

Chapter

Vietnam in APEC: Changes in Trade Patterns after the Open Door Policy

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1. Introduction

At the APEC Kuala Lumpur Ministerial Meeting in November 1998, the following three countries were formally admitted as new members: Vietnam, Russia and Peru. For APEC, this implied further enhancement of its diversity, which had been regarded as one of its prominent features in comparison to other regional frameworks. First, APEC became more diverse in terms of the level of economic development of its members. Vietnam is classified as a “low income country”, with annual per capita GNP of 320 US dollars in 1997 (World Bank, 1998), while APEC also includes some of the richest countries in the world. Second, APEC now has two additional former Socialist countries as its members besides the People’s Republic of China, which implies diversity in terms of political and economic systems of its members. Third, APEC now extends over an extremely wide geographical region. It extends from the Pacific coast of South America to the eastern border of the Russian Federation.

This study focuses on Vietnam as a new member of APEC. Since Vietnam started its ‘open door policy’ in the process of transition from central planning to a market economy in the late 1980s, it has made tremendous progress in integrating into the Asia Pacific region through expanded economic, commercial, and political relations. This meant a remarkable shift in terms of the country’s external economic relations, which had been characterized by strong and almost exclusive links with the members of the Council for Mutual Economic Assistance (CMEA) prior to the reform period.

Although this change can be seen as an inevitable result of the collapse of the CMEA, Vietnam's efforts to promote economic reform, particularly reform of its trade and investment regime, greatly contributed to expansion of trade and investment relations with Asian countries.

Such developments laid the basis for Vietnam's accession to ASEAN in 1995 and APEC in 1998, which were seen as important steps for achieving further integration with the international community. In particular, Vietnam eagerly wants to use these steps to establish a trade agreement with the US and to obtain membership in the WTO in the future, although further drastic liberalization of the economy will likely be a precondition. At this stage, it seems important to review the previous changes in Vietnam's external trade relations and to analyze the future prospects for further integration with the Asia Pacific region after its participation in APEC.

The purpose of this paper is to analyze the changes in Vietnam's trade patterns after the adoption of the open door policy, and to examine what Vietnam's participation in APEC would mean for both Vietnam and APEC. In particular, the study will focus on analyzing recent trends in Vietnam's export and import structures and its trade partners, assessing previous achievements as well as constraints, and drawing conclusions regarding the implications that Vietnam's participation in APEC will have on its trade opportunities.

The rest of the paper will be organized as follows. Section 2 provides a brief overview of Vietnam's open door policy, focusing on the progress of trade-related reforms and the country's integration with the international economy. Section 3 examines the changes in Vietnam's trade patterns after starting its open door policy, including major trade partners, export and import structure, and comparative advantage. Section 4 analyzes trade flows in the APEC region, including the three new members, and the characteristics of Vietnam's trade using the gravity model. Lastly, Section 5 provides the conclusion of the paper.

2. Vietnam's Open Door Policy and Its Participation in APEC

2.1 Doi Moi and Vietnam's Open Door Policy

The start of Doi Moi (renovation) and adoption of an open door policy in Vietnam in the late 1980s marked an important turning point for the country. Vietnam abandoned the socialist development model imposed on the whole nation since its reunification in 1976. The development strategy prior to the start of Doi Moi emphasized achieving central control of the economy and developing heavy industry at the expense of agriculture and light industry. Since Vietnam was still an underdeveloped and agrarian economy, the heavy industrial sector was built up with external support, mainly from the USSR (Hakkala and Nilsson, 1997). During this period, Vietnam's external economic relations mainly depended on foreign trade with other members of the CMEA and economic assistance from the USSR. After Vietnam invaded Cambodia in 1978, the US-led embargo was imposed on the country, and Western aid ceased. Chinese aid was also withdrawn in 1978, and a fierce border conflict followed in 1979.

Pushed by the economic crisis in the late 1970s and the apparent failure of the central planning system, early attempts for partial microeconomic reforms started in 1979, but it was not until 1986 when the government approved a more decisive economic reform under Doi Moi, or renovation. Tran Van Hoa (1997) outlines the four major components of the Doi Moi Program as follows:

1. reversal of the socialist industrialization model giving priority to heavy industry, and placing a new emphasis on agriculture and light industry;
2. acceptance of a market economy and introduction of measures to ensure that the market mechanism could work;
3. acceptance of private ownership; and
4. adoption of an 'open door policy' in foreign economic relations.

Accordingly, the 'Three Major Economic Programs' in the Fourth Five Year Plan (1986-1990) included production of foodstuff, consumer goods, and export goods. Regarding the open door policy, the foreign investment and trade regime became one of

the first targets of reform. A new Law on Foreign Investment was adopted in 1987, which, combined with several amendments that followed, created a relatively favorable environment for foreign investors. This laid the basis for the surge in foreign direct investment (FDI) inflows in the 1990s, especially from East Asian countries. Singapore, Taiwan, Hong Kong and South Korea became the top investors in Vietnam, mainly in the light manufacturing industry, services, and hotel and tourism.

Another key component of the open door policy is trade-related reform, and this will be discussed in detail in the subsequent section.

2.2 Progress of Trade-Related Reform

Under the central planning system, Vietnam's foreign trade was mainly based on barter agreements in ruble with other members of the CMEA¹, and it was under the state's strict control and coordination. In the process of reform, Vietnam has made substantial progress towards reducing the state's controls and protection of trade under the socialist system. However, numerous restrictions still remain, particularly in the form of non-tariff barriers aimed at protecting domestic industries.

The Trade Licensing System

In the pre-reform period, state-owned trading companies that held a monopoly over trade in certain commodities conducted all trade transactions. The system was initially revised to give individual firms the possibility of obtaining a trading permit as long as they satisfied the necessary requirements, but authorization was still required for each individual shipment. Later on, further revision made the general business license specify the lines of products and quantities the company was allowed to trade. However, the system still seems to remain a serious obstacle for private firms compared to state-owned enterprises and foreign firms. Licensed joint ventures and wholly-owned foreign affiliates, especially, are automatically granted import rights.²

¹ The terms of trade, including the prices, were determined by five-year bilateral agreements with annual renegotiations (Hakkala and Nilsson, 1997).

² They were also exempted from import allocation and import shipment authorization, normally covering several shipments, which were required for domestic companies (Hakkala and Nilsson, 1997).

Quotas

In 1989, Vietnam drastically restructured its intricate system of quantitative restrictions covering all imports. All import quotas were removed except for those covering certain key items, and the number of products subject to quota restrictions has been reduced over the subsequent years. However, depending on the market demand situation, temporary import bans on certain consumer goods, cars, and motor bikes were often imposed during the early 1990s (IMF, 1998).

Following the expansion of trade deficits in 1996, the government introduced new quota restrictions on selected commodities with large domestic stocks, including petroleum, fertilizers, paper, and steel, to stem the growth of imports (IMF, 1998). During 1997, the government also announced a series of restrictions on imports of some important consumer goods³ in order to protect domestic producers and to boost domestic production through foreign exchange controls and restrictions on the issuance of letters of credit (Kokko, 1997).

Tariffs

Along with drastically restructuring the quota system, the government introduced a new tariff system in the late 1980s, and the customs nomenclature has gone through several revisions since then. In general, a strong bias exists in the tariff structure. The highest rates apply to luxury goods and consumer goods, while the rates for raw materials, capital equipment, and intermediate inputs are generally much lower, typically below 5% (Kokko, 1997). Although the average tariff rates have been brought down over recent years, Vietnam's tariff structure still has a number of problems. One is that the tariff rates are complex and subject to frequent and often piecemeal modifications, which have created uncertainty and discouraged long-term investment by the private sector. Another problem is that tariff cuts for luxury goods have often been accompanied by the introduction of high excise taxes⁴, which leaves the level of real protection unchanged.

³ Examples include vegetable oil, beverages, furniture, clothes and footwear, canned foods, and detergents (Kokko, 1997).

⁴ Since tariffs are an important source of government revenue, new tax systems become necessary to complement the loss of tariff revenue caused by tariff reductions (Iwami, 1998).

High tariffs and excise taxes, as well as a trade licensing system that favors state-owned enterprises and foreign investors, have created an incentive for importing illegally. This has become a serious problem, particularly in discouraging domestic industrial production.

Export Promotion

Since the early 1990s, the Vietnamese government emphasized using export processing zones (EPZs) as a strategy to develop export-oriented manufacturing and supporting service industries. As of 1997, six EPZs operated mainly in light manufacturing sectors, such as textiles and garments, household goods production, and food processing (Nguyen Dinh Tai, 1997). However, reports indicate that they have produced only limited success⁵ for reasons ranging from the restrictive investment environment⁶ to poor management. In 1997, the government shifted policy towards promoting the development of Industrial Zones (IZs) to attract investments of import substitution industries as well as export industries.

2.3 Vietnam's Participation in APEC and its Implications

Since the start of its reform program and open door policy, Vietnam has made efforts to build economic, commercial, and political relations with non-CMEA countries. As a nation that had experienced a long period of international isolation, Vietnam has been particularly keen at integrating into the international community.

After the withdrawal of Vietnamese troops from Cambodia in 1989, Vietnam started to establish diplomatic relations with Asia-Pacific and Western European nations in the early 1990s. In 1995, Vietnam and the EU signed the Framework Agreement on Cooperation, and they officially signed the Agreement on Textile and Garments in 1996, which led to expansion of Vietnam's exports of these products to EU countries.

Normalization of its relations with the IMF and the World Bank opened the way for

⁵ Tan Thuan EPZ in Ho Chi Minh City had been regarded as the only successful case, and other EPZs developed only very slowly (Nguyen Dinh Tai, 1997; Iwami, 1998). Recently even Tan Thuan EPZ reportedly faces difficulties; it attracted far fewer projects in 1997 compared to previous years, and achieved only 22.9% of its planned targets in 1997 (Vietnam Investment Review, May 11-17, 1998).

⁶ For example, foreign investors had been subject to restrictions in terms of a minimum capital requirement and an obligation to export all of the products (Ishida, 1996).

Vietnam to access the world's capital markets. Lifting of the US embargo in 1994, followed by establishing diplomatic relations with the US in 1995, opened up commercial relations between Vietnam and the US.

In July 1995, Vietnam was formally admitted as the seventh member of ASEAN, which was recognized as an important step in Vietnam's integration into the world economy (Truong and Gates, 1996; Iwami, 1996). By becoming a member of ASEAN and participating in AFTA's trade liberalization program, Vietnam could show its commitment to further reform and liberalize its economy. Vietnam would also benefit from increased investment inflows and business opportunities, both within and outside the region. At the same time, however, Vietnam has to comply with the tariff reduction program under the Common Effective Preferential Tariffs (CEPT) scheme by 2006, and this will likely pose serious challenges for the domestic industries in Vietnam. Aside from the impact of trade liberalization under AFTA, Vietnam's participation in ASEAN paved the way for further integration in the Asia Pacific region. In November 1997, Vietnam was admitted to become an APEC member with the support of other ASEAN members, and membership took effect at the Kuala Lumpur Ministerial Meeting in November 1998. APEC is a forum committed to trade liberalization and economic cooperation in the Asia Pacific region, and APEC includes all of the important economies in the region as its members. While Vietnam can expect increased dialogue and closer cooperation with APEC members, it also needs to formulate concrete plans for trade liberalization in the future. Though APEC's trade liberalization program works on a voluntary basis, every member has to submit its Individual Action Plans (IAPs) every year to report on its progress and show future plans for trade and investment liberalization and facilitation towards the Bogor goal.

Having attained membership in ASEAN and APEC, Vietnam's new goal in foreign economic relations is to negotiate a trade agreement with the US and to obtain a Most-Favored Nation (MFN) status for its exports to the US market. The lack of the MFN status, which is granted to most other developing countries, has put Vietnamese products at a competitive disadvantage in the US market. Thus, obtaining the MFN status is crucial for Vietnam to expand its exports to the huge US market. The trade agreement with the US is also considered a vital step toward achieving Vietnam's

longer-term goal of becoming a member of the WTO. However, it might take some time before the two countries reach an agreement, because the conditions presented by the US are demanding. The conditions not only cover reducing tariff and non-tariff barriers, but they also cover trade in services, intellectual property rights, and foreign investment regime (Iwami, 1998).

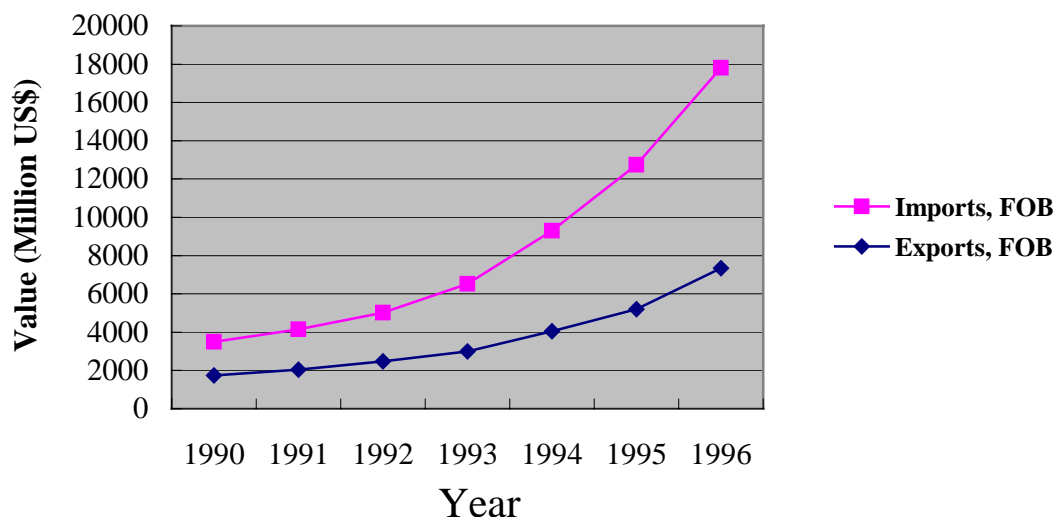
3. The Changing Patterns of Vietnam's Foreign Trade

In this section, we will observe the changes in Vietnam's foreign trade patterns as the result of its open door policy.

3.1 Export/Import Values and Trade Balance

As **Figure 1** shows, both export and import values increased remarkably since around 1993. This increase reflects the relaxation of state management of trade activities and gradual progress in trade policy reforms. However, the growth of imports clearly overwhelmed the increase in exports, and trade deficit expanded rapidly in the mid-1990s, reaching 13.7% of GDP in 1996 (IMF, 1998). As described in Section 2.2, this led the government to adopt measures to control imports in 1997.

Figure 1. Vietnam's Trade Value



Source: IMF(1998), Kokko(1997)

3.2 Major Trade Partners

As seen in **Table 1**, Vietnam's trading partners shifted remarkably after the collapse of the CMEA and Vietnam's adoption of an open door policy. In 1989, Vietnam largely depended on trade with CMEA countries, and as much as 60% of the country's imports came from the USSR. By 1996, however, trade with the CMEA countries had dropped substantially, and East and Southeast Asian countries had become the major trading partners, accounting for more than half of Vietnam's exports and imports. Western European countries also increased their share in Vietnam's trade, particularly exports. Vietnam's trade with the US has increased some, if we take into account the fact that it was virtually non-existent in 1989; however, the increase seems limited by the lack of

Table 1
Vietnam's Major Trade Partners

Unit: Million US\$

		Export				Import			
		1989		1996		1989		1996	
Asia		519	27%	3597	52%	288	11%	9396	69%
	Japan	261	13%	1829	26%	106	4%	1251	9%
	Korea	25	1%	232	3%	16	1%	1764	13%
	China	0	0%	280	4%	0	0%	926	7%
	Taiwan	4	0%	288	4%	1	0%	1294	9%
	Hong Kong	79	4%	179	3%	103	4%	661	5%
	Singapore	71	4%	397	6%	41	2%	1888	14%
	Malaysia	3	0%	137	2%	1	0%	355	3%
	Philippines	0	0%	151	2%	0	0%	136	1%
	Thailand	15	1%	60	1%	2	0%	526	4%
	Indonesia	31	2%	93	1%	1	0%	260	2%
	Cambodia	11	1%	112	2%	5	0%	26	0%
Eastern Europe		772	40%	136	2%	1638	64%	326	2%
	USSR/Russia	549	28%	29	0%	1533	60%	134	1%
Western Europe		94	5%	1738	25%	78	3%	1847	14%
	Germany	9	0%	563	8%	5	0%	376	3%
	France	80	4%	336	5%	53	2%	823	6%
North America		4	0%	383	6%	2	0%	715	5%
	USA	0	0%	311	4%	0	0%	678	5%
Oceania		1	0%	320	5%	11	0%	228	2%
	Australia	1	0%	308	4%	11	0%	181	1%
Others		546	28%	759	11%	549	21%	1684	12%
Total		1936	100%	6933	100%	2566	100%	13668	100%

Source: IMF, Direction of Trade Statistics (various years)

the trade agreement with the US.

3.3 Main Export/Import Items

Table 2 lists Vietnam's main export and import items shown at SITC (Revision 3) 3-digit level, based on the report of the collaborative study conducted by the Ministry of Planning and Investment of Vietnam and Japan International Cooperation Agency. The data came from this report because the government statistics do not provide trade data according to the international commodity classification system and also because Vietnam is not covered by trade statistics prepared by the United Nations or other international organizations.

Table 2. Vietnam's Main Export and Import Items

Main Export Items (% share in total exports)

SITC	Description	1991	1992	1993	1994	1995
036	Crustaceans and mollusks	9.6%	8.1%	9.0%	9.1%	7.6%
037	Fish etc. prepared, preserved N.E.S.	3.1%	2.5%	3.5%	0.9%	2.7%
042	Rice	11.2%	16.2%	12.1%	10.5%	9.7%
057	Fruits, nuts, fresh, dried	1.3%	1.6%	1.5%	1.8%	2.0%
071	Coffee and coffee substitutes	3.7%	3.5%	3.7%	8.1%	11.0%
231	Natural rubber	2.4%	2.6%	2.5%	3.3%	3.1%
322	Coal, lignite and peat	2.3%	2.4%	1.7%	1.7%	1.7%
333	Crude petroleum	27.9%	31.2%	28.3%	21.4%	19.0%
334	Petroleum products, refined	0.1%	0.0%	2.7%	1.7%	1.6%
635	Wood manufactures N.E.S.	0.0%	0.1%	1.6%	1.4%	1.6%
845	Ready-made clothes all kinds	6.4%	7.8%	8.0%	11.7%	13.6%
846	Clothing accessories	0.0%	0.0%	0.4%	0.0%	5.3%
851	Footwear and parts thereof	0.5%	0.6%	2.3%	2.8%	5.4%
899	Miscellaneous manufactured articles, N.E.S.	11.4%	8.1%	7.6%	8.3%	0.7%

Main Import Items (% share in total imports)

SITC	Description	1991	1992	1993	1994	1995
046	Meal and flour of wheat	2.2%	2.1%	1.3%	0.9%	1.1%
121	Tobacco, unmanufactured	2.3%	2.1%	1.5%	1.4%	1.2%
266	Synthetic fibers for spinning	2.8%	1.5%	2.0%	2.2%	2.4%
334	Petroleum products, refined	21.5%	22.7%	17.7%	12.3%	10.6%
541	Medical and pharmaceuticals products	2.0%	3.8%	3.4%	3.1%	1.6%
562	Fertilizers	9.3%	9.8%	5.7%	6.4%	6.7%
575	Plastic materials	1.6%	2.2%	2.1%	3.1%	2.8%
671	Pig iron, ferro-alloys, etc	1.5%	3.5%	5.9%	3.8%	4.4%
728	Other machinery, equipment for special industries and parts thereof	20.2%	7.3%	16.6%	12.6%	10.6%
785	Motorcycles and bicycles; parts thereof	0.2%	2.0%	7.3%	5.9%	5.0%
846	Clothing accessories	1.6%	2.2%	2.5%	2.6%	3.7%
851	Footwears and parts thereof	0.8%	0.0%	0.2%	1.2%	2.3%
899	Miscellaneous manufactured articles, N.E.S.	15.8%	18.4%	0.9%	8.5%	17.7%

Source: Sasano and Koyama (1998)

As the table shows, the most important export commodity is crude petroleum, but its

share of total exports has decreased since 1992. Other export items include mostly agricultural products, such as rice, coffee, fish and other marine products, and rubber.

Another important change in Vietnam's exports happened between 1991 and 1995 with the rapid growth of exports of labor-intensive manufactures, particularly clothing and footwear. Together, these products accounted for nearly 25% of the total export value in 1995. The textile and garment industry has become a particularly important export industry in Vietnam, which has developed mainly under subcontracting arrangements between Vietnamese producers and foreign partners providing materials, design, and marketing know-how (Masuyama and Kasamatsu, 1998).

Vietnam's imports are largely made up of raw materials, capital goods, and intermediate inputs used for industrial production, such as petroleum products, machinery, fertilizers, and iron. On the other hand, consumer goods account for only a small share of total imports, which can be explained by the tariff structure and non-tariff barriers that limit the import of consumer goods.

3.4 Structure of Comparative Advantage

In order to analyze Vietnam's export and import structure in a form comparable with other countries, it seems most appropriate to examine the structure of comparative advantage using the revealed comparative advantage (RCA) index, which is defined as follows:

$$RCA_{xih} = (X_{ih}/X_i)/(W_h/W)$$

where RCA_{xih} is the RCA index of Country i in Commodity h , X_{ih} is exports of Commodity h from Country i to the rest of the world, X_i is Country i 's total exports, W_h is the world total of trade in Commodity h , and W is the total world trade volume. If the RCA index is above unity, the country has comparative advantage in the commodity. A similar index can be defined for imports, RCA_{mih} , which is an indicator of comparative disadvantage.

Table 3
Vietnam's Trade Structure and Revealed Comparative Advantage (RCA)

		Export				Import			
		Share		RCA		Share		RCA	
		1991	1995	1991	1995	1991	1995	1991	1995
Agricultural Products		39.4%	40.2%	3.68	4.04	9.0%	6.7%	0.81	0.65
A1	Crude Foodstuff	28.1%	27.9%	5.19	5.82	0.0%	0.0%	0.00	0.00
A2	Agricultural Materials	4.3%	3.2%	1.43	1.15	6.5%	5.4%	2.08	1.87
A3	Processed Food	7.1%	9.0%	3.03	3.81	2.5%	1.3%	1.07	0.57
Minerals		35.0%	24.2%	2.79	2.45	24.2%	12.6%	1.81	1.21
M1	Mineral Materials	0.0%	0.0%	0.00	0.00	0.0%	0.0%	0.00	0.00
M2	Mineral Fuels	34.0%	22.2%	5.00	4.36	1.5%	0.8%	0.20	0.15
M3	Petroleum Products	0.1%	1.6%	0.03	1.04	22.7%	11.8%	9.62	7.46
M4	Non-ferrous Metals	1.0%	0.4%	0.48	0.19	0.0%	0.0%	0.00	0.00
Labor-intensive Manufactures		23.3%	32.5%	1.22	1.65	21.4%	31.7%	1.09	1.61
L1	Textiles	1.3%	1.8%	0.40	0.57	1.8%	1.7%	0.56	0.56
L2	Clothing	7.3%	20.3%	2.09	6.09	1.8%	4.4%	0.50	1.27
L3	Leather and Footwear	0.8%	4.8%	0.63	3.73	0.6%	1.8%	0.44	1.37
L4	Furniture and Wood Products	0.1%	1.8%	0.04	1.12	0.0%	0.0%	0.00	0.00
L5	Rubber and Plastic Products	1.3%	1.7%	0.47	0.54	2.2%	4.0%	0.76	1.29
L6	Miscellaneous Manufactures	12.6%	2.2%	1.82	0.30	15.0%	19.8%	2.14	2.73
Capital-intensive Manufactures		0.8%	2.6%	0.04	0.14	19.3%	22.0%	1.06	1.17
C1	Beverage and Tobacco	0.0%	0.0%	0.00	0.00	2.5%	1.4%	2.57	1.46
C2	Pulp, Paper and Paper Products	0.0%	0.0%	0.00	0.00	0.3%	0.6%	0.10	0.20
C3	Chemicals	0.2%	0.0%	0.03	0.00	14.1%	12.2%	2.04	1.59
C4	Glass and Non-metal Products	0.0%	0.4%	0.00	0.20	0.1%	1.7%	0.03	0.79
C5	Iron and Steel	0.0%	0.0%	0.00	0.00	1.5%	4.6%	0.48	1.46
C6	Metal Products	0.6%	2.2%	0.31	1.11	0.8%	1.5%	0.39	0.83
Machinery		1.4%	0.5%	0.04	0.01	26.1%	27.0%	0.69	0.66
T1	Industrial Materials	0.7%	0.2%	0.05	0.01	22.7%	16.9%	1.65	1.16
T2	Electric Machinery	0.0%	0.3%	0.00	0.02	1.6%	2.3%	0.16	0.17
T3	Motor Vehicles	0.0%	0.0%	0.00	0.00	0.7%	4.3%	0.09	0.51
T4	Other Transport Equipments	0.7%	0.0%	0.20	0.02	1.1%	3.3%	0.39	1.66
T5	Precision Instruments	0.0%	0.0%	0.00	0.00	0.0%	0.2%	0.00	0.08

Data sources:

Vietnam's trade data from Sasano and Koyama (1998)

World's trade data from United Nations, International Trade Statistics (various years)

In order to analyze Vietnam's RCA structure⁷, the author calculated RCA indices for the years 1991 and 1995, to observe the changes in RCA structure up to the most recent

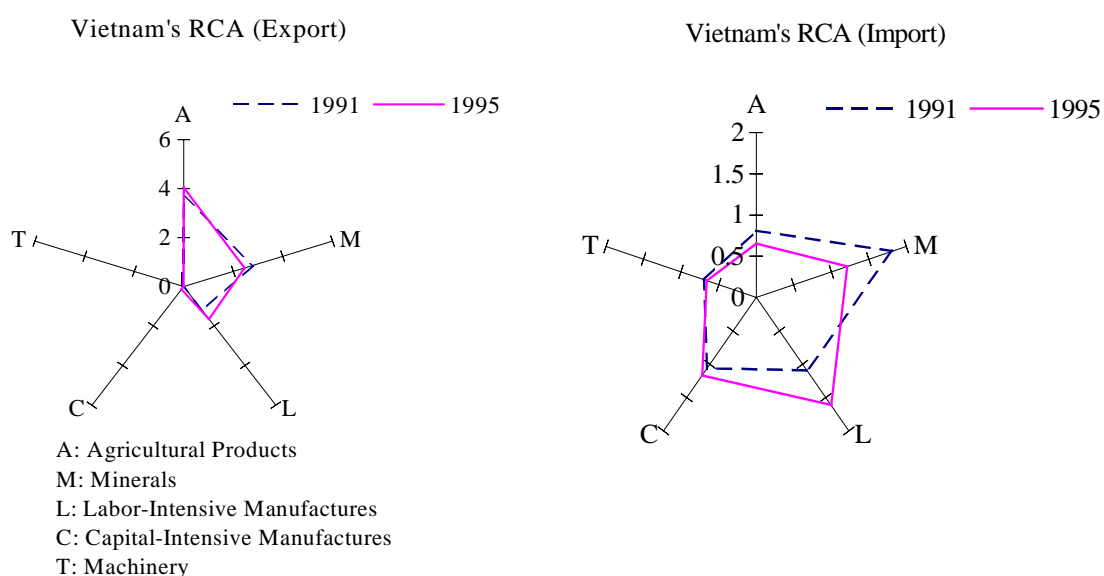
⁷ Previous attempts to analyze Vietnam's comparative advantage structure include the following: Hakkala and Nilsson (1997) measured Vietnam's RCA indices for 10 main commodity groups and sub-groups for the periods 1980-82, 1986-88, and 1991-93; Sasano and Koyama (1998), the source of the data used in this study, calculated RCA indices for each SITC 3-digit category from 1991 to 1994.

year for which data can be obtained. The author adopted the commodity classification⁸ previously used by Okuda (1997), who analyzed the changing comparative advantage in the APEC region from 1970 to 1990. This would enable comparing Vietnam's RCA structure with that of other Asia Pacific countries and regions presented in his study.

As **Table 3** and **Figure 2** show, Vietnam exhibits strong comparative advantage in mineral fuels, especially crude petroleum, and agricultural products, particularly crude foodstuff. Vietnam's competitiveness in processed food also increased from 1991 to 1995. As Tan (1994) notes, Vietnam's food processing industry utilizes the country's rich agricultural and fishery resources as well as labor; therefore, Vietnam has a great potential in this industry. Another important development is that RCA indices of a number of labor-intensive manufactures increased dramatically from 1991 to 1995, especially clothing, leather, and footwear.

In contrast, Vietnam holds comparative disadvantage in petroleum products, capital-intensive manufactures, and machinery, including chemicals, iron and steel, transport equipment, and industrial materials. It also shows comparative disadvantage in agricultural materials, which is due to large imports of materials used to produce

Figure 2. Structure of Vietnam's Comparative Advantage and Disadvantage



⁸ This commodity classification, which includes 5 broad sectors and 24 sub-sectors, has been used by

textiles

and clothing, such as synthetic fiber and cotton. Reflecting the surge of FDI in the clothing industry and electronics assembly, imports of materials and semi-finished products, such as textiles and electronic components, have expanded rapidly in recent years (Kokko, 1997).

In short, Vietnam's exports still consist of agricultural products, minerals and labor-intensive manufacturing; and its main import items are raw materials, capital goods, and inputs necessary for industrial production. According to Okuda (1997, p.36), developing countries in the APEC region, such as ASEAN countries and China, had comparative advantage in agriculture and mining; but the extent of advantage in these sectors shrank over time, and their comparative advantage eventually shifted to labor-intensive manufacturing. Based on the results of our analysis, a similar observation can be made for Vietnam; however, the time span required for the shift seems to have been shorter than for ASEAN countries and China. Compared to the changes in the structure of comparative advantage for ASEAN countries and China for 1970, 1980, and 1990 calculated by Okuda (1997), the shift of Vietnam's comparative advantage structure over the 1991-1995 period seems quite remarkable.

Faced with the challenge of achieving rapid economic growth to catch up with its East Asian neighbors, Vietnam has undertaken ambitious development programs.⁹ Considering Vietnam's recent economic programs included industrialization and modernization of agriculture and renovation of the industrial structure so as to raise the proportion of processing and manufacturing industries,¹⁰ our analysis of Vietnam's comparative advantage structure shows steady progress in transforming the industrial structure towards the goal pursued by the government.

3.5 Complementarity of the Comparative Advantage Structure between Vietnam and Other APEC Economies

In order to analyze the potential for further diversification and expansion of Vietnam's

Okuda (1997) and others. See Appendix 1 for details.

⁹ The "socio-economic stabilization and development strategy up to the year 2000", adopted at the VIIth Communist Party Congress in 1991, set the overall objective of doubling 1990's GDP by the year 2000.

trade relations after its participation in APEC, we will examine the country's complementarity indices with APEC economies - or "virtual match" of the comparative advantage structure between two countries. As used by Okuda (1997) and others, the complementarity index is defined as follows:

$$C_{ij} = \frac{1}{h} [(RCA_{xih}) * (RCA_{mih}) * (W_h/W)]$$

where C_{ij} is the complementarity index between Countries i and j , with i being the exporting country and j being the importing country. Subscript h denotes commodity classification, and RCA_x and RCA_m are revealed comparative advantage indices for exports and imports, respectively. W_h is the world trading volume in commodity h , and W is the world total trading volume. C_{ij} greater than unity implies that the comparative advantage structures of the two countries are complementary, and C_{ij} smaller than unity implies that they are competitive.¹¹

Table 4 shows complementarity indices between Vietnam and APEC members, as well as the country's important trading partners which do not belong to APEC. Vietnam's export structure is highly complementary with the import structure of Japan, the former USSR, and EU countries. It is also complementary with Korea, Taiwan, and the US, but it is somewhat less compared to the first group of countries. It is quite natural that Vietnam's export structure, which mainly consists of agricultural products, minerals, and labor-intensive manufactures, tends to be complementary with the import structure of industrialized countries rather than that of developing countries.

In terms of Vietnam's import structure, which largely consists of fuels, machinery, and intermediate inputs, the strongest complementarity was found with the export structure of the former USSR in both 1991 and 1995 and the Philippines in 1995.¹² Other exporters with above-unity complementarity indices with Vietnam include Singapore, the US, and some of the EU countries.

¹⁰ These programs are included in the 1996-2000 Five Year Plan (Dao Le Minh, 1995).

¹¹ For further explanation of the complementarity index, see Okuda (1997).

¹² The extremely high complementarity index between the Philippines' exports and Vietnam's imports in 1995 seems to result from the large share of "Miscellaneous Manufactures" (L6 in the commodity classification adopted in this paper) in their trade structure. Particularly, it accounted for 42.4% of the Philippines' total exports in 1995.

Table 4
Complementarity Indices for Vietnam's Export/Import

Importer:	Exporter: Vietnam		Importer:	Importer: Vietnam	
	1991	1995		1991	1995
Japan	1.93	1.90	Japan	0.76	0.86
Korea	1.08	1.02	Korea	0.85	0.94
Taiwan	0.79	1.02	Taiwan	0.87	0.93
Hong Kong	0.81	0.98	Hong Kong	0.74	0.97
China	0.65	0.70	China	0.85	1.09
Singapore	1.02	0.63	Singapore	1.47	1.17
Malaysia	0.54	0.42	Malaysia	0.85	0.87
Thailand	0.68	0.55	Thailand	0.78	0.95
Philippines	1.18	0.91	Philippines	0.63	1.57
Indonesia	0.59	0.77	Indonesia	0.79	0.71
Australia	0.73	0.66	Australia	1.04	0.92
New Zealand	0.77	0.75	New Zealand	0.80	0.78
Canada	0.69	0.64	Canada	0.55	0.83
USA	1.05	1.03	USA	0.99	1.01
Mexico	0.61	0.64	Mexico	0.70	0.71
Chile	1.05	0.92	Chile	0.45	0.38
Peru	1.37	1.01	Peru	0.88	0.54
Brazil	1.60	0.98	Brazil	0.65	0.85
Argentina	0.69	0.54	Argentina	1.08	0.94
India	1.34	1.01	India	0.79	0.98
UK	0.94	0.89	UK	1.04	1.02
France	1.03	1.11	France	0.93	1.00
Germany	0.92	1.17	Germany	0.89	0.99
Italy	1.20	1.21	Italy	0.94	1.07
Netherlands	1.10	1.22	Netherlands	1.19	1.21
USSR	1.23	1.57	USSR	1.66	1.59
Czech/Slovak Rep.	0.96	0.98	Czech/Slovak Rep.	0.94	1.11
Hungary	0.74	0.94	Hungary	0.94	0.98
Poland	1.47	1.05	Poland	0.88	0.85

Data sources:

Vietnam's trade data from Sasano and Koyama (1998)

Taiwan's trade data from IDE's trade data retrieval system (AIDXT)

Trade data for all other countries from United Nations, International Trade Statistics
(various years)

Notes:

- (1) As Russia's trade data for 1996 were not available, 1991 data for the USSR was used for calculation of complementarity indices in 1995.
- (2) Due to the problem of data availability, 1990 data for Argentina and Peru and 1995 data for Czechoslovakia and Hungary were used for calculation of complementarity indices in 1995.

4. Determinants of Trade Flows in the APEC Region Incorporating the New Members

In the previous sections, we observed changes in Vietnam's trade structure and partners since Vietnam adopted an open door policy, and we found that Vietnam has significantly strengthened its trade relations with many APEC members. This section focuses on trade flows in the APEC region, which was significantly enlarged and diversified by Vietnam, Russia, and Peru joining APEC in 1998. We will analyze the determinants of trade flows in the new APEC region and clarify the characteristics of Vietnam's trade using the gravity model.

4.1 The Gravity Approach to Trade Flows

In its simplest form, the gravity model¹³ tries to explain bilateral trade flows by the economic size of exporting and importing countries, normally represented by their national income, and the distance between them, which affects transportation costs and acts as physical and psychological barriers to trade. In addition, many researchers have attempted to incorporate other variables to explain trade flows, such as cultural similarity, production factor endowments such as land and labor, and affiliation to regional trade arrangements.

Although numerous researchers have analyzed trade flows within the Asia Pacific region using the gravity model, to the author's knowledge, only one study incorporated Vietnam into the analysis. This fact is probably due to the lack of reliable trade data for Vietnam and its limited trade relations with non-CMEA countries until recently. Quoc-Phuong Le et al (1996) constructed a model to explain trade flows within the APEC region, plus Vietnam, using the following variables: GNP and GNP per capita of exporting and importing countries, distance between them, and dummy variables for Vietnam, Singapore, NAFTA, AFTA, and adjacent countries. Based on their analysis,

¹³ The model forms an analogy of Newton's law of gravity in physics, which states that any two objects in space attract towards each other with force which is proportional to the square of their masses and

they concluded that Vietnam turned from an “under-performer” in 1989 to at least an “average” performer in 1994 in Asia-Pacific trade.¹⁴

In this study, the author will develop two gravity models to explain trade flows in the APEC region, including the three new members, and to clarify the characteristics of Vietnam’s external trade. This is a unique new attempt to explain trade flows because the model incorporates Vietnam and Russia, which had been excluded from most previous studies. The first model, discussed in the next section, tries to provide an overall picture of trade patterns in the APEC region including the new members, and to compare the new members’ involvement with APEC’s regional trade. The second model, discussed in Section 4.3, focuses on the characteristics of Vietnam’s trade by analyzing the residuals calculated from a rather simplified model.

4.2 The Model Incorporating the New APEC Members

4.2.1 The Model

The first model is designed to explain the trade flows in the APEC region including the new members and their close trade partners. Besides the shift in the main parameters over the years, our analysis will emphasize the trade promotion effect of APEC, and it will also compare the extent to which the three new members are involved in APEC’s regional trade.

The model builds upon the previous works by Okuda (1997, 1998), but the author significantly expanded the scope of analysis by incorporating all APEC members including Russia¹⁵, Vietnam, and Peru, but excluding Papua New Guinea and Brunei. The author also introduced several other countries including the following: some important ex-CMEA economies (Czech and Slovak Republics¹⁶, Hungary and Poland),

inversely proportional to the distance between them.

¹⁴ Here, an “under-performer” refers to a country that trades far less than would be expected from examining the trading behavior of other APEC countries using the gravity model, and an “average” country is one whose trading behavior largely conforms to expectations.

¹⁵ Data for the USSR were used for 1989, whereas data for the Russian Federation were used for 1996 and 1997.

¹⁶ Data for Czechoslovakia were used for 1989, whereas data for Czech and Slovak Republics were added

selected EU countries with close trade links with APEC economies¹⁷ (the UK, France, Germany, Italy and the Netherlands), India, an important emerging economy that has strengthened trade ties with Asian countries, and main Latin American economies that have substantial trade relations with Peru (Brazil and Argentina). These countries do not belong to APEC, but they have close economic links with the APEC economies including the new members.

The author defined the gravity model to explain T_{ij} , the export value from Country i to Country j , incorporating the new APEC members as follows.

$$T_{ij} = f [\text{CNST, GDPX, GDPM, DIST, } C_{ij}, \text{HK, SGP, CHN, IND, MEX, APEC, ANZ, AFTA, NAFTA, LA, CMEA, COMMONWEALTH, CHNVN-FSUEE, VN-APEC, RUSSIA-APEC, PERU-APEC}] \text{-----Equation (1)}$$

For quick reference, **Table 5** lists all of the explanatory variables. Appendix 2 provides the detailed specifications and data sources.

CNST, GDPX, GDPM, and DIST are the constant term, GDP of the exporting country, GDP of the importing country, and distance between the two countries, respectively. These are variables traditionally used in the gravity analysis. The values of T_{ij} , GDPX, GDPM, and DIST are natural log transformed. C_{ij} , the trade complementarity index defined in Section 3, enters the model to control the complementarity or competitiveness of trade structures between the two countries concerned.

The model includes country dummies for Hong Kong, Singapore, China, India and Mexico, and it also includes regional dummies for APEC¹⁸, ANZCERTA, AFTA¹⁹, NAFTA, Latin America, CMEA, and the Commonwealth. However, the author will limit further descriptions of explanatory variables to those that have not been analyzed

up for 1996 and 1997.

¹⁷ Whereas Okuda (1997, 1998) treated EU as a whole in his gravity analysis, the author included five major EU members independently because some of the countries newly incorporated into the model were found to have strong links with particular EU economies, i.e., Vietnam and France, Russia and Germany, and India and the UK.

¹⁸ Excludes Vietnam, Peru and Russia.

¹⁹ Excludes Vietnam, because 1996 is regarded as too recent to assess the impact of its participation since 1995.

in the previous studies.²⁰

IND, a dummy variable for India, was added to control the country's tendency to trade

²⁰ For details of explanatory variables not described here, see Okuda (1997, 1998), which adopted similar specifications.

Table 5
List of Explanatory Variables

T_{ij}	Exports from Country i to Country j (See Appendix 2 for detailed specification.)
CNST	Constant
GDPX	GDP of the exporting country i (See Appendix 2 for detailed specification.)
GDPM	GDP of the importing country j (See Appendix 2 for detailed specification.)
DIST	Distance between the exporting and importing countries (See Appendix 2 for detailed specification.)
C_{ij}	Complementarity index with regard to Country i 's exports and Country j 's imports (See Appendix 2 for detailed specification.)
HK	Hong Kong dummy; 1 if the flow involves Hong Kong, 0 otherwise
SGP	Singapore dummy; 1 if the flow involves Singapore, 0 otherwise
CHN	China dummy; 1 if the flow involves China, 0 otherwise
INDIA	India dummy; 1 if the flow involves India, 0 otherwise
MEX	Mexico dummy; 1 if the flow involves Mexico, 0 otherwise
RUSSIA *	Russia dummy; 1 if the flow involves Russia, 0 otherwise
PERU *	Peru dummy; 1 if the flow involves Peru, 0 otherwise
APEC	Intra-APEC dummy (excluding three observers participating from 1998); 1 if the flow is intra-APEC, 0 otherwise
ANZ	Intra-ANZCERTA dummy; 1 if the flow is intra-ANZCERTA, 0 otherwise
AFTA	Intra-AFTA dummy; 1 if the flow is intra-AFTA, 0 otherwise
NAFTA	Intra-NAFTA dummy; 1 if the flow is intra-NAFTA, 0 otherwise
LA	Latin American dummy; 1 if the flow is between Latin American countries, 0 otherwise
CMEA	Intra-CMEA dummy; 1 if the flow is intra-CMEA, 0 otherwise
COMMONWEALTH	The Commonwealth dummy; 1 if the flow is between members of the Commonwealth, 0 otherwise
CHNVN-FSUEE	China/Vietnam-former USSR/Eastern Europe trade dummy; 1 if the flow is between China or Vietnam and the former USSR or Eastern Europe, 0 otherwise
VN-APEC	Vietnam-APEC trade dummy; 1 if the flow is between Vietnam and an APEC member, 0 otherwise
RUSSIA-APEC	USSR/Russia-APEC trade dummy; 1 if the flow is between the USSR/Russia and an APEC member, 0 otherwise
PERU-APEC	Peru-APEC trade dummy; 1 if the flow is between Peru and an APEC member, 0 otherwise

* explanatory variables newly introduced in the second specification.

Notes:

APEC: Vietnam, Peru, and Russia are not included.

AFTA: Vietnam is not included.

LA: Applies to Mexico, Chile, Peru, Brazil and Argentina in this model.

CMEA: Applies to USSR/Russia, Czechoslovakia/Czech and Slovak Republics, Hungary and Poland in this model.

COMMONWEALTH: Applies to the UK, Hong Kong, Singapore, Malaysia, India, Australia, New Zealand and Canada in this model.

less compared to its economic presence. This tendency can be explained by strong inward orientation of India's trade policies until the early 1990s and by its nature as a

“large country” similar to China. Thus, the expected sign for IND is negative. APEC, a dummy for intra-APEC trade, was adopted to check APEC’s trade creation effect within a wider regional setting. LA, CMEA, and COMMONWEALTH are dummies for trade among Latin American countries²¹, CMEA members²², and members of the Commonwealth²³, respectively. These three dummies were added to detect the tendency to trade more among countries considered to have close economic ties based on historical relations, cultural background, and/or common language, despite the absence of formalized trade agreements. The expected signs for all the regional dummies are positive.

In order to observe the impact of the collapse of the Communist block on trade flows, a dummy for trade between the former communist countries in East Asia and Eastern Europe, CHNVN-FSUEE, was added. The best explanation for China/Vietnam-Eastern Europe trade is their closedness vis-a-vis Western capitalist nations; therefore, this dummy was expected to be positive and to show a high value in 1989, and to become significantly lower in 1996.

Lastly, dummies for trade between Vietnam/Russia/Peru and the APEC countries were added to compare the level of involvement of the three new members in APEC trade prior to their participation in APEC.

The above model was estimated for 1989 and 1996. As Quoc-Phuong Le et al (1996) notes, 1989 was the earliest year Vietnam’s bilateral trade data can be obtained and regarded as reliable. The year 1996 was chosen instead of 1997, the most recent year data were available at the time of writing, mainly because 1997 data did not seem representative of the post-1990 trade patterns in the Asian-Pacific region. 1997 data seemed affected by the Asian currency crisis, which started in the middle of the year and marked a turning point in the regional trade. However, the analysis using 1997 data

²¹ Include Mexico, Chile, Peru, Brazil, and Argentina in this model.

²² In this model, the CMEA dummy was narrowly applied to include only the USSR in 1989 or Russia in 1996 and 1997, Czech and Slovak Republics, Hungary, and Poland.

²³ The Commonwealth has its roots in Britain’s imperial history and evolved in the process of decolonization, but now it is a voluntary association of independent sovereign states. Among the countries included in the model, the UK, Hong Kong, Singapore, Malaysia, India, Australia, New Zealand,

will be presented later, with a different specification designed to observe the changes in Vietnam's trade patterns. The estimation for the year 1997 is likely to be useful for examining the impact of the recent Asian currency crisis on Vietnam's trade.

4.2.2 Results

Table 6 shows the results of regression analysis. The samples included all bilateral trade flows between countries mentioned in Section 4.2, though bilateral relations with a zero observation were excluded, and the ordinary least square (OLS) method was adopted.

Keeping with the main purpose of the analysis, our discussion will emphasize the variables related to APEC and its three new members. We will try to limit the discussion of other variables as much as possible, especially those that produced results similar to the previous analyses using the gravity model.

Traditional Variables

Most of the traditional variables adopted in our model resulted in estimates largely consistent with the results of the previous analyses by Okuda (1997, 1998). However, the negative coefficient for **distance** in the present analysis expanded from 1989 to 1996, i.e., distance became more important as an impeding factor to trade, which is completely opposite of the previous results.²⁴ The main reason seems to be the significant expansion of the countries included in the analysis. First, since CMEA countries were included in the model, the estimates for 1989 were likely to be affected by trade between CMEA countries, which are not necessarily geographically close. A typical example is Vietnam, which traded mainly with the USSR and Eastern Europe in 1989 but shifted its

and Canada are members of the Commonwealth.

²⁴ Based on the gravity analysis of APEC trade from 1970 to 1995, Okuda (1997) found that the coefficient for distance shrank over time, and he argued that distance became less of an impeding factor to trade because of decreased shipping costs and technological innovation which significantly reduced the size of traded goods. According to Quoc-Phuong Le et al (1996), who applied the gravity model to analyze the trade flows in the APEC region plus Vietnam, the coefficient for distance also shrank from 1989 to 1994.

Table 6
Results of Regression Analysis: Equation (1)

Dependent Variable: T_{ij}

Independent Variables	1989		1996	
	Coefficient	t-value	Coefficient	t-value
CNST	0.545	1.112	0.207	0.507
GDPX	0.785 ***	31.016	0.912 ***	38.217
GDPM	0.848 ***	33.154	0.879 ***	34.847
DIST	-0.560 ***	-13.191	-0.657 ***	-19.178
CIJ	0.972 ***	5.369	0.927 ***	6.314
HK	1.276 ***	8.100	1.278 ***	9.648
SGP	1.373 ***	8.615	1.357 ***	10.124
CHINA	-0.469 ***	-2.869	-0.277	-1.519
IND	-0.512 ***	-3.203	-0.347 ***	-2.611
MEX	-1.525 ***	-9.333	-1.288 ***	-9.131
APEC	0.852 ***	8.619	0.896 ***	10.911
ANZ	1.246	1.568	1.648 **	2.446
AFTA	0.562 **	2.046	0.656 ***	2.847
NAFTA	0.449	0.954	0.733 *	1.839
LA	1.969 ***	7.379	1.229 ***	5.541
CMEA	1.459 ***	4.317	1.325 ***	4.609
COMMONWEALTH	0.492 ***	2.963	0.686 ***	4.843
CHNVN-FSUEE	2.184 ***	7.218	0.544 **	2.225
VN-APEC	-0.306	-1.264	1.412 ***	5.515
PERU-APEC	-1.151 ***	-5.197	-0.061	-0.351
RUSSIA-APEC	-2.010 ***	-9.506	-1.378 ***	-8.120
Adjusted R-squared	0.777		0.824	
F-statistic	146		202	
Sample Size	836		861	

*** Statistically significant at 99% confidence level

** Statistically significant at 95% confidence level

* Statistically significant at 90% confidence level

trade partners mainly to Asian neighbors by the mid-1990s. Second, the model introduced India and Brazil, both of which had inward-oriented trade policies during the 1980s but experienced gradual liberalization in the early 1990s. The increase in their trade was mainly with Latin American and Asian neighbors, respectively, rather than with industrialized countries. Third, the changes in coefficients for regional dummies such as NAFTA and AFTA suggest that regional trade increased substantially by the mid-1990s as new regional trade agreements began to have trade creation effects.

Country and Regional Dummies: Focus on APEC and CMEA

Here, we will not go into detailed discussion of country and regional dummies used in

previous studies²⁵ because our analysis produced results similar to them. Instead, we will try to focus our discussion on the effect of APEC and CMEA. CMEA was regarded especially important as a determinant of trade flows of Russia and Vietnam, two of the three new APEC members.

The coefficient for the **APEC** dummy was found to be positive and statistically significant in both 1989 and 1996, which confirms the trade promotion effect of APEC. However, the value of the coefficient in 1996 remained almost the same level as the 1989 level, which suggests intra-regional trade within APEC had already reached a significant level when APEC was formed in 1989. This observation is consistent with the evolution of APEC as an informal dialogue group in response to the growing economic interdependence among Asia Pacific economies.

The coefficient for the **CMEA** dummy shows substantial intra-regional trade existed, but it is particularly worth pointing out that its effect had not been diminished even in 1996, i.e., Russia and Eastern European economies continued to trade with each other even after the collapse of the CMEA trading system. In contrast, the coefficient of the **CHNVN-FSUEE** dummy decreased quite dramatically from 1989 to 1996, which suggests trade between the transitional economies in Asia and Eastern Europe dropped substantially in the 1990s. This is consistent with the observation that China and Vietnam significantly strengthened trade and investment linkages with East and Southeast Asian countries in the 1990s.

In the present analysis, the author introduced new dummies for India, the Commonwealth, and Latin America. The results can be summarized as follows.

- (1) The coefficient for the **India** dummy turned out to be negative and statistically significant, which conforms to our expectation.²⁶
- (2) The dummy variable for the **Commonwealth** was statistically significant in both 1989 and 1996. This suggests the existence of close trade relations between the

²⁵ Include Hong Kong, Singapore, China, Mexico, ANZCERTA, AFTA, and NAFTA dummies. Their effect on trade flows in the APEC region has been analyzed in detail by Okuda (1997, 1998).

²⁶ The value of the coefficient shrank from 1989 to 1996, which can be explained by the progress in trade liberalization as a part of stabilization and structural reforms in the early 1990s.

UK and the former British colonies²⁷, which is explained by historical ties and common language, despite the lack of a formalized trade agreement.²⁸

- (3) The **Latin America** dummy was statistically significant, but the coefficient shrank over the years. This can be explained by the fact that the countries included in the model belong to different regional trade agreements that came into effect in the 1990s²⁹, as well as the expansion of trade with emerging economies in Asia.

The New Member's Involvement in APEC's Regional Trade

The last three dummies show the level of involvement of the three new members in APEC's regional trade. In 1989, all of the coefficients were found to be negative, but the coefficient for the **Vietnam-APEC** dummy was the closest to zero and was the least significant. In 1996, the coefficient for the Vietnam-APEC dummy became significantly positive, while the **Russia-APEC** dummy was still substantially less than zero³⁰, and the **Peru-APEC** dummy was also still negative but less significant than in 1989. This is consistent with our previous finding that Vietnam's trade linkage with CMEA countries diminished substantially after the collapse of the CMEA trading system while Russia and East European economies continued to trade with each other even in 1996.

In short, Vietnam, unlike Peru or Russia, already had substantial trade involvement with APEC economies when it was admitted to become an APEC member in 1997.

4.3 Regression with a Different Specification: A Focus on Vietnam's Trade Relations

The gravity analysis in the previous section was designed to provide an overall picture

²⁷ The increase in the value of the coefficient from 1989 to 1996 seems to be the result of substantial expansion of India's trade with Hong Kong, Malaysia, and Singapore.

²⁸ Under the EU's system of trade preferences, Asian developing countries receive only tariff preferences under the GSP, and their status is less favorable compared to the former colonies in Africa, the Caribbean, and Pacific (ACP), and the Mediterranean countries.

²⁹ Mexico belongs to NAFTA, Brazil and Argentina belong to MERCOSUR, and Peru is a member of the Andean Community. In particular, Mexico's trade with the US increased remarkably after NAFTA came into effect.

³⁰ This is partly because a large part of Russia's trade in 1996 was with other members of the CIS. According to the data provided in the IMF's Direction of Trade Statistics, CIS members accounted for

of trade flows in the new APEC region in the context of a wider regional setting. However, it fell short of providing a detailed analysis focusing on Vietnam's trade relations because the selection of Vietnam-related variables in the previous specification was somewhat ad hoc. Therefore, for the purpose of clarifying the characteristics of Vietnam's trade in detail, the author considered it appropriate to run another set of regression with a rather simplified model and to examine the residuals related to Vietnam's trade.³¹

4.3.1 The Modified Model

To meet the above purpose, the original model was modified as follows:

1. All the explanatory variables related to Vietnam were excluded in order to avoid any bias on residuals related to Vietnam's trade, which is the focus of analysis in this sub-section.
2. Regional dummies for the Commonwealth and Latin America were excluded.
3. Country dummies for Peru and Russia were introduced to replace Peru-APEC and Russia-APEC dummies.

Thus, the new simplified model was set as follows:

$$T_{ij} = f [\text{CNST, GDPX, GDPM, DIST, } C_{ij}, \text{HK, SGP, MEX, PERU, RUSSIA, ANZ, AFTA, NAFTA}] \text{----- Equation (2)}$$

The above model was estimated for 1989, 1996, and 1997 for the same group of countries, but we excluded India, Brazil and Argentina. The results will be discussed in the following subsections: Section 4.3.2 will focus on the changes in the characteristics of Vietnam's trade between 1989 and 1996; and Section 4.3.3 will discuss the impact of the Asian currency crisis, which began in 1997, on Vietnam's trade.

20.2% of Russia's total exports and 23.7% of imports in 1996.

³¹ Quoc-Phuong Le et al (1996) made a similar attempt to analyze the residuals related to Vietnam's trade in 1989 and 1994, but the model only included APEC members. Thus, the present study is significant because it: (1) includes ex-CMEA countries and major EU economies in the model, and (2) expands the

4.3.2 The Characteristics of Vietnam's Trade in 1989 and 1996

Based on regressions for the years 1989, 1996, and 1997, **Table 7** shows the extracted residuals related to Vietnam. Since the estimates themselves are not central to our

Table 7
Residuals Related to Vietnam's Trade: Equation (2)

Exporter	Importer	1989	1996	1997
Vietnam	Japan	-1.198	-0.128	-0.119
Vietnam	Korea	-0.270	0.396	0.371
Vietnam	Taiwan	0.363	0.828	0.863
Vietnam	Hong Kong	0.188	-0.936	-0.715
Vietnam	China	-1.904	0.298	0.230
Vietnam	Singapore	0.189	0.340	0.499
Vietnam	Malaysia	-0.958	0.854	0.760
Vietnam	Thailand	-0.467	-1.030	0.117
Vietnam	Philippines	0.403	0.902	0.842
Vietnam	Indonesia	0.922	0.564	0.085
Vietnam	Australia	-3.085	1.432	1.661
Vietnam	New Zealand	n.a.	0.339	0.549
Vietnam	Canada	-1.647	0.318	0.607
Vietnam	USA	n.a.	-0.593	-0.528
Vietnam	Chile	n.a.	-0.206	n.a.
Vietnam	Peru	n.a.	1.241	0.074
Vietnam	UK	-2.868	0.877	0.971
Vietnam	France	0.449	0.664	0.928
Vietnam	Germany	-1.618	0.940	1.253
Vietnam	Italy	-2.986	-0.142	0.239
Vietnam	Netherlands	-2.628	0.757	1.128
Vietnam	Russia	3.000	-0.665	-0.492
Vietnam	Czechoslovakia	3.352	0.492	0.863
Vietnam	Hungary	2.470	0.373	0.436
Vietnam	Poland	2.111	0.426	0.848
Japan	Vietnam	0.303	0.154	0.233
Korea	Vietnam	-0.173	2.217	2.168
Taiwan	Vietnam	-0.920	2.081	1.998
Hong Kong	Vietnam	0.823	0.170	0.134
China	Vietnam	-2.994	0.763	0.763
Singapore	Vietnam	-0.846	1.142	1.026
Malaysia	Vietnam	-2.353	1.140	0.976
Thailand	Vietnam	-0.371	0.490	0.779
Philippines	Vietnam	0.779	0.021	-0.161
Indonesia	Vietnam	0.827	1.076	1.077
Australia	Vietnam	0.859	0.347	0.270
New Zealand	Vietnam	-0.223	1.557	0.958
Canada	Vietnam	-1.874	-0.864	-0.908
USA	Vietnam	-2.513	-0.254	-1.191
Mexico	Vietnam	n.a.	-0.691	n.a.
Chile	Vietnam	n.a.	0.296	0.020
UK	Vietnam	-1.433	-0.590	-0.068
France	Vietnam	1.154	1.313	0.759
Germany	Vietnam	-0.729	0.344	0.245
Italy	Vietnam	-1.819	-0.127	-0.440
Netherlands	Vietnam	-0.312	-0.220	-0.468
Russia	Vietnam	3.765	0.570	1.455
Czechoslovakia	Vietnam	2.196	-0.239	-0.317
Hungary	Vietnam	2.207	0.179	0.471
Poland	Vietnam	1.623	0.157	-0.666

discussion here, they are included in Appendix 3.

In 1989, Vietnam traded much more than predicted by the model with the USSR and Eastern Europe, as well as Hong Kong, Indonesia, and France, among non-CMEA countries.³² While Vietnam's close link with CMEA countries largely conforms to our prediction, the results also show that in 1989 Vietnam had substantial trade relations with only limited countries in Asia Pacific³³; and Vietnam retained a close link with France, which stemmed from its colonial history.³⁴

In 1996, the residuals related to Vietnam's trade with most of the Asian countries became positive and increased substantially compared with 1989³⁵, especially South

Table 8
Foreign Direct Investment in Vietnam by Investing Country
(Projects licensed between 1988 and 1996)

Country	Number of Projects	Total registered capital (million US\$)
Singapore	151	4322.3
Taiwan	286	3917.3
Hong Kong	247	3116.8
Japan	177	2400.1
South Korea	192	2261.3
British Virgin Islands	53	1486.3
Australia	67	1074.3
France	98	979.2
USA	62	849.0
Malaysia	56	773.8
Thailand	94	760.9

Source: General Statistical Office (1996)

Korea, Taiwan, Singapore and Malaysia. As shown in **Table 8**, these are countries that have been investing actively in Vietnam. FDI inflows in the manufacturing sector have increased Vietnam's trade with Asian countries as imports of parts, components

³² According to the analysis of residuals related to Vietnam-APEC trade by Quoc-Phuong Le et al (1996), Vietnam's trade relation was found to be stronger with Japan than with Indonesia and the Philippines. Our model seems to have predicted Vietnam's trade with Japan higher because of the inclusion of the complementarity index as an explanatory variable. As presented in the previous section, Vietnam's trade structure was highly complementary with Japan and Australia; and it was rather competitive with ASEAN countries.

³³ For example, among ASEAN countries, Indonesia was noted for its relatively "moderate" policy towards Vietnam even before the resolution of the Cambodian conflict (Singh, 1997).

³⁴ France was one of the nations which took the lead in resuming aid and cooperation programs in certain

and materials and exports of finished products. The residuals related to trade between Vietnam and EU countries also show substantial improvement in trade relations. Especially in terms of Vietnam's exports to EU countries, all of the residuals except for the one between Vietnam and Italy became positive, which reflects the rapid increase of Vietnam's exports of garments and textiles to EU based on the quota arrangement. On the other hand, Vietnam's trade ties with CMEA countries became much weaker in 1996, and the residual for Vietnam-Russia trade even turned negative.

Overall, the results show Vietnam's trade relations with many of the Asia-Pacific and Western European countries improved substantially, and Vietnam's links with CMEA economies weakened between 1989 and 1996. However, Vietnam's trade with the US is still much less than predicted by the model, which seems to be explained by the lack of a Vietnam-US trade agreement and the absence of the MFN status for Vietnamese exports in the US market. In addition, it is worth mentioning that the residual related to Vietnam-Japan trade is still negative in 1996, implying potential for further increases in Vietnam's exports to Japan. The extremely high complementarity of trade structures, which was discussed in Section 3.5, seems to have affected the result.

4.3.3 Analysis of the Residuals in 1997: The Impact of the Asian Currency Crisis on Vietnam's Trade

Looking at the residuals for 1997 regression, the figures do not clearly show the impact of the Asian currency crisis on Vietnam's trade because we normally see a time lag before currency fluctuations begin to have an impact on actual trade flows. But still, there are some signs that changes are starting to take place. Residuals related to Vietnam's exports to many of the Asian countries decreased or remained almost the

areas even before the establishment of diplomatic relations in the early 1990s (Do Duc Dinh, 1995).

³⁵ The only exceptions are Hong Kong and Thailand. The residual related to Vietnam-Hong Kong trade seems to have turned negative because Hong Kong became less important as a re-exporter in 1996 compared to 1989 as China became more open to foreign trade. The negative value of residual related to Vietnam-Thailand trade is likely explained by the fact that most of Vietnam's main export items, such as rice, fish, and labor-intensive manufactures, are also produced and exported by Thailand; this cannot be fully accounted for by the low value of the complementarity index, one of the explanatory variables in the model.

same level as in 1996; but in contrast, residuals related to Vietnam's exports to most of the countries in other regions increased. The only exception is the residual related to Vietnam-Thailand trade, which turned from negative to positive. In fact, Vietnam's exports to Thailand more than doubled in just a year³⁶, which seems to come from a sudden increase in exports of electronic components resulting from a large FDI project.³⁷

The Asian currency crisis has affected Vietnam's exports mainly in the following two ways: 1) a sharp fall in demand in East and Southeast Asian countries, which had been the major market for Vietnam's exports; and 2) the loss of competitiveness due to drastic currency depreciation in other Asian countries seriously affected by the crisis.³⁸ While many of the other countries in the region have attempted to overcome the crisis by shifting their exports from the Asian market to the US and EU countries (Yamazawa et al, 1999), Vietnam has been in a disadvantaged position due to its limited potential for increasing exports to the US. Our results confirm that the increase of Vietnam's exports to Western and Eastern Europe from 1996 to 1997 is remarkable, especially in contrast to the limited increase of its exports to the US. In addition, East and Southeast Asian investors, especially those from South Korea and ASEAN countries, have been compelled to postpone or cancel FDI projects because of the crisis.³⁹ Considering such developments, the currency crisis is likely to be a serious challenge for Vietnam, which has depended largely on trade and FDI linkages with Asian countries for its economic

³⁶ Vietnam's exports to Thailand increased from 60 million US dollars in 1996 to 160 million in 1997 (IMF, 1997).

³⁷ According to the latest data available at the time of this writing published by the Thai Customs Department (1996, 1997), Thailand's imports from Vietnam during the first six months of 1997 was 1,767 million baht, compared to 574 million baht during the same period in 1996. It is particularly worth noting that electrical machinery and equipment imports increased drastically from 48 million baht during the first six months in 1996 to 1,021 million baht during the same period in 1997. Such a sudden increase seems to result from a large-scale FDI project by Fujitsu Corporation, which established a wholly-owned subsidiary in Vietnam and started to produce components for hard disk drives in 1997 for export to Thailand and the Philippines (Nagakura, 1999).

³⁸ The export performance of primary commodities, which is affected by international prices rather than exchange rate fluctuations, was also aggravated in 1998 because of the fall in prices of many of Vietnam's export commodities, such as crude oil, rubber, and coal (Vietnam Investment Review, August 17-23, 1998).

³⁹ During the first nine months of 1998, a total of 180 FDI projects worth 1.7 billion US dollars received approval, a 58% drop compared to the same period in 1997 (Vietnam Investment Review, November 2-8,

development.

With very few exceptions, the residuals related to Vietnam's imports in 1997 largely decreased or remained at a similar level compared to those in 1996. This is explained by import restrictions adopted by the government since the beginning of 1997 to protect domestic producers in certain key industries, as well as to reduce imports and prevent further expansion of trade deficits, as described in Section 2.

4. Summary and Conclusions

In this study, we have examined the changes in Vietnam's trade patterns since the start of economic reform and an open door policy, and we analyzed the trade flows in the APEC region incorporating Vietnam, Russia, and Peru using the gravity model. The main findings of these analyses can be summarized as follows.

- (1) Since the start of the open door policy, Vietnam has made substantial achievements in liberalizing its trade regime and integrating with the international community, particularly, the Asia Pacific region. During this period, Vietnam's trade, both export and import, expanded considerably, even though the growth of imports has overwhelmed the growth of exports.
- (2) Vietnam mainly exports agricultural products and minerals. However, the share of labor-intensive manufactures, especially clothing, footwear, and processed food, expanded considerably in the early 1990s; and the speed of this shift has been remarkable compared to the cases of other East and Southeast Asian economies. Vietnam's imports mainly consist of capital equipment, raw materials, and intermediate inputs. The share of parts, components and materials for manufacturing has also increased in the 1990s, which reflects the growth of manufacturing industry under subcontracting agreements between Vietnamese firms and foreign investors. The analysis of Vietnam's comparative advantage and disadvantage suggests that the country's trade structure is highly complementary

with that of industrialized countries such as Japan, Western Europe, the former USSR and the US, as well as East Asian NIEs. On the other hand, Vietnam's trade structure is not complementary with that of developing countries.

- (3) In the gravity analysis of trade flows in the APEC region incorporating Vietnam, Russia, Peru, and their close trade partners, APEC was found to have a substantial trade-promoting effect in both 1989 and 1996. While all three of the new APEC members, i.e., Vietnam, Russia, and Peru, showed low levels of involvement in trade with APEC members in 1989, only Vietnam's involvement with the APEC region turned positive in 1996. Contrary to Russia and Peru, this implies that Vietnam's membership in APEC was based on strong trade linkages with the Asia Pacific region that had developed prior to its participation in APEC.
- (4) Vietnam's trade partners shifted considerably in the 1990s. In 1989, the country traded almost exclusively with the CMEA countries under barter arrangements in ruble, but in 1996 it traded mainly with East and Southeast Asian countries. In particular, FDI inflows from Asian countries into Vietnam have contributed greatly to expanding trade between Vietnam and its Asian neighbors. Vietnam has also strengthened trade linkages with Western Europe. However, the increase in trade with the US has been limited by the absence of a Vietnam-US trade agreement, which is likely to become a serious constraint to Vietnam's export-led growth in the face of shrinking markets in Asia caused by the Asian currency crisis.

Based on the above results, we can infer that Vietnam's membership in APEC will have significant implications both for Vietnam and APEC.

For Vietnam, its participation in APEC was important because it was based on international recognition of its integration with the Asia Pacific region through expanded trade and investment, which was the result of the country's previous efforts in economic reform. Although Vietnam is likely to face further pressure to show its commitment to trade and investment liberalization, it can also expect enhanced opportunities for trade, investment, and economic cooperation. This is especially critical for Vietnam because APEC, unlike ASEAN, includes industrialized countries and newly industrialized economies, which have trade structures highly complementary with Vietnam and are likely to become important markets for Vietnam's exports.

Vietnam can expect to further improve its relations with the US, with which Vietnam currently has only limited trade relations. The MFN status in the US market has become especially crucial for Vietnam, which now faces serious constraints to economic growth dependent on trade and FDI linkages with Asian countries due to the Asian currency crisis. In addition, Vietnam will benefit from increased opportunities for dialogue with all the major economies in the Asia Pacific region, and Vietnam will have exposure to the latest developments in the international economy, which will enable the country to adjust their policies accordingly.

On the other hand, for APEC, Vietnam is the only one of the three new members that had developed substantial trade linkages with the region prior to entry. Vietnam's participation is particularly important for further expansion of its diversity in terms of the level of economic and industrial development. Vietnam is a latecomer in the region, which is currently experiencing the transformation of industrial structure similar to the one that other ASEAN countries and China went through in the past. We have observed that such a transformation has been stimulated by FDI inflows from other East and Southeast Asian countries that relocated labor-intensive processes to Vietnam under subcontracting arrangements. Expanded trade linkages with industrialized countries that have absorbed Vietnam's exports have also stimulated the transformation. Therefore, Vietnam's membership is expected to contribute to increasing trade and investment opportunities for the region as a whole, particularly in view of Vietnam's low level of economic development and complementarity of trade structure with many of the other APEC members.

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Appendix 1

Commodity Classification

Sectors	Sub-Sectors		Corresponding SITC codes (R1)
Agricultural Products	A1	Crude foodstuff	0-[A3]
	A2	Agricultural materials	2+4-[M1]-251
	A3	Processed food	013+(02-0223-025)+032+(046 ~ 048)+053+0554+(06-661)+0713+0723+09
Minerals	M1	Mineral materials	27+28
	M2	Mineral fuels	3-322
	M3	Petroleum products	332
	M4	Non-ferrous metals	68
Labor-intensive Manufactures	L1	Textiles	65
	L2	Clothing	84
	L3	Leather and footwear	61+851
	L4	Furniture and wood products	63+82
	L5	Rubber and plastic products	62+58
	L6	Miscellaneous manufactures	Otherwise specified
Capital-intensive Manufactures	C1	Beverage and tobacco	1
	C2	Pulp, paper and paper products	251+54+892
	C3	Chemicals	5-58
	C4	Glass and non-metal products	66
	C5	Iron and steel	67
	C6	Metal products	69
Machinery	T1	Industrial materials	71
	T2	Electric machinery	72
	T3	Motor vehicles	732
	T4	Other transport equipments	73-732
	T5	Precision Instruments	86

Note: Trade data expressed in SITC R2 or R3 codes were aggregated into each sector according to R2 or R3 equivalents of the R1 formula in this table.

APPENDIX 2

Specifications of Variables and Data Sources

- T_{ij} Nominal US dollar figures in millions, natural log transformed. Bilateral trade data came mainly from IMF, *Direction of Trade Statistics* (DOT). As DOT does not explicitly cover Taiwan, its trade data were taken from Department of Statistics, Ministry of Finance, Republic of China, *Monthly Statistics of Exports and Imports, Taiwan Area, the Republic of China*. The data used are mainly export figures, but import figures were used instead whenever the exporting country failed to provide the export figure.
- GDP Nominal US dollar figures in billions, natural log transformed. The data mainly came from IMF, *International Financial Statistics* (IFS), and the figures in national currencies were converted to US dollars using the average exchange rate under the series *rf*. The data for countries which were not covered by the IFS were obtained mainly from national statistics: (1) Hong Kong: *Hong Kong Monthly Digest of Statistics*, Census and Statistics Department, Hong Kong; (2) Taiwan: *Statistical Yearbook of the Republic of China*; (3) Vietnam: General Statistical Office, *Statistical Yearbook*; and (4) USSR (for 1989 regression): World Bank, World Development Indicators (WDI) Database (As the 1989 figure was not available, the sum of the GDP figures for the members of the CIS in 1990 was used.)
- DIST In miles, natural log transformed. Distance was calculated between major economic centers or ports of exporting and importing countries. In the case of large countries such as the US and Russia, more than one city was used depending on the destination. (For example, Los Angeles was used when calculating the distance between the US and Japan, while New York was used when calculating the distance between the US and the UK.) The author used the mathematical formula for calculating the length of the arc (travelling route) connecting two points (cities) on the surface of a sphere (the earth) from the coordinates of the points (latitude and longitude of the cities). In case geographical conditions do not allow direct travel between the two cities, particularly in the case of sea route, the distance was calculated as the sum of the length of the arcs connecting the major points of navigation. (For example, the distance between the Philippines and India was calculated as the sum of the distance between Manila and Singapore and the distance between Singapore and Madras.)
- C_{ij} Complementarity indices calculated in Section 3 were used.

Appendix 3

Results of Regression Analysis: Equation (2)

Dependent Variable: T_{ij}

Independent Variables	1989		1996		1997	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
CNST	0.851 *	1.755	1.832 ***	4.201	2.206 ***	4.960
GDPX	0.810 ***	27.669	0.863 ***	31.479	0.862 ***	30.304
GDPM	0.873 ***	30.003	0.799 ***	28.998	0.795 ***	27.825
DIST	-0.633 ***	-14.544	-0.716 ***	-19.218	-0.751 ***	-19.824
CIJ	1.331 ***	5.958	1.054 ***	5.713	1.094 ***	5.797
HK	1.552 ***	9.090	1.407 ***	9.498	1.238 ***	8.235
SGP	1.503 ***	8.630	1.472 ***	9.752	1.355 ***	8.795
MEX	-1.248 ***	-7.083	-1.173 ***	-7.482	-1.138 ***	-7.142
PERU	-1.024 ***	-5.530	-0.800 ***	-5.224	-0.771 ***	-4.950
RUSSIA	-1.525 ***	-8.462	-1.377 ***	-9.128	-1.500 ***	-9.787
ANZ	2.314 ***	2.809	2.554 ***	3.550	2.124 ***	2.908
AFTA	1.054 ***	3.724	0.839 ***	3.418	1.005 ***	3.946
NAFTA	0.592	1.189	1.093 **	2.522	0.865 *	1.963
Adjusted R-squared	0.764		0.804		0.791	
F-statistic	184		238		219	
Sample Size	677		695		691	

*** Statistically significant at 99% confidence level

** Statistically significant at 95% confidence level

* Statistically significant at 90% confidence level