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The Financial Crisis and Agricultural Productivity in Asia and the Pacific

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Report of the APO Study Meeting on Effects of Financial Crisis on Productivity of Agriculture (STM-12-00)
Japan, 6–13 December 2000

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THE FINANCIAL CRISIS AND AGRICULTURAL PRODUCTIVITY IN ASIA AND THE PACIFIC

2004
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Tokyo

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TABLE OF CONTENTS

FOREWORD

An unexpected financial crisis hit the East and Southeast Asian countries in 1997, putting their socio-economies in turmoil. Banking systems were disrupted, while many business activities had to cease. Local currencies plummeted whereas domestic prices soared. The social impact of the crisis has been very severe as both unemployment and poverty have increased significantly. While clear signals of economic recovery have recently emerged in these countries, the overall situation of Asian economies remains opaque.

The financial and economic crisis hit the agriculture sector as well: demand for agricultural commodities stagnated; public expenditures for agriculture declined due to limited budgets; and many urban workers returned to their native villages for the sake of survival. All of these have had an adverse effect on agricultural productivity, income, and employment in the rural sector where the majority of the poor live. The impact may have been relatively minor and short-lived in some cases, but could be more profound and long-lasting where the disruptions were sufficiently large and long to cause capital investment to dwindle, alter the nature of already weak labor markets, and delay the recovery of commodity demand.

To assess these impacts and learn lessons from them, the APO organized the study meeting on the Effects of the Financial Crisis on the Productivity of Agriculture in Japan. This publication is a compilation of the selected papers and proceedings of the meeting. It is our hope that this publication will provide useful lessons and insights to our readers, especially planners, policymakers, and researchers who are keen to devise better policies and measures to cope with such sudden external shocks while avoiding negative impacts on long-term productivity growth in agriculture.

The APO is grateful to the Government of Japan, especially the Ministry of Agriculture, Forestry and Fisheries, for hosting the meeting, and to the Association for International Cooperation of Agriculture and Forestry for implementing the program. Our appreciation also goes to the resource persons for their valuable contributions and to Dr. Tongroj Onchan for editing the publication.

TAKASHI TAJIMA
Secretary-General

Tokyo
April 2004

SUMMARY OF FINDINGS

INTRODUCTION

The Study Meeting on the Effects of Financial Crisis on Productivity of Agriculture, which was organized by the Asian Productivity Organization (APO), and hosted by the Government of Japan, was held in Tokyo from 6 to 13 December 2000. The Association for International Cooperation of Agriculture and Forestry (AICAF) implemented the program with financial and technical assistance of the Ministry of Agriculture, Forestry and Fisheries (MAFF). Fifteen participants from 13 member countries and four resource speakers from Indonesia, Japan, the Republic of Korea and Thailand attended the study meeting.

The objectives of the study meeting were to: 1) discuss the impact of financial crisis on productivity of agriculture in the Asia-Pacific region; and (2) outline the main policy measures and programs for alleviating the impacts of the crisis.

The study meeting consisted of the presentation and discussion of resource papers, as well as country reports and field visits to JA Sawada, JA Maebashi-shi and JA Katashina-mura in the Gunma prefecture. The topics covered by the resource papers were: 1) Impact of the 1997 Financial Crisis on Southeast Asia's Farm Sector with a Special Reference to Thailand; 2) An Outline of the Credit Business of Agricultural Cooperatives in Japan; 3) Impact of Financial Crisis on Productivity of Agriculture: Korean Case; and 4) An Overview of the Impact of the Financial Crisis on Productivity of Agriculture in the Asia-Pacific Region. The country reports focused on the economic and social situation of the respective countries in relation to the Asian financial crisis, particularly the effects of the Asian financial crisis on the productivity of agriculture in the respective participating member countries. In the workshop, participants identified major issues of the effects of the 1997 financial crisis on the productivity of agriculture in the member countries, and suggested specific strategic actions to address such issues.

HIGHLIGHTS OF RESOURCE PAPERS

Impact of the 1997 Financial Crisis on Southeast Asia's Farm Sector with a Special Reference to Thailand (Prof.Dr. Tongroj Onchan)

The paper reviews the subject under the following three sub-titles: 1) The Asian economy: From Boom to Crisis; 2) The Socio-economic Impact of the Financial Crisis in the Affected Southeast Asian Countries; and 3) The Impact of the Financial Crisis on Thailand's Farm Sector. The paper also uses information relevant to the subject from other sources as independent insets, e.g., the worsening agricultural performance of Asian countries during 1998-99 (FAO 2000), crisis impact on Thailand's rural sector (World Bank, pp. xii-xiii, April 2000), and a postscript based on the reports of the Asian Development Bank (2000a and b) and the World Bank (1999 and 2000).

A summary of the paper is as follows:

After experiencing a rapid and sustained economic growth, which had brought about improved economic welfare for a great number of people in the Southeast Asian countries

during the 1970s to the mid-1990s, the unexpected financial crisis (which started in July 1997 in Thailand) has had a great adverse impact on these economies, especially the five most affected countries of Thailand, Indonesia, Malaysia, the Rep. of Korea, and the Philippines. The pathways to the social impacts of the Asian crisis may be explained as follows: the crisis started with capital flight, which led to the depreciation of the local currency, unviable corporate balance sheets, credit crunch, falling output (farm, non-farm) and lowered government revenue (which caused reductions in government spending of social programs). Other related problems include higher costs of living, lower wages and rising unemployment. Regarding the farm sector, the following are expected to occur: migrations back to the rural sector by unemployed workers, lower farm production and income, increase in rural poverty and income inequality. In sum, four major impacts consist of labor markets, changes in relative prices, public spending, and assets and credit. These impacts may vary in severity by social groups, e.g., urban vs. rural or rich vs. poor.

The Asian financial crisis rapidly caused marked contractions in the GDP and employment of the five affected countries. The shrinkages in GDP in 1998 ranged from 0.5 percent in the Philippines to 14 percent in Indonesia. Unemployment rates increased in all countries with the largest increase in the Rep. of Korea. The impact was usually more on prices; the currency devaluations had an almost immediate impact on the prices of goods and services, which had high import content. Inflation was particularly serious in Indonesia because food prices rose markedly. Prices of farm inputs, e.g., fertilizer, fuel, and animal feeds, also increased sharply. The crisis impact on the income of households, both urban and rural has been particularly significant. The reduction in remittances from urban sectors caused rural household incomes to markedly decline.

Overall, real per capita household income declined by 20 percent in the Rep. of Korea and by 12 percent in the Philippines. Furthermore, rural poverty increased and income inequality worsened. In the Rep. of Korea, for example, the poverty rate increased from 3 percent to 6.4 percent and the Gini coefficients (which show the degree of income inequality) increased from 0.28-0.29 in 1997 to 0.32-0.33 in 1998. Finally, as budget cuts were experienced in all of the affected countries, expenditures on education by both the government and households decreased. In addition, enrollment rates have declined and dropout rates from schools have increased. Consequently, human resource development has been adversely affected by the crisis.

The paper presents a case of Thailand in some detail, based on an impact study of the financial crisis on the farm sector. The data used were from two farm household surveys conducted before (1995/96) and after (1998/99) the crisis. The study showed substantial changes in income and consumption, but these changes were not equitably distributed among the population. Major findings of the study could be summarized as follows:

1) There was little sign of a massive urban to rural migration, and out-migration seemed to have slowed considerably;
2) Net remittances declined for all but the richest households;
3) The regional impacts of the crisis have been heterogeneous; the central region performed much better in terms of consumption and income compared to the north and the northeast;
4) The poor have been the most affected;
5) There seems to be no credit crunch; and

6) The impact of the crisis on farm production and income was mixed. Rich households did much better in terms of farm profits and productivity than poor households.

The findings of the Thai study also suggested two types of rural policy responses to the crisis: changes in agricultural policy and changes in social policy targeted to rural areas. These findings and suggested policy responses may be of some interest and relevance to other affected countries.

An Outline of the Credit Business of Agricultural Cooperatives in Japan
(Eikichi Koguchi)

The paper first gives an overview of the history and present status of the types of cooperatives in Japan. The paper particularly emphasizes the cases of agricultural, fishery and forestry cooperatives.

Presently, there are 1,300 agricultural cooperatives and 1,700 fishery cooperatives in Japan, in addition to fishery production associations, marine products processing cooperatives, forestry cooperatives, credit associations, credit cooperatives, common facility cooperatives, petty common facility cooperatives, mutual fire insurance cooperatives, joint enterprise cooperatives, consumers' cooperatives and labor credit associations.

The author discusses the organizational structure of agriculture, forestry, fishery cooperatives and other organizations. Of the 1,300 agricultural cooperatives, some are single purpose, e.g., prefectural economic federations of agricultural cooperatives and prefectural mutual insurance federations of agricultural cooperatives, while others are multipurpose cooperatives.

Traditionally, agricultural cooperatives work in a three-tier system, i.e., at the municipal, prefectural and national level. National level organizations include the National Federation of Agricultural Cooperatives Associations (*Zen-Noh*), the Norinchukin Bank and many others. Presently, mega-mergers of Japanese agricultural cooperatives (JA) are taking place, due to the changing financial environment. Such mergers will result in a fewer number of JAs, but each JA will be much larger in size and not limited to one municipality. For instance, the Nara prefecture (near Osaka) now has only one JA. The number of JAs has declined sharply from 4,072 in 1987 to 1,300 in 2000. Similarly, the number of employees reduced sharply from the year 1987-99, while JA membership increased during the same period. A large number of JA employees (70,000) are engaged in agricultural credit business as well.

The savings of the multipurpose cooperatives have increased from ¥51 trillion (1989) to ¥70 trillion (1999). Out of the ¥70 trillion savings, ¥22 trillion are allocated for loans to farmers. Thus, contrary to a steep decline in the number of JAs, their savings have increased progressively. Savings traditionally increase by ¥10 trillion every 2-3 years. However, lately, the same amount of savings took 10 years, due to the financial crisis in Japan, which decreased the price of land. Primary sources of the JA savings are deposits of farmers' savings and proceeds from the sale of farmland.

The author also introduced the role of the Norinchukin Bank in the agricultural, forestry and fishery cooperative systems in Japan, particularly in granting loans and other services. The Norinchukin Bank was established in 1923 and was officially renamed as the Norinchukin Bank in 1943. The bank has been rated as "AAA". As of 31 March 2000, the balance of loans and bills discounted in the consolidated settlement of the bank amounted to

¥21,553 million, which accounted for 41.8 percent of its total assets. Loans to corporations, which engage in business related to the primary sector, are the core of the bank's lending operations. The bank is well positioned to offer a stable flow of financing by making use of the cooperative credit system's abundant yen resources, and has thus built a strong reputation for reliability.

The financial crisis in Japan during the last decade resulted in a sharp decline in the price of land and the failure of many corporations, companies, banks, etc. Thus, the Japanese Government has instructed financial institutions to undertake measures to avoid such a crisis. For this purpose, the Japanese Government has established a Financial Services Agency and the supervisory role has been given to the Norinchukin Bank.

The paper discusses two types of government-programmed loans for agriculture, namely the interest subsidies type and the long-term, low/non-interest type. As of March 2000, outstanding loans in agriculture, fishery and forestry sectors were ¥2.4, ¥1.0 and ¥0.2 trillion, respectively. Outstanding savings and borrowings of farm households have also dropped.

The Asian financial crisis of 1997 did not significantly affect agricultural productivity in Japan. Despite several financial turmoils, farmers were able to get loans/credits from the banks. However, farmers are facing difficulties in paying back their 20-30-year-old loans, due to low incomes. The latter is mainly due to the sharp decline in land prices and off-farm incomes. During the last decade, Japanese farmers had suffered because the GATT deregulated the livestock market, lowered rice prices and increased the import of vegetables. One positive aspect of the WTO (GATT) was that more people entered farming. For instance, the number of people who entered farming increased from 10,000 in 1990 to 60,000 in 1999. In conclusion, agricultural productivity in Japan was not affected much by the 1997 Asian financial crisis.

Impact of Financial Crisis on Productivity of Agriculture: Korean Case
(Dr. Young-Bong Yu)

This study focuses on the impacts of the 1997 Asian financial crisis on agricultural productivity, especially in the Rep. of Korea. The analysis of this study is that the financial crisis impact on the agricultural production sector varied by the economic level and agricultural characteristics of each country. To identify this, the author looked into the Korean agricultural characteristics and estimated the crisis impacts on agricultural economy. The Rep. of Korea realized that the financial crisis caused the input cost of agricultural intermediate goods to rise, which led to a decrease in the consumption of agricultural products, which in turn resulted in the price drop of agricultural products. Therefore, the crisis affected value-added output and agricultural productivity. A summary of this analysis is as follows:

In the midst of the financial crisis in 1997, Korean agriculture was heavily dependent on the imports of agricultural intermediate goods, capital-intensive agricultural production systems and various agricultural products such as grains, fruits and meats. GDP per capita reached the level of US$10,000 and food consumption came to a limit. Therefore, the financial crisis caused the cost of agricultural intermediate goods, such as fertilizer, fuels, pesticide and feed grains, to rise. A fall in agricultural income caused a decrease in the demand of agricultural products, which led to lower prices of agricultural products. Value-added output of the agricultural production sector fell sharply in 1998. Therefore, agricultural productivity also decreased rapidly. There was recovery in the agricultural production sector along with economic recovery in 1999, but both did not recover back to the pre-crisis level.

Financial crisis impacts varied by farm scale and the type of farming. In the Rep. of Korea, large-scale farms and horticulture under the greenhouse farms suffered severely from the crisis. Also, small-scale farms could not survive due to low productivity. Farm debts caused by a worsening farm economy skyrocketed. There is a great possibility that the financial crisis caused investment to decrease, which led to a downturn in the agricultural production sector. If the stability of the Korean economy is not secured, agricultural input and output prices will be unstable. This will pose an obstacle for technology development and agricultural investment intended for boosting productivity. In short, the impact of the financial crisis on agricultural production is in sight and its long recovery will be under way. To neutralize the impacts, a stable agricultural interest rate must be secured.

An Overview of the Impact of the Financial Crisis on Productivity of Agriculture in the Asia-Pacific Region (Dr. Memed Gunawan)

The paper discusses the background and evolution of the 1997 Asian financial crisis, and also the economic recovery process in the Rep. of Korea, Malaysia and Thailand, along with the impact of the financial crisis on Indonesian agriculture.

It compares the rapid economic growth of Asian countries, particularly the Rep. of China, the Rep. of Korea, Singapore, Indonesia, Malaysia, Thailand and the Philippines during the 1980s and 1990s, with the slow economic growth of the free market economies such as the United States and Western Europe. Thereafter, the paper describes the weaknesses in the Asian economic systems that led to the 1997 financial crisis in these countries. The paper cites the specific example of Indonesia, where economic attention was shifted from the agriculture sector to the manufacturing industries. It then provides an overview of the Asian financial crisis and the factual conditions of the financial crisis, its evolution and impacts, as well as the policy measures taken by the governments.

The last decade was marked with several important changes, such as: (1) the fast development of ICT and biotechnology; (2) the new role of government in public management; (3) the implementation of multilateral and regional agreements on trade, tariff, and economic cooperation such as the WTO, APEC, AFTA, etc.; and (4) the growing concern about food security, environment, and human rights that to some extent, affect economic decisions but most certainly do affect resource allocation.

The crisis in Asia was triggered by the regional contagion effect of Thailand. The combination of over-investment, bad debts, a huge private sector foreign loan (around US$90 billion), and an overvalued fixed exchange rate of the baht forced the Thai Government to devaluate the baht in July 1997. This crisis then spread to neighboring countries, such as Indonesia, Malaysia, the Philippines and the Rep. of Korea. The paper discusses in detail how the financial crisis spread from Thailand to other countries, and reviews common characteristics of economic development of Asian countries such as Thailand, the Philippines and Indonesia. Japan experienced slow growth and an increase in unemployment, but it soon recovered.

The financial crisis created substantial effects to the whole economy. A weakening domestic currency had cyclical effects to other economic sectors, which in turn worsened the exchange rate. The paper specifically discusses the inflation and interest rate, banking systems, investment and business activities, as well as social problems, in relation to the 1997 Asian financial crisis.

The fluctuation in exchange rates has important effects on the prices of exports and imports. The direction of these effects depends on the currency one uses to measure prices. If import and export prices were affected equally by the movement of the dollar, an adverse

import shock would be matched by a favorable export shock. Experience suggests that the changes in the exchange rate, in terms of the prices of exports and imports, are not equal in developing countries. When the dollar rises, import prices of developing countries seem to fall less than their export prices. The net effect is that a rising dollar worsens trade in developing countries.

Since the financial crisis is an impact of external shock, the ability of a country to handle such a crisis depends on its macro economic foundation, external resources, the intensity of resources used in the economic sector and the initial condition of the economy. For example, an agriculture sector using mostly domestic resources would be less affected by the financial crisis than enterprises that depend heavily on imported commodities.

Since 1999, economic recovery in the crisis-affected countries, namely Thailand, the Rep. of Korea and Malaysia, has been witnessed. The process of economic recovery in the Rep. of Korea, Malaysia, and Thailand initiated from the ability of these countries to take advantage of: 1) the increasing international demand for electronics and computer-related goods; 2) low interest rates; and 3) expansive fiscal policies. This supports the recovery process of investment, reduces unemployment and increases domestic demand. Despite impressive achievement at the macro-level, these countries have not been fully successful in restructuring their financial system, which remains a challenge to be solved in the years ahead.

Impact of the financial crisis on agriculture in Indonesia could be summarized as follows:

As regards growth rates, all sectors of the economy fell 18-40 percent in 1998, except for agriculture, which grew by 1.1 percent. This was well below the growth rates of 3-4 percent that the agriculture sector experienced in 1995-96, but it represented a small recovery from a growth rate of only 0.9 percent in 1997 during the El Niño drought. Estate crop production did not change much. However, the rupiah income to farmers increased significantly, although world prices declined. The financial crisis caused a sharp fall in livestock output in 1998 (7.1 percent), due to the higher prices of imported input.

Food prices were increasing more rapidly than non-food prices, giving rise to concerns about food security.

Four major conclusions regarding the social impact of financial crisis are as follows:

1. Urban areas, in general, have been more severely affected than rural areas.
2. Effects have varied widely across the country. For instance, both urban and rural areas in Java were badly affected.
3. Areas that were badly affected by the crisis were uncorrelated with the initial levels of poverty.
4. The more severely affected urban areas tended to be in those regions of the country where the rural areas were also more severely affected, and *vice versa*.

In addition, the paper also discusses the effect of the financial crisis on employment, rice production, the credit market and farm prices in Indonesia.

HIGHLIGHTS OF COUNTRY REPORTS

The Asian financial crisis, which started in Thailand in July 1997, has had very different impacts on the economies of various APO member countries. For instance, the crisis

had a deep impact on the economies of the five most affected Southeast Asian countries (Thailand, Indonesia, Malaysia, the Rep. of Korea and the Philippines) due to large and rising current account deficits, very high levels of bad loans and extensive unproductive investments, mostly in speculative real estate and stock markets. This was particularly the case in Thailand, Indonesia and Malaysia. However, due to its sound economic foundation, the Rep. of China was less affected by the financial crisis. Also, South Asian countries (Bangladesh, India, Nepal, Pakistan, Sri Lanka and the Islamic Rep. of Iran) were able to escape direct effects of the 1997 financial crisis because of various favorable factors such as lower current account deficits, close monitoring of hot money and Foreign Direct Investment (FDI) money markets, no capital account convertibility, less investment in speculative real estate and stock markets, etc. Nevertheless, imports and exports, including the agricultural products of these countries, experienced some shock of the crisis. In general, imports of the South Asian countries increased while exports declined, mainly due to very high levels of currency devaluation in the Southeast Asian countries. Mongolia was also little affected by the 1997 financial crisis because of her closed economy.

Not much data could be found on the effects of the financial crisis on agricultural productivity in many of the APO member countries. However, based upon the available information, the pattern of the crisis impact on agricultural productivity was rather similar to that of the overall economy of these countries. For instance, the impact was more intense in the Thailand, Malaysia, the Rep. of Korea and the Philippines, but less in Indonesia and the Rep. of China. The Rep. of China's labor productivity was reduced by the crisis, but it recovered quickly. In Indonesia, production in the crop sector was not affected by the financial crisis because of the use of domestic agricultural inputs and the dependence of the domestic market on agricultural products. On the contrary, the poultry industry in Indonesia collapsed due to its dependence on imported feeds. However, agricultural productivity in most of the South Asian countries in general, was not affected by the financial crisis.

The South Asian countries however experienced a decline in agricultural productivity, particularly in crop productivity in the years 1998/99 due to the natural calamities such as floods, long drought spells, insect pest and disease incidence, etc. These countries were able to escape from the financial crisis because of various factors, such as no capital account convertibility, relatively closed markets and close monitoring of the flow of hot money and FDI money markets, less investment in speculative markets, the preponderance of subsistence farming, etc. Nevertheless, agricultural productivity in a few of these countries was impacted to some extent by the financial crisis. For instance, the rubber industry in Sri Lanka collapsed due to its inability to export rubber to the crisis-hit countries like Malaysia and Indonesia, who were the traditional importers of rubber. Similarly, Nepal experienced an increase in the prices of agricultural inputs, due to the depreciation of its currency. However, the productivity of Mongolia's agriculture sector was not affected by the Southeast Asian financial crisis, due to her closed economy, which had little integration with the Asian economies.

In general, the financial crisis led to less financial resources for agricultural use, which in turn adversely affected the supply of credit to farmers, depreciated local currencies, decreased off-farm incomes of the farm households, caused high inflation/cost of living, raised the cost of agricultural inputs and thus reduced their use, lowered wages, increased unemployment and raised rural poverty in the affected countries.

Regardless of the extent of the effects of the Southeast Asian financial crisis on the productivity of agriculture, all member countries were aware of the situation and were adopting specific policy and institutional measures suited to their own needs in order to:

a) alleviate negative impacts of the crisis on their economy and agricultural productivity; and b) minimize the chances of recurrence of a similar financial crisis in the future.

Overall, the Asian financial crisis has underscored the importance of institutional reform in preventing future crises. To pave the way for sustainable agricultural development and productivity enhancement, deregulation of financial activities accompanying sound financial supervision and an improved governance system would be beneficial to the farm sector, farming communities and farmers' associations' management.

Specific issues, concerning the effects of the financial crisis on agricultural productivity and strategic actions to be taken, were identified by the participants in the organized workshop during the study meeting:

WORKSHOP OUTPUT

Objectives

A workshop was conducted to: 1) identify major issues of the effects of the 1997 financial crisis on the productivity of agriculture; and 2) suggest strategic actions to address such issues. To enhance the discussion and better share views and experiences, the participants were divided into two groups. The two groups were composed as follows:

Group I:	Ms. I. Jahan (Bangladesh), Dr. G. S. Kaushal and Mr. S. C. Hota (India), Mr. J. Y. Farsi (Islamic Rep. of Iran), Mr. B. N. Maharjan (Nepal), Mr. M. R. Saroya (Pakistan), and Mr. T. A. Wimalasena (Sri Lanka)
Chairperson:	Mr. Muhammad Rafiq Saroya
Rapporteur:	Ms. Ishrat Jahan
Facilitator:	Dr. Memed Gunawan
Group II:	Dr. Y. C. Liao (Rep. of China), Mr. D. Hidayat (Indonesia), Mr. I. Mat and Mr. F. L. L. Poh (Malaysia), Mr. D. Nyamrentsen (Mongolia), Ms. S. M. Encabo (Philippines), and Dr. V. NaRanong (Thailand)
Chairperson:	Mr. Fred Lew Leong Poh
Rapporteur:	Ms. Sheila Marie Encabo
Facilitator:	Dr. Tongroj Onchan

The outputs of the two groups were presented in a plenary session, and are summarized as follows:

Group I – Why were some South Asian countries able to escape the financial crisis?

- No capital account convertibility.
- Close monitoring of the flow of hot money and FDI money markets by the central banks.
- Short-term loans were not invested in long-term investments, such as real estates.
- Due to low interest rates, the inflow of short-term loans was restricted, unlike Southeast Asian countries where the interest rate was kept artificially high.
- Agriculture is vulnerable to natural calamities.
- Basic foundation for industrial development was not present because the main focus was on agricultural development.

- Preponderance of subsistence farming except plantation crops – tea, coffee, rubber, cotton, jute – which were grown on a commercial basis.
- Food grain crops constitute almost 70 percent of total agriculture production, and are mainly grown for sustenance.
- Farmers do not have any control over the price of inputs, which are mainly imported.
- Marketing of products is a major problem for all the countries because of the lack in infrastructural development and competitiveness in the world market.

1. ***Issues***

South Asian countries, including the Islamic Rep. of Iran, were not as significantly affected as the Southeast Asian countries in terms of agricultural productivity.

- Production of food crops, which is based on subsistence farming, was not affected much. However, in the case of Nepal, price of inputs such as fertilizer, pesticides, seeds, etc., went up as a result of the devaluation of the Nepalese currency.
- Exports, including agricultural products to Southeast Asian countries suffered because the financial crisis resulted in the currency depreciation of these countries. This made exports from South Asian countries to the Southeast Asian countries uncompetitive because of the increase in price. On the other hand, imports from Southeast Asian countries to South Asian countries increased. As a result, terms of trade were affected.
- In the case of the Islamic Rep. of Iran, however, exports did not reduce and imports increased.
- Although in terms of trade, South Asian countries were affected adversely, yet the total share of exports from these countries in the world market was very small. Thus, these countries were able to absorb the shock of the financial crisis, except for Sri Lanka, where the rubber industry collapsed because it could not export a major portion of its rubber products, due to low prices of rubber products in the world market.
- Agricultural lands are highly fragmented.
- Low prices of agricultural commodities especially rice.
- The share of exports to the national economies (GDP) of these countries was very small. Thus, they were little affected by the crisis.

2. ***Suggestions***

- South Asian countries, including the Islamic Rep. of Iran, should take a cautious approach in opening up its capital account to the international economy.
- Establishment of transparent accounting standards and practices, and the public disclosure of information are important in improving financial infrastructures.
- Strengthen banks' profitability and capitalization by restricting connected lending.
- All support and subsidies to the agriculture sector in the developed countries should be transparent and open, so that South Asian countries will able to adopt appropriate measures for the export of their agricultural products in the context of the WTO regime.
- Tariff rate quotas set by the developed countries should be totally abolished.
- Agriculture in these South Asian countries should adopt low-cost technologies by resorting to micro-watershed development, bio-fertilizer, integrated pest management, etc.
- An increase in the allocation of resources for agricultural research and development.
- Organic farming should be promoted in view of the increasing international demand for organic products.
- Support farmers in terms of alleviating their loan burdens.

Group II

Country	Issues	Strategies
Rep. of China	C Agriculture sector greatly affected by the financial crisis C Increase in non-performing loans due to weak financial fundamentals and poor supervision	C Increased infrastructure investments by the government C Extended the grace period for debt payments C Promotion of exportable commodities C Establishment of nationwide farm bank (Resolution and Trust Corporation [RTC]) C Encouraged agricultural cooperatives to merge C Updated the capacity of farm organizations
Indonesia	C Reduction in the budget allocated for agricultural projects, e.g., irrigation and credit C Agriculture generally unaffected except those dependent on imported inputs for production, e.g., livestock and poultry C Increase in food prices C Decline in the real wage rate	C Increased exports C Expansion of existing subsidized credit program C Efforts to fund substitutes for livestock intermediate inputs C Allocation of food safety and budget C Promotion of crop diversity
Malaysia	Small farmers: C Decrease in farm credit C Decrease public spending C Increase in input prices more than the increase in output prices Plantation sector: C Gained due to the appreciation of the US dollar	C More credit and incentives for small farmers C Reduce the food import bill Plantation: C Encourage diversification of fruit crops C Encourage private companies to engage in food production Smallholder: C Encourage group farming among farmers
Phlippines	C Reduction in government allocation to the agriculture sector C Increase in inflation and interest rate C Reduction in government allocation to the agriculture sector C Increase in inflation and interest rate	C Agriculture/fisheries modernization 3 Productivity and competitiveness 3 Increase access to land and other production resources 3 Promote sustainable use of resources 3 Empower stakeholders and rationalize the function of institutions
Mongolia	C Agriculture sector unaffected due to little integration with other Asian economies	C Increase access of farmers to commercial banks C Privatization of farms

... To be continued

Continuation

Country	Issues	Strategies
Thailand	C Temporary reduction in the labor productivity of agriculture (high outflow of laborers from the industry) C Perceived long-term decrease in labor C Temporary gain for tradable agricultural commodities due to depreciation C Temporary reduction in budget allocated for agriculture C Decrease in non-farm income C Increase in farm debt	C Restructure the agricultural production system 3 Encourage production of high-value crops through field research C Rely on market mechanism rather than government intervention Long term: Improve R&D C Restructure the agricultural budget to allocate more funds for research instead of construction or extension C Focus on the provision of technical assistance instead of monetary support
Rep. of Korea	C Serious impact on agriculture due to high dependence on imported intermediate inputs C Decrease in agricultural productivity there was recovery in 1999 but not equal to the pre-crisis level C Farm debts increased C Large farms and horticulture farms suffered severely	C Reform the agricultural financial system C Provision of income subsidies C Promotion of technology innovation C Structural adjustments for improving the competitiveness of agriculture

General measures to alleviate the adverse effects of the financial crisis:

- C Reform/restructure the farm credit system to improve operational efficiency and to relieve the debt burden of farmers (Rep. of Korea and Indonesia)
- C Restructure the agricultural production/marketing systems to emphasize more on high-value products, raise farm productivity, and improve marketing efficiency (Thailand and Malaysia)
- C Strengthen R&D activities and reallocate the budget for agriculture (Thailand)
- C Promotion of agricultural export
- C Strengthen farmers' associations/cooperatives to better serve farmer members (Rep. of China)
- C Accelerate land reform activities (Philippines)
- C Promotion of group farming (Indonesia)
- C Introduction of a food bill scheme (Malaysia)
- C Increase subsidies on farm inputs and farm credit interest rates (Indonesia and Rep. of Korea)

FIELD VISITS

The participants visited the following three Japanese Agricultural (JA) Cooperatives in the Gunma prefecture in order to observe the on site situation of agricultural productivity in the host country: 1) JA Sawada; 2) JA Maebashi-shi; and JA Katashina-mura.

JA Sawada

The president of the JA Sawada welcomed the participants and gave a brief presentation of the JA.

The JA Sawada is situated in the mountainous area of the Gunma prefecture. JA Sawada was established in 1975 with an investment of ¥1.5 billion, i.e., 50 percent by the National Government of Japan, 10 percent by the prefectural government and 40 percent by the JA. The size of JA Sawada is relatively small because it has still not gone through the process of a JA merger. Total membership in the JA is 900, consisting of 500 regular members and 400 associate members. The JA controls a land area of 16,602 ha, of which only 3.1 percent (512 ha) is arable. Since the size of the JA is limited, its members work hard to survive.

Main activities of the JA Sawada are as follows: i) purchasing and marketing of agricultural products; ii) processing of agricultural products. For this purpose the JA is operating an "agricultural products processing factory"; iii) cultivation, processing and marketing of medicinal herbs; iv) a shop for selling JA products including a restaurant; v) insurance, savings and guidance; and vi) health and welfare operations.

Presently, JA savings amount to¥5 billion, while money for insurance contracts is ¥40 billion. Among JA activities, product processing and marketing of agricultural products and medicinal herbs constitute 60 percent. The JA processes 80 percent of the agricultural products and sells 20 percent fresh products. The JA has undertaken food processing in order to stabilize prices and benefit farmers, in addition to creating opportunities for employment for the community. The JA helps farmers plan well in advance through ensuring the purchase of their agricultural products at a fixed price. Currently, the JA manufactures 160 pro-health processed food products.

An important challenge to the progress of the JA Sawada is that it has raw materials but lacks the processing technology and distribution channel.

Since the ultimate aim of the JA Sawada is to develop the local community, it is striving hard for innovative ideas. That is why the JA started producing Chinese medicinal plants about eight years ago. The problem, however, is to establish credibility of such medicinal plants in order to compete in the market. For this purpose, the JA Sawada has established Japan's largest herbs park in an area of 26 ha with an investment of ¥2.35 billion. About 400 species/varieties of herbs are cultivated in the Herb Park. Besides the park, the JA has a Herb Museum, a pharmacy, a herb restaurant and a direct sale center for promoting the market of Chinese medicinal herbs/processed food products, particularly pickles. Some foreigners, especially from the Philippines, have been working at the JA for the last 10 years. The JA also maintains a playground, which has 150 species/varieties of medicinal Chinese herb plants. On average, return on dividends amounts to 4 percent. The JA Sawada is struggling hard to survive economically through innovations in its processed products like pickles, by adding-value, etc.

At the end, Mr. Seki (plant manager) led the participants to visit the agricultural processing industry. The participants observed all operations involved in pickle formation, i.e., vegetable cleaning, vegetable preservation, vegetable processing, cold storage and packaging, etc.

The participants also visited the JA's Herb Park and Herb Museum. The participants expressed their keen interest in the activities of the JA Sawada and asked many questions about the JA activities, particularly in view of the 1997 Southeast Asian financial crisis.

JA Maebashi-shi

The vice president of the JA Maebashi-shi welcomed the participants, while his staff gave a brief presentation on the JA.

The JA Maebashi-shi is situated 18 km from Maebashi city. This JA was originally established in October 1987, but the existing JA is much larger because it is the result of the merger of 12 JAs that took place in 1993. Three basic policies, which govern the activities of the JA Maebashi-shi, are as follows:

1. Promotion of highly productive agriculture using local resources
2. Working in harmony with the environment and local communities
3. Strengthening the JA and building people's trust in the JA.

The JA has a total membership of 15,083 with 12,997 households. The number of regular and associate members is 8,558 and 8,525, respectively with 7,841 and 5,156 households. The JA has a board of executives consisting of 32 members and a board of seven auditors.

The JA further consists of, among others, 12 branches for overall management, 176 branches for agriculture, 110 women organizations, 12 branches for horticulture, etc. The total number of JA staff in Maebashi city is 359.

The JA Maebashi-shi is blessed with a variety of agricultural products. Total production in the area is worth ¥20 billion, of which production worth ¥12 billion is sold at the JA. Sales of animal husbandry products and fruit comprise 34.7 and 22.3 percent, respectively. The JA maintains very elaborative and transparent accounts pertaining to its production, income, expenditure, etc.

Farmers produce, harvest, and pack the agricultural products and bring them to the JA. The JA is responsible for the sale of these products. Prices of vegetables and meat are set through bids, while rice is marketed voluntarily; its price depends upon the brand and site of production.

The Asian financial crisis had no direct impacts on the JA farmers because they were granted credit without any hesitation. However, the crisis had its implications for the national level JA administration. Similarly, the WTO has its own implications for the farmers as it has resulted in a decline in the price of vegetables and thus has adversely affected farmers' incomes.

The participants also observed the various facilities at the JA's main building. The JA has provided a sale shop to the member farmers, where they could bring their agricultural products, particularly the vegetables, fix prices themselves and sell the products. Similarly, the JA maintains an information center, where not only information on production and marketing of agricultural products is provided to the members through the internet, but computer training is also provided. The farmers are organized into groups based on the types of agricultural products they produce. Main vegetables grown in the JA include the cucumber, spinach, eggplant, tomato, etc. which are mainly sent to Tokyo. The participants also visited the JA nursery facility for vegetables. At this facility, seedlings of the improved vegetable species/varieties are raised and given to the member farmers for production on 75 ha of land. Organic farming is practiced on less than 10 percent of the total land area allocated for vegetables.

The participants showed keen interest in the various activities of the JA Maebashi-shi and asked many questions to better acquaint themselves about the JA operations in Japan.

JA Katashina-mura

Mr. Yoshitsugu Miura, general manager, and Mr. Denroku Hoshino, manager of the JA, welcomed the participants to the JA Katashina-mura.

The JA is situated in a small village, namely Katashina, at an altitude of 810 m above sea level. The JA was established in 1948. Total population of the village is 6,300 with 1,700 households. The number of regular JA members is 1,060. Total area of the village is 39,150 ha, of which 92.1 percent (36,038 ha) is under forests, etc., and is owned by the National Government. Sightseeing and agriculture are the two selling points of this village. It has eight skiing grounds, so heavy snow is always a blessing for the village.

The JA Katashina-mura is a unique agricultural cooperative. It promotes both agriculture and tourism activities in the village. That is why it did not participate in the ongoing mergers of JAs in Japan and has thus maintained its identity.

Regarding agricultural activities, the JA's main concern is to promote agriculture in the village, especially for its members. This is the second largest JA in the Gunma prefecture, based on cropped area. The relationship between the JA and the village government is excellent. Main crops grown are the upland vegetables such as Japanese radishes and tomatoes. Due to high day temperatures and low night temperatures, these upland vegetables are of very good quality and are thus sold in the Tokyo market. Besides vegetables, the JA has some areas for rice and it also has a limited number of livestock. The annual turnover of the JA is ¥1.1 billion per year.

Tourism is an important activity for the Katashina-mura, which has 300 residences available for rent to tourists. The JA operates 80 such residences and thus directly participates in promotion of the local tourism. About 0.4 million tourists visit the village annually, while more than one million tourists pass through the village every year. The JA plays an important role in the promotion of tourism and earns much more income from tourism than agriculture.

The JA is private and does not receive any government subsidy for its management operations. The JA provides the following services to its members: i) guidance on agricultural business; ii) guidance on tourism, particularly, how to attract more tourists to the guest houses; and iii) organize special events for the informal education and recreation of the village children.

The participants expressed their keen interest in the uniqueness of the JA Katashina-mura, but could not observe any ongoing JA activities due to heavy snowfall during the visit.

CONCLUSION

In view of the very different effects of the 1997 Southeast Asian financial crisis on the agricultural productivity of the APO member countries and diverse challenges they face in agricultural development, no specific common strategy could be formulated by the participants. However, all the participants emphasized the need for policy and institutional reforms relevant to the situation of the individual countries to avoid such a crisis in the future. Also, improvement in agricultural productivity through the support of the farm sector will allow proper and sustainable use of resources, which would in turn produce value-added agricultural products.

1. IMPACT OF THE 1997 FINANCIAL CRISIS ON SOUTHEAST ASIA'S FARM SECTOR WITH A SPECIAL REFERENCE TO THAILAND

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INTRODUCTION

Before the unexpected financial crisis, which started in Thailand in July 1997,[1] the rapid economic development of Asia was of much interest worldwide. The success achieved also generated much debate on whether the Asian model was specifically for Asia or if it might be applicable to other regions. Another point of interest was about the major factors that contributed to such a rapid growth. Though there are major differences between the various Asian countries, the high growth performance could be explained by sound economic foundations encompassing competitive exchange rates, investment in the export sectors, low inflation, high gross domestic savings, low deficits, the high priority of education, high foreign direct investment rates and relatively even distributions of income. These factors were responsible for Asia's GDP growth of 7.8 percent in the 1980s and 9.9 percent over the period of 1990-97, compared to the world averages of 3.1 percent and 2.3 percent for the same periods (World Bank, 1993; and ADB, 1997). Since 1970, Asia's share of the world's total GDP has almost tripled. In 1997, three of the Asian economies, namely Japan, Singapore and Hong Kong had higher per capita incomes than Sweden (Ministry of Foreign Affairs, Stockholm, 1999).

The Asian economic miracle during the 1980s to the mid-1990s had a great impact on the Asian economies, especially in terms of poverty reduction, increase in income and a higher standard of living. Expectation was also high, in regards to the sustainability of the income growth and the higher level of development of several countries that would soon form a group known as the NICs (newly industrialized countries). In fact, there were very few people who could foresee that many Asian countries would face an unprecedented economic and social crisis or that the crisis would be so serious as to continue to the present day.[2]

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[1] The **Baht** (฿) was floated on 2 July 1997, which caused the nominal rate to climb from ฿25-26 to ฿40 to the dollar and then jumped to ฿41 by April 1998. At the time of writing (28 November 2000), the exchange rate is about ฿44 to US$1.

[2] Despite the fact that recovery has been occurring since 1999, most affected economies are still experiencing difficulties, especially in the financial sectors.

However, this does not mean that there were no clear warning signs before the crisis. Large and rising current account deficits, extremely high levels of bad loans and extensive unproductive investments, mostly in speculative real estate and stock markets, were experienced especially in Thailand, Indonesia and Malaysia. Furthermore, since the early 1990s, the competitiveness of the ASEAN countries deteriorated. Also, foreign direct investment declined, which led to high inflation and overvalued local currencies. This was because they were usually pegged with the US dollar, which greatly appreciated as the local currencies become overvalued. However, these warning signs were mostly neglected because most people were led to believe that the recession was cyclical rather than structural in character. This thinking has proven to be a very costly assessment of the situation.

Needless to say, the crisis has had a deep impact on the economies of the most affected countries, namely Thailand, Indonesia, Malaysia, the Republic of Korea (hereafter referred to as Korea) and the Philippines. As the World Bank puts it, "*What started as a financial crisis has now developed into a comprehensive social crisis*". This is quite obvious, since the poor has little or no savings to fall back on. They have little or no access to credit, especially from formal sources, and they have little or no assets to sell. Thus, the crisis has more serious social implications.[3]

The pathways to the social impacts of the Asian crisis can be illustrated with a diagram as shown in Figure 1. The crisis started with capital flight, which led to the depreciation of the local currency, followed by the unviable corporate balance sheets (financial problems). Then came the credit crunch that caused falling output (farm, non-farm), which then decreased the demand for labor. This led to a shrinking government revenue that forced a reduction in government spending, especially on social programs. Other problems included higher inflation/cost of living and lower wages or rising unemployment. As regards to the farm sector, migration back to the rural sector by the unemployed workers, especially from the construction and manufacturing sectors, increased rural poverty. This might have caused lower farm production and income.

In sum, the major social impacts of the crisis are as follows:

1. ***Labor Demand***

The short-run impact on households was a reduction in demand, due to layoffs, and a reduced demand for products by urban and rural enterprises.

2. ***Prices***

Changes in the prices of commodities, public services, tax and subsidy compensated for the declining income caused by lower wages and/or unemployment.

3. ***Public Spending Cuts***

This was due to the reduction in government revenue.

4. ***Changes in Assets***

These may have had distributional effects, on both the rich and the poor. Prices of real estate properties and stocks declined sharply, while the poor might have had to sell their assets, e.g., land, to compensate for their declining income.

5. ***Long-term Impacts on Capabilities***

For different socio-economic groups, the effects may be different, especially in regards to nutrition, health, and education.

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[3] It must be noted that the majority of the poor people living in rural areas are farmers with small or no land.

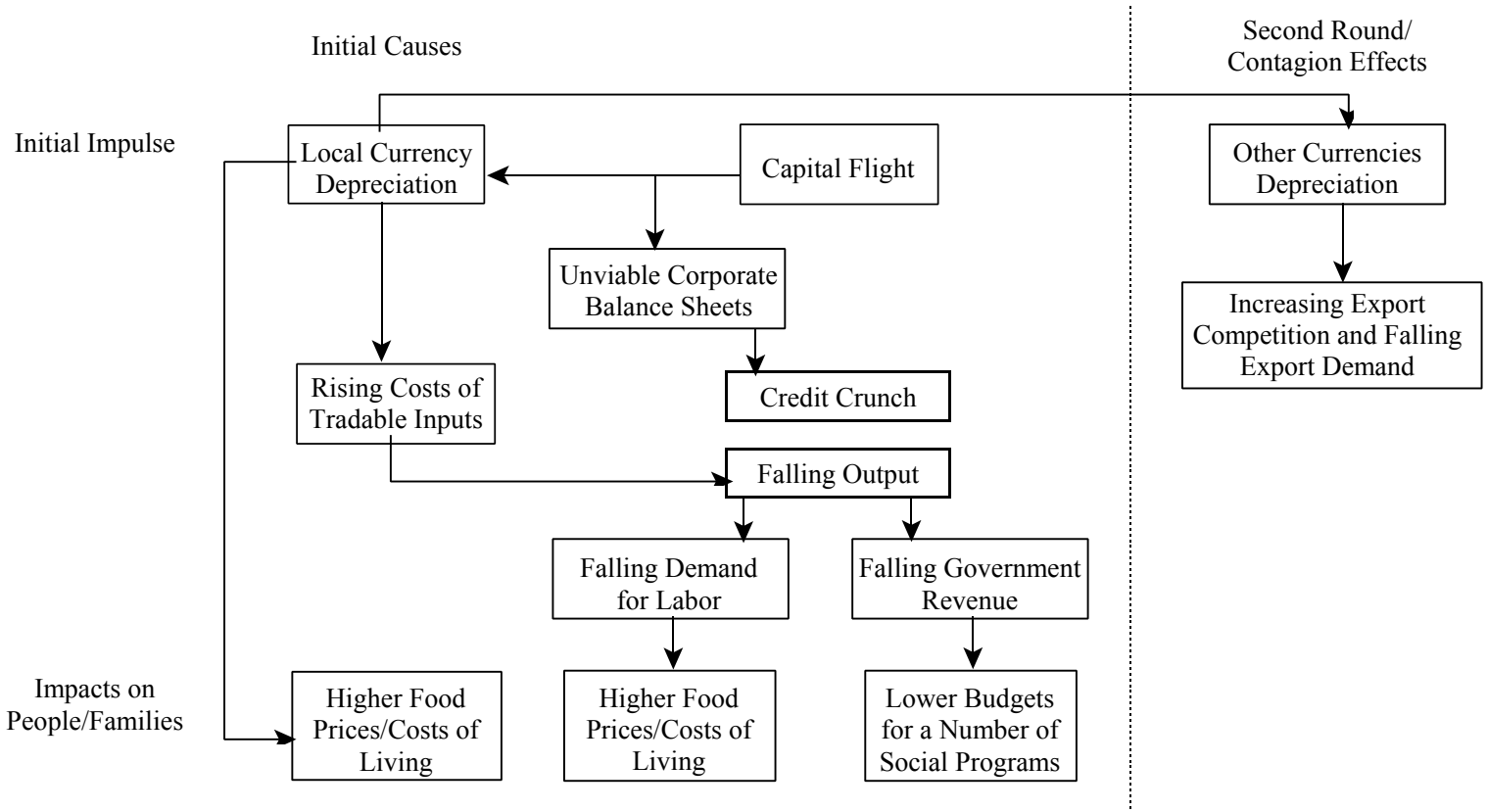


Figure 1. Pathways of the Asian Financial and Economic Crisis to Social Impacts

Note: Thailand Development Research Institute (TDRI), 1999 adapted from Ammar and Orapin, 1998, p. 11.

This paper focuses on the impact of the financial crisis on the farm sectors of Southeast Asian countries, with a special emphasis on Thailand. As the data on the impact of crisis on the farm sector at the regional level is limited, I will briefly discuss the crisis impact mainly on the general economies of the five affected countries. Then, a case of Thailand's farm sector will be presented. This should be of particular interest as the crisis started in Thailand. Also, the impact on the Thai economy has been very serious, especially among the poor. During this uncertain period of economic recession, the farm sector has been of much attention, as it could provide the necessary social safety net that has been absent in Thailand. The data used in the study are from farm household surveys conducted in 1995/ 96 (pre-crisis year) and in 1998/99 (post-crisis year). The effects on consumption, income, production, credit, and assets will be discussed and conclusions will therefore be drawn.

THE SOCIO-ECONOMIC IMPACT OF THE FINANCIAL CRISIS IN THE AFFECTED SOUTHEAST ASIAN COUNTRIES

The Asian financial crisis quickly caused marked contractions in both the GDP and employment of the affected economies of Indonesia, Korea, Malaysia, the Philippines and Thailand. The declines in GNP per capita were very sharp, especially in Indonesia (Table 1) in 1998. The shrinkages in GDP ranged from about 0.6 percent in the Philippines to 13 percent in Indonesia, while those in the agriculture sector ranged from 1.4 percent in Thailand to 6.6 percent in Korea. However, Indonesia's agriculture had a positive growth rate of 0.8 percent (Table 2). Despite some signs of recovery at present, these economic recessions have significant social consequences which are likely to persist for some time, even after the economies return to a normal and stable state.

Table 1. Per Capita GNP in Five Southeast Asian Countries, 1996-98

(Unit: US$)

	1996	1997	1998
Indonesia	1,100	1,110	640
Rep. of Korea	10,590	10,550	8,600
Malaysia	4,330	4,530	3,670
Philippines	1,160	1,200	1,050
Thailand	2,930	2,740	2,160

Source: Asian Development Bank (ADB), 2000b.

As mentioned earlier, conceptually, the financial and economic crisis can exert adverse social impacts in five ways: prices, labor markets, assets, credit and government budget. These impacts may vary in severity by social groups, e.g., urban vs. rural, or rich vs. poor. Our main attention here will be the impact on prices, employment, income, poverty, income distribution and human development.

Table 2. Growth Rates of GDP and GDP of Agriculture

(Unit: Percent)

	GDP				Agriculture			
	1996	1997	1998	1999	1996	1997	1998	1999
Indonesia	7.8	4.7	-13.2	0.2	3.1	1.0	0.8	0.7
Rep. of Korea	6.7	5.0	-6.7	10.7	3.3	4.6	-6.6	4.7
Malaysia	10.0	7.5	-7.5	5.4	4.5	0.4	-4.5	3.9
Philippines	5.8	5.2	-0.6	3.3	3.8	3.1	-6.4	6.0
Thailand	5.9	-1.7	-10.2	4.2	3.6	0.4	-1.4	-8.6

Source: ADB, 2000b.

Prices and Farm Output

Currency devaluations had an almost immediate impact on the prices of goods and services which had high import contents. Inflation was particularly serious in Indonesia, where food prices rose markedly. In the farm sector, prices of farm inputs, e.g., fertilizers, fuel and animal feeds, also increased sharply. These increases in input prices have had an effect on farm output. In Indonesia, for example, the price of poultry feed increased from Rp.700/kg to Rp.3,000/kg, which caused a decline in output. In the Philippines, prices of farm inputs increased by 15-100 percent; animal feeds increased nearly 100 percent in price and the price of fertilizer was raised by 30-60 percent (Knowles, *et al*., 1999).

As reported by the FAO, after the crisis at the global level, agricultural (crop and livestock) production has been rather disappointing. In 1998, it expanded at the rate of only 1.1 percent, which was the lowest since 1993. Agricultural production of developing countries grew by only 2.6 percent, lower than the rate of 2.9 percent in 1997. A major factor for the slow farm output growth in developing countries is the worsening performance of the Asia and Pacific developing region (FAO, 2000; and see Box 1). In the five crisis-affected countries, paddy production declined considerably in 1998, compared to that of 1996. However, some improvements were observed in 1999 (ADB, 2000a).

Box 1: The Worsening Agricultural Performance of Asian Countries during 1998-99

A major factor behind the slow growth of output in developing countries is the worsening performance of the Far East and the Pacific developing region. Production growth in this region slowed to only 1.8 percent in 1998. Bad weather conditions, particularly June to September torrential rains in some countries and El Niño-related droughts in others, were the main common factors behind the worsening performance. The provisional estimates for 1999 indicate that regional production growth may have slowed even further, to only 1.2 percent. Such developments are, to a large extent, determined by the situation in *China* where, after six consecutive years of output growth at more than 5 percent of growth rate, in 1998, affected parts of the country fell to a more modest 3.3 percent. The reduction in output growth was caused by floods in the central areas of the country that damaged the rice and wheat crops. Provisional estimates for 1999 point to almost stagnant production, with an increase in output of less than 1 percent. A slight reduction, in paddy output is expected, partly owing to the lowering of the state purchasing

prices for inferior quality grains and to crop damages caused by heavy rains in June and July. *India* recorded a slight reduction of less than 1 percent in agricultural output in 1998, while a modest recovery was expected to take place in 1999. Other larger countries in the region suffered either declines in agricultural production (*Indonesia, the Philippines, the Rep. of Korea, Thailand, Malaysia*) or slowdowns in output growth (*Bangladesh, Cambodia*) during 1998. Resumed output growth was expected in 1999 in most of these countries, with the exceptions of *Indonesia* and *the Rep. of Korea*. The production estimates now point to *Vietnam* as the most consistently positive agricultural performer in the region, with rates of production growth near or above 5 percent for the past eight years.

Source: FAO, 2000.

Employment

Unemployment rates increased in all countries, with the largest increase set by Korea (Figure 2). Unemployment has also been a serious problem for Indonesia. Between August of 1997 and 1998, the unemployment rate in Indonesia rose from 4.7 percent to 5.4 percent,[4] and the crisis has had much more severe effects in urban areas. This is quite different from Thailand's experience, where the rural economy experienced rising unemployment. Furthermore, the traditionally poor Northeastern region had been much adversely affected. In Malaysia, unemployment was estimated to rise from 4.5 percent to 5.5 percent, at the end of 1998. In the Philippines, the upper and middle class, especially those living in urban areas, were most affected by the crisis.

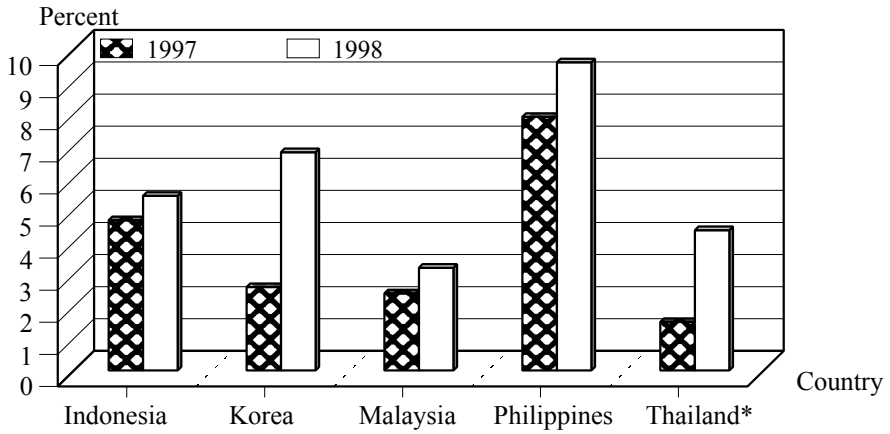


Figure 2. Unemployment Rates in Five Southeast Asian Countries, 1997-98

Sources: APO, *Asia-Pacific Productivity Data and Analysis*, 2003.
Note: * Wet season (August).

[4] Data from the government labor force surveys (Sigit, 1998). This is quite different from another estimate which reports a very high rate of 10.3 percent (TDRI, March 1999).

Another interesting aspect of employment problems is the expansion of informal sectors in some countries, namely Indonesia and Korea. Information on this issue is not available in other countries, but it is likely that they have similar experiences. This seems to be the case in Thailand, where the unemployed started several types of trading activities in urban areas.

Income

As unemployment increases, inflation rises, wage decreases, and thus household incomes in the five affected countries have declined significantly. In Thailand, for example, over 50 percent of the households reported a decline in income, the highest proportion being in the Northeast. Rural household incomes have also been affected by reduced *remittances* from the urban sectors as well as by higher food prices (TDRI, 1999, p.9). In the Philippines, remittances declined by 14 percent between 1997 to 1998. In Indonesia, however, due to a sharp increase in overseas migrant workers after the crisis, the level of remittances increased dramatically from US$1.30 billion in 1997 to US$3.51 billion in 1998 (up until October only). In the Philippines, massive business closures are likely to impose the greatest income losses on middle to upper income groups. In addition, non-labor income (i.e., interest, rent and profits, including the income of the self-employed) has also been adversely affected. Income in the forms of rent and profits is expected to be especially hard hit by the crisis. In Thailand, the largest declines in real income are experienced by entrepreneurs, in both agriculture and non-agriculture sectors.

In the farm sector, shortage of credit was reported for farm and enterprise development among poor families. They had to depend more on informal sources of credit, as bank loans were not usually available to small farmers.

Overall, the available data showed that between 1997 and 1998 real per capita household income declined by 20 percent in Korea and by 12 percent in the Philippines. In Indonesia, real per capita household expenditures declined by 34 percent in urban areas and by 14 percent in rural areas (Knowles, *et al*., 1999).

Inequality and Poverty

Available information indicates that income inequality has increased during the crisis in Thailand, Korea, and the Philippines, but has probably decreased in Indonesia (ADB, 1999). In Thailand, during 1996-98, the expenditure of the richest urban quintile (only 5.5 percent of population) increased from 20.5 percent to 22.5 percent (Table 3). As indicated by percent change in the mean and the median of real per capita expenditure in Table 4, Indonesia decreased by 54 and 41 percent, respectively. In the Philippines, between 1997 and 1998, the degree of income inequality increased sharply as the share of the richest decile increased from 39.3 percent to 42.9 percent, while everyone else held less income (Table 5). The situation in Korea is similar as the Gini coefficients increased from 0.28-0.29 during the last three quarters of 1997 to 0.32-0.33 during the first three quarters of 1998 and the share of the richest decile increased from 22 percent to 24-25 percent during the same period.

With regards to poverty, available data also suggests that the problem worsened in all five countries. In Indonesia, for example, a poverty rate of 39.1 percent was projected by the Central Bureau of Statistics. However, other estimates are much lower, which range from 14 percent to 20 percent (Table 6). In Korea, the poverty rate increased sharply from 3 percent in 1997, to 6.4 percent in 1998 and 7.5 percent in 1998. In Thailand, the increase was from 11 percent in 1996 to 13 percent in 1998 with the poverty rate being the greatest in rural areas.

Table 3. Changes in the Size Distribution of Real Per Capita Household Expenditure in Thailand, 1996-98 (1996 and 1998 SES data)

Expenditure Groups		Percent of Total Real Per Capita		Percent Change in Share, 1996-98
		1996	1998	
Urban:	I (low)	2.6	2.5	-1.2
	II	4.6	4.6	-0.2
	III	6.8	6.7	-1.4
	IV	10.0	9.7	-2.7
	V	20.5	22.5	10.1
Sub-total		44.5	46.1	3.8
Rural:	I (low)	3.9	3.8	-2.2
	II	6.1	5.9	-4.2
	III	8.3	8.0	-4.4
	IV	11.8	11.3	-4.0
	V	25.4	24.9	-1.8
Sub-total		55.5	53.9	-3.0
Total		100.0	100.0	-

Source: Calculated from data provided in Brooker Group (1999).

Table 4. Changes in Real Per Capita Expenditure in Indonesia between 1997 and 1998, by 1997 Quartile (IFLS* data)

Quartile	Percent Change in Mean	Percent Change in Median
I (low)	120	49
II	42	12
III	-2	-19
IV	-54	-41
Total	-34	-2

Source: Poppele, Sumarto, and Pritchett, 1999.
Note: * IFLS = Indonesian Family Life Survey.

Table 5. Size Distribution of Nominal Household Income in the Philippines, 1997 and 1998 (1997 FIES and 1998 APIS data)

(Unit: Percent)

Income Decile	1 (low)	2	3	4	5	6	7	8	9	10	Total
1997	1.7	2.7	3.5	4.3	5.4	6.8	8.7	11.5	16.3	39.3	100.00
1998	1.2	2.2	3.0	3.9	5.0	6.3	8.3	11.1	16.1	42.9	100.00

Source: Reyes, *et al*., 1999.

Table 6. Alternative Estimates of Changes in the Poverty Rate in Indonesia, 1997-98

Source	Urban		Rural		Total	
	1997	1998	1997	1998	1997	1998
IFLS, using BPS[a] inflation rates	9.2	12.0	12.4	15.2	11.0	13.8
IFLS, using IFLS inflation rates	9.2	15.8	12.4	23.0	11.0	19.9
"100 Village" survey, using BPS inflation rates					11.0	14.4
"100 Village" survey, using IFLS inflation rates					11.0	18.6
Susenas[b] data, using BPS inflation	14.5	17.2	18.0	19.0	16.9	18.3
World Bank projection	5.0	8.3	15.0	17.6	10.1	14.1
BPS projection					11.3[c]	39.1

Source: Sigit, 1998.
Note: [a] Central Bureau of Statistics; [b] National Social and Economic Survey; and [c] refers to 1996.

Human Resource Development

Due to a sharp decline in household incomes and the need to maintain certain levels of food consumption, expenditures on education have decreased (see Table 7 for the case of Indonesia). At an aggregate level, education budgets have been cut in most of the crisis countries, with the exception of Malaysia. Enrollment rates are reported to have declined in some countries. Furthermore, dropout rates from schools were reported to increase.

Table 7. Changes in Indonesian Household Expenditure Shares, 1997-98

(Unit: Percent)

Item	Urban			Rural		
	1997	1998	Change	1997	1998	Change
Food	59.0	64.0	8	76.2	80.8	6
Selected foods:	13.0	20.6	59	30.6	39.4	29
Staples						
Meat	12.7	10.4	-18	12.5	9.7	-22
Non-food:	4.1	5.7	41	4.4	4.0	-9
Alcohol/tobacco						
Health	1.7	1.5	-14	1.2	0.7	-40
Education	4.9	4.5	-8	2.4	1.8	-24
Household goods	8.2	6.8	-17	3.6	3.2	-12
Transport	3.2	3.2	1	1.8	1.5	-16
Clothing	2.9	2.5	-16	2.2	1.5	-32
Housing	10.8	9.1	-15	6.1	4.8	-21
Recreation	2.6	2.1	-2	1.8	1.7	-7

Source: Frankenberg, Duncan and Beegle, 1999.

IMPACT OF THE CRISIS ON THAILAND'S FARM SECTOR[5]

This section will present in some detail the results of a study on the impact of the 1997 crisis on the farm sector of Thailand. As the macroeconomic context of the 1997 crisis has already been mentioned, and a summary of the magnitude of the impact is given in Box 2, no discussion of this aspect will be made here. I will first mention the agriculture sector during the crisis, then I will discuss the changes in the farm household consumption, income and production (including credit and assets), before and after the crisis.

Box 2: Crisis Impact on Thailand's Rural Sector

The crisis has further exacerbated the following unsustainable trends:

- The *proportion of the poor* has increased to 13.0 percent and 12.4 percent in the first and second quarter of 1998, or equivalent to around 7.6-7.9 million people.
- The *income gap* has widened: the top 20 percent income group enjoyed a 56-percent share of total income, a slight increase from 1996; while the 20 percent lowest income earners shared the same portion of total income (4.4 percent); and the middle income group lost income.
- The total number of *unemployed* in rural areas increased from 3.1 percent to 8.1 percent and a decline in real income of 25 percent.
- *Remigration* back to rural areas has led to increased pressure on natural resources, and greater competition for agricultural land and limited off-farm employment.
- *Public expenditures* for social and rural development have been slashed: appropriations for social services, education, and public health declined by 32 percent, 11 percent and 15 percent over the originally approved FY1998 budget.
- The *social fabric is stressed*, as a variety of surveys document an increase in conflicts among families and groups, in the number of street children, and in the rates of child labor, prostitution, crime, and suicides.

Source: World Bank, 2000, pp. xii-xiii.

In conducting the study, various hypotheses concerning the plausible effects of the crisis on farmers have been advanced (e.g., World Bank, 1999). Therefore, one of the objectives is to determine whether the data reported in the two surveys are consistent with any or all of these hypotheses. The following questions are considered in the report.

- It is thought that urban unemployment resulted in a large emigration bank to the rural areas and in a sharp decrease in remittances, choking off an important source of cash for small farmers. *Did this large emigration materialize and are the poor indeed so reliant on remittances? What has happened to off-farm income as a result of the crisis?*
- In rural areas, unemployment increased from 2.4 percent to 5.3 percent between February 1997 and February 1999, and underemployment rose as well. The Northeast

[5] This section is drawn from a report by MERI and the World Bank (June 2000). The valuable contribution of Gershon Feder, Charles Mehl and Hanan Jacoby of the World Bank os especially acknowledged.

region, the poorest in the country, was hit the hardest. *What has been the regional distribution of the crisis impacts in rural areas?*

- It has been hypothesized that the crisis hurt mainly the poorest households, and therefore contributed to the increasing inequality. The overall poverty rate increased from 11.3 percent of the population in 1996 to 12.4 percent during the second quarter of 1998. While the upper-income group increased its income level since 1996, albeit in modest terms, the low- and middle-income groups experienced a decline. *Have the impacts of the crisis been harshest on the rural poor?*
- The credit crunch that followed the baht devaluation and the initial increase in interest rates purportedly caused a drop in rural credit, which further reduced the demand for cash inputs. *Has there been a rural credit crunch, and did it differentially harm poor farmers?*
- As a consequence of the devaluation and other factors, the price of the main cash crop (rice) rose, and the price of the main purchased input (fertilizer) fell. While these changes benefitted farmers, there was also the El Niño drought, as well as the potential losses of off-farm income and credit supplies. *What has been the net impact of these various shocks on agricultural production and income?*

The report investigates these questions using the household survey data, and in doing so, examines the channels through which the crisis was likely to have been transmitted to agricultural households – mainly the markets for inputs, outputs, labor and credit. Also, in assessing the consequences of the crisis on the rural sector, a particular effort is made to analyze how families at different welfare levels have weathered the crisis. Understanding who was affected and how is the first step toward formulating a policy to ameliorate the impact of the crisis.

The Agriculture Sector During the Crisis

In terms of volume, the main crops cultivated in Thailand are paddy rice, tapioca (cassava) and sugarcane (Table 8), all of which are important both as cash and staple crops. The two main types of paddy rice are glutinous (long grain) and non-glutinous (5 percent broken), which offer low substitutability in terms of consumption, but are highly substitutable in terms of production. Rice is predominantly cultivated in the North, Northeast and Central regions, and other crops also have distinct geographical patterns. Overall, corn and oilseeds represent only a small share of the cultivated area.

Table 9 shows the evolution of the average yearly farm-gate price index for a number of subgroups of agricultural products. Grain and food crops, oilseeds and tropical beverages enjoyed a substantial increase in real prices between 1997 and 1998. In particular, the real price of tropical beverages increased by 85 percent, while the real price of grains, food crops and oilseeds increased by almost 25 percent. The livestock sector, by contrast, experienced a real price decline, probably due to the fact that this industry relied heavily, until the crisis, on imported corn for animal feed. The increase in the feed-to-output price ratio that resulted from the devaluation of the baht might have led producers to accelerate the liquidation of their stocks, with a consequent decline in the real price of livestock products.

Overall, the devaluation of the *baht* brought higher farm-gate prices for farmers. A more precise estimate of the amount of pass-through that actually occurred would require a closer look at the functioning of marketing channels, which is beyond the scope of this study.

Table 8. Output of Major Crops

(Unit: 000 mt)

Type of Crop	1990	1991	1992	1993	1994	1995	1996	1997p
Paddy[a]	17,026.0	19,809.0	20,184.0	19,098.0	20,125.5	20,678.6	22,081.9	22,389.2
Rubber[b]	1,250.0	1,340.0	1,500.0	1,553.0	1,737.0	1,810.0	1,937.0	2,100.0
Maize	3,800.0	3,600.0	3,400.0	3,300.0	3,900.0	4,060.0	3,970.0	3,842.0
Tapioca roots	19,705.0	20,356.0	20,203.0	19,091.0	15,374.0	17,387.8	18,087.9	15,958.5
Sugarcane	40,563.0	47,430.0	34,711.7	37,568.6	50,458.9	57,693.4	56,190.0	42,270.0
Mung bean	303	304	261	231	255.5	234	237.9	212.1
Groundnuts	161	157	137	136	150.3	147	151.6	147.5
Soybeans	500	436	435	513	527.6	386	352.3	366.3
Sesame	29.2	32	31.5	32.8	31.8	33.5	34.3	34.7
Coconut[c]	1,426.0	1,379.0	1,411.0	1,462.0	1,476.0	1,412.6	1,410.0	1,419.0
Castor beans	23	28	12	10	7	5.7	5.6	6
Cotton	97	129	99	67	77.9	80.7	75.1	70.2
Jute and kenaf	191	139.1	151	144	126.8	79	74.3	73
Kapok and bombax fiber	37	37.1	37.2	39.7	40.9	43	46.4	46.8
Tobacco leaves	66.8	85.4	93.6	50.8	48.8	59.8	72.4	79

Source: Office of Agricultural Economics, Ministry of Agriculture and Cooperatives.

Notes: [a] Paddy production in year *t* includes the first crop in year *t/t* + 1 and the second crop in year *t*.

[b] Rubber Research Institute, Ministry of Agriculture and Cooperatives.

[c] Production converted at 1.25 kg per nut. Updated 25 June 1999.

Table 9. Farm Price Index (1984 = 100)

	1994	1995	1996	1997	1998
Combined index:	143.70	166.36	178.50	185.01	230.57
Crops	140.69	166.97	179.34	183.39	239.40
Grains and food crops	143.14	168.10	183.72	191.71	255.31
Oilseeds	100.48	98.52	119.12	113.18	149.92
Agricultural raw materials	146.12	195.80	180.08	157.47	158.81
Tropical beverages	67.84	139.80	93.06	77.49	149.37
Livestock	122.94	138.07	146.15	146.65	156.70
Fisheries	175.81	185.05	193.63	235.75	293.16
Forestry	246.84	271.21	310.47	312.78	311.12

Source: Computed from Office of Agricultural Economics data.

1. ***Rice***

Since rice is both the most important staple crop and a considerable source of cash income for the average Thai farmer, we must first look at how the baht crisis may have impacted its price. Figure 3 shows the behavior of the price of a representative rice quality, 5 percent broken, in baht per mt, on the wholesale Bangkok market and at the farm-gate. It shows that both (nominal) prices rose with the onset of the crisis, though the *wholesale price rose* by more than the farm-gate. Figure 4 takes July 1997 as the base period, and while it confirms the previous point, it clearly shows that by March 1999, the two price series returned to their pre-crisis levels. Thus, the crisis had only a transitory impact on the domestic price of rice. Moreover, both the wholesale and the farm-gate prices decreased in real terms since July 1997. Finally, Figure 5, taking April 1995 as the base period, indicates that the two price series followed the same trend, as one would expect in the absence of dramatic structural changes in the marketing channels or government price policies. Both prices increased in real terms by almost 25 percent. In sum, the crisis had only a *temporary impact on the price* of rice; thus it appears that the factors contributing to the increase in the real price of rice between April 1995 and March 1999 are to be found in the pre-crisis period.

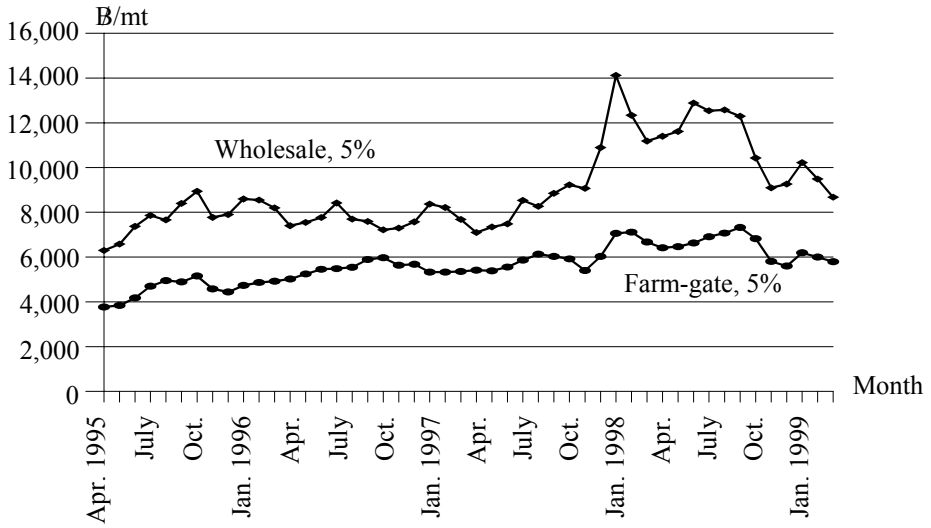


Figure 3. Wholesale and Farm-gate Prices of Non-glutinous Rice, 5 percent Broken

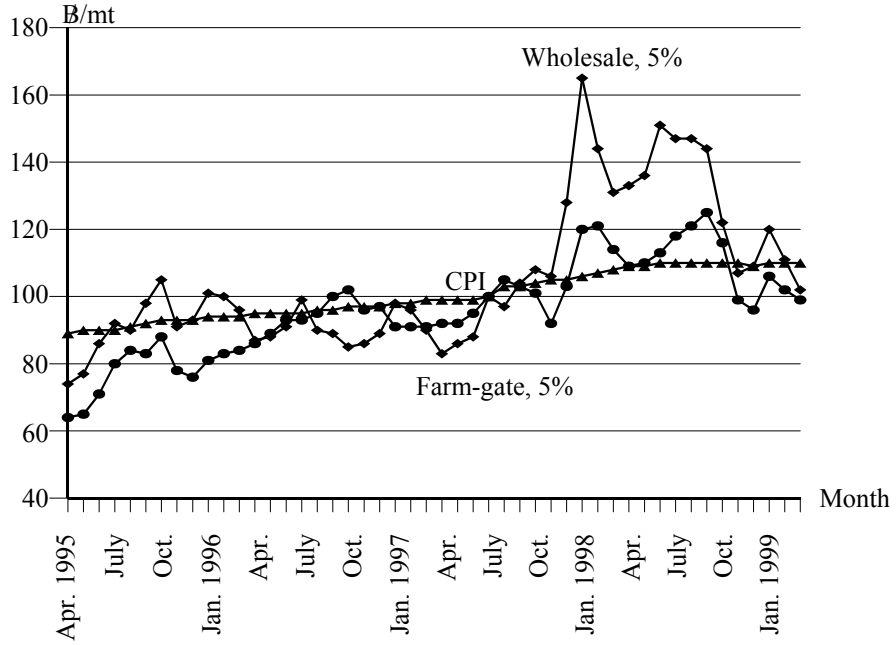


Figure 4.
Wholesale
and Farm-gate Prices of
5 percent Broken Rice and CPI (July 1997 = 100)

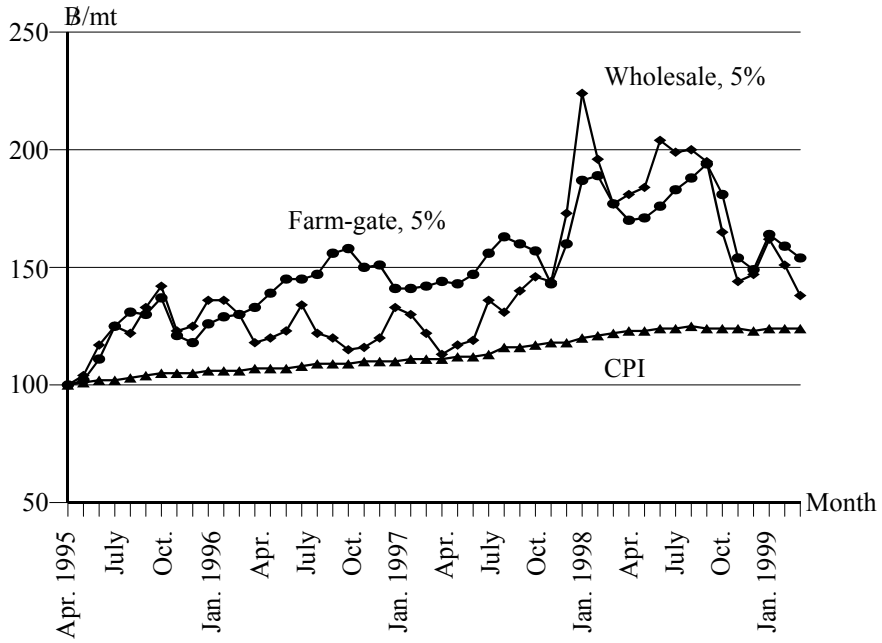
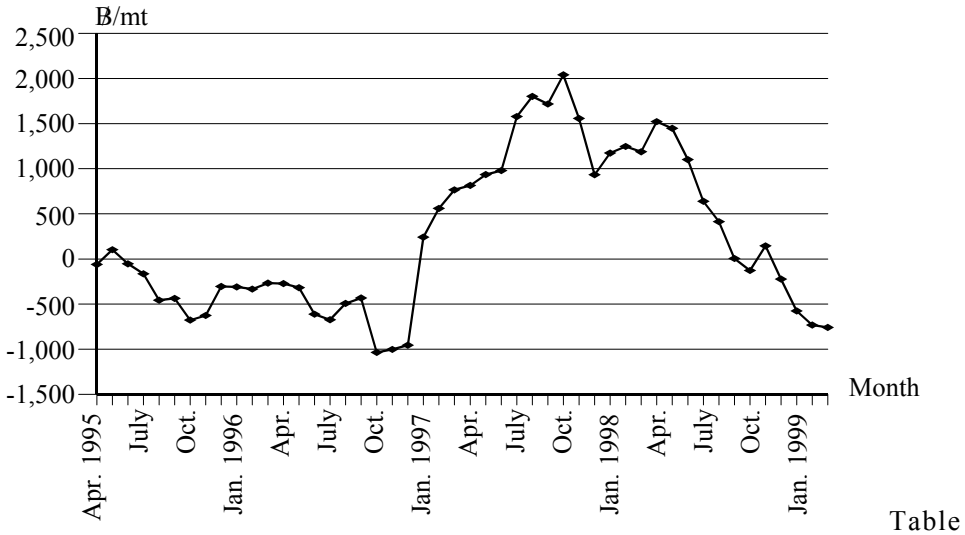


Figure 5. Wholesale and Farm-gate Prices of
5 percent Broken Rice and CPI (April 1995 = 100)

A complicating factor is that there are geographical differences in the production of rice qualities. Glutinous rice is produced and consumed mainly in the upper North and Northeast regions, while non-glutinous rice is consumed mainly in the lower North, Central, and Southern regions. Thus, when examining the geographic patterns in farm income growth, it is important to consider whether the prices of the two rice qualities have displayed significant differences across the time period under examination. Figure 6 shows the behavior of the price premium of glutinous over non-glutinous rice. During most of 1997-98, non-glutinous rice is bought at a discount at the farm-gate. Thus, rice farmers in the regions where glutinous rice is produced can be expected to have done well relative to farmers in non-glutinous regions, in terms of revenue growth.



Table

Figure 6. Premium of Glutinous (Long Grain) over Non-Glutinous (5 percent Broken) Rice: Nominal Farm-gate Prices

10 reports the farm-gate price of selected crops and livestock, and confirms that, in real terms, the price of rice increased by 43-86 percent between 1995 and 1998, depending on the quality. By contrast, the prices of sugarcane, cassava, corn, livestock and livestock products decreased in real terms. Price increases for rice are higher than those reported above because Table 10 uses average yearly data, and the 1998 data do not reflect the subsequent price decline that cancels the initial devaluation effect.

2. ***Fertilizer***

The most important variable input, second to labor, is fertilizer. Table 11 shows the evolution of fertilizer prices. As the government subsidizes the cost of commercialization and transportation to rural areas, the relevant price, when considering those farmers that had access to the program, is the wholesale price. The rest of the farmers pay the retail price. In the absence of a suitable fertilizer price index, consider the price of urea (46-0-0), the fertilizer commonly used by rice producers. First, note that the increase in the wholesale and retail price of fertilizers during 1997 and 1998 was less than the rate of the baht depreciation. This partly reflects the fact that the international price of urea declined during this period, by 19 percent in US dollar terms (World Bank, 1999). Given a rough 35-percent devaluation of the baht during the same period, a one-to-one pass-through of the international price to the wholesale price would, therefore, have resulted in a 16-percent increase, as indicated in Table 9. At the retail level, the nominal increase was even lower. Also note that between 1995 and

1999, the period of the household survey data, the nominal wholesale price of urea decreased by more than 20 percent, while the international price decreased by almost 58 percent. At the same time, the baht lost 48 percent of its value against the US dollar. Therefore, it seems that over this longer period, the wholesale price of urea declined more than the sum of the devaluation and the drop in the international price. This also holds for the retail price of urea. Thus, both in nominal and real terms, there was *a strong decline in the price of fertilizers, at both the wholesale and retail levels*.

Table 10. Average Annual Prices of Selected Commodities, 1995-98

(Unit: ฿/mt)

Year	Non-glutinous/ Glutinous Rice	Sugar Rice	Long Grain Rice	Corn	Cassava	Livestock
1995	4,053	3,725	410	3.85	1.16	138.07
1996	5,189	4,664	394	4.06	0.91	146.15
1997	5,472	6,256	439	4.19	0.71	146.65
1998	6,629	7,694	485	3.93	1.31	156.70
Percent change						
1995-98	63.6	106.6	18.3	2.1	12.9	13.5
1997-98	21.1	23.0	10.5	-6.2	84.5	6.9

Source: Ministry of Agriculture and Cooperatives.

Table 11. Average Yearly Fertilizer Prices, 1995-99

Year		21-0-0	46-0-0	16-20-0	16-16-8	15-15-15
1995:	CIF	2,680.46	5,756.03	4,723.05	4,949.19	5,600.54
	Wholesale	3,525.00	6,554.17	5,391.67	5,618.75	6,070.83
	Retail	4,440.00	7,200.00	6,200.00	6,660.00	7,000.00
1996:	CIF	3,028.25	5,795.89	4,950.03	5,133.81	6,122.73
	Wholesale	3,770.83	6,354.17	5,570.83	5,725.00	6,362.50
	Retail	4,451.34	7,089.80	6,099.77	6,767.09	7,156.89
1997:	CIF	3,436.01	5,326.94	5,075.56	5,399.39	8,178.80
	Wholesale	3,904.17	5,833.33	5,641.67	5,958.33	6,537.50
	Retail	4,626.42	6,954.00	6,222.25	6,552.25	7,543.92
1998:	CIF	2,683.66	5,409.34	5,965.99	6,434.07	8,347.78
	Wholesale	4,208.33	6,788.00	7,404.17	7,754.55	8,637.50
	Retail	5,340.00	7,792.45	8,094.92	8,594.50	10,122.58
1999*:	CIF	2,466.93	3,909.68	5,571.80	5,874.07	6,991.35
	Wholesale	4,000.00	5,114.29	6,342.86	6,828.57	7,850.00
	Retail	4,710.00	6,061.00	7,151.86	7,808.29	9,312.57
Percent change						
1995-98:	CIF	0.12	-6.02	26.32	30.00	49.05
	Wholesale	19.39	3.57	37.33	38.01	42.28
	Retail	20.27	8.23	30.56	29.05	44.61
1997-98:	CIF	-21.90	1.55	17.54	19.16	2.07
	Wholesale	7.79	16.37	31.24	30.15	32.12
	Retail	15.42	12.06	30.10	31.17	34.18

Source: Ministry of Agriculture and Cooperatives.
Note: * Average price for January-July.

To sum up, the aggregate price data indicates that *rice farmers faced an improved environment* during the 1998/99 crop year as compared to 1995/96. While the real prices of rice increased during the two crop years, this increase occurred mainly during the pre-crisis period. During the post-crisis period, the real farm-gate price of rice actually decreased. Moreover, fertilizer prices fell, despite the devaluation.

Consumption

Were the rural poor especially hurt as a result of the crisis? This question is addressed by first looking at changes in per capita household consumption, which is computed as the sum of cash and non-cash expenditures. A delicate issue in this kind of analysis is how to choose an appropriate welfare ranking criterion. A common approach uses per capita expenditures in the baseline period. However, given the large transitory component of expenditures, and the relatively low precision with which expenditure is measured in the two surveys, there is a high risk of ranking households improperly. In what follows, households are ranked using their *per capita landholdings*, which is adjusted for land fertility. Average (unadjusted) per-capita landholdings in *rai*[6] ranging from the lowest to highest quintile are as follows: 1.3, 2.8, 4.8, 7.9 and 17.7.

Table 12 shows per-capita household expenditures by quintile and survey year. Medians are reported, here and throughout this report, in order to mitigate the influence of outliers. Two results appear striking when looking at these figures. First, all quintiles except the highest one, display a real decline in per capita expenditures. Overall, the median per capita expenditure for the sample declined by 17.5 percent. Thus, the (unweighted) data support the hypothesis that the *poorest households were hit the hardest by the crisis*, but the data also show that the richest households actually were better off.[7] Similar findings are obtained when the expenditure data are weighted using information in the 1995 census to reflect the rural populations living in the corresponding regions. After weighing the data, the declines in consumption of the poorest households relative to the richest ones, are slightly more pronounced.

Table 12. a) Per Capita Expenditure, by Quintile

(Unit: ฿)

Quintile	Unweighted			Census-weighted		
	1995/96	1998/99	Percent Real Change	1995/96	1998/99	Percent Real Change
1	7,496	7,705	-17.22	7,222	7,566	-15.24
2	7,956	7,411	-26.86	7,760	7,404	-24.59
3	8,396	9,012	-12.67	8,235	9,005	-10.65
4	9,668	10,717	-9.14	9,520	10,411	-10.64
5	11,676	16,096	17.85	11,360	15,995	20.80

[6] 1 *rai* = 0.16 ha.

[7] The null hypothesis that the percentage change of the medians was equal across quintiles was tested for each pair of quintiles. In order to do so, the standard deviation of th epercent change of the medians by quintile was computed by bootstrapping the respective samples 600 times. The *t*-tests for equality across quintiles reject the null hypothesis in all cases at the 5-percent confidence level.

b) Per Capita Expenditure, by Region

(Unit: ₿)

	1995/96	1998/99	Percent Change
Northeast	7,631	8,595	-7.4
North	9,776	9,119	-26.7
Central	10,708	15,457	24.3

Second, there are important regional differences in consumption changes, as shown in Table 12b. Households in the Central region increased their consumption level substantially from the first to the second survey. On the other hand, households in the North region suffered a dramatic decline in real consumption, while the Northeast region suffered only a modest decline. The concern that rural households were hit hard by the crisis seems justified when looking at these results. The income data presented below also tell a very similar story, albeit with different magnitudes.

Farm and Off-farm Income

Household income is composed of farm profits and other income from both agricultural and nonagricultural sources. Farm profits are computed as the difference between farm output value and costs. These include variable costs, which comprise of both crop-specific and joint costs. Prices for goods produced but not sold are imputed using the same procedure as in the case of consumption. Other (non-farm) income includes off-farm agricultural wage earnings, non-agricultural wage earnings, income from other businesses, government transfers and remittances.

Before turning to the findings, it is worth pointing out the dramatic differences across quintiles in the extent of income derived strictly from agricultural production. In the base year 1995/96, the median share of farm profit in total income is a mere 30-percent for the lowest quintile and increases steadily by quintile as follows: 30 percent, 41 percent, 47 percent, 63 percent and 75 percent. This fact has profound implications for the distributional impact of the crisis. Richer households are highly exposed to agricultural output and input price shocks; poorer households, by contrast, have comparatively greater exposure to labor market shocks. As has been shown, over the crisis period, rice and fertilizer prices moved in a direction favorable to farmers, while the labor market performed badly. The poor, therefore, should have suffered relative to the rich in terms of income growth.

Table 13 confirms this simple intuition, showing that in real terms the per capita income of the two poorest quintiles decreased between the two survey periods, while that of the three upper quintiles increased. In fact, both farm profits and non-farm income decreased for the two lowest quintiles and increased for the upper three quintiles. Especially striking is the spectacular rise in farm income for the highest quintile. Non-farm income growth was also higher for the better-off households, but not nearly as skewed as farm income growth. Similar results are seen in the weighted data. One can speculate that households in the higher quintiles obtain more of their non-farm income from skilled labor, which was less affected by the recession. In any event, the distance between the two extremes of the household income distribution almost doubled between the two survey periods. Thus, the hypothesis that the income distribution worsened as a consequence of the crisis may be well founded.

Regional differences are also marked, as Table 13b shows. The Central region witnessed an impressive increase in real income, while the other two regions basically stagnated. The increase in income in the Central region was mainly due to soaring farm profits, although non-farm income also increased considerably.

Table 13. Household Income

a) By quintile

(Unit: ฿)

Quintile	Unweighted			Census-weighted		
	1995/96	1998/99	Percent Real Change	1995/96	1998/99	Percent Real Change
Total income:						
1	12,506	13,126	-15.04	12,351	12,380	-19.77
2	12,121	12,464	-17.16	11,850	11,780	-20.59
3	12,716	17,144	14.82	12,356	17,073	18.18
4	14,571	18,995	10.36	14,463	19,006	11.41
5	15,962	30,472	70.90	16,041	30,111	67.71
Farm profits:						
1	2,475	1,987	-39.73	2,350	1,943	-37.32
2	3,870	3,897	-19.28	3,784	4,034	-13.39
3	4,333	6,337	26.25	4,362	6,363	25.87
4	6,638	9,564	24.08	6,098	8,566	20.47
5	6,705	18,406	154.53	6,540	17,265	143.99
Non-farm income:						
1	7,717	8,675	-7.58	7,700	8,250	-12.86
2	6,233	6,333	-18.40	6,200	6,167	-20.53
3	5,483	7,500	16.78	5,858	7,625	10.16
4	4,563	6,600	24.66	4,710	6,667	21.55
5	5,000	6,467	9.33	5,050	6,467	8.06

b) By region

(Unit: ฿)

	1995/96	1998/99	Percent Real Change
Per capita total income:			
Northeast	11,854	15,370	9.7
North	14,234	16,348	-5.1
Central	16,902	29,297	53.3
Per capita farm profits:			
Northeast	3,219	4,529	20.7
North	4,772	5,435	-6.1
Central	3,962	12,791	202.8
Per capita non-farm income:			
Northeast	6,329	7,200	-6.2
North	4,927	6,267	7.2
Central	7,000	10,583	31.2

In sum, both income and consumption data tell similar stories; *the poor were most harmed by the crisis* and attendant changes in the rural economy, and the North was the most severely affected region. The income and consumption data are not entirely in accord,

however, on the severity of the crisis. Consumption data exhibit more dramatic percentage declines than income data. Even though expenditure and income modules were compatible across the two surveys, it is typically the case that expenditures and income data collected with household surveys do not match up closely, for a variety of reasons. The discrepancy found in the present analysis may be symptomatic of this more general problem; on the other hand, economic factors could also play a part (see the discussion of asset changes below).

Remittances and Migration

Thailand's urban and rural sectors are closely linked by flows of remittances and migration, so any discussion of crisis impacts in rural areas must consider these flows. As Table 14 shows, only about a quarter of the rural households received remittances in 1998/99. Median remittances for the whole sample are thus zero for both crop years. Table 14 looks only at those household with positive net remittances. The figures in this table are consistent with the earlier findings on non-farm income and with the hypothesis that the downturn in the urban labor market had negative consequences for rural households, especially the poor. That the richest households experienced an increase in net remittances might be due to their urban relatives being more highly skilled and thereby less affected by urban unemployment. Their observed income gains may largely be of pre-crisis origin.

Table 14. Net Remittances

Quintile	Net Remittances (households with positive net remittances)			Percentage of Households with Positive Net Remittances	
	1995/9	1998/9	Percent Real Change	1995/96	1998/99
1	5,000	3,167	-56.7	16	22
2	4,500	3,850	-34.4	20	28
3	3,333	3,333	-20.0	24	26
4	3,000	3,333	-8.9	19	27
5	2,550	4,100	40.8	19	28

In sum, while there was a real decline in remittance income among recipient households (most sharply among the poor), the majority of rural households, particularly the poorest ones, do not rely much on remittances. Once again, though, these findings must be qualified by noting that remittance income may easily be misclassified.

Turning to data on migratory flows, Table 15 covers the entire three-year period between the two surveys. In order to capture migration decisions due to the crisis, the period between the two survey years is divided into two: one period goes from approximately April 1996 to March 1998, and the other period covers just the year prior the second survey. As Kakwani (1998) notes, the effect of the crisis should have begun to be felt in the urban labor market by the beginning of 1998, so this breakdown should capture the labor force dynamics that the crisis put in motion.

The migration data show that, over the three-year period before the survey, more households had some of their members moving out (27 percent) than moving in (7 percent). A handful of households experienced both emigration and immigration of their members. Only 2 percent of the households had someone moving in before the crisis period. This percentage more than doubled during the year before the survey. Yet, the numbers involved are so small that they can hardly be used to support the view of a major return migration to

rural areas. Out-migration has been quite steady and consistently greater than in-migration, except in the Central region, where during the year following the crisis more households had some members coming in than leaving. One caveat, however, is that sample from the Central region is less than half of the samples from the North and Northeast. Finally, there is evidence that the crisis deterred out-migration, most markedly in the North and Central regions. The more dramatic fall in out-migration in the Central region might be explained by its proximity to Bangkok.

Table 15. Household Migration

(Unit: Percent)

Percent by Region	Northeast	North	Central	Total
a) During last three years				
Move in	9.19	6.36	5.80	7.38
Move out	39.72	17.09	25.00	27.37
Move in and out	3.42	2.69	1.45	2.76
b) During last year				
Move in	7.17	4.24	5.80	5.66
Move out	20.09	5.37	4.71	11.07
Move in and out	1.87	0.99	0.36	1.23
c) Between three years ago and last year				
Move in	2.49	2.12	0.36	1.97
Move out	25.70	12.01	21.01	18.94
Move in and out	0.16	0.85	0.43	0.49

Overall, the picture that emerges from the data is that *no massive migration back to the rural areas* has taken place since the crisis, and that out-migration seems to have slowed considerably.

Yields and Fertilizer Use

During the 1998/99 (1995/96) crop year, rice was cultivated by 93.5 percent (91.2 percent) of the households in the Northeast, 77.4 percent (76.4 percent) in the North, and 71.3 percent (69.3 percent) in the Central region. Overall, almost 83 percent of the 1,626 surveyed households cultivated rice during both crop years. No dramatic changes occurred in cropping patterns between the two surveys.

Because of the importance of rice as a consumption and production good, the behavior of rice yields is a key indicator of crisis impacts. Table 16 shows an overall increase in rice yields, but with farms in the Central region displaying the highest increase compared to farms in the North and Northeast. Farmers in the Northeast, in fact, reported lower yields during the second survey. Interestingly, yields declined for farmers in the bottom two quintiles. This finding is not merely due to the fact that the poor happen to live in regions that experienced lower yields, since there are at least as many poor in the sample from the North where yields rose as there are from the Northeast where yields fell.

Some of the observed patterns in rice yields might be explained by the changes in the intensity of fertilizer used, as shown in Table 17. Fertilizer expenses are reported in nominal terms because the nominal price of urea was little changed between the two survey periods. Unfortunately, data on the quantities of chemical fertilizer are not available. Since the change

in the price of fertilizer is known, however, the change in fertilizer use can be inferred from the expenditure data. As Table 10 showed, farmers in all the quintiles increased their fertilizer expenditures, which means that they must have increased their fertilizer use as well. To be sure, the poorest farmers increased their expenditures the least, but this finding cannot go very far in explaining why their yields declined relative to richer farmers. On the other hand, the data certainly cast doubt on the hypothesis that the crisis led to a contraction in fertilizer use.

Table 16. Rice Yields

(Unit: kg/*rai*)

	1995/96	1998/99	Percent Change
a) By quintile			
1	347	288	-16.9
2	369	350	-5.2
3	312	350	12.1
4	302	322	6.5
5	280	357	27.6
Total	320	333	4.1
b) By region			
Northeast	300.30	260.00	-13.42
North	360.00	420.00	16.67
Central	276.79	350.00	26.45

Table 17. Fertilizer Expenses

(Unit: ฿/*rai*)

Quintile	1995/96	1998/99	Percent Nominal Change
1	140	160	14.3
2	105	128	21.9
3	87	115	32.2
4	78	112	43.6
5	79	100	26.6

Given the dominance of rice, it is worth asking whether these yield changes translated into changes in farm profit. Certainly, the considerable yield increase in the Central region is consistent with the large rise in farm profit reported in Table 13. In the Northeast, by contrast, yields declined but profits rose. This finding might be explained by the fact that glutinous rice is primarily grown in the Northeast and that the price of this variety rose more substantially than the price of ordinary rice. The experience in the North presents somewhat of a puzzle, since yields seem to have risen while profits fell in real terms, though not by much.

Finally, while rice yield and farm profit changes are encouragingly consistent across quintiles, the question remains why the poorest farmers have performed so badly. Neither information on inputs or weather sheds much light on this issue. In the end, however, the question may be of limited significance, since these poorest households derive a relatively small proportion of their total income from farming their own land. Much more significant, from their perspective, is the decline in off-farm income.

Credit

To assess the hypothesis of a rural credit crunch, Tables 18 and 19 examine the changes in the percentage of households receiving credit and in the average value of loans received by the households during the two crop years, from all sources and from the state-owned Bank of Agriculture and Agricultural Cooperatives (BAAC). Credit for buying fertilizer and for consumption are treated separately, although the stated purpose for borrowing does not necessarily coincide with the final use of borrowed funds. An important caveat in interpreting the findings on credit is that supply and demand factors cannot be distinguished with the data at hand; only the net change in use of credit is observed. However, if there was no significant fall in credit use, then it is reasonable to conclude that there could not have been much of a *credit crunch (contraction in credit supply)*.

Table 18. Percentage of Farmers Obtaining Credit

a) Percentage of households obtaining a loan

(Unit: Percent)

Quintile	Total Loans		Consumption		Fertilizers	
	1995/96	1998/99	1995/96	1998/99	1995/96	1998/99
1	32	29	3	5	6	4
2	34	41	5	7	6	13
3	39	43	4	4	5	14
4	42	49	3	6	9	15
5	52	61	5	5	11	23

b) Regions

(Unit: Percent)

Region	Total Loans		Consumption		Fertilizers	
	1995/96	1998/99	1995/96	1998/99	1995/96	1998/99
Northeast	42	49	5	7	10	15
North	37	38	3	5	7	9
Central	43	51	3	5	2	25

c) Loans per household

(Unit: ฿/household)

Quintile	1	2	3	4	5
Total loans:					
1995/96	24,500	25,000	20,000	25,000	30,000
1998/99	30,000	30,000	30,000	30,000	40,000
Percent real change	2.4	0.0	30.0	0.0	13.3
Consumption loans:					
1995/96	10,000	30,000	20,000	17,500	20,000
1998/99	12,000	30,000	10,500	20,000	20,000
Percent real change	0.0	-20.0	-67.5	-5.7	-20.0

... To be continued

Table 18. Continuation

Quintile	1	2	3	4	5
Fertilizer loans:					
1995/96	10,000	19,190	10,900	20,000	20,000
1998/99	30,000	20,000	25,000	20,000	30,000
Percent real change	200.0	4.2	129.4	0.0	50.0

Table 19. Loans from the Agricultural and Cooperative Bank

Quintile	Households Obtaining Credit from BAAC (percent)		Medium-size Loan for Households from BAAC (฿/houseold)		
	1995/96	1998/99	1995/96	1998/99	Percent Real Change
1	23	24	15,500	20,000	9.0
2	20	23	10,000	15,000	30.0
3	25	24	12,000	20,000	46.7
4	29	28	15,000	20,000	13.3
5	35	34	20,000	30,000	30.0

Table 18a shows that only the poorest quintile reported a lower use of credit in the second survey compared to the first, and not much of a decline at that. Information on loans outstanding is reported in Table 18b. No clear pattern emerges concerning the real change in outstanding loans. *There appears to be a decline in consumption loans and a large increase in fertilizer loans*, the latter finding consistent with the increase in fertilizer expenditures reported earlier. Overall, though, there is no real sign of a credit crunch. Information on loans sizes and quantities disbursed by the BAAC in Table 19 reinforces this conclusion. The percentage of farmers borrowing from the BAAC was stable between the two survey periods, and the median loan size increased for all quintiles.

Assets

Table 20 shows how these asset values changed by quintile and regions between the two survey periods. The information is incomplete for quite a number of households, so the information reported below should be read with some caution. Nevertheless, one clear pattern emerges. All households, except for those in the second quintile, experienced a sharp fall in the value of their assets between the two periods. Regionally, asset values in the North stagnated, while those of the other two regions showed a substantial decrease. Why should assets have depreciated so much? The overall increase in real farm profits is surely not consistent with a fall in the value of assets, most of which are used in agricultural production. An initial tentative explanation is that the value of rural household assets was influenced by the collapse in real estate values in urban areas. This has been a dramatic feature of the Thai crisis, and it is likely that the fall in urban real estate values spilled over to rural areas. One can further speculate that the fall in asset values made households feel poorer and led them to limit their consumption plans; this may help explain why household expenditures fell more than income, according to the survey data.

Table 20. Asset Values

a) Median Asset Values

Quintile	1995/96	1998/99	Percent Real Change
1	90,879	88,333	-22.80
2	105,558	122,803	-3.66
3	159,810	159,736	-20.05
4	192,380	193,100	-19.63
5	302,158	300,483	-20.55

b) Regions

	1995/96	1998/99	Percent Real Change
Northeast	136,250	138,032	-18.69
North	138,387	166,040	-0.02
Central	268,861	274,150	-18.03

Conclusions and Policy Implications

By combining two household surveys conducted before and after the 1997 economic crisis, this report makes considerable progress in answering the questions posed earlier in Part III. According to the data, the crisis indeed led to substantial changes in income and consumption, but these changes were far from being equitably distributed among the rural population. While the analysis confirms some of the conventional wisdom about the rural impact of the crisis, other hypotheses put forth earlier are inconsistent with the data. To summarize:

- the analysis found *little sign of a massive urban to rural migration*, though there appears to have been a slowdown in rural emigration. This finding is consistent with Kakwani's (1998) conclusion that the shock in the urban labor market was absorbed through lower wages and reduced work hours, rather than through unemployment.
- *net remittances declined for all but the richest households* – This again is consistent with Kakwani's (1998) findings that the poorest households experienced the largest decline in this source of income. On the other hand, the poor are less reliant on remittances, and so, on balance, may not have been made so much worse off relative to the rich. Overall, however, off-farm income (inclusive of remittances) declined for the poor, but not for the rich.
- the *regional impacts of the crisis have been heterogeneous*, with the Central region performing much better in terms of consumption and income compared to both the North and Northeast. While unemployment figures suggest that the Northeast was hardest hit, the household data indicate, rather, that the North fared the worst of the three regions.
- the data strongly support the view that *the poor have borne the brunt of the crisis*. Between the 1995/96 and 1998/99 surveys, their expenditures and income (farm and off-farm) fell both in real terms and those relative to the rich. These findings are consistent with the fact that the poor derived most of their income from off-farm sources rather than from their own cultivation, whereas the situation is reversed for

richer farmers. The crisis and attendant events in the rural economy, conspired to improve the profitability of rice production but worsened the labor market situation, thereby helping the rich and hurting the poor.

- *evidence of a credit crunch is absent* in the data. Although the information is insufficient to distinguish changes in the supply of credit from changes in demand, a rural credit crunch would have made itself apparent in a large decline of outstanding loans. Such a decline simply did not materialize.
- finally, *the impact of the crisis on farm production and income was mixed*. Rich households did much better in terms of farm profits and yields than poor households, and households in the Central region did much better than those in the North and Northeast. It is possible that the beneficial macroeconomic events – higher rice prices and lower fertilizer prices – were counterbalanced for smaller farmers by the reduced cash flow for input purchases (and to some extent by the regionally differentiated impact of the drought). However, differences in fertilizer expenditures across quintiles were not dramatic enough to explain differences in rice yields. In any case, since the poorest farmers derive most of their income from non-farm sources, explaining their relative performance in their own cultivation is of secondary importance.

From the policy perspective, the findings of this report raise some important issues. One can envision *two types of rural policy responses to the crisis*: changes in agricultural policy and changes in social policy (targeted to rural areas). As to the first type of policy, during the crisis period, the macroeconomic environment was generally favorable to Thai agriculture, which has been made abundantly clear in this report. It could perhaps be argued that farmers would have benefitted more had increases in the international price of rice been fully transmitted to the farm-gate. But even such a policy change would not have helped the rural poor very much, as they are not the main beneficiaries of higher rice prices. Likewise, expansion of rural lending through the BAAC is unlikely to have been effectual, given the absence of a credit crunch and no signs of reduced fertilizer use. Changes in social policy, by contrast, may be worth considering. Temporary social programs targeted to the rural poor, such as workfare, could be effective in providing support for households dislocated as a result of the crisis. However, the situation in rural Thailand is fluid and must be closely monitored as the economy recovers. Whether economic growth can fully repair the fabric of the social safety net is an important topic for future research.

POSTSCRIPT

A recent review of the ADB and the World Bank (World Bank, 1999 and 2000) reveals that Asia's recovery from the 1997 financial crisis has been faster than expected. The economies of the five affected countries started to stabilize in the second half of 1998.

The ADB's *Asian Development Outlook 2000* states:

> "*The year 1999 saw the resolution of the financial crisis in developing Asia and acceleration of global growth, ..., Asia posted a strong growth that meant almost tripling the growth rate from the previous year.*"

This has been due mainly to the increase in *exports* and the growth in the *manufacturing sector*, especially the electronics and electrical sectors in response to expanding global demand. Korea's recovery has been rapid, while the Philippines, Malaysia

and Thailand has shown positive, though slow, economic growth. Indonesia will probably continue to stagnate. One way to gauge the extent of recovery is to compare per capita income levels in local constant prices with their pre crisis levels. By the end of 1999, only Korea had exceeded its previous level of GDP per capita. This, however, has not yet happened in the other four affected countries, despite the fact that growth rates of GDP have increased from those of 1997. Thailand, for example, had a 4.2-percent growth in its 1999 GDP and was projected to increase to 5 percent in 2000, compared to -1.7 percent in 1997 and -10.2 percent in 1998 (Table 21). It appears that structural problems remain serious in these countries, especially Thailand, where progress in bank restructuring has been slow (ADB, 2000a).

Due to the faster-than-anticipated recovery, the social impacts of the crisis have turned out to be less serious than originally feared. The fast recovery may be attributed to three factors: the ability of the agriculture to absorb unemployed labor; the effect of public-transfer programs in some countries; and to some extent the existence of an informal safety net. However, a full social recovery will still take a long time.

Table 21. Growth Rates of GDP in Five Southeast Asian Countries, 1998-2001

(Unit: percent)

	1998	1999	2000	2001
Indonesia	-13.0	0.3	4.0	5.0
Korea	-6.7	10.7	8.8	6.5
Malaysia	-7.4	5.6	6.0	6.0
Philippines	-0.6	3.3	4.0	4.5
Thailand	-10.2	4.2	5.0	5.0

Source: International Monetary Fund, 2000.

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2. IMPACT OF FINANCIAL CRISIS ON PRODUCTIVITY OF AGRICULTURE: KOREAN CASE

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INTRODUCTION

The financial crisis of Asia began by the sudden fall of the Thai baht in July 1997. Since then, the Asian economies have been depressed. At the threshold of the new millenium, the Japanese economy stagnated for a long time, and the unrest of politics and economy of Taiwan, as well as the unsatisfactory restructuring of economies in South-East Asian countries and the Republic of Korea (henceforth referred to as Korea), reflect the gloomy economy of Asia. These economic depressions of the Asian countries are due to not only external factors, such as the liberalization of the world economy, but also internal factors such as the unstable economic and political situation in each country.

Although Korea received bailout money from the International Monetary Fund (IMF) in December 1997, it is still in the center of Asia's financial crisis and has trouble overcoming it. In Korea, the financial crisis spilled over politics, society and other sectors as well as the economy. For example, the value of won dropped sharply, unemployment rate increased, the *Chaebal* (conglomerate) collapsed, many enterprises and banking agencies became bankrupt, and political power changed. This crisis also had effects on the production of agriculture sector and changed the consuming pattern of agricultural products. Agricultural production declined in response to a decrease in the demand of agricultural products. Thus, some labor forces U-turned to the agriculture sector from non-agriculture sectors. The influence of financial crisis on agricultural production was not smaller than on the non-agriculture sectors.

This study shows the impact of the financial crisis on Korean agriculture and agricultural productivity. The analysis here approaches from the following viewpoints. Firstly, the impacts of financial crisis on the agriculture sector varied according to the economic development level and agricultural characteristics. Since different economic development levels, demand of agricultural products and agricultural production technology or trade dependency is different, far-reaching effects caused by financial crisis are dissimilar. Secondly, the influence of the financial crisis changes the price of agricultural output and input directly.

This study is focused on Korea. Therefore, characteristics of the Korean economy, agriculture and condition of the financial crisis in Korea needs to be understood first. Next, the general influence of financial crisis on agricultural productivity is discussed. The financial crisis in Korea doubtfully influenced the agricultural production system. Therefore,

it is necessary to understand how much influence the financial crisis had on agricultural productivity in Korea; this will be analyzed later.

WHAT HAPPENED IN THE KOREAN ECONOMY?

Structure of the Korean Economy and Its Agriculture Sector

Through the five-year economic development plan, which started in 1962, Korea accomplished rapid economic development. In particular, during the third economic development plan period (1971-76), Korea experienced a variety of changes and developments, which is known as the turning point of Korean economy.

As shown in Table 1, GNP per capita in the mid-1960s was less than US$1,500. But after 30 years (in the mid-1990s), it was up to US$10,000. This resulted from a rapid annual growth of 7 percent. For the last three decades, the Korean economy has had the highest growth that any country has ever experienced. As a result, some shares in the industrial structure shifted from agriculture to manufacturing, and then to services.

Table 1. Trends of the GNP Per Capita and the Industrial Structure in Korea, 1965-97

Year	GNP Per Capita[a]	Share of GDP (percent)[b]			Share of Labor Force (percent)		
		A	I	S	A	I	S
1965	1,374	37.2	24.2	38.6	58.5	10.4	31.2
1975	2,670	24.9	33.4	41.7	45.7	19.1	35.2
1985	4,709	12.5	41.0	46.5	24.9	24.4	50.6
1995	10,056	6.5	43.3	50.1	12.4	23.6	64.0
1997	11,028	5.7	42.9	51.4	11.3	21.4	67.3
Annual growth rate							
1965-75	6.9	4.0	16.9	9.9	1.2	10.3	5.0
1975-85	5.4	1.1	13.5	7.3	-3.5	5.1	6.3
1985-97	7.3	1.3	9.7	8.6	-3.7	1.8	5.4
1965-97	6.7	2.3	12.5	8.6	-2.1	5.4	5.5

Sources: World Bank, 1999, *World Development Indicators* CD-ROM; and Korea Statistical Information System, Korea National Statistical Office, Internet site.

Note: [a] At 1995 constant price (US$); and [b] A = agriculture, forestry and fishery, I = industry, and S = SOC and other services.

As regards its share of GDP, agriculture accounted for 37.2 percent in 1965 that however declined to less than 6 percent in 1997. Over the same period share of industry and services in GDP increased from 24.2 and 38.6 percent, respectively to 42.9 and 51.4 percent. Until the mid-1970s, agriculture recorded 4 percent annual growth rate that slowed to about 1 percent in mid-1990s. However, the industrial sector kept setting records with growth rate of more than 10 percent.

In the share of labor force among the sectors, agriculture accounted for 58.5 percent in the mid-1960s, but decreased to 11.3 percent in 1997. On the other hand, that of services started to increase remarkably. The agriculture sector saw increases in the number of employees until the mid-1970s and then experienced a decrease in labor of more than 3 percent annually. Since the mid-1980s, the agricultural employment growth rate has been slowed to less than 2 percent against the growth rate of 10 percent until the mid-1970s.

Since the mid-1990s, the industrial structure of the Korean economy has been similar to that of developed countries. The level of GNP per capita is close to that of an upper to middle income economy indicating that the Korean economy is close to becoming an advanced economy.

The Agricultural Production Structure

Agriculture production in Korea has experienced remarkable changes in the past 30 years (Table 2). First, total agricultural production achieved a high annual growth rate of about 5 percent, until the first half of the 1970s. Despite lower growth rates later on, the sector recorded annual growth rates of 4 percent from the early 1960s to the late 1990s. For the growth rates by sub-sector, the growth of the crop production sector has been stagnant, while the growth of the livestock production sector has been relatively greater (about the level of 5 percent). As the Korean livestock farming has been the intensive type, unlike those of Europe, the U.S.A. and Australia, and so forth, it should have imported much feed grain because of the soaring demand for livestock products and the given conditions of the domestic agricultural production factors.

Table 2. Structural Changes in the Agricultural Production

Year	Agricultural Output[a] (US$ million)			Agricultural input			
	Crops	Livestock	Total	Land (000 ha)	Labor (000 person)	Fertilizer[b] (000 mt)	Tractors (000)
1961/63	1,576	218	1,794	2,098	5,270	326	0.0
1971/73	2,316	537	2,853	2,280	5,701	668	0.2
1981/83	3,172	1,262	4,434	2,241	5,451	700	5.7
1991/93	3,438	2,676	6,114	2,138	3,302	955	65
1996/98	3,567	3,432	6,999	1,987	2,706	924	134
Annual growth rates (percent)							
1961/63-1971/73	3.9	9.4	4.7	0.8	0.8	7.4	25.3
1971/73-1981/83	3.2	8.9	4.5	-0.2	-0.4	0.5	37.9
1981/83-1991/93	0.8	7.8	3.3	-0.5	-4.9	3.2	27.5
1991/93-1996/98	0.7	5.1	2.7	-1.5	-3.9	-0.7	15.7
1961/63-1996/98	2.4	8.2	4.0	-0.2	-1.9	3.0	28.0

Source: Young-Bong Yu, 2000.
Notes: [a] 1979-81 constant US dollar; and [b] N+P+K total.

Let us see the trend of the main input factors of production, to grasp the technological progress in agricultural production. The input of land and labor, among other factors, began to decrease from the mid-1970s. This reflects the smooth transition into the structure of land- and labor-intensive technology in the Korean agriculture, which was caused by the overall economic growth. This trend in labor greatly intensified in the 1990s, and the decreasing input of land has been striking. However, there have been increases in other factors. For instance, fertilizer consumption increased 3 percent annually and agricultural machinery such as tractors showed an annual growth of 28 percent during the last 35 years.

As this increase or decrease in the input factors reflects the technological progress, the Korean agriculture shifted to capital-intensive agricultural production technology by substituting land and labor for fertilizer and machinery. This trend was greatly intensified in 1990s. The input of the chemical fertilizer in the late 1990s showed the same trend as those of the developed countries. And the growth rate and input amount of chemical fertilizers began to fall. However, agricultural machinery input, such as tractors, increased steadily.

Demand for Agricultural Products

On the basis of the rapid growth in the Korean economy and the technological changes of the agricultural production sector, the demand of agricultural products has also experienced drastic changes in the past 30 years. In general, the demand of agricultural products increases according to the economic growth, and becomes stagnant if it reaches a certain level in a high-income economy. The increase in demand for the products changes from inferior goods to superior goods. In other words, under the early stages of economic development, the consumption of cereals rises, and after that, consumption shifts gradually to the demand of vegetables, fruits, meat and milk products. In the maturity stage of high-income economies, the trend leads to an increase in the demand of safe, healthy and environmental-friendly food.

Table 3 shows the trend of the annual food consumption per capita from the early 1960s to the recent years. First, the demand in cereals decreased during the mid-1970s. Since the demand for rice fell after the early 1980s, the consumption level was less than 100 kg per capita in the late 1990s. This trend was caused by the changes in the consumption patterns, which was induced by the rising income. The demand for fruits, vegetables and livestock products is still increasing, and the rise in the consumption of livestock products is outstanding compared to the increases in demand for other agricultural products. However, since the early 1990s, the increases in the consumption of fruits and livestock products have been sluggish, and the consumption of vegetables has already shown an annual growth rate of less than 1 percent since the early 1980s. This confirms that the demand in crop products except livestock products entered the stagnant phase in Korea after the mid-1990s.

Table 3. Trends and Annual Growth Rates of Food Consumption in Korea, 1961/63-1996/98

Year	Food Consumption Per Capita (kg/year)					
	Cereals[a]	Rice	Fruits[b]	Vegetables	Meat	Milk[c]
1961/63	179	105	6	75	4	2
1971/73	227	118	13	106	6	4
1981/83	192	123	30	194	15	11
1991/93	167	99	59	204	31	21
1996/98	166	95	64	210	39	22
Annual growth rates (percent)						
1961/63-1971/73	2.4	1.2	8.5	3.5	3.9	5.3
1971/73-1981/83	-1.6	0.4	8.4	6.3	10.1	11.8
1981/83-1991/93	-1.4	-2.1	7.2	0.5	8.0	6.9
1991/93-1996/98	-0.1	-0.8	1.4	0.6	4.4	1.1
1961/63-1996/98	-0.2	-0.3	7.0	3.0	6.9	6.9

Source: FAOSTAT Agriculture Data, Food Balance Sheet.
Notes: [a] Except beer; [b] except wine; and [c] except butter.

Figure 1 depicts the above trend very well. The demand in cereals increased gently until the mid-1970s, thereafter it has been falling steadily. The consumption of vegetables remained stagnant after the second half of the 1970s. The consumption of fruits rose until the mid-1990s, but has recently been stagnant. Meanwhile, the demand for milk has been stagnant after it increased until the late 1980s. The demand for meat is still rising, but its annual growth rate has fallen during the 1990s. Therefore, it is probably safe to say that the demand for agricultural products in Korea is characterized by the consumption saturation and the diversification of consumption patterns that can be found in the developed countries.

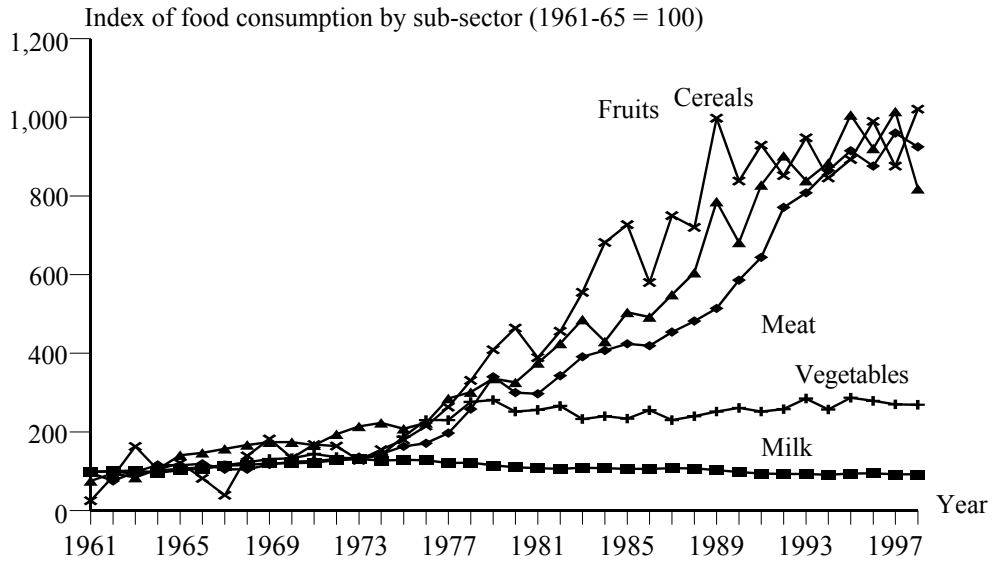


Figure 1. Index of Food Consumption by Sub-sector, 1961-97
(1961-65 = 100)

Source: FAOSTAT Agriculture Data, 1999, Food Balance Sheet (CD-ROM).

FINANCIAL CRISIS AND STRUCTURAL REFORM IN THE KOREAN ECONOMY

As Korea was struck by the currency devaluation in Asia, which started in Thailand in July 1997, the Korean Won value fell at least 59 percent in six months. On 3 December 1997, the IMF agreed to offer US$57 billion with the purpose of reducing the financial crisis in Korea. Thereafter Korea has carried out the restructuring program based on the IMF's recommendations. Figure 2 shows how the foreign exchange rate in Korea skyrocketed in December 1997, with the highest rate in January 1998. The year 1998 was the toughest restructuring period in the Korean economy, and it was the turning point of rapid recovery from the currency crisis. The Won value did return to the pre-crisis level. After the upward trend from September 1998, the Korean Composite Stock Price Index (KOSPI) has again shown a downward trend from December 1999. This trend may be attributed to the following reasons: the restructuring of corporate and financial sectors, which was expected after 1997,

did not materialize, even at the end of 1999, when the signs of the economic recovery appeared. Economic recovery has yet to be achieved smoothly.

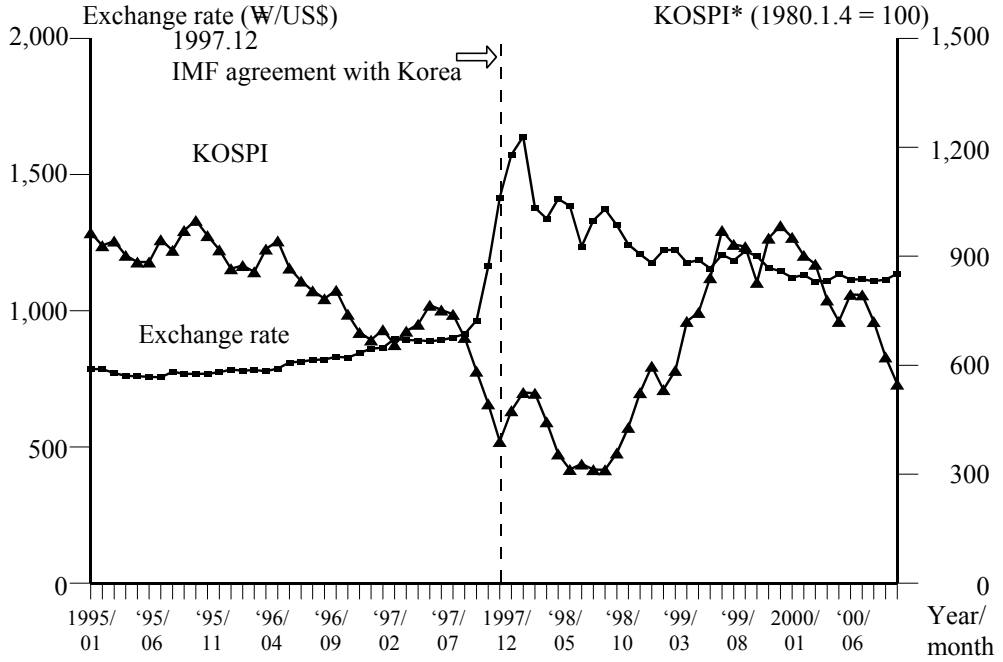


Figure 2. Trends of the Exchange Rate and the KOSPI, 1995-2000

Source: Korea National Statistical Office, Korea Statistical Information System, Inter-net Home Page, December 2000.
Note: * Stock average of period.

This financial crisis, which started in December 1997, has brought about various changes in the Korean economy (Table 4). The GDP growth rate decreased to -6.7 percent in 1998, which was right after the crisis, but showed an upward trend of 10.7 percent in 1999. This growth rate is the highest among the ones after 1998. Specifically by industry, the revival in the manufacturing industry was most remarkable (from -7.5 percent growth rate in 1998 to 13 percent in 1999). The growth rate of the agriculture sector was -6.6 percent in 1998, a slim gap compared to that of the industrial sector, but the upward trend remained very sluggish relative to the industrial sector, at a level of 4.7 percent. This indicates that the impact of the financial crisis on the Korean agriculture was different from that on the manufacturing industry.

Due to the aftermath of company restructurings, and so forth after the currency crisis, the unemployment rate at the level of 3.1 percent in December 1997 continuously increased to record the unprecedented highest level of 8.6 percent in February 1999. As the economy entered the recovery phase after that time, the rate decreased to 4.8 percent in December 1999, 3.6 percent in September 2000, to gain stability, but it is premature to say that it is going into complete recovery just because it has recently shown a slightly increasing trend.

Table 4. Indicators of the Korean Economy, 1995-99

Indicators		Unit	1995	1996	1997	1998	1999
GDP growth		Percent	8.9	6.8	5.0	-6.7	10.7
GDP per capita		Percent	7.8	5.7	4.0	-7.6	9.6
Value-added, growth rate:	Agriculture	Percent	6.6	3.3	4.6	-6.6	4.7
	Industry	Percent	10.3	7.0	5.4	-7.5	13.0
	Services	Percent	9.9	7.5	6.5	-4.7	9.8
Share of GDP:	Gross domestic savings	Percent/GDP	35.4	33.5	32.5	33.9	33.0
	Gross domestic investment	Percent/GDP	37.2	37.9	34.2	21.2	26.8
Unemployment rate		Percent	2.0	2.0	2.6	6.8	6.3
Consumer prices		Percent	4.5	4.9	4.5	7.5	0.8
Merchandise exports growth		Percent	31.2	4.3	6.7	-4.7	10.1
Merchandise imports growth		Percent	31.9	12.3	-2.2	-36.2	29.0
Balance of trade		US$ million	-4,444	-14,965	-3,179	41,627	28,716
Foreign direct investment		US$ million	1,776	2,325	2,844	5,143	n.a.
Exchange rates to the dollar (average of period)		₩/US$	771	805	951	1,401	1,190

Source: Asian Development Bank (ADB), 2000.

According to the rapid trend of economic recovery, consumer prices came back to the stability status. The inflation rate soared to the level of 7.5 percent in 1998, but fell to 0.8 percent in 1999, which was the lowest in the history of the Korean economy. In addition, the balance of trade turned from deficit to surplus, and the merchandise exports growth rate recovered from -4.7 percent in 1998 to 10.1 percent in 1999, whereas the merchandise imports growth rate increased to 29 percent in 1999 in contrast to -36.2 percent in 1998.

The Korean economy has experienced rapid recovery thanks to the implementation of IMF programs, expansionary macroeconomic policies and financial reform since the banking crisis. But, due to the decreased level of factory operation, the increased unemployment rate, the shrinking consumption, the delayed corporate and financial sector reform, signs of another stagnation begin to appear. Thus, recently concerns are raised about the transition into the long-term cyclic W-pattern, even when the Korean economy was expected to enter the recovery trend of V-pattern in getting out of the shock of the currency crisis in the early 2000.

IMPACT OF THE FINANCIAL CRISIS ON THE AGRICULTURAL PRODUCTIVITY

The effects of the financial crisis on the agriculture sector may be divided into direct and indirect effects. First, the direct effect is on agricultural production. It influenced the industries related to agricultural input goods, such as chemical fertilizers, pesticides, agricultural machineries, seeds, feed, as well as the factor market. It will also affect the supply of the intermediate goods. Besides, it will further have an effect on the trade sector, the consumer market of agricultural products, agricultural finance and banking, etc., to affect the agricultural production sector. The financial crisis consequentially influences the production cost and the price of the agricultural products.

The impact of the financial crisis on agricultural production and productivity can be illustrated with a simple diagram (Figure 3). First, its influence on the production sector will increase the input costs of the intermediate goods, which lead to the increase in production costs. It will also affect the wage, rent and interest rate to increase production costs. In addition, the increase in banking costs in the financial sector will bring about the increased costs in both the facility investments of the agriculture sector and agricultural funding. For the trade sector, the higher import costs will serve as the elements of both the increased prime costs in the agricultural inputs sector and the increased prices in the imported agricultural products. But, for the export sector, the decreased export unit price of agricultural products will lead to increased export competitiveness. Besides, the stagnation of the overall national economy will bring about shrinking consumer demand and further lead to a decrease in the demand for agricultural products.

Such an effect will generally lead to a rise in production cost, a fall in the price of agricultural products, and it will further cause a decrease in the productivity of the agriculture sector. In particular, increased input costs of intermediate goods will lead to a decrease in value-added production, to have an effect on the agricultural productivity.

The after-effects of the financial crisis on the agricultural production sector will vary according to the features of the agriculture that absorb its shocks. Among other things, its effects will be greatly different according to the trade dependency of the agriculture sector. The degree of the financial crisis shock will vary in proportion to the import or export dependency of the agricultural products and the trade dependency of the agricultural intermediate goods (for instance, the intermediate goods including grain for feed, chemical

fertilizer and seeds, etc.) The shock of the crisis will be different according to the demand patterns of the agricultural products closely related to the income levels. In other words, the shock will be much greater when the consumption of the agricultural products is in saturation than that when the food consumption is in shortage. This is due to the elasticity of food demand for price, and it means that the gaps of both the decreasing prices and the shrinking consumption vary according to the features of demand.

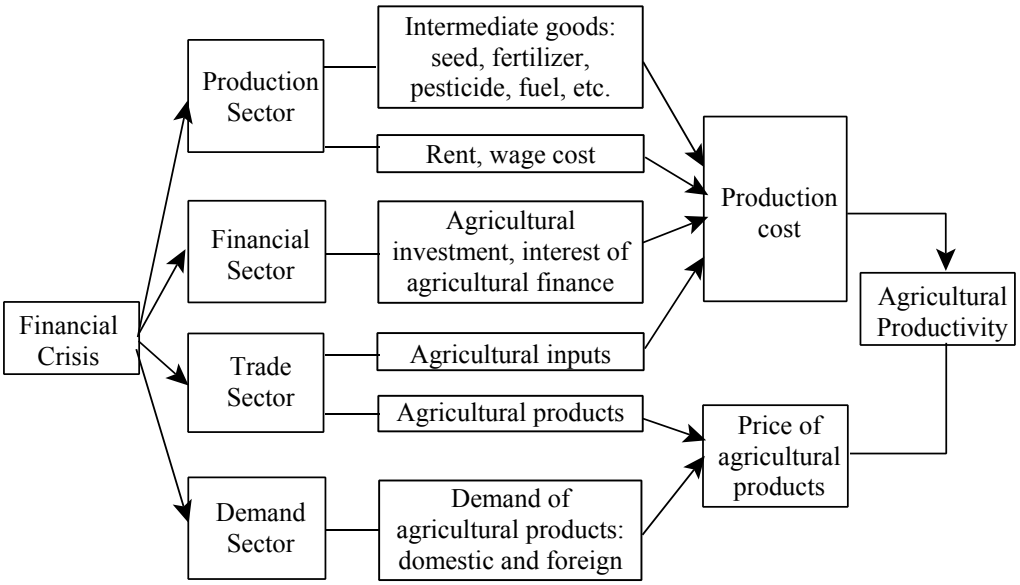


Figure 3. Effect of the Financial Crisis on Agricultural Production

Korean agriculture is import-dependent because while it imports feed grain, raw materials for pesticides, chemical fertilizer and seeds for flowers and vegetables, the export volume of the agricultural products is relatively negligible. Therefore, the impact of the financial crisis on agricultural productivity is relatively greater in Korea than that in the export-dependent countries. As the demand for agricultural products enter the phase of consumption saturation, the shrinking consumption and decreasing prices of agricultural products in the wake of reduced income will be the expected trend at least in the near future. These effects will vary by farm size as well as by commodity.

Impact on the Agriculture Sector

As shown in the previous Figure 3, the impact of the financial crisis has effects on the cost of agricultural production and the price of agricultural products. Impact of the financial crisis is relatively large for an import-dependent agriculture like one in Korea. In this part, let's discuss what has happened to the Korean agriculture since December 1997.

1. ***Agricultural Production***

The value-added output of the agriculture sector decreased to -6.6 percent in 1998 and increased to 6.2 percent in 1999 (Table 5). The livestock production increased to 2.9 percent

in 1998, but value-added decreased to -3.0 percent. It was due to the 7.7-percent increase in the cost of intermediate goods. The cost increase of intermediate goods was due to an increase in production cost, which led to decreasing value-added agricultural products. In particular, Korea has an intensive livestock production system that depends heavily on feed grain. An intensive livestock production system dependent on imported feed grain is one of the sectors that was influenced directly by the financial crisis.

Table 5. Value-added in Agriculture at 1995 Constant Prices

(Unit: ₩ trillion)

Year	Value-added in Agriculture	Crop Production			Livestock Production		
		Intermediate Goods	Value-added	Total Output	Intermediate Goods	Value-added	Total Output
1990	16.37	3.26	14.63	17.89	2.88	1.74	4.62
1995	19.72	3.52	16.67	20.19	4.11	3.05	7.16
1996	20.54	3.50	17.18	20.68	4.40	3.36	7.76
1997	21.41	3.29	17.88	21.17	4.41	3.53	7.94
1998	20.00	3.17	16.58	19.75	4.75	3.42	8.17
1999	21.24	3.15	17.73	20.88	4.60	3.51	8.11
Annual growth rates (percent)							
1990-95	3.8	1.5	2.6	2.5	7.3	11.8	9.1
1996	4.2	-0.6	3.1	2.4	7.1	10.2	8.4
1997	4.2	-6.0	4.1	2.4	0.2	5.1	2.3
1998	-6.6	-3.6	-7.3	-6.7	7.5	-3.1	2.9
1999	6.2	-0.6	6.9	5.7	-3.2	2.6	-0.7

Source: Ministry of Agriculture and Forestry, *Agricultural and Forestry Statistical Yearbook 2000*.

As shown in Table 5, the share of intermediate goods in livestock production is over 50 percent, much higher than in the crop production sector (15 percent in 1999). This rate, which was 55.6 percent in 1997, increased to 58.1 percent in 1999. As a result, economic crisis in Korea caused the cost of intermediate goods to rise sharply, and led to the drop of value-added output. This impact caused the production decline of crops and livestock by -7.3 and -3.0 percent, respectively. However, the value-added output of livestock and crops in 1999 returned to the level of 1997.

2. ***Terms of Trade***

The drop in value-added output in the agriculture sector occurred due to the following two factors. One is the fall in total output caused by the drop in the total production amount or the fall of the total output value caused by the decline of price of products. The other is the drop in value-added output caused by the increase in the price of intermediate goods. The price change of agricultural products and intermediate goods had an effect on these two factors. The financial crisis influenced these two factors. The cost increase of imported materials, wages and the interest burden induced the rise in the price of intermediate goods, while total output value decreased due to price-drops stemming from decline in consumption because of the economic depression. This is shown in the change in terms of trade in agriculture (Figure 4).

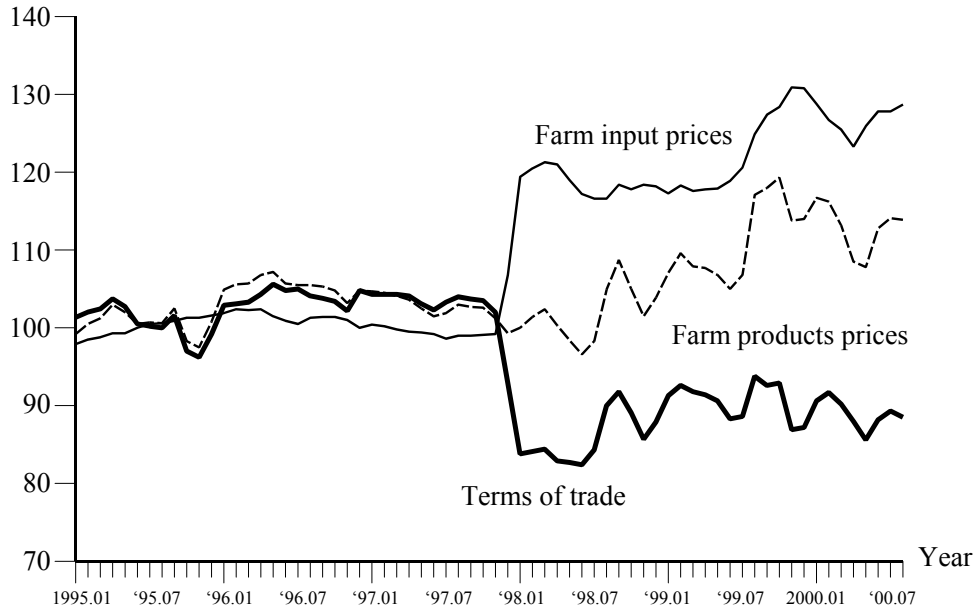


Figure 4. Terms of Trade in Agriculture, January 1995-July 2000

Source: Korea National Statistical Office, Korea Statistical Information System.

Figure 4 shows the terms of trade, consisting of an index of farm inputs price by using the index of farm purchasing prices and the index of farm selling prices. When the financial crisis occurred in December 1997, the terms of trade deteriorated sharply but recovered somewhat in the second half of 1998. But until August 2000, it was still below 90. This was because the farm purchasing prices index increased up to 130, and did not recover to the level of pre-financial crisis.

The price of intermediate goods, which depend on imported raw materials, was most vulnerable to the financial crisis. Figure 5 shows the change in the pattern of main intermediate goods. The price of fuels increased most sharply. Price index of fuels was up 83 percent, from 132 in November 1997 (before the crisis) to 241 in March 1998 (after the crisis). Also, within a month from November 1997, the price index of feeds, machinery, fertilizer and chemicals increased by 35, 47, 41 and 34 percent, respectively. With an exception to the recovery of the price of feeds, this price increase had not yet returned to the level of pre-financial crisis. This caused the cost of farm management to rise, and led to deteriorated terms of trade.

The price index of farm selling price has however decreased. As shown in Figure 6, with the exception of the price of cereals (including paddy rice), livestock price index has decreased since the second half of 1997. The fruits price index has shown fluctuation, repeating a decline and a sharp rise rally. The decline in livestock price was attributed to a decrease in consumption caused by impacts of the financial crisis. It decreased until mid-1998 and again showed instability in early 2000. Price fluctuation of fruits still continues because of the instability in the demand-supply balance. Such unstable changing patterns in the farm selling price have effects on the farm gross income and cause terms of trade to deteriorate.

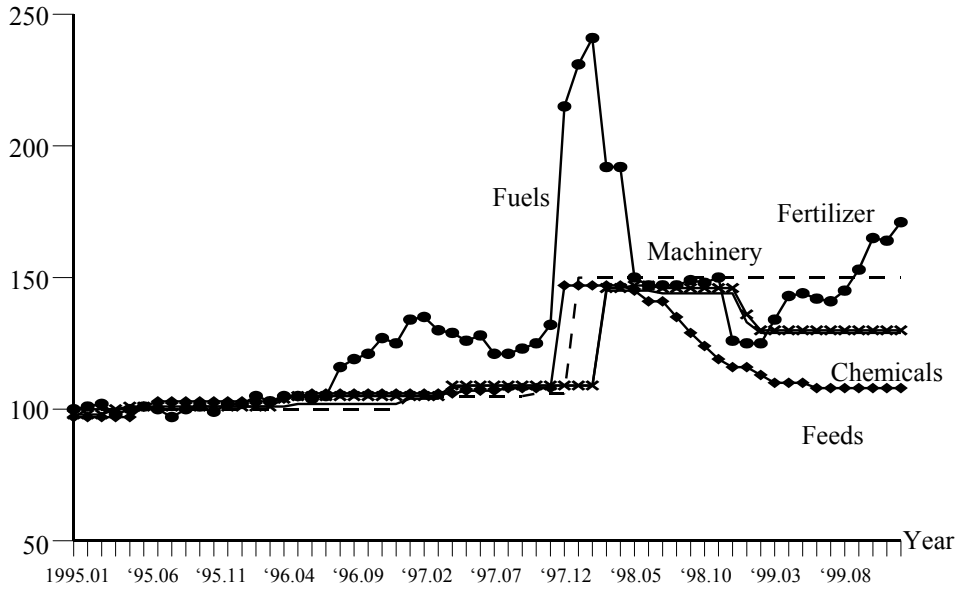


Figure 5. Indices of Farm Purchasing Price by Commodity, 1995
(year average = 100)

Source: Korea National Statistical Office, Korea Statistical Information System.

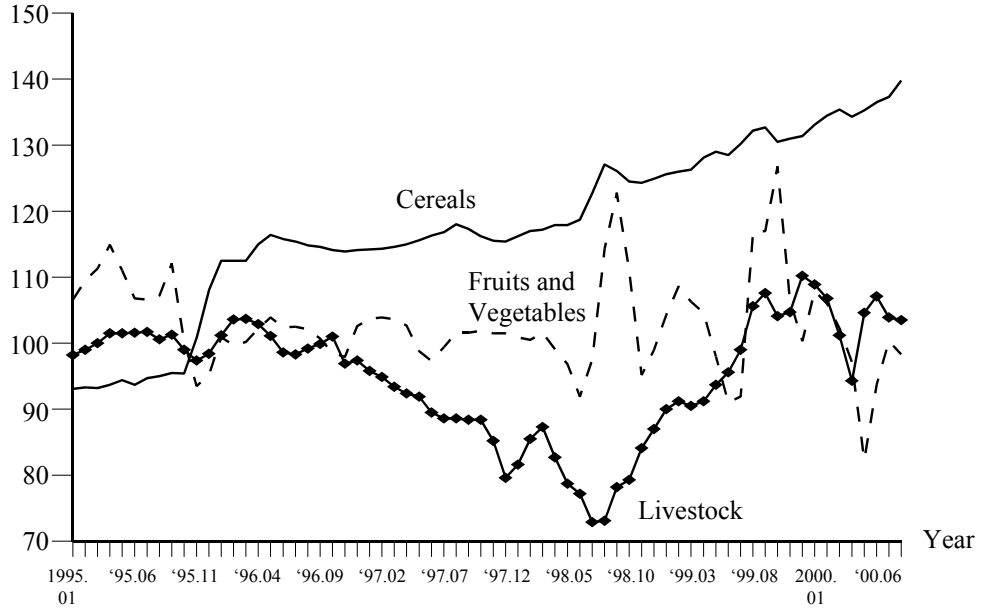


Figure 6. Indices of Farm Sealing Price by Sub-groups, 1995
(year average = 100)

Source: Korea National statistical Office, Korea Statistical Information System.

Change in the Labor Market

The Korean financial crisis also affected on the labor market. The rise in unemployment rate caused labor force to go to other industries. The agriculture sector received the U-turn of this labor force. The number of U-turn farm increased from 371 in 1990, to 922 in 1995 and to 1,841 in 1997. Annual growth rate from 1990 to 1997 increased by 25.7 percent. But, in 1998 right after the crisis, it increased to 6,409 by 248 percent. As a result, steadily decreasing employment in agriculture, forestry and fisheries in 1997 increased to 2.48 millions in 1998. In 1999, the number of U-turn farms decreased to 4,118 and employment in agriculture, forestry and fisheries went down 5.3 percent to 2.35 millions.

Figure 7 depicts trends of the number of U-turn farms by age group. The U-turn phenomenon is most common for people in their 30s and 40s. This reflects that it is comparatively hard for the aged people to decide to U-turn.

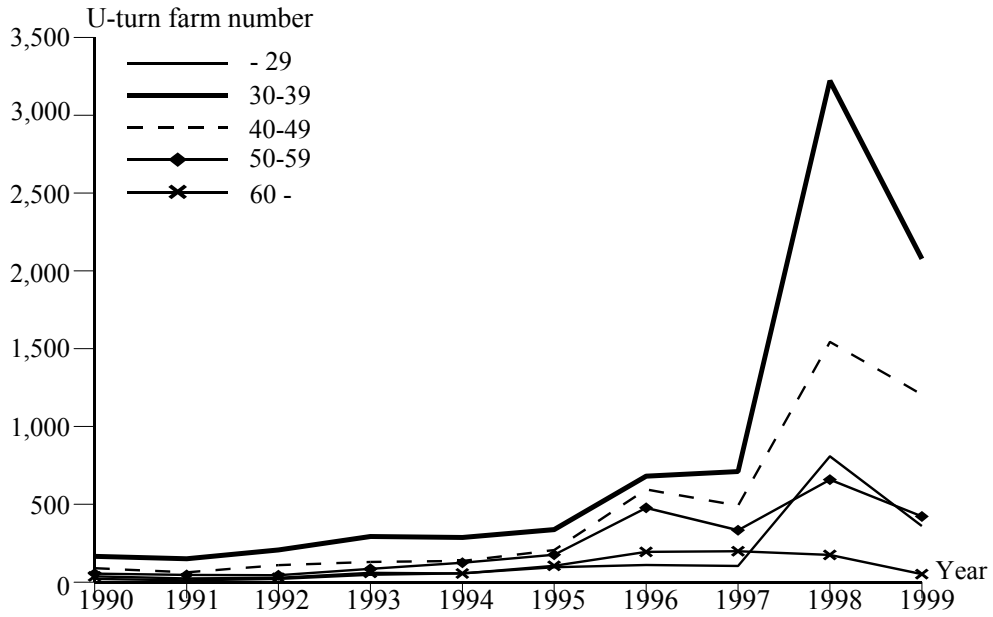


Figure 7. Trends of U-turn Farm Number by Age Group

Source: Ministry of Agriculture and Forestry, Internet Home Page.

The financial crisis influenced the shift of labor force. The agriculture sector played a role in easing the impacts on labor markets. However, in the agriculture sector, the increase in the number of U-turn farms caused labor productivity to decline.

Trade of Agricultural Products

The financial crisis had an effect on agricultural products trade. Heavy effects were seen on the imported agricultural products market because Korea is an agricultural products importing country. In particular, the import of feed grain is so essential in Korean livestock that a financial crisis is disastrous.

As shown in Table 6, the balance of payments (BOP) in Korea was all negative in 1998. The deficit range of BOP of agricultural products decreased from US$6.1 billion in

1997, to US$4.0 billion in 1998. The import of agricultural products, crop products and livestock products fell to 29, 26 and 43 percent, respectively. In particular, the import of feed grain, fruits and meats decreased by 34, 44 and 44 percent, respectively, that strongly influenced domestic consumption. The downfall in the value of the Won caused export competitiveness to rise, and export of some goods (such as pork) to increase. However, because Korea is a net importer of agricultural products, imports increased again with the recovery of the exchange rate, after the financial crisis. In 1999, imports of all items, with the exception of grain and coffee, increased again. This result is very different from that of net exporter of agricultural products. In Korea, the negative effect of the financial crisis on the domestic market was through agricultural products trading market.

Farm Income and Farm Debts

The negative impact of the financial crisis on agricultural production, terms of trade and trading market also led to negative influence on the farm economy, e.g., value-added output, farm income and farm debts per average farm. As shown in Figure 8(a), average value-added per farm was ₩9.27 million in 1998, down 30 percent from that of 1997. Over the same period farm income was down 12 percent. As a result, farm debts went up 30 percent. In particular, though farm income and value added output recovered somewhat in 1999, farm debts increased by 18 percent (up to ₩10.6 million).

Farm debts have increased, due to more interest burdens since the financial crisis. It is a big burden to the greenhouse horticultural farms and large-scale farms. Figure 8(b) depicts farm debt trends by farm scale. The large-scale farm income increased @21 percent in 1999 against 14 percent in 1998. The increase in farm debts has been one of the hot issues of Korean agriculture since the crisis. While in 1999, the average income for farms with more than 5 ha was ₩45.1 million, farm debts amounted to ₩73.8 million, which signify a serious problem. Such debt problems also exist in small-scale farms. As of 1999, the average income for farms with less than 0.5 ha was ₩2.8 million with an average debt of ₩13.1 million. Farm debts have added to the financial cost burden, and it has both direct and indirect effects on agricultural production activities.

Change in Agricultural Productivity

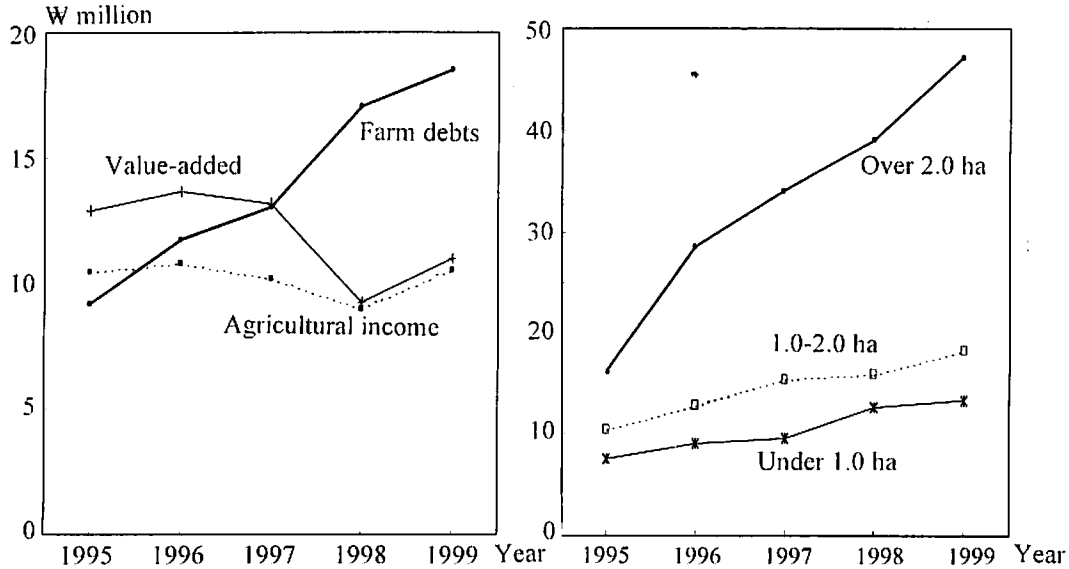
The impact of the financial crisis on Korean agriculture caused value-added output to decrease. This was due to the cost increase of intermediate goods, and also the price decrease of agricultural products. These price changes led to the decline in agricultural productivity. Also, a recovering Korean economy boosted the value-added output in the agriculture sector as well as a recovery in productivity. As a result, agricultural productivity experienced a sharp drop in 1998, but a soaring recovery in 1999.

As shown in Table 7, agricultural value-added output fell in 1998 (-6.6 percent) and a recovery in 1999 (6.2 percent) was distinctively under way, while the input trend of agricultural land was not so different from that of the past. However, labor input was up 5.4 percent in 1998 with the increase in U-turn farms, for the first time since the mid-1970s. In 1999, labor input decreased by 5.6 percent, slightly lower than the level of agricultural labor in 1997. The temporary increase in labor force in 1998 caused the land/labor ratio to decline, and then to rally again in 1999.

Table 6. Trends of Agricultural Products Trade, 1996-99

Product	Net Trade Value (US$ million)*				Export Growth (percent)			Import Growth (percent)		
	1996	1997	1998	1999	1997	1998	1999	1997	1998	1999
Merchandise total	-20,624	-8,452	39,031	23,933	5	-3	9	-4	-35	28
Agricultural products:	-6,728	-6,111	-4,033	-4,486	6	-8	4	-7	-29	9
Crops	-5,748	-5,146	-3,691	-3,678	2	-15	0	-8	-26	0
Cereals	-2,591	-1,910	-1,630	-1,519	8	6	15	-26	-15	-7
Feed grains	-97	-110	-66	-99	2	-38	-8	8	-34	52
Fruits	-261	-283	-155	-250	-8	32	60	7	-44	48
Vegetables	-91	-102	-35	-11	-20	17	59	2	-23	27
Coffee	-119	-164	-127	-106	48	-38	-29	41	-27	-20
Livestock	-980	-965	-342	-837	22	21	6	3	-43	71
Meat	-539	-547	-127	-449	21	28	8	7	-44	77
Milk products	-166	-150	-88	-129	26	5	-24	-8	-39	40

Source: Ministry of Agriculture and Forestry, *Agricultural and Forestry Statistical Yearbook*.
Note: * Net trade value = total export value - total import value.



(a) Trends of Average Farm Income, Value-added and Farm Debts

(b) Trends of Farm Debts by Farm Scale

Figure 8. Trends of Farm Economy, 1995-99

Source: Korea National Statistical Office, Korea Statistical Information System.

Land productivity and labor productivity decreased to -5.9 and -11.4 percent, respectively in 1998 but rallied again in 1999.

This phenomenon in terms of productivity trends by farm scale is shown in Table 8. In 1998, land, labor and the capital productivity of an average farm was negative and down by 32, 28, and 33.5 percent, respectively compared to that in 1997. In 1999, this productivity growth rate rallied between 15 percent and 19 percent, but did not reach the pre-financial crisis productivity level. By farm scale, the labor productivity of large-scale farms was higher than that of medium- and small-scale farms. Small-scale farms have a lower than average rate of productivity, while large-scale farms have higher than average rates of productivity, these two extremes have a balancing effect. Because the financial crisis had a heavy impact on small-scale farms, the labor productivity went down 39.3 percent in 1998, but went up by only 6.2 percent in 1999. It is different from large-scale farms, where labor productivity decreased to 25.1 percent in 1998, but then gained 19.5 percent in 1999.

However, land productivity of small-scale farms was higher than that of large-scale farms. Even so, the decrease in land productivity of small-scale farms caused by the financial crisis and the subsequent increase during the recovery were not paralleled to those of large-scale farms. The land productivity of small-scale farms declined to 46.2 percent in 1998 and rose to 12.4 percent to 1999. The corresponding productivity rates for the large-scale farms were 26 and 24.8 percent, respectively. The change in the trends of capital productivity is similar to that of labor productivity. The impact from the financial crisis and the recovery changes the trends of other types of productivity as well.

Table 7. Trends of Agricultural Productivity and Growth Rates, 1990-99

Year	Agricultural Value-added (₩ trillion)	Land (000 ha) (A)	Labor (000 persons) (B)	Land per Labor (A/B)	Productivity	
					Land (₩ million/ha)	Labor (₩ million/person)
1990	16.37	2,109	3,152	0.67	7.76	5.19
1995	19.72	1,985	2,419	0.82	9.93	8.15
1996	20.54	1,946	2,322	0.84	10.56	8.85
1997	21.41	1,924	2,276	0.85	11.13	9.41
1998	20.00	1,910	2,399	0.80	10.47	8.34
1999	21.24	1,899	2,264	0.84	11.19	9.38
Annual growth rate (percent)						
1990-95	3.8	-1.2	-5.2	4.2	5.0	9.4
1996	4.2	-2.0	-4.0	2.1	6.3	8.5
1997	4.2	-1.1	-2.0	0.9	5.4	6.3
1998	-6.6	-0.7	5.4	-5.8	-5.9	-11.4
1999	6.2	-0.6	-5.6	5.3	6.8	12.5

Source: Ministry of Agriculture and Forestry, *Agricultural and Forestry Statistical Yearbook*.

Table 8. Indices and Growths of Agricultural Productivity by Farm Scale, 1995-99

Year	Labor Productivity				Land Productivity				Capital Productivity			
	Average	<1 ha	1-2 ha	>2 ha	Average	<1 ha	1-2 ha	>2 ha	Average	<1 ha	1-2 ha	>2 ha
1995	100	83	95	122	100	161	115	89	100	81	100	105
1996	100	77	93	125	100	152	112	81	100	78	105	103
1997	100	79	92	140	100	154	113	89	100	81	103	110
1998	100	69	100	149	100	119	114	95	100	69	106	124
1999	100	63	100	153	100	112	112	100	100	64	104	140
Annual growth rate (percent)												
1996	12.6	4.5	10.5	15.2	4.9	-1.3	2.1	-4.3	-13.1	-16.2	-9.0	-15.1
1997	2.0	4.9	0.5	13.9	-3.0	-1.9	-2.4	6.7	-3.8	0.0	-5.4	3.7
1998	-29.9	-39.3	-23.6	-25.1	-30.8	-46.2	-30.1	-26.0	-37.3	-47.0	-35.2	-29.6
1999	16.4	6.2	15.7	19.5	19.4	12.4	17.0	24.8	15.6	6.8	13.2	30.3

Source: Ministry of Agriculture and Forestry, *Agricultural and Forestry Statistical Yearbook*.

Table 9 compares the increase in the rates of intermediate goods costs, the input amount of the chemical fertilizer and labor input in 1998 and 1999. This will allow us to look into the trends of land and labor productivity. The financial crisis has had effects on the decrease in value-added output. Also, it severely damaged the production of greenhouse horticulture. The decline in value-added output resulted from the increase in the cost of intermediate goods, the drop in output price, as well as a decrease in factor input. As shown in Table 9, the decrease in the input of chemical fertilizers and labor was remarkable in 1998. In particular, the decline in the chemical fertilizer input continued in 1999. As a result, land productivity of most commodities dropped sharply in 1998. Even in 1999, with the recovery, land productivity has not reached a satisfactory level. However, the recovery trend in 1999 for land productivity was better than that of labor productivity.

In sum, the financial crisis had heavy impacts on agricultural productivity through the price system. Korean agriculture depends heavily on imports, so the impacts of the production cost increase and value-added output decrease are highly reflected. As a result, agricultural productivity in 1998 fell sharply. Recovery is underway in 1999 in the economy, but it will be difficult to return to the pre-financial crisis level. Low productivity, decrease in farm incomes and increase in financial burdens have aggravated troubles of farms.

CONCLUSIONS

Starting from December 1997, the impacts of Korean financial crisis spreaded to all the sectors of economy in 1998. The agriculture sector was not an exception, and in the dark atmosphere of economic recovery, the instability of this sector was getting more serious. In 1999, the Korean economy experienced remarkable recovery in the indicators of macro-economy. However, as of December 2000, external and internal factors remained stumbling blocks to a prosperous future of Korean economy. External factors consisted of unstable oil prices, the long depression of the Japanese economy and the low growth of the US economy. Internal factors are the decline in the manufacturing operation capacity rate, a widening gap of income between the rich and the poor, and a fluctuating exchange rate.

Under these conditions, the financial crisis impacts on Korean agriculture have been very serious for the past three years. The impacts on the agriculture sector varied according to the level of agricultural production technology and the demand for agricultural products. In the midst of the economic crisis in 1997, Korean agriculture heavily relied on the import of agricultural intermediate goods, the capital-intensive agricultural production and the import of various agricultural products such as grains, fruits and meats. GDP per capita reached the level of US$10,000 and food consumption was limited. Consumer needs changed from the demand for traditional foods to higher quality foods. The financial crisis caused the input cost of agricultural intermediate goods such as fertilizer, fuel, pesticide and feed grains to rise. Decrease in the demand of agricultural products caused prices to drop. Value-added output of the agriculture sector fell sharply in 1998. Therefore, agricultural productivity decreased rapidly. There was a recovery in the agricultural production sector, led by economic recovery in 1999, but it did not return to the pre-financial crisis level.

The impacts of the financial crisis varied with the farm scale and the type of farming. In Korea, large-scale farms and greenhouse horticultural farms suffered severely. Small-scale farms could not recover yet because of their low productivity. Farm debts skyrocketed, which was caused by a worsening farm economy. There is a great possibility that the financial crisis caused investments to decrease, which led to the downturn in the agricultural production

Table 9. Growth Rates of Agricultural Productivity by Products, 1998 and 1999

(Unit: Percent)

Product	Value-added		Intermediate Goods Cost		Chemical Fertilizer (kg)		Labor Input (hour)		Productivity			
									Labor		Land	
	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999
Rice, paddy	-2.5	7.6	19.6	1.5	2.5	4.2	6.1	-5.8	-8.1	14.2	-2.5	7.6
Apple	-1.1	6.8	18.1	5.3	1.7	-25.6	-9.2	-11.1	8.9	20.2	-1.1	6.8
Pear	-17.2	5.7	20.4	4.4	-15.9	-4.1	-8.8	-8.4	-9.1	15.3	-17.2	5.7
Cucumber (GH)	-29.6	5.4	12.4	-2.5	-19.7	-5.3	-0.9	4.8	-29.0	0.5	-29.6	5.4
Tomato (GH)	-12.5	-1.8	2.8	19.8	-1.3	-12.8	-24.9	22.3	16.6	-19.7	-12.5	-1.8
Orange (GH)	-54.5	43.9	2.6	-22.9	-11.4	74.8	24.9	2.4	-63.6	40.6	-54.5	43.9
Grapes	-16.8	-12.2	17.2	6.5	-8.7	-11.6	-9.5	-4.3	-8.0	-8.2	-16.8	-12.2
Rose	-14.2	19.4	18.0	5.5	-31.2	0.0	-3.0	-0.6	-11.5	20.1	-14.2	19.4

Source: Rural Development Administration Internet Home Page.

Note: GH means greenhouse products.

sector. If the stability of the Korean economy is not to secured, agricultural input and output price will be unstable. This will pose an obstacle to technological development and agricultural investment that, in turn, will help in boosting productivity. In short, the impact of financial crisis on agricultural production is in sight and its recovery will be underway in the long run. To overcome the impacts of the financial crisis, stable agricultural interest rates must be secured.

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3. AN OVERVIEW OF THE IMPACT OF FINANCIAL CRISIS ON PRODUCTIVITY OF AGRICULTURE IN THE ASIA-PACIFIC REGION

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INTRODUCTION

Since early 1980s, developing countries, especially in Asia, have shown remarkable economic growth. New industrialized countries such as Taiwan, Korea, and Singapore soared with double-digit economic growth, while agriculture-based economies like Indonesia, Malaysia, Thailand, the People's Republic of China and the Philippines followed at 7-10 percent (Table 1). These figures are much higher than those of the developing countries in Far East Asia, Africa and Latin America. During the same period, free market economies, especially in the United States and Western Europe, underwent a slower economic growth, around 1-3 percent per annum. Based on this trend, some futurists believed that Asia would become the most important part in the world economy. This hypothesis seemed to be true until a severe financial crisis and economic recession hit some Asian countries.

Behind the remarkable growth of Asian countries, there are some weaknesses that have not been properly addressed. There are potential external shocks related to open trade and investment. The domestic resource endowment, the state of dependency on external sources, the investment climate, the economic development stage and the income level are among the most important factors that determine the ability of a country to face external shocks. However, Asian domestic currencies were usually overvalued and had been maintained at a level to support the importation of capital and the development of the manufacturing industry though to the varying extent. The impacts emerged when the market mechanism operated without any space or time barriers.

In 1997, the economic crisis started in Thailand, followed by Korea, Indonesia, Malaysia and the Philippines, respectively. Appreciation of the US dollar in these countries affected the whole economy at different intensities, depending on its economic condition, macro-economic fundamentals, and other burdens such as poverty alleviation, poor people income generation, domestic industry promotion and other social concerns.

Since the carefully designed agricultural development in the latest 1960s, Indonesia has made substantial agricultural infrastructure investments in irrigation, research, extension and credit provision that moved the country from a state of food shortage in rice to one of self-sufficiency in 1984. Since then, more attention has been paid to the development of manufacturing industries, and not agriculture-based industries (foot-loose industries). Almost

all of the manufacturing industries developed in the last two decades are supported by the heavy importation of capital and raw materials, and financed by foreign loans. The value gained is related to the low domestic wage rate, which is certainly not considered as comparative advantage.

Table 1. World Economic Growth Rates, 1995-99

Country	1995	1996	1997	1998	1999
World	3.8	4.3	4.2	2.5	3.0
Developed Countries:	2.6	3.2	3.2	2.2	2.8
Seven main countries	2.2	3.0	2.9	2.2	2.6
U.S.A.	2.3	3.4	3.9	3.9	3.7
Japan	1.5	5.0	1.4	-2.8	0.8
Germany	1.7	0.8	1.8	2.3	1.4
France	2.1	1.6	2.3	3.2	2.5
Italy	2.9	0.9	1.5	1.3	1.2
United Kingdom	2.8	2.6	3.5	2.2	2.3
Canada	2.8	1.7	4.0	3.1	3.6
Others	4.3	3.9	4.2	2.1	3.5
Developing Countries:	6.1	6.6	5.8	3.2	3.5
Africa	3.0	5.9	3.1	3.4	3.1
Far East and Europe	3.7	4.7	4.5	3.2	1.8
Latin America	1.5	3.6	5.3	2.2	0.1
Asia	9.1	8.2	6.6	3.7	5.3
NIEs Asia	7.3	6.2	5.8	-1.8	5.2
People's Republic of China	10.5	9.6	8.8	7.8	6.6
Indonesia	8.2	7.8	4.7	-13.2	0.2
Singapore	8.2	7.5	9.0	0.3	4.5
Malaysia	9.4	8.6	7.7	-6.7	2.4
Thailand	8.8	5.5	-1.3	-9.4	4.0
Philippines	4.7	5.8	5.2	-0.5	2.2
Vietnam	9.5	9.3	8.2	3.5	3.5
Countries in Transition:	-0.5	-0.3	2.2	-0.2	0.8
Middle and East Europe	1.6	1.6	3.0	2.2	1.0
Russia	-2.4	-3.4	0.9	-4.6	-
Trans-Caucasus and Middle Asia	-4.4	1.6	2.5	2.2	2.0

Source: Bank Indonesia, 1999.

This paper provides an overview of the Asian financial crisis, factual conditions of the financial crisis, its evolution, its impacts, and the policy measures taken by the government. Although the paper does not discuss any country in particular, some illustrations are shown using Indonesian case. A significant amount of data and citation have been taken from the publications of the World Bank, Central Bank (Bank Indonesia), and books written by Prasetiantono (2000), Kwik Kian Gee (1998), and studies conducted by the Center for Agro-Socio-Economic Research.

EVOLUTION OF THE FINANCIAL CRISIS

Dynamic Changes in the World Economy

The last decade was marked with several important changes, among others are: (1) rapid development of ICT, and bio-technology that changed the direction of world economic development and global economic situation; (2) new role of government in public management, as initiated by several noted writers such as David Osborn, Peter Plastrik, Peter Senge and many others has changed government management policies substantially. This is expressed in the simple famous phrase of *steering rather than rowing*; (3) the implementation of multilateral and regional agreements on trade, tariff, and economic cooperation by the World Trade Organization (WTO), Asia-Pacific Economic Cooperation (APEC), ASEAN Free Trade Area (AFTA), etc. has made every single country reevaluate its economic development policies in order to gain from the free trade; and (4) the growing concern about food security, the environment, and human rights that to some extent affect the economic decision and most certainly resource allocation. These changes have made what is it called a borderless world and borderless economy come into reality.

No developing country should isolate itself from the world economy. However, by linking itself to the world economy, a country also exposes itself to external shocks (Krugman, 1991). It can experience economic disturbances that originate from events outside of the country. When the General Agreement on Tariffs and Trade (GATT) was signed in Marrakesh in 1994, new era of international trade and investment was born. The agreement is expected to benefit all countries. Every country in the world anticipates this by exploring and exploiting its most competitive sector of economy and using resources effectively to achieve comparative advantage. However, the implementation is not always smooth due to the different readiness of each country and the further development of several social movements that limit the trade access such as environment, human right, and food security and food safety. Up until now, there are some unfinished disputes that originated from the self-interest of individual countries. When the United States imposed a tariff on Japanese cars, Japan practiced a highly protective policy on its agricultural products. Other countries try to be cautious in international trade by prioritizing their own interests. Food security and the multi-functionality of agriculture are also among the many disputable issues between the WTO member countries.

Big problems currently being faced by most emerging markets, including ASEAN, are the availability, accessibility and mobility of large short-term capitals as an alternative to solve the domestic saving problem (saving-investment gap). This will be a potential *boomerang* because it can be easily invested and withdrawn from a country. The Mexico crisis in 1994 was basically a case of short-term capital investment. More intense money markets and domestic currency speculation also add to the intense fluctuation of the exchange rate.

Process of the Financial Crisis

Crisis in Asia was triggered by the regional contagion effect in Thailand. The combination of overinvestment, bad debts, a huge foreign loan in the private sector (around US$90 billion), and an overvalued exchange rate of the baht forced the Thai Government to devaluate the baht in July 1997. The crisis was expected to spread fast to the neighboring countries, especially Indonesia because of the similarity in the characteristics and economic

fundamentals in the two countries. Both economies were characterized by over investment, high bad debts and large foreign loan.

Changes in the economic indicators in some Southeast Asian countries explain how the financial crisis occurred in these areas (Table 2). Prior to the crisis, exchange rates, unemployment rates, and Consumers' Price Index (CPI) were quite stable. Also real GDP increased steadily. However, current account balances were mostly at deficits with relatively high rates of 5-9 percent. The capital account balance rate was quite high, at 8-13 percent, and similarly investment rose at high rates and some economies overheated. Inflation rates in the People's Republic of China, Indonesia, and the Philippines were in double digits. Most Asian countries gained from the international trade.

Thailand's economy increased by 8-9 percent per year, prior to the crisis in 1997, and investment grew at remarkable double digits. However, the current account deficit was high, more than 6 percent of the GDP. Upon entering the crisis, the current account deficit was 8.9 percent. Inflation rose during the crisis, but declined sharply only in one year afterwards. The baht depreciated from ฿25/US$1 to around ฿31/US$1 in 1997 and reached the peak of ฿41.37/US$1 in 1998.

The financial crisis in Indonesia was first identified by the depreciation of Indonesia's Rupiah into US dollar in mid-1997, when the value of US$1 increased from Rp.2,383 in 1996 to Rp.4,650 in 1997. Then, the value of the US dollar continued increasing until it reached a peak of Rp.14,900 per US dollar in May 1998. Under this situation, international creditors immediately forced the Indonesian private sector to pay the loan, or at least reject the extension of the short term or extraordinary short-term maturity. Since then, the rupiah exchange rate declined rapidly.

Some Asian countries such as Thailand, the Philippines, and Indonesia have similar economic characteristics, namely:

1. High economic growth (around 7-8 percent) was achieved by the high investment on properties beyond the real demand, which resulted in bad debts (around 30 percent). Therefore, depreciation of the local currency has had a large domino impact on the economic activities.
2. Many physical constructions that encouraged imports were financed by foreign loan, some of them being short-term loans. The payment of short-term loans increased the demand for the US dollar for a very short time, which further decreased the exchange rate of domestic currency.
3. Baht, peso and rupiah have been overvalued for a long period of time. Thailand and the Philippines adopted a fixed exchange rate, under intervention from their Central Bank. In the case of Indonesia, an overvalued rupiah (in 1996 the exchange rate was Rp.2,300/US$1) stimulated the import-based industry, such as automotive and manufacturing, and to some extent discouraged local resources that were based on investment and export. Import became cheaper and easier until the external shock.
4. Increasing wage rates gradually reduced the competitiveness of commodities of the three countries in the international markets. Other countries such as Vietnam, China, Sri Lanka and Lao DPR have taken over the labor-intensive industries such as textile and foot-ware, due to the advantage of low labor wage rates.

Table 2. Macro Indicators of Selected Asian Countries

Indicators	1992	1993	1994	1995	1996	1997	1998	1999
People's Republic of China:								
Real GDP	14.2	13.5	12.6	10.5	9.6	8.8	7.8	7.1
Investment	12.9	24.9	15.6	15.5	10.4	7.1	14.4	5.2
Current account balance	1.33	-1.98	1.42	0.23	0.89	3.29	3.03	1.58
Capital account balance	0.05	3.91	4.68	4.74	4.89	2.54	0.00	0.08
CPI	6.4	14.7	24.1	17.1	8.3	2.8	-0.8	-1.4
Exchange rate	5.5	5.76	8.62	8.35	8.31	8.28	8.28	8.28
Unemployment rate	2.3	2.6	2.8	2.9	3.0	3.1	3.1	3.1
Indonesia:								
Real GDP	7.2	7.3	7.5	8.2	7.8	4.7	-13.1	0.3
Investment	n.a.	n.a.	13.8	14.0	-3.0	8.6	-33.0	-20.0
Current account balance	-2.2	-1.5	-1.7	-3.4	-3.5	-3.0	4.3	4.1
Capital account balance	4.6	3.9	2.3	5.3	4.9	1.5	-4.1	-3.2
CPI	4.9	9.8	9.2	8.6	6.5	11.1	77.6	2.0
Exchange rate	2,030	2,087	2,200	2,308	2,383	4,650	8,025	7,050
Unemployment rate	2.7	3.1	4.4	7.2	4.9	4.8	5.5	6.4
Republic of Korea:								
Real GDP	5.1	5.8	8.6	8.9	6.8	5.0	-5.8	10.7
Investment	0.8	5.2	11.8	11.7	7.3	-2.2	-21.1	4.1
Current account balance	-1.5	0.1	-1.2	-1.9	-4.4	-1.7	12.5	6.1
Capital account balance	2.1	0.8	2.7	3.6	-0.1	-0.1	0.1	-0.1
CPI	6.2	4.8	6.2	4.5	5.0	4.4	7.5	0.8
Exchange rate	788.4	808.1	788.7	774.7	804.5	951.3	1,401.4	1,188.6
Unemployment rate	2.4	2.8	2.4	2.0	2.0	2.6	6.8	6.3

... To be continued

Continuation

Indicators	1992	1993	1994	1995	1996	1997	1998	1999
Malaysia:								
Real GDP	8.9	9.9	9.2	9.8	10.0	7.5	-7.5	5.4
Investment	11.0	17.8	16.1	22.8	8.2	9.2	-43.0	-5.9
Current account	-3.9	-4.8	-7.9	-10.2	-4.6	-5.9	13.7	17.1
Capital account	7.2	8.5	6.2	7.8	5.6	7.2	4.0	4.5
CPI	4.7	3.6	3.7	3.4	3.5	2.7	5.3	2.8
Exchange rate	2.5	2.6	2.6	2.5	2.5	2.8	3.9	3.8
Unemployment rate	3.7	3.0	2.9	3.1	2.5	2.4	3.2	3.0
Philippines:								
Real GDP	0.3	2.1	4.4	4.7	5.9	5.2	-0.6	3.3
Investment	7.8	7.9	8.7	3.5	12.5	11.7	-16.3	-1.7
Current account	-1.6	-5.5	-4.6	-4.4	-4.8	-5.3	2.4	9.5
Capital account	3.5	5.2	7.1	4.6	13.4	8.0	0.7	-0.9
CPI	8.6	7.0	8.3	8.0	9.1	6.0	9.8	6.6
Exchange rate	25.5	27.1	26.4	25.7	26.2	29.5	40.9	39.1
Unemployment rate	9.8	9.3	9.5	9.5	8.6	8.7	10.1	9.7
Thailand:								
Real GDP	8.1	8.4	9.0	8.9	5.9	-1.7	-10.2	4.2
Investment	n.a.	n.a.	11.4	11.0	7.4	-21.7	-44.2	-4.8
Current account	-5.5	-4.9	-5.4	-7.9	-8.1	-0.9	13.3	9.1
Capital account	8.49	8.4	8.4	13.0	10.7	-3.4	-8.9	-6.3
CPI	4.1	3.3	5.0	5.8	5.9	5.6	8.1	0.3
Exchange rate	25.4	25.32	25.15	24.92	25.34	31.37	41.36	37.84
Unemployment rate	2.8	2.6	2.6	1.71	1.54	1.51	4.37	4.17

Source: Asian Development Bank.

The financial crisis also stuck the incredible economy of the Rep. of Korea. Strength of the macro-economic foundations of the Korean economy, which supported its double-digit economic growth, was being questioned. Before the crisis, real GDP of the Rep. of Korea rose between 5-9 percent and investment climbed up to 11.8 percent in 1995. The country managed low inflation rates and its current account deficit was less than 2 percent, except in 1996, when current account rose to a still-reasonable 4.4 percent. The Rep. of Korea's agricultural infrastructure is one of the best in Asia. Hence, with these figures no one expected the financial crisis to hit this country. However, political and other internal business problems in the Rep. of Korea were expected to bring some serious economic problems. The Korean won almost doubled in value within four years of economic instability. Similarly, unemployment jumped from 2 percent to 6.8 percent in 1998. In 1997, investment declined by 43 percent. The Government of the Rep. of Korea finally requested for financial assistance from the International Monetary Fund (IMF). Remarkably, the Korean economy rebounded from the crisis in only six months. In early 1998, the country's GDP moved from -5.8 to 10.7 percent.

Japan experienced a much slower growth and an increase in unemployment, but it soon recovered. However, the yen depreciation is one of the economic policies of Japan used to increase exports. This policy has been very successful, as of 1998 and 1999, its exports increased tremendously. There was practically no significant financial problems in Japan during the Asian economic crisis in 1997-99. The yen was devaluated from around ¥103-106/US$1 in 1996, to ¥120/US$1 in 1997 and 1998, and then reached the peak at more than ¥140/US$1. But the yen was able to appreciate to reach the initial value of 1996 in early 2000.

Malaysia was known to have no problems with foreign loans. It managed to have a low inflation at the rate of 2 percent, an economic growth of 8 percent, and a per capita income of US$4,500. It seemed that the economic fundamentals of this country were very strong. However, the foreign account deficit was quite large (US$5.5-6 billion), which was around 7-10 percent of GDP in 1994 and 1995. In comparison, Indonesia had less than 4 percent, and Thailand had around 8 percent. Furthermore, foreign loans, especially of the private sector, have been very high for Indonesia (Table 3).

Table 3. Indonesia's Foreign Loans, 1997-99

(Unit: US$ million)

Item	1997	1998	1999
Government	53,865	67,315	75,763
Private	82,223	83,572	65,618
Bank	14,364	10,769	10,063
Non-bank	57,588	67,515	52,630
Bond	10,271	5,288	2,915
Total	218,311	234,459	206,989

Source: Bank Indonesia, 1999.

Malaysia was able to maintain high investment which declined by 43 percent preceding the economic crisis. However, the capital account balance was maintained positive, at 4-7 percent. Malaysia's economy also recovered very fast. In 1999, its real GDP grew at 5.4 percent.

The exchange rate of a currency is determined by the supply and demand for that currency but the transactions also depend largely on non-economic factors. During the crisis, when political and social stability are quite unstable, any occurrence that may lead to positive or negative market sentiment or expectation of future conditions of the country, directly reflected in the exchange rate. This movement in the exchange rate is also accelerated by the higher amount of activities in the money market and the improvement of the information system; hence any changes will be transmitted immediately. Unfortunately, unstable currency and fluctuating exchange rates, tend to be interesting field for speculation.

The Cyclic Effects of the Financial Crisis

The financial crisis has a substantial effect on the whole economy. For instance, a weakening domestic currency has cyclic effects on other economic sectors, which in turn worsen the exchange rate (Figure 1).

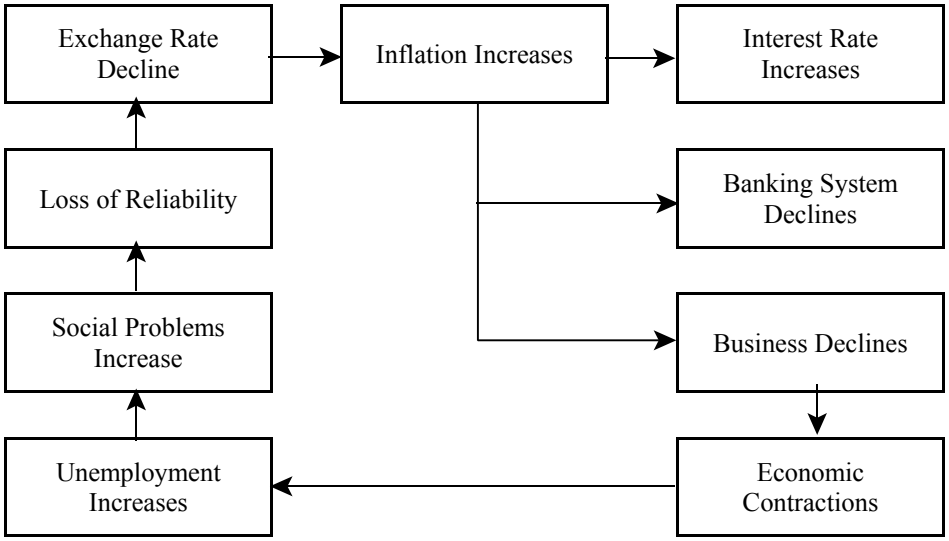

Figure 1. The Process of Financial Crisis

1. ***Inflation Rate and Interest Rate***

A declining exchange rate causes the inflation rate to increase, followed by an increase in the interest rate as the logical policy to control inflation. Imported goods will be more expensive in local currency and therefore consumers will have to pay more for the same amount of goods. This causes higher inflation. To control the inflation, the government/ banks have to set a higher interest rate to control borrowing.

2. ***Banking Systems are Severely Affected***

A high interest rate and a low demand for money have negative impact on the banking system because these will directly affect the lending and borrowing activities. In addition, bad debts due to bad banking management have lost credibility for a large number of banks.

3. ***Investment and Business Activities***

To the whole industry, this is a sign of low investment, low business activities, low production, low input and a lowering of other related activities. Many businesses close down, reduce their activities, or operate under capacity so that they can maintain minimal loss. This

results in a contraction of the national economy, along with an increase in the unemployment rate, and lowers the average income.

4. ***Social Problems***

To many countries, the whole adverse impacts might include an increase in social problems, disturbances, crimes, riots and social instability. When these problems arise, a loss of credibility might happen. This will in turn adversely affect the exchange rate, to cause further vulnerability and instability.

Impacts of the Financial Crisis on the Whole Economy

Fluctuations in the exchange rates have important effects on the price of exports and imports. The direction of these effects depends on which currency one uses to measure prices. If movements in the US dollar affected import and export prices equally, an adverse import shock would be matched by a favorable export shock. Experience suggests that the effects of the changes in the exchange rate in the export and import prices of developing countries are not equal. When the US dollar rises, dollar import prices in developing countries seem to fall less than their export prices. The net effect is that when the US dollar rises, it worsens the term of trade in the developing countries (Kruger, 1991). A possible explanation is that, whereas prices of commodities are highly flexible, prices of manufactures are often somewhat inflexible. Econometric evidence suggests that the rise of the dollar may be an important factor in the failure of commodity prices to rise during the 1982-85 period of recovery. For developing countries, when a country's terms of trade decline, any given volume of export pays only for a smaller volume of imports. Therefore, the country has to reduce import volume, increase export volume, or increase borrowing. If the country does borrow abroad or has engaged in such borrowing in the past, it becomes exposed to shocks that originate from the capital market.

Since the financial crisis is an external shock, the ability of a country to handle such a crisis depends, among others, on its macro-economic foundation, its dependability on external resources, the intensity in resource usage by sectors of the economy, and the initial condition of the economy.

Sectors of the economy may suffer or gain from the financial crisis, at least in a limited region during the short run. The agriculture sector in developing countries, due to its abundance in natural products, uses relatively high portions of its domestic resources. Land, seed, labor, fertilizer, machinery, technology and other capital inputs, are traditionally domestic inputs. In Indonesia, for instance, the impacts could be categorized based on the source of inputs (domestic or import), and the target market of the outputs.

Since traditional agricultural commodities commonly use domestic inputs and are used for domestic consumption, they are not significantly affected by changes in exchange rates (Table 4). Because the cost of production and revenue to producers are in domestic currency, the fluctuation in exchange rates have less impact on agriculture sector. However, farmers growing exportable commodities (rubber, coffee, cocoa, tea, and palm oil) gained substantial profit during the financial crisis.

The poultry farming in Indonesia is an example of an industry that uses a large portion of imported inputs but most of its products are directed for domestic consumption. Input costs paid in US dollar rose faster than the revenue received in domestic currency (rupiah) during the financial crisis. This industry collapsed immediately after dollar value doubled in terms of the rupiah.

Table 4. Impact of the Financial Crisis: Indonesian Case

Source of Input	Market for Output	
	Domestic	Export
Domestic	Traditional commodities such as rice and other food crops were not significantly affected by the external shock.	Rubber, coffee, tea, palm oil, and cocoa are exportable commodities. Farmers gained much from the appreciation of the US dollar, although international prices slightly declined. Other industries survived during the crisis include handicraft, furniture and other art products.
Import	Some imported raw materials such as corn, soybean meals, and fishmeals are used for the poultry industry, where the product (chicken) is mostly for the domestic market. This industry collapsed as the US dollar appreciated.	More than 90 percent of raw materials are imported for the Indonesian textile industry. Since a large portion of the product is for the domestic market, it has to compete with other lower wage rate countries such as China, Bangladesh, Vietnam and Sri Lanka. Therefore, this industry has faced difficulties during the crisis.

THE ECONOMIC RECOVERY PROCESS IN THE REP. OF KOREA, MALAYSIA, AND THAILAND

In 1999, economic conditions of several Asian countries improved. In general, macroeconomic policies implemented by these countries are relatively similar. Differences are mostly related to the intensity and degree of commitment to recovery and socio-political stability. These differences caused variations in the recovery progress between the countries. Significant progress in economic development in the Rep. of Korea, Malaysia, and Thailand may be good examples of the high degree of political commitment to make the rebound from the crisis (Table 5).

With respect to monetary policies, the latter three countries successfully reduced their interest rates to relatively low levels. In the case of fiscal policy, government expenditures were designed to be more expansive in order to balance the weakening private domestic demand. In the banking sector, restructuring was carried out by separating strong financial liquidity from unviable financial institutions. In the mean time, the restructuring in the corporate sector was activated to enhance business activities in the real sectors by encouraging big group companies to restructure their debt and divest their non-core company activities.

The process of economic recovery in the Rep. of Korea, Malaysia, and Thailand initiated from the ability of these countries to take advantage of the opportunity of an increase in the international demand for electronics and computer related goods, and low interest rates and expansive fiscal policies. This supported the recovery process of investment, reduced unemployment, and increased domestic demand. Despite the impressive achievement at the macro level, these countries have not been fully successful in restructuring their financial systems, which would be a challenge to be resolved in the years ahead.

Table 5. Economic Recovery Process in the Rep. of Korea, Malaysia and Thailand

Rep. of Korea	Malaysia	Thailand
Monetary and Financial C Reduced overnight call rates when the exchange value of the Won was stronger. Overnight call rates decreased from 25 percent (March 1998) to 15 percent (July 1998) and kept on decreasing until it reached the level of 4.7 percent in April 1999. C Placed liquidity into banking system. C Strengthened the control functions by consolidating all activities for strengthening financial institutions, i.e., Financial Supervision Commission (FSC), which splitted from the central bank function. The tasks of this institution are to manage insolvent bank and to evaluate CAR, to identify viable institutions, and to take over non-performing loan (NPL) without any conditions from the banks until 30 June 1998.	C Reduced interest rate from 7.0 percent to 6.5 percent in April 1999 and 5.0 percent since May 1999. C Reduced intervention rate in August 1999 at the amount of 50 BP into 5.5 percent, to make a flexible lending rate. C Implemented capital control to prevent capital outflow. C Implemented the fixed exchange rate system. C Restructured the banking sector by establishing the "*Danaharta*" financial institution to take over and manage unresolved credit in the financial system.	C Reduced the bank interest rate – after the inflation rate decreased and exchange rate of Baht was relatively stable from 12.5 percent (July 1997) to 7 percent (February 1999) and finally reached 12.5 percent again in July 1999. C Reduced the liquidity reserve requirement from 2 percent to 1 percent. C Reformed the financial sector by establishing the 'Financial Sector Restructuring Authorities'; which functions to separate healthy financial institutions and insolvent institutions, to increase control mechanism and to give guidance in the restructuring process of the private sector's debt.
Real Sector C Required the big company groups (*chaebol*) to divest as one way for capital restructuring, and to focus the company groups on related business activities. C Amended regulations to allow foreign companies to compete with domestic companies. C Created new regulations to protect minority capital share and to support a more transparent management.	C Amendment of law to enforce companies to conduct debt restructuring, and to protect creditors and the minority capital share. C Practiced transparency in the capital market. C Established Corporate Debt Restructuring Committee to assist recapitulation of corporate sectors.	C Adjusted the 'Lending Criteria' in order to increase export credit. C Reduced tariff on raw materials and value-added tax (VAT) for exporters. C Restructured private sector's debt by establishing 'Debt Restructuring Advisory Committee (CDRAC)' and agreed on the conditions of the debtor-creditor and inter-creditor arrangement. C Amendment on bankruptcy regulations, requirement on public companies and private companies, as well as

... To be continued

Continuation

Rep. of Korea	Malaysia	Thailand
		regulations on land ownership by foreign company were made.
Fiscal Policy C Implemented fiscal policy to speed up the financial sector and corporation restructuring and to reduce unemployment. Fiscal deficit in 1998 was 4.9 percent of the GDP and in 1999 it was 4 percent of the GDP.	C Implemented a tight fiscal policy in 1997 (surplus 2.5 percent of GDP) by postponing several government projects. C Implemented an expansive fiscal policy in order to stimulate economic activities. Fiscal deficit in 1998 was 2.5 percent of the GDP and in 1999 it was 5.5 percent of the GDP.	C Implemented an expansive fiscal policy in order to stimulate economic activities by increasing government expenditure, and reducing tax. Fiscal deficit in 1998 was 5 percent of the GDP and in 1999 it was 6 percent. Fiscal deficit will continue in 2000.
Recovery Program C Economy of the Rep. of Korea recovered in early 1999. C Improvement in export performance is the biggest component in the increase of GDP. Improved GDP was stimulated by the Won depreciation and increase international demand. C High international demand shifted the Korean position from 'price taker' into 'price maker', which resulted in the increase export volume and value. C Capital account balance was also improved due to the availability to 'roll over' short-term loans and the increase in portfolio investment flows into market capital and obligation. C All mentioned above took part in increasing usable foreign reserve since June 1998. C The increase in private sector consumption was	C Malaysia's GDP standard to expand during the second quarter of 1999, which was supported by the improvement in export performance and a recovered domestic demand. C From the supply side, the recovery process was supported by the expansion of the manufacturing industry sector, especially semi-conductors and other electronic products. In the mean time, performance in the agriculture sector was enhanced supported by palm oil production. C The improvement in export performance caused a surplus in trade balance for 24 months in a row. C The improvements of the above external factors along with capital inflow, and both public and private sectors' loan, has advocated for the increase in the foreign exchange stock.	C Economic recovery started since the first quarter of 1999 when economic progress as recorded at 0.9 percent. C This economic expansion was mainly supported by the improvement in export performance and private consumption. C M2 growth has slowed down since September 1998. C Baht appreciated from ฿54.9/US$1 (January 1998) to ฿37.43/US$ 1 (December 1999). C Parallel with Baht appreciation and the decrease of interest rate, the inflation rate was reduced from 10.7 percent in June 1998 to -1.1 percent in August 1999. C The decrease in interest rate has contributed to the increase in consumption. C The problem of *credit crunch* has indicated a positive development after banking recapitulation.

... To be continued

Continuation

Rep. of Korea	Malaysia	Thailand
supported by a low interest rate, income effect and wealth effect. C The enhancement of export volume and foreign demand also supported the increase in investment and labor absorption, and reduced the unemployment level. C Labor absorption caused an increase in income and public consumption.	C A strengthening domestic demand since the second half of 1998 was especially promoted by the decline in the interest rate and the consumer's trust (consumer confidence index). C Inflation rate started to decline since the second quarter of 1999, followed by the decrease in inflation and excessive production capacity.	C NPL decreased since the third quarter of 1999, in line with the decline of loan interest and the progress of the debt restructuring process.
Existing Problems C A continually appreciating Won will become a constraint that prevents export, which is now the driving force of the Korean economy. Appreciation of Won was due to high export value until the third quarter of 1999 as well as massive capital inflow.	C The banking restructuring process has not been finished. C Impacts of fiscal stimulation package has not been as expected.	C Banking restructuring process has not yet finished.

THE IMPACT OF THE FINANCIAL CRISIS ON AGRICULTURE: THE CASE OF INDONESIA

Agriculture cannot be described as a neglected sector in the Indonesian economy. Aggregate government spending on agriculture as a proportion of the total budget and as a proportion of GDP, is the highest in Southeast Asia. The rate of growth of yields has also been among the highest in Southeast Asia. During the boom period, crop production grew steadily, but more slowly than forestry, fisheries, or manufacturing. The crisis reduced the growth of all these sub-sectors, but their growth rate declined less than that of manufacturing. In 1998, output of crop sector was increasing despite the crisis, whereas it was severely contracting in manufacturing. This drew government's special attention to the agriculture sector of Indonesia, because it provides a form of economic ballast during hard times. People can return to agriculture when other industries contract.

The impacts of the financial crisis on agriculture could be summarized as follows:

1. ***Growth Rates***

All sectors of the economy fell from 18 percent to 40 percent in 1998, except for agriculture which grew at 1.1 percent. This was well below the growth rates of 3-4 percent agriculture had experienced in 1995-96, but that represented a small recovery from a growth rate of only 0.9 percent in 1997 during the El Niño drought. Within agriculture, food crop production increased at 1.7 percent. The net effects of the crisis for food crop output appeared

to be positive, due to an improvement in farmers' terms of trade as a result of the depreciation of the rupiah. Estate crop production did not change much, however, rupiah income to farmers increased significantly even though world prices declined. Some of the strongest evidence of the crisis impacts on rural households can be found in the sharp fall in livestock especially poultry output in 1998 (7.1 percent). Poultry industry suffered due to the high importation of input, that was non-profitable to supply to the domestic market.

2. ***Food Prices***

Food prices rose more rapidly than non-food prices, giving rise to concern about food security.

3. ***Social Impact***

a. The urban areas, in general, were affected more severely than rural areas. This reflects the fact that the crisis was initially an urban event. Effects on rural areas have been of secondary consequence to these urban effects. While the El Niño effects have been more severe in rural areas, urban effects have been their secondary consequence.
b. The effects varied widely across the country. Both urban and rural areas in Java were badly affected. This result presumably reflects the high degree of integration between rural and urban areas in Java, shown in the high rates of labor mobility.
c. Areas that were badly affected by the crisis were uncorrelated with the initial levels of poverty. Areas badly affected included both areas initially better-off and poorer areas, while areas not badly affected included initially poorer and better-off areas. This has great importance because this meant that the target of the crisis impact and poverty are not the same.
d. Although urban areas were in general more severely affected, those urban areas that were more severely affected tended to be those where rural areas were also more severely affected, and vice versa.

4. ***Employment***

Early reports on the impact of the crisis suggested large increases in unemployment but actual unemployment appeared to have risen by only small amounts. The impact of the crisis is actually not on the levels of unemployment or on labor force participation, but rather on real wages, which have fallen very significantly. These facts reflect the flexibility of Indonesia's labor markets. A collapse in the demand for labor has been expressed primarily in the decline of its price, rather than in the level of employment. There has been a large sectoral reallocation of employment away from sectors of the economy that have contracted, including construction and services, and more towards sectors which have expanded, notably agriculture.

5. ***Rice Production***

Rice production declined in 1997. The production in 1998 was 47 million mt, and then increased to around 50 million mt with more favorable climatic conditions in 1999. The crisis created problems of input marketing related to both the cost of imports, given the Rupiah devaluation and the financing of domestic production. Uncertainty about the input pricing policy has also been a problem. At the same time, the subsidy for fertilizer was lifted which directly increased the cost to farmers.

6. ***Credit***

The crisis led to a dramatic tightening of credit markets. Bank Indonesia raised interest rates substantially in a bid to attract capital back into the country, and to shore up the exchange rate. Interest rates were raised from about 11 percent to roughly 22 percent at the beginning of the crisis, and then were increased sharply to 70 percent in mid-1998. Once inflation began to cool, the government reduced interest rates to near pre-crisis levels in mid-

1999. To reduce the impact on farmers from the abolition of fertilizer subsidies, the government expanded the existing program of subsidizing credit. A major change in farm credit is that channeling banks are currently asked by the government to be executing banks. Therefore, the banks will be responsible for the process and risk of farm credit.

7. ***Farm Prices***

In general, the exchange rate depreciation increased the price of tradable products and factors relative to non-tradables. This meant an increase in farm prices for commodities such as cocoa, coffee, tea, and to a lesser extent, rice (whose domestic prices are determined in part by world market prices). However, rural farmers also faced higher prices for imported inputs such as fertilizers and engineered seed varieties. Prices of most commodities rose sharply in early 1998 as the exchange rate depreciation caused the increases in tradable prices, and as the government removed subsidies on necessities such as rice and kerosene, as part of an IMF-sponsored reform program. Many non-tradable commodities also experienced price increases, due to higher transport and processing costs. By mid-1999, prices had risen to roughly two-and-a-half times their pre-crisis levels.

1. BANGLADESH

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INTRODUCTION

Bangladesh, with an area of 147,570 km^2 that supports 130 million people (January 2000), has been classified as a least developed country (LDC) of Asia by the United Nations. Population is rapidly increasing at a growth rate of 1.5 percent per annum (Ministry of Finance, 2000) with a density of 882/km^2. The overwhelming majority of the population (80 percent) live in the rural areas and depend primarily on agriculture for their livelihood. The per capita income (US$299) is one of the lowest among the South Asian countries compared to US$436, US$492, and US$827 for India, Pakistan and Sri Lanka, respectively.[1] The people of Bangladesh spend more than half of their income on food.[2]

The 1997 Asian financial crisis has had an impact on the agriculture sector of Bangladesh. This paper attempts to discus such an impact and ways to enhance agricultural productivity.

ECONOMIC AND SOCIAL SITUATION

A look at the composition of the GDP in Table 1 makes it readily evident that the economy is characterized by its heavy dependence on agriculture. Even as late as 1999-2000, 31.9 percent of the GDP originated from this sector though the sectoral share indicated a distinct declining trend during the 1990s. Many factors have inhibited the growth of Bangladesh's overwhelmingly agricultural economy. These include a rapidly growing labor force which cannot be fully absorbed by agriculture, a low level of industrialization and underdeveloped energy resources.

The ratio of investment to GDP from both private and public sources estimated to be at a low 22.41 percent (private 15.68 percent and public 6.73 percent) during 1999-2000 and 22.19 percent in 1998-99, from a level of 20.72 percent (private 13.70 percent and public 7.03 percent) in 1996-97.

Inflation rose to 8.9 percent during 1998-99 from 2.52 percent in 1996-97, but started declining in 1999-2000, which was estimated to be 4.11 percent. An upward trend was observed in the aggregate price level during the first six months of 1998. Prices of food and non-food essential items escalated with the implementation of the pay scale for the public sector employees, rise in the prices of electricity and energy, shortfall in the rice crop (*Aman*)[3]

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1 *Asia Week*, October 2000.

2 The income elasticity of demand for food (mostly rice) is variously estimated at 0.53-0.73.

3 Of the three seasonal rice crops (*Aus, Aman* and *Boro*), *Aman* constitutes about 5 percent of the total rice production and is planted from mid-July through mid-September.

Table 1. Growth and Composition of the GDP of Bangladesh[a]

Items[b]	1990-91[a]	1996-97	1998-99	1999-2000
GDP at constant price (1984-85) (Tk. million)	514,440	680,210	756,120	801,171
GDP at current price (Tk. million)	834,390	1,403,050	1,737,620	1,982,990
Composition of GDP (as percent of total GDP at constant price):				
Agriculture	37.6	32.4	31.6	31.9
Crop	29.7	23.8	22.6	22.9
Fisheries	2.7	3.2	3.4	3.4
Livestock	2.7	3.1	3.3	3.3
Fishery	2.5	2.3	2.3	2.3
Manufacturing	9.8	11.1	11.2	11.1
Large scale	5.7	7.2	7.5	7.4
Small scale	4.1	3.9	3.7	3.7
Transport, storage and communication	11.8	12.2	12.4	12.4
Trade services	9.1	10.1	10.3	10.2
Banking and insurance	1.9	1.8	1.7	1.7
Others[c]	29.8	32.4	32.8	32.7
Annual growth rate (percent)				
GDP	3.4	5.9	5.2	6.0
Agriculture	1.6	6.4	5.1	7.2
Crops	1.2	6.2	4.4	7.2
Population	2.17	1.81	1.67	1.5

Source: Ministry of Finance, 2000.

Notes: [a] Bangladesh fiscal year is 1 July through 30 June. Data for 1999-2000 are provisional; [b] foreign exchange rates are: 1990-91, US$1 = Tk.35.68; 1996-97, US$1 = Tk.42.70; 1998-99, US$1 = Tk.48.06; and 1999-2000, US$1 = Tk.50.00; and [c] others of GDP includes: (i) mining and quarrying; (ii) construction; (iii) power, gas, water and sanitary services; (iv) housing services; (v) public administration and defense; and (vi) professional and miscellaneous services.

and the devastating flood of 1998. The devaluation of Taka,[4] and the expansion of credit in the private sector also influenced the price level. However, bumper food grain production and proper distribution led to a downward trend in food and non-food items prices during 1999-2000 and thus arrested the inflationary pressure.

The labor force in Bangladesh rose from 51 million (male 31 million and female 20 million) in 1990-91 to 56 million (male 35 million and female 21 million) in 1995-96, a large number being engaged in agriculture (63.2 percent).[5] However, the unemployment rate remained at 30 percent during the same period.

The total export receipts during 1998-99 increased by 20.3 percent to US$5,324 million compared to US$4,427 million in 1996-97. However, import payments also increased to US$8,018 million during 1998-99 from US$7,162 million in 1996-97 i.e., an increase of 12 percent. Although foreign trade deficit was US$2,694 million, it had been reduced by 1 percent from the level of US$2,735 million during 1996-97. This deficit has reduced further with the bumper production of food grain during 1999-2000.

Poverty alleviation is one of the prioritized goals for the country's development program. The present Fifth Five-Year Plan (1997-98 through 2001-02) has assigned high priority to the poverty alleviation. However, it can be seen from Table 2 that although over a period of 12 years (1983-84 to 1995-96), both poverty and hardcore poverty in the urban and rural areas was reduced by 24 percent to 33 percent,[6] the poverty scenario is still bleak. About 27 percent of urban people and 25 percent of rural population are still under hardcore poverty. However, as mentioned, the government is attaching top priority to alleviating poverty through the development of food safety net programs.

Table 2. Poverty and Hardcore Poverty in Bangladesh

(Unit: Percent)

Nature of Poverty	1983-84	1985-86	1988-89	1991-92	1995-96	Percent Decrease in 1995-96 compared to 1983-84
Poverty[a]:						
Rural	61.9	54.7	47.8	47.6	47.1	24
Urban	67.7	62.6	47.6	46.7	49.7	27
Hardcore poverty[b]:						
Rural	36.7	26.3	28.6	28.3	24.6	33
Urban	37.4	30.7	26.4	26.3	27.3	27

Source: Bangladesh Bureau of Statistics, Household Expenditure Survey 1995-96.

Notes: [a] Poverty is measured in terms of daily per capita food intake of less than 2,122 kcal.

[b] Hardcore poverty is measured in terms of daily per capita food intake of less than 1,805 kcal.

4 Bangladesh currency (present exchange rate is US$1 = Tk.55).

5 The Labor Force Survey has not been conducted after 1995-96.

6 Household Expenditure Survey 1995-96, Bangladesh Bureau of Statistics. After that, no survey has been conducted.

IMPACT OF THE FINANCIAL CRISIS ON AGRICULTURE AND THE RURAL ECONOMY

Agriculture, with a dominant crop sector, is the corner stone of the Bangladesh economy. Agriculture remains the main source of income and the principal occupation for some 63 percent of the population, with 57 percent being employed in the crop sector. It acts as the major source of economic growth, export earnings and poverty alleviation. In terms of its importance to total export, it is second to ready-made garments. Although overall agriculture encompasses the development of crops, livestock, fishery and forestry, crops form the largest sub-sector of agriculture, contributing to over 75 percent of the value-added in agriculture. Therefore, this country paper will focus its discussion on crop agriculture.

The fertile land of Bangladesh is used for multiple crops, which increases the overall productivity. Around 74 percent of the effective land area of the country is under crop production. The net cropped area amounts to around 8.24 million ha, the gross cropped area is about 13.8 million ha and the present cropping intensity is recorded at 185. Rice is the main crop, accounting for approximately 72 percent of the cropped area, jute for 5 percent, wheat for 3-4 percent and a variety of other crops such as pulses, oilseeds, sugarcane, tea, vegetables and fruits and others for the remaining 19 percent (Figure 1). Rice is the dominant crop and largely determines the growth rate of the agriculture sector. In fact, the entire crop production growth can be explained by the growth in food grain production, particularly rice. Therefore, rice constitutes the largest and most important part of the economy, with the view to ensure dependable food security for all, to alleviate poverty and to lead to the sustainable development of agriculture.

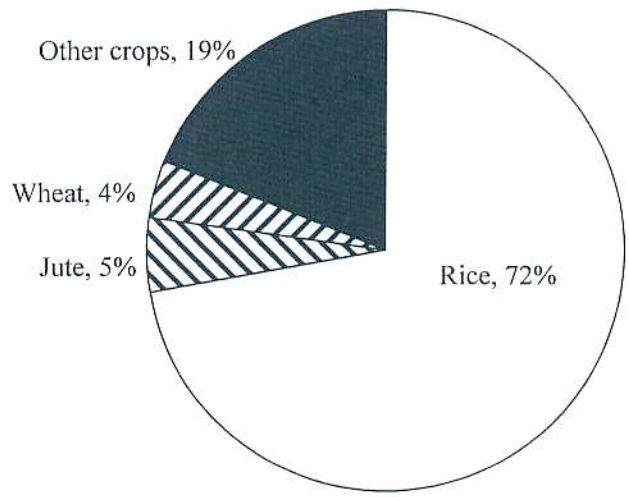

Figure 1. Cropping Pattern of Bangladesh

The Asian, or rather the Southeast Asian crisis began in July 1997 with the loss of confidence from foreign investors, bankers, currency speculators, and market analysts in Thailand's ability to cope with a deteriorating economic situation, including a rising trade deficit and a growing international debt which was 50 percent of the GDP. The Thai Government had little choice but to adopt a managed float of its currency. The resultant planning of the Baht led to a series of forced currency devaluations that soon swept through

Indonesia, Malaysia and the Philippines, and then spread to the Rep. of Korea and, to a lesser extent, Singapore, Taiwan, and Japan. This situation forced these countries to slash their purchasing power by 20-50 percent. The value of stocks, real estate and other assets sharply declined. Interest rates and bad loans increased, which threatened many businesses, particularly banks, with grave ramifications. Unemployment was also raised.

Economists and financial analysts have differences in opinions on the exact causes of this crisis. While each country's situation is distinct, most explanations center around the following factors:

- Excessive dependence on foreign borrowing by business enterprises and banks, and especially over-dependence on short-term debt.
- Too much investment in real estate and excess manufacturing capacity.
- Inadequate supervision of financial institutions and politically influenced allocations of credit to unsound companies.
- Overly expensive fiscal and macro-economic policies.
- Declining terms of trade for countries whose currencies have been pegged closely to the US dollar.

The spillover effects of the Asian crisis transmitted to different countries by the channels of trade and finance, have affected different countries in different ways and have been met with policy measures in the monetary, financial and trade spheres. The spillover affect, however, did not spread over to Bangladesh. Therefore, the Bangladesh agriculture has not been directly affected by the currency crisis in Southeast Asia. This is because Bangladesh has very little short-term external debt, no capital account convertibility (but the Taka is fully convertible for most current account transactions), low foreign exchange exposure by the domestic commercial banks and a preponderance of long-term concessional development assistance. Moreover, despite the government's liberalized policy for increasing direct foreign investment, very few companies, especially in the agriculture sector, have invested in the country. In addition, the government took initiatives to stop bad loans in the banking institutions.

No study has yet been conducted to measure the impact of the Southeast Asian financial crisis on the productivity of agriculture in Bangladesh. However, the Institute for International Economics (IIE), the International Food Policy Research Institute (IFPRI) and the Purdue University conducted a study in March 1999 to analyze the implications of the Asian financial crisis for both Asia and the rest of the world. This study used a multi-sectoral, multi-regional, computable general equilibrium (CGE) model to analyze the impact of the Asian crisis, thus highlighting the implications of possible future developments in Japan and China.[7] This study analyzed the results under different scenarios and summarized the impact

[7] The model focuses on real trade flows, trade balances, world prices and real exchange rates. It incorporates considerable detail on sectoral output, consumption and trade flows – both bilateral and global. The model includes 17 regional models, each with 14 sectors, and five primary factors of production: agricultural land, natural resources, capital, unskilled labor, and skilled labor. The report results in eight groups: combining Korea, Taiwan and Singapore into the Asian newly industrialized countries (NICs); Indonesia, Malaysia, the Philippines and Thailand into the Asian less developed countries (LDCs); and adding Latin America, Canada, South Asia and Mexico to rest of the world (ROW).

on agricultural development in some of the main producing and consuming areas. However, the author of this country paper tried to compare the situation that prevailed in Bangladesh with only one scenario.[8] Results of the study are presented in Table 3, which summarizes the impacts of the Asian financial crisis on agriculture in terms of agricultural production, exports and imports. In this table, the South Asian countries have been put together along with some other countries under the category of other. Thus, an attempt has been made here to compare the Bangladesh situation with the 'other' category.

Table 3. Changes in Agricultural Output, Exports and Imports

(Unit: Percent)

Countries		Production	Exports	Imports
U.S.A.		-1.0	-4.4	2.9
Western Europe		-0.4	-2.7	1.8
Australia and New Zealand		2.1	4.5	4.7
Japan		-0.1	-8.6	2.1
China		0.4	-9.7	5.7
Asian NICs		-3.9	9.3	-12.6
Asian LDCs		-5.0	36.6	-25.9
Others		-0.1	-3.1	2.2
Bangladesh*:	1998-99	5.1	-15.9	50
	1999-2000	7.2	0.9	-36

Sources: Institute of International Economics, 1999; and Bangladesh figures obtained from the Economic Survey, 2000, Ministry of Finance.

Note: For Bangladesh, the base year is 1997-98 and agricultural production includes all sub-sectors. Agricultural exports include raw jute, tea, frozen food, agricultural products and other primary products.

In both the Asian LDCs and NICs, major currency devaluation led to significant import substitution and a decline in domestic production. As a result of the crisis, the decline in income led to a decline in consumer demand and depressed agricultural production in most parts of the world. In the Asian NICs and LDCs, the income effect complemented the import substitution effect. However, Australia/New Zealand's case is exceptional. There, the decision to accept a real depreciation boosted competitiveness, generated an increase in agricultural exports, and with exports being a large share of output, the net effect was to increase supply. For the United States, exports declined and imports rose, and domestic output fell. For rest of the world (which also includes South Asian countries) exports also were estimated to decline, imports to rise and domestic outputs to fall. But, the extent of such an impact appeared to be very low in these countries.

[8] Under this scenario, the developed model is a combination of real exchange rate depreciations and supply side contractions due to domestic financial disintermediation, which impeded the affected countries ability to respond to the real exchange rate change. Under this scenario the study programmed a set of real exchange rate changes and supply side shocks approximately what occurred between July 1997 and December 1998.

In Bangladesh, it was observed that during the post-crisis year, agricultural production increased by 5.1 percent against an estimated negative growth of -0.1 percent, agricultural exports reduced substantially and imports increased significantly. The main reason behind this was not the Asian crisis, but rather the three months long and devastating flood, which deteriorated the overall economic situation. Additional food deficit amounted to more than 2.0 million mt, despite an increase in agricultural production. The government was forced to resort to emergency import in order to meet the demand for food and essential commodities. The trade deficit widened and stood at US$2,694 million and the current account deficit was at US$394 million. However, the situation changed during 1999-2000. Agricultural production increased at an annual growth rate of 7.2 percent, exports increased by 0.9 percent and imports decreased by 36 percent. Appropriate policy measures and programs such as providing loans on soft terms, especially to the small farmers, ensured the timely supply of agricultural inputs by the public and private sectors. A liberalized fiscal policy by the government has made this possible.

Here an attempt has also been made to briefly analyze agricultural productivity in terms of production, land, labor and total factor productivity using secondary information. This is because no organization has recently conducted any study to measure and analyze agricultural productivity by using primary data and applying econometric models.

The overall performance of the agriculture sector in 1990s compared with the pre-Asian financial crisis and post-crisis period, is presented in Table 4. Annual compound growth rate of the agriculture sector as a whole has been remarkable between the pre-crisis and post-crisis period at 4.02-5.06 percent compared to the 3.15-percent and 2.75-percent medium-term trend since 1990-91 and the long-term trend since 1984-85, respectively. Although non-crop sectors' performance was remarkable, the growth rate in GDP is still largely dominated by the growth in the crop sector.

Table 4. Performance of Agricultural Production in 1999-2000 Compared to the Pre-crisis Period, Medium- and Long-term Trend Growth Rates (at the 1984-85 constant price)

(Unit: Percent)

Sector	1996-97 to 1998-99	1996-97 to 1999-2000	1990-91 to 1999-2000	1984-85 to 1999-2000
Agriculture	4.02	5.06	3.15	2.75
Crop	2.88	4.31	3.89	2.06
Others	7.07	7.06	6.54	4.96
Non-agriculture	6.10	5.90	6.08	5.72
GDP	5.43	5.63	5.05	4.62

Source: Bangladesh Economic Survey, 2000.

An estimate of labor productivity in the agriculture sector[9] (Table 5) indicates a downtrend from 1985-86 to 1990-91. Labor productivity remained almost the same during pre- and post-crisis period. However, labor productivity did not change much during the

[9] Data for crop and non-crop labor force is not available separately. This labor productivity is estimated for the agriculture sector as a whole.

1990s. With the adoption of improved technology, the demand for labor in the agriculture sector is gradually declining. Labor has been shifting to non-agriculture sectors because real wages are higher in non-agriculture sectors than in the agriculture sector. The land-labor ratio also showed a sharp decline from 0.68 in 1985-86 to 0.38 during 1995-96. This ratio did not change during the pre- and post-crisis period.

Table 5. Trends in Labor Productivity and Land-Labor Ratios

Year	Agriculture GDP at 1984-85 Constant Price (Tk. million)	Agricultural Labor Force (million)	Labor Productivity	Total Cultivated Land (million ha)	Land-Labor Ratio
1985-86	175,555	20.03	8,765	13.54	0.68
1990-91	193,420	34.40	5,623	13.71	0.40
1995-96	207,130	35.39	5,853	13.51	0.38
1998-99*	226,960	36.58*	6,204	13.83	0.38
1999-2000*	238,530	37.13*	6,242	n.a.	

Source: Calculated from the Bangladesh Economic Survey, 2000.
Note: * Labor force in the year 1998-99 and 1999-2000 is estimated at an annual growth rate of 1.67 and 1.5 percent, respectively.

Due to the non-availability of data, the total factor productivity is difficult to measure for the pre- and post-crisis period. However, using the cost and return data of major rice and wheat crops, an attempt has been made to show the extent of the total factor productivity from 1987-88 to 1991-92 and for the year 1998-99 (Tables 6, 7 and 8). From the return cost ratio, respective indices have been prepared to get the approximate measures for total factor productivity. It can be seen that total factor productivity during 1988-89 increased considerably from the previous year for all three crops. This is mainly due to the fact that the government undertook major policy initiatives during that year to privatize all agricultural inputs, which created competition in the market and thus, reduced the prices of agricultural inputs. This induced farmers to use more inputs and as a result, crop production increased. In some years, such as 1998-99, productivity declined mainly because of the loss in crops from natural calamities such as floods, drought and cyclones, and the increase in prices of agricultural inputs such as fuel, for irrigation purposes.

Table 6. Cost and Return Analysis of T. *Aman* Rice

Year	Return (Tk./ha)	Cost (Tk./ha)	Return/Cost Ratio	Index
1987-88	12,772	12,325	1.04	100
1988-89	14,196	12,632	1.12	108
1989-90	18,087	13,672	1.32	127
1990-91	15,228	13,771	1.11	107
1991-92	17,819	14,285	1.25	120
1996-99	24,670	21,143	1.17	113

Sources: Ministry of Agriculture, *Handbook of Agriculture Statistics, 1999*; and Ministry of Food, 1999.

Table 7. Cost and Return Analysis of *Boro* Paddy

Year	Return (Tk./ha)	Cost (Tk./ha)	Return/Cost Ratio	Index
1987-88	25,896	21,013	1.23	100
1988-89	27,579	21,041	1.31	106
1989-90	28,069	22,412	1.25	102
1990-91	28,289	23,531	1.20	98
1991-92	30,348	23,924	1.27	103
1996-99	36,747	33,296	1.10	89

Sources: Ministry of Agriculture, *Handbook of Agriculture Statistics, 1999*; and Ministry of Food, 1999.

Table 8. Cost and Return Analysis of Wheat

Year	Return (Tk./ha)	Cost (Tk./ha)	Return/Cost Ratio	Index
1987-88	9,949	12,496	0.80	100
1988-89	12,696	13,119	0.97	121
1989-90	11,083	13,457	0.82	103
1990-91	13,749	14,695	0.94	118
1991-92	15,393	15,253	1.01	126
1996-99	17,920	16,606	1.08	135

Sources: Ministry of Agriculture, *Handbook of Agriculture Statistics, 1999*; and Ministry of Food, 1999.

For measuring land productivity, an estimate was made by taking into consideration the GDP from crop agriculture and total cropped area. It appears from Table 9 that land productivity has been increasing, although many studies indicate the declining fertility of land. Actually, land productivity has increased mainly because of the increased yields of paddy and wheat crops, due to the use of improved irrigation, fertilizer and seed technologies and the increase in cropping intensity.

Other factors influencing productivity include:

- High risk in agriculture which is prone to natural calamities.
- Lack of purchasing power for a majority of farmers to modernize and mechanize their farming practices.
- Highly fragmented landholdings.
- Fully exploited natural resource bases such as land.

Landholdings in Bangladesh are generally too small, highly fragmented and too widely scattered for the proper management and economical use of irrigation and other facilities. The average landholding per farm family is less than 2 acres. The distribution of land is also highly skewed. A small group of only 11 percent of the rural farm households own more than 50 percent of the total cultivable land, while 39 percent of the households have no agricultural land (Table 10). Disparity is also evident in income distribution. According to an estimate of the Bangladesh Bureau of Statistics, the highest 20 percent of the rural population earn more than 50 percent of total rural income while the lowest 20 percent earn less than 5 percent of the total income. However, the situation improved from the pre-crisis

period (April 1995) to the post-crisis period (April 1998). The Gini ratio was reduced from 0.42 to 0.31 during this period. Still, the gap in income distribution is wide and therefore, poverty is acute in rural Bangladesh, mostly because of the lack of employment opportunities in the rural areas (Table 11).

Table 9. GDP from Crop Agriculture and Land Productivity

Year	GDP from Crop Agriculture (Tk. million)	Total Cropped Area (million ha)	Land Productivity	Land Productivity Index
1984-85	13,503	13.15	1,026.84	100.00
1985-86	13,959	13.54	1,030.95	100.40
1986-87	13,959	13.34	1,046.40	101.90
1987-88	13,711	13.82	992.11	96.62
1988-89	13,450	13.71	981.04	95.54
1989-90	15,082	14.06	1,072.69	104.47
1990-91	14,995	14.03	1,068.78	104.08
1991-92	15,221	13.81	1,102.17	107.34
1992-93	15,639	13.71	1,140.70	111.09
1993-94	15,385	13.48	1,141.32	111.15
1994-95	14,806	13.52	1,095.12	106.65
1995-96	15,216	13.51	1,126.28	109.68
1996-97	16,157	13.80	1,170.80	114.02
1997-98	16,383	13.82	1,185.46	115.45
1998-99	17,094	13.83	1,236.01	120.37

Sources: Bangladesh Bureau of Statistics and Ministry of Agriculture.

Table 10. Land Ownership Pattern in the Rural Areas of Bangladesh

(Unit: Percent)

Ownership*	Number of People	Share of Land
Landless	39	0
Small	50	45
Medium	10	38
Large	1	17
Total	100	100

Source: Calculated by the author from *the Agriculture Census Report, 1996*, Bangladesh Bureau of Statistics.

Notes: * Small farms, 1.00 ha; medium farms, 1.00-3.03 ha; and large farms, 3.04 ha.

Considering this situation, the Bangladesh Government has undertaken strategies to increase the growth and productivity of the agriculture sector. Continuous high population growth has made Bangladesh an extremely land scarce country. Land can no longer be counted as an important source of growth for agricultural production. Therefore, a breakthrough in agriculture necessitated the development of a new technology package of modern inputs – irrigation, fertilizer and seed – popularly known as the Green Revolution.

The government implemented a number of policy measures and development projects to increase the productivity of the agriculture sector. As food grains (rice and wheat) largely dominate the growth in agriculture, the policies and programs are mainly centered around the growth of food grain production. The government, from the early 1980s, started an open economic policy and gradually removed the control over the distribution of agricultural inputs, such as irrigation, seeds, fertilizer and pesticides, promoted the input trade private sector and also removed the subsidies on these inputs. As a result, food grain production increased considerably (Table 12). This has, to some extent reduced poverty in the rural areas.

Table 11. Rural Income Distribution by Households

(Unit: Percent)

Household Group	April 1998		April 1995	
	No. of People	Income	No. of People	Income
Decile-1	6.9	1.5	8.4	1.2
Decile-2	7.9	3.1	7.9	2.7
Decile-3	8.4	4.1	8.6	3.7
Decile-4	9.2	5.2	8.9	4.7
Decile-5	9.8	6.2	10.0	5.7
Decile-6	10.1	7.6	9.9	6.9
Decile-7	10.3	9.1	10.5	8.6
Decile-8	11.4	11.7	11.4	11.1
Decile-9	12.2	15.9	11.3	15.8
Decile-10	13.8	35.6	12.5	39.2
Gini ratio	0.31		0.42	

Source: Bangladesh Bureau of Statistics.

Table 12. Trends in Food Grain Production in Bangladesh from 1971-72 to 1998-99

(Unit: 000 mt)

Year	Rice (A)	Wheat (B)	Total Food Grain (A+B)	Percent Change over Previous Year
1971-72	9,774	113	9,887	-
1975-76	12,561	218	12,779	13.83
1980-81	13,883	1,093	14,976	12.08
1985-86	15,041	1,042	16,083	-0.02
1990-91	17,852	1,004	18,856	0.58
1995-96	17,687	1,369	19,056	5.41
1996-97	18,922	1,450	20,372	6.91
1997-98	18,862	1,803	20,665	1.44
1998-99	19,352	2,000*	21,352	3.32
Annual average growth rate: 3.13				

Source: Bangladesh Bureau of Statistics.
Note: * Estimated of Department of Agricultural Extension (DAE).

ENHANCING AGRICULTURAL PRODUCTIVITY ON A SUSTAINABLE BASIS

Although the Asian financial crisis did not have any direct impacts on the agricultural production of Bangladesh, over the long term, however, the dramatic devaluation of currencies by its neighbors may significantly erode Bangladesh's competitive edge. Therefore, the steady and cautious devaluation of the Taka by the government has been continuing.

Bangladesh has been pursuing a liberal trade policy in keeping with the global market economy. With this end in view, the government adopted a policy for the further liberalization of export and import regimes, including a reduction in tariff rates. Some of the recent policy measures include:

- ensuring quality control
- withdrawing restrictions on the country of origin for the industries enjoying bonded warehouse facilities
- easing the import of raw materials for export industries
- reducing import duties for a large number of agricultural inputs, agro-processing raw materials and agro-machineries
- reducing tariff tabs to 5 from 8 in 1996-97
- reducing the maximum rate of import duty to 37.5 percent.

The government realized that we still have many other structural issues to address, in order to immunize ourselves as much as possible against a future crisis. Large capital inflows and the sudden withdrawal of foreign capital were key features of the crisis, so the management of erratic and volatile short-term capital has become an important policy issue. Financial market globalization, therefore, promotes various policy issues.

Strengthening the domestic financial system should be the most important policy to enhance agricultural productivity on a sustainable basis. Establishing transparent accounting standards and practices, and the public disclosure of information are important in improving the financial infrastructure. Strengthening banks' profitability and capitalization, restricting connected lending, tightening asset classification, and loan loss provisions are essential elements in the regulatory and supervisory framework. The government should also be more cautious in opening its capital market.

In Bangladesh, where nearly half of the total population live below the UN-defined absolute poverty line, food security is a matter of great national importance. Rice is the staple food of the country, and wheat and maize are gaining importance in the Bangladesh diet. About 85 percent of the calories and most of the protein in the average diet come from food grain (rice and wheat). It is therefore, understandable that "food security" has become *de facto* a quest for self-sufficiency in cereal grain production.

The promising ways of sustaining high levels of food production to ensure food security include:

- increasing productivity (yield/ha)
- increasing cropping intensity without sacrificing the environmental basis of food production
- maintaining soil fertility

- adopting integrated pest management practices and arresting environmental degradation
- diversifying crops within rice and outside of rice
- developing physical and marketing infrastructure
- providing output price support and post-harvest storage facilities
- developing agro-product processing technology
- transforming subsistence agriculture into commercial agriculture
- controlling population growth more effectively.

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2. REPUBLIC OF CHINA

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I. INTRODUCTION

The financial turmoil erupted in 1997 has hit most of East Asian economies much harder than originally expected. The Republic of China (ROC) has not been immune, but has had the good fortune to hurt less. This report will take an institutional and close perspective in examining the issues. Section II will review the latest economic momentum in the Republic of China. The impacts from the financial crisis on ROC economy will be investigated in Section III. The measures taken in ROC and lessons to be drawn will be reviewed in Section IV. The impacts on agriculture and its challenges will be discussed in Section V. Section VI will set forth the conclusions.

II. THE LATEST ECONOMIC MOMENTUM IN THE REPUBLIC OF CHINA

The ROC has not been unaffected, but has had good luck to hurt less in the Asian financial crisis. Our GDP growth rate reached 4.6 percent in 1998 and the consumer price index went up by only 1.7 percent in 1998, while the unemployment rate was recorded at 2.7 percent (Table 1).

The ROC economy has again performed well in 1999. Real GDP rose 5.4 percent and exports grew 10 percent through the year. Foreign trade registered a surplus of US$10.9 billion. As a result, foreign exchange reserves built up to US$106.2 billion by the end of 1999, and foreign assets held by the private sector approached US$70 billion. Not surprisingly, the level of our external debt is negligible.

Real GDP rose 6.7 percent in the first half of 2000 and the pace of growth was expected to slow to 6.5 percent in the second half of the year. For the year as a whole, the economy was expected to grow from 6.4 percent to 6.6 percent. The expansion in output has been driven by strong external demand, and a stable increase in both private consumption and investment. In the meantime, prices have remained stable. The Consumers' Price Index (CPI) went up by a mere annual rate of 1.97 percent, recorded in October 2000. Inflation should remain subdued and was projected to be a moderate 1.25 percent for the year. Unemployment rate reached 3.1 percent in September or 3 percent on average, for the first nine months of this year. The Living Misery Index, as measured by the sum of the unemployment rate and the inflation rate, gives the ROC a total of 4.85 percent as of the end of September 2000, much higher than the Misery index of 3.67 percent on 21 September 1999, time of the earthquake.

Table 1. Key Economic Indicators of the ROC

Year	GDP Growth (percent)	Change in Fixed Capital Formation (percent)	Merchandise Trade (US$ billion)						Change in Price Index (percent)		Unemployment (percent)	Foreign Exchange Reserve (US$ billion)
			Exports		Imports		Trade Surplus					
			Amount	Percent	Amount	Percent	Amount	Percent	WPI*	CPI		
1986	11.6	10.3	39.9	29.7	24.2	20.3	15.7	47.6	-3.3	0.7	2.66	46.31
1987	12.7	18.6	53.7	34.7	35.0	44.7	18.7	19.2	-3.3	0.5	1.97	76.75
1988	7.8	14.6	60.7	13.0	49.7	42.0	11.0	-41.2	-1.6	1.3	1.69	73.90
1989	8.2	14.8	66.3	9.3	52.3	5.2	14.0	27.7	-0.4	4.4	1.57	73.22
1990	5.4	7.6	67.2	1.4	54.7	4.7	12.5	-11.0	-0.6	4.1	1.67	72.44
1991	7.6	9.2	76.2	13.3	62.9	14.9	13.3	6.6	0.2	3.6	1.51	82.41
1992	7.5	18.5	81.5	7.0	72.0	14.5	9.5	-28.9	-3.7	4.5	1.51	82.31
1993	7.0	12.0	85.1	4.4	77.1	7.0	8.0	-15.1	2.5	2.9	1.45	83.57
1994	7.1	7.4	93.0	9.3	85.3	10.8	7.7	-4.1	2.2	4.1	1.56	92.45
1995	6.4	7.3	111.7	20.0	103.6	21.3	8.1	5.3	7.4	3.7	1.79	90.31
1996	6.1	1.7	115.9	3.9	102.4	-1.1	13.5	67.4	-1.0	3.1	2.60	88.04
1997	6.7	10.7	122.1	5.3	114.4	11.8	7.7	-43.6	-0.5	0.9	2.72	83.50
1998	4.6	8.0	110.6	-9.4	104.7	-8.5	5.9	-22.7	0.6	1.7	2.69	90.30
1999	5.4	1.8	121.6	10.0	110.7	5.8	10.9	84.8	-4.5	0.2	2.92	106.20

Source: Economic Research Department, Council for Economic Planning and Development (CEPD), Executive Yuan, Rep. of China.
Note: * Wholesale Price Index.

Regarding financial markets, after receiving financial assistance from the International Monetary Fund (IMF) and other international organizations, and having reforming their economic structures and financial systems, most of the crisis countries in Asia have seen the stabilization of their financial markets after one and a half years from the eruption of the financial crisis.

Nevertheless, the ROC's financial market was hit by the shortage in confidence on investments. The Taipei Stock Index had plummeted from February's peak of 9,891 in year 2000 to a low point of 5,081 on 19 October 2000 (Figure 1). The reasons for the drop in the market included the unclear political situation and cross-strait relationships. However, it was strengthened by the fluctuations in the international stock market and in the currency of the Southeast Asian countries.

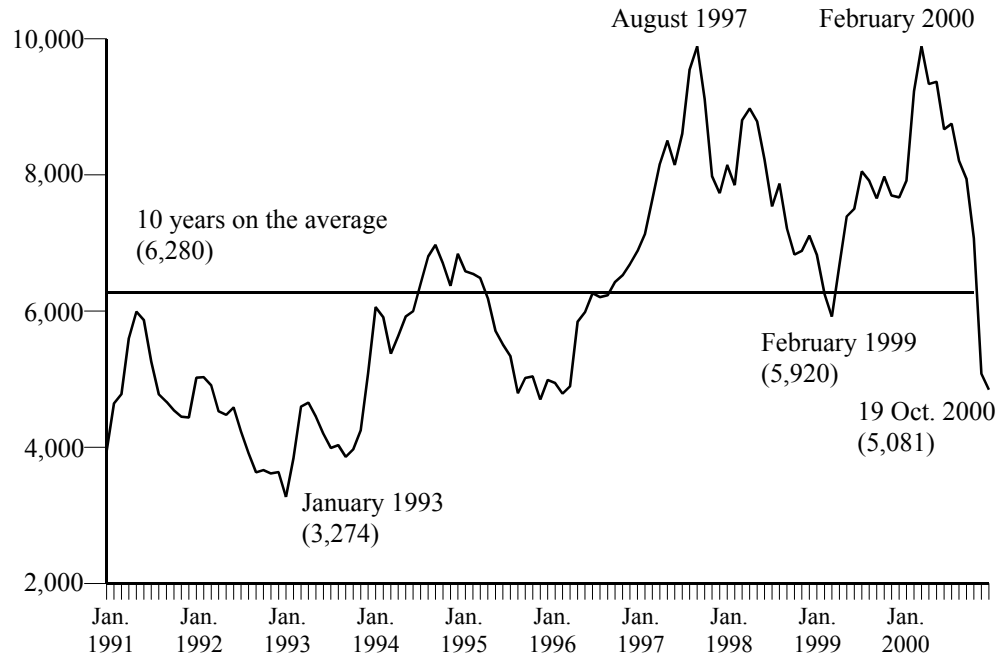

Figure 1. The Volatility of Taipei Stock Indices

Source: Chiang, 2000

The fall of the bubble economy and the 1997 Asian financial crisis resulted in the mounting of non-performing loans and the epidemic closures of many banks in several Asian countries. The non-performing ratio for the overall financial institutions in the ROC has rose from 4.93 percent in 1998, which was one year after the financial crisis, to 6.25 percent at the end of September 2000. Financial cooperatives, including the credit unit of the farmer's associations, had a much higher non-performing ratio of 15.6 percent (Table 2).

Due to inadequate financial supervision of the financial institutions and the deregulation of the financial market in the last few years, the impaired assets in the financial institutions increased. People now worry about the possibility of a systematic financial crisis in the ROC. At this moment, the possibility is limited, because the economic fundamentals of the ROC are sound and our foreign trade continues to have double-digit growth.

Table 2. Non-performing Ratios of the ROC's Financial Institutions, 1995-2000[a]

(Unit: Percent)

Year	Overall Banking Sectors	Domestic Financial Institutions[b]	Local Branch of Foreign Banks	Financial Cooperatives
1995	3.00	2.88	0.82	4.02
1996	4.15	3.74	1.00	7.10
1997	4.18	3.74	1.07	8.53
1998	4.93	4.41	1.64	10.57
1999	5.67	4.96	3.20	13.70
Sept. 2000	6.25	5.36	3.33	15.57

Source: Bureau of Monetary Affairs, Ministry of Finance, ROC.

Notes: [a] The above figures represent numbers by the end of the respective years except the year 2000; and [b] financial cooperatives include the credit unit of farmer's associations.

III. THE IMPACTS AND CAUSES OF THE FINANCIAL CRISIS

If we look at the period of mid-1997 to mid-1999, two features of the ROC economy stand out. First, the ROC was the least affected economy from the Asian financial crisis and was, moreover, able to maintain steady growth throughout the crisis. While most other Asian economies experienced sluggish or even negative growth, the ROC managed to register a 4.6-percent economic growth rate with a 1.7-percent inflation in 1998. Second, as the crisis gradually subsided, the ROC emerged as one of the few economies to recover strongly. To put it simply, the most remarkable attribute of the ROC economy is its flexibility or resilience. It has proved itself capable of withstanding the onslaught of a financial crisis, while continuing to perform credibly.

Impacts of the Asian Financial Crisis

According to a forecast made by the World Economic Forum, the ROC economy has exhibited exceptional resilience and strong potential in the face of adversity (Table 3).

From the end of June 1997 to June 1998, the combined rates of depreciation and the decline in stock prices (so-called the volatility of financial markets) of East Asian countries and economies ranged between 35 percent and 122 percent. The ROC's financial markets were the least affected (Table 4). However, by the end of 1999, countries in the region were able to recuperate to the level before the crisis except for the ROC, the Philippines, Thailand, Malaysia and Indonesia. All of the countries had positive economic growth in 1999, but some of the economies still suffered from high unemployment ratios.

Causes of the Asian Financial Crisis

The countries hit hardest by the crisis shared the following characteristics: persistent current account deficits, heavy reliance on foreign capital, inflexible exchange rate regimes, overvalued real exchange rates, etc. The factors, in a potent mixture, could give rise to financial crises.

Table 3. The Impacts of the Asian Financial Crisis on Economic Growth

(Unit: Percent)

Country	1996	1997	1998			1999 (actual)
			Original (A)	Actual (B)	Difference (B - A)	
ROC	5.8	6.8	6.1	4.6	-1.5	5.4
Japan	3.9	0.9	3.2	-1.9	-5.1	0.3
Hong Kong	4.9	5.2	5.6	-5.1	-10.7	2.9
Singapore	6.9	7.8	7.2	0.3	-6.9	5.4
Rep. of Korea	7.1	5.5	6.0	-6.7	-12.7	10.7
Philippines	5.7	5.1	5.9	-0.5	-6.4	3.2
Thailand	5.5	-0.5	6.8	-10.0	-16.8	4.2
Malaysia	8.6	7.8	8.3	-7.5	-15.8	5.4
Indonesia	8.0	4.6	7.4	-13.7	-21.1	0.2

Notes: [a] Original – WEFA (Wharton Economic Forecasting Association early and change her name to Global Insight Co. nowadays), August 1997; and [b] revised: WEFA, February 1998.

1. ***Huge Movement of Cross-border Capital***

Net private capital flows to emerging market countries (that is all developing, newly industrialized and transition countries), encouraged by financial liberalization and globalization, reached a record high of US$214 billion in 1996, with Asia attracting the largest share by far.

The devaluated currency was used for risky and unproductive investment, particularly in the securities and real estate markets, which caused financial instability.

Many of the crisis countries acted over-hastily and imprudently in liberalizing capital flow. The broad opening of their stock markets to foreign investment resulted in huge inflows of foreign money into properties and stocks, which helped fuel the creation of bubble economies (Table 5). An excessive surge in capital inflows might plant the seeds of a currency crisis by contributing to: (1) a real appreciation of the local currency; (2) a build-up of external debts; (3) an explosive growth in domestic credit and a current account deficit; (4) overinvestment in risky ventures; and (5) an equity or property market bubble.

2. ***Overinvestment***

The East/Southeast Asian countries pursued high rates of economic growth by favoring massive investment. However, as domestic savings were insufficient to meet the demand for investment capital, serious internal imbalances arose (Table 6).

3. ***Persistent Current Account Deficits***

As their export competitiveness weakened and their rapidly expanding economies sucked in a sharply rising volume of imports, the ASEAN 4 and South Korea recorded growing trade deficits. Year after year of current account deficit gave rise to serious external imbalances (Table 7).

4. ***Heavy Reliance on Foreign Capital***

Because of the insufficiency of domestic saving, the ASEAN 4 and the Rep. of Korea were compelled to fund their excessive investment from foreign borrowing, which created a massive build-up of foreign debt (Table 8). Short-term capital tends to be highly volatile in nature. Massive and rapid movements of short-term capital can seriously undermine the stability of a financial system and ultimately affect the whole economy.

Table 4. Key Economic Indicators of Selected Countries

(Unit: Percent)

Indicator	Volatility of Financial Markets			Economic Growth Rate			Unemployment Rate		
	July 1997-June 1998	July 1998-Dec. 1999	July 1997-Dec. 2000	1997	1998	1999	1997	1998	1999
ROC	-35.4	21.3	-17.8	6.7	4.6	5.4	2.7	2.7	2.9
Japan	-41.5	56.7	3.9	1.4	-2.8	0.6	3.4	4.1	4.7
Hong Kong	-43.8	98.2	11.3	5.3	-5.1	2.9	2.2	4.7	6.2
Singapore	-61.9	134.2	10.5	8.0	0.3	5.4	2.4	3.2	2.9
Philippines	-74.6	26.2	-58.2	5.2	-0.5	3.2	8.7	10.1	9.7
Thailand	-88.0	95.9	-37.7	-1.8	-10.0	4.2	3.5	4.8	4.2
Rep. of Korea	-95.3	265.8	15.9	5.0	-5.8	10.7	2.6	6.8	6.3
Malaysia	-96.5	86.9	-58.2	7.7	-7.5	5.4	2.6	3.9	3.4
Indonesia	-122.1	161.7	-72.2	4.9	-13.5	0.2	4.7	17.1	-
China	-	-	-	8.8	7.8	7.1	3.1	3.1	3.1

Source: Economic Research Department, CEPD, Executive Yuan, ROC.

Table 5. Net Private Capital Flows to Developing Countries

(Unit: US$ billion)

Year/Item/Region	1984-89	1990-96[a]	1996	1997	1998	1999
Total capital[b]	12.6	141.8	214.9	117.8	69.5	89.8
FDI[c]	13.1	64.6	121.1	145.0	127.3	119.2
Portfolio	4.4	64.0	79.9	66.6	42.0	25.1
Others	-4.9	13.0	13.9	-93.8	-99.8	-54.5
Asia and NIEs[d]	9.9	58.3	108.1	-15.1	-49.5	-38.1
Africa	2.3	3.7	5.1	14.1	7.3	14.2
Middle East and Europe	2.3	22.9	3.9	7.9	24.9	21.9
Latin America	-0.2	46.1	81.7	88.3	73.6	75.3

Source: IMF, *World Economic Outlook*, December 1998.

Notes: [a] Annual average; [b] net private capital flows comprise net direct investment, net portfolio investment, and other long- and short-term net investment flows, including borrowing; [c] FDI = Foreign Direct Investment; and [d] Newly Industrialized Economies (NIEs) = Hong Kong, Rep. of Korea, Singapore, and Taiwan.

Table 6. Economic Growth, Investment and Savings of Selected Asian Countries, 1990-96 Average

(Unit: Percent)

Country	Economic Growth	Fixed Capital Formation (A)	Domestic Saving (B)	Excess Saving (B - A)
Philippines	2.8	22.5	18.8	-3.7
Thailand	8.6	40.4	34.2	-6.2
Malaysia	8.8	38.3	32.1	-6.2
Indonesia	8.0	27.4	28.9	1.5
Rep. of Korea	7.7	36.7	35.0	-1.7
ROC	6.3	22.6	28.0	5.4

Source: IMF, *World Economic Outlook*, December 1997.

Note: All numbers are in percentage of GDP.

Table 7. Current Account Balance of Selected Countries

(Unit: US$ billion)

Year	Philippines	Thailand	Malaysia	Indonesia	Rep. of Korea	ROC
1990	-2.7	-7.3	-0.9	-3.0	-1.7	10.9
1991	-1.0	-7.6	-4.2	-4.3	-8.3	12.5
1992	-1.0	-6.3	-2.2	-2.8	-3.9	8.6
1993	-3.0	-6.4	-3.0	-2.1	1.0	7.0
1994	-3.0	-8.1	-4.5	-2.8	-3.9	6.5
1995	-2.0	-13.6	-7.4	-6.4	-8.5	5.5
1996	-4.0	-14.7	-3.6	-7.7	-23.0	11.0
1997	-4.3	-2.9	-4.8	-4.8	-8.2	7.7
1998	7.6	13.5	14.1	3.8	42.3	4.5

Sources: 1) *International Statistics*, IMF Publications, April 2000; and 2) the Central Bank of China, *Financial Statistics*.

Table 8. External Debt and Foreign Exchange Reserve of Selected Countries (as of June1997)

(Unit: US$ billion)

Country \ End of Year	1990	1995	1996	1997	1998
Rep. of Korea	35.0[a]	119.7[b]	157.5[b]	154.4[b]	151.5
Indonesia	69.9	124.4	129.0	137.9[b]	145.9
Thailand	28.1	83.2	90.8	93.4[b]	85.4
Malaysia	15.3	34.3	39.8	43.4[c]	39.6
Philippines	30.6	39.4	41.2	45.4[c]	47.4
ROC	17.7[a]	27.0[a]	24.4	24.6	22.2*

Sources: World Bank, *Global Development Finance 1998*, March 1998; and [a] Asian Development Bank, *Key Indications of Developing Asian and Pacific Countries 1997*; [b] IMF, *The IMF Response to the Asian Crisis*, September 1998; and [c] Bank of International Settlement/OECD, *Statistics on External Indebtedness*, June 1998.

Note: * Figure for the end of June 1998. However, the public foreign debt is US$50 million by the end of 1998.

5. ***Inflexible Exchange Rate Regimes***

Most of these countries pegged their exchange rates to the US dollar, with little room for fluctuation. As the US dollar steadily strengthened from 1995 onward, the pegged currencies became overvalued. As a result, these countries' export products lost their competitiveness, and their export growth rates showed a clear decline (Table 9).

6. ***Unsound Financial System***

Because of the high level of government protection and intervention in financial institutions in Asian countries, the market mechanism was seriously skewed. With unsound financial supervision, also banks became encumbered with very high ratios of non-performing loans (Table 10).

7. ***Weak Corporate Financial Structure***

Corporations in the crisis countries funded operations through excessive borrowing, creating a highly unsound corporate financial structure (Table 11). In Thailand and Indonesia, for example, corporations had an average debt to equity (net worth) ratio of over 300 percent, while it was more than 400 percent in the Rep. of Korea.

8. ***Other Factors***

In some Asian countries frequent changes in the cabinets resulted in the inconsistency of policies. In other countries, protracted one-party rule led to political and social instability.

Why the ROC Was Hit Less Severely

1. ***Sound Economic Fundamentals***

Strong economic fundamentals are the reasons why Taiwan has escaped the Asian crisis relatively unscathed. In 1997, at the height of the financial crisis, the average non-performing loan ratio for the banking sector was 4 percent, much lower than that of the other countries in the region. The average capital adequacy ratio stood at 11.4 percent, well above the 8-percent requirement set by the BIS. With steady improvements in the corporate financial structure, the average debt-to-equity ratio for listed companies has fallen to 78 percent. Furthermore, companies in Taiwan are less susceptible to foreign exchange fluctuations because they do not rely on foreign borrowing. This in effect creates a firewall that can shield Taiwan from the contagion of a financial crisis.

Table 9. Real Effective Exchange Rate Index and Export Growth Rate (1990 as base)

(Unit: Percent)

Year	Philippines		Thailand		Malaysia		Indonesia		Rep. of Korea	
	Exchange Index	Export Growth	Exchange Index	Export Growth	Exchange Index	Export Growth	Exchange Index	Export Growth	Exchange Index	Export Growth
1992	107.1	2.8	99.7	13.6	109.7	9.7	100.8	16.6	87.8	6.6
1993	97.4	22.0	101.9	13.5	111.0	17.0	103.8	8.4	85.2	7.3
1994	111.6	15.5	98.3	21.6	107.1	26.8	101.0	8.8	84.7	16.8
1995	109.5	28.7	101.7	23.1	107.0	20.3	100.5	13.4	87.8	30.3
1996	116.0	18.8	107.6	0.5	107.0	6.5	105.1	9.7	86.8	3.7

Sources: IMF, *International Financial Statistics Yearbook, 1998*; and J. P. Morgan, *Asian Financial Market*, Q2 & Q3, 1998.
Note: A real effective exchange rate index above 100 signifies overvaluation.

Table 10. Non-performing Loans (NPLs) of Selected Asian Countries

(Unit: Percent)

Country	Current NPL Ratio	Estimated Peak NPL Ratio	Peak NPL as Percent of GDP
Singapore	2	>8	9
Hong Kong	2	>8	13
Philippines	3	10-15	7
ROC	4	n.a.	n.a.
Malaysia	6	12-25	17
Indonesia	9	>25	16
Rep. of Korea	14	>25	34
Thailand	18	>25	40

Source: Roy Ramos, *Banks: A Critical Ingredient to Recovery for Asia*, World Bank/ Asian Development Bank Senior Policy Seminar, March 1998, Manila.

Table 11. International Bank Lending of Selected Developing Countries (as of the end of 1997)

Country	Total External Debt (US$ billion)	Percent of Short-term External Debt	Sources (percent)		
			European Banks	Japanese Banks	American Banks
A. Asia	389.4	n.a.	43.3	31.8	8.3
Rep. of Korea	103.4	67.9	35.1	22.9	9.6
Thailand	69.4	65.7	28.5	54.4	5.8
Indonesia	58.7	59.0	38.3	39.4	7.8
China	57.9	56.0	48.5	32.3	5.1
Malaysia	28.8	52.0	44.0	36.4	8.3
B. Latin America	251.1	n.a.	58.2	5.8	24.0
Brazil	71.1	62.2	45.0	6.9	22.8
Mexico	62.1	n.a.	42.6	7.4	28.4

Source: Bank for International Settlements (BIS), 1998.

2. ***Orderly and Gradual Process of Economic and Financial Liberalization***

International capital movements in the form of long-term FDI support economic development in recipient countries by providing access to foreign savings. The investing country enjoys a higher rate of return on capital, creating a win-win situation. Short-term capital, on the other hand, is highly volatile in nature. In most cases, the size of a developing or NIE is too small to withstand the effects caused by sudden financial reversals. It is this reason that short-term capital inflows should be modulated, so that they do not impair the performance of the domestic economy.

Financial liberalization in most of the East Asian countries tended to begin with the opening of the capital account and the loosely regulated flow of foreign capital into stock markets (foreign funds bought as much as 30-49 percent of all shares). In addition, heavy protection of local financial intermediaries and restrictions on the establishment of foreign banks reduced competition and weakened market forces. As regulation allowed foreign capital to flow into real estate and equities, bubble economies arose. The bursting of the bubbles combined with weak financial structures resulted in the financial crisis.

The ROC has followed an appropriate sequence to open up its capital account over the last 15 years. This orderly and gradual approach has lessened the impact of the recent financial crisis by giving the private sector more time to adjust and improve its ability to compete.

That is, while strictly observing the precondition of keeping inflation under control, the government began with tariff-rate reductions and then proceeded with the sequential liberalization of interest rates, exchange rates and capital movement, in that precise order. At present, each individual can freely remit US$5 million and each company US$50 million overseas every year, without approval. Our securities markets are open to FDI and the maximum ratios of shareholding by foreign investors will be abolished at the beginning of year 2001.

3. ***Flexible Industrial Structure***

Small- and medium-sized enterprises (SMEs) make up the backbone of ROC's industrial structure, accounting for 98 percent of all firms. This makes country's business sector highly flexible, nimble and adaptable. Moreover, the close relationship and division of labor between the SMEs and large-scale enterprises gives ROC's industrial structure an extremely firm "pyramid" or "cluster economy" form and allows for the full realization of operational efficiencies.

4. ***Sound Corporate Capital Structure***

In 1997, the capital-assets ratio of Taiwan corporations reached 53.9 percent, compared to a 24-percent for the Rep. of Korea, a 32.6-percent for Japan, and a 38.5-percent for the United States. This low ratio enables our companies to avoid any serious impact of tightening liquidity.

5. ***Vigorous Venture Capital Industry***

Venture capital companies play an important role in strengthening the competitiveness of the SMEs and promoting the development of the technology industry.

6. ***Effective and Prompt Measures Taken by the Government***

In order to dispose the turmoil, series of measures were taken by the ROC Government.

IV. MEASURES TAKEN AND LESSONS DRAWN FROM THE CRISIS

Measures Taken by the ROC Government

Given our very close ties with other economies in East Asia, we must inevitably feel some impact from the crisis afflicting the region. The sharp decline of demand in Asian

markets meant that our exports contracted last year, causing a downturn in our economic performance. The economic growth rate dropped from 6.7 percent in 1997 to 4.6 percent in 1998. As exports shrank by 9.4 percent, several business groups on the island ran into financial difficulties. To counter the adverse effects of the Asian crisis, our government has taken a series of actions, shown in more detail in Appendix 1.

For domestic recovery, the following measures were taken:

1. ***On the Export Front***

The Ministry of Foreign Affairs introduced the "Global Export Promotion Package" to help ROC's businesses explore overseas markets. It includes the provision of market information, management assistance, technical services, the expansion of export insurance coverage, the set-up of trade exhibitions and greater participation in international trade fairs.

2. ***On the Investment Front***

We have taken action to stimulate domestic demand as a mean to offset the slowdown in export growth. Our approach is to boost the economy by making public investments of NT$1,263 billion (or the equivalent of US$40 billion) in infrastructure projects, over the next two fiscal years. The projects include independent power plants, naphtha-cracking plants, the North-South high-speed railway, and the MRT (Mass Rapid Transportation) link between Chiang Kai Shek (CKS) Airport and Taipei. This should all contribute to stronger economic growth.

3. ***On the Stock Market Front***

The Ministry of Finance created the "Stock Market Stabilization Committee" and the "National Financial Stabilization Fund" to check speculation and reduce volatility in the stock market. The measures included:

a) entitling companies in financial difficulties to apply for the stop-trading of their shares on the stock market for a period of less than two months.
b) opening off-board markets to finance financial institutions extending security.
c) injecting more funds into security finance institutions.

4. ***On the Financing Front***

Despite the sound economic and financial fundamentals, two bill finance companies and some other listed companies have defaulted on the payments for corporate checks and loan payments during the last few months. The onset of financial problems involved: (1) decreasing revenue for some listed companies due to the negative export growth; (2) improper financial management of some conglomerates which have raised short-term funds from the money market to support long-term capital expenditure; (3) overexpansion and over-leverage of some corporations run by second-generation entrepreneurs, who are usually more aggressive than their fathers; and (4) extremely active involvement in stock market investment.

To ease businesses' liquidity problems, the Ministry of Finance formed a special committee to provide funds for the urgent needs of selected enterprises that were maintaining healthy business operations. The cross-ministerial task force was set up to meet weekly to coordinate and implement the bailout measures. The two principles of the government rescue program were: (1) to assist only the companies that have sound operations and fundamentals, but which have temporary liquidity problems; and (2) to assist only the enterprises and not their shareholders. The measures included:

a) granting a grace period for corporations to repay their debts, a second grant to delay the repayment was approved after the first. Based on the difficulty of corporation

financing, the government had to grant another six months for corporations to repay their debts, which were due on October 2000.

b) providing NT$40 billion for a special and emergency financing facility to SMEs.

c) lowering the sales tax of the banking sector from 5 percent, before the crisis, to 2 percent, then waived from October 2000.

5. ***On the Real Estate Front***

Other steps taken included the injection of NT$150 billion (or US$4.6 billion) into the real estate market, in the form of low-interest loans for first-time home purchasers, and new social security provisions strengthening assistance to the unemployed and those with low incomes.

6. ***On the Institutional Reform Front***

The Cabinet also approved a long-term institutional reform package – the Economic Enhancement Plan – designed to advance economic reconstitution and promote the pursuit of healthy growth. The Plan's broad-ranging measures all adhere to the basic principles of respecting market mechanisms, enhancing the legal system and raising government efficiency.

7. ***On the Monetary Front***

Financial stability forms the bedrock of sustained economic development. It enables the private sector to choose production plans and trade decisions under a consistent macro-environment. The Central Bank of the ROC adopted a flexible exchange rate regime, which allows market forces to determine the nominal exchange rate, while ensuring that the real exchange rate reflects economic fundamentals. Other features of ROC's exchange rate policy indicate the nation's resolve to remove distortions from the market, improve bank risk management and offer market participants accurate and timely information.

With respect to monetary policy, the government closely monitors developments both at home and abroad and fine-tune the country's policies accordingly. By maintaining the money stock within the target range, the country is not only able to meet the funding requirements of both private and public enterprises, but is also able to create a low-inflation environment. These policies had successfully preserved the stability of the domestic economy during the Asian financial crisis in the short run, and had made important contributions to economic development in the long run.

Aside from acting to safeguard the health and dynamism of the domestic economy, ROC Government also worked out plans to contribute to the regional financial and economic stability, which helped Southeast Asia's crisis-hit countries to the road of recovery. These plans included:

(1) the establishment of the Southeast Asia Investment Holding Company, with the capital of US$930 million, for investment in Southeast Asia. The outstanding investment reached US$230 million in October 2000.

(2) the provision of US$600 million by the Central Bank of the ROC for placement as foreign-exchange deposits in overseas branches and subsidiaries of Taiwan banks, with each bank receiving US$30 million to be applied to alleviating difficulties of Taiwan businesses operating in those overseas markets.

(3) expansion of the Young Entrepreneurs Training Program, which provide training in all aspects of business operations, to give more opportunities for the participation of young people from Southeast Asia. The Indonesian Young Entrepreneurs Training Program is in progress at this moment.

(4) in addition to such unilateral assistance, the country had also contributed to the establishment of a regional bailout mechanism. At the APEC Economic Leaders Conference, held November 1998, we called for our fellow APEC members to support the issuance of Collateralized Bond Obligations (CBOs), as proposed by the APEC Business Advisory Council (ABAC). The proposal of "Fostering Venture Capital to Stabilize the APEC Economy" was raised by the ROC in the 1999 APEC Annual Meeting and was accepted by the ministerial meeting so as to revitalize the economy by means of establishing start-up companies.

Lessons Drawn from the Crisis

From the country's experience in dealing with the recent financial crisis, we would like to make the following policy recommendations:

1. ***The Paramount Importance of Maintaining a Sound Financial System***

(1) Giving full play to the market mechanism is essential to establish a free and fair economic system that relies on market forces – only then will resource allocation be improved and productivity raised.

(2) Creating a sound legal and regulatory system. However, to be fully effective and successful, liberalization needs to take place in the context of a sound financial system. This requires effective supervision and management of financial institutions.

2. ***The Need to Carry Out A Thorough Revision of Economic Policy***

(1) Adopting sound and stable macro-economic policies: Macro-economic imbalance must not be permitted to persist in the long term; appropriate policies must be adopted to implement timely corrections.

(2) Maintaining a flexible foreign exchange policy: Sustained current account deficits are undesirable and should be corrected by appropriate policies. The nominal exchange rate should remain flexible, while the real exchange rate should reflect economic fundamentals.

(3) Implementing financial policy in the appropriate sequence: Financial liberalization needs to begin at home. The domestic financial market should be liberalized first, in order to build up a strong financial structure.

Internationalization should then proceed in a gradual and orderly manner: first with the current account, then with the capital account, and with long-term investment preceding short-term investment in the liberalization of the capital account. Domestic savings should be the major source of capital formation. FDI and long-term foreign borrowing are suitable alternatives if domestic savings are insufficient to meet the needs of domestic investment.

The supervision and monitoring of financial institutions should be bolstered. To dispose the impaired assets of those insolvent financial institutions, an early establishment of the Resolution and Trust Corporation (RTC) is necessary. After the financial crisis, several asset management corporations were established in the Asian countries, such as the Resolution and Collection Corporation (RCC) in Japan, Korea Asset Management Corp. (KAMCO) in the Rep. of Korea, the Financial Supervisory Commission (FSC) and Asset Management Corporation (AMC) in Thailand, Danaharta in Malaysia and the Indonesian Bank Restructuring Agency (IBRA) in the Indonesia. The ROC Government has declared to introduce the RTC operation in October 2000.

(4) Maintaining flexible industrial policies: These should focus especially on strengthening business operations, improving the industrial structure, encouraging private investment in machinery and equipment and research and development (R&D), and promoting sustainable industrial development. Banks, importers and exporters should be encouraged to reinforce risk management. Corporate governance also should be strengthened.

Supply-side adjustments also explain why the ROC has consistently managed to produce good results. The government and the private sector have worked together to alter the structure of our manufacturing base, with far reaching consequences. Heavy and high-tech industries accounted for 79.2 percent of total industrial output in 1999, up from 64.6 percent in 1989. Taiwan is now the world's leading producer in 13 categories of manufacturing products. In terms of output, Taiwan's information technology industry now ranks third in the world, while the semiconductor industry ranks fourth.

The structural changes that have taken place in Taiwan's manufacturing base have also altered the make-up of our exports. High-tech products accounted for 24.2 percent of total exports in 1989. By 1999, this figure had risen to 42.1 percent. Conversely, the share of low-tech products fell from 37.7 percent to 16.9 percent over the same period.

V. THE IMPACTS ON AGRICULTURE AND ITS CHALLENGES

The Impacts of the Asian Financial Crisis on Agriculture

Beginning in l953, the government carried out its First Four-Year Economic Development Plan to strengthen agricultural development and raise national income. This successful land reform laid solid foundations for the ROC's economic development.

As an indicator of the success of this plan, Taiwan doubled its agricultural output index from 21.2 percent in l952 to 42.7 percent in l966; and further to 84.8 percent in l985 and 94.4 percent in l999, with 1996 as the base year (Table 12).

However, as might be expected of the concept of diminishing returns, the growth rate of agricultural production has decreased from an average annual growth rate of 4.8 percent between 1952 and 1980, to 1.9 percent between 1981 and 1995, then to 0.16 percent in 1996 before the eruption of the Asian financial crisis. The production posted negative growths in the two years following the financial crisis, but some of the non-financial factors might explain the fluctuations in agricultural production.

1. ***Foot and Mouth Disease in 1997***

The Food and Mouth Disease (FMD) exploded in March 1997, right before the eruption of the Asian financial crisis in July 1997. As a result, 3.85 million animals were incinerated to prevent the contagion of the disease; exporting markets were lost because of the ban on importation by the importing countries, mainly the Japanese market. It was estimated that the loss of the agricultural GDP amounted to NT$3.4 billion by the FMD impacts of 1997. Meanwhile, pork exportation was eliminated and a total of NT$119.5 billion was lost.

2. ***Typhoon Zeb and Natural Disasters in 1998***

Five typhoons and six other natural disasters damaged the agriculture sector in 1998. Typhoon Zeb, along with the following mudslide, seriously damaged the agriculture sector. The total agricultural production loss by the natural disasters was estimated at NT$12.1 billion or NT$7 billion in agricultural value-added loss. Along with the ban in the exportation of pork, it meant that NT$28.1 billion was lost in the GDP.

Table 12. Major Agricultural Economic Indicators

Indicator	1970	1980	1990	1995	1996	1997	1998	1999
Production index	60.0	76.4	94.5	99.8	100.0	98.7	93.3	94.4
Change in production (percent)	6.90	1.10	2.10	3.70	0.16	-1.27	-5.63	1.19
Real agriculture GDP (NT$ million)	163,562	201,293	238,879	246,007	245,184	241,562	225,635	229,654
Agriculture GDP real growth rate (percent)	4.8	-2.0	2.3	2.8	-0.3	-1.5	-6.6	2.7
Agriculture GDP as percent of total GDP (percent)	15.5	7.7	4.2	3.5	3.2	2.6	2.5	2.6
Agriculture fixed capital formation (NT$ million)	10,699	16,738	25,469	23,381	27,402	26,529	21,938	26,355
Agriculture fixed capital formation as percent of total capital formation	6.7	3.0	2.5	1.4	1.6	1.4	1.1	1.1
Agricultural labors (000 persons)	1,680	1,277	1,064	954	918	878	822	776
Agricultural labors as percent of total employment (percent)	36.7	19.5	12.8	10.5	10.1	9.6	8.8	8.3

Sources: 1) Council of Agriculture, ROC, *Basic Agricultural Statistics*, 2000; CEPD, ROC, *Taiwan Statistical Data Book*, 2000; and 3) Directorate-General of Budget, Accounting and Statistics (DGBAS), ROC, *Statistical Abstract of National Income, Taiwan Area, ROC, 1951-2000*, March 2000.

Note: At 1996 prices.

3. ***The 21 September 1999 Earthquake***

The earthquake struck Central Taiwan on 21 September 1999. More than 2,400 people were dead or missing. One hundred thousand houses collapsed or were seriously damaged by the quake. The total capital loss amounted to NT$267.5 billion, and total production loss was estimated at NT$97.1 billion, which amounted to an NT$30 billion loss in GDP. With regards to the agriculture sector, not only did it suffer a production loss, estimated at a total of NT$2.1 billion equivalent to a NT$1.3-billion loss in GDP, but it also faced a serious capital loss, which amounted to NT$7.7 billion.

Experience from the Kobe Earthquake (1995) shows that replacement due to damages will generate an expansion for demand, while recovering the loss of agricultural production capacity. After the immediate term, actual GDP growth will be higher than before the earthquake.

From the agricultural production change following the financial crisis, the agricultural economy was damaged by other factors rather than the Asian crisis, and that the impacts of the Asian financial crisis to the small-sized farmers in the ROC was limited from the beginning.

The Impacts on Agricultural Productivity

The conceptual change in output per hour is primarily designed to reflect the accurate trend of labor productivity, over a series of time, in order to indicate the flow and utilization of resources and to project future trends.

Table 13 shows that in 1998, the labor productivity index in the agriculture sector was 102.88 (with the base year of 1996 = 100), which declined 1.67 percent from the preceding year. This was due to the agricultural output decline of 6.59 percent of the preceding year, which was higher than the decline of working-hour input of 1.59 percent.

The index of agricultural labor cost per unit output in 1998 was 101.24, showing a rise of 1.17 percent from the preceding year, owing to the decline in agricultural labor productivity, which decreased faster than the employees' earnings.

Overall, all of the industries combined had a rise of 4.75 percent growth in labor productivity and a 0.73-percent decline in unit labor cost in 1998.

In 1999, the agricultural labor productivity had a growth of 6.81 percent, while the agricultural unit labor cost declined by 19.30 percent. The growth of agricultural labor productivity seems to be unreasonable if we consider the serious impacts caused by the 21 September Earthquake. The agricultural loss, damage by the quake, mainly focused on the capital loss of NT$7.7 billion, instead of the output loss of NT$1.3 billion. Therefore, much of the money for reconstruction and recovery was injected into the damaged areas and became the sources of GDP growth. The nature of the so-called "creative destruction" and Kobe's experience were proved in the ROC.

To sum up, agricultural labor productivity was not hurt much by the Asian financial crisis in the ROC.

Table 13. Labor Productivity and Unit Labor Costs

(Unit: Percent)

Year	All Industry				Agriculture			
	Labor Productivity (output per hour)		Unit Labor Cost		Labor Productivity (output per hour)		Unit Labor Cost	
	Index	Annual Rate of Change	Index	Annual Rate of Change	Index	Annual Rate of Change	Index	Annual Rate of Change
1989	68.67	8.21	82.88	6.00	77.49	4.11	71.32	6.64
1990	72.52	5.61	90.89	9.66	78.89	1.81	79.25	11.12
1991	76.35	5.28	95.73	5.33	79.50	0.77	88.60	11.80
1992	80.62	5.59	98.64	3.04	80.89	1.75	93.84	5.91
1993	85.37	5.89	101.58	2.98	90.95	12.44	95.95	2.25
1994	89.36	4.67	102.57	0.97	91.80	0.93	105.37	9.82
1995	94.54	5.80	101.98	-0.58	95.94	4.51	99.90	-5.19
1996	100.00	5.78	100.00	-1.94	100.00	4.23	100.00	0.10
1997	106.46	6.46	97.72	-2.28	104.63	4.63	100.07	0.07
1998	111.52	4.75	97.01	-0.73	102.88	-1.67	101.24	1.17
1999	116.66	4.61	93.44	-3.68	109.89	6.81	81.70	-19.30

Source: DGBAS, Executive Yuan (Cabinet).
Note: Base year: 1996 = 100 percent.

1. ***Impacts on the Marginal Capital Output Ratio of Agriculture***

The marginal capital-output ratio (MCOR), an inverse of the investment efficiency ratio, shows the investment requirement per additional unit of GDP. Table 14 shows that the ROC's investment ratio has been lower than most of the crisis-hit East Asian countries over the past two decades. The investment ratio of the ROC decreased from an average of 24.17 percent during 1979-86, to 21.94 percent during 1987-97 and to 24.8 percent in 1998 and 24.1 percent in 1999, while those of East Asian countries rose sharply. However, from 1987 to 1997, the ROC's investment-efficiency ratio[1] averaged 0.31, considerably higher than those of the Rep. of Korea (0.24), Indonesia (0.21), Malaysia (0.24), and Thailand (0.25).

Table 14. A Comparison of Investment Ratios and Investment-Efficiency Ratios of Selected East Asian Economies

	ROC	Rep. of Korea	Indonesia	Malaysia	Thailand
GDP growth rate (percent)					
1979-86	7.5	7.4	5.7	5.5	5.4
1987-97	6.7	8.3	6.9	8.5	9.5
Investment ratio (percent)					
1979-86	24.17	29.69	26.33	31.75	27.28
1987-97	21.94	34.81	32.74	35.06	37.41
Investment efficiency ratio					
1979-86	0.31	0.25	0.22	0.17	0.20
1987-97	0.31	0.24	0.21	0.24	0.25

Sources: 1) IMF, *International Financial Statistics Yearbook, 1998*; and 2) Chi Schive, 1999.

Note: The US dollar is used as the unit of account.

The MCOR of the ROC's economy stayed unchanged during the two sub-periods of 1979-86 and 1987-97, even though the economy underwent significant restructuring.

The enhancement of allocative efficiency over the past decade has strengthened the resilience of the ROC's economy. It explains why the ROC was relatively unaffected by the Asian financial crisis. Unlike the ROC, most of the crisis-affected Southeast Asian countries had suffered resource misallocation stemming from structural weaknesses, such as a mismatch between the industrial and financial structure (which led to an overinvestment in protected or targeted industries), flawed financial policies and poor corporate governance. Studies of the Asian financial crisis have focused on the investment inefficiency in the affected countries; all of these reasons are major causes of the crisis, and are impediments to recovery for the post-crisis period.

Analyzing changes in the MCOR of the ROC, between 1989-97 and 1998-99, we found that all industries lost efficiency after the financial crisis (Table 15). The MCOR of the service sector increased from 2.25 in 1989-97 to 3.60 in 1998-99; the industrial sector MCOR raised from 4.74 to 9.18 and the agricultural sector from -2.86 to -0.27.

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[1] Investment efficiency ratio = $\frac{\Delta Y}{I} = \frac{\Delta Y / Y}{I / Y}$; $\frac{\Delta Y}{Y}$ denotes GDP growth, $\frac{I}{Y}$ denotes investment ratio. Investment efficiency ratio which measures the marginal productivity of capital is also a reciprocal of MCOR.

Table 15. Changes in the Marginal Capital-Output Ratio of the ROC

Period	All Industries	Agriculture	Industry	Services
	$\frac{I}{\Delta Y}$	$\frac{I_A}{\Delta Y_A} \bullet \frac{\Delta Y_A}{\Delta Y}$	$\frac{I_I}{\Delta Y_I} \bullet \frac{\Delta Y_I}{\Delta Y}$	$\frac{I_S}{\Delta Y_S} \bullet \frac{\Delta Y_S}{\Delta Y}$
1989-97	2.11	-2.86*(0.003)	4.74*(0.19)	2.25*(0.53)
1998-99	5.05	-0.27*(0.013)	9.18*(0.25)	3.60*(0.77)

Source: DGBAS, *National Income of Taiwan Area, ROC*, various years, Executive Yuan, ROC.

Notes: 1) $\frac{I}{\Delta Y} = \frac{I_A}{\Delta Y_A} \bullet \frac{\Delta Y_A}{\Delta Y} + \frac{I_I}{\Delta Y_I} \bullet \frac{\Delta Y_I}{\Delta Y} + \frac{I_S}{\Delta Y_S} \bullet \frac{\Delta Y_S}{\Delta Y}$

I: real fixed investment;) $Y_{t,j} = Y_{t,j} - Y_{t\text{-}1,i}$; Y: real GDP.

2) A weighted annual average is used as the average MCOR for all industries in order to avoid abnormal changes in ratio values caused by small values in the denominator.

3) Industry includes the mining, manufacturing, public utility and construction sector.

The difference in the agricultural MCOR between the two periods observed may be attributed to two effects: a MCOR effect and an output-structure effect.[2] Empirical results indicate that agricultural MCOR increased by 2.60 between 1989-97 and 1998-99, with the MCOR effect accounting for a decrease of 0.20 and the output-structure effect making an negative contribution of 2.40.

These results reflect the fact that the agriculture sector became less capital saving (or that the trend of capital saving in agriculture decelerated) during the second sub-period. Nonetheless, the structural transformation of the agriculture sector in the economy did affect its average MCOR.

2. ***Impacts on Food Self-sufficiency Ratios***

The ratios of food self-sufficiency were adopted to describe the change in food security of the ROC. Two concepts are used to measure the ratios of food self-sufficiency; one is weighted by the prices of foods consumed while the second is weighted by the energy contained in the food.

Table 16 shows that the ratio of food self-sufficiency declined after the financial crisis. However, was food security in the ROC threatened by the financial crisis? Up until now, there are no warning signs to affirm this. What we do find is the long-term decreasing trend of the food self-sufficiency ratios. Also, the declines in the ratio for meat were mainly caused by the FMD eruption in 1997.

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2 $\left(\frac{I_a}{\Delta Y_a}\right) - \left(\frac{I_a}{\Delta Y_a}\right) = \frac{I_{a,1}}{\Delta Y_a} \bullet \frac{\Delta Y_1}{\Delta Y_{a,1}} - \frac{I_{a,0}}{\Delta Y_0} \bullet \frac{\Delta Y_0}{\Delta Y_{a,0}} = \left(\frac{I_{a,1}}{\Delta Y_1} - \frac{I_{a,0}}{\Delta Y_0}\right)\frac{\Delta Y_1}{\Delta Y_{a,1}}$

$+\left(\frac{\Delta Y_1}{\Delta Y_{a,1}} - \frac{\Delta Y_0}{\Delta Y_{a,0}}\right)\frac{I_{a,0}}{\Delta Y_0}$, 0 refers to period 1987-97, 1 refers to period 1998-99, *a* refers to agriculture. The first item measures the MCOR (change) effect while the second one captures the output structure (change) effect.

Table 16. Food Self-sufficiency Ratios in the ROC

(Unit: Percent)

Year	Average	Cereals	Starch Roots	Sugar	Pulses and Oilseeds	Vegetables	Fruits	Meat	Eggs	Fish and Seafood	Milk
Weighted by prices:											
1994	83.1	57.3	24.7	93.5	14.4	96.4	89.3	107.7	99.7	107.1	83.1
1995	85.4	56.3	34.6	83.6	14.8	96.3	88.6	110.2	99.7	113.6	85.4
1996	83.0	48.6	36.0	78.2	12.8	96.0	87.4	110.8	99.9	110.4	83.0
1997	79.5	53.9	34.3	70.7	11.2	94.7	86.2	96.7	100.0	115.8	79.5
1998	78.6	51.9	31.8	62.9	10.5	92.7	85.1	85.5	100.0	128.4	78.6
1999	77.1	58.0	33.4	55.9	9.3	93.9	85.1	80.5	100.0	118.3	77.1
Weighted by energy:											
1994	38.6	29.1	20.4	95.4	4.8	99.1	90.9	109.6	99.7	136.9	23.1
1995	37.4	28.2	25.8	84.7	4.7	99.5	89.8	115.2	99.7	143.0	25.4
1996	37.2	26.8	24.3	79.3	4.6	98.7	88.6	112.3	99.9	136.0	26.2
1997	37.1	30.2	21.6	71.0	4.1	96.9	87.2	100.2	100.0	132.5	26.1
1998	36.7	28.6	20.5	62.7	3.9	94.5	87.0	90.2	100.0	143.4	27.3
1999	35.6	29.8	22.1	54.2	3.3	96.3	86.4	86.6	100.0	131.3	26.9

Sources: 1) COA, Executive Yuan, *The Agricultural Statistics Yearbook*; and 2) Statistics Office, COA, Executive Yuan.

The Impacts and Challenges of Farmers' Associations

The credit units of farmer's associations play a very important role in agricultural financing. There were 305,287 farmers' associations installed with credit units, and 40,270 fishermen's associations installed with credit units by the end of 1999. As seen in Table 17, the balance of deposits registered to NT$138.4 billion or 7.7 percent of overall financial institutions and loans amounted to NT$77.7 billion or 5.6 percent of overall financial institutions by the end of 1999.

1. ***Impacts on the Financial Operations of Farmers' Associations***

Hit by the financial crisis, the net worth ratios of the credit units of the farmers' associations declined from the peak of 25.7 percent in 1991 to 5.2 percent in 1999, and the return on assets declined from 1 percent to 0.3 percent during the same period.

The non-performing ratio of farmers' and fishermen's associations soared after the Asian financial crisis; it registered at 16.1 percent by the end of 1999, much higher than for the overall financial sector (5.67 percent). The total non-performing loans were reported at NT$200 billion. At the end of 1999, 26 of the 314 credit units lost money, the total deficit of which amounted to NT$3.8 billion.

Seventy percent of the profit from farmers' associations, after accounting for the deficit in previous years, has to be disbursed for the purposes of promotion, training and welfare activities regulated by *the Statute for the Farmers' Associations*. While the credit units are the major source of benefit in most of the farmers' associations, the deficit in the credit units of some 20 farmers' associations imply that they are not able to support the disbursement of promotional activities, etc.

2. ***Causes for the Credit Units' Poor Performance***

What causes poor performance in the credit units nowadays? The reasons can be divided into external and internal factors as follows:

(1) *The External Factors*

The deregulation of the financial market and the emergence of new financial commodities from the early 1990s, which included the abolition of the ban on the establishment of new banks and the loosened regulation on the setting-up of branches by foreign banks, created a keen competitive financial environment. The credit units lost their competitiveness caused by the limitation of setting-up new branches, except in the rural areas and those operating on new financial commodities. To compete with other financial institutions, the credit units of farmers' associations were forced to expose themselves to business that involved higher risk and less competitiveness. Influence from the Asian financial crisis and the crash of bubble economy resulted in the soar of non-performing loans.

The second factor was the poor governance of the credit units. Three ministries are involved in the governance of the farmers' associations: the Ministry of Interior Affairs is in charge of association affairs; the Ministry of Finance rules the financial activities of the credit units and the Council of Agriculture takes care of agricultural production activities. Very few actions have been taken and the lack of division-of-labor between the ministries makes problems even more serious than before.

(2) *The Internal Factors*

The capital structure of farmers' associations is not of corporate-like shares, and there are no shareholders in the farmers' associations. It is impossible for the farmers' associations to increase capital by issuing shares to improve their capital structure.

Table 17. Highlights of the Credit Units of Farmers' Associations

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999
Deposits:									
Balance (NT$ billion)[a]	71.47	87.31	104.04	120.01	122.86	124.71	127.39	131.83	138.43
As percent of overall financial institutions[b]	9.4	9.6	10.0	10.0	9.4	8.7	8.3	7.9	7.7
Loans:									
Outstanding (NT$ billion)	38.53	53.87	68.84	80.22	88.24	84.37	82.37	80.35	77.72
As percent of overall financial institutions	6.8	7.4	8.2	8.1	8.2	7.5	6.6	6.1	5.6
Profit (NT$ billion)	7.58	8.78	10.19	11.76	9.68	10.85	9.14	6.85	3.82
Net worth ratio (percent)[c]	25.7	24.6	23.2	22.6	16.6	16.9	13.1	9.4	5.2
Return on assets (percent)[d]	1.0	0.9	0.9	0.9	0.7	0.8	0.7	0.5	0.3
Non-performing ratio (percent)	-	-	1.7	2.3	4.0	6.7	9.2	11.7	16.1
Deposits loans ratio percent)	51.3	51.4	58.9	62.1	66.0	68.2	63.1	59.7	55.8

Sources: Central Bank of China, 1999; and Ministry of Finance, 1999.

Notes: [a] US$1 = NT$31 on October 2000; [b] include the banking sectors and the postal savings system; [c] income before tax (net worth); and [d] income before tax (assets of the financial institutions).

Seventy percent of the benefits from the credit units, regulated by the law, have to support promotional activities, so there is little left for the capitalization improvement.

Lack of financial expertise in the management team is another reason for the poor performance of credit units. Moral hazard and political intervention weaken the stability and operation of credit units.

3. ***The Challenges and Government Strategies for the Farmers' Financial System***

To solve poor capital structure problems in some of the credit units, a task force, chaired by the Vice-Premier, was set up under the Cabinet. The proposals recommended to solve the problems include:

(1) *Establish a National and Local Farmers' Financing System*

A tentative proposal plans to transform the Cooperative Bank into the National Farmers' Bank, and allow the credit units of farmers' associations that have sound capital structure or a reevaluation in assets, to be either the shareholders of the national or the local farmers' bank. However, the proposal to set up a nationwide farmer bank has been rejected by the employees of the Cooperative Bank and the Ministry of Finance.

(2) *Set Up an Exit Mechanism*

To solve the insolvency problem in some of the credit units, exit mechanism is necessary. The government will assist the credit units in improving their capital structure and operation for three years. By the end of the assistance, if the units are not able to improve their capital structure or operation, the nationwide farmers' bank will take over the units.

(3) *Upgrade the Financial Competitiveness of Farmers' Associations*

The credit units may be allowed to run new financial activities, such as those of the commercial banks. The farmers' associations are encouraged to merge either on a prefecture-basis or zone-basis, so that they can gain the benefit of scale economies.

(4) *Strengthen the Financial Governance*

On-the-job training will be implemented to improve the knowledge capacity and ability within the credit units of farmers' associations. An independent auditing unit will be set up. An effort to elect leaders for the farmer's associations is being implemented. To unify the governance system, the credit units are supposed to be governed by the Ministry of Finance, while the other units in the associations will be under the governance of the Council of Agriculture.

Congress approved a new version of *the Statute for Farmers' Association* in December 2000, and this new regulation would pave the way for the revitalization of farmers' associations. The government acknowledged the problems of the credit units of farmers' associations to have originated before 1997, due to too much political intervention and late actions. Less political consideration and deregulation on financial activities, along with sound financial supervision and a healthy governance system will be beneficial to the improvement of farmers' associations management.

VI. CONCLUSIONS

The ROC's long-term approach to develop its small farm economy is a well-known success story. It started in the early 1950s with a peaceful land reform, followed by

improvements in farm resource utilization, building of rural infrastructure, provision of agricultural extension services and introduction of production structure changes.

Over the years, the ROC's agriculture has experimented with various adjustments in farm management to cope with fierce competition from other sectors for land, labor and other resources, while minimizing the adverse effects of farmland fragmentation and small-scale farming. Improvements have been introduced in the scale of farming, farm mechanization, farm organization, infrastructure development and farmer training. The results have enhanced farm income and improved living conditions for farmers. In addition, the ROC has introduced a series of agricultural policies to balance the growth of agriculture and industries sectors.

Even with the occurrence of FMD in 1997 and other natural disasters within the following two years, the labor productivity of the ROC's agriculture rose 4.63 percent in 1997, then decreased 1.67 percent in 1998, but soared again by 6.81 percent in 1999. These figures indicate that agricultural labor productivity was adversely affected by the crisis but was soon recovered. With regard to the capital investment efficiency, the agriculture sector became less capital-saving after the eruption of the financial crisis. The structural changes in the ROC's agriculture explained and dominated the change. With respect to the concern of food security, there are no warning signs to indicate that the self-sufficiency ratio of food, either weighted by prices or by energy contained, declined or was damaged by the financial crisis.

The Asian financial crisis has underscored the importance of institutional reform in preventing future crises. A good institutional framework is important for economic efficiency and long-term financial health. The ROC's more balanced approach to economic development, a better division-of-labor among SMEs and large enterprises, and the earlier, steady, and persistent financial reform with proper sequencing, had enabled the economy to suffer relatively less from the crisis.

Nevertheless, the regulation that had accompanied the ROC's liberalization from the early 1980s has shown to be inadequate in dealing with current problems. It is never too late for the overall economy and the agriculture sector to commit themselves to institutional reform for the agricultural financial system, in order to tackle the financial crisis and the approaching WTO accession.

The next few years will prove to be a critical and challenging period for the long-term development of Asia. For the people of Asia, there will be difficulties and hardships on the road to recovery. But whatever lies ahead, I am sure that the people of Asia, by dint of wisdom and hard work, will resolve all crises, overcome all obstacles and enjoy a bright economic outlook in the new millennium.

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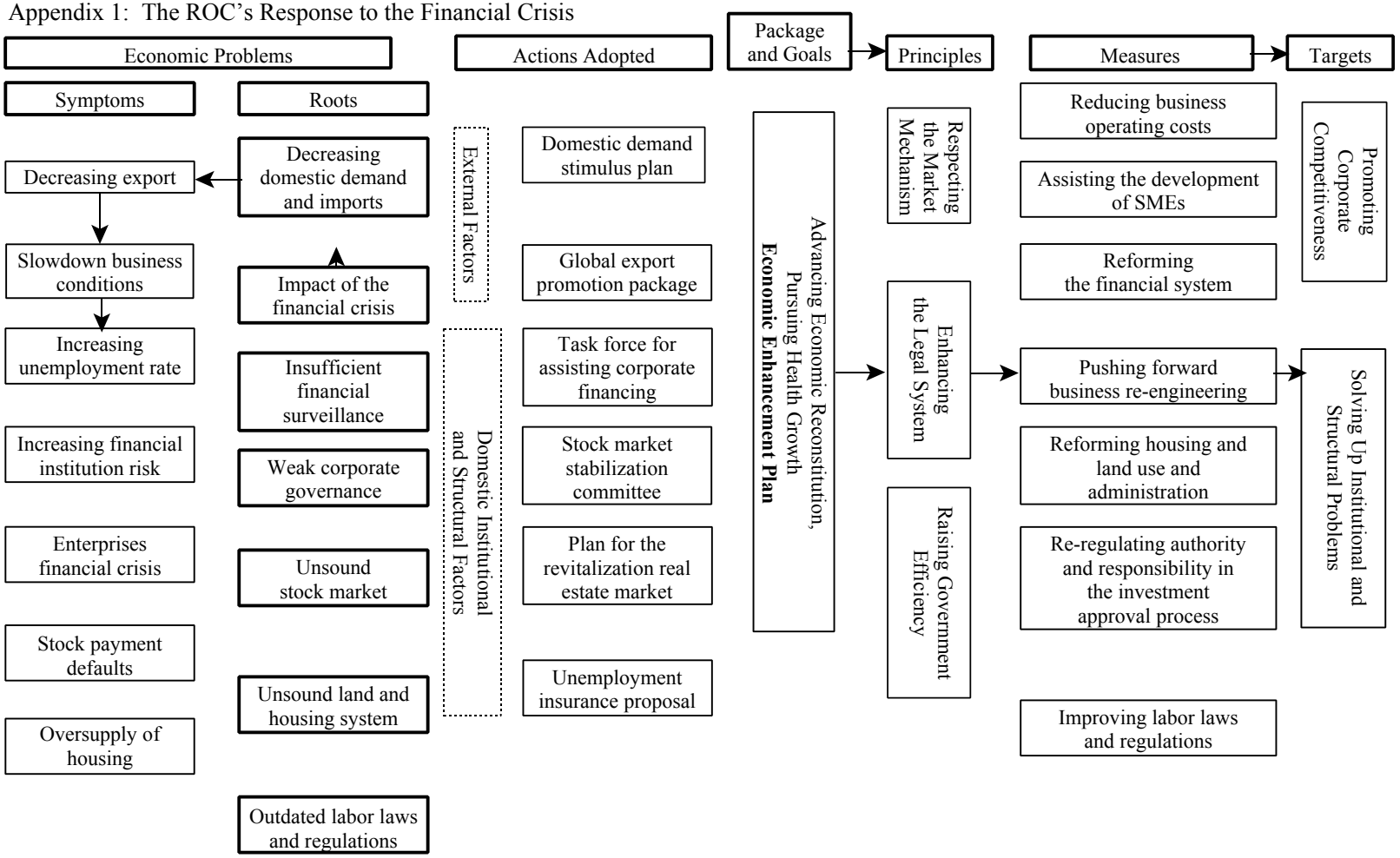
Appendix 1: The ROC's Response to the Financial Crisis



3. INDIA

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INTRODUCTION

The East Asian crisis burst onto the world scene almost like a bolt from the blue, affecting many rapidly growing Southeast Asian countries like Thailand, the Rep. of Korea, Malaysia, Indonesia, and the Philippines. Their reverberations have been felt by neighboring countries, including India.

The crisis has given rise to many issues to the countries themselves and also to the international community. The question of restructuring the economy, revamping the financial sector and appropriating changes in exchange rates with transparent allocation of resources on productive assets, in a manner to raise the productivity and return rate are matters to be addressed by the concerned countries themselves. But this crisis has raised certain issues relating to international financial institutions like the International Monetary Fund (IMF), and the revolution of international capital. As far as the first aspect is concerned, it may be said that the strategy of overnight deregulation does not provide the necessary rules and infrastructure for financial markets to work well. At the same time, a system of extensive control and government involvement as practiced in India is also not supportive of growth enhancement of financial markets. Government is needed to ensure thorough regulated reforms to put the financial systems in order, so as to function in a manner supportive of the growth process of economy. This calls for a sound legal framework, governing contracts sound banking, total transparency, and a vigilant central bank. Globalization of capital markets has an effect of redistributing world savings and enabling the countries to take advantage of available savings. The East Asian economy clearly benefitted from such globalization of capital markets. But, keep in mind that the capital markets either overshoot or undershoot. The East Asia experience clearly shows that with an open capital account, a country must have strict monitoring of capital inflow and supervisory control of the financial system in order to insulate the economy from severe shocks. A loose domestic financial system with volatile capital inflows is the worst combination spelling danger and exposing the economy to a sudden shock, which it cannot withstand.

HOW DID INDIA ESCAPE THE CRISIS?

India was not very much affected by the financial crisis of the East Asian countries. For this, one has to appreciate the macroeconomic aggregates of India and those of the affected countries of East Asia in the year 1997 (Table 1). This Table clearly shows various economic aggregates for the period preceding the economic crisis in 1990-96 and for the year 1997. The GDP rate of India was lower and the inflation rate was higher, but it had less

current account deficit than the East Asian countries. This advantage in India was reversed by the lower rate of domestic savings, which lagged behind the East Asian countries in fixed capital formation. The government deficit was very high, while East Asian countries had surpluses or lower deficits. The Indian financial system was also not sound. In March 1996, the non-performing assets were estimated to be as high as 23 percent of total assets of the state-owned banks. The Non-Bank Financial Intermediaries (NBFIs), who proliferated during the proceeding decade, accounted for 17 percent of the household deposits against the banks' share of 33 percent. The number of NBFIs is estimated at 40,000 and has a wide range of activities like lease, hire purchase, stock brokering, etc. but their activities were totally unregulated, which lent additional dimensions to a volatile financial scenario in the Indian capital market. The merchant bankers, underwriters and advertisers also colluded to engineer inflating project costs through the over-invoicing of imported capital inputs and the fixing of high premiums. This resulted in a substantial amount of capital being used inefficiently and also resulted in siphoning the capital market. People started loosing confidence. India experienced a crisis in 1993, due to a sudden depression in Indian currency. But, immediate steps were taken to maintain the current account deficit at an appropriate level, based on the recommendations of a high-level committee under the chairmanship of Dr. C. Rangarajan, Governor of the Reserve Bank of India, on the balance of payment as a result of which, the current account deficit was maintained at 1.6 percent of the GDP. Before the East Asian crisis, India could manage the sale of Resurgent India Bonds to the amount of Rs.179,775 million (US$4.23 billion). Further, the uncertainty in the finance system was caused by the economic sanctions imposed on India, due to the nuclear explosion at Pokhran in the middle of 1998 and the Kargil war in 1999. These greatly affected the Indian financial system; the Indian rupee further depreciated to 43.602 against US$1.00 in September 1998.

The problem of East Asian countries was the complete integration of their financial markets with the world market, which was not so in India. Not only was capital convertibility absent in India, but also the disallowance of foreign asset holdings by individuals. Capital movement across the borders was strictly regulated. All these measures helped to insulate the economy from the repercussions of the East Asian crisis. Depreciation of the Indian currency, due to nuclear experiment and the Kargil war, had nothing to do with the East Asian factor. One of the arguments is that East Asian countries had been fully exposed to the outside world. Most of their exports were directed to the developed countries. So, with the slowdown in the demand for Southeast Asian products, particularly from the United States and Japan, the East Asian countries suffered and their exports sharply declined. However, India, with a narrow foreign trade sector, did not have the exposure of similar magnitude to foreign economic disturbance. Private capital flow into India is still relatively small, in absolute terms and relative size of its economy. Net long-term private flows to India reached US$6.4 billion in 1996, which is a tiny fraction of the US$247 billion that went into the developing countries that year. This represented only 1.8 percent of the Indian GDP, less than half of the average of the developing countries. For the first time in 1986, India received portfolio equity flows, which was substantially lower in 1993, raising to US$4.4 billion in 1996 or one half of all recent net long-term private capital flows. FDI, which has been low, increased nine folds after 1992 to reach US$2.6 billion in 1996. Long-term debt flow has been largely constant for the last 15 years, but it has fallen from representing virtually all private capital flows. In India, though the domestic interest rate was higher than the foreign interest rate, a series of

Table 1. Selected Asian Economies: Basic Economic Data

(Unit: Percent)

Macro Aggregate	Year	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Thailand	India
Real GDP growth rate[a]	1990-96	8.0	7.7	8.8	2.8	8.5	8.6	5.4
	1997	5.0	6.0	7.0	4.3	7.2	0.6	5.8
Inflation[b]	1990-96	8.6	6.4	3.5	10.5	2.5	5.1	9.8
	1997	8.3	4.3	3.7	5.0	2.1	6.0	5.9
Domestic saving[c]	1990-96	28.9	35.0	32.1	18.8	47.4	34.2	22.8
	1997	27.3	32.9	37.0	21.0	50.0	31.8	25.2
Fixed capital formation[c]	1990-96	27.4	36.7	38.3	22.5	34.2	40.4	23.0
	1997	26.5	36.6	42.7	25.1	35.4	35.8	26.4
General government balance	1990-96	0.2	-1.0	0.3	-1.7	11.6	2.8	-10.4
	1997	2.0	0.0	1.6	-0.9	8.3	-0.4	-9.1
Domestic credit growth	1990-96	25.7	17.7	18.3	38.2	13.0	21.3	12.8
	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Foreign liability of banks[d]	1990-96	10.0	8.5	11.5	14.0	35.7	14.1	9.8
	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Current account balance[c]	1990-96	-2.6	-1.9	-6.0	-4.2	12.4	-6.9	-1.5
	1997	-2.9	-2.9	-5.8	-4.5	14.0	-3.9	-1.6

Source: World Bank,1997.

Note: [a] Annual percentage change; [b] percent change in Consumers' Price Index (CPI); [c] percentage of GDP; and [d] percent of total liability of banking system.

depreciation between 1991 and 1996 did not make capital inflow attractive. Subsequently, the interest rate was lowered below the foreign interest rate. This was to arrest industrial recession, but it did not cause capital flight, due to the intervention of the central bank to increase the values of domestic capital assets. India, thus, largely escaped the financial crisis, even though its economy has been affected indirectly in many ways. Capital inflow to India has slowed down and its trade has also shrunk. Table 2 clearly indicates that both the growth of export and imports as a percentage of Balance of Payment (BOP) have declined over the period of 1990-91 to 1999-2000. However, exports as percentage of GDP over this period has marginally increased from 6.2 to 8.2, occasionally rising to higher levels of 8.9 and 9.2. There has not been a significant difference in the trade balance during 1990-91 to 1999-2000. Nonresident deposits as a part of total capital (TC) inflows, had gone up from 18.3 percent to as high as 37.1 percent, but started declining thereafter and have gone down to a level of 21.9 percent in the year 1999-2000. However, one redeeming feature of the short-term debt as percentage of Foreign Exchange Reserves (FER), is that it has considerably declined over the period. The decline in portfolio investment is attributed to the Asian financial crisis, which started misperceptions in emerging markets like India. But the most dominating factor influencing the direction of capital flow is the stability of stock prices. Of late, the Indian stock market has become volatile. To make things worse, the global scenario has been very depressing and India's rating in the international market as a debtor has been lowered.

India's Foreign Trade

The East Asian countries had boomed since the beginning of 1990 and India exploited their high growth by pushing exports into their markets. As a result, the growth rate of India's export to these countries was higher than that of the rest of the world. But, the crisis brought about a turnaround in this trend. The products that were affected were oil meals, gems and jewelry, machinery, iron ore and semi-finished iron ore, leather and leather goods and project exports. The contractions in the East Asian countries, in the aftermath of the crisis, have compelled them to generate surpluses in their trade balance by contracting their imports. India could not escape from this import compression. These countries, because of their high economic growth in 1990s, were significant destinations for Indian export. Indonesia, Malaysia, the Philippines, the Rep. of Korea and Thailand together accounted for 6.8 percent of India's export in 1996-97, which decreased to 5.65 percent in 1997-98 and further to 3.79 percent in 1998-99 (Table 3). The percentage change in Indian exports to East Asian countries showed a sudden decline in the year 1996-97. From a level of 27.29 percent during the year 1994-95, it rose to a substantial level of 51.4 percent in the year 1995-96; but thereafter, it declined to 7.06 percent and then registered a negative growth as high as 36.36 percent. It is heartening to note that for all the East Asian countries, the percentage changes in industrial export have registered substantial increase in 1999-2000 (Table 3).

India's rupee depreciated by 17.6 percent, between the onset of the Asian financial crisis in July 1997 and February 1999, when the crisis was over. But, this depreciation is quite modest compared to the other Asian countries. Competitions of imports from these countries have intensified in Indian markets. During and after the crisis in 1997-98 and 1998-99, imports to India from these countries increased by 15.9 percent and 30.42 percent, respectively, which are higher than the corresponding figures during the pre-crisis period of 1996-97. It may also be noted that the growth rate of imports has slipped to 12 percent in 1999-2000, when the impact from the crisis weakened the East Asian economies (Table 4).

Table 2. An Anatomy of the Indian External Economy during 1990-91 to 1999-2000

Sl. No.	Item	1990-91	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000
1.	Growth of exports - BOP (percent)[a]	9.0	20.2	18.4	20.3	5.6	4.5	-3.9[b]	7.8
2.	Growth of imports - BOP (percent)[a]	14.4	10.0	31.3	21.6	12.1	4.6	-7.1[b]	2.7
	Of which: petroleum oil lubricant (percent)	60.0	-5.7	3.0	27.0	33.4	-18.7	-21.2	53.3
3.	Exports/imports - BOP (percent)	66.2	84.8	74.8	74.0	69.7	69.7	72.1	70.3
4.	Import cover of FER[c] (number of months)	2.5	8.6	8.4	6.0	6.5	6.9	8.2	7.9
5.	External assistance (net/TC[d]) (percent)[e]	26.3	19.2	19.0	29.7	10.6	9.7	10.4	2.7
6.	External commercial borrowing (net/TC[d]) (percent)[e]	26.8	6.1	12.9	42.9	27.3	42.6	55.4	1.5
7.	Nonresident deposits/TC[d] (percent)[e]	18.3	12.2	2.1	37.1	32.1	12.0	22.1	21.9
8.	Short-term debt/FER[c] (percent)	146.5	18.8	16.9	23.2	25.5	17.2	13.5	13.9
9.	Debt service payments as percent of current receipts	35.3	25.6	26.2	24.3	21.2	19.1	18.0	18.7
As percent of GDP[f]									
10.	Exports	6.2	8.3	8.4	9.2	8.9	8.8	8.2	
11.	Imports	9.4	9.8	11.2	12.4	12.8	12.6	11.3	
12.	Trade balance	-3.2	-1.5	-2.8	-3.2	-3.9	-3.8	-3.1	
13.	Invisible balance	-0.1	1.1	1.8	1.6	2.7	2.4	2.2	
14.	Current account balance	-3.2	-0.4	-1.0	-1.7	-1.2	-1.4	-1.0	-1.5[g]
15.	External debt	30.4	33.8	30.9	27.1	24.7	24.4	23.5	23.3[h]
16.	Debt service payment	3.0	3.1	3.4	3.4	3.0	2.7	2.6	

Source: Government of India.

Notes: [a] Rupee equivalent of BOP components are used to arrive at foreign debt position ratios. All other percentages shown in the upper panel of the Table are based on US dollar values; [b] growth rate of exports and imports during April-September 1999 are the growth rates over April-September 1999; [c] including gold and special drawing rights; [d] net; [e] as total capital flows are netted after taking into account some capital outflows the ratios against items Nos. 5, 6 and 7 may, in some years, add up to more than 100 percent; [f] at current market prices; [g] annualized; and [h] debt stock at the end of September 1999 as a percent of estimated GDP for 1999-2000.

Table 3. India's Exports to Selected East Asian Countries

(Unit: US$ million)

Countries	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000
Thailand	406.70	473.63	447.45	344.90	320.92	457.26
	(1.54)	(1.49)	(1.34)	(0.98)	(0.97)	(1.21)
Malaysia	286.57	393.75	531.58	490.49	321.63	435.52
	(1.09)	(1.24)	(1.59)	(1.40)	(0.97)	(1.16)
Rep. of Korea	332.53	448.93	518.91	468.12	307.46	428.81
	(1.26)	(1.41)	(1.55)	(1.34)	(0.93)	(1.14)
Indonesia	277.77	663.40	592.34	437.78	185.23	326.83
	(1.05)	(2.08)	(1.77)	(1.25)	(0.56)	(0.87)
Philippines	99.45	144.45	183.80	239.01	118.71	143.76
	(0.38)	(0.45)	(0.55)	(0.68)	(0.36)	(0.38)
Total	1,403.02	2,124.16	2,274.08	1,980.30	1,253.95	1,792.18
	(5.32)	(6.67)	(6.80)	(5.65)	(3.79)	(4.76)
Percentage change:						
Thailand	14.21	16.45	-5.53	-22.92	-6.95	42.48
Malaysia	16.00	37.40	35.00	-7.73	-34.43	35.41
Rep. of Korea	61.27	35.00	15.59	-9.79	-34.32	39.47
Indonesia	18.36	138.83	-10.71	-26.09	-57.69	76.45
Philippines	70.94	45.25	27.24	30.04	-50.33	21.10
Aggregate	27.29	51.40	7.06	-12.92	-36.68	42.92

Source: Center for Monitoring Indian Economy (CMIE), 2000.
Note: Figures in parentheses are percentage share of total exports.

Table 4. India's Imports from Selected East Asian Countries

(Unit: US$ million)

Countries	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000
Thailand	171.65	169.95	197.36	233.60	273.05	321.34
	(0.60)	(0.46)	(0.50)	(0.56)	(0.64)	(0.68)
Malaysia	490.21	904.08	1,042.24	1,180.32	1,610.38	2,059.34
	(1.71)	(2.46)	(2.66)	(2.84)	(3.80)	(4.36)
Rep. of Korea	629.06	826.07	884.34	1,002.98	1,394.11	1,211.59
	(2.19)	(2.25)	(2.26)	(2.41)	(3.29)	(2.56)
Indonesia	322.31	461.83	599.16	732.51	828.92	991.97
	(1.12)	(1.26)	(1.53)	(1.76)	(1.96)	(2.10)
Philippines	11.78	21.50	16.46	27.77	37.25	56.67
	(0.04)	(0.06)	(0.04)	(0.07)	(0.09)	(0.12)
Total	1,625.01	2,383.43	2,739.56	3,177.18	4,143.71	4,640.91
	(5.66)	(6.49)	(6.99)	(7.64)	(9.78)	(9.82)
Percentage change:						
Thailand	200.37	-0.99	16.13	18.36	16.89	17.69
Malaysia	96.74	84.43	15.28	13.25	36.44	27.88
Rep. of Korea	11.59	31.32	7.05	13.42	39.00	-13.09
Indonesia	169.67	43.29	29.74	22.26	13.16	19.67
Philippines	98.18	82.52	-23.44	68.71	34.14	52.13
Aggregate	62.23	46.67	14.94	15.97	30.42	12.00

Source: CMIE, 2000.

Note: Figures in parentheses are percentage share of total exports.

Indian exports compete with the exports of other Asian countries in third world countries' economies for goods like rice, cotton, textiles, textile garments, footwear, rubber and rubber products, electrical equipment like engineering goods, gems and jewelry. Because of the larger depreciation in these currencies, Indian exports had to face stiff competition in the third world countries' exports. Table 5 indicates that overall exports from India have registered lower and even negative growths after the crisis. The decline in agricultural and allied products is modest. While overall exports registered a negative growth rate in 1998-99, imports to India have been increasing over the years.

ECONOMIC IMPACT ON INDIAN AGRICULTURE

In the aftermath of the crisis, restraint is being observed in the Indian economy. With the onset of the crisis, the Indian rupee has been put under great pressure in the international market. The defense of the rupee, though not successful, by the Reserve Bank of India (RBI) has not stopped the depreciation. So, the rupee has constantly depreciated over this period. Further, due to contractions in foreign capital input, the government and the private sectors tried to boost investment through the conventional route of domestic borrowing. A large demand along with limited loanable funds in the country has stiffened the interest rate, which in turn damped the growth rate of the economy. Even though the Indian economy experienced a high growth rate of more than 7 percent between 1995 and 1997, it suffered a sharp decline in 1997-98, to 5 percent. Table 6 depicts the real growth rate of the Indian GDP over the period of 1993-94 to 1999-2000. From this, it is clear that the agriculture and allied sectors, which were booming with a growth rate of 9.6 percent in 1996-97, immediately exhibited a negative growth rate of -1.9 percent. But, right after the crisis, it went up to 7.2 percent but again came down to 0.8 percent in 1999-2000. In fact, the Table indicates a totally erratic growth rate in the agriculture sector and due to this erratic trend, it is difficult to estimate the effect of the Asian financial crisis on the Indian agriculture and the allied sectors. Table 7 gives the cultivated area of agricultural commodities and from this it can be seen that there is an erratic trend in the area coverage of food grains as well as in non-food grains during the current decade. The areas covered under food grain fluctuate, registering both a positive and negative growth rates before and after the crisis. The same holds true for areas covered under non-food grains. So, no definite inference can be drawn to the East Asian crisis. The production of major crops, which is presented in Table 8, also displays the same erratic trend as the trend in the area coverage both for food grains and non-food grains. It would, therefore, be difficult to establish a direct relation between Indian agriculture and its productivity of different crops with the East Asian crisis.

Production trend and growth rate cannot be ascribed to external factors like the financial crisis in foreign countries, and the contraction and expansion of agricultural exports and imports. Therefore, we have to look for some other determinants, like the pattern of investment in agriculture, over a period of time. Investment in agriculture is a prerequisite for its growth and is vital for the sustainable growth of the sector, in order to meet increasing demands. The total investment in agriculture increased from Rs.12,240 million in 1950-51 to Rs.25, 800 million in 1967-68, at the beginning of the Green Revolution. Table 9 presents a picture of public and private investment during different time spans, and its impact on the productivity growth of different types of crops. The early periods for growth rate are influenced by low base. The figures indicate considerable decline in public investment

Table 5. Commodity Composition of India's Exports

(Unit: US$ million)

Commodities	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000
Agriculture and allied products	4,227.28	6,120.01	6,868.50	6,634.20	6,033.11	5,504.60
	(16.06)	(19.22)	(20.50)	(18.93)	(18.17)	(14.62)
Ores and minerals	988.60	1,176.67	1,173.36	1,062.34	893.23	907.79
	(3.75)	(3.69)	(3.50)	(3.03)	(2.69)	(2.41)
Manufactured goods	20,410.02	23,782.44	24,634.16	26,578.59	25,785.69	29,509.85
	(77.49)	(74.69)	(73.54)	(75.83)	(77.64)	(78.39)
Petroleum and crude products	417.01	454.42	482.20	353.18	89.41	30.02
	(1.58)	(1.43)	(1.44)	(1.01)	(0.27)	(0.08)
Other commodities	294.60	308.33	339.75	420.30	409.53	1,692.13
	(1.12)	(0.97)	(1.02)	(1.20)	(1.23)	(4.50)
Total	26,337.51	31,841.87	33,497.97	35,048.67	33,210.97	37,644.39
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
Percentage Change:						
Agriculture and allied products	5.08	44.77	12.23	-3.41	-9.06	-8.76
Ores and minerals	11.43	19.02	-0.28	-9.46	-15.92	1.63
Manufactured goods	22.68	16.52	3.58	7.89	-2.98	14.44
Petroleum and crude products	4.94	8.97	6.11	-26.76	-74.68	-66.42
Other commodities	9.76	4.66	10.19	23.71	-2.56	313.19
All commodities	18.57	20.90	5.20	4.63	-5.24	13.35

Source: CMIE, 2000.

Note: Figures in parentheses are percentage share of total exports.

following the Green Revolution in 1967-68. The growth rate rose from 4.1 percent to 7.7 percent over the period from 1950-51 to 1967-68 and for the period 1967-68 to 1980-81. Thereafter, there has been a sharp fall in public investment, registering a negative growth rate, which further accentuated during the period of 1986-87 to 1992-93. This negative growth rate in public investment came down during the period between 1992-93 to 1998-99. This definitely indicates less involvement of public sectors in the employment of capital invested in agriculture. It is interesting to note that during the same time frame, private investment constantly registered a positive growth rate, although it had suffered a setback during the period of 1980-81 to 1986-87. Public investment in agriculture has a direct impact on agricultural productivity, of course with some time lag. The gestation period of capital investment in agriculture is about 10-15 years, which is mainly in the area of irrigation projects, fertilizer plants, pesticide plants, power transmission line to provide power to lift irrigation points and shallow tube-wells, agricultural research and extension. The investment made during the year 1967-68 to 1980-81 (period of Green Revolution) had a significant impact on agriculture. During 1980-81 to 1990-93, the growth in productivity of almost all crops (except coarse cereal) constantly showed an increasing trend.

Table 6. Sectoral Real Growth Rates

(Unit: Percent)

Percentage Change over the Previous Year	Agriculture and Allied Sector	Industry Sector	Services	Total GDP
1993-94	3.6	6.8	7.3	6.0
1994-95	5.0	9.2	7.0	7.0
1995-96	-0.9	11.8	10.3	7.3
1996-97	9.6	6.0	7.1	7.5
1997-98	-1.9	5.9	9.0	5.0
1998-99	7.2	4.0	8.3	6.8
1999-2000	0.8	6.9	8.2	5.9

Source: Government of India.

Agriculture's share in gross domestic capital formation slid from 14.5 percent in 1980-81 to just 6.4 percent in 1998-99, while its share in GDP came down from 35 percent to 25 percent during the same period. This speaks of the relative neglect of agriculture in the overall capital formation of the economy, which in due course could jeopardize hard earned food security as well as the welfare of the masses residing in rural India. The terms of trade (TOT) as per latest information released by the Ministry of Agriculture have significantly improved from 86.5 percent in the Triennium Ending (TE) in 1989-90 to 93.4 percent in TE in 1999-2000. The 7-percent point gain in TOT emphasizes a significant improvement in the incentives for agriculture, triggering higher consumption as well as higher private investment in agriculture. During the period from 1986-87 to 1998-99, private sector investment in agriculture has registered a positive and increasing growth rate, which has considerably upset the negative growth rate in public investment. Total investment has therefore maintained a positive growth rate during the same period, having a positive impact on agriculture (Figure 1).

Table 7. Cultivated Area of Agricultural Commodities

(Unit: 000 ha)

Year	Cereals	Pulses	Total Food Grains	Total Non-food Grains
1990-91	103,173	24,662	127,835	37,700
1991-92	99,330 (-3.72)	22,543 (-8.59)	121,873 (-4.66)	39,888 (5.80)
1992-93	100,789 (1.47)	22,360 (-0.81)	123,149 (1.05)	39,300 (-1.47)
1993-94	100,007 (-0.78)	22,434 (0.33)	122,441 (-0.57)	38,920 (-0.97)
1994-95	100,834 (0.83)	23,028 (2.65)	123,862 (1.16)	39,445 (1.35)
1995-96	98,732 (-2.08)	22,283 (-3.24)	121,015 (-2.30)	41,200 (4.45)
1996-97	101,315 (2.62)	23,194 (4.09)	124,509 (2.89)	42,349 (2.79)
Average annual growth rate	-0.28	-0.93	-0.41	1.99
1997-98	100,521 (-0.78)	23,284 (0.39)	123,805 (-0.57)	40,787 (-3.69)
1998-99	101,500 (0.97)	23,800 (2.22)	125,400 (1.29)	41,100 (0.77)
Average annual growth rate	0.10	1.31	0.36	-1.46

Note: Figures in parentheses are percentage change over the previous year.

Table 8. Production of Major Agricultural Commodities

(Unit: 000 mt)

Year	Cereals	Pulses	Total Food Grains	Total Non-food Grains
1990-91	162,125	14,265	176,390	279,855
1991-92	156,359 (-3.56)	12,015 (-15.77)	168,374 (4.54)	294,431 (5.21)
1992-93	166,669 (6.59)	12,815 (6.66)	179,484 (6.60)	270,027 (-8.29)
1993-94	169,022 (1.41)	13,100 (2.22)	182,122 (1.47)	269,748 (-0.10)
1994-95	177,456 (4.99)	14,038 (7.16)	191,494 (5.15)	319,813 (18.56)
1995-96	168,104 (-5.27)	12,310 (-12.31)	180,414 (-5.79)	326,893 (2.21)
1996-97	184,862 (9.97)	14,460 (17.47)	199,322 (10.48)	329,591 (0.83)
Average annual growth rate	2.36	0.91	2.23	3.07
1997-98	179,769 (-2.76)	13,349 (-7.68)	193,118 (-3.11)	308,741 (-6.33)
1998-99	188,200 (4.69)	14,800 (10.87)	203,000 (5.12)	342,800 (11.03)
Average annual growth rate	0.97	1.60	1.01	2.35

Note: Figures in parentheses are percentage change over the previous year.

Source: For Tables 7 and 8, Agricultural Statistics Division, Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, *Agricultural Statistics At A Glance*.

Table 9. Growth Rates of Agricultural Investment and Agricultural Productivity during Different Periods of India

(Unit: Percent)

Particulars	1950/51-1967/68	1967/68-1980/81	1980/81-1986/87	1986/87-1992/93	1992/93-1998/99[a]
A. Investment Growth*:					
Total investment	3.83	4.64	-2.48	2.35	5.85
Public investment	4.11	7.70	-4.40	-6.17	-0.98
Private investment	3.78	3.11	-1.30	5.85	7.50
B. Agricultural Productivity Growth[b]:					
Food grains	1.59	1.87	2.32	4.12	1.54
Rice	1.84	1.42	2.79	3.26	1.25
Wheat	1.90	2.45	3.25	3.48	1.47
Coarse cereals	1.44	1.74	-0.49	5.94	0.56
Pulses	-0.06	-0.95	1.67	1.47	0.64
Oilseeds	0.23	0.53	1.26	3.74	1.57
Sugarcane	2.31	1.38	0.74	1.53	-3.14
Cotton	1.92	2.55	3.06	6.90	1.45

Sources: * *Indian Journal of Agricultural Economics*, October-December 1996, p. 547.

Notes: [a] The investment growth for the period 1992/93 and 1998/99 has been estimated by using linear function; and [b] agricultural productivity growth has been calculated by using log-linear function, namely; Log Y = a + b*t*, where Y = productivity per ha and *t* represents time variable. Growth rate is given by (e^b - 1) x 100.

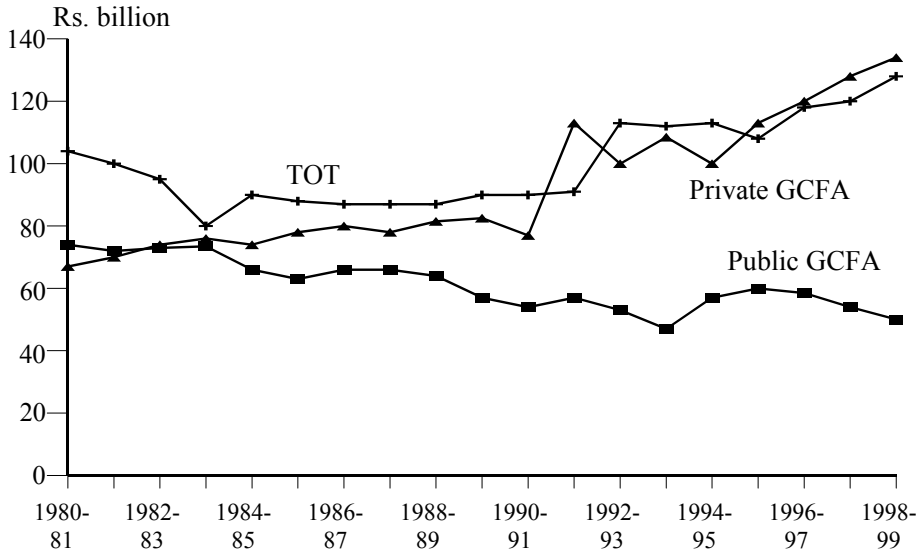

Figure 1. Incentives and Investments in Indian Agriculture, 1980-99
TOT Trend (1971-71 base), Public and Private GCFA (Gross Capital Formation in Agriculture) (1993-94 base)

Source: *The Economic Times*, 26 October 2000.

As the country faces emerging challenges of competition from other countries in the cost of production, a serious thought has to be given to allocating extra resources to agricultural research, education and extension.

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4. INDONESIA

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INTRODUCTION

In mid-1997, the Indonesian economy experienced a hard trial. Since the fall of the rupiah to the value of the US dollar, the Indonesian economy has been in an unstable condition. The growth of the economy has declined dramatically, while the inflation rate has increased significantly. The interest rate has jumped to a very high level, which has caused the Indonesian economy to be in a turbulent condition. In this situation, many companies have had to stop their business activities because they could not pay their high debts. As a result, many workers lost their jobs.

The financial crisis in Indonesia has led to include political instability. By the end of 1997, many organizations, either political or non-political, had protested to the government about this economic condition. This was expressed by many demonstrations initiated by university students, NGOs, political organizations, scientists, lecturers and public organizations. This situation made national security unstable. As a result, many businessmen and foreign investors reconsidered their plans to invest in Indonesia. Beside this, many tourists avoided in coming to Indonesia because they were afraid that their security and safety might be in jeopardy.

The financial crisis destroyed the Indonesian economy. This was indicated by the declining economic performance during the two years after the financial crisis. In the year 1998, the economy growth rate was -13.1 percent, while the growth rate of the industrial sector was -11.44 percent. However, the growth rate of the agriculture sector was still positive, at 1.52 percent. In the same year, the interest rate climbed to 60 percent, while the inflation rate was 40 percent. The high interest rate caused many difficulties for companies to borrow money for their business operation, while the high inflation rate reduced the people's ability to buy necessities, such as food and other items.

The destruction of the Indonesian economy represents how weak the foundations of the Indonesian economy are. It was not built on basic, strong and sustainable fundamentals, but on the very weak base of the industrial sector, which focused its development on big industries. These industries were developed through government planning, which is not based on national ability. Most of the big companies were established through government facilities. Hence, they grew as big companies not because of their ability to operate and manage their business, but because of government assistance in the form of capital. Also, many companies grew not because of their strong capital, strong human resources or strong

technological skills, but because of the money they borrowed from outside of the country, in the form of the US dollar, to expand their business activities. As a result, these big companies were very vulnerable to the fluctuations in the value of the US dollar. When the financial crisis happened, companies that had foreign loans in terms of the US dollar had to pay more than usual for their debts. Therefore, some big companies declared bankruptcy, because they had used all of their capital to pay for their high foreign debts.

In facing this situation, the new government has taken a strategic measure in reevaluating the concept of economic development in Indonesia. Through this strategy, all of the economic development planning will not be prioritized to the development of large industries, but rather, it will prioritize and focus on the development of small and medium enterprises. This program has been determined as the long-term development program.

For the short-term program, the government has taken a policy to revitalize all business activities which have future prospects for development, by restructuring and recapitalizing these companies. The restruction of companies is conducted by reorganizing business activities and business organizations, and is aimed to achieve efficiency. Recapitalization of companies is done by providing companies with the capital necessary to operate their businesses. Through this strategy, it is expected that all companies which were almost inactive could recover and operate again.

Even though the government has taken several strategies to overcome the financial crisis, there have been no indications of a recovery in our economy. This can be understood because recovery takes time and it is closely related to the problem of the low value of the Indonesian currency (rupiah) to the US dollar, the problem of low investment and the difficulties in obtaining capital. To overcome these problems, the government has taken strategic measures by implementing an export program, in which all companies are demanded to increase their exports, in order to raise the value of the Indonesian currency relative to the US dollar. Meanwhile, to generate economic activities, the government has provided benefits for those who invest in Indonesia. The benefits include the ease of obtaining permanent business permissions, selection of good locations, access to potential markets and export facilities. Furthermore, to overcome the problem of capital, the government has provided domestic companies with low-interest loans, particularly for small and medium enterprises.

DEVELOPMENT IN THE AGRICULTURE SECTOR

In the 1970s, the agriculture sector became the main focus of national development. Most of the government's programs were focused more on irrigation, extensification and intensification programs, which directly supported the agricultural development in Indonesia. As a result, the agriculture sector grew very rapidly. Many products from the agriculture sector were produced massively, such as vegetables, fruits, paddy and others, in order to meet national demand.

In the 1990s, however, the Indonesian Government changed the strategy from agricultural development to industrialization, which was directed to improve value-added output. During the first phase, this program seemed to be very successful; many big- to medium-sized industries were established. Unfortunately, the development of industries was not built on strong fundamentals, because most raw materials were imported and some of them were even financed by international loans in the form of the US dollar. As a result, when the financial crisis happened, industrial sectors suffered more than the other sectors.

All economic sectors suffered from the crisis except the agriculture sector that showed normal growth, even with the financial crisis situation. The reason is that the agriculture sector consists of thousands of farmers, who cultivate their land to support the agricultural development. Most farmers who cultivate their land can be categorized as small and medium companies, which have important roles in running village businesses. In operating their business and production activities, these farmers do not depend on imported materials rather they use domestic materials. This is why this sector remained strong when the monetary crisis happened. It was built by strong fundamental developments, which were focused on the extensification and intensification programs aimed to achieve self-sufficiency in the staple foods.

As a sector of the economy, agriculture has played a great role in sustaining economic development in Indonesia, as 70 percent of the population work in the agriculture sector and live as farmers in the villages. The agriculture sector has contributed highly to the development of the Indonesian economy. According to the statistical data from the Center for Statistical Bureau, in 1997, the agriculture sector contributed 8.31 percent to GDP. This share increased to 9.20 percent in 1998, and to 10.11 percent in 1999.

In 1997, the GDP of the agriculture sector reached US$5.3 billion which increased to US$9.1 billion in 1997, and further expanded to US$11.3 billion in 1999.

To understand the impact of the financial crisis on the development of the agriculture sector, we have to elaborate on the production pattern of major agricultural commodities, particularly paddy, maize, cassava, sweet potato and others.

1. ***Paddy***

From Table 1, we can see that in 1997, the production of paddy was 49,377,054 mt, and in 1998, this decreased to 49,199,844 mt. However, in 1999, it rebounded to 50,866,387 mt. Furthermore, the 1997 yield rate of paddy reached 4,432.2 kg/ha in 1998, it decreased to 4,197.4 kg/ha, but in 1999, it increased again to 4,251.9 kg/ha. From the Table, we can see that the impact of financial crisis to the productivity of paddy is not serious.

Table 1. Harvested Area, Yield Rate and Production of Paddy

Reference	1996	1997	1998	1999
Harvested area (ha)	11,569,729	11,140,594	11,716,499	11,963,204
Yield rate (kg/ha)	4,416.8	4,432.2	4,199.2	4,251.9
Production (mt)	51,101,506	49,377,054	49,199,844	50,866,387
Production growth rate (percent)	2.73	-3.37	-0.36	3.39

2. ***Maize***

Maize is most consumed by Indonesians because it tastes very good. This is the reason why this commodity is also planted by many farmers. From Table 2, we can see that in 1997, the production of maize was 8,770,851 mt, and in 1998, it increased to 10,169,488 mt. But in 1999, it declined to 9,204,036 mt. The yield of maize was 2,614.1 kg/ha in 1997, and it slightly increased to 2,642.9 kg/ha and to 2,662.9 kg/ha in 1998 and 1998, respectively, which indicated that the financial crisis had no impact on productivity of maize.

Table 2. Harvested Area, Yield Rate and Production of Maize

Reference	1996	1997	1998	1999
Harvested area (ha)	3,288,451	3,355,244	3,847,813	3,456,357
Yield rate (kg/ha)	2,600.1	2,614.1	2,642.9	2,662.9
Production (mt)	8,550,451	8,770,851	10,169,488	9,204,036
Production growth rate (percent)	2.8	2.6	15.9	-9.5

3. ***Cassava***

From Table 3, we can see that in 1997, the production of cassava was 15,134,021 mt, and in 1998, it declined to 14,699,203 mt, but in 1999, it increased to 16,458,544 mt. The yield was 12,171.8 kg/ha in 1997, and remained almost the same in 1998 and 1999. Thus the impact of the financial crisis on the productivity of cassava was only slight.

Table 3. Harvested Area, Yield Rates and Production of Cassava

Reference	1996	1997	1998	1999
Harvested area (ha)	1,233,345	1,243,366	1,205,353	1,350,008
Yield rate (kg/ha)	12,246.5	12,171.8	12,194.9	12,191.4
Production (mt)	15,104,110	15,134,021	14,699,203	16,458,544
Production growth rate (percent)	0.5	0.20	-2.9	12.00

4. ***Sweet Potato***

It is also a product preferred by many people. The development of this product can be seen from Table 4. In 1997, the production of sweet potato was 1,847,492 mt. In 1998, it increased to 1,935,044 mt, but lowered to 1,665,547 mt in 1999. The yield of sweet potato reached 9,453.2 kg/ha in 1997, then increased to 9,575.1 and 9,669.8 kg/ha in 1998 and 1999, respectively.

Table 4. Harvested Area, Yield Rates and Production of Sweet Potatoes

Reference	1996	1997	1998	1999
Harvested area (ha)	194,422	195,436	202,092	172,243
Yield rate (kg/ha)	9,507.9	9,453.2	9,575.1	9,669.8
Production (mt)	1,848,544	1,847,492	1,935,044	1,665,547
Production growth rate (percent)	2.2	-0.1	4.7	-13.9

5. ***Other Major Crops***

The financial crisis did not have any serious impacts on the productivity of other major crops in Indonesia, e.g., peanut, soybean, green soybean, tomato and broccoli. Although some fluctuations were discovered over the years, the production of various crops has been quite stable from 1996 to 1999.

IMPACT OF THE FINANCIAL CRISIS ON AGRICULTURE

In general, the impact of the financial crisis on farmers' activities was not very serious. The production of major commodities, such as paddy, maize, cassava and others, are still increasing even though the increase may not be very significant. This is also shown by the farmers' income. The farmers' income remains the same before and after the financial crisis. This is because farming is mostly a small business. Farms are mostly managed by traditional farmers who lack the capital, management skills and the knowledge. Most farmers in Indonesia are not real businessmen. They cultivate their land according to their own knowledge and the production is mainly for their own family consumption. Only when they have spare production do they sell to traders. In cultivating their land, farmers do not require much cost because they cultivate their own land, and are assisted only by their family members and their neighbors. Farmers make their own seeds for planting and plow their own land. Only fertilizers are used to increase the productivity of land. Farmers buy fertilizers at very normal prices from the producer because it is a State-owned company. The government also provides low fertilizer prices for all farmers in Indonesia.

When the financial crisis happened in Indonesia, most farmers did not feel the impact. They only experienced the increase in the prices of goods and services, which diminished their purchasing power. However, farmers in the villages seldom buy consumption goods. They only buy necessities, such as sugar and coffee, which are not produced in their villages.

For farmers, the financial crisis only impacted the prices of fertilizers and the costs of production, but not their income because it is almost the same as their income from before the crisis. As an overview, let us see the development of farmers' income based on each commodity (Table 5).

Table 5. The Income of Farmers According to Each Major Commodity

(Unit: Rp. 000)

Commodity	1996	1997	1998	1999
Paddy	590	685	725	820
Maize	525	615	685	725
Cassava	485	540	620	700
Sweet potatoes	495	515	585	720
Peanut	540	590	625	745
Soybean	565	618	695	755
Tomatoes	575	620	690	750

Source: Primary data from a survey in West Java, 1999.

From the table, we can see that the development of farmers' incomes, based on commodities, tend to increase. However, the highest income is in paddy followed by soybean and tomatoes.

For the farmer, the increase in income does not impact their welfare because their purchasing power was almost the same before and after the crisis. The financial crisis did not have much impact on the farmers because of the following reasons:

a. Most farmers in Indonesia do not use imported products, so when the value of the US dollar increased relative to the value of the rupiah, it did not impact their activities or their lives.

b. Most farmers in Indonesia use their own capital to buy fertilizer. Some obtain their working capital from the government bank with low interest rates.
c. The farmers in Indonesia never distribute their own products. When farmers harvest their agricultural products, traders pick them up.
d. The farmers in Indonesia are not consumptive people, which means that they never buy convenience goods, they only buy things which are not produced in their villages.
e. Most farmers in Indonesia are traditional farmers. They manage their land based on their own knowledge and skill. The farmers are not educated people, but they have the experience of cultivating their land.
f. They very often cultivate their land with other farmers in their neighborhood. People in the villages always help each other.
g. Everyone cooperates in the villages to solve their problems together.

THE GOVERNMENT POLICY

Even though the financial crisis has had little impact on the agriculture sector productivity, the sector has received attention from the government to be developed as the main pillar of Indonesian economic development.

In developing the agriculture sector, the Indonesian Government has taken a policy to improve the production and productivity of agriculture, and increase the income of farmers in Indonesia. This policy has been implemented through various programs which aim to:

1. disseminate the knowledge of agricultural technologies, which would improve production and productivity;
2. assist farmers in the form of working capital to allow for the cultivation of their land;
3. provide farmers with adequate and cheap fertilizers;
4. carry out the extensification program by opening up new agricultural and arable land in Indonesia;
5. improve the agricultural infrastructure to allow the distribution of agricultural products to accelerate from villages to the markets;
6. implement the intensification program to improve agricultural productivity; and
7. conduct the diversification program to obtain various agriculture products.

The programs above have been carried out and have provided good results to fulfill the people's needs. The programs have also become the foundation for building a strong agriculture sector that is not vulnerable to a financial crisis.

CONCLUSIONS

1. The financial crisis has had an impact on the economic performance of Indonesia. These effects are shown by the decline in Indonesia's economic performance during the period of the financial crisis.
2. In 1998, the growth of the economy was -13.1 percent, and the growth rate of industrial development was also negative at -11.44 percent. However, the growth rate of the agriculture sector remained positive.
3. The interest rate soared to 60 percent, while the inflation rate climbed to 40 percent. The high interest rate caused difficulties for many companies in obtaining loans.

4. Even though the economic performance declined dramatically, the growth of the agriculture sector still remained positive. The agriculture sector contributed 8.31 percent to total GDP in 1997, 9.20 percent in 1998, and 10.11 percent in 1999.
5. The impact of the financial crisis to the production of agricultural commodities was not very serious. This was shown by the stable agricultural productivity of several commodities, such as paddy, soybean, cassava, peanut and others.
6. The reason why the impact of the financial crisis did not affect agricultural products can be explained as follows:
   (1) Most farmers in Indonesia do not use imported products for production activities.
   (2) Most farmers in Indonesia use their own capital to buy fertilizers. Some obtain working capital from the government bank with very low interest rates.
   (3) The farmers in Indonesia are not consumptive. They seldom buy convenience goods. They only buy necessities which are not produced in their villages.

5. ISLAMIC REPUBLIC OF IRAN

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INTRODUCTION

The agriculture sector contributes to 25 percent of the GDP, 25 percent of the total employment, 80 percent of consumed food and 33 percent of non-oil exports. Some important products in this sector are: wheat, barley, rice, corn, cereal, grass, potato, onion, sugar beet and cotton. Table 1 presents the trend in annual production of important agricultural products (Table 1).

Table 1. Annual Production of Main Agricultural Products

Products	1980	1985	1990	1995	1996	1997	1998	1999
Wheat	3,733	6,631	8,012	11,227	10,015	10,044	11,955	8,673
Barley	979	2,297	3,548	2,952	2,736	2,498	3,300	1,998
Rice	501	1,776	1,981	2,301	2,684	2,350	2,770	2,348
Corn	0	138	145	234	210	267	329	271
Cereal	249	343	324	676	704	545	576	471
Grass	2,965	5,541	6,119	7,981	8,820	10,352	10,078	8,847
Potato	1,338	1,726	2,516	3,074	3,139	3,284	3,430	3,433
Onion	659	719	1,214	1,131	1,199	1,157	1,209	1,676
Sugar beet	3,640	3,924	3,641	5,521	3,686	4,754	4,987	5,548
Cotton	205	324	436	523	597	450	459	440

THE ROLE OF OIL IN THE ECONOMY

Oil revenues play a two-way role in our economy. In the case of high oil revenue, the limit on production capacity is determined by the most limiting production factor. By increasing oil revenue, foreign currency is removed and other factors, such as human capital and infrastructures, cannot support high public investment. For example, in 1973, the sudden increase in oil revenue caused irrational structural change in the economy, which favored the growth of service sector, but led to decline in the growth of agriculture and industrial sectors. Roots of this situation stemmed from earlier decades. Our investment in human capital and infrastructures were poor. Since the 1970s, the exchange rate has been directing the economy to higher consumption and lower production. Also, an artificial exchange rate has brought inefficiency.

Decrease in the importance of the agriculture sector in the economy had started earlier, but in 1970, the decline was accelerated. During 1965-72, when oil growth was slow but

positive, the contribution of agriculture sector decreased by 4.4 percent annually. But, during 1973-77, when oil growth was accelerated, the annual decline in agriculture reached 11.4 percent.

As a trend, the agricultural GDP is inversely related to oil revenue. During 1979-81, due to the fall in oil revenue, the share of the agriculture sector in the GDP increased but in 1982, with increase in oil revenue, the share of agriculture sector again decreased.

These results show that first, the agriculture sector has been less influenced by oil revenue turbulence. Second, when oil revenue increase, the surplus revenue was directed to the service sector, civil sector and other industries, which depends on foreign suppliers. Therefore, the growth in oil revenue led to a decline in the share of agriculture in the GDP.

The decline of the agricultural GDP and corresponding increase in the service GDP implies that the labor force transferred from the agriculture sector to the service sector. Therefore, the service sector was the pivot point of economic growth. In the period of oil boom, the government price-control policy, besides structural factors, had limited the growth of agriculture sector.

The agriculture sector is actually independent from political issues and the oil crisis. In 1978, during the great Islamic Revolution, when all economic sectors showed negative growth, this sector grew by 3 percent. The only year when production of different commodities decreased was 1999, which was due to very low rainfall. Now, our agriculture sector is facing a water crisis.

THE RECENT OIL CRISIS

The oil crisis of 1996 was during our economic recession and this caused some financial difficulties for the country. The fall in oil price affected the import of intermediate goods and capital goods, and reduced state revenue. This resulted in less investment.

In 1996, the allocated budget was only around 66 percent of the planned amount. In an oil economy, because tax and the exchange revenue depend on oil revenue, any turbulence in oil prices results in greater fluctuations of economic activities. An important point is that even if the fall in oil revenue is for the short term, its impacts are for the long term. This implies that we must plan for the long term in policy-making to prevent future oil crises.

Since 1995, oil revenues have been reducing annually by 19 percent, but agricultural value-added (AVA) output has been increasing at a different growth rate (Table 2). The lowest oil revenue was in the year 1998, which experienced the highest agriculture growth rate.

Table 2. Oil Revenue, Value-added and Government-fixed Investment in the Agriculture Sector

Year	1995	1996	1997	1998
Government-fixed investment in	648.7	464.9	521.2	439.7
Agricultural value-added	3,738	3,896	3,981.5	4,277.8
Rate of growth in AVA (percent)	3.7	3.5	1.5	7.8
Portion of agriculture in GDP	26.9	26.5	25.7	25.4
Oil revenue	-	32,745	26,427	21,382
Growth of oil revenue (percent)	-	-	-19	-19

LABOR FORCE AND CAPITAL PRODUCTIVITY

From here on, labor force productivity will be defined as agricultural GDP divided by labor force in this sector. Based on a survey, during 1966-96 the labor force productivity grew annually by 5.4 percent, mainly due to the agricultural mechanization. Capital productivity over the same period declined by 0.07 percent annually. This implies that investment in technology caused the growth in labor force productivity.

During the Asian financial crisis there were no signs of declining productivity in agriculture, in terms of labor force and capital. However, to obtain sustainable development in the agriculture sector, there are several challenges such as:

1. changing from monopolies in agriculture to one of market mechanism, which would promote investment in this sector.
2. new technology developments, such as biotechnology.
3. environmental protection and optimizing the use of base resources.
4. changing the financing structure of the sector.
5. privatization and promotion of higher private investment.
6. extension of the export-oriented production.
7. reduction in costs for small-size farms.

Regarding these challenges, the focus of the third year in the Five-Year Development Plan is on the restriction of economic activities and management development. Some important policies in the agriculture sector are as follows: i) privatization and decentralization; ii) prevention of land fragmentation; iii) introduction of a comprehensive land law; iv) optimization of water utilization; v) expansion land use by water infrastructure development; vi) standardization of resource productivity; vii) infrastructure development; viii) promotion of greenhouse production; ix) promotion of investment in the agriculture sector; x) to change the pricing policy to a market-based policy; xi) to improve agricultural insurance; xii) to decrease and remove subsidies; xiii) to empower producing communities, corporations, etc.; and xiv) to stop establishing industries in agricultural areas.

POLICIES TO CONTROL THE OIL CRISIS EFFECTS

A survey of the Iranian economy, its status in the world economy, and the effect of the oil crisis on different sectors of economy provides the planners, policy-makers and administrators with the following lessons to streamline the national economy:

1. The effects from the fall in oil revenue are long-range and sustainable, therefore the proposed policies must be of long-range.
2. The oil crisis shock had undesirable effects on the economy and we could not control all of the effects, but we can direct these effects to sectors that will create fewer difficulties.
3. Any good policy will not transfer the shock to the poor.
4. Our public budget is the origin of some inefficiencies. The huge body of the government and its current costs impose inefficiencies to the economy. Thus, we need a radical structural change of downsizing the government and change the structure of the public budget.

5. The effects from the oil crisis can direct us to higher inflation. Therefore, we might have to promote production and control the money supply to restrict the inflation.
6. Non-oil exports can reduce the effects of the oil crisis by providing us with foreign currencies, so that we may support export-oriented production.
7. To leave the recession and unemployment, we should provide resources for the promotion of production.
8. The government's involvement in economic activities brought inefficiency to our economy and led to limited private activities. Therefore, we must transit our economy to a market economy and privatize socio-economic activities in order to promote efficiency and the higher involvement of the private sector.

CONCLUSIONS

Agriculture sector was not affected by the Asian financial crisis due to the following: i) no capital account convertibility; ii) dominance of subsistence farming; iii) little integration with other Asian economies; iv) close monitoring of the flow of money; v) dependence of agricultural production mainly on internal resources; and vi) supply of agricultural products only to the domestic market.

In light of the lessons learned from the past experience, some of the suggestions for smooth development of Iranian economy/agriculture sector are as follows:

- The country should take a cautious approach in opening up her capital account to the international economy.
- Establishment of transparent accounting standards and practices, and the public disclosure of information are important in improving financial infrastructure.
- Strengthen the agricultural financial system by privatization.
- All support and subsidies toward the consumption of agricultural products must be shifted toward production.
- Cooperatives should be empowered for higher involvement in policymaking and agricultural operations.

Economy of Iran is in transition from a governed economy to one relying on market mechanisms, which is the same as East Asian countries. We may experience financial crises, such as the recent financial crisis of Southeast-East Asia in the future. To avoid occurrence of such financial crisis, countries like Iran can learn a lot from the Southeast Asian financial crisis in order to ensure that appropriate policy measures are in place to build national economy on sound economic fundamentals.

6. REPUBLIC OF KOREA

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INTRODUCTION

The currency crisis since 1997 has substantially affected the Korean agriculture sector, as well as non-agriculture sectors. The abrupt devaluation of the domestic currency caused a rise in production cost, while the shrunk economy through declining income and increasing unemployment, forced the prices of agricultural products down. To make things worse, a large inflow of cheap foreign agricultural products increased annually, which caused dropping prices. Korean farmers were sandwiched between deteriorating terms of trade and a heavy debt burden.

However, the impact of the currency crisis on the agriculture sector was not as substantial as non-agriculture sectors, since its linkage between domestic and foreign sectors is relatively weaker. Among the agriculture sector, livestock is most sensitive to the international prices of feed grains and the variation in exchange rates, because the self-sufficiency ratio of feed grains is only 2.5 percent. Greenhouse farming is also sensitive to oil prices, but its share in the agriculture sector is small. Other sectors are sensitive to the prices of raw materials like chemical fertilizer, chemical pesticides and other inputs.

Fortunately, loanable funds for agriculture, such as policy loans and cooperative loans, were abundant even during the crisis. This made the credit crunch to be of very short-run. Farmers were able to maintain normal farming, compared to non-agriculture sectors. There is no evidence of declining agricultural productivity in quantity. However, the productivity measured by market value decreased significantly because of the deteriorated terms of trade.

This paper will describe roughly the evolution of the financial crisis in the next section, and the impact of the crisis on the agriculture sector in the third section. In the fourth section, policy imperatives will be explained very briefly. In fifth section, discussion about the effects of the crisis on agricultural productivity will be presented and then concluding remarks on policy implications will follow.

FINANCIAL CRISIS OF KOREA IN 1997-99

Evolution of the Crisis

The Korean economy of 1997 was like a ship rocked by three-direction waves, that is it was hit by a downturn in the business cycle, a successive corporate insolvency and an increase in non-performing loans, and the contagion effects from the Southeast Asia currency crisis. In 1996, firms encouraged by the relative boom of 1995 expanded investments, but the business cycle went down and the real GDP growth rate slipped from 8.9 percent in 1995 to 7.1 percent in 1996. Although this might seemed to indicate a soft-landing, the firms faced

rapid increase in inventories by the reduced demand and drop in profit rates, which caused insolvency problems. The balance of payments severely deteriorated in 1996; that is the current account deficit had widened from US$8.5 billion in 1995 to US$23.0 billion in 1996. This trend in economic recession continued for the first half of 1997 and resulted in successive bankruptcies of large conglomerates, which started at the end of 1996 by the Hanbo Group, the 14th largest conglomerate.

After the collapse of Hanbo, bankruptcies of large enterprises followed, and they resulted in a domino effect on the small and medium firms that subcontracted with these enterprises. The bankruptcy of Kia Motors, one of the three largest auto companies and the main company in the eighth largest conglomerate, seriously affected the markets and creditworthiness of the Korean economy. With the series of business insolvencies, the soundness of financial institutions was substantially weakened and their non-performing loans abruptly piled up. The non-performing loans of commercial banks incremented from ₩12.2 trillion as of the end of 1996 to ₩21.9 trillion in September 1997. Thus, the non-performing loan ratio to total credit rose from 3.9 percent to 6.4 percent.

The Southeast Asian currency crisis, which started with the plunge of Thai, Indonesian and Malaysian currencies in early July 1997 affected Korea in September. Some merchant banking corporations that had been operating short-run financial intermediation in the Southeast region, by using funds borrowed from Japan and Hong Kong, faced severe liquidity problems. In addition to corporate insolvency, this made financial markets more unstable and resulted in the shortage of foreign currency in the Korean exchange market. As Korea and the Southeast Asian economies became vulnerable, the leading international credit rating agencies such as S&P's and Moody's downgraded Korea's long-term sovereign rating very sharply in October. With these disturbance factors, foreign financial institutions turned down the request for the rollover of Korean banks, and corporate and foreign investors withdrew their portfolio investments from the Korean capital market. The net inflow of foreign investment reversed from a positive US$2.1 billion in July 1997 to a negative US$0.8 billion in October.

A financial panic became a reality in November. The rollover ratio of the seven largest commercial banks fell from 86.5 percent in October to 58.8 percent in November, and it was almost impossible to find other sources of foreign currency. Foreign exchange rates skyrocketed and the foreign currency reserve declined sharply, as shown in Figure 1. The Bank of Korea supplied foreign exchange to corporate and financial institutions facing defaults on their repayment obligations. However, it could not meet the demand for foreign exchange.

At last, the government requested for the IMF bailout loans on 21 November. Korea and the IMF signed an agreement for a financial aid package totaling US$58.3 billion, under the conditions of macroeconomic stabilization and structural reform.

Policies to Overcome the Crisis and Stabilization of the Economy

On the brink of default for the nation's economy, the government implemented a strong macroeconomic policy to stabilize the economy. Since the signing of the IMF financial aids on 3 December 1997, the government implemented thorough structural reforms, such as financial sector restructure, corporate sector and labor market reforms, and capital account liberalization, under a tight monetary policy. The government allocated ₩64 trillion in public funds for the financial sector restructure in May 1998, and, in addition, an extra public fund of ₩25.8 trillion was used from 1997 to 1999. The drive for financial sector restructure

focused on a shake-out among financial institutions, clearing of bad loans, the tightening of prudential regulation, heightened transparency of financial information, and the reorganization of the corporate governance of financial institutions.

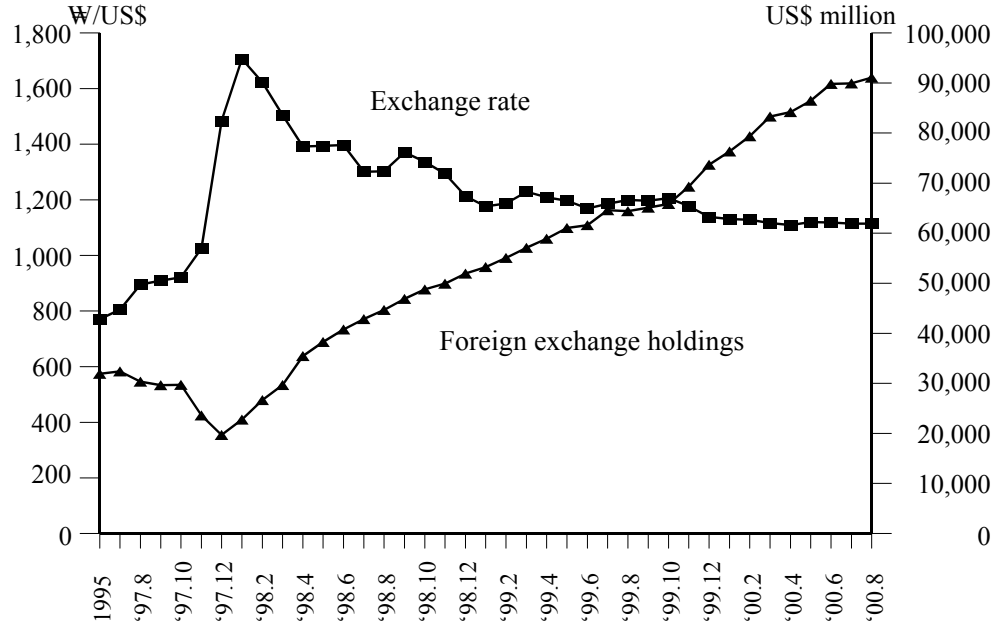

Figure 1. Trend of the Foreign Exchange Rate and Foreign Currency Holdings in Korea

The first restructuring of the financial industry ended at the end of 1999 and the second one is currently progressing. From the end of 1997 to April 2000, the banks and the non-bank financial institutions have disappeared by 30.3 (10 banks) and 20.8 (430 institutions) percent, respectively. As the financial market is being structurally changed and not yet stable, capital flight to savings is substantially continuing. From the end of 1997 to June 2000, the deposits share of the banking institutions, based on M3, increased from 33.0 percent to 44.2 percent, while the trust account of banking institutions dropped from 20.8 percent to 9.4 percent due to the increasing vulnerability of the stock market.

The Korean economy had recovered rapidly until early this year, when it was compared with the other Asian countries suffering from the currency crisis. From the beginning of 1998, most people actively participated in the movement of collecting gold to overcome the shortage in foreign exchange, which strongly motivated the people's will to "do anything to overcome the crisis". With the inflow of foreign exchange due to IMF aids and an increase in exports, the exchange rate became stable again after the spring of 1998, and the foreign exchange reserve rapidly increased as shown in Figure 1. The current account or the balance of payments, achieved US$40.4 trillion, the highest record in Korean history, in 1998, and US$24.5 trillion in 1999 (Table 1). This set up a sound base for the Korean economy to reentering a growth path. However, this year, the Korean economy is still troubled by skyrocketing oil prices, another insolvency of large conglomerates, political scandals, and non-performing loans of financial institutions.

Table 1. Changes in the Major Economic Index, 1995-99

	1995	1996	1997	1998	1999
BOP (current account) (US$ million)	-8,508	-23,005	-8,167	40,365	24,477
Exports (US$ million)	124,632	129,968	138,619	132,121	1,451,637
Imports (US$ million)	129,076	144,933	141,798	90,495	116,793
GDP (₩ billion)	377,350	402,821	423,007	394,710	436,799
Agricultural products (₩ billion)	23,354	24,120	25,234	23,569	24,666
Unemployment (percent)	2.0	2.0	2.6	6.8	6.3

Source: The Bank of Korea.

THE IMPACT OF THE FINANCIAL CRISIS ON KOREAN AGRICULTURE AND THE RURAL ECONOMY

Paths of the Shock Affecting the Agriculture Sector

We may describe the path of the currency crisis shock to the agriculture sector as one of three ways, i.e., agricultural production, consumption, and credit sectors. Devaluation of the domestic currency caused a rise in agricultural input prices, the tight money policy raised interest rates, and the shrunk in consumption demand for food resulted in the drop in the prices of agricultural products. Since the linkage of the agriculture sector with the foreign sector is relatively weak, the direct impact of the currency crisis was not severe, compared to non-agriculture sectors. However, farmers' sentiments are affected because of the vulnerability in the farm household economy.

In the production sector, farms suffered from the shortage of inputs due to skyrocketing prices, such as feeds and oil for heating, when the currency crisis began. The damages were especially prominent in both livestock and greenhouse farming. The prices of feed, oil and chemical fertilizer increased by 36, 107 and 29 percent, respectively. In winter of 1998, we could not import feeds and oil due to the shortage in the US dollar, which led to the starvation of livestock and withered vegetables in greenhouses because no oil meant no heat. From the beginning of the crisis (the end of 1997) to the spring of 1998, many farms became bankrupt because of elevated managerial costs and drops in product prices.

As the economic recession deepened and unemployment increased, the income and consumption level significantly shrank. In turn, this caused a reduction in the demand for agricultural products, which dropped their prices substantially. With a rise in production costs and lower revenues, the terms of trade for a farm household substantially deteriorated in 1998, as shown in Figure 2. However, it recovered in 1999, though still lower than 1997, but then declined again in 2000.

The severe credit crunch took place in rural financial markets as well, although it only lasted for a very short period in the winter, because the government supplied emergency loans to import feeds from the United States. However, the direct impact of the crisis on agricultural credit was relatively weak, when compared with the other sectors. It was relatively easier for farmers to borrow money from agricultural cooperatives than firms in the non-farm sectors, even though interest rates were higher than before. The market interest rate in rural areas rose from 13-14 percent to 18-19 percent, but it was still much lower than that of urban areas, which soared from 10-12 percent before the crisis, to the peak of 40 percent in December 1997.

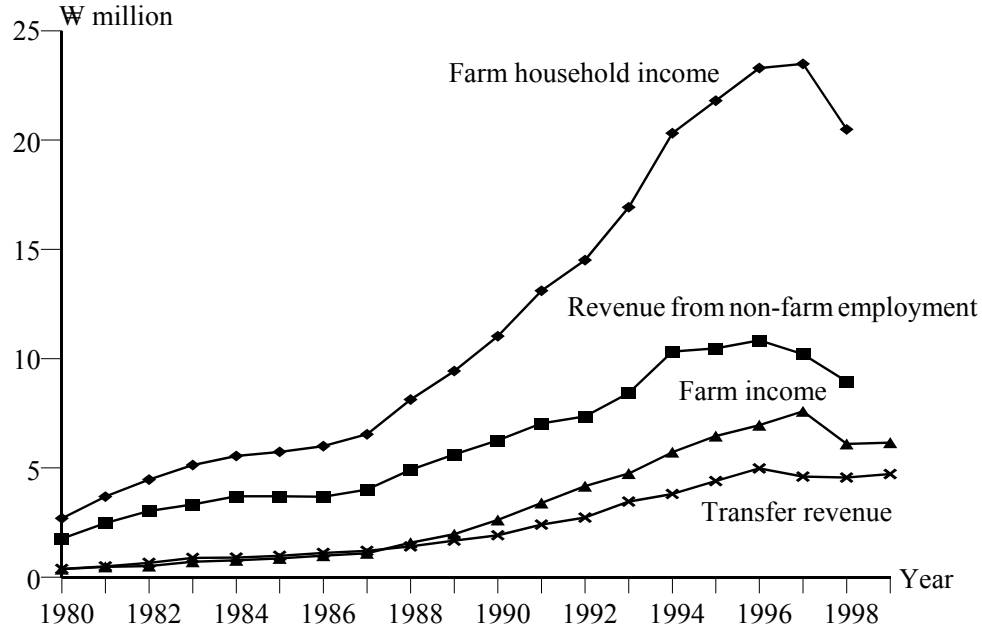

Figure 2. Farm Household Income Trend

An Unstable Farm Household Economy

The financial crisis severely affected the farm household economy, which was sandwiched between increasing costs and declining income. In 1998, agricultural production and income declined by 6.2 and 12.7 percent, respectively, while farm household debt increased by 30.7 percent (Figure 2). The growth rates of farm and non-farm income were 12.2 and -13.1 percent, respectively. In 1999, farm income and non-farm income increased by 18.0 and 1.9 percent, respectively, which caused the total farm household income to recover by 8.9 percent, but still lower than that of 1997. As shown in Figure 3, it is expected that the farmer's income level this year will be lower than that of last year because of the declining prices in agricultural products, which is related closely to the imports of foreign agricultural products and domestic overproduction.

The farm household economy became more vulnerable as the crisis shock spread. When not considering the principal repayments of mid- and long-term debts, it was 26.4 percent of the total farm households in 1997 had more expenditures than income. This number increased to 40.3 percent in 1998. If we add the principal of debt repayment, 49.9 percent of farm households could not save any money in 1998. Figure 4 shows that the trend in short-run debt repayment capability has declined rapidly in recent years. The short-run repayment capability developed by Park and Hwang (1999a) indicates the amount of money a farm household can save after paying for consumption expenditures and mid and long-term debt principals.

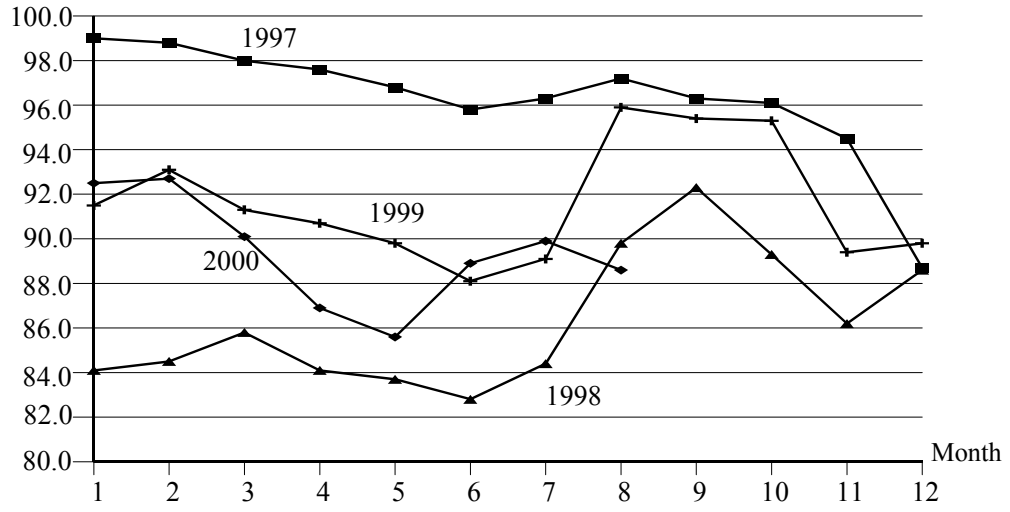

Figure 3. Trend of the Terms of Trade of Farm Households
(Sales Price Index/Purchase Price Index)

Source: National Agricultural Cooperatives Federation, 2000.

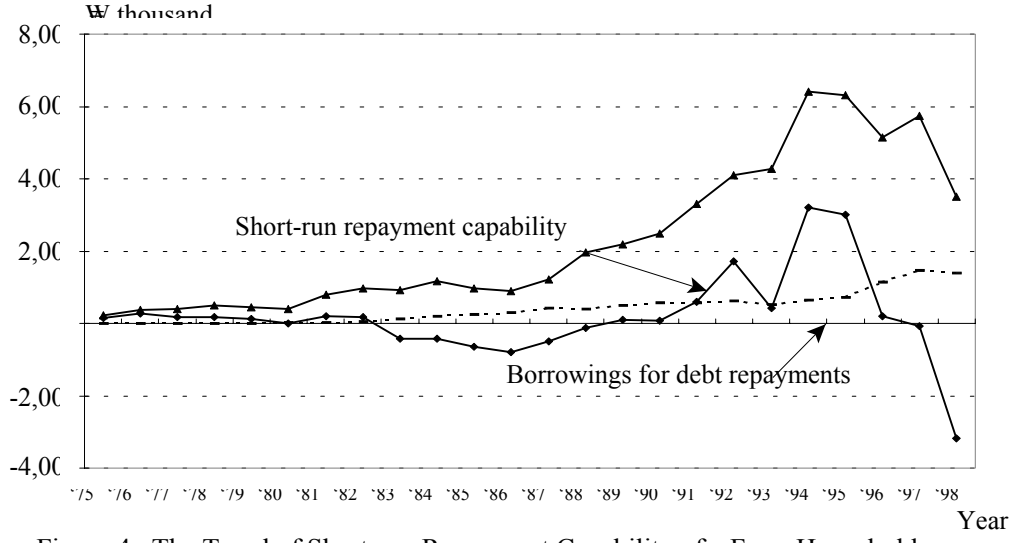

Figure 4. The Trend of Short-run Repayment Capability of a Farm Household

Source: Park, Kim and Hwang, *Policy Direction for Farm Household Debt Problems*, p. 57, Figures 3-7, KREI, 1999.

Major Policy Imperatives for Alleviating the Impact of the Financial Crisis on Farmers

At the beginning of the crisis, the government supplied emergency loans to firms related to the agricultural input industry, as well as farm households suffering from the shortage of funds, and suspended debt repayments. In addition, it tried to get GSM (Export Credit Guarantee Program of U.S.A.) 102 to guarantee the imports of agricultural products from America at the end of 1997. With the feeds imported by the GSM 102, and the United

States and Canadian loans of US$880 million, we could stabilize the feeds market and rescue livestock. In addition, the corporation for feeds was allowed to obtain credit guaranteed funds. The tax exemption on the oil for agricultural uses, which was supposed to end by the end of 1997, was suspended. The same applied to the liquefied petroleum gas (LPG). The government asked the National Agricultural Cooperative Federation to increase the purchasing amounts of fertilizer and pesticides, for the timely supply to farmers. The interest rate for farm machinery loans was lowered from 6.5 percent to 4.5 percent.

On the other hand, the Structural Adjustment Program, which started in 1992 and was accelerated from 1994 onwards, were steadily implemented along the time schedule, even though the budgets were reduced by a bit. The second Structural Adjustment Program, which will invest ₩45 trillion in the agriculture sector from 1999 to 2004, was launched in 1999. We can say that the Korean agriculture sector does not have credit crunch problems any longer, since the large amount of policy loans and cooperative funds were applied. Currently, the agricultural cooperatives at the primary level can lend only about 60 percent of their total deposits. This loan capability was a very important factor to mitigate the shock of the currency crisis.

However, paradoxically, Korea has severe troubles with the farm household debts. The debt problem of farm households became a hot issue, ever sine the currency crisis shocked the agriculture sector in 1998. With declining revenue, repayment of debts, which had been supplied by the agricultural restructuring investment plans of 1994, began to increase since the grace period for a majority part of them ended and both principal and interests were scheduled to be repaid. Thus, most farmers asked the government to establish an effective debt measurement to mitigate the debt burden. The government made the Measure of Lessening Debt Burden of Farm Household in November 1998, which allowed farmers to suspend the repayments of debts that were scheduled for 1998 and 1999, for two years. However, this did not satisfy farmers, so they protested against the government. The government had to make additional measures for 1999-2000. These included the postponement of repayment, a supply of low interest policy loans to replace cooperative loans (of which the interest rate was higher), a supply of restructuring loans and the provision of guaranteed credit by the credit guarantee fund to replace the debts privately guaranteed.

Financial Crisis Effects on Agricultural Productivity

It is not easy to explore the exact effects of the crisis on agricultural productivity in the respects of analysis methodology and data. It is certain that the crisis caused rises in input prices and drops in output prices, so farmers had to reduced the input amount as shown in Table 2. However, it is ambiguous whether this resulted in lower productivity or not, since it depends on the degree of reduction in inputs and the characteristics of technology. If the reductions in utilized inputs were not critically substantial, the average productivity or the marginal productivity measured by quantity base would be improved. On the contrary, if we measure the productivity at the base of market value, the result might not be consistent with the quantity base, it all depends on the degree of declining prices.

In 1998, some inputs, such as chemical fertilizer, chemical pesticides, oil and feed grains, were reduced (Table 2). In contrast, the amount of major outputs has not declined since 1998 (Table 3). This means that the agricultural productivity at the quantity base did not decline during the crisis. However, the productivity, as measured by market value, shows that it is significantly lower than before the crisis (Table 4). This implies that the output market condition substantially affected the farm household economy rather than the technical productivity itself.

Table 2. Use of Major Agricultural Inputs

Year	Chemical Fertilizer[a] (kg/ha)	Chemical Pesticides[a] (kg/ha)	Oil[b] (kℝ)	Feed Grains[c] (000 mt)	Labor[d] (days)
1990	458	10.4	51,270	5,634	198.93
1991	349	11.7		6,769	181.32
1992	414	11.8	87,334	6,908	176.42
1993	424	11.4	103,034	8,182	174.32
1994	440	11.9	119,578	8,373	167.03
1995	434	11.8	128,567	8,510	163.46
1996	424	11.5	163,728	9,169	152.48
1997	421	11.8	197,453	9,170	143.73
1998	406	10.4	154,597	8,204	141.57
1999	398	12.2	175,966	8,549	136.84

Source: Ministry of Agriculture and Forestry, *Major Statistics of Agriculture and Forestry*, 2000.

Note: [a] Component base; [b] supplied amounts by tax exemption; [c] total used amounts in nationwide; and [d] converted labor days based on an adult.

Table 3. Amount of Major Agricultural Products

(Unit: 000 mt; and 000 heads)

Year	Grains	Vegetables	Fruits	Korean Cattle	Dairy Cattle	Hogs	Fowls
1990	7,013	8,677	1,766	1,622	504	4,528	74,463
1991	6,563	8,609	1,765	1,773	496	5,046	74,855
1992	6,256	8,791	2,090	2,019	508	5,463	73,324
1993	6,205	10,152	1,920	2,260	553	5,928	72,945
1994	5,465	9,222	1,930	2,393	552	5,955	80,569
1995	5,816	10,586	2,300	2,594	553	6,461	85,800
1996	5,504	10,209	2,207	2,844	551	6,516	82,830
1997	6,031	9,806	2,452	2,735	544	7,096	88,251
1998	6,122	9,984	2,153	2,383	539	7,544	85,847
1999	5,831	n.a.	2,385	1,952	535	7,864	94,587

Source: Ministry of Agriculture and Forestry, Major Statistics of Agriculture and Forestry, 2000.

Note: Livestock statistics indicate the number of breeding.

In addition to the shrink in demand, the opening of agricultural product markets is an important factor. The inflow of cheap foreign food is increasing annually, and farmers have had to change crops according to the profitability of the previous year. The price fluctuation of outputs is very large, but input prices tend to be rigid. Many farmers are frustrated by the deteriorating terms of trade in the farm household economy.

Table 4. Average Productivity of Agriculture

Year	Land (₩/10 a)	Labor (₩/hour)	Capital (₩/₩)
1990	624,893	4,932	0.70
1991	702,316	6,043	0.70
1992	746,082	6,462	0.63
1993	777,610	6,940	0.60
1994	929,183	8,714	0.65
1995	954,171	9,387	0.61
1996	1,000,652	10,573	0.53
1997	970,192	10,780	0.51
1998	671,771	7,559	0.32
1999	802,084	8,796	0.37

Source: National Statistical Office, *Farm Household Survey Report*, May 2000.

CONCLUDING REMARKS: POLICY IMPLICATIONS

The financial crisis damaged the agricultural sector through increasing input prices and lowering the demand for agricultural outputs. Agricultural production did not decline in quantity, although some input utilized in production was reduced. However, in terms of market value, it decreased substantially. An important factor in maintaining the production level was the smooth supply of agricultural funds through agricultural cooperatives during the crisis. Policy loans were supplied, according to the plan, and the agricultural cooperatives also offered an abundance of loanable funds.

During the crisis, the farm household economy became substantially vulnerable, due to deteriorating terms of trade, a drop in income, and heavy burden of debts. In addition to the financial crisis shock, an inflow of cheap foreign agricultural products is also a disturbing factor in decreasing output prices. It is expected that market competition between domestic and foreign agricultural products will accelerate in the future. In that case, the farm household economy will become even more vulnerable and the government will not be able to make appropriate policies to solve the problem within agricultural production. According to the aspects of the current situation, a stabilization policy for the farm household economy is required.

First, the government should provide proper measures to stabilize farm households that have a heavy burden of debts. Most of the farms with debt problems are owned by young full-time farmers, who will likely succeed in agriculture in the future. With financial supports to alleviate debt burdens, services of management consulting and technology extension should be provided. Income subsidies should be increased for low-income classes that consist of aged farmers, small farms, and farmers in regions of unfavorable conditions. Without the expansion in income subsidies, the problem will be very difficult to solve.

Second, technology and managerial innovation to raise efficiency and productivity are required. This will be achieved by the joint efforts of the government and the farmers. So far, Korea has invested a lot of money into the hardware of agriculture, but it has not brought successful results, owing to the lack of proper software in managerial technology, information distribution, consulting system, etc. This is a main source of criticism on the overinvestment in agriculture and the misallocation of resources.

Third, the agricultural financial system needs to be reformed in order to enhance efficiency in intermediation, market stability, and resource allocation efficiency. Although the agricultural cooperatives responsible for agricultural finance have successfully mobilized enough savings to supply them to the agriculture sector, their efficiency is not higher because of their small-scale, low-level technologies, and the lack in expertise. The operation system of policy loans also has similar problems.

Fourth, we should continue the structural adjustment and expand the investments into the export sector of agricultural products to have competitiveness in international markets. For agriculture to be viable, an appropriate market size as well as production scale should be secured. Some commodities have enough competitive edge for international markets, but their infrastructure and software for exports are relatively poor.

Lastly, it is important to raise the market value of commodities that depend on the quality and creditworthiness of markets. In the future, most customers will be concerned with food safety, and will pay more for foods that are grown without contamination. In other words, producing high-value commodities is a way to enhance productivity. In this sense, environment-friendly agriculture will be a more important alternative for small farms.

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7. MALAYSIA

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INTRODUCTION

Malaysia, like some other Asian nations, suffered much from the economic and financial crisis, which started in July 1997. Before the crisis, Malaysia was proud to be a country that is well placed in the developing economies, which had strong economic fundamentals and financial stability. The economic growth rates averaged 8.9 percent between the years of 1988 and 1996, while the inflation rate was only 3.5 percent.

The Role of Agriculture in the Malaysian Economy

The current Malaysian economy is deeply rooted in three prime sectors, namely manufacturing, services and agriculture. However, the present situations are the results of evolutions and revolutions that occurred in the economy. In the 1970s or perhaps earlier, the Malaysian economy was totally dependent on agriculture.

Malaysia was well known for her exports of rubber, tin, and palm oil, and to a certain extent, cocoa. In fact, agriculture was the largest single contributor to GDP, with 29.1 percent. The economic transformation, which took place through the years, diminished the contribution of agricultural output to GDP to only 9.64 percent during the 1995-98 period. To date, agriculture is the third most important economic sector.

In the period of 1990-98, the agriculture sector experienced very minimal growth, as can be seen from the following annual growth percentages (Table 1). The performance level of 1996 was only a breather before the 1997 economic crisis.

Table 1. Annual Growth Rate of Agriculture Sector in Malaysia

(Unit: Percent)

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998
Growth rate	0.4	0.0	4.7	4.3	-1.0	-2.5	4.5	0.4	-4.5

Broadly speaking, agriculture is still the most important sector in the context of Malaysia's socio-economic development. This sector absorbs a large part of the labor force. In 1995, about 1.4 million people, or 18 percent of the total workforce was involved in agriculture. Besides improving the income and livelihood of the masses, it also contributed

to the lowering of the poverty rate, especially in the rural areas. In 1990, the poverty rate in rural areas was 21 percent, compared to 15.3 percent in 1995.

Before the Economic Crisis

As mentioned earlier, Malaysia experienced a favorable economic growth before the crisis. In terms of external debts, Malaysia was also favorable, compared to most of her neighbors and other East Asian countries. As of June 1997, her total external debts were US$45.2 billion, or 42.0 percent of the GDP. At the same time, Non-Performing Loans (NPL) in the banking sector were only 3.6 percent of the total loans disbursed.

Ringgit Malaysia (RM), the Malaysian currency, was also considered as strong and stable. In fact, some quarters considered it to be below its real worth at that time. The exchange rate of RM2.48 to US$1 and its respectable position in the money market was purely determined by market forces, devoid of any government intervention.

By 1997, Malaysia's total external trade has exceeded US$158 billion. According to the World Trade Organization (WTO), Malaysia was ranked as the 18th world's largest exporter and the 17th world's largest importer. The current account payments balance shrunk from 10 percent to 5 percent of the GDP. Meanwhile, the reserve was set at 38 percent of the GDP, which was one of the highest in the world.

The Economic Crisis

The economic crisis involving Thailand, Indonesia, the Philippines and Malaysia started with the swift and sharp fall of the respective currencies. It forced the economic growth in this region to a stand still. Henceforth, various hypotheses and theories have been formed to analyze the principal factors behind the crisis.

In the midst of the crisis, sources of credit diminished and some banks even withdrew their already-approved loans. The interest rate regularly increased, and within a short span of time, it had exceeded 12 percent per annum. Even some companies with highly viable projects and confirmed export demand had difficulties in getting bank guarantees. The Central Bank shortened the period of compliance for NPL from six months to three months. Banking control measures were tightened by increasing the bad debts allowance from 1 percent to 1.5 percent of total loans disbursed. The repayment period for motor-vehicle loans was limited to five years. Banks were not allowed to provide financial facilities to property projects that have not taken off. Meanwhile, the maximum limit was decreased for those projects which have started. As a consequence to the constraints and control measures being imposed, many banks suffered losses and companies were forced to declare bankruptcy.

The government also took various precautionary measures to overcome the crisis. Public spending was cut by 21 percent, which worsened the situation. Trade and industrial activities diminished and drove new employment opportunities to nil, while retrenchments were exercised.

The agriculture sector was also hit hard by the crisis. The total export for agricultural products declined to 8.5 percent in 1999, from the 18.3 percent enjoyed in 1990. The total credit for agriculture and agriculture-related activities was only 1.8 percent in 1998 and 2.1 percent in 1999, of total facilities given.

Factors Leading to the Crisis

According to the International Monetary Fund (IMF), the principal factors leading to the economic crisis, which has engulfed the South-East Asian region, were the inherent

weaknesses in the nations' financial systems and administration structures. Among the most important ones were ineffective financial control systems, inefficient management of high-risk financial portfolios and certain government policies of fixing the monetary rate of exchange. The situation encouraged banking institutions and corporate sectors to borrow from international organizations. Apart from the factors mentioned, the slow economic growth experienced in Europe and Japan led to a dull global investment performance or climate. The fall of Thailand's Baht, followed by money market dealers' speculations and financial merchants' manipulations, has resulted in the plunge of the Malaysian Ringgit to RM4.48 per US$1.

THE EFFECTS OF THE FINANCIAL CRISIS ON THE AGRICULTURE SECTOR

As introduced in the earlier discussion, the crisis greatly affected the agriculture sector. The growth of 4.5 percent achieved in 1996 fell to 0.4 percent at the start of the crisis. The sharp decline in the growth rate was directly related to the decrease in the availability of credit and the increase in the interest rate. The situations not only hampered further growth and development, but also eroded the confidence and participation of private sector. In addition, the government enforced a restraint expenditure policy in the agriculture sector. In 1998, the government's allocation for agricultural and rural development expenditures was only 5.3 percent of the total budget.

Implications to Farmers, Smallholders and Fishermen

The economic crisis led to a very low monetary exchange rate, the decline in economic growth, strict credit control measures, low returns on investments and a bizarre employment market. As Malaysia's principal trading partners of Eastern Asia were also experiencing slow economic growth, the demand for Malaysian exports was greatly affected. As such, the sharp increase in the export value of Malaysian products, due to the downfall of the Malaysian Ringgit, did not help in sectoral growth because of the decrease in production and the increase in costs.

The agricultural production in 1998 decreased by 5.9 percent compared to the previous year's performance. The very high rate of interest, which reached 14.7 percent in June 1998, constrained agricultural activities further. The increase in the costs of imported agricultural supplies left this sector unattractive. Thus, farmers, small holders and fishermen were hit hard by the economic crisis. With low consumer purchasing power, the domestic demand for agricultural products also declined drastically, which has left the farmers and the fishermen poorer.

The financial constraints led to less Research and Development (R&D) programs. Therefore, new technologies were achievable only at very high costs. This led to lower agricultural productivity, which also was of poorer quality. At the same time, importing countries imposed a higher standard for their imported products, including agricultural products. Hence, agriculture as part and parcel of the economy, was badly hit by the economic crisis. As most of the players in this sector of Malaysia are small farmers, smallholders and artisan fishermen, they are actually the ones who were damaged, and who suffered the most during the economic crisis.

Major Policy Imperatives Taken to Alleviate the Impact of the Financial Crisis on Farmers

Realizing that the farmers were the worst affected group, several major policy options were implemented to alleviate their poverty. Some of these policy options include:

1. ***Fund for Food (3F) Scheme***

The 3F was set up to help the rural communities that were financially affected by the crisis. It is revolving fund whereby the objective is to promote large-scale cultivation and production of food crops, fruits, livestock and fisheries. Depending upon the nature of the projects, the funds disbursed ranged from a minimum of RM10,000 (US$2,632) to a maximum of RM3 million (US$789,000), payable over a period of eight years at a low interest rate of 4 percent per annum. Unlike any other loans, financing from the 3F could be as high as 90 percent of the cost of the project.

Up until now, a total of RM1 billion (US$263.2 million) has been set aside for the 3F scheme to help the farmers. Unfortunately, the response towards the 3F is not very encouraging, due to the personal preference of the majority farmers toward patronizing their local financial institutions, even though they charge a higher interest rate.

2. ***Gazetting of Land for Agricultural Purposes***

The main problems faced by the agriculture sector pertaining to land issues are the continuous conversion of prime agricultural land for industrial purposes and fragmentation of land ownership, which impede productivity improvement. Hence, the strategy adopted by the government recently is the gazetting of some agricultural land as permanent agriculture zones to curb speculation and the conversion of agricultural land for other purposes. Lately, the government has identified about 40,000 ha of idle land suitable for agricultural purposes. This includes 10,290 ha suitable for vegetable growing and 29,630 ha for agriculture.

Another strategy adopted was to optimize land usage due to the scarcity of agricultural land in certain areas. This could be achieved by introducing integrated farming. Integrated farming has mushroomed throughout the years as a means to cut down on meat imports, and refers to carrying out both agriculture and breeding in a given place. Currently, nearly 89 percent of the domestic consumption of beef is imported. A total of 8,900 heads of cattle in 1999 and another 14,756 heads by the year 2000 will successfully be bred under the integrated farming programs nationwide. Land productivity can also be sustained through the planting of high-yielding clone varieties. Table 2 shows the land productivity of the major crops in the country at both the value level and their growth rates.

3. ***Enhancement of Group Farming Activities***

To revitalize the farms which were badly affected by the crisis, various mini-estates and group farming projects have been established by the relevant agencies within the Ministry of Agriculture. The purpose of such group farming projects and the mini-estate concept is to consolidate all of the group farming activities within every locality in order to achieve the synergy effect.

According to studies carried out by the Department of Agriculture (DOA), the difference between the income of farmers working in a group and farmers working alone is shown in Table 3. It shows that group farming can be a powerful tool to raise the productivity of farmers and to help modernize farming practices throughout the country in the absence of land reform.

Table 2. Land Productivity of Major Crops, 1990-2000 (constant 1978 prices)

(Unit: RM/ha)

Year / Crop	1990	1995	2000	Growth Rate (percent)	
				1991-95	1996-2000
Rubber	1,565	2,014	2,325	5.17	2.91
Oil palm	2,764	3,282	3,627	3.49	2.02
Cocoa	2,725	3,181	3,634	3.14	2.70
Pepper	11,661	12,256	13,962	1.00	2.64
Paddy	1,569	n.a.	1,383	-	-
Coconut	612	626	639	0.43	0.42
Vegetables	25,864	36,856	41,218	7.34	2.26

Source: Ministry of Agriculture, *National Agriculture Policy (1992-2010)*, Malaysia.

Table 3. Farmers' Income by Selected Food Crops

(Unit: RM/farmer/year)

Crop	Average Net Income	
	Group Farming	Outside Group Farming
Paddy	5,733 (US$1,509)	3,765 (US$967)
Sugarcane	5,327 (US$1,402)	3,044 (US$801)
Chilies	14,222 (US$3,743)	8,520 (US$2,242)
Brassica	9,811 (US$2,582)	6,703 (US$1,764)
Cabbage	9,732 (US$2,561)	7,516 (US$1,978)

Source: Department of Agriculture, Malaysia (1998).

4. ***Greater Participation of Rural Housewives***

To lighten the financial problems of rural households, both the DOA and the Ministry of Rural Development (MORD) established various Female Farmers Groups (FFG), under the Integrated Local Community Development (ILCD) program. The objective of the FFG is to further promote the participation of housewives in pursuing various economic activities within the community.

Through various economic activities organized by the FFG, a sense of self-awareness was created on the part of housewives, that they are able to contribute positively to supplement their household incomes. Furthermore, such FFG activities provide a homely atmosphere for the housewives to exchange their views and ideas. This results in a close rapport and bondage amongst themselves. Interviews with some of the FFG members revealed that each of them could easily earn an additional RM150-200 (US$40-53) per month to supplement their family household income.

Long-term Effects of the Financial Crisis on the Productivity of Agriculture

The financial crisis, had serious repercussions which may affect long-term productivity in the agriculture sector. Some of the long-term effects include:

1. ***Higher Costs in the National Food Import Bill***

Before the crisis, the average exchange rate of the Ringgit against the US dollar was US$1 = RM2.60. However, during the crisis period, the Ringgit depreciated tremendously

in value, so that the Ringgit was pegged at US$1 = RM3.80. This means that the Ringgit depreciated about 46 percent against the US dollar, in such a short time.

During the crisis period, the National Food Import Bill amounted to RM11.4 billion (US$2.94 billion) in 1997. Unless some drastic measures are taken to curtail food import, the nation will continue to suffer a substantial outflow of monetary reserves, as imports will cost more if the trend persists.

2. ***Low Commodity Prices***

Malaysia is the largest producer of oil palm and palm oil, which accounted for 64 percent of the total value in agricultural exports. During the crisis period, the palm oil industry enjoyed good commodity prices as crude palm oil (CPO) was traded in the international market in US dollars.

CPO prices went up to its all time high of RM2,377 (US$626) per mt during the boom days of 1998. However, CPO prices eased to RM1,449 (US$381) per mt in 1999, before lowering to the current level of RM800 (US$211) per mt. Table 4 shows the trend in palm oil prices.

Table 4. Trend in Palm Oil Production, Export and Prices, 1997-2001

Year/Item	1997	1998	1999	2000	2001
Production (000 mt)	9,069	8,380	10,554	10,650	11,450
Export (000 mt)	7,591	7,521	8,964	8,591	8,836
(RM billion)	(10.82)	(17.79)	(14.47)	(10.12)	(9.72)
(US$ billion)	(2.85)	(4.68)	(3.81)	(2.26)	(2.56)
Price (RM/mt, local/delivery)	1,358	2,378	1,459	1,100	1,050
(US$)	(377.3)	(383.9)	(383.9)	(289.5)	(276.3)

Source: Bank Negara, Economic Report (2000).

At the moment, most of the plantation companies are either operating at a breakeven level or only earning marginal profits as the cost of production is RM650 (US$171) per mt. If such trend persists, plantation companies will be compelled to diversify into other economic activities, besides agriculture, for their survival.

The reasons for the low commodity prices are due to its vulnerability in the international market, as a result of strong competition from other CPO producing countries. Furthermore, the economy of the agriculture sector is over-dependent on the economic performance of a single crop namely, oil palm, which has been unhealthy because of stiff competition in the international market and close substitutes such as soybean oil.

3. ***Continuous Dependency on Foreign Labor***

In the 1980s, when the country was moving toward industrialization, it resulted in an acute labor shortage in the agriculture sector. The alternative during that period was to recruit foreign workers in 1987, as a temporary measure to overcome the labor shortage. However, the continuous recruitment of foreign workers seemed to become a norm in the agriculture sector. If such trend persists, the financial stability of the country will be adversely affected, as massive remittance of our monetary reserves are sent by the foreign workers to their home countries. Under such circumstances, productivity in the agriculture sector is completely dependent upon the foreign workers and any policy changes pertaining to the recruitment of foreign workers by the government will have serious repercussions for the agriculture sector.

4. ***Continuous Conversion of Prime Agricultural Land for Industrial Purposes***

During the boom time, there was massive conversion of prime agricultural land for industrial purposes. However, during the financial crisis, agricultural activities were being revitalized in order to produce more food and to cut down food imports. Unfortunately, whenever there is a sign of economic recovery, agricultural land, which was under cultivation, are again subjected to continuous conversion for industrial purposes. Hence, it is not possible to sustain the productivity of agriculture in the long-run, as it is activated only during the crisis period.

Strategies for Enhancing Agricultural Productivity on a Sustainable Basis, in Light of the Financial Crisis and Trends in the Economy

As identified under the Third National Agricultural Policy (NAP3), in effect from 1998-2010, instead of adopting a commodity-based approach as practiced in the past, the current focus is toward a product-based approach to further develop the value chain within the food processing sector. This is consistent with the cluster-based approach adopted in the Industrial Master Plan 2 (IMP2), 1996-2005.

The objectives of such a food group policy is to ensure an adequate and stable supply of quality, safe, nutritious and reasonably priced food and to position Malaysia as a global supplier of selected food products. Hence, some of the strategies adopted to achieve productivity enhancement on a sustainable basis include:

1. ***Large-scale Commercial Farming***

Over the years, 77 percent of total food crop production in the country was produced by the small farmers who did not enjoy economies of scale due to the fragmentation of their farms. Hence, a two-prong approach has been adopted to promote large-scale commercial farming:

a) At the plantation level, there is a call by the government to some of the established plantation companies to diversify into large-scale commercial cultivation of tropical fruits, instead of just depending upon the mono-crop of oil palm. To achieve this, numerous fiscal and investment incentives are being offered to these plantation companies to promote fruit cultivation. Unfortunately, the response towards fruit cultivation is not encouraging, as all the plantation companies are complacent with the cultivation of perennial crops, such as the oil palm.

b) At the farm level, success of the group farming projects is a testimony that the future breed of farmers will work in groups rather than in isolation, in order to achieve the synergy effect of productivity enhancement and higher farm income.

2. ***Greater Private Sector Participation***

In order to accelerate the transformation of the agriculture sector into a modern, dynamic, commercialized and productivity-driven sector, the investment in the private sectors is very critical. Hence, to encourage greater private sector investment in agriculture, the adopted strategies include:

i. Establishment of a comprehensive databank of land that can be made available to potential investors. The databank will include information on land, ownership, terms and conditions of the lease or rental.

ii. Undertaking a review of the current rules and procedures that affect the operations and impede investment in the private sector.

iii. Strengthening linkages with relevant international bodies to support Malaysian agricultural interests.
iv. Establishment of an institutional framework that will encourage greater linkages between the farmers' and fishermen's institutions and other investors, including private corporations, which may lead to more joint ventures.

3. ***Improvement in Marketing Services***

One of the biggest problems faced by the agriculture sector is the lack of coordination and linkages between the producers and the exporters of agricultural products. Under such circumstances, the farmers are not getting fair prices for their products. Hence, there is a need to set up a comprehensive marketing intelligence network, in order to allow the farmers to have direct access to the market rather than supplying their produce through different levels of wholesalers and retailers.

Similarly, improvement in marketing services must be complemented by a good infrastructure. At the moment, there is a lack of refrigerated trucks and warehouse facilities for the cold storage of processed food products. Unless there is improvement in the infrastructure support, farmers would not be able to compete effectively in the international market. This is one of the main reasons why Malaysian agricultural products are not able to achieve competitiveness in the international market.

4. ***Enhancing Food Security***

Table 5 shows the trend of the estimated national self-sufficiency level of major food commodities over the next decade. As shown in the table, the self-sufficiency level for the majority of the food commodities is favorable except for beef and mutton. The self-sufficiency level for rice is being maintained at 70 percent, purely for food security reasons as it is cheaper to import rice from neighboring countries.

Table 5. Self-sufficiency Level of Major Food Commodities, 1985-2010

(Unit: Percent)

Items	1985	1990	1995	2000	2005	2010
Crops						
Rice	73.6	79.4	76.3	73.0	70.7	70.4
Fruits	101.8	110.4	98.8	99.3	109.0	120.7
Vegetables	80.8	75.2	71.6	75.0	79.5	89.5
Livestock						
Beef	43.0	23.8	19.2	20.8	22.5	24.4
Mutton	9.4	10.5	6.0	6.4	7.1	7.5
Poultry	108.6	113.9	110.7	126.6	125.6	128.4
Pork	103.3	106.3	104.0	80.0	87.5	84.6
Eggs	103.3	109.4	110.3	113.0	112.2	113.9
Milk	4.0	4.3	3.5	4.0	4.5	5.0
Food fish	94.9	91.1	94.5	89.0	89.7	94.3

Source: Ministry of Agriculture.

Based upon such trend, the nation is able to sustain any financial crises in the future, as far as food commodities are concerned, except for beef and mutton. Hence, steps have already been taken to increase the production of beef, such as the promotion of integrated farming of cattle rearing within the oil palm smallholdings, which not only ensure double sources of income for farmers, but also help to boost beef production.

CONCLUSION

The financial crisis has taught national policy makers a valuable lesson: even though the nation is heading towards industrialization, there is still a need to have balanced development between the agriculture sector and other economic sectors. Such balanced development will ensure a consistent supply of food to feed the growing population, and at the same time, it will provide a source of raw materials to the industrialized sector.

From a productivity perspective, the production of food should be the responsibility of everyone, and not solely dependent upon the small farmers. Thus, this calls for greater participation from the plantation companies to diversify into food production to allow for a decrease in food import. Similarly, the government should provide the necessary institutional support to revitalize the agriculture sector. Hence, unless there is such integration between farmers, plantation companies and the government, the nation will continue to suffer from the massive outflow of monetary reserves, which is caused by the continuous importation of food products.

The worst fear is that the nation would not be able to overcome the shock of another financial crisis in the future, if such trend of continuous importation of food persists. Hence, the best preventive measure is to start producing our own food supply.

8. PAKISTAN

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INTRODUCTION

Although the economic importance of agriculture, in terms of its contribution to GDP, has been declining over the last 25 years, this sector like many developing countries still accounts for a large share of the GDP and employment. In Pakistan, agriculture still contributes more than 25 percent to the GDP, employs around 47 percent of the work force, is the main source of foreign exchange earnings, and provides linkage through which it can stimulate growth in other sectors. Being in such a dominant position, the growth of agriculture is itself a major component of overall economic growth. Over the last decade, agriculture grew at an annual average rate of 4.4 percent, with large fluctuations mainly on account of weather conditions and pest attacks on crops. Agriculture has also suffered from various problems, such as the traditional methods of farming, low yields, shortage of key inputs (credit, fertilizer, improved seed), adulterated pesticides, unstable market prices, and little attention to the sub-sectors other than crop farming.

The agriculture sector bounced back with a growth of 5.5 percent in 1999-2000 compared to a relatively low growth of 1.9 percent of the preceding year. The sharp recovery in agriculture owes mainly to the bumper cotton crop, good harvest of rice and wheat crops. However, the surge in agricultural growth was partly offset by a substantial decline in the sugarcane crop. Major crops as a whole registered a growth of 9.6 percent in 1999-2000 against a growth of only 0.04 percent from the previous year. The growth of minor crops and livestock slowed to 2.7 and 2.8 percent, respectively, compared to 4.3 and 3.2 percent the year before last. Fisheries, however, posted a growth of 8.5 percent, compared with the 0.6-percent recorded in the preceding year.

AN OVERVIEW OF THE ECONOMY

The economic slide, in which Pakistan finds itself today, must be traced back to the mid-1990s, after which the parameters of the economy demonstrated a downhill trend. By 1994-95, workers' remittances soared by 21 percent, gross fixed investment by 5 percent and foreign investment by 138 percent over the preceding year. In 1995-96, GDP growth rate was 6.8 percent and exports grew by 7.1 percent. The economy was moving in a buoyant manner, as indicated by critical economic variables.

The subsequent period witnessed the chute in unmistakable terms. GDP growth rates decelerated to an annual 2.9-percent during 1995-96. Exports never touched the figure of US$8.7 billion of 1995-96 again. Similarly, workers remittances were lower than the peak

of US$1.3 billion during 1994-95. The trade gap widened over the period, resulting in successive devaluations. One US dollar, which valued Rs.33.6 in 1995-96, is now worth Rs.58 in the inter-bank market (a rise of 72.6 percent). By March 1999, the general index of share prices stood at 103 compared to 290 in June 1994. The level of unemployment also rose after 1996.

Investment in the public sector declined sharply in relation to the private sector. Normally at an average of 9 percent of the GDP, it declined to 6 percent in the second half of the 1990s, while private sector investment remained around 8 percent during the same period.

A large fiscal deficit continues to pose as a serious threat to the macro-economic stability. The trends in fiscal deficit, which existed in the 1980s, continued to persist in the first half of the 1990s. However, fiscal deficit was reduced to an average of 6.4 percent in the second half of the 1990s, mainly by cutting development expenditure.

A modest recovery in growth is certainly a positive development in the fiscal year of 1999-2000. Real GDP grew by 4.5 percent compared to 3.2 percent of last year i.e., 1998-99, and an average of 4.0 percent for the second half of the 1990s. The modest recovery in growth is fully supported by an impressive recovery in agriculture, on account of bumper cotton and wheat crops, and a good rice crop. Agriculture grew by 5.5 percent compared to 1.9 percent of last year.

Another positive development in the fiscal year 1999-2000 has been the fall in inflation. Inflation, measured on the basis of the Consumer Price Index, declined to 3.4 percent during July 1999 to April 2000, from the 6.1 percent of the comparable period of last year. This has been the lowest inflation in the last two decades.

One of the most positive developments of the outgoing fiscal year has been a strong rebound in exports. At least three factors are responsible for a "V-shaped" recovery in exports. First, the bumper cotton crop and its reduced prices made the textile sector buoyant. Second, the policy of maintaining a stable and predictable exchange rate following the sharp depreciation in previous years, helped Pakistan maintain its external competitiveness. Third, the strong recovery in the global economy made possible by the continued strong growth in the United States, recovery in Europe, and stronger than anticipated recovery in the crisis-hit East Asian economies, firmed up the demand for Pakistani exports in the major markets. Hence, the improved supply of exportable items, stronger demand in international markets and a much more stable exchange rate have been mainly responsible for a strong recovery in exports for the outgoing fiscal year. Exports, during the first 10 months (July-April) of the year 1999-2000, grew by almost 10 percent compared against a decline of almost 12 percent in the same period last year.

Like exports, imports have also picked up during the first 10 months (July-April) of the year 1999-2000; overall imports grew by 10.9 percent instead of a decline of 9.4 percent in the same period last year. Although, most of the increase in imports is mainly due to higher import bills of petroleum products, non-food non-oil imports have also registered an increase of 4.3 percent. This is an important development as it suggests that economic revival appears to be taking place. The current account balance has improved by 34 percent during the first nine months (July-March) of the year 1999-2000, declining from a deficit of US$1,812 million to US$1,195 million.

With regard to the agriculture sector in 1999, it achieved a growth of 5.5 percent against the rate of 1.9 percent of the previous year. The production of rice increased to 5,156 thousand mt from the 4,674 thousand mt last year, while the production of cotton reached to

11,240 thousand bales from 8,790 thousand bales. These show an increase of 10.3 and 27.9 percent, respectively. The production of sugarcane is estimated at 46,363 thousand mt, which is lower by about 16 percent compared to last year's, due to delays in payments by the sugar mills, abolition of flat rates for electric tube-wells and less rainfall. We had a bumper wheat crop in the year 1999-2000. This increase is attributed to the enhancement in the support price of wheat from Rs.240 to Rs.300 per 40 kg, and the timely disbursement of agricultural credit to the growers.

Agricultural credit, amounting to Rs.27,912.6 million, has been disbursed in 1999-2000 (July-March), against Rs.30,652.0 million during the corresponding period last year, thereby registering a decline of 8.9 percent. This decline is mainly due to a lower demand for production loans. The fertilizer offtake during the first nine months (July-March) of the current year is 2,123 thousand nutrient mt, compared with 1,988 thousand nutrient mt for the same period last year, showing an increase of 6.8 percent.

THE FINANCIAL CRISIS AND ITS OUTLOOK

Pakistan has been relatively insulated from the currency and capital market turmoil in Southeast and East Asia by the fact that the country has not undergone significant liberalization of the financial sector and had low to moderate foreign debt exposure. The main impact of the crisis will be felt through a slow down in foreign direct investment (FDI) inflows from the crisis-affected countries.

Exports suffered a setback at the end of 1997, when East Asian economies suffered currency turmoil. This adversely affected our exports and led to a hefty one-time devaluation of the Pakistani currency by 8 percent on 15 October 1997. This led to shrinking exports as the international prices of goods fell, although imports also became cheaper such as petroleum products during 1998-99.

Whatever the case may be, whenever there is a financial crisis in the country, it normally leads to the devaluation of the local currency and the extent of devaluation depends upon the severity of the crisis. The massive devaluation of currency not only harms national interests but also those of the individual and commercial/business enterprises.

Although the agriculture sector consumes electricity and petroleum only by 17 and 2 percent, respectively, the prices of various input like seed, chemical fertilizer, diesel oil, electric power, labor charges and canal water rates increased by various proportions as the result of inflationary pressure on the economy. As a result, costs of production for agricultural products increased. The Government of Pakistan, therefore, has been revising support prices of agricultural products.

Due to the introduction of improved tillage practices and new concepts in farming techniques, etc., the production per ha has increased, which has diluted/minimized the effects of inflationary factors of the financial crisis. The offtake of fertilizer as well as the credit requirement of the agriculture sector is expanding every year. The productivity of agriculture as a whole has increased significantly. Thus, the marginal effects of the financial crisis on farming as well as the farming community has been minimized/nullified.

CONCLUSION

If we review the economy of Pakistan during the period of financial crisis, it transpires that the country was already not doing well; it had a huge debt problem, low foreign exchange reserves and a falling GDP. Basically, these economic indicators kept away major

foreign investments, and as a result, Pakistan was a bit insulated from the crisis. In fact, all the basic problems, which triggered the economic crisis, as discussed above, were partly already prevailing to a certain extent in Pakistan. Economic development was already slow due to many external and internal problems. However, due to economy being under development, there were no sudden consequences as in the case of the Asian tigers. But, due to the crisis, 15 percent of total exports to the Far-Eastern region dried up, plus some major projects undertaken by Korean firms were effected. In all, from 1997 onward, negative trends were seen. The agriculture sector did not suffer directly, but due to the economic problems, this sector was indirectly affected. Later, by various government interventions, the slide in agricultural productivity halted in 1999. In fact, the agriculture sector stabilized in the year 2000.

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9. PHILIPPINES

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INTRODUCTION

Stiglitz (1998) accounted that in the last 20 years, there have been at least 10 countries, which suffered from the simultaneous onset of currency and banking crises. The result has been full blown economic crises causing, in many cases, contractions of 5-12 percent in the first year of the crisis, and negative or only slightly positive growth for some years afterwards. In view of this general phenomenon, he raised the question: "Must financial crises be this frequent and this painful?"

In the Philippine economic history since the 1980s, several economic crises have been experienced, due to the occurrence of any or a combination of the following: (i) overspending and overheating of the economy; (ii) financial crisis; (iii) crisis of confidence; and (iv) crisis from abroad or other countries. Financial crises are mainly caused by: (i) overexposure to foreign liabilities and lack of capacity to earn foreign exchange to pay for those debts; and (ii) financial bubbles created by over-investments in the equities and real estate sectors. Domestic or external shocks or circumstances can similarly contribute or trigger an economic crisis.

For the period 1983-86, a combination of these crises brought havoc to the economy: the foreign debt crisis in the 1980s that started in Mexico and Brazil; assassination of a prominent political figure; and overheating of the economy. The crisis that hit the country in 1989-92 resulted from overheating, foreign debt burden and domestic political instability. The 1997 crisis, on the other hand, was triggered by the economic crisis in Thailand, which followed the opening of the country's financial market. This resulted in the massive inflow and outflow of volatile short-term capital, consisting of short-term dollar-denominated debt and portfolio investments.

The ongoing crisis, on the other hand, is mainly due to the crisis of confidence in the current administration, triggered by peace and order problems in the southern portion of the country, which took time to be resolved. This was further aggravated by the series of oil price increases, resulting from the deregulation of the oil industry. In view of the integration of the Philippine economy in the global market, however, the financial sector is currently being adversely affected.

ECONOMIC AND SOCIAL SITUATION OF THE COUNTRY

Economic Situation Prior to the 1997 Financial Crisis

Three years before the 1997 crisis, the country enjoyed a steady and strong economic growth compared to its sluggish pace in the early 1990s. Higher incomes, stable prices, favorable balance of payments (BOP) and fiscal positions result from the various policy reforms instituted, starting 1991 (Tables 1-3). These reforms encouraged greater private sector involvement in the development process and opened up the economy. A macro-economic stabilization program was also put in place to reduce fiscal deficit. However, in comparison with countries such as Thailand, Indonesia, China, Malaysia and Singapore, the country's performance still lagged behind.

Like other countries in the region, the Philippines experienced a substantial inflow of foreign capital, especially in portfolio investments in 1995-96 (Table 2). This resulted in the strengthening of the peso, despite the country's large trade deficit. The large proportion of portfolio investments to total foreign investments, appreciation of the peso combined with a large trade and current account deficit, and the deterioration of the BOP position in early 1997, made the economy vulnerable to speculative attacks on its currency.

However, as later confirmed by the country's experience, the various policy reforms instituted earlier, especially those which resulted in the strengthening of the banking system, made the country relatively more resilient to the impact of the crisis compared to some countries in the region.

Agricultural Development Prior to the 1997 Crisis

Agricultural development prior to the 1997 crisis was geared towards increasing productivity, efficiency, competitiveness, market adaptability, and sustainability of the country's agri-based industries. Growth in the sector averaged at 2.5 percent from 1990 to 1996, with crop production constituting the bulk of the total agricultural output (Table 4 and Figure 1). It may be noted, however, that the livestock and poultry sub-sectors have been the most robust among the production sub-sectors, with annual average growth rates of 3.9 and 6.6 percent, respectively. Fishery production, on the other hand, was hampered by environmental problems in the aquatic environment, thus the dismal 1.8 percent growth during the same period.

The agriculture sector, however, remained vulnerable to adverse weather conditions. The drought in the early part of 1995 and a number of devastating typhoons toward the end of that year significantly affected the production of major crops e.g., rice and sugar. The sector recovered in the following year, but was again battered by the El Niño in 1997, the worst to hit the country in 31 years.

IMPACT OF THE FINANCIAL CRISIS ON THE AGRICULTURAL/RURAL ECONOMY

Economic Impact of the Crisis

The most immediate impact of the financial crisis was manifested in the sudden outflow of substantial amounts of foreign capital. This placed a heavy strain on the country's dollar reserves and caused the depreciation of the peso (more than 62 percent within the seven months after the crisis struck). To ease the pressure on the exchange rate, interest rates were increased by almost seven percentage points at their peak level.

Table 1. Real Sector Indicators, 1993-99, Growth Rates

Indicator	1993	1994	1995	1996	1997	1998	1999
GNP	2.1	5.3	4.9	7.2	5.3	0.4	3.7
GDP	2.1	4.4	4.7	5.8	5.2	(0.6)	3.3
Agriculture, fishery and forestry	2.1	2.6	0.9	3.8	3.1	(6.5)	(6.4)
Industry	1.6	5.8	6.7	6.4	6.1	(2.1)	0.9
Mining	0.7	(7.0)	(6.8)	1.3	1.7	2.8	(8.4)
Manufacturing	0.7	5.0	6.8	5.6	4.2	(1.1)	1.6
Construction	5.7	8.9	6.5	10.9	16.2	(9.6)	(1.6)
Utilities	2.9	13.9	13.0	7.5	4.8	3.3	3.1
Services	2.5	4.2	5.0	6.4	5.4	3.5	4.5
GNP (₱ billion at 1985 prices)	747	786	825	884	930	934	968

Sources: 1) National Economic and Development Authority; and
2 National Statistical Coordination Board

Table 2. Selected Indicators for Monetary and External Sector, 1993-99

Indicator	1993	1994	1995	1996	1997	1998	1999
Current account (US$ million)	(3,016)	(2,950)	(3,297)	(3,953)	(4,351)	1,546	7,239
As percent of GNP	(5.4)	(4.5)	(4.3)	(4.6)	(5.1)	2.2	9
Export growth	15.8	18.5	29.4	17.7	22.8	16.9	18.8
Import growth	21.2	21.2	23.7	20.8	14.0	(18.8)	4.1
Trade balance in goods (US$ million)	(6,222)	(7,850)	(8,944)	(11,342)	(11,127)	(28)	4,295
Capital and financial account (US$ million)	2,820	4,547	3,393	11,075	6,593	478	(1,007)
Overall BOP position (US$ million)	(166)	1,802	631	4,107	(3,363)	1,359	3,839
Prices and interest rates							
Inflation rate (1994 = 100)	6.9	8.4	8.0	9.1	6.0	9.8	6.6
Ninety-one-day T-bill rate	12.3	13.6	11.3	12.4	13.1	15.3	10.2

Sources: *Bangko Sentral ng Pilipinas*, the National Economic and Development Authority and Bureau of the Treasury and the National Statistical Coordination Board.

Table 3. National Government Fiscal Position, 1993-98*

(Unit: ₱ billion)

Indicator	1993	1994	1995	1996	1997	1998
Total revenue	260.4 (17.4)	336.2 (19.4)	361.2 (18.4)	410.4 (18.2)	471.8 (18.7)	462.5 (16.6)
Total disbursements	282.3 (18.8)	319.9 (18.4)	350.1 (17.8)	404.2 (17.9)	470.3 (18.6)	512.5 (18.3)
Budgetary deficit (-)/surplus	-21.9 (-1.5)	16.3 (0.9)	11.1 (0.6)	6.3 (0.2)	1.6 (0.1)	-50.0 (-1.8)
Deficit financing	21.9	-16.3	-11.0	-6.3	-1.6	50.0

Sources: Department of Finance and Department of Budget and Management.
Note: Figures in parentheses are percent of GNP.

Table 4. Gross Value-added (GVA) in Agriculture, Fishery and Forestry by Industry Group at Constant 1985 Prices

(Unit: ₱ million)

Industry/Industry Group	1990	1991	1992	1993	1994	1995	1996
Agriculture Industry	153,414	158,205	159,385	163,556	168,419	171,069	177,553
a. Agriculture	122,631	126,204	127,010	130,736	135,224	136,616	143,265
Crops	85,870	88,694	87,662	89,660	92,775	93,269	96,418
Palay	24,873	25,868	24,412	25,228	28,182	28,189	30,175
Corn	10,950	11,093	11,009	11,435	10,769	9,837	9,893
Coconut	7,084	6,798	6,815	6,827	6,831	7,380	6,890
Sugarcane	3,652	4,646	4,871	5,257	5,326	3,964	4,810
Banana	2,698	2,691	2,789	2,798	2,836	2,809	3,011
Other crops	36,613	37,598	37,766	38,115	38,831	41,090	41,639
Livestock	16,854	17,061	17,195	17,996	18,858	19,834	21,143
Poultry	12,215	12,626	13,999	14,866	15,255	16,056	17,866
Agricultural activities and services	7,692	7,823	8,154	8,214	8,336	7,457	7,838
b. Fishery	30,783	32,001	32,375	32,820	33,195	34,453	34,288
Forestry	7,320	4,732	4,186	3,497	2,971	1,779	1,898
GVA in agriculture, fishery and forestry	160,734	162,937	163,571	167,053	171,390	172,848	179,451

... To be continued

Table 4. Continuation

(Unit: ₱ million)

Industry/Industry Group	1997	1998	1999	Growth Rate			
				1990-96	1997-96	1998-97	1999-98
Agriculture Industry	183,601	171,548	183,035	2.5	3.4	-6.6	6.7
a. Agriculture	149,326	136,858	147,471	2.6	4.2	-8.3	7.8
Crops	99,973	87,118	96,367	2.0	3.7	-12.9	10.6
Palay	30,135	22,877	31,516	3.4	-0.1	-24.1	37.8
Corn	10,324	9,111	10,921	-1.6	4.4	-11.7	19.9
Coconut	7,280	6,325	5,860	-0.4	5.7	-13.1	-7.4
Sugarcane	4,828	4,164	5,109	6.2	0.4	-13.8	22.7
Banana	3,206	3,020	3,222	1.9	6.5	-5.8	6.7
Other crops	44,200	41,621	39,739	2.2	6.2	-5.8	-4.5
Livestock	22,273	23,196	24,277	3.9	5.3	4.1	4.7
Poultry	19,088	19,023	19,186	6.6	6.8	-0.3	0.9
Agricultural activities and services	7,992	7,521	7,641	0.5	2.0	-5.9	1.6
b. Fishery	34,275	34,690	35,564	1.8	0.0	1.2	2.5
Forestry	1,112	897	747	-18.6	-41.4	-19.3	-16.7
GVA in agriculture, fishery and forestry	184,713	172,445	183,782	1.9	2.9	-6.6	6.6

Source: Economic and Social Statistics Office, National Statistical Coordination Board.

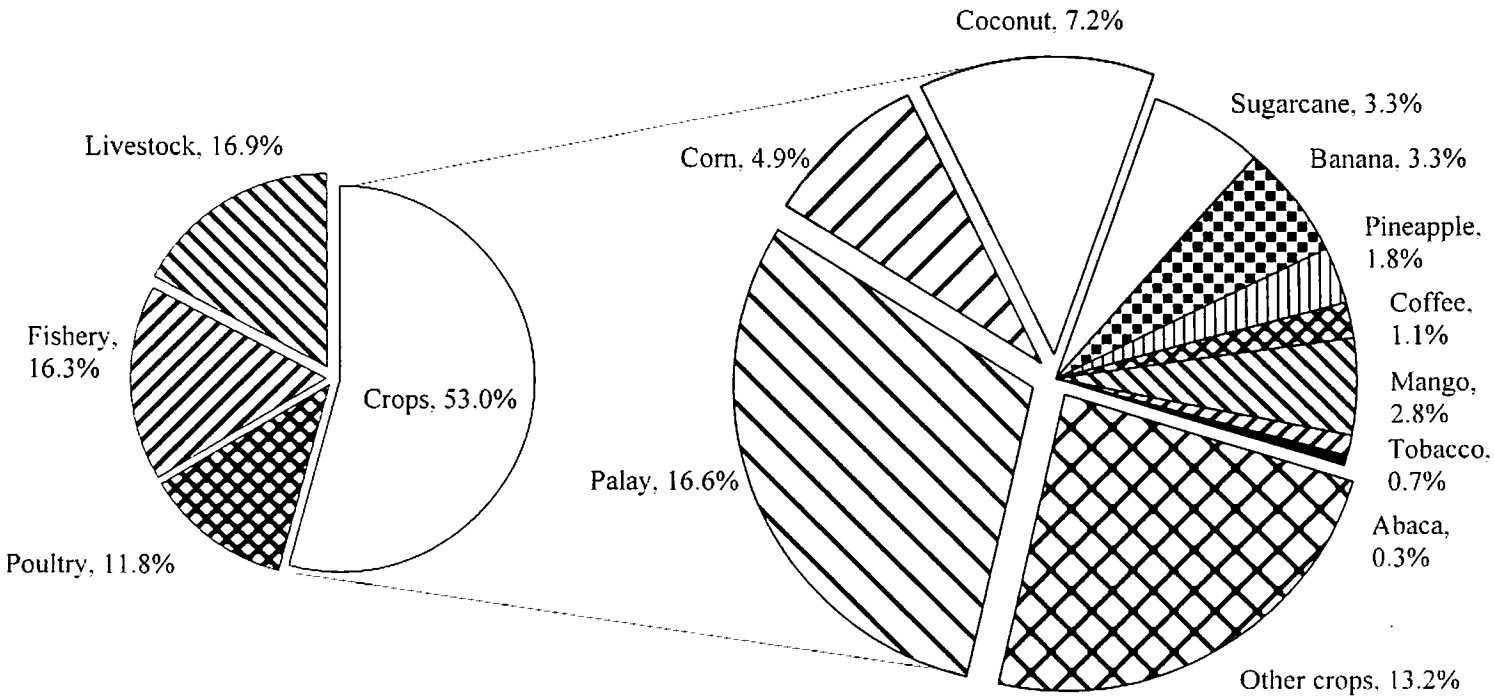

Figure 1. Percent Share of the Crops sub-sector (Major Crops) in the Agriculture's Gross Output Value, Philippines, 1999 (at current prices)

Deceleration in the GDP growth was experienced in the second semester of 1997, with the agriculture sector registering flat growth and both the industrial and service sectors showing some signs of weakening. Nonetheless, the sector managed to grow by 4.3 percent in 1997 (Table 4). In 1998, however, the economy contracted by 6.6 percent, after experiencing adverse weather conditions: drought in the second quarter and two strong typhoons in the fourth quarter. This resulted in a 1.28-percent reduction in the sector's contribution in the 1998 GNP (Table 5). While the economic contraction was attributed to the weather disturbances rather than to the financial crisis, the marked decline in manufacturing and construction output during the period indicated that the adverse impact of the crisis was already being felt.

Closure and retrenchments of 3,072 establishments in 1998, affected 155,198 workers. Closures or shutdowns were common among small-sized establishments while retrenchments, rotations or reductions in working hours were prevalent among large-sized establishments.

Inflation slightly accelerated in the first few months after the crisis, with pressures coming mainly from the service and housing sectors, while food prices were somewhat stable. However, when agricultural output dropped drastically during the second quarter of 1998, the increase in food prices accelerated and brought overall inflation to a double-digit level.

Based on the 1998 Annual Poverty Indicators Survey,* a total of 13.5 million families (or 93.8 percent of the total estimated number of families) were affected by the 1997 financial crisis. Among the major coping mechanisms of the families reported include: (a) changes in eating pattern; (b) increases in working hours; and (c) searches for assistance from government or relatives.

In terms of the allocation of the National Government Expenditure, the agriculture, agrarian reform and natural resources sectors experienced lower shares in 1998, compared to the average of the 1993-96 levels (Table 6).

Effects of the Financial Crisis on the Productivity of Agriculture

The long-term effects of the 1997 financial crisis on agricultural productivity have yet to be studied in detail. However, data shows that a year after the 1997 crisis, much of the economic gains achieved in the preceding years have already eroded. As can be gleaned in Table 7, real labor productivity dropped immediately following the onset of the financial crisis. In particular, agricultural labor productivity dropped by 3.4 percent in 1998. Caution, however, has to be applied in interpreting this data as the adverse impact of the El Niño, which hit the country during the same year, may be difficult to isolate.

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* The 1998 annual Poverty Incidence Survey is a nationwide survey designed to provide access and impact indicators that can be used as inputs to the development of an integrated poverty indicator and monitoring system. It provides data on the socio-economic profile of Filipino families and other information relating to their living conditions. Relevant information on the impact of the Asian economic crisis is likewise added in the survey. Specifically, the survey aims to identify the poor families through the use of non-income-based indicators.

Table 5. Contribution to GNP Growth at Constant 1985 Prices

Industry	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Average 1990-96
1. Agriculture, Fishery and Forestry	0.11	0.31	0.09	0.48	0.58	0.19	0.80	0.63	-1.28	1.10	0.36
Agricultural industry	0.40	0.67	0.16	0.57	0.65	0.34	0.79	0.69	-1.28	1.17	0.51
Forestry	-0.28	-0.36	-0.08	-0.09	-0.07	-0.15	0.01	-0.06	0.00	-0.07	-0.15
2. Industry Sector	0.93	-0.95	-0.19	0.56	1.94	2.28	2.22	2.10	-0.73	0.30	0.97
Mining and quarrying	-0.04	-0.04	0.10	0.01	-0.11	-0.09	0.02	0.02	0.03	-0.10	-0.02
Manufacturing	0.70	-0.11	-0.44	0.18	1.22	1.64	1.38	1.02	-0.27	0.38	0.65
Construction	0.29	-0.92	0.14	0.28	0.46	0.35	0.59	0.90	-0.59	-0.09	0.17
Electricity, gas and water	-0.01	0.12	0.02	0.08	0.38	0.38	0.24	0.15	0.10	0.10	0.17
3. Service Sector	2.06	0.06	0.43	1.05	1.79	2.10	2.67	2.25	1.45	1.76	1.45
Transportation, communication and storage	0.13	0.03	0.08	0.15	0.24	0.33	0.43	0.47	0.38	0.33	0.20
Trade	0.69	0.08	0.25	0.37	0.59	0.83	0.83	0.57	0.36	0.72	0.52
Finance	0.40	-0.12	0.01	0.09	0.22	0.29	0.57	0.57	0.21	0.09	0.21
O. dwellings and R. estate	0.16	0.01	0.04	0.10	0.16	0.16	0.22	0.19	0.08	0.03	0.12
Private services	0.27	-0.01	0.04	0.20	0.29	0.29	0.34	0.32	0.31	0.40	0.20
Government services	0.43	0.08	0.01	0.14	0.28	0.19	0.30	0.13	0.11	0.18	0.20
GDP	3.1	-0.6	0.3	2.1	4.3	4.6	5.7	5.0	-0.6	3.2	2.79
Net factor income from abroad	1.7	1.1	1.2	0.0	0.9	0.3	1.6	0.3	1.0	0.5	0.98
GNP	4.8	0.5	1.6	2.1	5.3	4.9	7.2	5.3	0.4	3.7	3.76

Source: Economic and Social Statistics Office, National Statistical Coordination Board.

Table 6. Sectoral Allocation of National Government Expenditure, 1993-99[a]

Share to Total Budget	1993	1994	1995	1996	1997	1998	1999
Economic Services	32.12	34.64	34.60	30.37	31.32	28.31	28.18
Agriculture, agrarian reform and natural	9.66	10.45	9.69	10.25	11.98	8.72	8.78
Trade and industry	1.54	1.87	2.63	1.57	1.45	0.97	0.83
Tourism	0.23	0.24	0.33	0.26	0.29	0.34	0.23
Power and energy	3.51	1.34	1.43	0.39	0.48	0.55	0.97
Water resources and flood control	2.25	1.81	1.62	0.96	1.92	1.77	1.57
Communications and transportation	14.14	17.99	16.79	15.23	14.19	15.47	14.53
Other economic services	0.79	0.94	2.11	1.71	1.00	0.50	1.27
Social Services	31.84	30.24	33.16	36.17	38.84	40.83	41.95
Education	24.22	22.76	25.33	26.50	27.81	29.74	29.45
Health	4.35	4.01	3.44	3.99	4.15	3.74	3.98
Social services and welfare	2.03	2.46	2.84	3.58	5.94	6.33	6.62
Housing and community development	1.04	0.81	1.35	1.83	0.71	0.78	1.10
Land distribution[b]	-	-	-	-	-	-	0.59
Other social services	0.21	0.21	0.20	0.26	0.22	0.21	0.22
Defense	14.43	11.66	11.29	10.99	8.56	8.77	8.77
General Public Services	23.62	23.46	20.95	22.47	21.29	22.09	21.09
Public order and safety	9.77	9.22	9.37	10.03	9.81	10.42	10.86
General administration	11.25	12.89	10.54	11.24	10.65	11.67	9.85
Other general public services	2.59	1.35	1.05	1.20	0.83	-	0.39
Total expenditure	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Department of Budget and Management.

Notes: [a] Net of transfers to local government units, net lending and interest payments; and [b] less tan 0.01 percent.

Table 7. Labor and Productivity Indicators, 1993-99

Indicator	1993	1994	1995	1996	1997	1998	1999
Labor force (000)	26,879	27,654	28,382	29,733	30,355	31,056	32,081
Employment (000)	24,382	25,032	25,676	27,186	27,715	27,911	28,980
By sector:							
Agriculture	11,139	11,286	11,147	11,645	11,319	10,933	11,624
Industry	3,804	3,948	4,139	4,430	4,631	4,583	4,533
Services	9,439	9,798	10,391	11,112	11,771	12,395	12,823
Jobs created (000)	686	651	643	1,510	529	196	1,069
By sector:							
Agriculture	413	147	(139)	498	-331	-381	691
Industry	-19	142	193	291	201	-47	-50
Services	292	372	591	721	659	624	428
Levels (₱)							
Real labor productivity[a]	30,634	31,405	32,113	32,525	33,569	33,361	30,191
Real labor productivity[b]	30,111	30,616	31,234	31,234	32,221	31,818	28,595
By sector:							
Agriculture	14,997	15,186	15,506	15,410	16,326	15,773	15,778
Industry	66,104	67,369	68,581	68,200	69,248	68,635	69,854
Services	33,440	33,579	33,252	33,076	32,916	32,358	32,545

Sources: National Statistical Coordination Board, Medium-Term Philippine Development Plan (MTPDP) 1993-98 and Updated MTPDP 1996-98; and National Statistics Office, Labor Force Survey.

Notes: [a] Real GNP/total employment; and [b] real GDP/total employment.

Major Policy Imperatives Being Undertaken to Alleviate the Impact of the Financial Crisis on Farmers and Strategies for Enhancing Sustainable Agricultural Productivity

The 1997 crisis served as a wake up call for the country's macro-economic management. The 1997 financial crisis exposed weaknesses in the Asian economies, which must be addressed for the regions to return to its high growth of recent years. While much has been done to make the country's financial system the most resilient among the crisis- affected economies, reforms in the corporate and financial sector governance have to be sustained to minimize the country's vulnerability to sudden movements in short-term capital.

The MTPDP 1999-2004 envisions a sustainable development path anchored by growth and social equity. The overall achievement will be measured in a large part by the reduction in poverty, especially in the rural areas, and an improvement in the distribution of income. Specifically for the agriculture sector, acceleration of growth is expected through the implementation of a comprehensive modernization program. The objective is to foster an internationally competitive agriculture sector that will increase earnings of farmers, from both domestic and export markets, and ensure food security, while meeting the objectives of ecological balance and environmental preservation. Thus, fiscal spending is geared towards agricultural modernization, to achieve food security, and increase the productivity of the rural sector, which accounts for the bulk of the poor.

The enactment of Agriculture and Fisheries Modernization Act (AFMA) in 1997, sets the framework for the government's centerpiece strategy for rural development. Among the

major strategies of AFMA: (a) enhancing productivity and competitiveness; (b) widening people's access to land and other productive resources; (c) promoting sustainable use of natural resources and protecting the environment; and (d) empowering stakeholders and rationalizing the functions of institutions. The Act prescribes urgent measures, such as the identification of strategic agricultural and fisheries development zones (SAFDZs) and the formulation of modernization plans with budgetary support for irrigation, farm-to-market roads and other rural infrastructure, research and development, extension, farmer credit, information and marketing support services, product standardization, and consumer protection.

Despite budgetary constraints, the core components of the AFMA have been initiated, to include:

(a) completion of the Agriculture and Fisheries Modernization Plans in 13 of the 15 regions;
(b) completion of the SAFDZ delineation after thorough conduct of public consultations at the national and regional levels;
(c) launching of the *Agriculturang Maka-Masa* Program aimed to increase productivity of rice, corn, high value crops, livestock and fisheries through better irrigation, seeds and breeders, marketing systems and technology; and
(d) massive rehabilitation and construction of new irrigation facilities.

Various policy reforms have also been started and these include the following:

(a) Implementation of the Agro-Industry Modernization Credit and Financing Program, affecting the four-year phase-out plan of all directed credit programs, whose funds shall be consolidated into the new program;
(b) Issuance of *Bangkok Central ng Pilipinas* Circular Number 217 allowing for longer and variable grace periods in the repayment of loans for long-gestating agriculture and fisheries projects;
(c) Issuance of Executive Order No. 133 which specifies the implementation of rules and regulations governing the exemption from the payment of tariffs and duties of inputs to agriculture and fisheries enterprises; and
(d) Preparation of a set of criteria for the selection and prioritization of irrigation investments. A guideline that would rationalize irrigation service fees is likewise being crafted with due emphasis on the importance of watersheds and cost recovery through co-financing schemes in systems rehabilitation and maintenance.

In terms of institutional reforms, convergence effort among the three principal institutions of government i.e., Department of Agriculture (DA), Department of Agrarian Reform (DAR), Department of Environment and Natural Resources (DENR), whose mandates primarily concern the development of the rural sector has been initiated. This involves the adoption and implementation of joint and complementary initiatives in the rural areas. The roles of each department have been defined to operationalize the sustainable development paradigm in the rural sector through integration of the social, economic and environmental aspects of rural development.

Cost-sharing schemes with stakeholders have been institutionalized by the DA to encourage more meaningful and responsive participation in, and consequently ensure the sustainability of, programs and projects.

Growing recognition of the importance of budget and planning process linkage, on the other hand, recently paved the way for initiatives to improve existing practices in the various oversight and line departments. These initiatives are geared toward more effective and efficient resource utilization and allocation, consistent with the government's efforts to increase expenditures towards desired government outcomes.

A project is currently being implemented by the National Economic and Development Authority, the central planning agency of the country, to establish a database and information backbone to institutionalize economic surveillance and strengthen the agency's planning capability. It is envisioned that this initiative will enable the formulation of timely, analytical and forward-looking policies. In addition to the regular monitoring of the economy's performance, the importance of including early warning indicators in the database, specifically forecast possible financial and economic collapse, has been recognized. However, full utilization of this system has yet to be realized as pilot testing is still waiting to be conducted in the next few months.

CONCLUSION

While individual country initiatives, such as the ones mentioned above, are needed to mitigate the impact of financial crises on all sectors of the economy, particularly on the farmers. Coordinated efforts among affected economies could be a bigger step to be taken. The continuing international dialogues on these and other related issues offer some hope for each of the affected economies. This particular meeting for the region promises a great opportunity to foster collaborative efforts towards making financial crises less frequent and painful, as they have been these past years. The sharing of country experiences in the region is a big stride as possible networking activities may be initiated towards this end.

As Stiglitz (1998) emphasized, the challenge today is to prevent the pendulum from swinging too far to the other side. There appears to be a huge task in the redesign of international architecture for the integration of the economies in the global system, so that it can work the way it was envisioned. What we may be able to accomplish at the end of the meeting may not be a perfect solution to this problem. But as Stiglitz (1998) puts it appropriately: "*We must not let the perfect be the enemy of the good. In a downpour, it is better to have a leaky umbrella than no umbrella at all*".

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10. SRI LANKA

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INTRODUCTION

The agriculture sector of Sri Lanka is responsible for food and export crop production and it contributes to 16.4 percent of the GDP and 23.3 percent of the GNP in 1999. This provides employment for one-third of the labor force, exceeding the provision of employment contribution of any other major sector. Tea, rubber, coconuts, flower and ornamental plants, cinnamon and other spices crops are the major exports of the agriculture sector in Sri Lanka.

THE AGRICULTURE SECTOR

The agriculture sector can be divided into a number of sub sectors, such as plantation crops, food crops, export agricultural crops, animal production, fisheries, etc. The importance of each sector is briefly discussed below.

The Plantation Sector

Tea, rubber and coconut are the three plantation crops.

1. ***Tea***

GNP of tea is 2.4 percent. There was US$162.38 million in export earning from tea during 1999. Main importers of tea are the U.S.A., Russia, Turkey, Syria and U.K. There was 1 percent growth in tea export during 1999. Financial crisis of Russia and increment of petroleum fuel price badly affected to tea industry. Rise in fertilizer prices caused the reduction of fertilizer application by 9 percent during 1999.

2. ***Coconut***

Coconut is used for local consumption and also export. The contribution to GNP by the coconut is 2.9 percent. Sri Lanka is one of the principal exporters of desiccated coconut. The demand of coconut oil was reduced due to severe competition by vegetable oil in the open market. This led to reduction in income for large plantation and oil producers, and caused poor growth in the coconut industry.

3. ***Rubber***

Rubber is a primary raw material for industries. Over half (51 percent) of rubber production in Sri Lanka is used by local industries and the rest is exported. The Sri Lankan natural rubber market was badly affected by the synthetic rubber industry and the natural rubber production of other East Asian countries. There are a number of rubber-based industries in Sri Lanka. Yet low prices in the world rubber market badly affected our rubber

industry. High price of fertilizer reduced fertilizer application by 3 percent, which resulted in the lowest productivity.

Food Crops

The Sri Lanka staple food crop is rice, in which the country is 90-95 percent self-sufficient. Rice production in the year 1999 was 2,868 mt. The import volume of rice during this period was 214 mt. The average rice yield of Sri Lanka is 3.67 mt/ha. There are several factors causing the stagnation in rice yield. A large percentage of the expenditure was incurred for the harvest of paddy. This operation is mainly done by manual labor power. Cost for paddy cultivation can be reduced by mechanizing the harvesting operations. Limitations to this innovation are boggy soils and small and sloppy plot sizes of paddy fields. Also increase in fertilizer prices in the world market increased the cost of cultivation of paddy.

Export Crops

Crops, such as cinnamon, pepper coffee, cocoa, citronella, cloves are included in this category. Sri Lanka is the principal producer of cinnamon, 70 percent of the world production is made in Sri Lanka. The export of those crops is responsible for 2.4 percent of the GNP. Deteriorating economic situations in the importing countries adversely affected the export of agricultural products. As an example, the financial crisis of Brazil badly influenced the cinnamon market of Sri Lanka during 1990.

Animal Production

The price of animal feed affected the cost of animal production. Price of animal products increased during 1990-99 due to price hikes in animal feed. Sri Lanka imports 75-81 percent of milk and milk products consumed in the country. Prices of this foodstuff increased due to the rise in world market prices.

Fisheries

Total fish products during 1999 were 280,000 mt, an 8-percent increase over production level of 1998. Out of this production, 38 percent was harvested from deep sea. However, we still import some amount of fish products. There is a large potential to develop deep-sea fishing, but due to the limitations in capital and technology, it is still underdeveloped.

Flower and Ornamental Plants

This is a new area for agricultural development. A substantial amount of export earnings and employment generation is done by this sub sector. However, due to the limitation of technology and difficulties in timely production, the growth has not been significant in this sub-sector. The production is limited also due to transportation problems.

Fruit Crops

We grow tropical fruit crops such as mango, banana, passion fruits, orange, rambutan, etc. and some of them are exported. However, we also import a considerable amount of apples, grapes, oranges, etc. and spend a large amount of foreign currency. Export of tropical fruits is a new industry with a great potential to expand.

EFFECTS OF THE FINANCIAL CRISIS ON RESOURCE UTILIZATION IN THE AGRICULTURE SECTOR

Financial crisis affects any kind of economic activity, so it also affects agricultural operations. The theme discussed here is in the view of resource utilization in the agriculture sector, under the sub-headings of land, labor, capital and technology.

Land

Land is a fixed asset for Sri Lanka farmers, so they seldom change the ownership of land. Therefore, the financial crisis did not affect the availability of land in agriculture.

There are three kinds of landholding in agriculture, such as large landholdings (more than 5 acres), medium-size landholdings (2-5 acres), and small landholdings (smaller than 2 acres). Most of the landholdings in the food crop sector are small landholdings. Also three kinds of land ownership exist: i) owner farmers; ii) tenant farmers; and iii) rental farmers. No studies have been done on the effect of the financial crisis on the pattern of land ownership. However, there is evidence that this crisis decreased the profitability of agricultural production, which resulted in the low rental value of land.

The financial crisis also adversely affected land improvement and developmental activities. Since most of the agricultural production activities gave low profitability, investment in land development activities such as soil erosion control and other means of long-term investments were avoided. The usage of land for marginally profitable and unprofitable crops is reduced.

Labor

Agricultural labor wages in Sri Lanka are continuously increasing. For example, labor wages per day was Rs.100-125 during 1995, and presently it is Rs.250-275. Labor wages rise because there is a shortage of laborers in the agriculture sector. This shortage is a result of labor movement from the agriculture sector to other sectors, and the low preference to agricultural labor jobs by younger generation. There is a high labor demand for agricultural activities such as the harvesting of paddy and land preparation. Farm mechanization seems to be a viable option.

Farmers have to invest more money to buy or hire tractors, or irrigation systems or chemical weedicides to replace labor. Since the prices for agricultural products are low, it is not economical to invest more money in such enterprises. However, resourceful farmers invest their own money on such activities and have achieved marginal profit. Other farmers use family labor and a minimum amount of hired labor, so they may not complete the operations on time, therefore, resulting in poor productivity.

Another constraint in agricultural mechanization in Sri Lanka is the inappropriateness of machines in some soil conditions and farming situations. The financial crisis slows down the process for mechanization by discouraging investment on machines.

Capital

Capital is not an important factor for traditional village farmers. But, now almost all Sri Lanka farmers use capital as a resource, and sell some of their produce to the market to reimburse their investment. Most of our farmers treat farming as an economical activity, so they invest capital and sell their produce to get profit. However, due to the financial crisis, the prices of the farm produce went down, which reduced the profits. This discouraged

capital investment on farming operations. Only resourceful farmers used capital during the crisis situation because they invested their own money. However, farmers who borrowed money from formal or non-formal means to invest in agriculture, have the additional cost of interest, resulting in higher costs of production, and loss in profits in agricultural enterprises. Therefore, the financial crisis limited the use of capital in agriculture as a production resource.

Technology

Technology is the most essential factor in commercial agricultural production. Technology covers the operations of land preparation, seeds and planting materials, plant protection, weed control irrigation and drainage, harvesting and post-harvest activities. Each and every operation has various means of technological procedures, materials and tools. Only traditional village farmers use less technology and invest the least money. But, other farmers use technology though to a varying extent.

However, the financial crisis reduced the profitability of agricultural activities, thus it reduced money investment in agriculture, resulting in low levels of technology utilization. Although the Department of Agriculture and other relevant agencies carried out technology dissemination, it is clear that technology usage is limited due to the shortage of funds and the low profit margin in agricultural production.

EFFECTS OF THE FINANCIAL CRISIS ON PRODUCTIVITY OF AGRICULTURE

As discussed earlier, resource utilization was affected by the financial crisis. This in turn affected the productivity of agriculture as discussed below:

1. ***Food Crop Sector***

This sector mainly comprises of small farm holdings farmers with less resources and a few percentage of resource rich farmers. As discussed earlier, poor farmers do not use a sufficient amount of fund for agriculture, resulting in poor productivity. As an example, such farmers did not use advance technology such as good seed and planting materials, agro-chemicals, or mechanization. They invested less money and got less return, causing poor productivity. Only a few farmers have sufficient money to invest for new technology mechanization, etc. so that only a few percentage of farmers received higher productivity.

2. ***Plantation Sector***

This sector comprises of large holdings and resourceful farmers. But there are small farm holdings too. However, this sector has more resource compared to the food crop sector, so that these farmers can operate on rather good standards. Due to the financial crisis, prices of rubber went down, so most of the cultivation's were neglected, in order to follow a process of diversification. Price of tea also fluctuated, however, it presently exists at a fairly high price. The price of all other export crops such as cinnamon, paper, etc. increased in price, thus they never received negative effects from the financial crisis.

Other than rubber, and to some extent the coconut, all other crops were not hit by the crisis since these crops received higher foreign market demands. Therefore, the productivity of these crops were maintained.

3. ***Animal Production and Fishing Industry***

Components of animal production are poultry, dairy and beef production, goat farming the buffalo industry. Only the poultry farmers use feeds and other ingredients such as medicine, etc., which require the money that was effected by the financial crisis. Due to the financial crisis, consumers' buying powers were slightly reduced, which slightly lowered the demand of local animal products. This reduced the profitability of the animal industry. Although the profit margin has gone down, production practices are maintained in good standards. Therefore, the productivity of the animal industry was not affected by financial crisis.

Fishery industry is comprised of motor boat fishing and manual fishing. About 90 percent of fish products come from motor boat fishing. Therefore, fish production incurs investment for boats and nets and also fuel. Most of the boat owners get loans to invest for their business. There is limited capacity to invest money in this sector, due to the financial crisis. Therefore, the country has not reached full productivity in this industry due to the limitations on investment.

4. ***Non-traditional Agricultural Products***

Ornamental plants, the flower industry and mushroom production, etc. come under this category. Ornamental plants and flowers are mainly produced for foreign markets. Larger investors engage in this industry. They faced a reduced foreign demand, due to the international crisis, so they had to reduce their production accordingly. They have the capacity to change their production tactics, according to the demand. Therefore, the financial crisis did not affect the productivity of such products. There are a number of self-employers in the non-traditional sector. They also faced slightly lower demand for their products locally, so that their profit margin went down. The situation made them reduce production capacity, thus affected productivity.

SOLUTIONS FOR THE PROBLEMS

Main problems are declining prices of agricultural commodities, less demand for value-added products and low availability of funds for investment. To alleviate these problems the following remedies are suggested:

Strengthening Farmer Organizations

Organized farmers can get more benefits from outside sources as well as from their farming fields, than unorganized farmers. When farmers are in a group, they have a stronger voice, so that they are able to get formal economic benefits. These farmers can get formal loans easily. Also, they can sell their products in a competitive market, and to have inputs on wholesale prices. In addition, they can get more attention from service supply organizations. Protecting farmer organizations will allow these farmers to avoid shortages in funds and low prices.

Forward Contracting

There are a number of producers and buyers in an open economy for every commodity. When they are in an unorganized manner, production is not targeted for demand. So prices fluctuate which have harmful effects on products and also on consumers. The financial crisis affected to the demand volume and led to uncertain sale of products at the guaranteed price. This uncertainty can cause a stop in agricultural production by individual farmers. This

uncertainty could be eliminated by forward contracting, where producers, as a group, make an agreement with marketing organizations, who agree to buy items at a given prices. This situation is very comfortable for producers as well as sellers, and the fluctuations in price can be eliminated.

Improve the Relationship between Farmer Organizations and the Financing Sector

This can be done by government department mediation. Farmer organizations are accepted as institutions, so they can do various organizational activities. The government department can coordinate farmer organizations and banks in order to keep better relationships between these two sectors. This will create an atmosphere for the smooth flow of financing activities, as stated by the agreements. We have evidence that 100 percent loan recoveries were done by some banks after they worked with farmer organizations. This condition makes it easier for farmers to get loans for agricultural activities under the financial crisis situation.

Appropriate Technology

Some technologies require more funds, but they are not 100 percent effective for the given conditions. If a farmer has invested on such a technology, he/she still has some uncertainties. Sometimes farmers can incur loss if the technology does not work. Therefore, only site-specific tested technologies should be disseminated to the farmers by the Department of Agriculture and other relevant organizations.

Introduction of More Production Alternative

If the farmer has only one production alternative, he/she has to use it regardless its impact on productivity. But, if there are a number of alternatives, he/she can select the most suitable one and practice it. This approach is convenient under the conditions of the financial crisis.

Project-based Agricultural Production

Agricultural practices can be evaluated before hand for their financial, economic, social, technical, environmental and market aspects. Project cycle frameworks give better evaluations of agricultural practices, so that farmers can see whether they are operating at a profit or loss. By doing this with various agricultural enterprises, they can select the most suitable agricultural practice for their situation. This practice avoids ill-effects from the financial crisis on agricultural entrepreneurs.

CONCLUSION

Although the percentage of GNP on agriculture is diminishing, our economy still relies on the agricultural production. The current financial crisis affected Sri Lanka agricultural entrepreneurs in various strengths. Farmers who borrowed money, used more inputs, and were connected to the market, faced high stress from financial crisis. Conventional farmers who were not connected to the market, were not affected by the financial crisis.

This phenomenon of the crisis reduced market demand and farm prices. It also reduced funding for agricultural activities by banks and fluctuated the prices for commodities.

A number of remedial measures are suggested to overcome the above problems. They are: strengthening farmer organizations, forward contracting between producer groups and marketing organizations, improve relationships between financing organizations and farmer

organizations, introducing more production alternatives to farmers, introducing project cycle-based agricultural production activities and introducing appropriate technologies for agricultural production. By introducing such activities, they will be able to control the prices of agricultural commodities, increase the supply of fund to farmers and improve technology adoption. These activities will minimize the ill-effects of the financial crisis on agriculture.

11. THAILAND

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I. INTRODUCTION

For many foreign observers, the Asian crisis is now over. Earlier this year, the Asia Development Forum (ADF), held a workshop in Singapore, entitled "Beyond the Asian Crisis". The workshop placed a lot of emphasis on ways to alleviate the adverse impact of the crisis, along with preventive measures for similar crises in the future. Many foreign analysts are quick to point out that Thailand's export has already picked up and is now back to pre-crisis level. However, in Thailand, this kind of euphoria is rarely seen. Many businesses could only breakeven with their cash flow. Many, including those with healthy cash flows, are still in such great debt that even after debt restructuring/rescheduling, they would not have healthy balance sheets until the year 2015 or beyond. This makes it difficult to measure the overall effects of this financial crisis at this stage.

Also not realized by many foreigners and Thais alike, the crisis did not adversely affect everyone or every sector. This financial crisis came with a major devaluation of the Baht. The Baht devaluation, along with the El Niño that took place then in several countries, had caused food prices to increase substantially in the 1997/98 season. In a net food-exporting country like Thailand, the so-called "crisis" had become "a golden year" for the Thai agriculture sector, at least up until mid-1998. Effects of devaluation then subsided. The Baht began to revalue and the world prices of many agricultural products began to decrease, especially after the crisis had spread to a number of Asian and Latin-American countries. This all happened within one year after the onset of the Thai crisis.

The crisis also affected the Thai rural economy in a less direct manner. Contrary to conventional beliefs, a large percentage of families in rural Thailand who identify themselves as "farmers" actually draw their main income from non-farm activities. Remittance has long been another major source of income for these families. The crisis cut off the flow of non-farm income and remittance substantially. It also reversed the roles of members in many families. Many young family members, who moved out for employment in urban areas and sent home remittance, were laid off and had to return home for family support.

Due to the layoffs in the industrial sector and the high crop prices after the onset of the crisis, conventional wisdom would expect massive urban-to-rural migration, which would increase agricultural employment substantially. As it turns out, employment in agriculture continued to decline in 1998 and 1999.[1] Apparently, most workers who returned to the rural

[1] Agricultural employment increased slightly in the year 2000. However, even then the number of farmers in the year 2000 is still less than in 1996.

areas stayed there only temporarily and then searched for employment elsewhere. A agriculture sector, it continues to shrink, although not as fast as in the early 1990s.

These unconventional results make impacts and responses of this crisis int topics for further studies. Since the onset of the crisis, there has been a number of stu impacts of the crisis (e.g., Siamwalla and Sopchokchai, 1998: and Behrman, *et al.*, name a few). Very few focused on the agriculture sector, however. None attem measure the impact of this crisis on agricultural productivity, partly due to the abs relevant data. This paper makes a preliminary attempt to explore the issue and mar extract a few answers from the available data. Unfortunately, the available data do no this exploration to go as deep as the author would like.

Following this introduction, Section II will provide a brief overview of the rol agriculture plays in Thailand. Section III will touch upon agricultural productiv problems on productivity measurement. Section IV will describe the financial crisis early effects on employment. Section V will attempt to explore the impact of this c agricultural productivity, particularly on rice production. The concluding remarks w provided in Section VI.

II. AGRICULTURE IN THE THAI ECONOMY

The vast majority of land in Thailand is used for agricultural activities. Half of th force is also engaged in agricultural activities (Figure 1). The majority of Thais al Thailand as an agricultural society. However, Thailand's development path in the p decades has lessened the importance of the agriculture sector substantially. Through 1990s, the agriculture sector's share in the GDP has slowly declined to around 10 pe the overall GDP. The agriculture share in export value has also been rather stable at 13-15 percent.

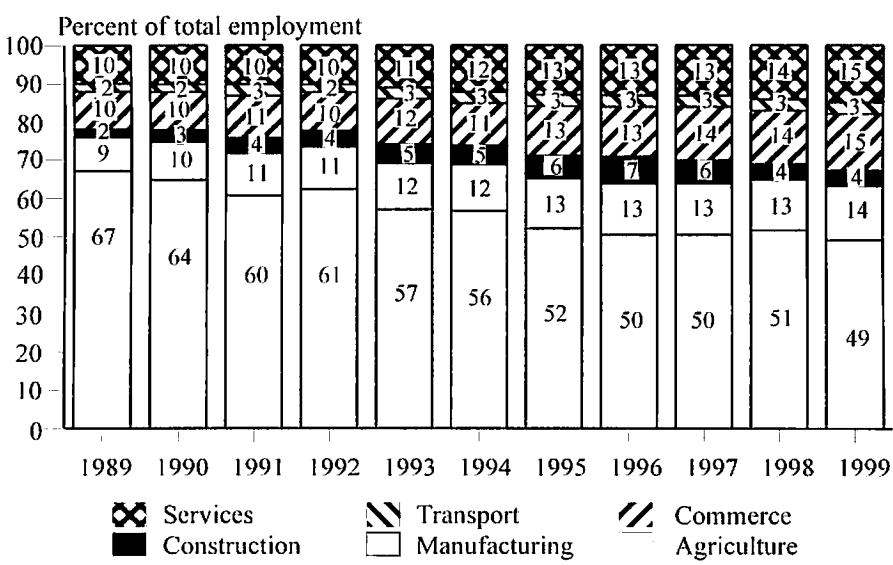

Figure 1. Sectoral Distribution of Employment, Third Quarter of 1989-99

Source: Behrman, *et al.*, 2000.

Figure 1 indicates that the labor share of the agriculture sector is quite high, even though it continues to decline. The significance would be more pronounced when one compares these figures with those of other developing countries which have similar levels of per capita GDP as Thailand. This leads many Thais to believe in the high labor-absorption capacity of the agriculture sector. What many people overlook is that concentration of labor in one sector does not always mean that the sector would be able to absorb *much more* laborers. One could also use simple mathematics to demonstrate that when one-half of the labor force generates only one-tenth of the country's GDP, not only is the level of inequality dramatically high[2] but the productivity in the agriculture sector must also be rather low.

In fact, it turns out that the Thai farmers do realize the limitations of the agriculture sector. Among those who are classified as "farmers", based on their main activities during the rainy season, less than two-thirds draw their main income from farming. Seasonal migration, specifically from rural to urban areas or to big cities in the dry season, is very common. A lot of families also send young members to work year-round, who then send home substantial remittance. In fact, if one changes the definition of "farmers" from those who spend most of their working times on farms to those whose main incomes are from agricultural activities, the share of agriculture in employment would come down to about 30 percent. A recalculation to compare the average income of farmers and non-farmers would be much less dramatic than the one stated earlier. Nonetheless, the average income of a non-farmer would still be almost four times as much as income of an average farmer.

It should not come as a surprise that a great number of Thai farmers has made every attempt to provide their children with higher education, so that they could get a better job and would not have to follow the parents' footsteps. Many children from farming families also prefer to escape from this occupation. This process has been ongoing in the past few decades, as partly shown in Figure 1. Apparently, the crisis slowed down the process to some extent. However, even with such a big financial crisis which hit the non-agriculture sector very hard and the rumor of a massive urban to rural migration, the net outcome of the crisis was rather small, as it would be more evident in Section IV.[3]

III. AGRICULTURAL PRODUCTIVITY AND PROBLEMS ON PRODUCTIVITY MEASUREMENT

Low productivity has always been viewed as a major problem within the agriculture sector of Thailand. However, little attempt has been made to measure agricultural productivity. The only reported – and thus most frequently cited – productivity index is yield per ha (or yield per *rai*; 1 *rai* = 0.16 ha). Very few researchers attempt to use other indexes. Siamwalla and NaRanong (1990) use yield per worker as an alternative of productivity measurement in their study on rice. Both measurements are, however, crude in the sense that

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[2] It implies that income of an average farmer would be only one-ninth of those outside of the agriculture sector.

[3] Another result of the crisis was that more children went to school. This result is consistent with what happened in the United States in the early 1990s, when the job market was considered poor. Not many people predicted this *ex ante*, in the case of Thai crisis, because they cling to the belief that the crisis would affect a great many people so adversely that they would not able to invest more in their children's education.

they reflect not only land or labor productivity, but also the effects of other inputs and weather conditions. Although there are many studies that estimate the effects of each of these factors on productivity, most of them use survey data that are area-specific or crop-specific. Many of these studies are also one-time cross-sectional studies.

Among the factors affecting agricultural productivity, weather conditions turn out to be the most important one for Thai agriculture. Most of Thailand's agricultural areas are primarily rainfed, and only 22 percent of agricultural land are labeled irrigated area. In reality, not all of this 22 percent receive "irrigated" water, even during the rainy season. It is estimated that only 8 percent of the agricultural land receive irrigated water in the dry season. Since crop yields in rainfed areas fluctuate from year to year, the overall crop yields also fluctuate substantially.

In general, crop yields in Thailand are much lower than those in most of the developed and developing countries. For example, average rice yield per ha in Thailand is about one-half of rice yields in the United States, Japan, Rep. of Korea and China. Similarly, sugarcane yield (in terms of sucrose per ha) is about one-half of that of Australia. Therefore, there has been a lot of talk about the "potential" of the Thai agricultural sector. One factor mentioned by many academics is that levels of chemical fertilizer used in Thailand are much lower than those of other countries. However, a closer investigation would reveal that crop yields in irrigated areas are similar to the crop yields of other countries. Furthermore, one of the main reasons that many farmers in rainfed areas are not willing to apply more fertilizers is that the risks of applying fertilizers are greater and the expected returns are generally lower than in the irrigated areas.

IV. THE CRISIS AND ADJUSTMENTS

The big wave of the financial crisis appeared to hit Thailand in mid-1997, with the Baht floatation climax on 2 July. However, the crisis actually began to pronounce itself in 1996, when it became clear that Thailand's export started to lose its competitiveness in the world market. The export growth rate, which used be in two-digit figures, sank to virtually zero in 1996. During the 1990s, Thailand has always had a huge current account deficit (close to 10 percent of the GDP annually), but since export growth was normally at two-digits, the problem was ignored by the Thai Government and international investors alike. Once the problem was revealed, as early as November 1996, a leading international hedge fund began to short sell the Baht, and soon other hedge funds followed suit. The Bank of Thailand fought them off vigorously and had "Won" some battles. However, eventually the bank used up almost all of the country's foreign exchange reserves and had to turn to the IMF for assistance.

The financial crisis and the accompanied credit crunch had led to the fall of many companies and a substantial amount of layoffs. Its impacts on agriculture were in four folds. First of all, the economic crisis lessened domestic demand for agricultural products. Second, devaluation of the Baht increased domestic prices of agricultural products, especially up until the first half of 1998. Third, the Baht devaluation increased prices of imported inputs such as fertilizers, insecticides and some ingredients of animal feeds. Finally, the depression or stagnation of the non-agriculture sector decreased the wage rate and therefore released some labor to the agriculture sector.

Up until the first half of 1998, the strongest effect was the Baht devaluation effect. As of February 1998, the Baht had lost about 55 percent of its value (the exchange rate moved

from ฿25 to ฿55 per US$1). The devaluation effect, coupled with effects created by the El Niño in several countries, made 1998 a golden year of tradable crops such as rice, maize, cassava and soybean. Livestock and aquaculture, such as chicken and shrimp, also benefitted greatly during the period. Although the cost of many imported inputs also doubled, the increased costs were more than offset by the increased prices. This was particularly the case for the Thai agriculture sector, which uses relatively little import contents in production. Non-traded or lightly-traded agricultural products, i.e., most fruits and vegetables and certain livestock products such as pork, were affected adversely by shrinking domestic demand.[4]

The sole exception of the price movement of tradable agricultural products was the case of para-rubber price. The domestic price in Baht of para-rubber continued to fall in spite of the Baht devaluation. Notably, the Southeast Asian countries, particularly Thailand, Indonesia and Malaysia, supply more than two-thirds of para-rubber to the world market. Shortly after the Thai crisis, both Indonesia and Malaysia fell into their own crisis and had to devalue their currencies. The rubber case was an early warning sign for trouble in the Thai agriculture sector. It was the first example of what would happen to the prices of many agricultural products in 1999 and thereafter.

After Thailand, Indonesia and Malaysia, the next victims were Rep. of Korea and Russia. Then, several Latin American countries, especially Brazil, were affected adversely from this "Asian" crisis. As the crisis spread to more and more countries, the world agricultural prices in hard currencies began to fall. Coincidentally, after value of the Baht rocked bottom in the first quarter of 1998, the Baht regained its value by almost 50 percent (from ฿55 to ฿37 per US$1) in less than one year. In 1999, prices (in Baht) of many tradable crops fell back to pre-crisis level. Many farmers began to feel the impact of the crisis. This may be seen from the fact that 5 percent of farmers left the agriculture sector in 1999.

Although it is difficult to single out the impact of the financial crisis on the labor force, Table 1 should shed some light on how the labor market adjusted during the crisis. As indicated previously in Figure 1, farmers and farm workers had been continually moving out of the agriculture sector long before the crisis. Table 1 indicates that in 1996, the number of farmers and farm workers decrease by more than 7 percent. The number of rice farmers – which accounts for three-fourths of all farmers – decreased even more. The decreasing trends in 1996 were similar to the earlier years, specifically during the 1980s and 1990s. After the onset of the crisis, the trend reversed in 1997; the number of farmers increased by 4 percent (9 percent for rice farmers) and the number of farm workers also increased by 3 percent.

However, the reversal of the secular trend did not last long. As early as the second half of 1998, which was the golden year of Thai agriculture, farmers – especially rice farmers – began to move out from the agriculture sector once again. Once crop prices plunged in 1999, a large number of farmers left the agriculture sector like they did in 1996. The trend was slightly reversed in the year 2000, partly because the recovery in the non-agriculture sector has not come through as many had expected (the substantial increase in oil prices could be one of the major causes). However, the number of farmers in 2000 was still less than in 1996, which was a pre-crisis year.

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[4] The crisis affected the domestic consumption of all types of meats, with greater effects on the more expensive ones. Pork consumption decreased substantially, which led to a fall in the price of pigs after devaluation. Beef consumption, which had begun to shrink even before the crisis, continued to decrease. Even chicken consumption, which became the least expensive source of protein, dropped by 20 percent in 1997.

Table 1. Employed Workers in the Agriculture Sector, 1995-2000

Year	1995	1996	1997	1998	1999	2000
Farmers	13,591,039	12,597,547	13,123,132	13,051,870	11,910,953	12,091,476
Rice farmers	10,389,873	9,301,794	10,155,874	9,703,129	8,529,948	9,014,906
Hired farm workers	1,565,193	1,426,751	1,468,560	1,589,359	1,706,924	2,141,357
Fishermen and hunters	328,827	465,790	403,211	378,640	459,829	367,239
Loggers	1,584,819	1,752,610	1,750,017	1,690,127	1,794,061	1,707,046
Total	17,069,878	16,242,698	16,744,920	16,709,996	15,871,767	16,307,118
Percentage change from the previous year						
Farmers		-7.3	4.2	-0.5	-8.7	1.5
Rice farmers		-10.5	9.2	-4.5	-12.1	5.7
Hired farm workers		-8.8	2.9	8.2	7.4	25.5
Fishermen and hunters		41.7	-13.4	-6.1	21.4	-20.1
Loggers		10.6	-0.1	-3.4	6.1	-4.9
Total		-4.8	3.1	-0.2	-5.0	2.7

Source: Compile by the author from raw data from the Labor Force Surveys Round 3 (August) (years 1995-2000) administered by the National Statistical Office.

One notable change in the labor force throughout the crisis is the number of hired farm workers, which has continued to increase from 1997, even in 1999 when a lot of farmers-operators moved out of agriculture. Since hired farm workers usually are among the poorest groups in the rural economy, the increase in their number creates an alarming possibility of poverty returning to the rural areas. This phenomenon also suggests job opportunities for unskilled labor in the non-agriculture sector is not sufficient to absorb as many workers as it used to during the pre-crisis years.

V. EFFECT OF THE FINANCIAL CRISIS ON AGRICULTURAL PRODUCTIVITY: A CASE STUDY OF RICE

Lack of relevant data makes it difficult, if not impossible, to measure the impacts of this financial crisis on agricultural productivity. This section attempts to explore this issue in the case of rice. Rice farming is still the most important agricultural activity in Thailand; more than three-fourths of Thai farmers are rice farmers. Rice is also the only crop that has been studied by the National Statistical Office's Labor Force Survey,[5] in which the number of workers can be found.

This section attempts to measure output per worker in the rice sector. The number of workers in the rice sector here comprise of workers who worked during the survey week (during rainy season in August) plus those who did not work during the survey week but who had a regular job in the rice sector.[6] Output per worker is then computed using the output of wet-season rice from the corresponding crop year (e.g., output per worker for the crop year 1993/94 is obtained by dividing output of that crop year by the number of rice farmers in August 1993).

As shown in Figure 2, output per worker in the rice sector had been climbing continually before the crisis. Apparently, as labor forces withdrew from the agriculture sector during the pre-crisis year, output per worker increased. It is possible that, during that period, the agriculture sector adjusted itself and became more efficient with less labor. The adjustment might involve using more laborsaving production processes. As a result, when the crisis hit in 1997 and a substantial number of workers returned to the agriculture sector, output per worker in the rice sector began to drop. Only when some workers once again moved out from the rice sector in 1998 that output per worker began to rise again.

The study attempts to explore productivity changes in different regions of Thailand (Figure 3). A similar pattern is noticed for most regions. However, there are rather huge gaps between output per worker between the Central and the Southern regions on one end and the Northern and Northeastern regions on the other end. While some factors, such as weather, might play significant roles in these differences – especially in case of the Northeastern region, there might also be some systematic measurement errors of outputs and labors in certain regions as well.

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[5] Numbers of workers in other crops are usually lumped together in a rougher category in the Labor Force Survey. Therefore, it is not possible to use the same measure I used here to measure (average) labor productivity of sugarcane farmers, for example.

[6] It should be noted that when the second group (those who did not work during the survey week) was excluded, the results are almost exactly the same as when they were included.

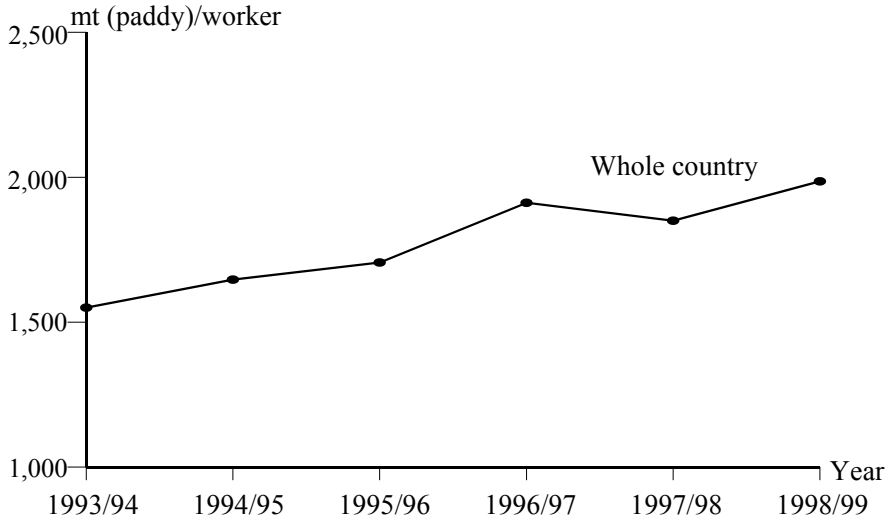
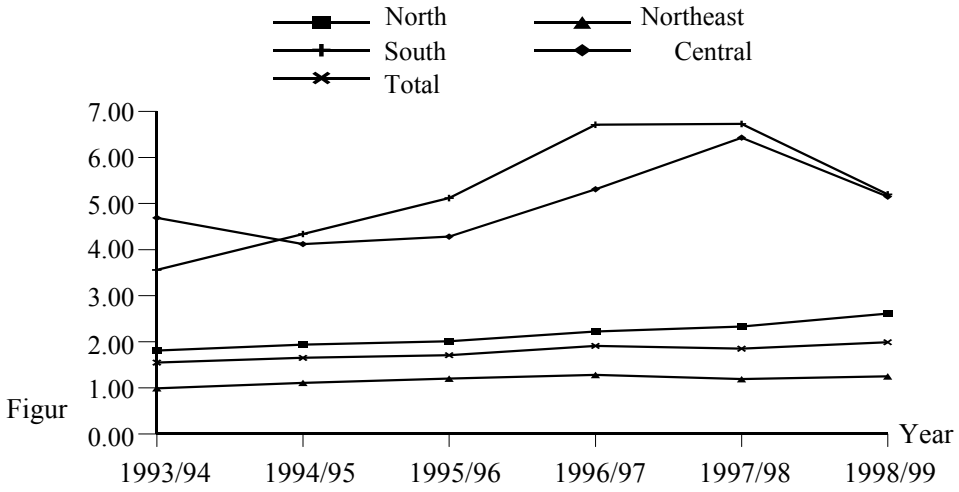


Figure 2. Wet Season Rice Yield in Thailand, Crop Year 1993/94 – 1998/99

Sources: Output: Office of Agricultural Economics, *Agricultural Statistics of Thailand* (year specified), several years; and number of rice farmers: compile by the author from raw data from the Labor Force Surveys Round 3 (August) (years 1995-2000) administered by the National Statistical Office.



Figur

e 3. Wet-season Rice Yield by Region, Crop Years 1993/94-1998/99

Sources: Output: Office of Agricultural Economics, *Agricultural Statistics of Thailand* (year specified), several years; and number of rice farmers: compile by the author from raw data from the Labor Force Surveys Round 3 (August) (years 1995-2000) administered by the National Statistical Office.

VI. CONCLUDING REMARKS

To date, there has been no study that focuses on the effects of the financial crisis on agricultural productivity in Thailand, partly because there are no such data. The author made a preliminary attempt to explore the productivity of rice, where data are most readily available. The finding was that, during the pre-crisis years when workers were moving out from the agriculture sector, output per worker in the rice sector climbed continually. It is possible that, during this period, the agriculture sector adjusted itself by using more labor-saving production processes. When the crisis hit in 1997 and some workers returned to the agriculture sector, output per worker in the rice sector dropped and would rise only when some workers left the rice sector once again.

The findings from this study suggest that the rice sector's labor absorption capacity is rather limited now, of which the farmers themselves are well aware. Adding more able bodies to this sector would probably result in a decrease in labor productivity. While the author was unable to look at the effects of the crisis on other crops, due to data constraints, it is plausible that other traditional field crops share the same problem as rice. Although the crisis in the non-agriculture sector of Thailand is far from over, there is no easy solution such as persuading workers to return to the agriculture sector. The slogan, "grow rice to feed one's self first", which encourages farmers in backward areas to stick with rice, might not be of the farmers' best interest.

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Siamwalla, Ammar and Orapin Sopchokchai, 1998. "Responding to the Thai Economic Crisis", a paper prepared for the United Nations Development Programme (UNDP/ Thailand), Bangkok, UNDP.

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2. PROGRAM OF ACTIVITIES

(6 - 13 December 2000)

Date/Time	Activity
Wed., 6 Dec.	
Forenoon	Opening Ceremony Presentation and Discussion on Topic I: *Impact of the 1997 Financial Crisis on Southeast Asia's Farm Sector with A Special Reference to Thailand* by Prof.Dr. Tongroj Onchan
Afternoon	Presentation and Discussion on Topic II: *An Outline of the Credit Business of Agricultural Cooperatives in Japan* by Mr. Eikichi Koguchi Presentation and Discussion on Topic III: *Impact of Financial Crisis on Productivity of Agriculture: Korean Case* by Dr. Young-Bong Yu
Thurs., 7 Dec.	
Forenoon	Presentation of Country Reports by Participants
Afternoon	Continuation of Presentation of Country Reports by Participants
Fri., 8 Dec.	
Forenoon	Presentation and Discussion on Topic IV: *An Overview of the Impact of Financial Crisis on Productivity of Agriculture in the Asia-Pacific Region* by Dr. Memed Gunawan
Afternoon	Continuation of presentation of Country Reports by Participants
Sat., 9 Dec.	
Forenoon	Workshop
Afternoon	Free
Sun., 10 Dec.	
Forenoon	Free
Afternoon	Leave Tokyo for Maebashi-shi, Gunma Prefecture
Mon., 11 Dec.	
Forenoon	Visit JA Sawada (agricultural cooperative)
Afternoon	Visit JA Maebashi-shi (agricultural cooperative)
Tues., 12 Dec.	
Forenoon	Visit JA Katashina-mura (agricultural cooperative)
Afternoon	Leave Takasaki, Gunma Prefecture for Tokyo
Wed., 13 Dec.	
Forenoon	Summing-up Session Closing Session