

Chapter IV

Russia's Participation in APEC and Economic Development in the Far East

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Introduction

With the collapse of the former Soviet Union in 1990, after more than seven decades of communist rule over the economy, the 15 republics of the Union became independent to form CIS. These new born economies inevitably had to reform their economic regimes from centrally planned ones to market oriented ones. Russia, the largest republic in the CIS, was one of those countries facing the harsh transitional change. The transitional reform promoted overall “monetarization” in the economy and increased the supply of basic commodities; on the other hand, however, the hyper-inflation brought about by increased fiscal expenditure and insufficient tax base eventually served as a main cause of the deep economic recession in the early 1990s. Also, a drastic change in production mode associated with the transition ironically invalidated the economy's capital stock accumulated under the communist rule. Accordingly, the economy faced a widespread unemployment problem.

The Russian economy is still under transitional shock. Russia's growth performance recovered only once since the Soviet Union breakup. In 1997, Russia achieved a positive growth rate of 0.9%, but the rate again turned negative the following year. The economic growth rate in 1998 registered -4.6%. The economy in that year was influenced by major unresolved problems such as unhealthy banking and financial sectors, inefficient production and increasing doubt about the inconsistency of the government's economic policy. On the production side, these problems materialized as reduced production and investment and even more excesses of labor force and capital

stock. Consequently, these problems are reflected in the demand side as macroeconomic phenomena such as the contraction of external trade that accompanied deterioration of the balance of payment and the sudden devaluation of the ruble. Eventually, all these factors lead to overall reduction of real income, both household and enterprise. In the year 1999, the growth rate registered negative again, with a 1% decrease. This may indicate that further deterioration of the macroeconomic situation has stopped, and some might hope that the Russian economy has started to run the normal track of development. Nevertheless, the hampered investment performance, both domestic and foreign, in that year shows us that Russia's overall economic performance is still unstable.

In 1998, Russia was formally admitted as a new member of APEC at the APEC Kuala Lumpur Ministerial Meeting. Russia's participation in APEC implies its further involvement with the Asia-Pacific regions, particularly the enhanced relationship between Russian Far East and Asia-Pacific economies. As we will see later on, Russia's trade has traditionally been biased toward ex-CMEA and other European countries. So, it is true that enhanced Asia-Pacific trades would have only a limited impact on the total external trade of Russia. Nevertheless, for Russian Far East, whose main trade partners are Asia-Pacific economies, its further involvement with that region has highly significant implications.

Currently, the Far East is agonized in a deep recession. The situation is even worse than the whole of Russia. The Far East's economic growth for the period of 1992-97 recorded -13.2% ¹, compared with the whole of Russia's performance of -9.1% for the same period. The Far East's external trade has also decelerated in comparison with other parts of Russia. The Far East occupies only 3-4% of Russia's total external trade. (In 1997, the share was 3.5%, including intra-CIS trades). Statistics show a downward trend in the Far East's trade share. In such a situation, expanding foreign trade and promoting incoming foreign investment are vital keys to revitalizing the Far Eastern economy in the following ways: foreign investment potentially serves as a key to better utilize unemployed labor forces and to raise efficiency of existing capital stock in the long run; foreign trade, especially exports, will broaden the market in which Far East producers

¹ Calculated by Appendix 2 using 1996 prices.

can sell their produced merchandise. As we are going to see, the Far East puts more emphasis on trade and investment in Asia-Pacific compared to the whole of Russia. In this sense, Russia's participation in APEC is even more relevant for the Russian Far East.

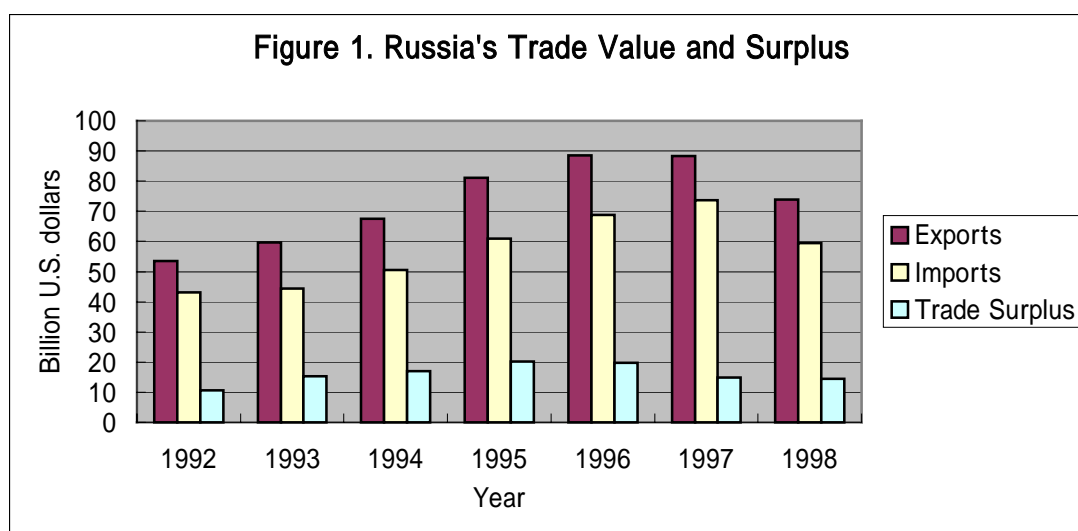
In this paper, the author would like to explain the implications of Russia's participation in APEC, especially the implications for the Russian Far East. Firstly, the author will examine characteristics of external trade, foreign direct investment, and productivity. Based on this examination, the author will discuss how APEC can assist in enhancing Russia's and the Far East's productivity, and eventually economic growth.

The rest of this paper is organized as follows: Section 2 shows different trade characteristics of Russia and the Far East through their trade partners, and it indicates that the Far East has developed strong trade ties with Asia-Pacific countries; Section 3 conducts a regression analysis to estimate determinants of trade by incorporating Russia and the Far East into a traditional gravity model, and it empirically clarifies characteristics of trade for both Russia and the Far East; Section 4 introduces a concept of representing overall efficiency, defined as total factor productivity (TFP), and it indicates that FDI and exports are the main vehicles to improve the economy; Section 5 provides a brief summary of FDI in the Far East, and then it points out the role of APEC in expanding both FDI and exports. The last section provides conclusions.

2. The Meaning of Russia's Participation in APEC-through Its Trade Patterns

2.1 Russia's Trade Patterns after the Collapse of the Soviet Union

As is well known, most statistics before the collapse of the Soviet Union are for the Union as a whole and not for Russia. Therefore, this paper only deals with Russia's trade patterns after the collapse of the Soviet Union. **Figure 1** shows Russia's export and import values. Both exports and imports increased gradually until 1997. In 1998, financial crisis occurred and damaged the foreign exchange market. The turbulence caused by the crisis deteriorated the entire Russian economy. As a result, both exports and imports decreased, and this again caused the exchange rate to fluctuate drastically.



Source: Russia in Figures, 1999. Goskomastat of Russia.

The main causes of the drop in total exports included the following: a plunge in the price of oil (a 32% decrease compared to the previous year), which was one of Russia's main export items; a decline in demand in the Asian Markets for oil; and a drop in steel exports to the U.S. because of import regulations (about a 17.5% decrease compared to the previous year). Imports shrank due to the depreciation of the ruble and domestic production fell greatly in machinery and equipment. In spite of the difficult economic situation after the collapse of the USSR, it is worth noting that Russia always recorded a trade surplus. Two main factors² can be pointed out: (1) Imports didn't increase as much as exports. Exports of precious stones and mineral products such as crude oil, oil products, and natural gas continued to grow, even in 1998 when the financial crisis drastically damaged growth performance; (2) Imports of machinery and transport equipment increased gradually and then decreased in 1998. In short, imports, mainly capital goods, didn't expand rapidly compared to exports because of the economic stagnation in Russia. According to Uegaki (1999), exports increased because a part of domestic production, which was expected to be consumed domestically, flowed outside of the country as exports. Consequently, the economic stagnation itself closely related to the trade surplus.

Table 1 shows Russia's external trade by country. The Table reveals some important

² Uegaki (1999).

characteristics of Russia's trade patterns. Russia mainly traded with European countries and CIS countries. The share of Asian countries was less than 20%, indicating relatively weak relations with Asian countries.

Among EU countries, Germany had a large share in both exports and imports in Russia's total trade. After the unification of Germany in 1990 and the collapse of the Soviet Union in 1991, trade between the two countries increased. The bilateral trade flow between the two countries more than doubled from 1992 to 1997. Russia mainly exported crude oil and natural gas to Germany through the long-distance pipelines connecting the two countries, and Russia imported foodstuffs, general machinery, electrical machinery, and transport equipment (Ogawa, 1999).

Ex-CMEA countries such as Hungary, Poland, Czechoslovakia/Czech, and Slovak Republics used to be main trade partners, particularly before the collapse of the Soviet Union. Fujita (1999) conducted a regression analysis both for 1989 and 1996 to show the determinants of trade flows in 31 countries, including APEC member economies and ex-CMEA countries. Interestingly, according to her result, intra-regional trade within CMEA had not diminished over the years, and the result pointed out the existence of strong intra-regional trade ties in spite of the collapse of the CMEA trading system. Based on this result, it is easily inferred that Russia's main trade partners had not changed and that any diversification of trade partners had not occurred even after the collapse of the Soviet Union. Consequently, these factors combined to maintain Russian trade with a large presence of European countries, including ex-CMEA countries and CIS.

Table 2 shows Russia's main export and import items. As shown in the Table, Mineral products such as crude oil, oil products, natural gas and coals, ferrous metals, pig iron, copper, aluminum, and nickel are Russia's major export items. Thus, Russia's yearly export value strongly depends on the market price of natural resources, which are highly unstable. It points out the importance of increasing exports of manufacturing products. On the other hand, Russia's main import items are machines and equipment such as metal working machinery, computers, and passenger cars. It is also interesting to note that Russia has different patterns of trade, particularly with CIS countries. Export items from Russia to CIS countries consisted mostly of the same goods that Russia trades to the rest of the world, mainly coals, natural gas, crude oil, and other electrical-related

materials and transport equipment. Import items from CIS countries were mainly food such as meat, butter, potatoes, grains, sunflower, and sugar. Russia also imported ores, aluminum products, and oil.

2.2 Characteristics of Trade in the Russian Far East

Trade as a Whole: An Overview

The Far East's trade share is very small compared to Russia's total trade values. However, trade is closely related to the economy in the region. **Table 3** shows export and import values after 1992. According to the Table, the Far East's exports increased in 1993 and decreased in 1994. In 1994, it should be noticed that trade with China fluctuated drastically. Exports to China decreased, which contrasted the positive growth of the Far East's export share for other countries. Imports from China also showed negative growth. The decrease in trade with China was considered to cause the decline of total trade volume in the region.

The main causes³ were: (1) Introduction of the visa system. Until 1993, no visa was required at the China-Russian border, but in 1994 the Russian government once again started requiring Chinese citizens to present visas before entering the country; (2) Quality problems. Chinese-made products couldn't satisfy consumers because of their relatively low quality. Between 1992 and 1993, Chinese goods became popular because of their low price, but in the end Chinese products lost credibility due to the low quality. Consumers shifted from Chinese-made products to Korean-made or U.S.-made products, which resulted in decreased imports from China; (3) Stagnation of the Chinese economy. Demand for the products made in the Far East decreased in China. Although China experienced high economic growth between 1992 and 1993, the economy started to have problems such as inflation and increased deficits for state-owned enterprises, and this caused demand for imports from the Far East to decline; (4) Sharp rise of transportation cost. The cost of Siberian railroad rose rapidly and hindered transportation from other Russian regions to the Far East, and this damaged re-exports from the Far East. Machinery and fertilizer produced in other regions were brought into the Far East, and exported from the Far East; (5) The rise of import taxes and the

³ Nakai (1996).

abolishment of import subsidies by the Russian government to control imports. The introduction of import taxes, particularly for foodstuff and agricultural products, caused total imports in the Far East to decrease, and the Far East depends heavily on imports for food supply; (6) Decreased demand for imported goods. The economic recession lowered the standard of living and resulted in decreased demand. These are considered main factors for the plunge in trade values in 1994.

After 1995, trade as a whole continued to grow because production increased for wood and foodstuffs such as fish products, and a great portion of the increase of products was exported. In addition, export taxes decreased by an average of about 30 percent. Increased production and reduced export taxes played an important role in expanding exports after 1995 (Nakai, 1996). On the contrary, the financial crisis, which bitterly hit the Russian economy, also had a negative impact on the economy's growth performance in this region. Since data on trade values for the Far East after 1997 are not available at the time of writing, another paper will conduct further analysis and include 1997 and thereafter.

Trade Partners

Table 4 shows the main trade partners of the Far East. Due to geographical closeness, the Far East traded mainly with Japan, Korea, and China. About 70-80% of total trade was occupied by the Northeast Asian countries, with the exception of North Korea. However, some important shifts in trade patterns were observed. First, although the share of exports to Japan has been substantial, it gradually diminished after 1996. Second, as mentioned above, the export share to China began to drastically decrease in 1994. Third, the export share of the U.S. increased in 1997. Fourth, in contrast to the large export share of Japan, its import share was relatively small-although the share increased in 1997. Import share of China also showed the same tendency as that of exports; it showed a rather sharp fall from 1992 to 1993. Fifth, the import share of the U.S. drastically increased in 1994 and continued to grow after that. Since then, the U.S. has been counted as one of the Far East's major trade partners.

The most remarkable shift of trade partners was observed between 1993 and 1994, with deepening trade relations with the U.S. and diminishing trade volume with China. U.S. had become a major trade partner not only in the Far East but also in Russia as a whole.

This was mainly due to the expansion of FDI by U.S. companies⁴. While the Far East still depends on Northeast Asian countries for most of its trade, it has also started to deepen trade relations with U.S. In contrast to Russia as a whole, which tends to trade intensively with CIS and European countries and less with Asian countries, the Far East shows a clear tendency to trade less with European countries. However, it should be noted that Germany also occupied a large share of exports and imports. This indicates that trade with Germany became important not only for Russia but also for the Far East as well.

Major Trade Items

Table 5 and **Table 6** show major export and import items respectively. As for exports, major items include foodstuffs such as fish products and seafood, fuel, mineral products, metal, wood, and pulp. The export share of primary commodities was around 70% each year, and it was more than that in some years. The Far East exports are heavily biased toward natural resources, and it even gives an impression of a monoculture economy. Looking at imports, the share of general machinery, equipment, transport machinery, and consumer goods combined for 80% of total imports. The Far East's severe winter climate hinders development of the agriculture industry. As a result, its rate of food self-support was not high, around 50% in the entire Far East region (Nakai, 1996).

3. Determinants of Trade Flows Focusing on Russia and the Far East

The previous discussions clarified the different trade patterns between Russia as a whole and the Far East. The Far East has developed strong trade ties with Asia Pacific economies, including Northeast Asian countries, Vietnam, and the U.S. In contrast, Russia mainly traded with EU and CIS countries. The purpose of this section is to empirically delineate the characteristics of Russia's and the Far East's trade and to reaffirm the trade patterns explained in the previous section. The method used in this section is the gravity model.

⁴ The annual amount of FDI by U.S. firms more than tripled from 1995 to 1997; it increased from US\$812.9 in 1995 to US\$2806.3 in 1997.

3.1 The Gravity Model and Its Specification

The concept of “gravity” model originated from Newton’s law of gravity in physics, and that idea was utilized in the field of international trade to explain bilateral trade flows. In short, to some extent, bilateral trade relations depend on their relative distances and economic volumes. In the gravity model, bilateral trade flows are explained by the economic size of exporting and importing countries, represented by their national income, and the geographical distance between two countries, which is considered to affect trade flows negatively.

In this section, the adopted model is somewhat modified to better fit reality. The equation listed below includes GDP of importing and exporting countries and the distance between them. It also includes regional dummies focusing on Russia and the Far East. Considering the previous models such as Fujita (1999), the author added some Russia and Far East-related countries to the sample. Newly introduced countries are as follows: CIS countries (Ukraine, Kazakhstan, Belarus), which play an important role in Russia’s trade, and Mongolia, which also has a close trade relation with Russia. The amount of trade in the Far East was introduced separately from Russia and incorporated in the model. The equation adopted in this study is formalized as follows:

$$T_{ij} = f [\text{CNST, GDPX, GDPM, DIST, HK, SGP, MEX, RUSSIA, FAREAST, APEC, NAFTA, RUSSIA-APEC, RUSSIA-CIS, RUSSIA-EU, RUSSIA-VIETNAM, RUSSIA-US, RUSSIA-ASIA, RUSSIA-CHINA, FAREAST-APEC, FAREAST-EU, FAREAST-VIETNAM, FAREAST-US, FAREAST-ASIA, FAREAST-CHINA}] \dots\dots\dots(1)$$

Table 7 shows details explanatory variables. The independent variable is T_{ij} , which is the value of exports from country i to country j . CNST, GDPX, GDPM, and DIST are the traditional or “core” variables in the gravity model. CNST is constant, GDPX is GDP of the exporting country, GDPM is GDP of the importing country, and DIST is the distance between the two countries.

Trade data used in this analysis are nominal U.S. dollars in billions and natural log transformed. Data came mainly from the IMF, *Direction of Trade Statistics*, except for Taiwan. Since the IMF doesn’t provide Taiwan’s trade data, bilateral export figures with Taiwan were taken from the Department of Statistics, Ministry of Finance, Republic of

China, *Monthly Statistics of Exports and Imports, Taiwan Area, the Republic of China*. Trade data used in this analysis are mainly export figures. However, import figures recorded in the partner countries were used instead if export figures were not available. Trade data for the Far East came from the Institute for Russian and European Economic Studies, *Russian Far East in Figures, 1999*.

GDP figures are nominal US dollars in billions, natural log transformed. Main data source is IMF, *International Financial Statistics (IFS)*, and data for the Far East came from the Institute for Russian and European Economic Studies, *Russian Far East in Figures, 1999*. GDP figures in national currencies were converted using the average exchange rate for each year (series *rf* in IFS).

Distance was estimated in miles, natural log transformed. Most data of distances between two major cities or ports were taken from Fujita (1999). The author calculated the distance based on Fujita (1999) for the countries not included in her analysis.

The following countries are included in the sample. (1) APEC member economies, excluding Papua New Guinea and Brunei; (2) CIS (Kazakhstan, Ukraine, Belarus); (3) EU (UK, France, Germany, Italy, Netherlands, Finland, Ireland); (4) East Europe (Hungary, Poland); (5) Other countries not included in any of the above categories: Mongolia, Switzerland, and India. Estimates are for 1992 and 1997.

In this model, the impacts of five country dummies are estimated, namely Singapore, Hong Kong, Mexico, Russia, and Russian Fareast, along with two regional dummies for APEC and NAFTA. These country and regional dummies, except for the Far East, were already estimated with a similar analysis conducted by Okuda(1997, 98) and Fujita(1999). The Fareast dummy was added to illustrate the region's propensity to trade compared to its economic size. In other words, the obtained coefficients represent whether or not the Far East is likely to be inward or outward oriented. Considering the economic stagnation in the Far East, the expected sign is negative. Some previous studies conducted detailed analysis of other variables⁵.

The rest of the explanatory variables are newly introduced in this analysis. Russia-APEC⁶ and Fareast-APEC dummies were added to estimate the level of trade

⁵ For detailed explanations of these variables, see Okuda (1997, 98).

⁶ Fujita (1999) also estimated the Russia-APEC dummy and obtained the same result as in this analysis.

involvement of Russia and the Far East in APEC trade. Since Russia mainly trades with European countries and CIS countries, the expected sign is negative. A dummy for Fareast-APEC is also estimated. Even though APEC members overlap with the main trade partners of the Far East, the Far East's involvement in APEC trade as a whole is considered relatively small. Consequently, the expected sign is negative or positive. Other Russia-related dummies such as Russia-CIS, Russia-EU, Russia-Vietnam, Russia-U.S., Russia-Asia, and Russia-China were also estimated to reaffirm the tendency of trade in Russia; i.e., more trade with CIS, Europe, Vietnam, the U.S., etc. Russia trades heavily with Europe and CIS countries and less with Asia Pacific countries. Both Russia-CIS and Russia-EU dummies are expected to have positive coefficients, and in contrast, Russia-Asia and Russia-China are expected to have negative coefficients. The Russia-Vietnam dummy was introduced to illustrate the change of trade patterns between the two countries after the collapse of the Soviet Union. Considering that trade with Vietnam became less and less important for Russia since 1992, this dummy is expected to show positive in 1992 and then to diminish over time. The Russia-U.S. dummy was estimated to clarify the presence of U.S. trade in Russia. As explained in the previous section, trade with the U.S. is gradually becoming important. This tendency should appear as a positive coefficient, particularly after 1996. The Far East regional dummies, Fareast-EU, Fareast-Vietnam, Fareast-U.S., Fareast-Asia, and Fareast-China were estimated as well. Fareast-EU is expected to show a negative coefficient, reflecting an aloofness between them. However, the results might reflect a slightly increasing trade volume with Germany. The Fareast-Vietnam and Fareast-U.S. dummies are considered to show the same tendency as Russia, and the Fareast-Asia dummy is expected to have positive coefficients. Considering the previous observations, the Fareast-China dummy will have different implications. The Far East traded less with China in 1997. Therefore, a strong positive coefficient will be found in 1992, and then the value of the coefficient will decrease in 1997.

3.2 Estimation Results

Table 8.a shows empirical results for the explanatory variables in **Equation 1**. GDP of exporting and importing countries, distance, and traditional countries' dummies such as Singapore, Hong Kong, and Mexico showed similar results to previous studies, and the

t-values were estimated to be highly significant for each sample year. The dummy variable for Russia was estimated to have a positive effect in 1992, but the effect turned negative in 1997. This indicates Russia's trade involvement became inward-oriented compared to 1992. The main reason was because Russia had little capacity to involve in external activities due to the serious economic depression. The same tendency was also observed for the Far East. The strong negative coefficient in 1997 shows that the Far East traded much less compared to its economic size. Consequently, both Russia's and the Far East's trade tended to shrink over the years, indicating a further inward-oriented tendency in external relations.

Since the main purpose of this regression analysis was to show the characteristics of trade in Russia and the Far East, the author did not further mention other traditional dummies⁷. The model estimated consistent results for regional dummies such as APEC and NAFTA⁸.

Russia-APEC and Fareast-APEC dummies show Russia's and the Far East's involvement in APEC's regional trade. The results show negative coefficients for both dummies. Even though both were estimated to have negative signs, the level of significance differed. To clarify the difference between the two parameters, the author conducted a test for parameter difference. **Table 8.b** shows the results, and it includes F-statistics and Chi-square statistics along with the probability that null hypothesis is not rejected. The greater the value of F-statistics or Chi-square, or the smaller the value of Probability, the difference in both parameters' implication becomes clearer. Specifically, in this analysis, the difference refers to involvement in APEC trade. According to **Table 8.b**, it is statistically reaffirmed that involvement in APEC's trade differed between Russia and the Far East; Russia as a whole had far less linkage with APEC member economies compared to the Far East.

Russia-Related Dummies

For the Russia-related dummies, the results of positive coefficients for the Russia-CIS

⁷ For implications of traditional country dummies not explained here, see Okuda (1997, 98), and Fujita (1999).

⁸ See Okuda (1997, 98) and Fujita (1999) for details on the estimated results for these regional dummies.

dummy showed consistent results with the previous discussion. That is, Russia traded heavily with CIS countries both in 1992 and 1997.

The impact of trade with European countries in Russia was relatively smaller than expected. The coefficient turned out to be positive in 1997, and the shift of sign reflected the increasing trade volume with Germany. However, even though bilateral trade volume with Germany expanded, it had little impact on total trade with EU countries.

The relative decrease of the coefficients in the Russia-Vietnam dummy suggests that trade between the two countries started to stagnate after the collapse of the former Soviet Union. Even though Russia had trade ties with Vietnam, its portion of total trade became less. This was not caused by Russia being reluctant to trade with Vietnam. Instead, the following factors hampered bilateral trade between the two regions: (1) Payment problems. This was mainly caused by the collapse of the former Soviet Union, making it difficult to pay deferred letters of credit; (2) Russia's trade tariffs. The tariff rates applied to imports from Vietnam were reduced by about 50% compared to general imports. However, starting in 1997, the discount was reduced to 25%. (3) Low competitiveness of Vietnam-made products, due mainly to their low quality. In the time of the Soviet Union, trade with Vietnam was motivated by, at least partially, helping an underdeveloped allied nation. But this motivation faded away in the post-Soviet Union time, and consequently, the low quality of Vietnam products became problematic; (4) Long distance between the two countries; (5) Decrease in the income level in Russia. Although these were considered to be obstacles, trade between them had increased again, particularly after 1998⁹. According to various news articles¹⁰, Russia tried to reconstruct relations by increasing trade ties and economic cooperation with such initiatives as joint ventures between these regions.

The dummy for Russia-U.S. shows its expected positive sign, and the level of significance improved in 1997. This result also conformed to our previous observation that the presence of US trade in Russia drastically increased.

⁹ In this paper, the author didn't analyze trade flows after 1998 because of data availability, but considering the relative importance between the two regions, it should be conducted in another paper.

¹⁰ BBC Monitoring Service: Asia Pacific 05/09/98, Saigon Times Daily 19/08/98, Asia Intelligence Wire 24/02/98, 19/05/98, and 06/06/1998.

As expected, coefficients for the Russia-Asia dummy were negative both in 1992 and in 1997. The result was consistent with our previous discussion and shows that the country traded much less with Asia Pacific countries. As for the Russia-China dummy, it was positive and highly significant in 1992 but became less significant in 1997. This indicates that among Asia-pacific countries China was one of the important trade partners for Russia, but the degree of importance declined over the years. However, in 1997 China's importance to Russia remained unchanged under relatively contracting foreign trade as a whole. Russian trade gradually became much less relevant for China because of the rise in income level in China. Further, Russian exports might be inferior substitutes for western products. Meanwhile, China acquired enough dollars through expanded exports to buy high-quality goods from western countries.

It is interesting to note that the shift of trade partners occurred in Russia from 1992 to 1997. The dummy variables for Vietnam and China in 1992 were both positive and statistically significant. However, the coefficients lowered in 1997 and their effects were no more significant. In the sense that the bilateral trade volumes are almost explained by income levels and distance, the changes in coefficients for both dummies suggest that China and Vietnam became "regular" trade partners for Russia. In contrast, trade with the U.S. became important, indicating the strong U.S. presence in Russia's trade.

Consequently, these results imply that Russia continued to trade with CIS countries while trade with China and Vietnam weakened, and the U.S. became a major trade partner for Russia. This indicated a shift in trade partners from China and Vietnam to U.S.

Far East-Related Dummies

For the Far East-related dummies, coefficients for Fareast-EU were estimated to be negative in 1992, and they became positive in 1997, though they were not significant. The shift of coefficients implied that the Far East deepened trade relations with EU countries. As mentioned above, the main reason is considered to be the increase in trade with Germany. It is considered that the increase in trade with Germany also had a positive effect on the Far East's trade.

Fareast-U.S. shows an expected positive sign in both 1992 and 1997. Trade with the U.S. increased, and this upward tendency coincided with previous discussions, which

concluded that strong trade ties between Russia and the U.S. developed overtime.

Looking at the Fareast-Asia dummy, the coefficient was negative in 1992 and became positive with a 5 percent level of significance in 1997. This indicates that trade with Asia-Pacific countries had become more important, particularly after the collapse of the Soviet Union. According to **Table 8.b**, in 1992, relatively low F- and χ^2 statistics indicate that Russia and the Far East almost equally engaged in Asia-Pacific trade. However, the difference became obvious in 1997. While Russia still traded less with Asian countries, the Far East started to expand trade with Asian countries, and such trade relations had a positive impact on overall trade in the Far East.

The Fareast-China dummy was estimated to be positive with a high significance level in 1992. This suggests that a strong relation between these regions had already existed during the USSR era. Then the relative importance of trade with China decreased in 1997. This complies with our previous discussion about trade with China decreasing, particularly after 1994. This is mainly due to a decline in production volume in the Far East.

The most interesting result was obtained for the Fareast-Vietnam dummy, which showed a strong positive value in 1992. In 1997, although its coefficient became somewhat smaller, the t-value was still significant. This implies that Vietnam remained one of the major partners of the Far East region. It should be noticed that the Far East region still trades with Vietnam even after the collapse of the Soviet Union. Meanwhile the involvement of Vietnamese trade with Russia as a whole decreased. Trade with Vietnam still plays an important role as a supply base in the Far East's trade. The region currently faces supply difficulties for consumer goods and other materials needed for production. During the Soviet Union era, various materials and goods were transported into the region from other parts of the USSR using the Siberian railroad, under the supervision of the central government. But after the independence of CIS and the collapse of the Soviet Union, the Far East had to procure supplies by themselves. Due to the rapid rise of land transportation costs, the Far East eventually had to limit suppliers to geographically close countries such as Northeast Asian countries and Vietnam. Vietnam and the Far East are geographically close, and they can transport goods easily by sea. Therefore, these two regions still retain their trade ties even after the collapse of the former Soviet Union.

The above analysis made clear that the Far East has recently developed strong relations through its trade ties with Japan, Korea, China, Vietnam, and the U.S., and they are all Asia-Pacific economies. Considering the meaning of Russia's participation in APEC, the Far East retains a strong linkage with Asia-Pacific regions and will benefit most from APEC. However, the economic situation in the Far East deteriorated, particularly after the collapse of the former Soviet Union. The economic situation showed little improvement even in 1997 when Russia as a whole experienced positive economic growth. The economy in the Far East is still in a deep recession due to stagnant domestic investment, decreased industrial production, and accumulated unpaid salaries. The number of firms in deficit as well as intra-firm debts are increasing. More fundamental problems also deteriorated the base of the economy's future growth, such as the rise in transportation costs, insufficient energy supply, heavy external dependency for raw materials, and outflow of population.

Taking this economic situation in the Far East into consideration, to achieve economic development, the Far East urgently needs to promote external economic activities such as trade and FDI. This is mainly because the Far East has to seek out a way to develop its economy in international relationships, which are rather new to the region. As a result of rushed liberalization of various domestic sectors, transportation costs became fairly expensive. This made it difficult for the Far East to obtain goods from other domestic regions through the Siberian railroad. This forced the Far East to look outside its borders for supplies of goods and materials. Now, the Far East has no other alternative than to develop its economy through external activities.

Since external activities mainly include trade and investment, increasing trade and inflow of foreign direct investment should be critical to achieving economic development in the Far East. In this regard, we must first examine whether increases in FDI and exports will result in economic improvement. After the examination, we will point out how both will increase.

4. Total Factor Productivity in Russia and the Far East

In this chapter, the author introduces a concept of total factor productivity (TFP). TFP is

considered to represent overall efficiency, and it is an important factor as a source of economic growth¹¹. As mentioned earlier, the purpose of this chapter is to analyze the impact of FDI and exports on economic development. Since TFP improvement represents overall economic development or rise in GDP per capita, the author conducts a detailed discussion about the relations among TFP, FDI, and exports in order to reaffirm the importance of FDI and exports in the Far East.

4.1. Estimation of TFP

TFP is defined as the residuals of output change net of the changes in inputs. In other words, TFP growth represents the shift of production function. Even though the method of estimating inputs, especially capital, has been controversial among researchers, they synonymously agree that TFP is one measure of overall efficiency. The author estimated TFP indexes for 31 countries, including Russia and the Far East, by using the following equation:

$$\ln TFP_t - \ln TFP_{t-1} = [\ln(Q_t) - \ln(Q_{t-1})] - S_k[\ln(K_t) - \ln(K_{t-1})] - S_l[\ln(L_t) - \ln(L_{t-1})] \dots\dots\dots(2)$$

where t is time, Q , L and K are output defined as value added, labor input, and capital input, respectively. S_k stands for capital input share, and S_l for labor input share, where $S_k + S_l = 1$. These figures were obtained first by dividing wage payment by total value added to solve the labor share and then subtracting it from the unity to get the capital share. Share weights are obtained as follows: the average of those for the current year and previous year.

$$S_k = 0.5*(S_{k,t} + S_{k,t-1})$$

$$S_l = 0.5*(S_{l,t} + S_{l,t-1})$$

¹¹ Past studies pointed out several factors for the economic downfall during the Soviet era. Declining rate of productivity growth or technical progress, slow growth of the labor force, the fall in marginal productivity of capital, lack of operating fund, the defense burden, corruption, and demoralization, all worsened the economy (Easterly, and Fisher, 1994). These factors are still considered to remain as obstacles in Russia. However, in this analysis, only TFP was analyzed because other factors were rather domestic matters, and another paper will conduct a detailed analysis of these domestic matters.

Appendix 1 shows a detailed description of the data sources and estimation method. **Table 9** shows the average TFP growth rates of the sample economies between 1986 and 1996. Instead of referring to details about each country's TFP result, we will proceed to discuss the TFP of Russia and the Far East region. As already known, although various data were provided by the Goskomstat of Russia (State Committee of the Russian Federation of Statistics), those data include some problems. Particularly, the source lacked price data. Therefore, an adjustment process was necessary to estimate TFP for Russia.

Growth rates of TFP¹² in Russia and the Far East were estimated for the years from 1993 – 1997. However, results obtained prior to 1995 seemed to be affected by the hyper inflation of the time, and it was almost impossible to accurately estimate the level of inflation rates for the period. Consequently, the author did not use the TFP index for years prior to 1995, and the Table only shows average TFP growth rates¹³ between 1996 and 1997.

As for Russia as a whole, TFP improved an average of 3% a year. This is mainly due to the recovery of the economy after the mid '90s. The increase in productivity could be explained by: (1) expansion of FDI, mainly by US firms as explained above; (2) improvement of capital utilization; (3) consequent increase in production volume, and; (4) increase in exports. It is considered that all these factors seemed to improve TFP, and they eventually led to the improved growth performance.

In contrast, the Fareast region's TFP showed negative growth during this period. This result also complies with our previous discussion; the Far East region experienced negative growth when Russia as a whole marked positive growth. Although Far East exports increased during this period, it didn't improve its productivity. Increased exports didn't actually contribute to productivity improvement because export growth by item remained fairly biased toward low value added product lines such as fish and seafood. In addition, since the Far East's financial system hasn't developed yet, export earnings

¹² Easterly and Fischer estimated historical TFP growth rates for the former Soviet Union. Interestingly, according to their results, TFP growth averaged a 1 percent per annum between 1950-87.

¹³ TFP for Russia and the Far East were based on 1996 prices. It was impossible to set the same base year as other estimated sample countries due to the hyper inflation after the collapse of the USSR. Other sample countries were based on 1990 prices.

didn't go to the financial sector. Consequently, a lot of private firms still suffered from insufficient financial sources even though exports increased. Therefore, total investment continuously declined. Since investment plays an important role in increasing productivity, it is urgently necessary to reconstruct financial sectors. The Far East's tendency addressed in the above sections---the tendency to trade less---may stem from insufficient investment; and the delayed renewal of capital stock may worsen the region's productivity and result in lowered international competitiveness.

4.2. The Role of FDI and Exports in Improving TFP

Increasing productivity plays an important role in improving an economy's overall performance, and several ways exist to raise the TFP level. **Figure 2** shows that both FDI and exports could possibly cause TFP improvement. As shown in the figure, TFP improvement results in expanded production; and therefore, a rise in GDP per capita will be achieved.

The following factors explain the mechanism¹⁴ how TFP improvement leads to greater production: (1) Improved productivity enhances competitiveness by lowering the cost of production, and it eventually results in increased exports. Increased exports directly stimulate production and also result in further expansion of production through the multiplier process; (2) Improved productivity makes it possible to increase production even though the amount of input remains the same. Increased production enables firms to enjoy benefits from large-scale production, and it contributes to further promotion of productivity.

As explained above, since higher productivity implies a greater production amount, productivity improvement seems to be the most important factor for development in both Russia and the Far East. It is important to know how TFP improves through exports and FDI, and the following section explains the mechanism.

¹⁴ See Urata (1994) for further detailed explanations.

FDI TFP¹⁵

It is considered that inflow of FDI has a substantial impact on economic development through spillovers¹⁶, and contributes to a subsequent improvement in productivity. In general, foreign firms bring into the recipient countries new technologies, management know-how, financial resources for new investment, and equipment and machineries needed to start operation. Particularly, export-oriented firms provide new export channels as well as procurement networks. Especially, new export channels contribute to improving overall efficiencies by removing obstacles- particularly for those suffering from insufficient capital stock, restricted finance for new investment, and low levels of production.

A few research papers have empirically analyzed the relations between TFP improvement and FDI expansion. Among the papers, Kawai (1994) tried to explain TFP improvement using several factors including FDI, represented by the ratio of foreign direct investment to domestic capital stock. The estimated coefficient of this variable was expected to be positive because FDI should contribute to improving overall efficiencies through new international channels discussed above. However, the result was not consistent with our previous discussion; it showed a rather showing negative impact on productivity. Kawai pointed out some reasons for this result as follows: (1) FDI sometimes leads to an oligopoly, which sometimes results in lowering productivity; (2) Investment in labor-intensive industries tends to increase, particularly in developing countries, and these industries use relatively low technologies. Under such a situation, the effect of technology transfer may not be significant; (3) Pregnancy periods of new investment. Since new investment benefits come after the pregnancy period, which bears little return, the lag period should be incorporated into the model. Therefore, even though rapid FDI occurs, it doesn't cause immediate TFP improvement.

On the other hand, Kawai (1994) also conducted a regression analysis by categorizing

¹⁵ Borensztein, De Gregorio, and Lee (1995) estimated the effects of FDI on economic growth in a cross country regression framework, and the results indicate that FDI has a positive effect on economic growth, although the magnitude of the effect depends on the stock of human capital available in the recipient country.

¹⁶ Sjöholm (1999) analyzed spillovers from FDI in the case of Indonesia. Spillovers are found in sectors with a high degree of competition, and the larger the technology gap between domestic and foreign establishments, the larger the spillovers. Possibly, the real value of FDI for the Far East originates from the technology gap between the country of investment origin.

the sample data based on countries' national income levels. The data was divided into five categories, less than US\$1000, US\$1000-1999, US\$2000-3999, US\$4000-7999, and US\$8000 or more. The result shows that as the income level rose, the positive effects of FDI became less significant. For low income countries, the positive effect of FDI on TFP was observed. Considering that the Far East is still at its early stage of development, FDI should have positive effects on productivity in the region.

On the other hand, some previous studies have also shown positive relations between FDI and TFP improvement by focusing on a specific country. Cororaton and Zingapan (1999) analyzed determinants of TFP in the case of the Philippines, and their study obtained a positive relation between FDI in manufacturing and the TFP improvement. This implied that FDI in manufacturing is supposed to further contribute overall improved efficiency. Okuda (1994) conducted a similar analysis for Taiwan, and his study also found a positive relation between TFP and accumulated FDI stock to total capital stock. In his model, a one-year lag in FDI was applied to clarify the production effects after the pregnancy period of investment.

These previous studies stressed the role of FDI on TFP improvement. Therefore, FDI expansion must be emphasized as a key factor in improving the economy.

Exports TFP Improvement, and TFP Improvement Exports

Several analyses have shown positive relations between increases in exports and TFP improvement. In trying to analyze the determinants of TFP, Kawai (1994) examined the impact of export values. The result showed a positive relation between TFP and exports. The World Bank (1993) also indicated that exports had a positive effect on TFP.

Increased exports enhance productivity through the following channels¹⁷: (1) Increased exports make it easier to obtain foreign technologies, capital goods, and intermediate goods through export earnings. Operating with these imported goods and equipment leads to higher production through these new inputs and equipment, and enables firms to produce goods more efficiently; (2) Domestic firms are forced to improve their competitiveness and increase exports under international competition, and this has a positive effect on productivity improvement.

¹⁷ Urata (1994).

On the other hand, increased TFP is also considered to promote exports. Enhanced TFP will lower the cost of producing export goods, which strengthens price competitiveness. However, the results in past studies are mixed, and the interdependence between them was not shown clearly, either.

Okuda (2000) conducted an econometric analysis to explain the role of exports in economic growth for the Korean case. He tested the following two hypotheses: (1) Impact of exports on TFP improvement; (2) Impact of TFP improvement on exports. According to his results, an increase in exports had a positive impact on productivity improvement, while the effect of TFP improvement on exports was slightly weak¹⁸.

Since these results were obtained for a different sample case, the author conducted another regression analysis to test whether the TFP improvement does contribute to intensify exports, by incorporating TFP as an explanatory variable into the gravity model used above. The estimated equation is as follows:

$$T_{ij} = f [\text{CNST, GDPX, GDPM, DIST, HK, SGP, MEX, TFP}] \dots \dots \dots (3)$$

The model was simplified by excluding all regional dummies. The variable TFP is average TFP growth rates between 1994 and 1996, and it was incorporated into the model for 1996. The model explains exports. A model explaining TFP was not run because a sufficient number of explanatory data (mainly domestic data) was not corrected. However, under the assumption that enhanced exports will affect the economy in a positive manner, only estimating an export function is still justifiable.

Table 10 shows the estimated result for determinants of trade flows in 1996. The coefficient of TFP was positive with a high significance level. This result implies that TFP improvement caused exports to increase. This result reaffirms the cycle between exports and productivity. According to Urata (1994), this relation between exports and productivity is recognized as “virtuous cycle”, which suggests the following linkage: expansion of exports causes productivity improvement further increases exports and production further enhances productivity further increases exports and production.

¹⁸ Even though the coefficient of TFP is positive, t value is less than 2 (1.928). Therefore, it is considered that TFP has a positive impact on exports. However, its significance is rather weak.

Table. 10 Determinants of trade flows with TFP

Independent Variables	Coefficient	t-value
Const	5.938***	12.016
GDPX	0.68***	19.217
GDPM	0.517***	20.219
DIST	-0.793***	-15.996
TFP	8.505***	4.104
SGP	1.387***	6.725
MEX	-0.649***	-2.887
HK	1.086***	5.299
Adjusted R-Square		0.539
Sample size		909

Source: Estimated by the author.

FDI Exports

Exports also increase through FDI. Okuda (1997) conducted a regression analysis to estimate the impact of FDI on trade by adding FDI variables into the gravity equation. He analyzed the effect of both FDI outflow from the exporting country and FDI inflow into the exporting country. According to his result, both showed a positive impact on trade flows, and particularly FDI inflow to the exporting country was observed to have a substantial impact on trade flows. This result implied that expansion of FDI induced exports. Petri (1995) also showed the effect of FDI on trade. He obtained positive coefficients both in contemporaneous form and in lagged form.

From the above observations, the following points are recommended to achieve economic development in the Far East region:

- (1) Considering the harsh economic situation surrounding the Far East, such as difficulties in obtaining supplies of goods from other domestic regions, the Far East region needs to develop economic linkages with Asia Pacific countries by promoting trade and investment in order to achieve economic development.

- (2) The above analysis on FDI and exports reveals the important role of FDI and exports in economic development through TFP improvement. Therefore, the Far East region needs to promote both FDI and exports to enhance TFP. However, Katseli (1992) stressed the role of historical background in developing trade-investment linkage. Particularly, Katseli considered relationships built on past trading and investment activities most important factor to reinforce the linkages. In other words, rapid expansion of FDI inflow without any historical linkage seems to rarely occur. Nevertheless, the Far East region needs to find a way to increase FDI and exports without strong historical relationships, and here lies the challenge of the Far East.

5. The Role of APEC in Expanding FDI and Exports in the Far East

Previous chapters affirmed that increases in exports and FDI are key factors in improving the economy of the Far East. During the period of the former Soviet Union, the Far East depended on other ex-USSR regions for most supplies. However, liberalization raised the transportation cost and made it difficult for the Far East to obtain supplies from other domestic regions. Consequently, the Far East had to develop its external relations to enhance economic development. Even though previous analysis clarified that the Far East had great potential to achieve economic development by improving productivity through exports and FDI, many difficulties still exist in expanding FDI and exports.

In this chapter, the author focuses on the role of APEC in developing favorable economic fundamentals in the Far East so that exports and FDI will expand. First, the author provides a brief overview of FDI in the Far East, and after that the author examines the role of APEC in expanding FDI and increasing exports.

5.1. FDI in the Far East

Table 11 shows the amount of FDI flowing into the Far East. The year 1998 saw a substantial reduction of FDI inflow into the region. This drastic decline of FDI inflow reflected the negative effects of the financial crisis that occurred in 1998, and businesses had to operate under the ruble's depreciation. Foreign firms mostly depended on imports

in the field of intermediate inputs. Therefore, the depreciation raised the cost of imported materials and caused the subsequent decrease in the value of dollar-denominated exports. The financial crisis forced foreign firms to face additional risks such as shrinking economic activities and declining domestic demand, unstable exchange rates and sharp inflation rate fluctuations, and political risks. These risks clarified some fundamental problems that the Russian economy faced. Some of these risks will be resolved by a properly functioning local banking system and by stabilizing rubles. However, political risks are considered more fundamental problems.

Table 11 also shows the amount of total investment and FDI in both Russia as a whole and in the Far East region. The Far East's share to the total investment in Russia was only 2-7%. The table also indicates that foreign investment was very small in the region. In the Far East regions, FDI concentrated in some specific regions, such as Khabarovsk, Sakhalinskaya, and Primorsky provinces. These regions accounted for 70% - 80% of the total foreign investment in the region, and other regions had very small amounts of foreign investment.

Table 12 points out some characteristics of FDI in the Far East. The Table shows countries investing in the Far East, and as shown, the U.S. is the most important investor in the region. Japan, Korea, and China, classified as "Asian Northeast regions" had occupied only a small share of total foreign investment. The major industries of U.S. investment included timber and pulp, telecommunications, service, and mining industries. Japan mainly invested in natural resources' extracting sector through joint ventures or economic cooperation.

The Far East's investment environment has not improved significantly yet. Foreign investors still face difficulties when they decide to start operation in this region because of the following reasons: (1) Stagnant economy; (2) Domestic firms with insufficient financial resources; (3) Energy supply problems; (4) Relatively small domestic market; (5) Environment problems; (6) Complicated relationships between local government and the central government.

It is considered that the Far East is still in the process of improving its investment environment, infrastructure, and legal system. Since the local government and local firms suffer from long-lasting stagnation, they are eager to increase FDI and achieve economic development for the entire region. As mentioned in the previous sections,

expansion of FDI plays an important role in not only enhancing productivity but also increasing production volume. As mentioned above, in addition to a lack of historical relationships, various risks and difficulties surrounding the Far East region make it difficult to expand FDI inflow. In the next section, the author focuses on the role of APEC activities in expanding both FDI and exports in the Far East.

5.2. The Role of ECOTECH in Assisting Development in the Far East

As shown in above sections, the Far East needs to work on building a favorable environment so that both FDI inflow and exports increase. Since the central government as well as the local government suffer from chronic budget deficits, Economic and Technical Cooperation (ECOTECH) in APEC is considered to play an important role in promoting economic development in the region.

ECOTECH is one of the co-equal pillars of APEC activities. The other pillars are liberalization and facilitation in trade and investment. Its goals are: (1) Achieving sustainable growth and equitable development in the Asia Pacific region; (2) Reducing economic disparities among APEC economies; (3) Improving economic and social well-being; (4) Building Asia Pacific communities. ECOTECH activities cover a wide range of areas involving policy dialogues, performing research, sharing data and information, conducting training programs and seminars, sharing technical expertise and experience, establishing research and business networks, and many other similar activities. Since ECOTECH's main purpose is to improve the ability of Asia Pacific governments to reduce impediments to trade and investment through unilateral or coordinated reforms, the introduction of ECOTECH activities should be important for Far East development. The following ECOTECH projects are considered to contribute to increasing exports and FDI by developing favorable economic fundamentals.

For increasing exports

To increase exports, the Far East will need to improve international competitiveness and explore new markets for export products. For the former, improving international competitiveness, activities promoting environmentally sustainable development contribute to an increase in exports. Since such activities enhance productivity through training and technology exchanges in various fields, participation in these activities will

result in improved productivity. For the latter, exploring new markets, participation in the APEC international trade fair is strongly recommended, particularly in the field of goods that the Far East has a comparative advantage. APEC member economies organized the trade fair to enhance trade opportunities in the region. Other programs that will contribute to increasing exports include the APEC program of exchanging trade promotion experts. Some programs offer activities mainly targeting the development of local firms, particularly SMEs, such as APEC center for technology exchange for small and medium enterprises (ACTETSME)¹⁹. Still others encourage facilitating strategic alliances among enterprises in the APEC region.

For Developing Economic Fundamentals

Among ECOTECH activities, few activities provide physical assistance. Most of activities relate to constructing information infrastructure, which frequently affect the development of economic fundamentals only in an indirect manner. Some projects that promote environmentally sustainable development provide guidelines and principles for sustainable development in infrastructure, and projects in that strengthen economic infrastructure assist development of the transportation and the financial infrastructure. The government can also obtain information on foreign investment through guidebooks and training programs on FDI policy administration and FDI adjustment. Although programs and projects organized under ECOTECH mostly assist an economy by providing information, these programs still offer great value for the developing economies because they improve access to information, which could potentially further development immediately and in the future.

The ECOTECH activities stated above are considered to contribute to not only increasing exports and FDI but also to improving productivity. Since several ECOTECH projects provide various kinds of opportunities for technology transfer and training, these projects will enhance the entire productivity of the participants in the long run. However, considering the current economic situation in the Far East, ECOTECH

¹⁹ ACTETSME functions mainly as a resource provider with capabilities in information networking, technical training, and organizing special activities for syndicating technology transfer projects. It provides an opportunity to find not only trade partners but also partners for joint ventures through the Internet.

projects are not sufficient to develop economic fundamentals. Consequently, other economic cooperation, not only within the APEC framework but also bilateral and multilateral cooperation, should be promoted for economic development in the Far East.

Conclusions

The main focus of this paper was to examine how the Far East region could achieve economic growth, and to determine what factors were needed to promote economic improvement. The following summarizes the findings of the analysis:

- (1) The collapse of the former Soviet Union forced the Far East region to look outside its borders for trade partners because the supply of goods and materials from the ex-USSR region stopped. This caused strengthening trade ties with Asia-Pacific countries, including the U.S. and Vietnam. External relations have now become an important factor in promoting economic growth in the Far East region.
- (2) Considering Russia's participation in APEC, the Far East region is considered to benefit from APEC. The Far East has close trade relations with APEC member economies, while Russia as a whole mainly trades with CIS and European countries. Empirical results also clarified the characteristics of trade partners for both Russia and the Far East.
- (3) Exports and FDI should play an important role in achieving economic growth in the Far East by deepening external relations. The analysis revealed that expansion of both FDI and exports was vital to economic development because it would enhance total efficiency in the economy.
- (4) Looking at FDI, foreign firms face several risks and difficulties in making a decision about investing in the Far East. In addition to a lack of historical external relationships with Asia-Pacific countries, insufficient infrastructure, a stagnant energy supply, poor economic performance, and unclear relations with Russia's central government hinder promotion of FDI. To resolve these constraints, ECOTECH activities are considered to play an important role in creating favorable conditions for foreign firms.
- (5) Taking the current economic situation into consideration, rapid expansion of FDI hardly occurs. Therefore, it is more important to first increase exports rather to

promote FDI. In order to increase exports, the Far East needs to advertise and market export goods, particularly export goods with comparative advantage, through exhibitions, free samples, catalogues, films and video advertising. At the same time, vital issues remain such as lowering production costs, diversifying product lines and improving product quality to raise competitiveness. The Far East also needs to increase the relative amount of goods with high value added.

- (6) The Far East could possibly achieve long-term sustainable development based on plentiful natural resources and a well-educated labor force with a high technological background. As explained above, FDI and exports are key factors in the region. To achieve economic growth, the region needs to further economic cooperation not only within the framework of APEC but also with other countries.

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Appendix 1

Description of Data Estimation

1. **Output:** Gross Domestic product. Data mainly came from IMF, *International Financial Statistics (IFS)*. The data were deflated using GDP deflators with a base year of 1990 and then converted to U.S. dollars using the average exchange rate of 1990 (series *rf* in IFS). For the Far East, all data, as well as output described below, were obtained from Goskomstat of Russia (State Committee of the Russian Federation of Statistics), *Russian Regional Statistics (Регионы России)*, 1998.
2. **Labor input:** The number of employment. Data came from IMF, *International Financial Statistics (IFS)*. Labor input share was calculated using data from the value of labor input, represented by total compensation. Data for OECD countries' compensation came from OECD, *National Accounts*, and it came from United Nations, *National Accounts Statistics* for other countries. However, there are a few countries not reporting such data on their statistics, and the author applied 65% of labor input share for those countries. This number, 65%, came from analysis conducted by Kawai (1995), which re-estimated labor input share for 28 countries, including Latin America and Asian countries. Therefore, the author considered it appropriate to apply 65% of labor input share as a proxy, although there is a possibility this may cause some biases in TFP estimation.
3. **Capital input:** Capital stock was estimated using the perpetual inventory method. Investment expenditure was deflated by WPI wherever available, or a GDP deflator was used instead where WPI was not available. To estimate capital stock accurately, the author tried to divide investment into two categories, building and construction, and machinery and equipment. Considering the national wealth in advanced countries, depreciation rates were assumed to be 0.03 for building and construction (30years), and 0.10 for machinery and equipment (10 years). However, a few countries do not provide investment data with detailed breakdowns. For those countries, the author applied a depreciation rate of 0.08 to the total investment. Data of investment were obtained from United Nations, *National Accounts Statistics*, OECD, *National Accounts*, The World Bank, *World Tables*, and Asian Development Bank, *Key Indicators of Developing Asian and Pacific Countries*. Domestic statistics were used for countries not reporting detailed data in the above statistics. In estimating initial capital stock, the author found insufficient data, particularly for Russia (and the Far East as well), Vietnam, Mongolia, and Kazakhstan. Since these countries failed to provide investment data for a long enough period of time the

initial capital stock was estimated by first estimating the capital-output ratio, and then the initial capital. In estimating the capital-output ratio, the author adopted Okuda(1998)'s equations in Korea's case, which include GDP per capita as the main explanatory variable.

The estimated model by Okuda was as follows:

$$\ln(\text{Capital coefficients}) = \text{Constant} + \beta_1 \ln(\text{GDP per capita}) + \beta_2 \ln(\text{GDP per capita}^2)$$

Both GDP per capita and capital investment were deflated by 1990 prices, and estimated results were as follows:

• For total investment:

$$\text{Coefficients} = \text{Const } 7.834(3.76) + \mathbf{[-2.306(-4.27)]} + \mathbf{[0.171(4.94)]}$$

Adjusted R-square:0.87

• For Construction and buildings:

$$\text{Coefficients} = \text{Const } 7.471(3.80) + \mathbf{[-2.269(-4.45)]} + \mathbf{[0.168(5.21)]}$$

Adjusted R-square:0.88

• For machinery and equipment:

$$\text{Coefficients} = \text{Const } 6.728(2.70) + \mathbf{[-2.433(-3.76)]} + \mathbf{[0.183(4.39)]}$$

Adjusted R-square:0.86

t-values are in parentheses. The author estimated initial capital stock based on capital coefficients calculated by the above equations. Series of estimated capital stock was then converted to U.S. dollars using the average exchange rate of 1990 (series r_f in IFS)

Table 1
Russia's External Trade by Country

Unit: Million US Dollars

	Exports						Imports					
	1994 (%)		1996 (%)		1998 (%)		1994 (%)		1996 (%)		1998 (%)	
Total	63522	100	79572	100	65932	100	36843	100	44616	100	41576	100
Europe	34556	54.4	41467	52.1	35047	53.2	18804	51.0	20619	46.2	19452	46.8
Austria	884	1.4	816	1.0	589	0.9	979	2.7	676	1.5	505	1.2
Belgium	1380	2.2	1384	1.7	675	1.0	614	1.7	694	1.6	695	1.7
Bulgaria	785	1.2	1177	1.5	600	0.9	345	0.9	246	0.6	166	0.4
UK	4259	6.7	3241	4.1	2935	4.5	896	2.4	1158	2.6	1220	2.9
Hungary	1408	2.2	1952	2.5	1518	2.3	761	2.1	696	1.6	622	1.5
Germany	6376	10.0	6668	8.4	6417	9.7	5675	15.4	5756	12.9	5738	13.8
Greece	151	0.2	141	0.2	365	0.6	184	0.5	208	0.5	127	0.3
Denmark	218	0.3	311	0.4	142	0.2	323	0.9	462	1.0	519	1.2
Ireland	926	1.5	2893	3.6	647	1.0	250	0.7	326	0.7	296	0.7
Spain	201	0.3	407	0.5	530	0.8	245	0.7	388	0.9	424	1.0
Italy	2984	4.7	2760	3.5	3316	5.0	1596	4.3	2450	5.5	1848	4.4
Netherlands	2471	3.9	3310	4.2	3938	6.0	1611	4.4	1052	2.4	923	2.2
Norway	319	0.5	460	0.6	231	0.4	111	0.3	284	0.6	201	0.5
Poland	1414	2.2	2363	3.0	2360	3.6	946	2.6	1080	2.4	1128	2.7
Romania	475	0.7	894	1.1	566	0.9	146	0.4	135	0.3	90	0.2
Slovakia	1235	1.9	1789	2.2	1373	2.1	209	0.6	266	0.6	192	0.5
Finland	1891	3.0	2521	3.2	2217	3.4	1628	4.4	1827	4.1	1516	3.6
France	1326	2.1	1582	2.0	1450	2.2	1005	2.7	1305	2.9	1596	3.8
Czech	1279	2.0	1939	2.4	1395	2.1	430	1.2	541	1.2	524	1.3
Switzerland	3719	5.9	3758	4.7	3110	4.7	539	1.5	489	1.1	420	1.0
Sweden	855	1.3	1101	1.4	673	1.0	311	0.8	580	1.3	702	1.7
CIS Countries	13861	21.8	15914	20.0	13601	20.6	10317	28.0	14575	32.7	11287	27.1
Asia	10537	16.6	15493	19.5	11036	16.7	4482	12.2	5036	11.3	4816	11.6
Afghanistan	16	0.0	21	0.0	13	0.0	8	0.0	8	0.0	7	0.0
Vietnam	121	0.2	122	0.2	211	0.3	52	0.1	32	0.1	56	0.1
Israel	424	0.7	565	0.7	476	0.7	155	0.4	195	0.4	145	0.3
India	379	0.6	794	1.0	582	0.9	587	1.6	610	1.4	665	1.6
Iran	147	0.2	377	0.5	513	0.8	42	0.1	40	0.1	28	0.1
Cyprus	271	0.4	487	0.6	285	0.4	61	0.2	72	0.2	38	0.1
China	2889	4.5	4750	6.0	3146	4.8	952	2.6	1016	2.3	1154	2.8
Korea	51	0.1	35	0.0	54	0.1	44	0.1	30	0.1	8	0.0
Mongolia	144	0.2	188	0.2	133	0.2	54	0.1	85	0.2	49	0.1
United Arab Emirates	185	0.3	51	0.1	357	0.5	51	0.1	24	0.1	30	0.1
Pakistan	17	0.0	68	0.1	21	0.0	6	0.0	14	0.0	14	0.0
Korea Rep.of	568	0.9	1340	1.7	524	0.8	429	1.2	846	1.9	1016	2.4
Singapore	417	0.7	602	0.8	74	0.1	211	0.6	241	0.5	107	0.3
Syria	87	0.1	63	0.1	159	0.2	20	0.1	10	0.0	10	0.0
HK	323	0.5	261	0.3	145	0.2	122	0.3	80	0.2	16	0.0
Thailand	467	0.7	221	0.3	32	0.0	36	0.1	55	0.1	62	0.1
Taiwan	194	0.3	495	0.6	142	0.2	137	0.4	73	0.2	74	0.2
Turkey	1014	1.6	1686	2.1	1928	2.9	401	1.1	595	1.3	519	1.2
Japan	2823	4.4	3367	4.2	2241	3.4	1114	3.0	1010	2.3	818	2.0
Africa	392	0.6	547	0.7	558	0.8	136	0.4	78	0.2	175	0.4
Algeria	47	0.1	110	0.1	83	0.1	51	0.1	22	0.0	84	0.2
Egypt	305	0.5	388	0.5	395	0.6	62	0.2	35	0.1	17	0.0
Morocco	26	0.0	40	0.1	48	0.1	16	0.0	14	0.0	67	0.2
Nigeria	14	0.0	9	0.0	32	0.0	7	0.0	7	0.0	7	0.0
America	4137	6.5	6136	7.7	5672	8.6	2805	7.6	4063	9.1	5559	13.4
Argentina	27	0.0	34	0.0	40	0.1	38	0.1	91	0.2	149	0.4
Brazil	77	0.1	109	0.1	177	0.3	193	0.5	205	0.5	655	1.6
Canada	197	0.3	118	0.1	144	0.2	187	0.5	346	0.8	212	0.5
Cuba	87	0.1	465	0.6	69	0.1	301	0.8	411	0.9	416	1.0
Mexico	62	0.1	14	0.0	76	0.1	7	0.0	35	0.1	68	0.2
Panama	126	0.2	328	0.4	116	0.2	9	0.0	18	0.0	4	0.0
USA	3561	5.6	5068	6.4	5050	7.7	2070	5.6	2957	6.6	4055	9.8
Australia and Pacific	39	0.1	15	0.0	18	0.0	299	0.8	245	0.5	287	0.7
Australia	38	0.1	8	0.0	12	0.0	191	0.5	102	0.2	151	0.4
New Zealand	1	0.0	7	0.0	6	0.0	108	0.3	143	0.3	136	0.3

Source: Russia in Figures, 1999. Goskomstat of Russia.

Table 2
Russia's Main Export and Import Items

Unit: Billion US Dollars

Exports	1994	(%)	1996	(%)	1998	(%)
Total	66.9	100	86.9	100	72.6	100
Machines, equipment and transport machinery	5.6	8.4	8.5	9.8	7.9	10.9
Mineral products	24	35.9	34.2	39.4	25	34.4
Metal, precious stones and their products	23.8	35.6	27.4	31.5	26	35.8
Chemical products and rubber	5.4	8.1	7.4	8.5	6.1	8.4
Wood pulp and paper products	2.7	4.0	3.6	4.1	3.6	5.0
Textiles and textile products	1.3	1.9	0.9	1.0	0.8	1.1
Leather raw materials, fur and their products	0.42	0.6	0.32	0.4	0.4	0.6
Foodstuffs and agricultural raw materials	2.8	4.2	3.2	3.7	2.2	3.0
Other	0.9	1.3	1.4	1.6	0.6	0.8

Imports	1994	(%)	1996	(%)	1998	(%)
Total	38.74	100	47.44	100	32.8	100
Machines, equipment and transport machinery	13.7	35.4	15.2	32.0	12.9	39.3
Mineral products	2.3	5.9	3.6	7.6	0.9	2.7
Metal, precious stones and their products	2.8	7.2	4.1	8.6	1.5	4.6
Chemical products and rubber	3.8	9.8	6.9	14.5	5.2	15.9
Wood pulp and paper products	0.6	1.5	1.5	3.2	1.5	4.6
Textiles and textile products	3.1	8.0	2.3	4.8	0.9	2.7
Leather raw materials, fur and their products	0.24	0.6	0.14	0.3	0.1	0.3
Foodstuffs and agricultural raw materials	10.7	27.6	11.9	25.1	8.7	26.5
Other	1.5	3.9	1.8	3.8	1.1	3.4

Source: Russia in Figures, 1999. Goskomstat of Russia.

Table 3 External Trade in the Far East

Unit: Million US Dollars

	1992	1993	1994	1995	1996	1997
total	2728.9	3238.9	2259.4	4180.2	5376.2	6169.2
exports	1539.2	2048.1	1610.5	2426.8	3344.9	3671.9
imports	1189.7	1190.8	648.9	1753.4	2031.3	2497.3
trade surp	349.5	857.3	961.6	673.4	1313.6	1174.6

Source: Russian Far East in Figures, 1999. Institute for Russian and European Economic Studies

Table 4 Main Trade Partners in the Far East

Unit: %

	Exports						Imports					
	1992	1993	1994	1995	1996	1997	1992	1993	1994	1995	1996	1997
Japan	47.4	43.6	61.8	48.3	31.0	29.2	19.4	17.5	17.0	10.7	7.9	21.4
Korea	7.0	5.7	10.1	10.4	9.8	11.5	11.7	6.0	15.2	12.1	15.1	18.5
China	27.3	29.9	9.7	7.1	21.1	10.9	48.5	48.4	14.6	8.9	10.8	10.5
Hong Kong	0.0	0.4	1.2	0.8	1.0	1.4	0.1	1.3	0.4	0.6	0.1	0.2
Taiwan	0.2	0.1	0.0	0.1	0.9	1.1	0.0	0.2	0.9	0.2	0.1	1.3
Singapore	0.1	1.4	1.6	1.5	0.6	0.0	1.7	2.0	2.2	2.5	2.6	0.1
Vietnam	2.5	0.4	0.4	6.1	1.1	1.5	0.3	0.3	1.6	1.3	0.9	1.1
North Korea	0.1	0.5	0.1	0.4	0.0	1.2	0.1	0.1	0.6	0.0	0.0	2.2
United States	3.8	1.4	3.9	9.1	3.8	10.8	4.0	6.4	17.3	21.5	20.3	19.3
Canada	0.0	1.2	1.2	1.4	0.2	0.1	0.7	0.5	3.0	0.7	1.0	1.1
Germany	0.1	0.3	1.2	2.1	0.6	3.6	1.0	3.5	2.7	11.3	2.8	2.1
France	1.4	2.6	0.2	0.7	0.1	0.0	0.0	0.2	0.7	0.3	0.5	0.3
Netherlands	1.0	0.1	0.0	0.1	0.0	0.2	1.7	1.3	0.7	0.5	0.0	0.5
United Kingdom	0.0	0.1	0.1	0.8	0.0	1.0	0.1	0.6	1.1	1.0	0.0	1.9
Italy	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.7	2.1	1.2	0.6	0.4
Switzerland	0.0	0.2	1.0	1.6	0.0	0.8	0.2	0.5	3.0	0.5	0.0	0.1
Australia	0.0	0.1	1.9	0.1	0.0	0.0	0.0	0.4	1.2	1.8	1.0	1.0
New Zealand	0.0	0.1	0.0	0.0	0.0	0.0	0.6	0.2	1.9	1.4	0.0	0.2

Source: Same as Table 3.

Table 5. Major Export Items

Unit: Million US Dollars

	1994	(%)	1996	(%)	1997	(%)
Total	1610.5	100.0	3339.5	100.0	3668.7	100.0
Machines, equipment and transport machines	32.0	2.0	781.2	23.4	549.0	15.0
Fuels, mineral products, metals	464.0	28.8	703.3	21.1	747.6	20.4
Coal	151.4	9.4	230.1	6.9	160.1	4.4
Steel	119.6	7.4	64.3	1.9	89.1	2.4
Nonferrous metal	61.8	3.8	79.8	2.4	94.5	2.5
Oil products	97.2	6.0	291.3	8.7	351.8	9.6
Chemical products	19.8	1.2	38.7	1.2	34.9	1.0
Fertilizer	2.2	0.1	-	-	-	-
Consumer goods	3.1	0.2	3.5	0.1	2.0	0.0
Construction materials	4.3	0.3	-	-	-	-
Raw materials and their products	317.2	19.7	418.9	1.5	486.0	12.8
Wood	309.4	19.2	412.3	12.3	467.4	12.7
Pulp	5.3	0.3	3.5	0.1	-	-
Foodstuffs	704.0	43.7	645.3	19.3	1104.4	30.1
Fish products	649.1	40.3	611.2	18.3	1080.2	29.5

Source: Russian Far East in Figures, 1999. Institute for Russian and European Economic Studies.

Table 6. Major Import Items

Unit: Million US Dollars

	1994	(%)	1996	(%)	1997	(%)
Total	648.9	100.0	2026.4	100.0	2493.5	100.0
Machines, equipment and transport machines	210.4	32.4	533.3	26.3	794.7	31.9
Fuels, mineral products, metals	36.0	5.6	160.3	7.9	279.0	1.2
Chemical products	22.2	3.4	56.5	2.8	31.2	1.2
Construction materials	9.2	1.4	10.0	0.5	7.0	0.3
Raw materials and their products	0.9	0.1	9.1	0.4	-	-
Consumer goods	319.2	49.1	738.7	36.5	899.1	36.1
Foodstuffs	144.7	22.2	227.2	11.2	102.1	4.1
Non-food stuffs	174.4	26.9	511.5	25.2	797.0	32.0

Source: Same as Table 5.

Table 7 Description of Explanatory Variables

T _{ij}	Exports from country i to j
GDPX	GDP of exporting country
GDPM	GDP of importing country
DIST	Distance between exporting and importing countries
TFP	Total Factor Productivity*
HK	Hong Kong dummy: 1 if the flow involves Hong Kong, 0 otherwise
SGP	Singapore dummy: 1 if the flow involves Singapore, 0 otherwise
MEX	Mexico dummy: 1 if the flow involves Mexico, 0 otherwise
RUSSIA	Russia dummy: 1 if the flow involves Russia, 0 otherwise
FAREAST	Fareast dummy: 1 if the flow involves Fareast, 0 otherwise
APEC	Intra-APEC dummy: 1 if the flow is intra-APEC, 0 otherwise
NAFTA	Intra-NAFTA dummy: 1 if the flow is intra-NAFTA, 0 otherwise
RUSSIA-APEC	Russia-APEC trade dummy: 1 if the flow is between APEC and Russia, 0 otherwise
RUSSIA-CIS	Russia-CIS trade dummy: 1 if the flow is between Russia and CIS countries, 0 otherwise
RUSSIA-EU	Russia-EU trade dummy: 1 if the flow is between Russia and EU countries, 0 otherwise
RUSSIA-VIETNAM	Russia-Vietnam trade dummy: 1 if the flow is between Russia and Vietnam, 0 otherwise
RUSSIA-US	Russia-US trade dummy: 1 if the flow is between Russia and US, 0 otherwise
RUSSIA-ASIA	Russia-Asia trade dummy: 1 if the flow is between Russia and Asian countries, 0 otherwise
RUSSIA-CHINA	Russia-China trade dummy: 1 if the flow is between Russia and China, 0 otherwise
FAREAST-APEC	Fareast-APEC trade dummy: 1 if the flow is between APEC and Fareast, 0 otherwise
FAREAST-EU	Fareast-EU trade dummy: 1 if the flow is between Fareast and EU countries, 0 otherwise
FAREAST-VIETNAM	Fareast-Vietnam trade dummy: 1 if the flow is between Fareast and Vietnam, 0 otherwise
FAREAST-US	Fareast-US trade dummy: 1 if the flow is between Fareast and US, 0 otherwise
FAREAST-ASIA	Fareast-Asia trade dummy: 1 if the flow is between Fareast and Asian countries, 0 otherwise
FAREAST-CHINA	Fareast-China trade dummy: 1 if the flow is between Fareast and China, 0 otherwise

*TFP introduced in the second equation.

Notes:

(1)CIS involves Kazakhstan, Ukraine and Belarus. Other CIS countries were excluded mainly due to data unavailability.

(2)ASIA involves Japan, Korea, Taiwan, and Hong Kong

Table 8.a Results of Regression AnalysisDependent Variable: T_{ij}

Independent Variables	1992		1997	
	Coefficient	t-value	Coefficient	t-value
CNST	4.162 ***	9.27	7.582 ***	17.37
GDPX	0.736 ***	26.00	0.501 ***	20.54
GDPM	0.704 ***	24.36	0.475 ***	19.82
DIST	-0.773 ***	-16.69	-0.831 ***	-17.47
HK	1.300 ***	6.64	0.743 ***	3.81
SGP	1.749 ***	8.70	1.037 ***	5.26
MEX	-1.155 ***	-5.43	-1.055 ***	-4.93
RUSSIA	1.301 ***	2.93	-0.190	-0.39
FAREAST	-0.658	-0.89	-2.620 ***	-3.44
APEC	0.439 ***	4.06	0.408 ***	3.66
NAFTA	0.922	1.49	1.575 **	2.44
RUSSIA-APEC	-2.531 ***	-4.54	-2.118 ***	-3.56
RUSSIA-CIS	3.912 ***	5.29	3.482 ***	4.42
RUSSIA-EU	-0.192	-0.32	0.379	0.60
RUSSIA-VIETNAM	2.344 **	2.18	0.884	0.79
RUSSIA-US	1.132	1.05	2.379 **	2.11
RUSSIA-ASIA	-0.672	-1.04	-0.025	-0.04
RUSSIA-CHINA	2.395 **	2.22	1.683	1.50
FAREAST-APEC	-0.711	-0.72	-0.863	-0.90
FAREAST-EU	-0.659	-0.72	1.064	1.09
FAREAST-VIETNAM	3.391 ***	2.79	2.989 **	2.45
FAREAST-US	0.878	0.72	3.228 ***	2.65
FAREAST-ASIA	-0.038	-0.04	1.559 **	1.97
FAREAST-CHINA	2.735 **	2.24	1.603	1.31
Adjusted R-Squared	0.643		0.565	
Sample Size	980		1066	

Notes: *** 1 percent significant, ** 5 percent significant, * 10 percent significant.

Source: Estimated by the author

Table 8.b. A Test for Parameter Difference

	1992			
	F Statistics	Probability	Chi-square	Probability
APEC-RUSSIA & APEC-FAREAST	2.654	0.104	2.654	0.103
EU-RUSSIA & EU-FAREAST	0.187	0.666	0.187	0.665
VIETNAM-RUSSIA & VIETNAM-FAREAST	0.417	0.519	0.417	0.519
ASIA-RUSSIA & ASIA-FAREAST	0.355	0.551	0.355	0.551
CHINA-RUSSIA & CHINA-FAREAST	0.044	0.834	0.044	0.834
	1997			
	F Statistics	Probability	Chi-square	Probability
APEC-RUSSIA & APEC-FAREAST	1.264	0.261	1.264	0.261
EU-RUSSIA & EU-FAREAST	0.346	0.556	0.346	0.556
VIETNAM-RUSSIA & VIETNAM-FAREAST	1.616	0.204	1.616	0.204
ASIA-RUSSIA & ASIA-FAREAST	2.472	0.116	2.472	0.116
CHINA-RUSSIA & CHINA-FAREAST	0.002	0.961	0.002	0.961

Source: Estimated by the author.

Table 9 Average TFP Growth Rates

	90-92	94-96	86-96
Japan	-0.46	0.04	0.01
Korea	-0.66	1.13	0.49
Taiwan	-0.14	0.84	1.35
Hong Kong	0.86	-0.96	1.30
China	1.41	4.15	3.15
Singapore	1.00	1.83	2.37
Malaysia	2.34	2.43	2.18
Thailand	4.46	1.58	2.84
Philippines	-2.43	0.41	0.46
Indonesia	1.30	1.51	1.08
Vietnam	0.28	1.17	0.39
Australia	-0.60	0.39	-0.26
New Zealand	-1.37	-0.36	-0.48
Canada	-1.40	0.37	-0.47
USA	-0.84	-0.05	-0.47
Mexico	-8.00	-2.95	-5.58
Chile	2.32	2.76	2.04
Peru	-1.94	-	-1.79
India	0.19	4.27	2.34
UK	-1.44	0.99	-0.02
France	-0.71	0.70	0.08
Germany	-1.56	-0.09	-0.46
Italy	-1.42	0.65	-0.20
Netherlands	0.24	-0.18	-0.66
Russia	-	3.35 *	-
Far East	-	-0.50 *	-
Kazakhstan	-	-2.97	-
Finland	-2.75	3.38	0.83
Ireland	1.93	4.67	2.34
Switzerland	-1.28	-1.10	-1.22
Mongolia	-8.05	3.35	-2.00

*Average between 1996 and 1997

Source: Estimated by the author.

Figure 2. TFP Improvement, FDI and Exports

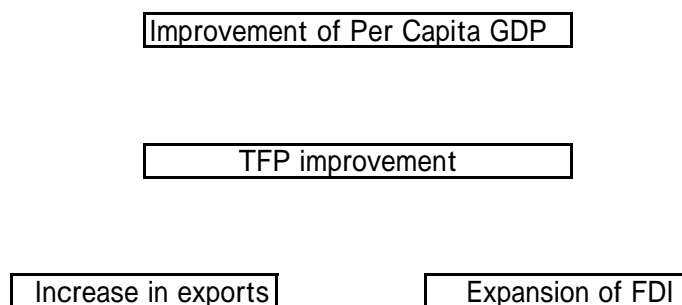


Table 11 Investment in the Far East Region

Unit: Thousand US Dollars

	1995				1996				1997				1998			
	Total	(%)	FDI	(%)	Total	(%)	FDI	(%)	Total	(%)	FDI	(%)	Total	(%)	FDI	(%)
Russia	2983400		2020200		6970300		2439800		12294700		5333400		11773000		3361000	
Far east regions	197922	6.6	126863	4.3	308043	10.3	242496	8.1	271056	9.1	195695	6.6	554494	18.6	249984	8.4
Yakutia (Sakha) Republic	11544	5.8	5242	4.1	7840	2.5	7839	3.2	14055	5.2	9798	5.0	196649	35.5	871	0.3
Jewish Autonomous Region	31	0.0	31	0.0	342	0.1	342	0.1	452	0.2	452	0.2	-	-	-	-
Primorsky Province	53358	27.0	23172	18.3	96554	31.3	65460	27.0	94526	34.9	60924	31.1	84604	15.3	46084	18.4
Khabarovsk Province	42349	21.4	33254	26.2	78862	25.6	77851	32.1	11939	4.4	11606	5.9	40091	7.2	14819	5.9
Amurskaya Oblast	924	0.5	924	0.7	6034	2.0	1025	0.4	505	0.2	318	0.2	414	0.1	414	0.2
Kamchatskaya Oblast	24405	12.3	836	0.7	24452	7.9	1848	0.8	34014	12.5	1921	1.0	42913	7.7	7181	2.9
Magadanskaya Oblast	13791	7.0	13785	10.9	49305	16.0	45231	18.7	62822	23.2	61630	31.5	53723	9.7	48690	19.5
Sakhalinskaya Oblast	51520	26.0	49619	39.1	44654	14.5	42900	17.7	52743	19.5	49046	25.1	136101	24.5	131925	52.8

Source: Russian Far East in Figures, 1999. Institute for Russian and European Economic Studies

Table 12 FDI by Country

Unit: Million US Dollars

Country	1997	(%)	1998(1-9)	(%)
United States	582.4	(50.2)	133.7	(40.5)
Japan	176.2	(15.2)	7.5	(7.5)
Korea	113.4	(9.8)	16.8	(16.8)
China	11.4	(1.0)	0.2	(0.2)
Others	276.6	(23.8)	171.9	(52.1)
Total	1160.6	(100)	330.1	(100)

Source: Shimoyashiro, JETRO, 1999.

APPENDIX 2 Estimation method for GDP deflators in Russia and the Far East

	Russia-All	Far East
GDP (National Level), 1996 bil Rb	2200225	
GDP, (Total of each region), 1996 bil Rb	1960661	118198.5
Adjusted GDP		132640.7

	Russia	Far East		Russia	Far East
<i>Industrial output (bil Rb Nominal)</i>			<i>Total of Industrial & Agricultural output (nominal)</i>		
1985	472.9	23.6	1989		
1990	552.6	27.8	1990		
1991	1176.7	59.6	1991	1436.7	72.1
1992	17210	928	1992	19872.7	1056.5
1993	120230	7318	1993	142647.8	8655.6
1994	354983	21361	1994	428712.3	25303.1
1995	982097	51206	1995	1191514	59787.4
1996	1282830	69622	1996	1581271	82609.3
1997	1410225	72888	1997	1742840	86808.1
<i>Index of industrial output</i>			<i>Total of Industrial & Agricultural output (real)</i>		
1985			1989	3177533	194886.8
1989	209.7318	242.1075	1990	3155361	190402.3
1990	209.5221	237.2653	1991	2916959	183730.6
1991	192.7603	230.1474	1992	2431882	157477.8
1992	158.0635	195.6253	1993	2131838	139006
1993	135.9346	172.1502	1994	1719075	107800.7
1994	107.3883	132.5557	1995	1650429	89947.85
1995	104.1667	108.6957	1996	1581271	82609.3
1996	100	100	1997	1609912	77699.6
1997	102	95	<i>Estimated GDP (real,bil Rb)</i>		
<i>Industrial output (bil Rb 96 price)</i>			1989	4421311	312917.7
1989	2690503	168560.1	1990	4390461	305717.3
1990	2687812	165188.9	1991	4058741	295004.9
1991	2472787	160233.2	1992	3383790	252852.3
1992	2027686	136198.2	1993	2966301	223193.4
1993	1743810	119854.4	1994	2391970	173088.9
1994	1377610	92287.91	1995	2296455	144423.7
1995	1336281	75676.09	1996	2200225	132640.7
1996	1282830	69622	1997	2240077	124757.4
1997	1308487	66140.9	<i>Estimated GDP (nominal)</i>		
<i>Agricultural output (bil Rb nominal)</i>			1991	1999.066	115.7665
1991	260	12.5	1992	27651.45	1696.357
1992	2662.7	128.5	1993	198484.3	13897.76
1993	22417.8	1337.6	1994	596522.6	40627.63
1994	73729.3	3942.1	1995	1657907	95996.94
1995	209417.4	8581.4	1996	2200225	132640.7
1996	298440.5	12987.3	1997	2425037	139382.4
1997	332614.5	13920.1	<i>Estimated Deflator</i>		
<i>Index of Agricultural output</i>			1991	0.000493	0.000392
1989	163.1918	202.7115	1992	0.008172	0.006709
1990	156.6642	194.1395	1993	0.066913	0.062268
1991	148.831	180.9261	1994	0.249386	0.234721
1992	135.4362	163.8488	1995	0.721942	0.66469
1993	130.0187	147.4639	1996	1	1
1994	114.4165	119.4458	1997	1.082569	1.117227
1995	105.2632	109.8901			
1996	100	100			
1997	101	89			
<i>Agricultural output (bil Rb 96 price)</i>					
1989	487030.5	26326.75			
1990	467549.3	25213.48			
1991	444171.8	23497.41			
1992	404196.4	21279.53			
1993	388028.5	19151.58			
1994	341465.1	15512.78			
1995	314147.9	14271.76			
1996	298440.5	12987.3			
1997	301424.9	11558.7			

(Notes)

1. Data in estimating deflators for both Russia and the Far East came from Goskomstat of Russia (State Committee of the Russia Federation of Statistics), Russian Regional Statistics, 1998.

2. Totals of industrial output and agricultural output are considered to be a proxy for GDP. However, there is a slight gap between proxy GDP totals and national level GDP. The proxy GDP is less than national GDP because the proxy is missing the service sector. Therefore, estimated GDP was calculated as follows: Estimated GDP=proxy GDP/0.891%.