
OSP	0.9	0.2	4.4	2.3	0.8	2.4	-0.6	8.9	-0.8	0.2	-0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0
OSG	0.6	0.1	1.9	1.0	2.9	1.1	2.1	4.6	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0
GDP	1.3	0.3	5.6	2.7	4.9	2.5	2.5	11.7	-0.8	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1

(Note) Simulation by author using GTAP 6.0-beta.

See Appendix 3 for sector abbreviations.

By contrast, non-FTA-member developing countries, such as Vietnam (VNM), India (IND), other South Asian countries (XSAS) and African countries, will suffer reduced production in several labor-intensive sectors, such as processed food (PFD), textile (TEX) and apparel (APP). The reduced production reflects the trade diversion effect and the resulting dislocation of labor in the adversely affected sectors. While theoretically the abandoned workers are to be absorbed in other sectors over the long run, they may be unemployed for some time. Generally in developing economies, mobility of unskilled labor is limited, and the adjustment process may be serious and painful.

ODA may work as a complementary measure to mitigate the adverse effects of trade policies if the government of Japan recognizes the situation. Japan's ODA can support the industrial adjustment process by, for example, assisting with job training services for workers in the adversely effected sectors and improving industrial infrastructure for the other more hopeful sectors.

4.4 *Simulation Results – Scenarios III, IV, V and VI*

What would happen if the industrialized countries were to grant most favored status to all developing countries by unilaterally opening up all sectors to them? The following five scenarios (Scenarios III-a, III-b,, IV, V and VI) are based on two: (i) the group of industrial countries which open their trade includes either Japan only, or Japan plus the EU and NAFTA; and, (ii) either the industrialized countries unilaterally open their trade or they establishes FTAs with all the developing countries. The two version of Scenario III assume either that Japan unilaterally opens only agricultural goods and processed foods markets (Scenario III-a) or that Japan unilateral liberalizes all traded goods from developing countries (Scenario III-b).

Table 7 summarizes the impacts of the five scenarios in terms of the national welfare. In Scenarios III-a and III-b, most of the developing countries receive welfare gains from Japan's unilateral actions. Scenario III-a — trade liberalization of agricultural goods and processed food — increases the welfare of most ASEAN developing countries. China, however, gains much less under Scenario III-a than under Scenario III-b because of the large decrease in Japan's tariff rates for textiles, apparel and other labor-intensive manufactured goods under Scenario III-b. The welfare gains are almost identical between two scenarios for Malaysia (MYS), Thailand (THA) and the Southern African

Customs Union (SACU), where most of the benefits come from Japan's liberalization of agricultural products. These result suggest that Japan's trade liberalization in agricultural goods and processed foods would have relatively greater impact on the high and middle income countries, such as Thailand, US, EU, and China, but rather limited impact on the low income countries of South Asia and most African countries..

Table 7: Welfare Gains from Various Scenarios

EV (million US$), GDP (percent)

	Scenario III–a		Scenario III–b		Scenario IV		Scenario V		Scenario VI	
	EV	GDP	EV	GDP	EV	GDP	EV	GDP	EV	GDP
CHN	787	0.0	2249	0.1	3438	0.7	12576	0.7	20480	2.5
JPN	-884	0.0	-1454	0.1	18621	0.3	332	0.1	9768	0.1
KOR	70	0.0	25	0.0	-2608	-0.5	337	0.2	-5032	-1.0
XEA	263	0.1	472	0.1	-994	0.1	5174	0.8	3261	0.8
IDN	94	0.1	315	0.2	593	0.6	2818	1.8	2486	1.9
MYS	926	-0.2	991	-0.1	1534	1.1	1732	0.4	2682	2.7
PHL	80	0.1	173	0.2	-163	0.1	1725	2.4	1156	2.2
SGP	-85	0.0	-79	0.0	-748	-0.6	-74	0.1	-1412	-1.3
THA	2602	1.5	2718	1.6	5431	5.5	6026	4.0	10543	10.8
VNM	59	0.1	202	0.5	41	1.0	1240	3.0	828	3.5
XSEA	-24	-0.1	-33	-0.1	-7	0.0	1024	1.3	774	1.0
IND	138	0.0	197	0.0	329	0.3	2443	0.4	6708	2.3
XSAS	58	0.1	69	0.1	510	0.7	1711	1.0	2297	2.1
CAN	109	0.0	131	0.0	-91	0.0	493	0.1	-470	-0.1
USA	2219	0.0	2292	0.0	-4317	0.0	5340	0.1	-1773	-0.1
MEX	605	0.1	679	0.1	20	0.0	415	0.1	-5430	-0.9
EU15	2510	0.0	2445	0.0	-3553	0.0	6209	0.2	6363	0.0
SACU	634	0.4	651	0.4	649	0.5	1623	1.1	1717	1.7
SADC	-8	0.0	11	0.0	-5	0.1	1396	2.6	1802	4.8
NAFK	75	0.0	88	0.0	4317	2.3	562	0.2	5866	4.4
XSSA	5	0.0	6	0.0	-2	0.0	61	0.5	33	0.5
XRW	1408	0.0	1695	0.1	-3949	-0.1	2983	0.1	-18762	-0.5
Total	11643	0.0	13843	--	19047	--	56146	--	43885	--

(Source) Simulation by the author using GTAP version6-beta.

1. (Scenario III--a) Japan eliminate all import tariffs on agricultural goods and processed foods from developing countries;
2. (Scenario III-b) Japan eliminates unilaterally all tariffs on all imports from developing countries;
3. (Scenario IV) Japan establishes an FTA with each developing country;
4. (Scenario V) The EU and NAFTA members, as well as Japan eliminate unilaterally all the tariffs to the imports from the developing countries.
5. (Scenario VI) The EU and NAFTA members, as well as Japan, establish an FTA with each developing country.

Under Scenario IV, the world EV increases substantially, because all developing countries eliminate their own tariffs on imports from Japan. Trade volume between Japan and the developing countries naturally increases due to the trade volume effect,

although some the developing countries imports are diverted to Japan. Overall, the positive trade volume effect outweighs the negative trade diversion effect. However, Japan receives most of the world welfare increase between Scenario(s) III and Scenario IV. Because of the trade diversion, Korea, Singapore, the United States and the EU15 all suffer under the Japan-Developing-Country-FTA,.

In Scenario V, the EU15 and NAFTA join Japan in unilaterally eliminating their tariffs on the imports from all developing countries. This case reveals the most fortunate outcome, almost all the countries gain in welfare and in real production. Scenario VI — large scale FTAs — on the other hand, brings about massive trade diversion resulting in reduced world welfare and loss of welfare and real production in most non-member industrialized countries. The simulation indicates that regional trade liberalization on such a large scale would be a poor approach. Multilateral liberalization involving all countries would better achieve world-wide trade liberalization without producing massive and negative trade diversion effects.

5. Conclusion and Policy Recommendations

5.1 *Conclusion*

In the context of coherence between development assistance and FTA/EPA policies, the Japanese government has paid little attention to the effects of its trade agreements on the development of its trading partners. While FTAs accord de facto favor to member countries, countries tend to seek their own benefits under the agreements. In addition, almost all the feasible FTA/EPA counterparts for Japan are developed, industrialized or wealthy countries, the only exceptions being China and some ASEAN states. Despite this inattention, historically Japan's trade and investment with developing countries — particularly in East Asia — has promoted their industrialization. Japan's trade liberalization in 1980s and 1990s, both multilateral and unilateral, helped establish international production networks in East Asia. Market-driven economic integration contributed to the industrialization of East Asia, including ASEAN5 and China. In this sense, Japan's trade policy has inadvertently been coherent and consistent with the development of her trading partners.

The geographic priority region of Japan's ODA policy — East Asia — was selected at least partly for economic considerations. Japanese trade policies have placed less importance on African and South Asian countries and the Japanese government has no plan to establish FTAs with these countries in the short- or medium-run. Nonetheless, Africa and South Asia have become the most important geographic areas for development assistance. For the Japanese government to implement coherent policies so that trade reinforces aid, efforts should be taken to increase trade and investment in these regions. If there are insurmountable obstacles to this, .Japan might consider boosting ODA activity in those two areas. On the multi-lateral front, Japan might consider promoting coherence in conjunction with the Doha Development Agenda.

According to empirical studies, trade and investment openness contribute to long-term economic growth. Trade and investment liberalization in developing countries improves efficiency in resource allocation and attracts domestic investment and foreign direct investment (FDI). As clearly seen recently in the Chinese economy, FDI inflows can stimulate technological progress markedly.

However, as the present study shows, trade diversion effects are also important. The simulation results suggest that an FTA between Japan and ASEAN5 (ASEAN5+J) and between Japan-China-South Korea and ASEAN5 (ASEAN5+3) generally accord welfare and production increases to all the FTA members. However, in the case of the ASEAN5+3 FTA, most developing countries outside the FTA as well as the world economy would lose welfare because of the trade diversion effects.

On a sector basis, under the ASEAN5+3 FTA, developing member countries would see expansion of some assembly manufactures. The expansion of these manufacturing sectors reflects anticipated inflows of FDI. Although not reflected in the simulation, inflows of FDI to these sectors usually accompanies technological progress, thereby ensuring sustainable dynamic growth. The FTA ASEAN5+3 will bring about development of the member countries but non-FTA-member developing countries will suffer a reduction of production in several labor-intensive sectors. The government of Japan should be aware of possible adverse outcomes and impacts on the economies of developing countries from its trade policies. ODA may work as a complementary tool to mitigate adverse trade policy effects. Japan's ODA can support the industrial adjustment process by, for example, assisting with job training services to workers in the adversely effected sectors and improving industrial infrastructure in other more

hopeful sectors.

Moreover, under a hypothetical scenario in which Japan unilaterally eliminates tariffs on imports from developing countries, all developing countries obtain welfare gains. The benefits accruing to developing countries will expand further if EU and NAFTA members join and eliminate their tariffs. This serves to remind us of the importance of multilateral trade liberalization under the WTO.

5.2 *Policy Recommendations*

Firstly, when it makes decisions related to formulating trade and investment strategies, the Japanese government should recognize the significant impact its trade and investment policies might have on the economies of developing countries. The planned FTA with ASEAN5 will have some positive or negative impact on the growth and income disparity of developing countries outside ASEAN. An accurate assessment of that impact will remind policy-makers that coherence is advisable among all policies and contribute to better decisions.

Secondly, the Japanese government can deliberately use its trade and investment policies to stimulate development in its trade and investment partners. Some development effects might even be greater than those of normal ODA projects, as can be seen in the significance of an ASEAN5+3 FTA to the Thailand economy.

Thirdly, to strengthen policy coherence, Japan's ODA strategy should include an explicit review process of trade and investment policies and their effects. Poverty reduction and environmental improvement are key strategic targets and these targets are closely linked with the industrial and market structures in developing countries. A coherent policy mix for ensuring development is important; for example, if Japan's trade and investment policy looks likely to have an undesirable impact on some key sector(s) of a developing country, Japan's ODA to that country could be oriented toward offsetting that impact.

Fourthly, on the multilateral front, Japan should consider playing an indirect role to improve the policy coherence of other developed countries. As this study shows through its simulations, multilateral trade liberalization by the industrialized countries toward developing country trade partners will have large positive impact on the

developing countries. In addition, Japan might be effective as a promoter of global multilateral trade and investment liberalization. This will indirectly contribute to the development of economies in Africa, a region where both Japanese trade and ODA are scarce. A cooperative strategy on the part of Japan in World Trade Organization negotiations would raise its profile and improve the coherence of developed countries as a group.

Finally, trade and investment have become increasingly important in the development process, as the case of China demonstrates. Japan's ODA policy should take this into account in reviewing sector strategies. If ODA is designed carefully to promote FDI inflows, more efficient results will be achieved.

References

Abe, K. (2005) “The Patterns of Integration in Trade and Investment in East Asia,” in Chapter 2 in *Trade, Investment and Financial Integration in East Asia*, ASEAN Research Group Study.

APEC Economic Committee (1997) *The Impacts of Trade Liberalization in APEC*. APEC Secretariat, Singapore.

--------- (1999) *The Impact of Trade Liberalization in APEC: 1999 Update*, APEC Secretariat, Singapore

Baldwin, R.E. (1989) “The Growth Effects of 1992,” *Economic Policy: A European Forum*, vol.9, 247-281.

Baldwin, R.E. (1992) “Measurable dynamic gains from trade,” *Journal of Political Economy*, vol.100, 162-174.

Baldwin, R.E. and Venables, A.J. (1995) “Regional Economic Integration,” *Handbook of International Economics*, Vol.3, Chapter 31.

Borensztein, E, De Gregorio, J. and Lee, J-W. (1998), "How does foreign direct investment affect economic growth?", *Journal of International Economics*.

Frankel, J., (1992) “Is Japan Creating A Yen Bloc in East Asia and the Pacific?”, NBER Working Paper No. 4050.

Hook, S. W. and Zhang, G. (1998), “Japan’s Aid Policy since the Cold War: Rhetoric and Reality”. *Pacific Affairs* 71: pp. 1051-1066.

Japanese Government (2004), *Decision by Ministers Meeting to Promote Economic Partnership Agreements*.

Krugman, P. (1979), “A Model of Innovation, Technology Transfer, and the World Distribution of Income,” Journal of Political Economy 87:2: pp.253-266.

Levine, R. and Renelt, D. (1992), “A Sensitivity Analysis of Cross-Country Growth Regressions,”, American Economic Review, 82:4: pp.942-963.

Meade, J.E. (1955) *The theory of customs unions* (North-Holland, Amsterdam)

Reimer, J. (2002), “Estimating the Poverty Impacts of Trade Liberalization,” *GTAP Working Paper* No.20.

Urata, S. (2004), “The Shift from ‘Market-led’ to ‘Institution-led’ Regional Economic Integration in East Asia in the late 1990s,” RIETI Discussion Paper Series 04-E-012.

Urata, S. and K. Abe (2004), “The Impacts of Japan-Korea FTA and CU on Economy, Industry and Trade in Japan and Korea,” Bilateral Joint-research between Japan and Korea.

Viner, J. (1950), *The customs union issues* (Carnegie Endowment for International Peace, New York).

Wacziarg, R. (1997), "Measuring the Dynamic Gains from Trade," Background Paper prepared for *Global Economic Prospects 1997*, World Bank.

World Bank (2003), *Lessons from NAFTA for Latin America and Caribbean Countries*, World Bank.

Appendix 1: Welfare Improvement Through Trade Liberalization

According to Baldwin and Venables (1995), suppose that the welfare of the representative consumer in a country can be represented by an indirect utility function $V = V(p + t, E)$ where p is border price vector, t is a vector of import tariff (domestically captured rent), and E is total expenditure on consumption. Total expenditure is equal to the sum of factor income, profits and domestically accruing trade rents including tariff revenue, net of investment. Therefore,

$E = wL + rK + tm$ where L is labor, K is capital, w and r are wage and rental price of capital, and m is the net import vector.

Totally differentiating V and dividing through by the marginal utility of expenditure, and assuming perfect competition in the market for used capital, we find:

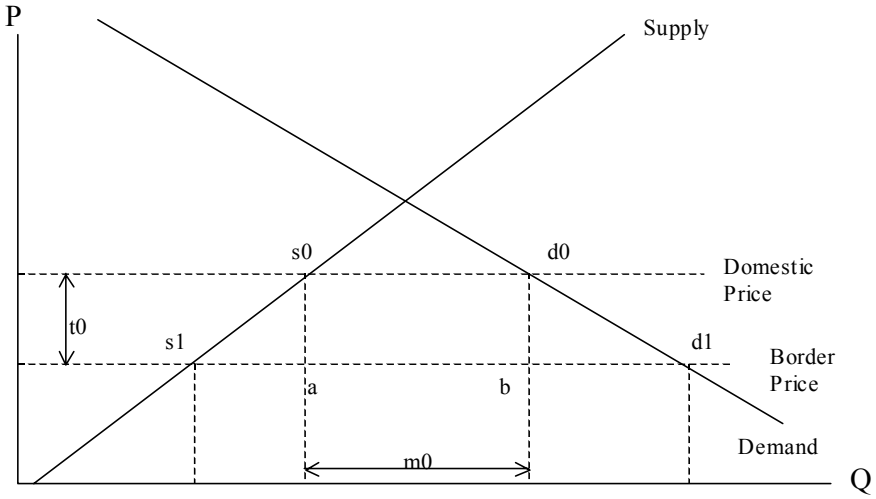
$dE \approx dV / V_E = tdm - mdp$

The first term is trade volume effect, and the second, terms of trade effect. The terms of trade effects should be zero, if all the related trading partners are small and cannot affect the world price level. In the case of tariff elimination, like an FTA, the trade volumes effect amounts to the following integral:

$$dE \approx \int_{t0}^{0} t \frac{dm}{dt} dt = [tm]_{t0}^{0} - \int_{t0}^{0} m dt = \int_{0}^{t0} m dt - t_0 m_0$$

where t_0 is the level of import tariff before the tariff elimination, and m_0 is the amount of import before the tariff elimination. In a partial equilibrium framework, the first term denotes the trapezoid $s_o d_o d_1 s_1$, and the second term is the rectangular $s_o d_o ba$ in the chart below. The difference of the two terms is equal to two triangles $s_o a\ s_1$ and $d_o b d_1$.

Chart 2: Graphical Presentation of Trade Volume Effect



Appendix 2: Survey of Trade in Growth Function Analysis

A standard approach to estimating dynamic impacts is to assume a growth function and adopt econometric methods to estimate the function. Barro (1991) first provided an empirical estimate for the growth function of per capita income. Overall, trade policy openness will stimulate domestic investment, as well as inducing policy improvements, leading to higher per capita GDP. The implication is that the governments of developing countries should open their own trade to accelerate growth of their macroeconomic incomes. See the Table below, summarizing the study of APEC (1998).

However, Levine *et al.* (1992) found that almost all the empirical results were fragile. They confirmed the robustness in the correlation between growth and the share of investment in GDP and between the investment share and the ratio of international trade to GDP. They adopted extreme-bound analysis to test the robustness of the various variables of the growth function, including the proxies of openness of markets. The proxies, often used, were imports per GDP, exports per GDP, or imports plus exports per GDP. Their findings included:

- Even if one substitutes imports or total trade for exports in cross-country growth or investment regressions, one obtains essentially the same coefficient estimate and coefficient standard error. Thus, researchers who identify a significant correlation using an export performance measure should not associate this result with exports *per se*, because it could be obtained using a corresponding measure of imports or total trade.
- The share of trade in GDP is robustly positively correlated with the share of investment in GDP.
- When controlling for the share of investment in GDP, we could not find a robust independent relationship between any trade or international price-distortion indicator and growth. Therefore, the relationship between trade and growth may be based on enhanced resource accumulation and not necessarily on the improved allocation of resources.

The results are largely in line with Wacziarg (1997), which calculated that a one standard deviation increase in an index of trade policy openness is associated with a 0.9 percentage point higher per capita GDP growth. The effect can be separated into different components. The largest is the impact through domestic investment, which

amounts to about half of the total impact, 0.42 percentage points out of 0.93. Remaining components include induced policy improvement (0.34 percentage points), such as the improvement of macroeconomic environment and shrinkage of black market, and technology transfer (0.20 percentage points) through foreign direct investment and manufactured exports. This study demonstrates that trade liberalization may stimulate growth, not only through the accumulation of capital, but also through policy improvements and technology transfer.

Table 8: Example of Growth Function (APEC Economic Committee (1999))
Dependent Variable is Δ ln (GDP/POP) (growth rate between 1970 and 1990)

Equation Independent Variable	(1)	(2)	(3)	(4)
Constant	0. 12*** (0.020)	0.071*** (0.018)	0.0076*** (0.022)	0.108*** (0.021)
ln(*PGDP*)	-0.005*** (0.002)	-0.004** (0.002)	-0.005** (0.002)	-0.005*** (0.002)
ln(*SCHOOL*)	0.008*** (0.003)	0.008*** (0.003)	0.008*** (0.003)	0.008*** (0.003)
ln(*OPENESS*)	0.006* (0.003)	0.006 (0.004)	0.009*** (0.003)	0.006** (0.003)
ln(*INVESTMEMT/GDP*)	0.026*** (0.009)		0.022** (0.009)	0.022** (0.009)
APEC_DUMMY		0.02** (0.0l)	0.011** (0.004)	0.009** (0.004)
ln(*OPENESS*)**APEC*		0.006 (0.006)		
No. of Economies Adjusted R-Square F-statistics	75 0.235 6.691***	75 0.211 4.967***	75 0.211 5.94***	75 0.267 6.403***

Sources: World Bank.(1998) *World Development Indicators*.

Notes:
1) Estimation method is the Ordinary Least Squares.
2) Numbers in parentheses are standard deviations. "***", "**"and "*"show statistical significance level at l%.5% and 10%, respectively.
3) ln(*PGDP*):Natural logarithm of GDP at 1970(1987 prices).
ln(*SCHOOL*) :Natural logarithm of secondary school enrollment rate at 1970.
ln(*OPENESS*) :Natural logarithm of annual average export-GDP ratio(1970-1990).
ln(*INVESTMEMT/GDP*) :Natural logarithm of annual average investment-GDP ratio(1970-1990).
APEC_D:APEC economy dummy variable.
ln(*OPENESS*) **APEC*: Product of ln(OPENESS) and APEC economy dummy.
4) F-statistics: Null hypothesis is that the residuals are homoscedastic.

Appendix 3: Regions and Sectors in the GTAP Model

Region			Sector		
1	CHN	China	1	GRN	Paddy rice
2	JPN	Japan	2	AGR	Vegetables, fruit, nuts
3	KOR	South Korea	3	FRS	Forestry
4	XEA	Rest of East Asia	4	FSH	Fishing
5	IDN	Indonesia	5	MIN	Coal
6	MYS	Malaysia	6	PFD	Vegetable oils and fats
7	PHL	Philippines	7	TEX	Textiles
8	SGP	Singapore	8	APP	Wearing apparel
9	THA	Thailand	9	PPP	Wood products
10	VNM	Vietnam	10	CHM	Chemical,rubber,plastic prods
11	XSEA	Rest of Southeast Asia	11	MTL	Ferrous metals
12	IND	South Asia	12	TRN	Motor vehicles and parts
13	XSAS	Other South Asia	13	ELE	Electronic equipment
14	CAN	Canada	14	OME	Machinery and equipment nec
15	USA	United States	15	OMF	Manufactures nec
16	MEX	Mexico	16	EGW	Electricity
17	EU15	Austria	17	CNS	Construction
18	SACU	South Africa CU	18	TRD	Trade
19	SADC	South African Dev Com	19	TRS	Transport nec
20	NAFK	North Africa	20	CMN	Communication
21	XSSA	Rest of sub-saharan Africa	21	FIN	Financial services nec
22	XRW	Rest of the World	22	OSP	Business services nec
			23	OSG	PubAdmin/Defence/Health/Education

Appendix 4: Technical Outline of the GTAP Model

The CGE model simulations in this study were carried out on the basis of the standard Global Trade Analysis Project (GTAP) model version 6.2, together with its Database Version 6-beta database. This Appendix summarizes data and structure of the model, including equations and parameters, taking excerpts from *Global Trade Analysis: Modeling and Applications* (1996), edited by T. W. Hertel, and notes on subsequent revisions of the models and databases.

1. DATA

The GTAP database consists of bilateral trade, transport, and protection data characterizing economic linkages among regions, together with individual and economy input-output databases that account for intersectoral linkages within each region.

Trade Data

The trade data upon which the GTAP data base is built originates from United Nations D-series trade statistics. COMTRADE (COMmodity TRADE) is the registered name of the database maintained by the UN Statistics Office. This database is one of the most complete and exhaustive in terms of commodity and country coverage, but because of the large size of the database, its reliability is questionable. Efforts have been made by the United Nations to fill the data gaps and balance the bilateral trade and transport matrices. The bilateral flows are also used to determine the pattern of trade in non-factor services. The reconciliation method adjusts reported values based on "relative" biases for bilateral transactions. For almost all the reporting countries there are only slight changes in the total reported values. There are cases of severe under-reporting or non-reporting in some countries. In most of these cases, the partners' reported trade was used, after adjusting for the international transport margins.

Protection Data

The support and protection data (SPD) is expressed in the form of *ad valorem* equivalent, tariff, and non-tariff barrier, and they draw heavily on information submitted to the GATT in connection with the Uruguay Round (UR) negotiations. The protection data is broadly indicative of the level of protection prevailing prior to the UR. The best-quality data in the SPD is that relating to tariffs. There remains considerable bilateral variation in the applied tariff rates, aggregated over all merchandise trade.

Non-tariff information is most complete in the cases of agriculture and textiles/apparel. Anti-dumping duties are incorporated for Canada, the European Union (EU) and the United States. Also, the export restraining effects of EU price undertakings are included. However, the SPD is not comprehensive. Other trade measures, despite their importance, are very difficult to quantify in a useful way. Protection of, and support to the service sector are especially difficult to quantify, and it is the only sector that is wholly neglected. It was thought better to do a solid job of incorporating tariff and selected non-tariff information and leave other policy measures aside for the time being, given the dubious information content of the latter.

Input-Output Data

The basic input-output (IO) data provide information about the individual regional economies. Some of these were obtained from the Australian Industry Committee (IC), while others were contributed by members of the GTAP network. The IO tables making up the regional databases refer to 2000. These economies present special problems for the database because of prevalence of the re-exports. The original dataset of Hong Kong includes a negative saving rate, which perhaps reflects an underestimate of re-exports or investment and an overestimate of consumption. Based on the actual figures for 2000, some of the government consumption has been moved to investment, which amounts to 10 percent of GDP, as the minimum amendment.

2. Model

The distinguishing features of the general equilibrium model include: the treatment of private household behavior, international trade and transport activity, and global savings/investment relationships.

Aggregation

The GTAP database consists of the 87 economies/regions and 57 disaggregated sectors and, which are aggregated to the appropriate versions for simulations. In this study, regions are aggregated into 22 regions and 23 areas.

Model Structure

The GTAP model is a computable general equilibrium model that depicts the behavior of households, governments, and global sectors across each region in the world. It is composed of regional models linked through international trade. Prices and quantities are simultaneously determined in factor markets and commodity markets by the accounting relationships, the equilibrium conditions specified by the behavior of economic agents, and the structure of international trade. The model includes three factors of production: skilled and unskilled labor, capital; and natural resources and land.

i). Behavior of Firms

The GTAP model assumes that firms use constant returns to scale technology, and minimize the cost of inputs, given a level of output and technology. Firms' behavior depends largely on the assumptions of separability in the production structure. Firms are assumed to combine a bundle of intermediate inputs in fixed proportion with a bundle of primary factors. The demand for each intermediate input is also assumed to vary in fixed proportion with the level of output. That is, the production function in the GTAP model has a Leontief structure. This production structure yields demand equations for a bundle of primary factors and each intermediate input. In determining the demand for primary factors, the constant elasticity of substitution (CES) functional form is assumed. The CES production function yields the demand equations for each primary factor, and the price of value-added in industry j in region r evaluated by firms. Firms purchase intermediate inputs, some of which are produced domestically, and some of which are imported. Domestic and imported intermediate inputs are substituted according to a constant elasticity of substitution. Similarly, a constant elasticity of substitution is assumed to capture the degree of substitutability between imports from different sources. The two-level CES functional form yields the demand function.

ii). Behavior of Households

Regional household behavior is governed by an aggregate utility function specified over composite private consumption, composite government consumption, and savings. The other feature of the regional households utility function is the use of an index of current government expenditures as a proxy for the welfare derived from the government's provision of public goods and services to private households in the region. The GTAP model employs a special case of the Stone-Geary utility function, in which all

subsistence quantities are equal to zero. The share of private household expenditures, government expenditures, and savings are constant in total income. Once the changes in real government spending have been determined, spending is allocated across composite goods and aggregate demand for the composite is allocated between imports and domestic products under the assumption of constant elasticity of substitution. Private household demand has a non-homothetic nature. The allocation of private household expenditures across commodities is based on the constant difference of elasticity (CDE) expenditure functions.

iii). Global Banking Sector and Savings/Investment

The GTAP model introduces two global sectors. One is the global transportation sector described below. The other is the global banking sector. The global banking sector intermediates between global savings and investment. It creates a composite of investment goods, based on a portfolio of net regional investment, and offers this to regional households to satisfy their savings demand. Therefore, all savers face a common price for this saving commodity. A consistency check on the accounting relationships involves separately computing the supply of the composite investment goods and the demand for aggregate savings. If all other markets are in equilibrium, all firms earn zero profit, and all households undergo budget constraints, then global investment must equal global savings by virtue of Walras' Law.

iv). Global Transportation

The global transportation sector provides the services that account for the difference between fob and cif values for a particular commodity shipped along a specific route. Summing all routes and commodities gives the total demand for international transport services. These services are supplied by individual regional economies, which export them to the global transport sector. In the GTAP model, transportation services are provided via the Cobb-Douglas production function. Lacking the data that link exports of transport services with specific routes, the services are combined into a single composite of international transport goods. Then, the percentage change equation for the composite price index given the demands for inputs to the shipping industry is derived under the Cobb-Douglas assumption. The GTAP model assumes that the composite of international shipping services is employed in fixed proportion with the volume of a particular good shipped along a particular route.

3. Model Parameters

There are four types of behavior parameters in the GTAP: elasticities of substitution (in both consumption and production); transformation elasticities that determine the degree of mobility of primary factors across sectors; the flexibilities of regional investment allocation; and, consumer demand elasticities.

First, the SALTER[24] project engaged in an extensive review of the literature and some original empirical work to specify values for substitution elasticities on a commodity-specific, region-generic basis. Table below reports the parameters.

The first column describes the ease of substitution between the domestic goods and the composite import, by commodity. As such, it shows the composite import demand elasticity. The second column determines the case of substitution among imports from different sources. In the SALTER parameter file, this is equal to twice the value of the value in the first column. The elasticities of substitution in the value-added aggregates for each sector are also reported in the third column of Table. The overall elasticity of substitution among primary factors determines the ability of the economy to alter its output mix in response to changes in relative commodity prices. These parameters also play an important role in determining the sectoral supply response, in the presence of sector-specific and sluggish factors of production. Elasticity of substitution in primary production is relatively small and the greatest degree of substitutability arises in the trade and transport sector.

Second, within each region, the model distinguishes between primary factors that are perfectly mobile across productive sectors and those factors that are sluggish. In an experiment with sluggish endowment commodities, it is important to determine how much of a disparity in relative sectoral returns can be sustained over the simulation period. This disparity is governed by the elasticity of transformation.

[24] The SALTER model, constructed by the Industrial Commission of Australia in the late 1980s, was a pioneering work of international general equilibrium model, providing the origin of the GTAP model.

Table 9: Assumed Parameters in the GTAP Model

	1	2	3
1 GRN	3.54	5.96	0.24
2 AGR	2.53	5.21	0.30
3 FRS	2.50	5.00	0.20
4 FSH	1.25	2.50	0.20
5 MIN	5.26	12.69	0.20
6 PFD	2.37	4.83	1.12
7 TEX	3.75	7.50	1.26
8 APP	3.80	7.65	1.26
9 PPP	3.10	6.32	1.26
10 CHM	2.96	6.05	1.26
11 MTL	3.39	6.94	1.26
12 TRN	3.15	6.43	1.26
13 ELE	4.40	8.80	1.26
14 OME	4.05	8.10	1.26
15 OMF	3.75	7.50	1.26
16 EGW	2.80	5.60	1.26
17 CNS	1.90	3.80	1.40
18 TRD	1.90	3.80	1.68
19 TRS	1.90	3.80	1.68
20 CMN	1.90	3.80	1.26
21 FIN	1.90	3.80	1.26
22 OSP	1.90	3.80	1.26
23 OSG	1.90	3.80	1.26

(Note) 1 = Armington substitution elasticity between domestic and composite import goods.

2 = Armington substitution elasticity among import goods by source.

3 = Substitution elasticity of primary factors (land, labor and capital).

Third, there is another set of "mobility" parameters that determine the flexibility of regional investment. It is possible to choose some regions where investment is quite sensitive to the changing rate of return, and others where this is not the case.

Fourth, the parameters that describe demand behavior in initial equilibrium for the representative private household are region-specific. Consumer behavior in GTAP is based on the constant difference elasticity (CDE) expenditure function, which is most naturally calibrated to income and own-price elasticities of demand.

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