WORKING PAPER 52

# Effects of Trade Liberalization on Agriculture in Viet Nam: Commodity Aspects

Nguyen Trung Que and
Nguyen Ngoc Que

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(Continued on inside back cover)

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Humid Tropics of Asia and the Pacific

# Table of Contents

# List of Tables

# List of Figures

# Abbreviations

| | |
|---|---|
| AFTA | Free Trade Area |
| APEC | Asia Pacific Economic Cooperation |
| ASEAN | Association of South East Asian Nations |
| CEPT | Common Effectively Preferential Tax |
| CP | In Vietnamese means the “Government” |
| CPV | Communist Party of Vietnam |
| ESCAP | Economic and Social Commission for Asia and the Pacific |
| EU | European Union |
| FAO | Food and Agriculture Organization |
| FOB | Free on board |
| GAP | Gross agricultural production |
| GDC | General Department of Customs |
| GDP | Gross domestic product |
| GOA | Gross output of agriculture |
| GSO | General Statistical Office |
| HDBT | in Vietnamese means “Council of Ministers” |
| HH | Household |
| IAE | Institute of Agricultural Economics |
| MARD | Ministry of Agriculture and Rural Development |
| Million VND | Millions of Vietnamese dong |
| MOF | Ministry of Finance |
| MOI | Ministry of Industry |
| MOT | Ministry of Trade |
| MOTAC | Ministry of Transport and Communication |
| MPI | Ministry of Planning and Investment |
| MRD | Mekong River Delta |
| PM | Prime Minister |
| QD-TTg | Decision of Prime Minster |
| RRD | Red River Delta |
| SOE | State-owned enterprises |
| SPS | Sanitary and phytosanitary |
| TC-TCT | The circular of Ministry of Finance |
| TTg | in Vietnamese means Prime Minister |
| TTLB/TM-CN | Inter-ministerial circular/ Trade-Industry |
| UIG | Union of Independent Governments |
| USD | US dollar |
| VAT | Value added tax |
| VND | Vietnamese dong |
| WTO | World Trade Organization |

# Foreword

Responding to the growing concern for the effects of trade liberalization on regional agriculture, the CGPRT Centre has implemented a three-year research project "Effects of Trade Liberalization on Agriculture in Selected Asian Countries with Special Focus on CGPRT Crops (TradeLib)" since March 1997, in collaboration with partners from ten countries: China, India, Indonesia, Japan, Malaysia, Pakistan, the Philippines, the Republic of Korea, Thailand and Viet Nam. In all these countries, important issues regarding trade liberalization were investigated with an identical research framework by national experts.

The investigation covers major crops which might receive either favorable or unfavorable effects of trade liberalization both in export and import. I believe that the project will provide broad and practical knowledge on various aspects of the effects of trade liberalization; moreover, the information will be useful for researchers and policy planners not only in participating countries but also in other countries in the region. However, I would like to note that, since this project was conceived and started before the current currency and economic crisis began in the middle of 1997, the analysis handles basically the period before the crisis with available current information.

I am pleased to publish **Effects of Trade Liberalization on Agriculture in Viet Nam: Commodity Aspects** as the report of the second phase of the country study of Viet Nam. A report of the first phase of the country study, which includes institutional and structural aspects on the same subject, was published recently. I certainly hope these reports will be fully utilized for the improvement of agricultural trade and the encouragement of regional agriculture.

I thank Dr. Nguyen Trung Que and Mr. Nguyen Ngoc Que of Viet Nam for their intensive research and the Institute of Agricultural Economics for allowing them to work with us and for providing continuous support. I am very much obliged to Dr. Boonjit Titapiwatanakun for his devoted contribution to the project as the regional advisor. I would also like to express appreciation to the Government of Japan for funding the project.

Haruo Inagaki
Director
CGPRT Centre

# Acknowledgements

During the last two decades under the implementation of market-oriented renovation policies, Vietnamese agriculture has achieved spectacular results. This study on effects of trade liberalization on agriculture in Viet Nam, which was initiated by the United Nations ESCAP CGPRT Center in collaboration with Vietnamese national experts, has a great practical and theoretical meaning.

I wish to express my deep gratitude to Dr. Haruo Inagaki, Director, CGPRT Center, Dr. Michio Kanai, Project Leader, CGPRT Center and Dr. Boonjit Titapiwatanakun, Kasetsart University, Thailand, Regional Adviser of the project, under whose guidance and support Phase II of this study was undertaken.

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Hanoi, Viet Nam
October, 1999

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# Executive Summary

During the last two decades, under the implementation of economic structural adjustment, agriculture of Viet Nam has been diversely developed with regard to production for both domestic consumption and export. Implementing the renovation policy shifting from a subsidized, bureaucratic, centrally planned production to market-orientated commodity production with the development of many economic sectors under the management of the State has paved the way for the expansion of trade.

The main exportable crops of Viet Nam have grown both in quantity and export value. They have contributed considerably to Viet Nam's economic development. Viet Nam has emerged in the world market as one of the main exporters of rice. Besides rice, there is also high potential for developing various exportable upland and root crops such as coffee, tea, rubber, groundnut and so on. The ongoing momentum of internal and external trade liberalization and the expansion of national, regional and international markets have notably impacted on agriculture in Viet Nam. Deeply concerned about this matter, the Government of Viet Nam, therefore, has launched a series of economic and institutional reforms encouraging farmers and agents to promote their agricultural activities and creating possibilities for market expansion.

During implementation of the renovation policy, Viet Nam has devised numerous policies in order to guide the economy such as the promulgation of the foreign investment law, the development of different economic sectors enjoying equality before the law and the import-export tax policy and at the same time Viet Nam has conducted administrative reform, re-organizing the system of trade, customs, quarantine control, etc.

To meet rapidly increasing demand Viet Nam has invested in the expansion and upgrading of infrastructure such as communication roads, the system of ports, railway stations, airports, the building of power plants, oil refinery facilities, and irrigation and telecommunication systems. This has created favourable conditions for the circulation of commodities nation-wide and the expansion of exports. However, infrastructure, especially the transport system, is still very backward and weak.

The effect of trade liberalization at the national level in this study is based on different methods including econometric estimation of supply and demand behavior parameters and partial equilibrium modeling of Viet Nam's agricultural trade with special focus on four major exportable crops: rice, coffee, tea and groundnut. Together, these sub-sectors contributed 70% of total sown area and 66% of agricultural exports during the last decade.

The model analyzes two trade policy options to examine the effects of trade liberalization at the national level on the production, marketing and demand of the selected commodities. In the first policy option, all export quota and other trade restrictions are assumed to be totally removed. Apart from the elimination of all trade restrictions, the second policy option also includes the assumption of an increase of 7% in the world prices for exports of the four crops in Viet Nam. According to the analysis results of various simulations, some preliminary conclusions could be formed: if Viet Nam removes all her export restrictions the country's overall agricultural export is likely to increase by nearly 26%, and in addition to this, if the WTO agreement on agriculture is fulfilled bringing about a 7% increase in the world prices for Viet Nam's agricultural export commodities, Viet Nam's agricultural export earnings might increase by more than 40%. In short, the analysis shows that the effect of national and global trade liberalization seems to be great for Viet Nam's agricultural sector. However, many

difficulties and challenges emerging from world competition and the risk of economic instability caused by world trade fluctuation should be further considered.

The impact of trade liberalization on agriculture at the farm level was also studied by using the partial budget approach. The cost and returns for the selected crops in specified locations were computed based on data drawn from the Institute of Agricultural Economics' commodity-specific study. For the scenario with full trade liberalization, only prices for outputs of the four selected crops were assumed to be changed. The result of partial budget analysis with and without trade liberalization demonstrated some very impressive potential impacts of free trade at the farm level. If there were totally free trade, net return per hectare in the case of rice in the Mekong River Delta, coffee in Dak Lak province, tea in Thai Nguyen province and groundnut in Nghe An province would increase by 1.4, 8.7, 9.3 and 1.4 million VND.

The study of the impact of trade liberalization on agriculture, both at national and at farm levels, is based on a limited amount of data and resources. Therefore, the findings of this study need to be further investigated. The analysis, however, could contribute to the clarification of the effects of trade liberalization on agriculture in Viet Nam.

Due to the influence of trade expansion, the production of agricultural commodities of farmer households has increasingly developed. The lives of farmer households has increasingly developed. The lives of farmer households in zones producing export commodities, such as rice in the Mekong river delta and coffee in Tay Nguyen, have clearly improved compared to the period before implementing the expansion of trade and zones, which are still undertaking self-sufficient production.

Besides the positive impacts of expansion of trade on agriculturally production, there are also numerous restrictions: administrative procedures have not been improved thoroughly and their implementation has been delayed. The relationship between farmer households and organizations dealing with processing and export has been loose, with no firm contracts. The producers have not been sponsored, so when market prices go down below the production cost, they suffered losses.

Being aware of the important role of the expansion of trade in boosting agricultural production, the Government of Viet Nam has devised a strategy and measures for the year 2010 aimed at bringing into full play the competitive advantage of agricultural commodities such as rice, coffee, rubber, cashew nuts, pepper, sugarcane, sugar, fruits, vegetables, and meats.

In short, the benefit of free international trade has been proved in this study with its findings that appear to be very convincing for Viet Nam. However, the implementation of binding commitments under the WTO and AFTA agreements on agriculture is hardly easy in real life. Acceding to the regional and world trade organizations, Viet Nam may still have various problems and challenges of its own, which need extra precautions and further comprehensive studies. The following are recommendations to increase agricultural production and exportation further:

- Price stability and food security for its low-income population may become great concerns of Vietnamese policy-makers, when the country liberalizes its foreign trade in the agricultural sector. There is a need to further accelerate agricultural diversification, income-generation and poverty alleviation programs in rural and marginal areas.
- In order to ensure smooth flow of agricultural products from production to exportation, a well-developed organization system, operation mechanism and infrastructural conditions are necessary for Viet Nam.
- As a country of high potential for export of agricultural products, Viet Nam needs to further improve its competitiveness in international agricultural markets through expanded programs for enhancing product quality, upgrading its physical infrastructure, strengthening the banking system, reforming the inefficient state enterprise sector and creating more access for the private sector to domestic and foreign trade.

- For better marketing and exportation, investment for processing, preserving, packaging and wrapping technologies is necessary.
- For adjustment to trade liberalization, it is necessary to reform administrative procedures, to plan specialized agricultural zones and to ameliorate laws and policies.
- For Viet Nam, the shift to tariffication from non-tariff border measures and removal of import licensing procedures may result in lack of effective protection in agriculture; the current tariff level in agricultural commodities is not high compared to that of other countries. However the application of the so-called minimum-buying price list in calculating import tax tends to increase the protection level of the current tariff system. Thus, removing this minimum-buying price list when joining regional and world trade communities may weaken the protection level of Viet Nam's agricultural production compared to that of other member countries.
- Establishing really fair trade with other countries of the regional and international communities under the general agreed system of binding trade protection measures is not easy for Viet Nam, since it lacks sufficient experience and capacity in these areas. Thus, efforts must be made to improve the technical and managerial capacity of government officers working in related fields.
- Positive measures have been devised to implement AFTA and APEC for integrating into regional and world markets and at the same time preparing for admission to the WTO.

# 1. Introduction

## 1.1 Background

Achievements of the economic renovation process in Viet Nam over the past ten years are great. The Government of Viet Nam has been actively implementing economic policies and measures aimed at changing from the "centrally planned subsidized" economy to a market-oriented commodity production one. This is a great driving force that creates conditions for economic development of the country. The expansion of trade liberalization for the domestic market and of trading operations with regional and world markets is of great significance in encouraging production activities. With the introduction of the Land Law, land policies have encouraged farmers to make full use of their labor and financial potentials for agricultural development and diversification of agricultural products, which helps meet demands not only of local but also of export markets. In addition, the implementation of policies which promote development of different economic sectors, independent business accounting, and equality before the law has enabled the various economic sectors to develop their capacities and enhance their creativity in a market economy. At the macro-economic level the Government has launched and been constantly refining its policies in regard to banks and credit, taxation, expansion of export and import operations, etc. Also, the Government has been improving the organizational system from central to grass-root levels in order to make the management apparatus and mechanisms more suitable to the renovation process. A combination of all these factors has assisted Viet Nam in developing its economy at a high speed.

Over the past ten years Viet Nam's economic growth rate has been on average at 5%, with the highest rate being over 9%. The growth rate of the industrial sector has been at 20 - 22% and that of the services sector at 18 - 19%. In particular, the agricultural sector has achieved a continual growth rate of 4 - 4.5%. This resulted in a per capita GDP level of over US$ 300. Infrastructure facilities in the transport sector including road networks, railways, waterways and airways have been rapidly constructed and expanded, and gradually modernized. The development of irrigation and dike systems could meet requirements of the production activities. The system of ports and warehouses enables quick loading and unloading operations. The electric power and communications sectors have made great advances.

All the above-mentioned factors are favorable for Viet Nam in expanding its trading activities in both domestic and world markets. Viet Nam joined ASEAN in 1995 and is gradually implementing AFTA. Viet Nam joined the APEC forum in 1998 and is expected to join WTO in near future. As a country that has started implementation of trade liberalization only recently, Viet Nam is naturally having many difficulties in joining regional and international trade organizations. However, it is clear that Viet Nam can benefit from the trade liberalization process for its economic development.

Viet Nam is a country that has great potential and advantages for agricultural development. The implementation of trade liberalization has a positive impact on this development. The renovation policies being implemented in the agricultural sector have enabled Viet Nam to make great advances, to not only meet local demands in food and foodstuffs, have food stockpiled, be free from annual importation of 500,000 tons of rice, but also to export 3.66 million tons of rice, ranking second next to Thailand. In addition, areas specializing in growing technical crops that can go for export such as coffee, rubber, tea, pepper, cashew nut, and vegetables and fruits have been developed. Currently over 11 million households engaged in farming activities have become independent economic units. They are entitled to five land use rights and autonomy in their production operations and marketing of their products. Many of

these households are self-supporting and making investment in mass production of agricultural products for local market as well as for export. They include rice growing farmers in the Mekong Delta, coffee growers in the Central Plateau, rubber and cashew nut growers in the Eastern part of the South, and tea growers in highland and midland areas in the North. The expansion of trading operations has created markets for producers. The markets and prices are a decisive factor for expansion of production activities and upgrading of quality of products. The law of supply and demand plays its regulatory role in production operations. Alongside achievements of a market-oriented agricultural sector, there are still a number of problems to be addressed. Viet Nam's agricultural production relies mainly on primitive methods and backward technologies, with little application of advanced technologies, leading to low quality goods compared to requirements of consumers. Few advanced processing technologies have been put into practice. There are still limitations in the production, processing and marketing chain, which greatly affects production activities. Because of the short period of implementation of market mechanisms, experience gained in marketing and establishment of relationships and development of customer networks is still very limited. All positive and negative aspects of the trade liberalization process need to be studied for the purpose of finding out reasons and recommending measures for promotion of commodity production in the agricultural sector.

## 1.2 Objectives of the study

Objectives of this study are:

- To study the impact of expansion of trade liberalization on agricultural production aimed at assessing and systematizing policies launched by the State during the economic renovation period.
- To assess the impact of expansion of trade liberalization on the development of several commodity production operations in the agricultural sector and of farmer households in Viet Nam.
- To recommend strategies for the expansion of trade liberalization aimed at stepping up development of agricultural products and measures for implementation of these strategies.

## 1.3 Overview on state policy for the commercial sector

### 1.3.1 Privatization and domestic market liberalization policy

Before 1986, the trend toward market mechanisms was established. However, the 6$^{th}$ Party Congress (1986) was a turning point in the renovation of economic policy and mechanisms in general, and of market and commercial service sectors in particular. First of all, decision 217/HDBT (Council of Ministers) dated 14/11/1987 officially reflects the trend toward the commodity economy, links production with the market, carries out the self-accounting mechanism and confirms the objective unity of an overall social market, reduces the burden on price and commercial activities, regulates income and guarantees effective implementation of social policies. Decision 193/HDBT 23/12/1988 confirms the role of state control over planning and policy, creating the environment and corridor for the operation of production units, and limiting intervention into various types of production and business. The decision also permits all the economic components to run businesses on legal commodities and creates equal conditions for access to bank loans, opening banking accounts and hiring labor by enterprises. The 6$^{th}$ Conference of the Communist Party (Plenary Session 6) recognized that the national domestic market is a united institution and the market serves both as the basis and object for planning. Decision 197/HDBT dated 12/12/1989 decided to transform a centrally and direct plan into an indirect guidance plan. The resolution of the 7$^{th}$ Party Congress in 1991 provided

the prerequisites for the development of market and commercial services following the liberalization mechanism applied with "one business price" (free market price). The resolution also provides the right to carry out a multiple-component commercial policy, abolishes barriers in commodity circulation and encourages joint ventures and a multilateral and diversified commercial sector.

For import and export, Decree 114/HDBT issued on 7 April 1992, that was later replaced by Decree 33/CP dated 19 April 1994, aimed at renovating the state-owned enterprises in import and export with a view to guaranteeing consistent state management in import and export and relaxing the management mechanism to encourage exports in difficult areas, expanding the right to take part directly in export for production enterprises, updating the tariff and taxation system as well as management tools to meet real demands in accordance with international regulations. Decree 35/CP issued on 25 April 1994 confirmed the policy of free goods circulation according to the current legal status, reorganized market management and took steps in the struggle against smuggling and speculation. Decree 02/CP issued on 5 Jan. 1995 provided rules on the prohibited and conditional commodities and services.

The policy system and mechanism regulating overall supply and demand constantly carry out the policy of liberalizing commodity circulation following market prices, so that the market can freely regulate itself. This has proved to be the most active and dynamic measure in regulating the supply-demand pattern. In addition, the State concentrates on balancing the quantity of important commodities through the plan to allocate to key enterprises a major amount, while the rest should be regulated by the market itself. Such a transitional mechanism applied to the important commodities is suitable for some years to come. The State has already paid attention to the accumulation of national reserves for the important commodities. Besides currency-commodity balances, the State also provides loans to business enterprises to run businesses on the essential commodities during the harvest period, utilizes the price-stabilizing fund to support the state-run trading enterprises in buying commodities for reserve or distributing commodities among the regions and supporting circulation to the mountain areas in order to stabilize the market, price and the supply of essential goods.

The policy system and management mechanism for the market components (State-owned and private) are influenced by Decision 193/HDBT, which indicates the policy of freeing economic components in circulating commodities by law. Over the last 6 years, a great number of documents was promulgated to provide the legal conditions for maintaining the business operation of different economic sectors. An environment that creates equality for competition among enterprises in the market has been established. The state-owned commercial enterprises have been rearranged and gradually subsidies were abolished, self-governing rights in running businesses were expanded, shifting from the command-planned mechanism to the directive planning and financial independence along with obligations to the State.

### 1.3.2 Banking, monetary and exchange rate policy

The monetary policy (banking and pricing system, foreign exchange rate, interest rate, and taxation) is regarded as a very important management tool in regulating the international trade balance.

The banking system has also been reorganized. The functions of the central bank and commercial banks were formerly included in the function of the State Bank. The provision of loans was decided by the State Planning Committee rather than by commercial banks. However, since the promulgation of Decision 218/CT of 3 July 1987 and Decree 53/HDBT of 26 March 1988 by the Chairman of the Minister Council, specialized banks began to be separated from the Central Bank which used to be called the "one level format" and began to run loan services. These business banks, however, are not called real commercial banks. In May 1990, the Viet Nam State Council issued two important decrees concerning "State Bank" and "Bank, Credit Co-operative and Financial Companies". The banking organization has thus been restructured

from “one level” to “two levels” of banks. There is a clear-cut difference between the function of the State to manage the operation of monetary policy and credit and the function of running monetary policy and credit following the principles of self-accounting by the commercial banks. The banking operation has undergone fundamental changes, from merely providing loans to state-own enterprises (SOE), to now expanding their services to all economic sectors. The structure of credit investment has been renovated through strengthening the provision of loans to encourage commodity production and export, in which long and medium-term loans are provided for the major industrialization program and basic construction investment. This will help the sector quickly upgrade the existing equipment and facilities, renovate the technology and finally speed up the industrialization and modernization program of the country. The banking sector also expanded the relationship with international organizations and strengthened the relationship with the central level and commercial banks in order to attract more support for funding, technologies, training of banking officials, and exchanging work experiences on monetary control and banking operations in the market economy. The banking system has constructed and operated an active monetary policy flexibly suited to reality, guaranteed to increase the annual currency supply in order to catch up with the economic growth rate and gradually control inflation. The relation between the monetary policy and national budget policy has been harmoniously regulated to halt the monetary compensation for state budget deficits. Special attention has also been provided to establish and effectively carry out the policies of interest, credit, management of foreign currency and regulation of the exchange rate. These are considered the key factors in the monetary policy.

Since late 1988, the State of Viet Nam started carrying out a comprehensive pricing reform and commercial liberalization. The State abolished most of the prices applied to farm products and input materials that used to be managed by the State. The foreign exchange rate was reunified and left floating. The interest of savings and loans was increased. This means that the State let the price be self-regulated according to market forces. This may lead to a higher rate of inflation but, at least, guarantee the market operational capacity. Along with this measure, the State is seeking ways to reduce the total amount of money to be circulated in the market in order to cut down inflation and stabilize the money value. These measures have helped prevent super-inflation, stabilize the national economy, create conditions for free trading and make the market rich in commodities. Prices often reflect the real scarcity of commodities or maintain competition in production as well as in trading that is considered a strong push to more effective development of the economy. Before 1989, the Viet Nam economy applied multiple exchange rates. The trading exchange rate, or the official exchange rate, was established by agreement between the Viet Nam government and members of the former Council of Mutual Economic Assistance and was usually fixed. The free trade exchange rate (specifically applied to non-trade transactions such as diplomatic, student training, and overseas Vietnamese) was more close to the market exchange rate compared to the official exchange rate. The rate, however, remained fixed for a long period of time. The internal exchange rate was only applied to the state import-export companies. In this case, due to the high value to be decided for the Viet Nam dong against other currencies, the additional input cost is very high for import and export commodities. The spontaneous market exchange rate is beyond the companies’ capacity.

The greatest harm caused by a multiple exchange rate is that it limits the import and export capacity, damages the value of the domestic currency, increases the inflation rate and distorts the accounting system. The Viet Nam dong then lost its value and the economy plunged into a state of super-inflation (in 1989, inflation reached to almost 700%). In this situation, in March 1989, the Viet Nam government abolished the state subsidy through an exchange rate to be established for commercial operations. For the unconvertible money sector (sector I) in 1991, the rouble (Russian money) which was used for trading exchange was abolished. All commercial payments between Viet Nam and member countries in the Council of Mutual

Economic Assistance were undertaken through the US dollar. The policy of a floating exchange rate and the policy for export decentralization and partial liberalization of imports have brought about positive changes in trading operations and the international balance of payment. The export strongly increased. The import and export balance was almost in equilibrium in 1991. To manage the trading activities in a liberalized commercial environment, the state issued a series of decisions to control foreign exchange in an effort to concentrate foreign currency in the state's hands. When the banking system was not strong enough, the state established two Foreign Exchange Centers in Ho Chi Minh City and in Hanoi with a net-work of treasury and gemstone trading transactions to control the price, monitor inflation and manage the exchange rate. Also in 1989, the power to fix the exchange rate by the Council of Ministers was transferred to the foreign trade banks to announce daily the exchange rate based on actual changes in the market.

Since the beginning of 1989, the Viet Nam Government declared a basic amendment in the bank interest policy. For the first time there was discrimination between real interest and nominal interest. The nominal interest consists of the real interest plus the inflation rate. The increase of interest rate made the domestic currency more attractive and stimulated capital import. By increasing the interest rate, the banking institutions helped stabilize the money value in the foreign exchange market. However, the increase of savings interest should be done at the same time with the increase of lending interest so as to solve the delay in the circulation of money bought in the commercial banks. This will guarantee the constant long-term operation of the banks. There appears now to be a trend to decrease the interest rate for both savings and loans in order to encourage borrowing by the production and trading enterprises. The interest of foreign currency has also been increased to the same level of domestic currency to encourage capital import.

### 1.3.3 Tax and fee policy

The system of tax and fee policies was issued and has been amended since 1990. The renovation of tax collection and management has helped obtain an increase in tax and fee collected (tax/fee collection in 1994 increased 3.7 times compared to 1991).

Taxes and fees have become the main source of national revenue and the state budget (making up more than 90% of the revenue). In import and export, the control over the tax policy plays a vital role in maintaining the traditional market, encouraging the opening of new markets, protecting domestic products and stimulating the expansion of commodities that have comparative advantages to other regional countries or have better competitive capacity in the world market. In addition to the Law on Export & Import Tax approved by the National Assembly and the experience on import and export control over the previous years, on 28 February 1994, the Prime Minister (PM) enacted Decision 78/TTg (Prime Minister) to provide guidance for the control of import and export activities. This is a legal document for the central and local authorities to study and work out policies and management measures to control import-export activities to maximize exports and strictly control imports. On 26 July 1994 the Ministry of Finance issued Decision 624/TC-TCT listing the items to be managed by the State and taxes to be enforced for imported commodities, revising the floor price for exported commodities and ceiling prices for imported commodities, and changing the tax rates and added charge applied to seasonal commodities. Since then these annual legal basics have been constantly in effect. However, since 1995 these legal basics were often enacted at the end of the earlier year by government and ministries to help enterprises and companies invest in their production, arrange the organizational structure and operational network, research markets, and sign contracts so as to achieve high efficiency in trading. On 28 July 1995, Viet Nam officially became a member of ASEAN and on 18 December 1995 the Government issued Decision 91/CP (Government) on the list of commodities to carry out Common Effectively Preferential Tax (CEPT) of ASEAN countries in 1996. On 27 December 1995, the Prime Minister issued

Decision 96/CP and 97/CP concerning the implementation of the Law on Revenue Tax, the Law on Consumption Tax and the guide to the amendment to these two laws. On 22 May 1997, Chairman Le Duc Anh signed the Law of Value Added Tax and the Law on Business Income Tax. These two laws will take effect on 1 January 1999.

One of the important issues in the reform program of the import and export tax and fee system is to rearrange the structure of taxes suitable for each type of tax and fee and for international practices, expand the scope of collection, stipulate the tax rates rationally in order to encourage the enterprises and the population to further intensify investment and apply advanced technology. This will lead to a unanimous application of one-level tax charged on revenue obtained by both enterprises that have domestic investment and those that have foreign investment. Tax and tariff systems should be reformed in accordance with the specific condition of Viet Nam, especially when Viet Nam becomes a member of ASEAN, APEC, and WTO.

The import and export tax should be continuously reviewed to protect to some extent domestically-produced commodities and break down the companies' dependence, encourage the production of processed export commodities and reduce the export of raw materials, and quickly move to a mechanism of self-statement and direct payment to the state treasury. The taxmen and tax agencies should mainly provide guidance and inspect the tax collection. The need is also to set up a unit, which in collaboration with the state legal agencies, guarantees strict implementation of the tax law.

### 1.3.4 New policies of the Government of Viet Nam during 1996-1998

Since Viet Nam joined ASEAN and prepared for its participation in the APEC forum and WTO, the Government of Viet Nam has refined several laws and policies for stimulation of commodity production and integration with the world. In addition to the policies summarized above, since 1996 our Government has refined several policies and issued several new policies aimed at stepping up the expansion of trade liberalization and stimulating production of agricultural commodities.

The Law on Foreign Investment in Viet Nam was passed by the National Assembly on 12 November 1996 and amended in 1998. Through this Law, the Government creates favorable legal conditions for foreign investors and, at the same time, reduces unnecessary formalities and thus shortens the time required for approval of foreign-investment projects in Viet Nam.

Decision No. 10/1998/QD-TTg dated 13 January 1998 of the Government concerned mechanisms for management of import and export operations in 1998. For implementation of this Decision, the Ministry of Trade has issued a Circular guiding export of rice and import of fertilizers. The most important fact is that quotas are not required for all agricultural products except rice, export of which is still under control of the Government. This encourages businesses to strengthen their efforts towards expansion of export markets.

In order to create conditions for export of agricultural products, the Government of Viet Nam has been improving administrative procedures. It is now easier, quicker and less troublesome to apply for a permit, pass customs check and get quarantine clearance. Presently Viet Nam promotes the use of containers in import and export dealings, which results in quicker and tidier operations. For export of other agricultural products, except rice, those establishments registered for import and export operations have to deal only with customs formalities.

Commencing 1 January 1999 the Government of Viet Nam implemented the Law on Value Added Tax (VAT) instead of the turnover and income taxes with an aim to encourage businesses to invest capital in their production capacities and to avoid double taxation. The Government of Viet Nam has either reduced or exempted the tax applicable to export of some agricultural products in order to encourage businesses to step up export operations.

Together with policies targeting expansion of local markets, the Government has also issued many other policies that encourage farmer households and businesses to step up their agricultural production and processing activities.

The National Assembly passed amendments to the Land Law in 1998, focusing mainly on refinement of the five land use rights entitled to farmer households, which encourages them to step up production activities.

The Government has speeded up the process of issuing certificates of land use rights on a long-term basis for the farmers. By doing so, the Government creates conditions that make the farmers feel safe in investing capital in and expanding their production activities.

The provision of soft loans to farmer households under the program on development of rubber trees in the Northern part of Central Viet Nam and in the Central Plateau areas encourages the farmers in these Central provinces to grow rubber trees on small plots of land. The program on extension of Arabica coffee to the northern mountainous provinces and the Central Plateau to reach a total area of 40,000 ha by the year 2005 encourages farmer households to change the composition of their crops.

The Government also attaches special importance to solutions for investments in upgrading and modernizing preservation and processing technologies, which are regarded as the main measures for the industrialization and modernization process in agriculture and rural areas.

### 1.3.5 The impact of entering into AFTA, APEC and WTO

Shifting from self-sufficient to a commercial agriculture under market oriented economics is a key commission of Viet Nam agriculture. In order to integrate into regional and world markets, entering into AFTA and APEC is necessary. It also is a motive for Viet Nam to rapidly reform technology, expand the production scale, and enhance the competitive capability of agro-products in market. In addition, Viet Nam also gets economic co-operation and experience from other countries, which will help Viet Nam implement commercial production mechanisms under market-oriented economics. Up to now, there are many deficiencies in Vietnamese agriculture such as obsolete techniques and production, obsolete processing technology, and weak infrastructure. Furthermore, it is necessary to gradually perfect the investment policies so as to enhance economic development. Because of these difficulties, at an early stage of entering into these commercial organizations Viet Nam surely will meet obstacles. For example in the sugar production sector in Viet Nam because of lack of advanced technology and lack of raw materials, the cost of sugar is high. However the price of imported sugar from other countries in the region into Viet Nam is lower than the cost in Viet Nam, so domestic sugar production meets more and more difficulties. Other products, including consumer goods are presently in the same situation.

To overcome this situation Viet Nam must strengthen investment, speed up the application of advanced technologies, enhance the competitive capability of agro-products, and gradually reduce production costs. If Viet Nam can solve these matters, the difficulties will gradually lessen and Viet Nam will enjoy the advantages of trade liberalization and integration into regional and world markets.

In the production process of commercial agro-products in Viet Nam, households are raw material producers, since after harvesting they sell their products to processing plants. After being processed or party processed, these products will be sold to reprocessing plants and eventually come to domestic consumers or be exported. The farmer households purchase the necessary inputs for production from trade businesses. Therefore, the production process includes many stages. Each stage is independent but they have relationships with each other. However, they do not know the cost and returns of each stage. It is very difficult to distribute the benefit between stages. Presently the Viet Nam Government is reforming the administrative procedures, modifying policies in order to eliminate difficulties, reduce the monopoly and create equality between economic elements. However, we are not sure about the evidence, which is the basis for estimating the expenditure in each stage. Therefore in this report, it is impossible to give an exact value for each stage.

## 1.4 Infrastructure development

The implementation of in-country trade liberalization and expansion of international trading relations involve an urgent need to upgrade and develop infrastructure in Viet Nam in order to meet requirements in economic exchange and to upgrade product quality.

### 1.4.1 Development of the transport sector

Development of the transport sector is a pressing need. The transport system of Viet Nam is still very backward and weak. Moreover the diversified topography and elongated shape of the country and the frequent natural disasters have seriously damaged and degraded the transport system.

The transport system of Viet Nam is very diversified, including the road network, railways, waterways and airways. This advantage should be exploited in order to facilitate economic development in Viet Nam. Since the implementation of market-oriented commodity production, the Government of Viet Nam has attached importance to building the transport system.

The transport sector ranks second in added assets value next to the industrial sector. This resulted in rapid growth of Viet Nam's transport sector (Table 1.1).

**Table 1.1 Increased value of fixed assets of the economic and transport sectors (fixed price at 1989).**

| Order | Objects | Unit | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 |
|---|---|---|---|---|---|---|---|---|
| 1. | Economic sectors | Million VND | 1,433.5 | 1,222.7 | 1,627.0 | 2,725.0 | 4,402.7 | 4,785.7 |
| 2. | Transport sector | Million VND | 225.7 | 197.6 | 301.2 | 349.9 | 483.3 | 739.6 |
| 3. | Transport sector/ Economic sectors | % | 15.74 | 16.16 | 18.5 | 12.84 | 10.98 | 15.45 |

Source: Department of Statistics, Viet Nam.

#### 1.4.1.1 Land transport

In 1985 the total length of the road network was only 84.936 km including asphalt, macadam-paved and earthen roads. In 1994 the road network was expanded and upgraded and its total length reached 177.259 km of which 15,070 km were asphalted roads, an increase of 2.09 times compared to 1985. By now 87.9% of all communes have either asphalted or earthen roads accessible for vehicles to the commune centers (Table 1.2).

**Table 1.2 Land transport (vehicular roads by economic zone) and proportion of asphalted or earthen roads.**

| | Whole Country | North Mountains | Red River Delta | Old 4 Area | Middle Coastal Area | Central High Land | South-East of Southland | Mekong River Delta |
|---|---|---|---|---|---|---|---|---|
| Number of land routes to communes | 7,739 | 2,137 | 1,684 | 1,514 | 754 | 439 | 434 | 768 |
| Asphalted or earthen (%) | 87.4 | 81.4 | 99.4 | 93.2 | 92.3 | 96.1 | 97.5 | 68.0 |

Source: Socio-economic data selected from the large-scale surveys conducted during the 1990-1996 period (Hanoi Statistics Publishing House, 1998).

Over the past years, based on funds mobilized from the Government budget, the population and ODA resources, Viet Nam has focused on upgrading of the extremely important roads such as the highway 5 from Hanoi to Hai Phong, highway 1 from Lang Son to Ca Mau, road 18 from Quang Ninh to Bac Ninh, the Hanoi to Noi Bai Airport road, highways 6, 3 and 2

and many others to allow traffic through. Development of rural transport has also been stepped up, and vehicular roads to communes, villages and hamlets have been constructed. Bridges have been constructed on the highways to replace ferries, thus traffic jams are avoided. In 1997 passenger transport increased by 1.75 times and cargo transport increased by 2.08 times compared to 1985.

### 1.4.1.2 Railway transport

Currently the railway system of Viet Nam has a total length of 3,378 km counting from the center of Hanoi to Ho Chi Minh City (Table 1.3). The system consists of the following routes: Hanoi - Hai Phong, Hanoi - Lao Cai, Hanoi - Lang Son, and Hanoi - Thai Nguyen. Over the past years the Government of Viet Nam has concentrated its efforts on upgrading and modernizing the railway system, locomotives, wagons, stations, etc. and the shortening of traveling time. Only a few lines have been extended.

**Table 1.3 Main indicators of railway transport, 1985-1997.**

| Year | Total Length of Railway (km) | Number of Trains | | | Volume of Goods | | Passengers | |
|---|---|---|---|---|---|---|---|---|
| | | Locomotives | Passengers Car Boxes | Freight Car Boxes | Carried (thousand ton) | Circulated (million ton-km) | Carried (mill. persons) | Circulated (mill. person- km) |
| 1985 | 3,183.9 | 474 | 1,215 | 6,421 | 4,050.0 | 868.8 | 19.1 | 3,358.7 |
| 1990 | 3,219.5 | 452 | 1,051 | 5,384 | 2,341.0 | 847.0 | 10.5 | 1,913.0 |
| 1991 | 3,259.5 | 507 | 983 | 5,286 | 2,567.0 | 1,103.3 | 9.5 | 1,767.0 |
| 1992 | 3,259.5 | 507 | 815 | 5,064 | 2,774.0 | 1,076.8 | 8.7 | 1,752.0 |
| 1993 | 3,291.4 | 484 | 774 | 5,064 | 3,187.0 | 978.0 | 7.8 | 1,921.0 |
| 1994 | 3,291.4 | 435 | 780 | 4,805 | 4,000.0 | 1,370.1 | 7.9 | 1,796.0 |
| 1995 | 3,291.5 | 416 | 796 | 4,647 | 4,515.0 | 1,750.6 | 8.8 | 2,133.3 |
| 1996 | 3,326.5 | 426 | 746 | 4,712 | 4,041.5 | 1,683.6 | 8.5 | 2,260.0 |
| 1997 | 3,378.0 | 430 | 785 | 4,735 | 5,100.0 | 1,758.0 | 8.8 | 2,320.0 |

Sources: These data were quoted from Statistical yearbooks 1989, 1991, 1992, 1993, 1994, 1995, 1996, 1997.
Infrastructure of Viet Nam 10 years of renovation 1985-1995.
Statistical data of agriculture, forestry and fishery 1985-1995.
Statistical data on basic situation and infrastructure of rural region in Viet Nam.

### 1.4.1.3 Waterways transport

Viet Nam has a coastline with a total length of over 3,000 km and a dense system of rivers and canals, which are very favorable for development of domestic and international waterway transport (Table 1.4). In making use of this advantage, the Government of Viet Nam has made investments in dredging passages, establishment of directional posts and a system of ports. Particularly, the system of ports has been upgraded and modernized to serve the waterways transport sector.

Currently Viet Nam has eight big seaports managed by MOTAC. In addition, there are 24 seaports managed by provinces, which have been or are being improved. By the year 2000 all the seaports managed by local authorities will become operational.

Eight big seaports under central management alone already show the development of the marine transport sector. In 1985 the volume of goods loaded and unloaded through the seaports reached only 5,760,400 MT. The figure for 1997 was 16,714,500 MT an increase of 2.9 times compared to 1985. The rapid increase in capacity of the seaports under central management is due to requirements of the trade expansion process and to capital investment made by the Government.

**Table 1.4 The system of ports managed by the Ministry of Transport and Communications as of 1996.**

| Name of Seaport | Current Situation | | | | Year 2000 - 2010 | | | |
|---|---|---|---|---|---|---|---|---|
| | Wharf Length (m) | Kinds of Ship (thousand ton) | Capacity (million ton/ year) | Depth (m) | Wharf Length (m) | Kinds of Ship (thousand tons) | Capacity (million ton/ year) | Depth (m) |
| Hai Phong (Hai Phong) | 2,366 | 7 - 10 | 4 - 4.6 | 8.4 | 3,000 | 10 - 20 | 7 - 10 | 9 - 10 |
| Sai gon (Ho Chi Minh City) | 2,084 | 10 - 20 | 4 - 7 | 9 | 3,000 | 10 - 20 | 8.2 | 14 |
| Cai Lan (Quang Ninh) | 165 | 30 - 50 | - | 9 | 1,463 | 10 - 50 | 22 | 12 |
| Cua Lo (Nghe An) | 330 | 10 | 0.5 - 0.7 | 4 | 437 | 5 - 10 | 1 - 2 | 6 |
| Da Nang (Da Nang City) | 1,478 | 20 | 0.8 - 1.0 | 5 | - | 10 - 25 | 1.2 - 6.0 | 8 |
| Quy Nhon (Binh Dinh) | 350 | 20 | 0.5 - 2.5 | 5 | 500 | 5 - 20 | 2.5 | 7 |
| Nha Trang (Khanh Hoa) | 176 | 10 | 0.2 - 0.5 | 5 | 250 | 5 - 15 | 0.2 - 0.5 | 7 |
| Can Tho (Can Tho) | 142 | 10 | 0.15 - 5.0 | 5.5 | 300 | 5 - 10 | 0.15 - 5.0 | 7 |

Source: Ministry of Transport and Communications.

At present the three biggest seaports of Viet Nam are located in Ho Chi Minh City, Hai Phong and Da Nang. Cai Lan seaport (in Quang Ninh province) is being enlarged. This seaport can receive ships with dead weight ranging from 7,000 to 50,000 MT and waterline ranging from 5 to 9 meters. The loading and unloading capacities of these seaports are substantial: 4 to 7 million tons of cargo per annum in Ho Chi Minh City seaport, and 4 to 4.6 million tons per annum in Hai Phong seaport. Facilities serving the loading and unloading operations, warehouses and yards, have all been strengthened. Specialized machinery, lifting devices, and cranes have been modernized and thus are capable of performing quicker loading and unloading operations and quicker clearance of ships.

Means of marine transport have also been modernized for cargo transport and transfers to bigger ships.

In 1985 there were only 83 ships, with a total tonnage of 544,800 tons, an average of 5,000 tons per ship. In 1997 the number of ships was 600, with a total tonnage of 710,000 tons, an average of over 1,000 tons per ship. The volume of transported cargo increased from 2,621,000 tons in 1985 to 10,334,000 tons in 1997, an increase of 3.94 times (Table 1.5).

Along with marine transport, river transport has also been developing strongly, particularly in the Mekong Delta, which serves mainly cargo transportation. By 1997 within the riverways there were: 9,800 km for up to 100-ton dead-weight; 3,420 km for up to 500-ton dead-weight; 1,700 km for up to 1,000-ton dead-weight; and 1,980 km for over 1,000-ton dead-weight.

These river routes contributed to transportation of 24,144,000 tons of cargo with a total length of route passed of 2,821 million km.

In 1997, for river transport Viet Nam had 700 tugboats, 21,350 canoes, and 2,015 barges, with a total tonnage of 853,600 tons.

**Table 1.5 Main indicators of sea-borne shipping, 1985-1997.**

| Year | Number of Ships | | Volume of Goods | | Number of Passengers | | Means of Transport Managed by MOTAC | | |
|---|---|---|---|---|---|---|---|---|---|
| | Freight Ships (no.) | Total of Capacity (thous. tons) | Carried (thous. tons) | Circulated (million ton-km) | Carried (million persons) | Circulated (million person-km) | Number and Total Length Wharves (number/total length in m) | Other Means (no.) | Storage Area (thous. $m^2$) |
| 1985 | 83 | 454.8 | 2,621 | 8,042.4 | 0.5 | 79.7 | - | - | - |
| 1990 | 350 | 662.2 | 3,484 | 8,313.1 | 0.8 | 92.8 | - | - | - |
| 1991 | 360 | 681.0 | 4,330 | 12,518.5 | 1.0 | 54.8 | - | - | - |
| 1992 | 364 | 587.0 | 5,105 | 12,015.8 | 2.2 | 70.0 | - | - | - |
| 1993 | 366 | 617.9 | 4,498 | 12,650.0 | 1.9 | 36.5 | - | - | - |
| 1994 | 362 | 536.1 | 5,461 | 14,104.0 | 1.1 | 29.0 | 47/5,861 | 335 | 528.4 |
| 1995 | 608 | 588.9 | 6,670 | 14,803.3 | 0.6 | 29.4 | 52/7,191 | 465 | 681.9 |
| 1996 | 549 | 650.1 | 8,843 | 21,365.5 | 0.7 | 41.0 | 53/7,159 | 408 | 754.0 |
| 1997 | 600 | 710.5 | 10,334 | 26,578.0 | 0.7 | 42.0 | 55/7,259 | 431 | 800.0 |

Source: These data are quoted from Statistical yearbooks 1989, 1991, 1992, 1993, 1994, 1995, 1996, and 1997.
Infrastructure of Viet Nam 10 years of renovation 1985 - 1995.
Statistical data of agriculture, forestry and fishery 1985 - 1995.
Statistical data on basic situation and infrastructure of rural regions in Viet Nam.

#### 1.4.1.4 Airways

Based on the need to expand international exchange, capital investments have been made in upgrading the major airports like Noi Bai airport, and Ho Chi Minh City airport to international standards, with conditions good enough for transportation of passengers and cargoes to other countries. Other local airports have also been rehabilitated. These include airports in Cat Bi (Hai Phong), Hue, Da Nang, Vinh, Dien Bien, Playcu, Buon Ma Thuot, Quy Nhon, Nha Trang, Vung Tau, Gia Lam, etc. The country's airway system has experienced initial improvements.

### 1.4.2 Development of the electric power sector

The electric power facilities of Viet Nam developed mainly during the subsidized economy period, including Thac Ba hydroelectric power station (Yen Bai province), Uong Bi and Cam Pha thermoelectric power plants (Quang Ninh province), Yen Phu electric power plant, Ninh Binh electric power plant, Thai Nguyen electric power plant, etc. These electric power plants served mainly the industrial zones and residential areas in cities adjacent to the industrial zones. After the country's liberation in 1975, the remaining electric power plants in the South were also developed.

Electricity plays a very important role in production activities and the daily life of the people and is an important energy source for introduction of advanced technologies. From 1955 up to now the electric power sector have made important steps forward. Those thermoelectric power plants built in the past and during the 1960-1984 period have been degraded and become obsolete. They have been replaced by the big Hoa Binh and Tri An hydroelectric power stations, Pha Lai thermoelectric power plant and by many small-scale hydroelectric power stations in different localities.

In 1985 the country had 3,050 electric power plants, of which 771 plants were under central management and 2,339 plants were managed locally. By 1997 in the whole country there were 1,900 plants, of which 478 plants are managed centrally and 1,413 plants are managed locally. Electric power output was 5,230 million kwh in 1985 and 19,123 million kwh in 1997, an increase of 3.66 times (Table 1.6). Because of this, electricity supply for the

agricultural sector has increased considerably. The figures for 1985 and 1997 were 308.5 million kwh and 1,487 million kwh, respectively, an increase of 4.83 times. The Government has confidently invested capital in the 500 kv North-South transmission line with a total length of 1,487 km. The number of 222 kv and 110 kv lines also increased rapidly.

**Table 1.6 Some indicators of the electricity sector, 1985-1997.**

| Year | Electricity (mill. kwh) | | | Electricity for Agriculture (mill. kwh) | Power Lines (km) | | | Number of Electricity Enterprises | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | Of which | | | 500 kv | 220 kv (newly built) | 110 kv (newly built) | Central | Local |
| | | Central | Local | | | | | | |
| 1985 | 5,230 | 5,192 | 38 | 308.5 | 0.0 | 0.0 | 87.5 | 711 | 2,339 |
| 1990 | 8,790 | 8,773 | 17 | 586.8 | 0.0 | 303.0 | 789.0 | 666 | 2,354 |
| 1991 | 9,307 | 9,285 | 22 | 807.4 | 0.0 | 91.0 | 499.0 | 589 | 2,173 |
| 1992 | 9,818 | 9,797 | 21 | 975.0 | 0.0 | 84.0 | 82.0 | 546 | 2,053 |
| 1993 | 10,851 | 10,830 | 21 | 1,000.0 | 0.0 | 89.0 | 438.0 | 537 | 1,731 |
| 1994 | 12,476 | 12,450 | 26 | 1,166.0 | 1,487.0 | 298.0 | 185.0 | 522 | 1,508 |
| 1995 | 14,665 | 14,640 | 25 | 1,204.6 | 1,487.0 | 65.0 | 225.0 | 508 | 1,485 |
| 1996 | 16,996 | 16,972 | 24 | 1,350.0 | 1,487.0 | 120.0 | 278.0 | 499 | 1,472 |
| 1997 | 19,123 | 19,106 | 17 | 1,440.5 | 1,487.0 | 145.0 | 300.0 | 487 | 1,413 |

Source: These data are quoted from Statistical yearbooks 1989, 1991, 1992, 1993, 1994, 1995, 1996, and 1997.
Infrastructure of Viet Nam 10 years of renovation 1985 - 1995.
Statistical data of agriculture, forestry and fishery 1985 - 1995.
Statistical data on basic situation and infrastructure of rural regions in Viet Nam.

By now the supply lines have merged into one national grid to ensure effective and regulated use of electricity.

### 1.4.3 Water resources system

The water resources system plays an extremely important role for development of the agricultural and industrial sectors, as well as for daily life of the population. Since coming into power in 1954 the Government of Viet Nam has paid great attention to construction of irrigation systems. This helped ensure conditions for irrigation of wet rice production areas in the Red River Delta in the North increasing from one to two crops per year. Other areas have also been irrigated.

By 1985 the country already had 4,952 large and small irrigation schemes, of which 4,560 were independent and 312 were dependent schemes.

The design capacity allows irrigation of 2,533,900 ha and flood control for 1,344,200 ha with a total number of 188,631 water pumps. Together with these irrigation schemes, there is a system of canals and trenches that brings water into fields. The Government has invested substantial capital in the irrigation schemes.

The capital invested by the Government in the irrigation schemes normally accounts for 60-70% of the total budget allocated for the agricultural sector. By now the irrigation system has made an important step forward. According to available statistical data in 1995, the number of irrigation schemes was 10,632, an increase of 2.15 times compared to 1985. The design capacity allowed irrigation of 2,612,000 ha, an increase of 3.08% compared to 1985 and flood control for 1,687,000 ha, an increase of 25.25% compared to 1985. In particular, water pumps used for the agricultural sector reached a level of 513,105 units, an increase of 2.72 times compared to 1985. Topographical and climatic conditions are severe with occurrence of La Nina. Over the past years many of the irrigation works have been damaged by flooding, particularly those in the Central and Mekong Delta regions. There were cases when many of the irrigation schemes dried up. At present, in the coffee, tea and pepper growing areas, farmer households use water from drilled wells. This decreases ground water resources. Therefore, there is a need to continue to invest in the irrigation system of Viet Nam.

### 1.4.4 Telecommunications system

Commodity production practices require appropriate development of the telecommunications system. Therefore, the Government of Viet Nam has made capital investments in modernization of the post and telecommunications system.

Since 1995 the post sector has been modernized with the use of wireless and cable telephone systems, making it convenient for local and international contacts. Internet, facsimile and other modern facilities are also in use. The telephone system developed rapidly. The total number of telephones increased from 126,433 in 1991 to 757,216 in 1995 and to 2,000,000 in 1998. This means that there are 2.5 telephones per 100 people. The postal sector continues its modernization process to serve developments of the various economic sectors.

# 2. Analysis of Selected Exportable Agricultural Commodities

## 2.1 Government policies on the selected agricultural commodities

From 1960 to 1981 over 93% of the farmer households in North Viet Nam joined cooperatives where land and means of production were collective property. The cooperatives operated on a business accounting basis. The farmers were paid after harvest according to their work performed. The cooperatives operated in accordance with plans developed by the Central Government. Products were sold at prices fixed by the Government. Key input materials were distributed by the Government at fixed prices. According to this mechanism the cooperatives were responsible for all of their operations from production to storage, processing and marketing of their products. The products were sold mainly to the Government. Markets in rural areas were places where the farmers sold products from their side production activities or things in surplus. In parallel with this process, the leadership management was not good enough, which led to a declining status of the cooperatives during 1979-1980. The farmers had a hard life and agricultural production decreased. Also, the crisis during the 1979-1981 period in the country made the situation even more severe.

In the case of the Southern provinces, after liberation in 1975 the policy on transformation of the agricultural sector was implemented and the farmers joined agricultural cooperatives and groups of mutual assistance following the models as developed in North Viet Nam. Agricultural production also declined in the 1979-1981 years, as cooperatives were formalistic, and the farmers lived a hard life and were unenthusiastic about making capital investment in production activities.

The Government of Viet Nam started implementing a policy of contracts to give the farmers autonomy in their production operations. After delivering the volume of products as contracted with the cooperatives, farmers had the right to use the remaining part of their products at their discretion. This policy stimulated members of the cooperatives to put more materials and labor resources into their production activities and to become more responsible for their products. Thus agricultural production developed better and livelihood of the farmers was to some extent improved. This policy was implemented in the 1981-1985 years. One problem arising during this period was the increasing level of products to be delivered from the same area of land, which the leadership of the cooperatives imposed on the farmers. The result was that farmers had to use more inputs, but the value of their surplus products could not cover their production costs. Hence the farmers became more and more in debt to the cooperatives. The farmers then used fewer inputs and agricultural production declined.

In this context the Government of Viet Nam decided to implement a renovation of economic mechanisms, switching from the centrally-planned subsidized economy to a market-oriented commodity production one. The main components of the renovation are as follows:

- Eliminate check points between localities so as to allow free flow of goods throughout the whole country and at the same time expand relationships with regional and world markets.
- Implement pricing policy as governed by a market mechanism. The Government performs a regulatory role in order to stabilize prices on some essential goods.
- Allow different economic sectors to develop and participate in a market-oriented economy. All economic sectors are equal before the law.
- Refine and renovate as appropriate financial, banking and taxation policies.

Within the agricultural sector, commencing from 1989 the renovation of management mechanisms has created a turning point for the sector's development. Main components of the renovation of mechanisms in the agricultural sector are as follows:

- Land use rights are given to farmer households on a long-term basis. The farmers have the property right to other main means of production.
- The farmer households become self-supporting economic units. The farmers decide directions for their production activities, market their products, deal with business accounting by themselves and are responsible for outcomes of their production activities.
- The cooperatives are only to provide services which the farmer households are not in a position to perform by themselves, for example irrigation, plant protection, electricity supply, protection of rice fields, and transfer of scientific advancements. The farmers have to pay for services provided by the cooperatives on an agreed basis.

Changes in economic mechanisms have had great impact on development of the agricultural sector, particularly of export commodities such as rice, coffee, rubber, tea and peanut.

## 2.2 Rice

### 2.2.1 Area and production

The first positive impact to be mentioned is the impact on farmer households. Government policies, Resolution No. 10 of the Politburo and the Land Law have confirmed the five land use rights of land-users. The farmers have the property right to their means of production and are independent in their business operations. They take the initiative in seeking funding sources and looking for markets for their products. Many households become rich thanks to their determined inputs of materials and labor in the production of high value products. By doing so they are creating a new competitive market which requires that those households engaged in business operations upgrade the quality of their products. In addition, the Government has also issued policies on agricultural tax, credit, stepping up of agricultural and forestry extension, transfer of scientific advancements and strengthening of state-owned enterprises. The farmer households use land areas effectively, expand areas wherever possible and increase intensive farming activities. This helps increase cultivation area and rapidly increase productivity. Agricultural products can not only meet demands of the domestic market but also go for export.

Table 2.1 shows that over the past ten years the country's rice production area had an increase of 1.3 million ha, an annual average increase of over 100,000 ha. The increase in planted area took place mainly in the Mekong Delta where there is still potential for reclamation and where conditions are favorable for production activities. The Mekong Delta forms a large rice-growing area for export.

**Table 2.1 Paddy planted area and production, Viet Nam, 1985-1997.**

| Year | 1985 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|---|---|---|---|---|
| Area ('000 ha) | 5,730.9 | 5,895.8 | 6,027.7 | 6,302.7 | 6,475.4 | 6,559.4 | 6,598.5 | 6,765.6 | 7,003.8 | 7,091.2 |
| Production ('000 tons) | 15,874.8 | 18,996.3 | 19,225.1 | 19,621.9 | 21,590.3 | 22,836.5 | 23,528.2 | 24,963.7 | 26,396.7 | 27,645.8 |

Source: Department of Statistics, Viet Nam.

On the basis of expansion of area under the above-mentioned plantations and with a number of policies that encourage production activities, as well as to meet the requirements of the markets, both productivity and quality of products have been improved. Rice yield increased

from an average of 2,780 kg/ha in 1985 to 3,900 kg/ha in 1997. According to statistical data of the Ministry of Agriculture and Rural Development, the yield in 1998 reached 4,000 kg/ha.

The Mekong Delta is the largest rice-producing region of the country. This is also the region specializing in rice production for both domestic consumption and export. Rice yield in this region over the past three years has been at 4,000 kg/ha. Of great interest is the fact that this region is suitable for growing long-grain and soft rice varieties, with small white spot. Most of these varieties were obtained from IRRI and are very suitable for export.

Due to high population density, average per capita cultivation area in the Mekong Delta is low. Therefore the farmers in this region have developed intensive farming techniques which help obtain the highest yield compared to other regions of the country, averaging 4,500 to 4,900 kg/ha and in some places up to 6,000-7,000 kg/ha. The quality of rice cultivated in the Red River Delta is still not up to the export standard, thus annual export volume reaches only a level of 80,000 to 100,000 tons. Rice produced in this region goes mainly for domestic consumption.

### 2.2.2 Rice milling

The market has increasingly expanded, and the output of products has highly increased. Viet Nam mainly exports products in the form of raw materials or through manufacturing with out-of-date technology, thus the product quality is not high. The Government strongly promotes the investment for rice mills in the key areas of rice production.

In the North, the principal focus is on the Hong Delta, where there are 278 State rice workshops, in which there are 4 rice mills with a production capacity of 60 tons/shift, 46 mills with a capacity of 15 - 30 tons/shift and 228 grinders with a capacity of 3 - 5 tons/shift. The private and collective sectors have 2,200 mills with a capacity of 3 - 5 tons/shift. The capacity of all the rice workshops can ensure manufacture of 10 million tons/year. In 50 mills with capacity of 30 - 60 tons/shift, there are 13 mills which have been used over 30 years with old technology. Recently in the North, a lot of small and medium-scale mills have been intensified with up-to-date technology and they now produce high quality products.

At present, in the Mekong Delta and Ho Chi Minh city, there are 4,939 mill workshops with a total capacity of 22,300 tons of paddy/shift or an equivalent amount of 8.5 - 9 million tons of rice/year. In these mills, there are 348 State-owned enterprises with a capacity of 6,386 tons of paddy/shift and 4,591 private enterprises with a capacity of 15,075 tons of paddy/shift. Most of the old processing workshops are now improved with technologies imported from developed countries. Meanwhile, a lot of mills with high capacity and modern technology have been built:

- Sai Gon - Satake rice mill, capacity 600 tons of paddy/shift
- Cuu Long II mill, capacity 240 tons of paddy/shift
- Cai Lay - Tien Giang, capacity 300 tons of paddy/shift
- 15 mills with enclosed technology used to reprocess rice for export after cleaning, mixture splitting, classifying, grinding, polishing and packaging processes.
- 138 reprocessing workshops in the Cuu Long Delta with capacity of 6,000 tons of reprocessed rice/year.

There has been a lot of progress in rice processing technology and this has reduced the loss and greatly raised the quality of imported rice as well.

### 2.2.3 Trade

To assess the economic effects of rice consumption, it is necessary to examine the consumption channel of rice in the Red River Delta and Mekong Delta.

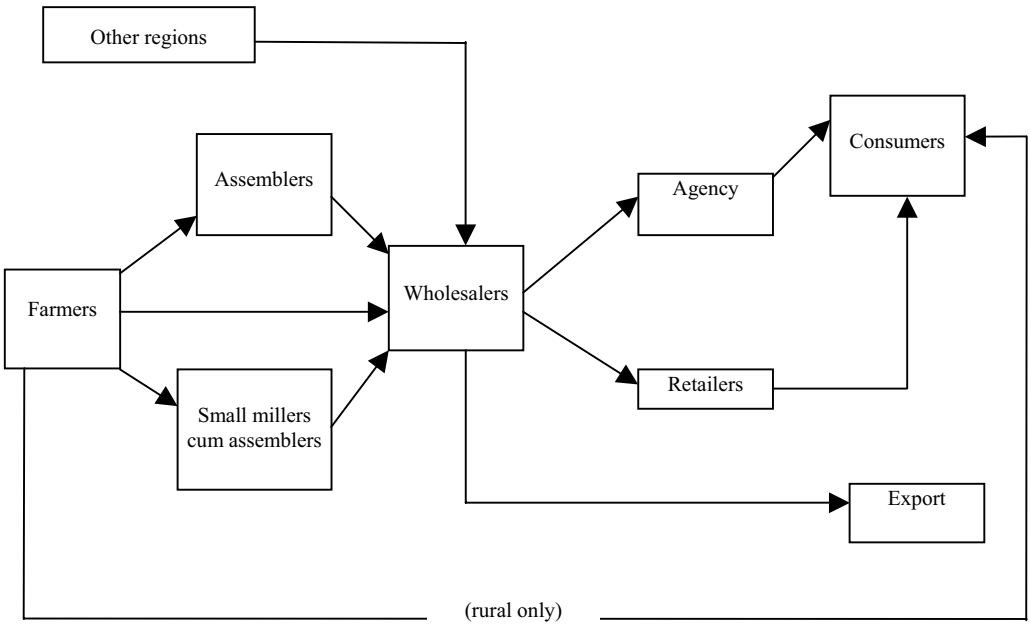
*Consumption channel of rice*

There are two general corporations of provisions in the country (North and South General Corporation of provisions). The duties of these corporations are procuring farmers' foodstuffs, trading domestic foodstuffs and exporting foodstuffs. However, these corporations mainly trade foodstuffs for export. Collecting foodstuffs and supplying for the domestic market is mainly conducted by businessmen and privately-owned trading enterprises. Rice that was purchased directly from farmers by state-owned trading enterprises accounts for only approximately 5%. There are significant differences in rice consumption systems between the Hong River Delta and the Mekong Delta (see Figures 2.1 and 2.2)

*Marketing channel of rice in the Hong River Delta*

The marketing channel of rice in the Hong River Delta has it's own specific characteristic: small production scale and self-sufficiency. As a result the farmers only sell their products in a small amount and they sell through the whole year. The farmers in Hong River Delta only sell rice when they need money, therefore, rice marketing under small scale gains an advantage. Rice marketing of the state-owned companies nowadays meets many difficulties because of small amount and scattered distribution of rice sold, the diversification of rice seed and unusual demands of the export market. It cannot complete with private traders. Besides the professional private traders, farmers living near cities and towns directly bring and sell rice to consumers at their leisure. Therefore, the large-scale rice trade is mainly conducted by state-owned companies, and few private traders and assemblers take part in the large-scale trade.

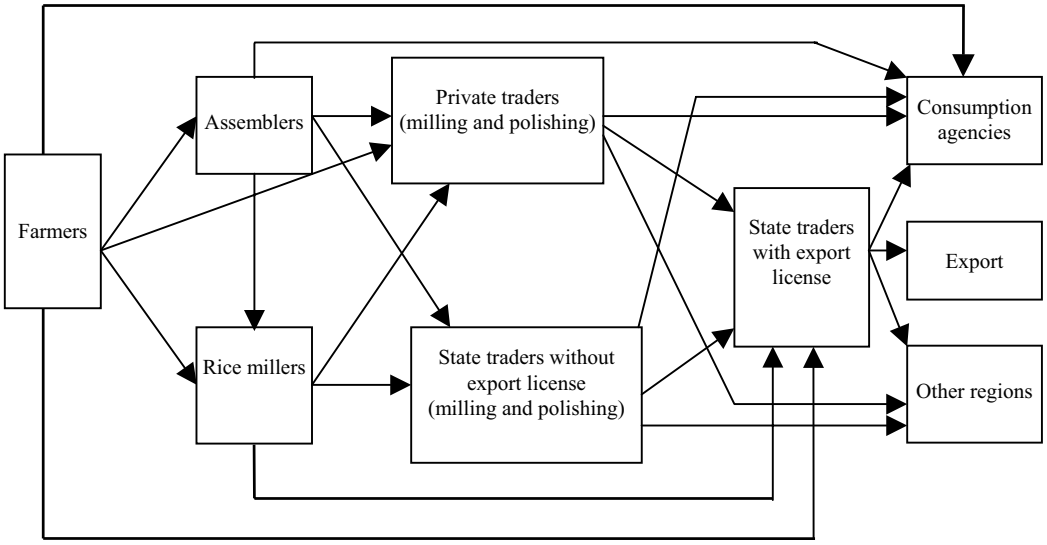
**Figure 2.1 Marketing channels of rice in the Hong River Delta.**




*Marketing channel system of rice in the Mekong River Delta*

The Mekong River Delta is the main rice bowl in Viet Nam with high rice production skills. In 1996 the rice production was 14,236.7 thousand tons. The circulated amount of rice in and outside the region was about 12 million tons. All economic elements take part in collecting and consuming rice. At harvest time the rice market is very animated because the farmers usually sell their products in bulk, especially the poor farmers and the people who lack capital.

**Figure 2.2 Marketing channels of rice in the Mekong River Delta.**




*Rice export*

Viet Nam's rice output has increased considerably from 15,874,800 tons in 1985 to 27,645,800 tons in 1997, an increase of 1.74 times. The increased rice output not only meets local demands in food but also contributes to food stockpiling, to development of animal husbandry and to increased rice volume for export. In 1998 Viet Nam exported 3.66 million tons of rice, ranking second among rice exporters in the world (Table 2.2). Increased export of rice, upgraded quality of rice going for export and higher export prices have a stimulating impact on the domestic market, thus leading to higher and higher output.

**Table 2.2 Exportation of rice, Viet Nam, 1994-1998.**

| Year | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|
| Export ('000 tons) | 1,983.0 | 1,988.0 | 3,003.0 | 3,550.0 | 3,660.0 |

Source: Department of Statistics, Viet Nam.

The rice production of Viet Nam annually increases by 1 million tons which is enough for both local consumption and storage. The Mekong Delta is the rice bowl of the country with an annual output of 14 million tons of rice, of which about 3.0 to 3.5 million tons is exported. The rice of the Mekong Delta is marketed in the Western highlands, the seacoast regions, the central part and the North mountainous area. The rice market is quite large now. In the past few years, the rice export market has expanded. In 1991 Vietnamese rice was exported to 20 countries, and currently (1997-1998), it is exported to 80 countries and marketed in five continents (Table 2.3).

**Table 2.3 Rice exports of Viet Nam to various continents (%).**

| | 1991 | 1992 | 1993 | 1994 | 1995 | Average 1991-1995 | Last 6 month of 1996 | Last 6 month of 1997 |
|---|---|---|---|---|---|---|---|---|
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| - Asia | 33.81 | 39.2 | 33.77 | 34.01 | 68.47 | 43.24 | 62.44 | 51.5 |
| - Africa | 23.32 | 37.87 | 27.90 | 15.49 | 14.85 | 23.76 | 9.89 | 28.64 |
| - Europe | 6.65 | 9.04 | 10.85 | 2.17 | 1.87 | 5.86 | 16.62 | 1.61 |
| - America | 36.22 | 13.89 | 27.47 | 48.30 | 14.80 | 27.12 | 11.04 | 17.02 |
| - Pacific Islands | 0 | 0 | 0.01 | 0.03 | 0.01 | 0.02 | 0.01 | 1.23 |

Source: General Statistical Office of Viet Nam.

Since 1991 the export market of Vietnamese rice has expanded, with the biggest markets being Asia, Africa and America. The volume of exports to other continents is less and unstable, mainly because the different categories and quality of the rice are not suitable.

The more Vietnamese rice quality increases, the higher the price of exported rice. The gap between rice prices for the same categories in comparison with Thai rice is constantly diminishing. Viet Nam is gradually gaining more regular consumers who soon become partners. In the past three years, the export turnover of Vietnamese rice has been valued from 850 million USD to 1 billion USD.

## 2.3 Coffee

### 2.3.1 Area and production

Coffee growing was not so well developed in Viet Nam in the past because the Vietnamese people mostly drink tea. Export of coffee is still limited and it is exported mainly to Eastern Europe and the former Soviet Union. Since the launch of the policy on expansion of trade, in addition to the Eastern European and the former Soviet Union markets, Viet Nam has expanded its relations with a lot of customers and now exports coffee to many countries in the world. Currently coffee is grown in many places of the country, particularly in the Central Plateau where natural conditions are suitable for coffee growing and where coffee has become a crop of high economic value. The coffee growing area has increased rapidly from 44,700 ha in 1985 to 278,400 ha in 1997. According to the statistical data of the Ministry of Agriculture and Rural Development, there are currently 300,000 ha of coffee plantations, an increase of almost 7 times compared to that in 1985. With about 2,000 ha of coffee plantations, Dak Lak province has the largest coffee growing area.

**Table 2.4 Coffee planted area, Viet Nam, 1985-1997.**

| Year | 1985 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|---|---|---|---|---|
| Area ('000 ha) | 43.9 | 123.7 | 119.3 | 115.1 | 103.7 | 101.3 | 123.9 | 186.4 | - | - |
| Production ('000 tons) | 12.3 | 40.8 | 92 | 100 | 119 | 136 | 180 | 218 | 320.1 | 400.3 |

Source: General Statistical Office of Viet Nam.

Along with expansion of coffee growing area, the application of technical advancements as well as requirements of markets and economic efficiency forced businesses and households to step up intensive farming by irrigating these areas during the dry season, using more fertilizers and taking better care of the coffee trees. Coffee yield has increased from one ton of coffee beans per ha in 1985 to three tons per ha in 1997. Coffee yield in Dak Lak province reaches 5-7 tons of coffee beans per ha.

### 2.3.2 Trade

**Table 2.5 Export of coffee.**

| Year | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|
| Export ('000 tons) | 176.4 | 248.1 | 283.7 | 404 | 430 |

Source: General Statistical Office of Viet Nam.

Under the impact of expanded markets, coffee-growing area has expanded and coffee yield has increased rapidly, hence there has been considerable increase in coffee output. Coffee output increased from 12,300 tons of coffee bean in 1985 to 400,000 tons in 1997, an increase of 32.52 times. Coffee beans produced in Viet Nam goes mainly for export; local consumption accounts for only 10% of total production. Coffee is suited to basaltic soil and has the highest economic value among the currently grown technical crops.

As shown in Table 2.6 the coffee export markets have been widening. In the crop of 1993 - 1994, only 10 countries consumed 98.67% of the total coffee exports of Viet Nam, and the remaining 24 countries consumed 1.33% of the total exports. From 1994 to 1995, the coffee market expanded to 36 countries. The 10 most important consumers imported 85.32% of the total exports and 26 other countries consumed 14.68%. In 1995 - 1996, the 10 biggest consumers imported 79.22%, while 27 other countries consumed 20.78%. In 1996 - 1997 the consumer market expanded to more than 40 countries and the 10 most important consumers imported 78.93%, while 30 countries consumed 21.07%. These data indicate that Vietnamese coffee already has its own markets, its regular consumers and constantly finds new partners. The coffee export volume has constantly increased and its quality is highly appreciated by consumers. In the past few years, the coffee price in the world market has been unstable and tends to decrease. This also affects the coffee producing areas in Viet Nam.

**Table 2.6 Shares of major coffee export markets of Viet Nam, 1993-1997.**

| 1993 –1994 | | 1994 –1995 | | 1995 –1996 | | 1996 - 1997 | |
|---|---|---|---|---|---|---|---|
| Country | Share (%) | Country | Share (%) | Country | Share (%) | Country | Share (%) |
| Singapore | 42.51 | Germany | 17.40 | U.S.A | 28.58 | U.S.A | 24.29 |
| Germany | 15.88 | U.S.A | 17.32 | Germany | 11.92 | Germany | 15.13 |
| Holland | 17.76 | Singapore | 17.29 | Poland | 7.48 | France | 7.11 |
| Japan | 4.39 | Poland | 7.48 | Japan | 5.88 | Belgium | 6.82 |
| Spain | 4.20 | Japan | 7.42 | Italy | 5.51 | Italy | 5.57 |
| France | 4.04 | South Korea | 4.86 | England | 5.37 | Spain | 5.54 |
| Italy | 3.64 | Spain | 4.06 | Spain | 4.04 | England | 5.37 |
| Belgium | 2.93 | Algeria | 3.77 | China | 3.95 | Algeria | 3.16 |
| England | 1.73 | England | 2.96 | France | 3.71 | Poland | 2.94 |
| Jordan | 1.59 | France | 2.76 | Singapore | 3.67 | Japan | 2.95 |
| **Total** | **98.67** | | **85.32** | | **79.22** | | **78.93** |

Source: General Statistical Office of Viet Nam.

### 2.3.3 Coffee processing technology

As mentioned above, 90% of Vietnamese coffee beans are exported. The remaining 10% are manufactured in the local market. Thus, coffee processing technology concentrates on manufacturing coffee beans from coffee fruits with two methods: wet processing and dry processing. The technology of wet processing can ensure the quality of the coffee, but this method is too expensive. For this reason, in Viet Nam only 3% to 5% of coffee total production is processed in this way. Dry processing technology has been popularly used recently.

## 2.4 Rubber

### 2.4.1 Area and production

Rubber trees were introduced into Viet Nam only about one hundred years ago and rubber was found to grow well in the basaltic soil of the eastern part of the South and the Central Plateau. Rubber trees can tolerate dry conditions and don't require watering in the dry season. The Government of Viet Nam has implemented a rubber-growing program for many years, focusing mainly on state-owned enterprises. After the launch of the Land Law, the farmer households also use 3 - 5 ha of forest areas and plots of land allocated to them for growing rubber. Therefore, the rubber growing area has increased rapidly in Dak Lak, Gia Lai and Kon Tum provinces. Currently the area under rubber plantations is 329,000 ha, an increase of 3 times from 108,200 ha in 1985 (Table 2.7). Rubber yields also increased but still not to a high level.

**Table 2.7 Planted area and production of rubber, Viet Nam, 1985-1997.**

| Year | 1985 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|---|---|---|---|---|
| Area ('000 ha) | 108.2 | 215.6 | 221.7 | 220.6 | 212.4 | 242.4 | 258.5 | 278.4 | 278.3 | 329 |
| Production ('000 tons) | 47.9 | 50.6 | 57.9 | 64.6 | 67 | 96.9 | 128.8 | 124.7 | 142.5 | 180.7 |

Source: General Statistical Office of Viet Nam.

### 2.4.2 Trade

Rubber production has also increased from 47,900 tons of dried latex in 1985 to 180,700 tons in 1997, an increase of 3.77 times. Eighty percent of the dried latex is exported, and the remaining 20% is used for manufacturing of products for local consumption (Table 2.8). In recent years, because of decreased prices for natural rubber in the world, rubber production has been below demand. Practice shows that rubber production is still of lower economic efficiency compared to some other technical crops such as coffee and pepper grown on the same type of land.

**Table 2.8 Exportation of rubber.**

| Year | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|
| Rubber ('000 tons) | 135.5 | 138.1 | 149.5 | 194 | 197 |

Source: General Statistical Office of Viet Nam.

Rubber products, which are used in industry to create new products, occupied 20% of the local rubber market and most of the rest is exported. Rubber production of Viet Nam is still low compared to Malaysia, Thailand and Indonesia. In the past few years, we have mostly exported to industrialized countries of Asia such as Korea, Japan and China and also widened the market to EU and American markets.

## 2.5 Tea

### 2.5.1 Area and production

Tea plantations are concentrated in mountainous provinces in North Viet Nam and in Lam Dong province in the Central Plateau. Provinces in the North include Thai Nguyen, Phu Tho, Yen Bai, Tuyen Quang, Son La, and Ha Giang, with Thai Nguyen being the best known location. Tea is sold in domestic markets, mainly in the form of dried buds. Tea is a popular drink in Vietnamese households. Tea is suited to the midland soil; Viet Nam also has Shan tea which is grown in the highland areas over 1,000 m above sea level in Yen Bai, Tuyen Quang and Ha Giang. Tea quality is also fairly well known. After the launch of the economic

renovation tea growing activities were rehabilitated and developed but at a low pace because of its low economic efficiency, low price and high investment level. The tea growing area increased from 50,800 ha in 1985 to the present area of 81,700 ha, an increase of 60% (Table 2.9).

**Table 2.9 Planted area and production of tea.**

| Year | 1985 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|---|---|---|---|---|
| Area ('000 ha) | 50.8 | 58.3 | 60 | 60 | 62.9 | 63.4 | 67.3 | 66.7 | 74.8 | 81.7 |
| Production ('000 tons) | 28.2 | 30.2 | 32.2 | 33.1 | 36.2 | 37.7 | 42 | 40.2 | 46.8 | 52.3 |

Source: General Statistical Office of Viet Nam.

Due to many factors, but mainly cultivation intensity, yields in fresh tea buds from place to place are not the same. The average yield in the whole country was only 3,240 kg of fresh tea buds per ha in 1991 and 3,410 kg per ha in 1995. Because of market demands tea growers do not cut tea trees in winter any more. Instead, they irrigate and fertilize tea plantations for harvest during wintertime. The price of tea during winter, especially close to Viet Nam's traditional New Year (Tet), increases by 1.5 to 2 times. Although tea yield in winter is not so high, value gained is high.

Currently in Viet Nam fresh tea buds are produced mainly by farmer and worker households. The tea growing areas therefore increased substantially. In intensive tea growing areas, such as Thai Nguyen, tea yield reaches 7,000-8,000 kg/ha.

### 2.5.2 Trade

Tea production increased from 28,200 tons of dried buds in 1985 to 52,300 tons in 1997, an increase of 1.85 times. Only about 60% of the tea production is exported, mainly the black tea product (Table 2.10). Viet Nam's green tea is not yet competitive in the world market, therefore its production is not stable.

**Table 2.10 Export of tea from Viet Nam.**

| Year | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|
| Tea ('000 tons) | 23.5 | 18.8 | 20.8 | 20.8 | 31.0 |

Source: General Statistical Office of Viet Nam.

Tea is a traditional plant of Viet Nam that has been exploited for a long time. Almost all Vietnamese families drink tea and the local market is the main market. In 1996, the whole country consumed 22,000 tons of dry tender tea leaves of all sorts which was 47% of the total tea production. Due to economic development, citizens' incomes have been raised and thus, tea consumption has increased. According to an estimation, if the citizens' incomes increased 1%, the tea consumption would increase by 0.15-0.2%. Apart from being consumed in the local market, Vietnamese tea is also exported to the world market. From 1986 to 1990, the tea total production of Viet Nam gained 30.24 thousand tons. The annual average exports were 13.7 thousand tons, taking 45.3% of the total tea production. From 1991 to 1995, tea total production annually gained 37.84 thousand tons in which 21,000 tons were exported. Export turnover gained 32.6 million USD.

The main export markets of Vietnamese tea until 1990 were the East European countries and the Soviet Union (80% - 85% of the exported total production of tea). Hong Kong, Singapore and Chinese markets occupied 15% to 20% of the total market. After 1990, the markets of the Soviet Union and East Europe fluctuated making tea exports stagnant. In the past few years, Vietnamese markets have expanded to the Central East: Iraq, Iran, Libya and Syria where Vietnamese tea exportation is still unstable (from 27,000 to 30,000 tons/year). In general,

the tea export market is not stable and the main exported tea is black tea, for which the processing technology is too old and out-of-date.

## 2.6 Groundnut

### 2.6.1 Area and production

Groundnut is grown in almost all regions in Viet Nam. However, groundnut cultivation is currently concentrated in Nghe An province and some provinces in the midland in the North like Bac Giang and Vinh Phuc. The quality of groundnut grown in these two regions is good; groundnut grains are big and of export quality. In other localities such as the Central Plateau and Eastern part of the South, groundnut can be sold mainly in domestic markets. Viet Nam exports a large quantity of groundnut to the Eastern European and the former Soviet Union markets, including both whole and shucked groundnut, ranging from 70,000 to 80,000 tons per year. The groundnut growing area has remained at a level of 200,000 to 250,000 ha (Table 2.11). Groundnut yields also increased but still not to a high level.

**Table 2.11 Planted area and production of groundnut.**

| Year | 1985 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|---|---|---|---|---|
| Area ('000 ha) | 212.7 | 208.6 | 201.4 | 210.9 | 217.3 | 217.2 | 248.2 | 259.9 | 262.8 | 251.3 |
| Production ('000 tons) | 202.4 | 205.7 | 231 | 234.8 | 226.7 | 259.3 | 294.2 | 334.4 | 357.7 | 325.9 |

Source: General Statistical Office of Viet Nam.

### 2.6.2 Trade

Groundnut is a short duration crop. Groundnut production of Viet Nam keeps increasing. Total peanut output has increased from 202,400 tons in 1985 to 352,900 tons in 1997, an increase of 1.74 times. Groundnut is mainly consumed locally. The average annual volume of exported groundnut is more or less stable at 100,000 tons (Table 2.12). Increased groundnut output is obtained mainly because of higher yield from the same growing area by applying scientific advancements.

**Table 2.12 Export of groundnut from Viet Nam.**

| Year | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|
| Exported ('000 tons) | 119.2 | 111 | 127 | 84 | ? |

Source: General Statistical Office of Viet Nam.

Groundnut is domestically consumed at a rate of about 50 to 60%. The rest is for export. Before 1990, Vietnamese groundnut was mostly exported to the East European countries and the Soviet Union. Since 1991, the groundnut market has expanded to other countries in Asia such as Hong Kong, Singapore and also to Europe. Because of the low quality of Vietnamese groundnut, the total exports only gained about 100,000 tons/year.

## 2.7 Effects of the economic crisis on selected commodities

In recent years, the economic development of Viet Nam, to some extent, has been affected by the economic recession and crisis in South East Asian countries. However, the influence of the regional crisis has not been observed clearly in Vietnamese agriculture, since in this sector there is still little foreign investment and very few joint ventures. Agricultural production is based mainly on small farmer households with backward production techniques. Thus, the majority of farm work is done manually. The hardest hit domain was the export

market of agricultural produce. The buying power of countries hit by the crisis has decreased, and their currencies have been devaluated restraining agricultural exports of Viet Nam.

The Government of Viet Nam has made great efforts in foreign exchange management to keep the exchange rate between the Vietnamese dong and the US dollar stable. Therefore, the export of agricultural produce has been relatively stable. The factor that impacted most was the unsuitability of the price of agricultural produce in the international market. When the price of agricultural produce in international markets fell, sometimes below the production cost, the export of agricultural produce became stagnant and this has influenced the producers who couldn't expand their production and practise intensive production. Some zones have even reduced their production areas.

## 2.8 Recommendations to enhance farm product production and consumption

### 2.8.1 The potential for production of farm products

Viet Nam still has great potential for production of farm products. Land resources are available for development of both annual and perennial crop cultivation. The labor force is available and the climatic conditions favorable to intensify farming and increase crop plantations. At present, investment has been made to improve the infrastructure bases that serve for production and the expansion of trade. Viet Nam has participated and is participating in the activities of some of the regional and world commercial organizations such as AFTA, APEC, and WTO. With the present resources, capacities and achievements, the Government's policies for the period of 1998 - 2000 and 2010 are as follows:

- Promote production of commodities to meet the demand of domestic consumption and export; improve the economic efficiency in commodity production with a view to strengthening competitive capacity in the world market and raise up the economic efficiency in export.
- Develop the processing industry; strengthen construction of infrastructure bases in order to actively support the improvement of product quality.
- Foster the application of advanced technologies to create more high quality products to meet the requirement of the markets.
- Gradually perfect and construct the network of policies and the legislation system to facilitate commercial expansion, such as increasing the export volume, foreign investment, encouraging the economic components/sectors to participate in trading and export activities. Improvement is also required for the policies of finance, taxation (including import, export taxes), banking and the state budget support.

In agricultural production, from now to the year 2000 and 2010, the strategy is to further develop agriculture on the basis of sustainable ecology, diversified production and integration of agriculture, forestry and processing industries so as to gradually speed up the industrialization and modernization program, quickly increase the quantity and quality of farm products to meet the demand of domestic consumption and export with a high economic efficiency and improve the living conditions of the population and contribute to rural development. Starting from these strategies, MARD has worked out its own goals and major indicators for the period 1998-2000 - 2010.

### 2.8.2 Objectives and major indicators of the target

The objectives of MARD are listed below and major indicators are given in Table 2.13.

- To guarantee national food security.
- To increase commercial production in the agricultural sector from the present rate of 25% to 30% in the year 2000 and 40% in 2010.

- To increase the export value of farm products from US$ 2.4 billion to US$ 4.0 billion in the year 2000 and US$ 9 - 10 billion by 2010, making the export value per capita increase from US$ 41 to US$ 60 by the year 2000 and US$ 140 in 2010.
- To further strengthen the role and position of Vietnamese agriculture in the region and worldwide.

**Table 2.13 Major indicators on production and export of farm products.**

| | | 1998 | | 2000 | | 2010 | |
|---|---|---|---|---|---|---|---|
| Indicator | Unit | Total | Export | Total | Export | Total | Export |
| 1. Agric. growth rate | % | 4.5-4.7 | | 4.5-4.7 | | 4.0-4.5 | |
| 2. Major products: | | | | | | | |
| Food in rice equivalent | million tons | 31.0 | 3.5-4.0 | 32.0 | 4.0 | 38.0-40.0 | 4.0 |
| Meats (live weight) | 1,000 t | 1,700 | 50 | 2,000 | 200 | 4,000 | 1,000 |
| Coffee (seed) | ton | 380-400 | 360-370 | 400-450 | 380-400 | 500-550 | 450-500 |
| Rubber (dry latex) | ton | 180-190 | 160 | 200-220 | 180 | 350-380 | 300 |
| Tea (dry bud) | ton | 50 | 30-35 | 70 | 40-45 | 150-180 | 125-150 |
| Vegetables | ton | 5,000 | 50 | 6,000 | 100 | 10,000 | 1,000 |
| Fruits | ton | 4,000 | 100 | 5,000 | 300 | 10,000 | 1,000 |
| Sugar | ton | 600 | | 1,000 | | 1,500-1,600 | |
| Cashew nut | ton | 40 | 35 | 50 | 40 | 120 | 100 |
| Oil plants | | | | | | | |
| Coconut | ton | 1,200 | 250 | 1,500 | 300 | 2000 | 400 |
| Groundnut | ton | 350 | 250 | 400 | 300 | 500 | 400 |
| 3. Export value | US$ billion | | 2.7-2.8 | | 4.0 | | 9-10 |

Source: Pushing up the Production of Agricultural Commodities, Enhancing Competitiveness and Effectiveness of Agricultural Exports (1998-2000-2010), Report of the Ministry of Agricultural and Rural Development.

### 2.8.2.1 Food crops

To fulfill the plan of exporting 3 - 4 million tons of rice per year in the years to come, Viet Nam needs to take the following steps:

- Intensification of the existing area of paddy, investment in expanding the cultivated land through land reclamation and increase of cropping intensity in the areas that are still rich in resources; increase of the rice production area for export, which is estimated at 1.3 million ha in the Mekong River Delta and 300,000 ha in the Red River Delta; production every year of around 13-14 million tons of high quality rice, of which 7 - 8 million tons is for export.
- Development and multiplication of the high quality varieties to meet the demand of production.
- Increase of the maize production areas in the Red River Delta, Northern Mountain and Midland, the Mekong River Delta, Southeast region, Central Highland with a total area of 1 million ha, which is estimated to return a production of 5-6 million tons of commercial maize.
- Investment in processing and storage to upgrade the existing warehouses, milling and polishing network geared to export.
- Investment in construction of product drying units in the Mekong River Delta and other areas where a great amount of products can be produced.
- Expansion of markets and the number of market partners, strengthening of the sustainability and stability of the markets focusing on those of ASEAN, Middle East, Latin America, Russia, Europe, and Japan.
- Completion of the rice import, export mechanisms following commercial liberalization and suitable steps; strengthening and enhancing the capacity of different economic sectors that would invest in this field of activity.
- Strengthening capital investment in order to carry out the above-mentioned measures with a cost estimated at US$ 800 million and export value at 1-1.2 billion USD/year.

**2.8.2.2 Coffee**

To expand the coffee area to 400,000 ha by the year 2005 with production of 500,000 tons of beans, of which 450 - 480 thousand tons would be for export to return an export value of US$ 1 billion, the following measures should be worked out:

- Established of plantations for the existing 250,000 ha of Robusta coffee in Tay Nguyen (Central Highland) and the Southeast region; replanting of 100,000 ha of Arabica coffee in some of the provinces in the Northern Mountain and Central Zones with a view to ensure the proper ratio of 2 Robusta coffee : 1 Arabica to increase the export value.
- Intensified investment in processing technology: drying, pre-processing, storage, and refinery. In 1998 - 1999, the priorities are set to invest in constructing processing units, packaging, grading of coffee for export; constructing the coffee processing factories to process coffee and high quality coffee products; diversifying the product items for domestic consumption and export.
- Market promotion of products, retaining the confidence of customers in order to maintain business ties with the traditional market in Europe; strengthen the newly-established markets in America, Middle East and expand the markets to China and Japan.
- Increase the capital investment for coffee production and processing, which is estimated at 390 - 400 million USD in the years to come.

**2.8.2.3 Rubber**

To achieve a constant output of 350-380 thousand tons per year and 350-380 tons of dry latex for export with a total export value of 350-450 million USD, the rubber sector should:

- Intensify the existing land area for rubber plantation with a yield estimated at 1-1.2 tons of dry latex/ha; efficiently implement the World Bank projects on coffee development and rubber management and exploitation techniques applied for the rubber areas in the Southeast region.
- Expand the existing rubber area; replant every year 30,000 ha with the focus on developing small rubber households in which the state would provide financial and technical support. From 1998, the projects to develop 60,000 ha of rubber under the World Bank loan program and the French Development Fund will be implemented in the Central Highland, Central Coastal area, and the Southeast region so that the area under rubber should be 700,000 ha by the year 2010.
- Invest in developing the rubber and rubber wood processing industry in order to increase the processing capacity from 100,000 tons to more than 300,000 tons/year. Try to achieve 50% finished products by the year 2010.
- The investment fund required for the rubber sector is estimated at 600 million USD for a sustainable development of 700,000 ha.

**2.8.2.4 Tea**

In Viet Nam, resources still remain huge for developing the tea crop. To achieve the targets for the year 2010 of tea area: 100,000 - 120,000 ha; tea output in dry bud: 150,000 - 180,000 tons, with 120,000 - 150,000 tons for export; export value of approximately 300 million USD or 6-7 time increase, the tea industry should:

- Enhance intensification on tea plantation areas in existence; upgrade the poor tea plantations and create high productivity of clean tea.
- Replace the old and degenerated tea plantations by planting new high-yielding varieties introduced from Japan and Taiwan; develop planting of Shall and Tuyet (Snow) tea on highland areas of more than 1000m above sea level.

- Renovate and replace the old processing facilities; establish joint ventures with foreign counterparts to import more modern processing facilities.
- Improve the existing organizational and management system of the tea industry with a view to streamlining the activities from production to processing and export; actively look for more markets both at home and overseas.
- The investment fund is estimated at US$340 million, of which 40-50% is in the form of international loans, 30-35% obtained through joint ventures established with foreign partners and 5-10% from the state budget.

#### 2.8.2.5 Groundnut

Groundnut is an annual crop and can be planted widely on different soil types. By the year 2000, Viet Nam will attempt to raise the groundnut growing area to 250,000 ha with a total output of 350,000 tons, of which around 250,000 tons are for export with a value of US$ 75-80 million. By the year 2010, the objective is an output of 500,000 tons with 400,000 tons for export with an export value of US$ 120 million per year. The measures that should be implemented include:

- Select and introduce into production better quality varieties to satisfy the client demand.
- Increase the groundnut productivity.
- Strengthen and expand the markets.

For other crops as well as the livestock sector, the principles are also to increase the output and quality of products, expand the markets, and improve the processing technologies in order to increase export efficiency.

## 2.9 Conclusions and remarks

In the 10 years of renewal in Viet Nam's economic mechanisms, the economic and trade-expanding policy has had a great effect on the development of agricultural commodities such as rice, coffee, tea, rubber and groundnut. Not only has the sown-area of these crops increased but the productivity and product quality have also improved, because of the scientific and technological progress applied to production. Products from the plants increased sufficiently to satisfy the local and exterior demands. The increased export of agricultural products has stimulated the development and improvement of the quality of the products, especially by concentrating on investment for processing, preserving, packaging, and wrapping technologies. To ensure the continuity of the agricultural products from production to exportation requires a well-developed organization system, operation mechanism and infrastructure conditions.

The implementation of economic renovation policies to transform a previously bureaucratic centralized economy to a more market-oriented approach managed by the state has created great incentives for farmers to improve performance of agriculture in Viet Nam. The liberalization of domestic and foreign trade in accordance with the recognition of farmer households as autonomous economic units has further stimulated the supply of agricultural products for domestic demand and export. Moreover the continuous improvement of renovation policies along with a substantial increase in investment in agricultural production has strongly affected the diversification of agriculture.

Viet Nam has joined ASEAN and is in the process of preparing for participation in WTO. This will facilitate more trade liberalization and consequently improve commercial agriculture in the country.

The study on trade liberalization, therefore, is very useful as to give some grounds for making policy proposals in order to fully exploit the potential of agriculture and to overcome

the constraints and accelerate more efficient agricultural trade and integration into regional and world markets.

# 3. Effects of Trade Liberalization on Selected Commodities at the National Level

## 3.1 Analysis methodology and selection of commodities

To analyze the effect of trade policies at the aggregate level, this chapter is based on different methods, including econometric estimation of supply and demand behavior parameters based on secondary data provided by the General Statistical Office, and construction of a partial equilibrium model of Viet Nam's agricultural trade (MOVAT) with a focus on some major exportable crops. The description of the model as well as the assumptions and data applied are presented in the sections below.

Trade liberalization in agriculture is a tremendous process that affects the overall economy. However, a practical way to start the analysis of effects of trade liberalization in agriculture is to concentrate on some major commodities that may give a more detailed picture of reality. There are several reasons to select these four crops for the study. First, these sub-sectors account for the largest proportion of agricultural production and exports. Furthermore, these crops are closely related to the key issues of economic development such as income generation and export earnings, food security and rural poverty alleviation.

The major exportable commodities mentioned here are rice, coffee, tea and groundnut, which play substantial roles in the development of Viet Nam's agriculture. In 1997, the selected crops in total contributed around 48% of gross agricultural product or almost 60% of cultivated area (Table 3.1).

**Table 3.1 Composition of Viet Nam's agricultural GDP.**

| | 1997 | 1990-1997 | |
|---|---|---|---|
| Component | (bill. dong) | Average (bill. dong) | Growth (%) |
| GDP | 221,872 | 167,836 | 8.45 |
| Agriculture's Share | 55,923 | 48,201 | 4.39 |
| GOA | 91,235 (100%) | 75,692 | 5.70 |
| Share of: | | | |
| Livestock | 15,206 (16.7%) | 12,633 | 5.62 |
| Cultivation | 73,457 (80.5%) | 60,808 | 5.74 |
| 4 Major Crops: | 43,714 (49.9%) | 34,781 | 6.71 |
| Rice | 36,663 (40.2%) | 30,815 | 5.33 |
| Coffee | 5,089 (5.6%) | 2,403 | 24.25 |
| Tea | 418 (0.5%) | 320 | 7.16 |
| Peanut | 1,544 (1.7%) | 1,243 | 7.47 |

Source: Viet Nam's GSO and Yearbook 1997.

Note: Agriculture includes forestry and fishery. GDP figures in 1997 are at fixed price of 1994, and figures for gross output of agriculture (GOA) are at the current price.

These four crops on average in the 1990-1997 period covered nearly 70% of the total sown area. Among them rice is the largest crop in terms of area occupied as well as production and export volumes. Moreover, it is important to note that the selected crops have significant roles in continuously increasing contributions to agricultural export. During the last five years (1993-97) the four crops together brought in about 66.5% of the total agricultural export earnings (Tables 3.2 and 3.3).

**Table 3.2 Viet Nam's import and export by sector.**

| | 1997 | 1993-97 | | | |
|---|---|---|---|---|---|
| | Mill. US$ | Mill. US$ | Growth (%) | Share (%) | |
| Total Import | 11,200.0 | 8,049.8 | 29.98 | | |
| Total Export | 8,850.0 | 5,718.8 | 31.22 | 100.0 | |
| Trade Balance | -2,356.0 | -2,331.0 | | | |
| Agricultural Export | 2,400.0 | 1,709.2 | 27.09 | 29.9 | 100.0 |
| Export of the 4 Selected Crops: | 1,762.9 | 1,137.3 | 30.35 | 19.9 | 66.5 |
| Rice | 890.4 | 623.9 | 23.82 | 10.9 | 36.5 |
| Coffee | 767.6 | 410.1 | 47.02 | 7.2 | 24.0 |
| Peanut | 57.6 | 72.2 | -1.64 | 1.3 | 4.2 |
| Tea | 47.3 | 31.1 | 15.79 | 0.5 | 1.8 |

Source: Viet Nam's GSO and Yearbook 1997.

**Table 3.3 Sown area and yield of crops in Viet Nam.**

| | 1990 – 1997 | | |
|---|---|---|---|
| | Average | Growth (%) | Share (%) |
| Sown Area ('000 ha) | | | |
| All Crops | 10,186.4 | 3.37 | 100.0 |
| 4 Selected Crops | 7,062.3 | 2.62 | 69.4 |
| Rice | 6,603.1 | 2.35 | 64.8 |
| Coffee | 159.2 | 12.38 | 1.6 |
| Tea | 67.1 | 4.51 | 0.7 |
| Peanut | 232.9 | 3.24 | 2.3 |
| Crop Yield (ton/ha) | | | |
| Rice | 3.52 | 2.91 | |
| Coffee | 1.25 | 10.56 | |
| Tea | 2.68 | 2.54 | |
| Peanut | 1.22 | 4.10 | |

Source: Viet Nam's GSO and Yearbook 1997.

## 3.2 Competitiveness of the selected crops

Overall indications of the comparative advantages of Viet Nam's agricultural sector, especially of the selected crops in this study, can be seen through the rapid expansion of exports from a deficit of various agricultural products prior to 1989 to becoming one of the world's largest exporters in rice and coffee. It is important to note that one of the commonly used indicators for comparative advantage of agricultural production is domestic resource cost (DRC). This indicator represents the efficiency of using domestic resources to generate a unit of foreign exchange. The DRC indicators for the crops concerned, which were computed based on data of the Agricultural Commodities-Specific Survey conducted by the Institute of Agricultural Economics (IAE) in 1996-1997, are shown in Table 3.4. From these data, it seems that Vietnamese farmers are among the lowest-cost producers in the region and in the world with regard to some crops such as rice, coffee, peanut and tea. The cost of production for these crops tends to be only around half of the border price. However, it should be borne in mind that the current low level of agricultural wages is one important factor that makes Vietnamese agricultural commodities more competitive.

**Table 3.4 Some economic indicators for the selected crops in Viet Nam.**

| | Unit | Rice | | Coffee | | Tea | | Peanut | |
|---|---|---|---|---|---|---|---|---|---|
| | | RRD | MRD | CH | NCC | NMM | CH | NMM | NCC |
| Sample size | HH | 391 | 1004 | 405 | 101 | 453 | 201 | 151 | 245 |
| 1. Sown area | ha /HH | 0.45 | 2.66 | 1.08 | 0.88 | 0.35 | 0.61 | 0.13 | 0.15 |
| 2. Yield | kg/ha | 5,825 | 5,371 | 3,448 | 735 | 5,879 | 5,021 | 1,289 | 1,645 |
| 3. Man-days used | m-d/ha | 141.5 | 100.3 | 500 | 289 | 527 | 355 | 256 | 193 |
| Of which, hired | m-d/ha | 13.0 | 13.5 | 82.9 | 6.8 | | 19.6 | | |
| 4. Production cost (PC) | D/kg | 1,220.3 | 1,051.6 | 7,352 | 10,193 | 1,602 | 1,452 | 3,577 | 4,076 |
| Of which, seed | % | 7.5 | 9.5 | | | | | 16.2 | 21.0 |
| Fertilizer | % | 21.4 | 20.6 | 29.4 | 29.6 | 15.5 | 29.1 | 27.4 | 21.4 |
| Labor | % | 27.7 | 22.6 | 39.4 | 38.5 | 51.7 | 44.9 | 41.5 | 38.1 |
| 5. Share of non-tradable in PC | % | 73.7 | 59.8 | 68.4 | 69.8 | 73.9 | 66.7 | 81.5 | 87.3 |
| 6. Domestic price | D/kg | 1,925 | 1,354 | 10,323 | 10,308 | 1,581 | 1,350 | 4,536 | 4,686 |
| 7. Border price (BP) | D/kg | 1,899 | 1,757 | 15,844 | 15,844 | 3,951 | 3,951 | 7,798 | 7,798 |
| 8. DRC | D/US$ | 0.58 | 0.49 | 0.33 | 0.50 | 0.30 | 0.25 | 0.37 | 0.44 |
| 9. Ratio PC/BP | | 0.643 | 0.599 | 0.464 | 0.643 | 0.405 | 0.367 | 0.459 | 0.523 |
| 10. Net benefit [(6)-(4)] | D/kg | 704.4 | 302.1 | 2971 | 115 | -21 | -102 | 959 | 610 |

Source: The IAE Commodity-Specific Survey 1996-1997.

Note: NMM = Northern Mountains & Midland; RRD = Red River Delta; MRD = Mekong River Delta;
NCC = North Central Coast; CH = Central Highland; NES = North-East South.
DRC = Domestic resource cost in economic value.
HH = household.

## 3.3 Trade-related policies

Since the early 1980s internal trade with respect to the crops in concern has been gradually liberalized. All the market interventions such as fixed prices, product delivery quota and state monopoly in domestic trade were abolished. Farmers were given control over the production process and allowed to sell the produce to markets of their choice. The restrictions of agricultural commodity flows across provincial boundaries were also removed in the first years of the 1990s. The economic restructuring in Viet Nam that substantially reduced the predominant role of the public sector in agricultural marketing and processing has paved the way for more active involvement of the private sector in economic life. The domestic trade of agricultural products, therefore, is now mainly in the hands of the private sector, with an estimated market share of approximately 60-80%.

On the other hand, some intervention in the agricultural market has been kept intentionally. In an attempt to stabilize domestic prices, the state trading companies with subsidized working capital were instructed to purchase agro-products (mainly rice) from farmers and private traders when market prices fell below the prior determined level. In the country, some “general” commodity-specific state corporations engaged in distribution and exports of major agricultural commodities are entitled to distribute subsidized loans and export quotas to provincial companies.

In an attempt to control external trade, the government of Viet Nam has adopted several border measures. Apart from the implementation of quality management and SPS inspection measures necessary to protect human, animal or plant life or health, customs duties are also applied for agricultural trade. However, it should be noted that the customs duties in form of taxes on exports/imports levied at the border are not very high and not effective in terms of trade restriction. Calculation of customs duty is based on F.O.B. price for exported goods and C.I.F. price for imported goods. In some abnormal cases, duties are calculated based on minimum purchase or sale prices set by the state.

As the past policy-driven monopoly position of state-own companies is no longer effective, the government tends to resort to licensing procedures in foreign trade activities as the main measure to ensure food security and price stability for its low-income population. Thus, imports or exports must be made through authorized traders, companies are mainly allowed to trade only goods related to their registered businesses, deposits are required prior to getting trade licenses and so on. This procedure has substantially constrained Viet Nam's agricultural trade.

Since 1989, the import-export quota policy (applied mainly to fertilizer imports and rice exports) and the licensing procedures limiting foreign trade mainly to state companies have remained broadly unchanged. However, from 1996 some relaxation in the quota level started to appear. In addition, the naturally low domestic price caused by the low average level of income should be seen as a major obstacle to agricultural imports in Viet Nam.

## 3.4 Supply and demand behavior of the selected crops in Viet Nam, 1986-1997

In the study on the development of agricultural trade and the effects of trade interventions, the focus is on quantitatively identifying major relationships between prices and quantities of commodities supplied or demanded. For the case of Viet Nam, the following three functional forms are used to describe these relationships:

For the demand function:

$\ln Q^D = A^D + B^D * \ln P^D + C^D * \ln Y$ (or $Q^D = A^D + B^D * P^D + C^D * Y$)

For the supply function:

$\ln Q^S = A^S + B^S * \ln P^S$ (or $Q^S = A^S + B^S * P^S$)

For the price transmission function:

$P^S = A^T + B^T * P^D$

Where:

ln = Natural log;

$Q^D$ and $Q^S$ = Quantity demanded and quantity supplied;

$A^D$, $A^S$ and $A^T$ = Intercepts of demand, supply and price transmission functions;

$B^D$, $B^S$ and $B^T$ = Price elasticity of demand and supply (as in double-log form); and price coefficient of linear transmission function;

$C^D$ = Income elasticity of demand function;

Y = Income (or per capita GDP);

$P^S$ = Supply price;

$P^D$ = Demand price.

It should be noted that in our case, the double-log form tends to give better estimation of supply and demand functions of the selected crops except tea. However, for the price transmission the linear form turns out to be the best, since there is very close and straightforward relationship between producer and consumer prices.

Based on data provided by the General Statistics Office (GSO), all necessary parameters of the related functions, i.e. $B^S$, $B^D$, $B^T$ and $C^D$ with regard to the selected crops in Viet Nam are estimated and presented in the Table 3.5 (for more details, see the Appendix):

**Table 3.5 Demand and supply elasticity of the selected crops in Viet Nam, 1986-1997.**

| Parameters | Rice | Coffee | Tea | Groundnut |
|---|---|---|---|---|
| SPE (or $B^S$) | 0.2564 | 0.9448 | 0.1556 | 0.3307 |
| DPE (or $B^D$) | -0.4650 | -1.6561 | -1.4553 | -1.3901 |
| DYE (or $C^D$) | 0.5517 | 5.6705 | 4.6620 | 2.7664 |
| PTC (or $B^T$) | 0.5679 | 0.9035 | 0.2208 | 0.6910 |

Note: SPE = Supply own price elasticity; DPE = Demand own price elasticity; DYE = Demand income elasticity; PTC = Coefficient of farm-wholesale price transmission in linear form.

## 3.5 Vietnamese agricultural trade model for the selected crops

### 3.5.1 Model description

The model of Viet Nam agricultural trade (MOVAT) is designed to simulate the trade of the major important agricultural commodities, which are rice, coffee, tea and peanut, and to examine the effects of trade liberalization at the national level on their production, marketing and demand. Due to lack of data on the demand side (especially the consumer price for rubber products) a prior attempt to include rubber into the model could not be satisfied. The main part of the model is a system of equalities with eight blocks as follows:

Demand:

$$\ln Q^D_i = A^D_i + B^D_i(\ln P^D_i) + C^D_i(\ln Y_0) ;$$

Supply:

$$\ln Q^S_i = A^S_i + B^S_i(\ln P^S_i) ;$$

Price transmission:

$$P^S_i = A^T_i + (B^T_i)*(P^D_i) ;$$

Supply-demand balance:

$$Q^S_i*CONV_i*(1 - LOSS_i) - X_i + M_i = Q^D_i;$$

Export price relationships:

$$P^D_i + IXT_i \geq P^{WX}_i *NER *(1-T^X_i-NXM_i);$$

Import price relationship:

$$P^{WM}_i *NER*(1+T^M_i+NMM_i) + IMT_i \geq P^D_i;$$

Export quota:

$$X^Q_i \geq X_i ;$$

Import quota:

$$MQi \geq Mi .$$

Where:

- ln = Natural log;
- BD = Demand elasticity relative to consumer price;
- CD = Demand elasticity relative to income;
- $B^S$ = Supply elasticity relative to producer price;
- BT = Transmission coefficient of supply price relative to demand price;
- $Q^D$ or $Q^S$ = Quantity demanded or supplied;
- $A^D$, $A^S$ and $A^T$ = Intercepts of demand, supply and price transmission functions;
- $B^D$, $B^S$ and $B^T$ = Price elasticity of demand and supply functions, and price coefficient of transmission function;
- $C^D$ = Income elasticity of demand function;
- $Y_0$ = Original income (i.e. 1997 per capita GDP = 4.100 million dong);
- $P^S$ = Supply price;
- $P^D$ = Demand price.
- $P^{WM}$ and $P^{WX}$ = World prices for import and export at border port (in US$);
- X and M = Quantity exported and imported;
- XQ and MQ = Export and import quota;
- NXM and NMM = Normal export margin and import margin (in fraction of world prices);
- NER = Nominal exchange rate (in 1997 = 13,000 dong per US$).
- $T^M_i$ and $T^X_i$ = Import and export tax (in fraction);
- IXT and IMT = Implicit export tax and import tax bodied in quota or in other distortion factors (dong/kg);
- Conv = Conversion ratio from fresh to processed goods (in fraction);
- Loss = Crop losses (in fraction);

i = Crop index, including rice, coffee, tea and groundnut.

In the model, there are eight types of endogenous variables and four selected commodities. The total endogenous variables, therefore, amount to a number of 32. These eight types of endogenous variable are listed below.

$P^D_i$ and $P^S_i$ = Consumer and producer prices (dong per kg);

$Q^D_i$ and $Q^S_i$ = Quantity demanded and supplied (thousand tons);

Xi and Mi = Exports and import (thousand tons);

$IXT_i$ and $IMT_i$ = Implicit export and import taxes (dong per kg).

The exogenous variables (or parameters) prior estimated or identified outside of the model are:

$A^D_i$, $A^S_i$ and $A^T_i$ =Intercepts of demand, supply and price linkage functions;

$B^D_i$, $B^S_i$ and $B^T_i$ = Price elasticity of demand and supply curves, and coefficients of price transmission functions;

$C^D_i$ = Demand income elasticity;

$CONV_i$ = Conversion ratio from raw to processed goods (as fraction);

$LOSS_i$ = Product loss rate (in fraction);

$NXM_i$ and $NMM_i$ = Normal export/import margin, including extra processing cost for export/import (in fraction);

$P^{WX}_i$ and $P^{WM}_i$ = World price for export/import at border port (US$ per kg);

$X^Q_i$ and $M^Q_i$ = Export and import quota (1000 ton);

$T^X_i$ and $T^M_i$ = Export and import tax (in fraction);

NER = Nominal exchange rate (dong per US$).

**Table 3.6 Exogenous variables used in the MOVAT (for base scenario).**

| Parameters | Unit | Rice | Coffee | Tea | Groundnut |
|---|---|---|---|---|---|
| $A^D$ | | 12.415 | 10.832 | 9.409 | 13.469 |
| $A^S$ | | 8.347 | -3.045 | 4.278 | 3.050 |
| $A^T$ | | -114.240 | 536.000 | -39.000 | -63.205 |
| $B^D$ | | -0.465 | -1.656 | -1.455 | -1.390 |
| $B^S$ | | 0.256 | 0.945 | 0.156 | 0.331 |
| $B^T$ | | 0.568 | 0.904 | 0.221 | 0.691 |
| $C^D$ | | 0.552 | 5.671 | 4.662 | 2.766 |
| CONV | Fraction | 0.70 | 1.00 | 0.22 | 0.70 |
| LOSS | Fraction | 0.05 | 0.05 | 0.05 | 0.05 |
| NXM | Fraction | 0.10 | 0.20 | 0.40 | 0.10 |
| NMM | Fraction | 0.15 | 0.15 | 0.15 | 0.15 |
| IXT | Dong/kg | 221.8 | 1,166.2 | 2,323.8 | 479.4 |
| $T^X$ | Fraction | 0.02 | 0.07 | 0.05 | 0.05 |
| $T^M$ | Fraction | 0.15 | 0.15 | 0.15 | 0.15 |
| $P^{WX}$ | US$/ton | 242 | 1,900 | 1,500 | 700 |
| $P^{WM}$ | US$/ton | 300 | 2,300 | NA | NA |
| $X^Q$ | 1000 ton | 3,680 | 404* | 31.5* | 84.0* |
| $M^Q$ | 1000 ton | NA | NA | NA | NA |
| X0 | 1000 ton | 3,680 | 404 | 31.5 | 84.0 |
| M0 | 1000 ton | NA | NA | NA | NA |
| PD0 | Dong/kg | 2,930 | 16,000 | 9,000 | 7,257 |
| PS0 | Dong/kg | 1,550 | 15,000 | 1,950 | 4,950 |
| QD0 | 1000 ton | 13,121 | 16.5 | 15.47 | 138.3 |
| QS0 | 1000 ton | 27,645 | 420.5 | 235.1 | 352.9 |

Note: * Quota equivalents (export volume restricted by other distortion factors);

The magnitudes of most of exogenous variables used in the base scenario are 1997 levels. For option 1 and 2, the same exogenous variables as in base scenario are used; however, to simulate the free trade regime all export/import taxes and quota or quota equivalents are assumed to be removed. Moreover, with regard to option 2, the world price for Viet Nam's export is assumed to increase by 7% due to the impact of the Uruguay Round on Agriculture as projected by FAO.

In MOVAT, the demand/supply and price linkage functions are expressed in proxy forms. Although the price and income coefficients (or elasticity), such as $B^D$, $B^S$, $B^T$ and $C^D$ are taken from the results of econometric estimations (Table 3.5), the intercepts of related functions

are computed based on the original prices (PS0, PD0), income ($Y_0$) and quantities demanded/supplied (QS0, QD0) in 1997. The normal export/import margins (NXM or NMM) as well as conversion ratios and loss ratios are loosely estimated relying on the data of IAE's 1996-1997 commodity survey. In the baseline scenario, which is intended to simulate the current agricultural trade system with its existing policy distortions related to the selected commodities, the magnitude of most exogenous variables representing trade restrictions such as export or import quota and taxes (including implicit taxes or tax-equivalent of non-tax restriction measures) as well as the world prices (F.O.B./C.I.F. prices) are 1997 levels (see Table 3.6).

## 3.5.2 Trade liberalization options for the selected crops

### 3.5.2.1 The 1997 base scenario

The 1997 base scenario is the partial equilibrium that simulates production, consumption, trade and prices in 1997 for the selected crops: rice, coffee, tea and groundnut. In MOVAT, the base scenario is used as a reference for comparison with different trade policy options.

In the base-run scenario, the effective rice quota is assumed to be the 1997 rice export of 3,680 thousand tons. Exports of other related crops (i.e. coffee, tea and groundnut), to which no quotas were applied recently, are also constrained to the actual export level of 1997. By doing so, the policy-related distortion factors under the name of implicit taxes can be approximately identified. Export taxes and surcharges for rice, coffee, tea and groundnut are also assumed in the base-run, which amount to 2, 7, 5 and 5%, respectively.

Table 3.7 is provides the key variables in the base-run scenario related to rice, coffee, tea and groundnut.

**Table 3.7 Summary of base scenario: distorted markets in Viet Nam.**

| Item | Unit | Rice | Coffee | Tea | Peanut |
|---|---|---|---|---|---|
| Quantity supply | 1,000 ton | 26,594.1 | 441.2 | 232.5 | 352.9 |
| Quantity demand | 1,000 ton | 14,005.1 | 15.1 | 17.1 | 150.7 |
| Export volume | 1,000 ton | 3,680.0 | 404.0 | 31.5 | 84.0 |
| Consumer price | Dong/kg | 2,546.6 | 16,864.8 | 8,401.2 | 7,255.6 |
| Farm-gate price | Dong/kg | 1,332.2 | 15,781.8 | 1,817.7 | 4,950.4 |
| Implicit export tax: | Dong/kg | 221.8 | 1,166.2 | 2,323.8 | 479.4 |

Note: Quantities demanded are measured in converted weight of processed products.

### 3.5.2.2 Option 1 - removing export quota, export taxes and other distorted factors

The rationale behind the adoption of a quota policy or taxes and other policy distortions is well known. Trade restriction policy reflects a notion that the benefits to the economy in terms of food security, price stability or infant domestic industry protection, and the ultimate socio-economic and political security, are higher than the costs of foreign exchange lost. This can hardly be true, at least with respect to the overall development of the economy in the long run. Although the growing concern on negative effects of trade liberalization is not without merit, there is consensus that more liberalized world trade is beneficial to all.

In this section we attempt to use the partial equilibrium model of Viet Nam agricultural trade (MOVAT) to quantitatively examine the effects of trade liberalization on agriculture in Viet Nam with special focus on rice, coffee, tea and groundnut. The first policy option is to eliminate all distortion factors including trade quotas, taxes and other implicit constraints reflected in the ambiguous part of the gap between domestic and world prices. It implies that the assumption of a free trade regime is reducing the gap between domestic and world prices to the level of justifiable normal market margins only. In the MOVAT, this is simulated by removing all the constraints on exports of related crops, which were applied in the base-run scenario. The impact of trade liberalization measures in policy option 1 on production and trade of selected

crops in Viet Nam can be assessed by comparing the base-run scenario (distorted markets) with option 1 (without any trade restrictions).

Table 3.8 summarizes the effects of removing the export quota and taxes, including both explicit and implicit ones. According to the model, the removal of trade constraints in terms of export quota, and export taxes brings about an increase in consumer and producer prices of the selected commodities by 11.2 and 12.5%, respectively. The combined effect is that total export earnings from the crops concerned would rise up dramatically by around 26%. The overall producer gain appears to outweigh all the losses accruing to consumers, rent-seeking traders and government revenue making the net social welfare amount to US$ 306 million.

**Table 3.8 Result of removal of all trade restrictions (option 1) in comparison with base scenario of distorted markets.**

| | | By Individual Crop | | | | For All 4 Crops | |
|---|---|---|---|---|---|---|---|
| | Unit | Rice | Coffee | Tea | Peanut | Billion D | Million $ |
| Farm-gate price | Dong/kg | 1,494.0 | 18,399.0 | 2,546.7 | 5,596.1 | | |
| Change | Dong/kg | 161.7 | 2,617.3 | 729.0 | 645.7 | | |
| Percent change | % | 12.14 | 16.58 | 40.11 | 13.04 | 12.47 | |
| Consumer price | Dong/kg | 2,831.4 | 19,760.0 | 11,700.0 | 8,190.0 | | |
| Change | Dong/kg | 284.8 | 2,895.2 | 3,298.8 | 934.5 | | |
| Percent change | % | 11.18 | 17.17 | 39.27 | 12.88 | 11.23 | |
| Quantity supply | 1000 ton | 27,385.8 | 510.0 | 245.1 | 367.5 | 52,979.1 | 4,075.3 |
| Change | 1000 ton | 791.7 | 68.8 | 12.6 | 14.6 | 2,563.2 | 197.2 |
| Percent change | % | 2.98 | 15.60 | 5.40 | 4.14 | 5.08 | |
| Quantity demand | 1000 ton | 13,331.5 | 11.6 | 10.6 | 127.3 | 39,143.1 | 3,011.0 |
| Change | 1000 ton | -673.6 | -3.5 | -6.5 | -23.4 | -2,243.9 | -172.6 |
| Percent change | % | -4.81 | -23.08 | -38.24 | -15.50 | -5.42 | |
| Export volume | 1000 ton | 4,880.0 | 472.9 | 40.7 | 117.1 | 28,891.3 | 2,222.4 |
| Change | 1000 ton | 1,200.0 | 68.9 | 9.2 | 33.1 | 5,956.5 | 458.2 |
| Percent change | % | 32.61 | 17.05 | 29.10 | 39.37 | 25.97 | |
| Overall producer gain: | Bill. D | 7,685.8 | 1,377.0 | 787.8 | 336.6 | 10,187.2 | 783.6 |
| Of which, farmer gain | Bill. D | 4,365.5 | 1,244.8 | 174.1 | 232.6 | 6,017.0 | 462.8 |
| Consumer gain | Bill. D | -3,892.2 | -38.7 | -45.6 | -129.9 | -4,106.5 | -315.9 |
| Change in trader profit | Bill. D | 188.8 | 85.1 | 8.9 | 15.0 | 297.8 | 22.9 |
| Change in trade rent | Bill. D | -816.4 | -471.1 | -73.2 | -40.3 | -1,401.0 | -107.8 |
| Change in Gov. revenue | Bill. D | -231.5 | -698.5 | -30.7 | -38.2 | -999.0 | -76.8 |
| Net Social Gain | Bill. D | 2,934.4 | 253.7 | 647.2 | 143.3 | 3,978.5 | 306.0 |

Note: Nominal exchange rate is VND13,000 per USD.

Trade rent is assumed to be the implicit export tax embodied in export quota (applied for rice only) and in other policy distortion factors (for other crops).

Quantities supplied and quantities demanded for crops are measured in their different forms using conversion ratios.

### 3.5.2.3 Option 2 - increasing the world price for the selected crops by 7%

To examine the combined impact of internal and external trade liberalization under WTO and AFTA conditions, apart from the elimination of all trade restrictions in the base scenario, the second policy option also assumes an increase of 7% in the world prices for exports of the four relevant crops in Viet Nam. This assumption is pursuant to the FAO projection on changes in international food prices by the year 2000 as a result of the impact of the Uruguay Round on Agriculture.

Table 3.9 summarizes the integrated effect of the national trade liberalization policy and the WTO-induced increase in the world prices for Viet Nam's agricultural exports. There would be some very serious impacts on domestic prices for related crops as well as great overall welfare in the agricultural sector. Consumer and producer prices would rise nearly 20% compared to the base scenario. Global free trade, which may bring about an increase of 7% in the world prices for Viet Nam agricultural exports as assumed in combination with removal of all restrictions on foreign trade, would have an incredible impact on Viet Nam's agriculture, in

general, and on the development of the selected crops in particular. The total export value of these four crops would rise up by more than 40% as compared with the base scenario. Consequently, the general effect of the second policy experiment is demonstrated with a great economic improvement in terms of a net social gain of US$ 628 million.

**Table 3.9 Result of full removal of all export restrictions plus 7% increase in world price (option 2) for selected crops in Viet Nam in comparison with base scenario of distorted markets.**

| | | By Individual Crop | | | | For All 4 Crops | |
|---|---|---|---|---|---|---|---|
| | Unit | Rice | Coffee | Tea | Peanut | Billion D | Million $ |
| Farm-gate price | Dong/kg | 1,606.6 | 19,649.5 | 2,727.7 | 5,985.9 | | |
| Change | Dong/kg | 274.3 | 3,867.7 | 910.0 | 1,041.9 | | |
| Percent change | % | 20.59 | 24.51 | 50.07 | 21.07 | 20.92 | |
| Consumer price | Dong/kg | 3,029.6 | 21,143.2 | 12,519.0 | 8,763.3 | | |
| Change | Dong/kg | 483.0 | 4,278.4 | 4,117.8 | 1,507.8 | | |
| Percent change | % | 18.96 | 25.37 | 49.02 | 20.78 | 19.01 | |
| Quantity supply | 1000 ton | 27,899.9 | 542.7 | 247.7 | 375.9 | 58,413.4 | 4,493.3 |
| Change | 1000 ton | 1,305.8 | 101.5 | 15.2 | 23.0 | 4,272.3 | 328.6 |
| Percent change | % | 4.91 | 23.01 | 6.54 | 6.53 | 7.89 | |
| Quantity demand | 1000 ton | 12,918.6 | 10.4 | 9.6 | 115.9 | 40,493.6 | 3,114.9 |
| Change | 1000 ton | -1,086.5 | -4.7 | -7.5 | -34.8 | -3,790.5 | -291.6 |
| Percent change | % | -7.76 | -31.23 | -44.03 | -23.08 | -8.56 | |
| Export volume | 1000 ton | 5,634.8 | 505.2 | 42.2 | 134.1 | 34,505.8 | 2,654.3 |
| Change | 1000 ton | 1,954.8 | 101.2 | 10.7 | 50.1 | 9,965.6 | 766.6 |
| Percent change | % | 53.12 | 25.05 | 33.99 | 59.64 | 40.61 | |
| Overall producer gain | Bill. D | 13,159.3 | 2,104.8 | 988.8 | 549.5 | 16,802.3 | 1,292.5 |
| Of which, farmer gain | Bill. D | 7,474.5 | 1,902.7 | 218.5 | 379.7 | 9,975.4 | 767.3 |
| Consumer gain | Bill. D | -6,501.6 | -54.6 | -54.9 | -201.0 | -6,812.1 | -524.0 |
| Change in trader profit | Bill. D | 369.5 | 168.6 | 13.3 | 27.1 | 578.6 | 44.5 |
| Change in trade rent | Bill. D | -816.4 | -471.1 | -73.2 | -40.3 | -1,401.0 | -107.8 |
| Change in Gov. revenue | Bill. D | -231.5 | -698.5 | -30.7 | -38.2 | -999.0 | -76.8 |
| Net Social Gain | Bill. D | 5,979.3 | 1,049.138 | 843.3 | 297.1 | 8,168.8 | 628.4 |

Note: Nominal exchange rate is VND13,000 per USD.

Trade rent is assumed to be the implicit export tax embodied in export quota (applied for rice only) and in other policy distortion factors (for other crops).

Quantities supplied and quantities demanded for crops are measured in their different forms using conversion ratios.

## 3.6 Concluding remarks

This chapter has examined the effects of trade liberalization on the major selected exportable crops in Viet Nam. According to the results of various simulations reported in tables 3.6 to 3.8, if Viet Nam removes all export restrictions, the country's overall agricultural export is likely to increase nearly 26% and, if the regional and world trade agreements are fulfilled, it might result in at least a 7% increase in the world prices for Viet Nam's agricultural exports and therefore more than a 40% increase in export earnings would accrue to Viet Nam's agricultural sector.

In short, the benefit of free international trade has been indicated in this study with its findings that appear to be very convincing for Viet Nam. However, the implementation of binding commitments under the WTO and AFTA agreements on agriculture is not easy in real life. Viet Nam may still have various problems and challenges of its own, which may need extra precautions and further comprehensive studies after joining the regional and world trade organizations.

Price stability and food security for the low-income population may become great concerns of Vietnamese policy-makers when the country liberalizes its foreign trade in the agricultural sector. There is a need to further accelerate agricultural diversification, income-generation and poverty alleviation programs in rural and marginal areas.

As a country of high potential for export of agricultural products, Viet Nam needs to further improve product competitiveness in international agricultural markets through expanded programs for enhancing product quality, upgrading physical infrastructure, strengthening the banking system, reforming the inefficient state enterprise sector and creating greater access for the private sector to domestic and foreign trade.

For Viet Nam, the shift to tariffication from non-tariff border measures and removal of import licensing procedures may result in lack of effective protection in agriculture. The current tariff level for agricultural commodities is not high compared to that of other countries. However the application of a so-called minimum buying price list in calculating import tax tends to increase the protection level of the current tariff system. Thus, removing this minimum buying price list after joining world trade communities may weaken the protection level of Viet Nam agricultural production compared to that of other member countries.

It is not easy for Viet Nam, to establish really fair trade with other countries of the regional and international communities under the general agreed system of binding trade protection measures since it lacks sufficient experience and capacity in these areas. Thus, efforts must be made to improve the technical and managerial capacity of government officers working in related fields.

# 4. Effects of Trade Liberalization at the Farm Level

## 4.1 Selection of location and analysis methodology

To examine the potential impact of trade liberalization at the farm level, four specific locations with relatively concentrated growing areas and large production of the crops in concern were selected, i.e. the Mekong River Delta (MRD) for rice, Dak Lak province for coffee, Thai Nguyen province for tea and Nghe An province for groundnut. Rice is cultivated all over the country, but the Mekong River Delta is the biggest rice-producing region in Viet Nam, accounting for more than 50% of the country's total rice output. Among all the provinces, Dak Lak and Nghe An are the biggest producers of coffee and groundnut, respectively. Thai Nguyen is not the largest tea producer; however, it is traditionally a very famous area in Viet Nam in terms of producing tea of high quality. In Nghe An groundnuts are highly concentrated as a cash crop. The micro effect of changes in the trade system on the four commodities from the above-mentioned locations was analyzed using primary data related to costs and returns of representative farmers as shown in Table 4.1.

**Table 4.1 Profiles of representative farmers and their farms, 1996-1997.**

| | Rice in MRD | Coffee in Dak Lak | Tea in Thai Nguyen | Peanut in Nghe An |
|---|---|---|---|---|
| Sample size (no. HH) | 1,004 | 405 | 150 | 245 |
| Average land size (ha/HH) | 1.523 | 1.382 | 1.466 | 0.383 |
| Average crop sown area per HH (ha) | 2.663 | 1.079 | 0.220 | 0.153 |
| Average farmer family size (persons) | 5.8 | 5.5 | 4.7 | 5.6 |
| Average farmer age (years) | 47.2 | 44.3 | 40.2 | 46.2 |
| Farmer educational level (majority) | Primary | Primary | Primary | Primary |

Source: IAE commodity specific survey data, 1996-1997 and recomputed by author.
Note: HH = household.

The farm level impact of trade liberalization was evaluated by comparison of partial budgets for each of the selected crops between with and without full free trade. In that sense, only those factors, which are altered due to the changes in trade regime, have to be focused on. In general, partial budget analysis involves estimating the costs and returns attributable to the changes.

The costs and returns for each of the four commodities allocated in a particular site were computed based on the commodity-specific survey conducted by the Institute of Agricultural Economics (IAE) in 1996-1997. These survey data with the 1996-1997 prices of inputs and outputs were used for the scenario without trade liberalization. For the scenario with trade liberalization, only prices for farm outputs and seeds and seedling costs of rice and peanut are assumed to be changed. The yields and input levels, the variable costs (except seeds and seedling costs of rice and peanut) and fixed costs for the selected crops are presumed to remain unaltered. Since there are no subsidies for fertilizers and pesticides, in general, only the prices of tradable inputs used in crop production may have high potential of being affected by trade liberalization. It is important to note that in Viet Nam, chemical fertilizers and pesticides used as agricultural inputs are mainly imported. The major imported agricultural input appears to be urea fertilizer (50-80%). Moreover, during the last decade, markets of urea fertilizer as well as those of other chemical inputs had a relatively high level of trade liberalization. In fact, there is

no tariff imposed on import of fertilizers/pesticides. Moreover, the tariff equivalent of non-tariff trade barriers with regard to the selected crops is also marginal (around 0 to 5%). The estimated elasticity of the domestic price for urea fertilizer with respect to its tariff equivalent is statistically significant at 0.013% (see details of regression estimation in the Appendix). This means that a 1% decrease in tariff equivalent of non-tariff measures would induce only a 0.013% reduction of the domestic price of urea fertilizer. Therefore, it could be assumed that the impact of a further liberalized fertilizer market would be negligible. In short, for the partial budget analysis only the price of farm outputs is presumed to change due to trade liberalization. The increases in farm prices as estimated in the previous chapter with regard to the national level impact of the second trade policy scenario, i.e. 20.6% for rice, 24.5% for coffee, 50.1% for tea and 21.1% for groundnut, are applied to investigate the effect at the farm level.

## 4.2 Effects of trade liberalization at the farm level

Partial budgets with different scenarios (with and without trade liberalization) were prepared for the four crops based on the survey data from the selected production sites. Although it seems to be a very rough approximation, the results of this partial budget analysis might give some insights of the impact of free trade at the farm level.

### 4.2.1 Rice

In Viet Nam, MRD has a great potential capacity for export of rice due to its high comparative advantage in terms of cost of production and high level of commercialization. The average per farm sown area of paddy rice in the region is about 2.7 hectares, higher than that in the Red River Delta (RRD). The average yield in MRD is slightly higher than the country average, but not higher than that in RRD. However, the cost of rice production per hectare in the region is only around VND 1.0 million, much lower than that in RRD (i.e. lower by 15-20%). Inevitably, rice producers in MRD would gain the greatest benefit from liberalization of rice trade in comparison with other areas in the country.

Table 4.2 presents the results of partial budget analysis for rice production in the Mekong River Delta. The effect of full trade liberalization on representative rice-producing farms from MRD is measured by differences in per hectare costs and returns between the two scenarios of with and without free trade. Under fully liberalized trade, although the seedling cost is increased, farm net returns per hectare would experience a sharp increase by VND 1.382 million due to the farm price of rice increasing by 20.6%.

### 4.2.2 Coffee

During the past ten years, the coffee sector has been successfully improved in Viet Nam. Its growth has brought about great pay-offs to the country in terms of foreign exchange earnings as well as in terms of regional income growth, especially in the Central Highlands region including Dak Lak province.

Dak Lak is considered the largest coffee producer and exporter among all the provinces in Viet Nam producing nearly one-half of the total annual coffee output of the country. Coffee-producing farmers in the province are expected to be positively affected by trade liberalization. This can be affirmed by the results of partial budget analysis for coffee production at the farm level (Table 4.3). In spite of unfavorable conditions of a distorted trade regime (without full trade liberalization), coffee is still found as one of the most profitable crops in Viet Nam with relatively very high net returns (e.g. more than VND 8 million per ha in the case of Dak Lak province). If there were full trade liberalization of coffee, the farm net returns would soar up drastically, more than twice, and would reach the level of VND 16.8 million per hectare due to the increase in the farm price of coffee of 24.5%.

**Table 4.2 Partial budget for rice production (per ha) in the Mekong River Delta.**

| | Without Trade Liberalization | With Trade Liberalization | Difference |
|---|---|---|---|
| Returns | | | |
| Yield (kg) | 5,370.6 | 5,370.6 | 0.0 |
| Price (VND/kg) | 1,353.7 | 1,632.5 | 278.7 |
| Gross Returns ('000 VND) | 7,270.3 | 8,767.3 | 1,497.0 |
| Variable Cost ('000 VND) | | | |
| Seeds & seedlings | 537.6 | 648.3 | 110.7 |
| Amount (kg) | 199.3 | 199.3 | 0.0 |
| Fertilizer | 1,165.0 | 1,165.0 | 0.0 |
| Pesticides/insecticides | 527.9 | 527.9 | 0.0 |
| Irrigation water | 349.7 | 349.7 | 0.0 |
| Land preparation | 264.2 | 264.2 | 0.0 |
| Fuel | 41.1 | 41.1 | 0.0 |
| Transportation | 196.9 | 196.9 | 0.0 |
| Small implements | 54.1 | 54.1 | 0.0 |
| Human labor | 1,277.6 | 1,277.6 | 0.0 |
| Amount of man-days | 100.3 | 100.3 | 0.0 |
| Wage rate | 12.7 | 12.7 | 0.0 |
| Miscellaneous | 536.7 | 536.7 | 0.0 |
| Sub-total costs | 4,950.7 | 5,061.4 | 110.7 |
| Cost of working capital | 206.3 | 210.9 | 4.6 |
| Interest rate (percent/year) | 20.0 | 20.0 | 0.0 |
| Crop growing duration (month) | 5 | 5 | 0.0 |
| Total Variable Cost ('000 VND) | 5,157.0 | 5,272.3 | 115.3 |
| Fixed cost | | | |
| Depreciation | 42.9 | 42.9 | 0.0 |
| Land charges & other costs | 447.7 | 447.7 | 0.0 |
| Total Fixed Cost ('000 VND) | 490.6 | 490.6 | 0.0 |
| Net Returns ('000 VND) | 1,622.7 | 3,004.4 | 1,381.6 |

Source: IAE commodity specific survey data, 1996-1997 recomputed by author.
Note: VND stands for Vietnamese dong.

**Table 4.3 Partial budget for coffee production (per ha) in Dak Lak province.**

| | Without Trade Liberalization | With Trade Liberalization | Difference |
|---|---|---|---|
| Returns | | | |
| Yield (kg) | 3,448.0 | 3,448.0 | 0.0 |
| Price (VND/kg) | 10,322.8 | 12,852.9 | 2,530.1 |
| Gross Returns ('000 VND) | 35,592.9 | 44,316.7 | 8,723.8 |
| Variable Cost ('000 VND) | | | |
| Fertilizer | 7,448.7 | 7,448.7 | 0.0 |
| Pesticides/insecticides | 568.0 | 568.0 | 0.0 |
| Irrigation water | 2,136.7 | 2,136.7 | 0.0 |
| Land preparation | 103.3 | 103.3 | 0.0 |
| Transportation | 371.2 | 371.2 | 0.0 |
| Small implements | 196.6 | 196.6 | 0.0 |
| Human labor | 9,990.7 | 9,990.7 | 0.0 |
| Amount of man-days | 499.5 | 499.5 | 0.0 |
| Wage rate | 20.0 | 20.0 | 0.0 |
| Miscellaneous | 1,010.6 | 1,010.6 | 0.0 |
| Sub-total costs | 21,825.7 | 21,825.7 | 0.0 |
| Cost of working capital | 2,182.6 | 2,182.6 | 0.0 |
| Interest rate (percent/year) | 20.0 | 20.0 | 0.0 |
| Crop growing duration (month) | 12 | 12 | 0.0 |
| Total Variable Cost ('000 VND) | 24,008.3 | 24,008.3 | 0.0 |
| Fixed cost | | | |
| Depreciation | 2,444.3 | 2,444.3 | 0.0 |
| Land charges & other costs | 1,079.4 | 1,079.4 | 0.0 |
| Total Fixed Cost ('000 VND) | 3,523.7 | 3,523.7 | 0.0 |
| Net Returns ('000 VND) | 8,060.9 | 16,784.8 | 8,723.8 |

Source: IAE commodity specific survey data, 1996-1997 recomputed by author.
Note: VND stands for Vietnamese dong.

### 4.2.3 Tea

Thai Nguyen is not the largest province in terms of tea-growing area and production volume. Nevertheless, it is well known all over the country as the sole area, which can provide tea products of great quality. Domestic consumers highly appreciate tea from Thai Nguyen

province and offer the highest price for it. The growth of the tea sector, therefore, has benefited farmers in Thai Nguyen province in terms both of income generation and poverty alleviation. It should be noted that the current net return per hectare for tea in Thai Nguyen province is only about VND 0.1 million, which is higher than that in many other tea-growing areas. Due to full trade liberalization the farm price of tea would change drastically and might increase by 50%. Consequently, the farm net return would rise up from 0.1 to 9.4 million VND per hectare, due to trade liberalization.

### 4.2.4 Groundnut

Groundnut is grown in various areas throughout the country, but it is highly concentrated in Nghe An province where it serves as a cash crop for farmers. Most of the groundnut produced is exported to earn foreign exchange. Thus, the growth and profitability of groundnut production are closely linked with the international trade environment. Table 4.5 presents the results of partial budget analysis for groundnut production at the farm level. Due to full trade liberalization, the farm price for groundnut would increase by 21.1% compared to the base scenario without trade liberalization. This would lead to an increase in the farm net return per hectare of groundnut by VND 1.3 million compared to the scenario without trade liberalization. In other words, the impact of full trade liberalization on groundnut production at the farm level would be very impressive and it would almost triple the farm profit per hectare of groundnut.

**Table 4.4 Partial budget for tea production (per ha) in Thai Nguyen province.**

| | Without Trade Liberalization | With Trade Liberalization | Difference |
|---|---|---|---|
| Returns | | | |
| Yield (kg) | 8,397.0 | 8,397.0 | 0.0 |
| Price (VND/kg) | 2,222.8 | 3,335.8 | 1,113.0 |
| Gross Returns ('000 VND) | 18,664.9 | 28,010.3 | 9,345.5 |
| Variable Cost ('000 VND) | | | |
| Fertilizer | 3,010.7 | 3,010.7 | 0.0 |
| Pesticides/insecticides | 1,536.1 | 1,536.1 | 0.0 |
| Irrigation water | 642.1 | 642.1 | 0.0 |
| Fuel | 2,822.0 | 2,822.0 | 0.0 |
| Transportation | 44.7 | 44.7 | 0.0 |
| Small implements | 256.1 | 256.1 | 0.0 |
| Human labor | 6,791.2 | 6,791.2 | 0.0 |
| Amount of man-days | 689.3 | 689.3 | 0.0 |
| Wage rate | 9.9 | 9.9 | 0.0 |
| Miscellaneous | 422.3 | 422.3 | 0.0 |
| Sub-total costs | 15,525.0 | 15,525.0 | 0.0 |
| Cost of working capital | 1,552.5 | 1,552.5 | 0.0 |
| Interest rate (percent/year) | 20.0 | 20.0 | 0.0 |
| Crop growing duration (month) | 12 | 12 | 0.0 |
| Total Variable Cost ('000 VND) | 17,077.5 | 17,077.5 | 0.0 |
| Fixed cost | | | |
| Depreciation | 511.0 | 511.0 | 0.0 |
| Land charges & other costs | 965.4 | 965.4 | 0.0 |
| Total Fixed Cost ('000 VND) | 1,476.4 | 1,476.4 | 0.0 |
| Net Returns ('000 VND) | 110.9 | 9,456.4 | 9,345.5 |

Source: IAE commodity specific survey data, 1996-1997 recomputed by author.
Note: VND stands for Vietnamese dong.

**Table 4.5 Partial budget for groundnut production (per ha) in Nghe An province.**

| | Without Trade Liberalization | With Trade Liberalization | Difference |
|---|---|---|---|
| Returns | | | |
| Yield (kg) | 1,645.0 | 1,645.0 | 0.0 |
| Price (VND/kg) | 4,686.0 | 5,673.3 | 987.3 |
| Gross Returns ('000 VND) | 7,708.5 | 9,332.6 | 1,624.2 |
| Variable Cost ('000 VND) | | | |
| Seeds & seedlings | 1,410.0 | 1,707.1 | 297.1 |
| Amount (kg) | 251.0 | 251.0 | 0.0 |
| Fertilizer | 1,437.0 | 1,437.0 | 0.0 |
| Pesticides/insecticides | 89.0 | 89.0 | 0.0 |
| Irrigation water | 45.0 | 45.0 | 0.0 |
| Land preparation | 238.0 | 238.0 | 0.0 |
| Transportation | 41.0 | 41.0 | 0.0 |
| Small implements | 65.0 | 65.0 | 0.0 |
| Human labor | 2,553.0 | 2,553.0 | 0.0 |
| Amount of man-days | 193.0 | 193.0 | 0.0 |
| Wage rate | 13.2 | 13.2 | 0.0 |
| Miscellaneous | 130.0 | 130.0 | 0.0 |
| Sub-total costs | 6,008.0 | 6,305.1 | 297.1 |
| Cost of working capital | 200.3 | 210.2 | 9.9 |
| Interest rate (percent/year) | 20.0 | 20.0 | 0.0 |
| Crop growing duration (month) | 4 | 4 | 0.0 |
| Total Variable Cost ('000 VND) | 6,208.3 | 6,515.3 | 307.0 |
| Fixed cost | | | |
| Depreciation | 126.0 | 126.0 | 0.0 |
| Land charges & other cost | 571.0 | 571.0 | 0.0 |
| Total Fixed Cost ('000 VND) | 697.0 | 697.0 | 0.0 |
| Net Returns ('000 VND) | 803.2 | 2,120.4 | 1,317.2 |

Source: IAE commodity specific survey data, 1996-1997 recomputed by author.
Note: VND stands for Vietnamese dong.

## 4.3 Concluding remarks

According to the partial budget analysis at the farm level, the 7% increase in the international prices of the four commodities will give higher returns for all four commodities. Tea will get highest increase of 8.53 times followed by groundnuts, coffee and rice.

# 5. Conclusions and Recommendations

## 5.1 Conclusions

Viet Nam is an agricultural country with 80% of the population living in rual areas and 74% of its labor force engaged in agriculture. In recent years, under the implementation of economic structural adjustment, the agriculture of Viet Nam has been diversely developed, with regard not only to production for domestic demand but also for export. The main exportable crops of Viet Nam, rice, coffee, rubber, cashewnut, peppercorn, etc have shown growth in quantity, quality and export value. They have contributed considerably to Viet Nam's economic development. Viet Nam also has high potential for developing various exportable upland crops and root crops such as coffee, tea, rubber, groundnut and so on. Expansion of domestic, regional and world markets has impacted significantly on the promotion of agricultural production in the country. Furthermore, promotion of agriculture, including expansion of area under cultivation, increase of crop yield, enhancement of quality of primary products and development of the processing industry is the key motivation to expanding and sustaining market development.

In recent years, Viet Nam's development toward trade liberalization has positively affected agricultural production. As a country of mono-crop agriculture based on primitive farming technology, Viet Nam has progressively been shifting its self-sufficient agriculture to a more commercialized one serving both domestic and export markets. In 1997 Viet Nam became the second biggest rice exporter in the world, with an export value reaching US$ 870 million. Other upland crops such as coffee, rubber, groundnut, peppercorn and cashewnut have increased both in quantity and export value. In 1997 agriculture contributed 27.1% of total export value. The quality of exported agricultural products has been considerably enhanced. The export price of each product has also been gradually increasing. The export markets for Viet Nam's argo-products have also been expanding. There are many factors contributing to the these results, the most important of which is that we have oriented towards the development of a market-based agriculture. The government has promulgated many policies encouraging households and enterprises to produce goods, freeing commodity circulation within country and promoting export to regional and world markets. The policies related to tax, investment, capital, infrastructure, etc, have been gradually and firmly improved in order to catch up with economy reality.

Viet Nam's orientation of economic reform, changing the centrally-planned, subsidized economy into a market-led economy along with the socialist orientation under the state regulation has actively affected economic growth. Free trade not only in Viet Nam but also in the region and all over the world made foreign investment and domestic factors increase. In 1995, 1996 and 1997 Viet Nam's economy grew 9% per year. In 1998 and 1999 regional economy growth decreased from 5.8% down to 0.09% per year because of the economic crisis. This influenced Viet Nam's economy in 1998 and the growth rate went down to 6%. However, trade liberalization has also actively affected agricultural progress. Before 1990, Viet Nam imported 0.5 million tons of food per year, and now it has met the domestic demand of food and exported 3.55 million tons of rice in 1997. Coffee production has developed rapidly both in area, yield, output and quality and so far around 400 tons has been exported annually. Tea and peanut products have also developed strongly, meeting the demand of the domestic market and for export. The export turnover of the agricultural sector has increased clearly from 783.2 million US dollars in 1990 to 2,400 million in 1997. The lives of farmer households in zones producing export commodities such as rice in the Mekong River Delta and coffee in Tay

Nguyen have been clearly improved compared to the period before implementing the expansion of trade and zones which are still undertaking self-sufficient production.

There are two important elements that have promoted agriculture production. Firstly, farmer families became self-economic units with land and means of production and carried on their own businesses. They have been granted five rights in using land and can take the initiative in undertaking efficient production. The households have made major contributions to the creation of agricultural commodities.

Secondly, the creation of consumer markets and the support for production resulted from the state's open policies. So, many products such as coffee, rubber, tea, peppercorn, cashnewnut, fruits and vegetables have been consumed in the domestic market and exported, contributing up to 2.5 - 3 billion USD of export surplus.

In 1995, Viet Nam joined ASEAN and followed AFTA's terms, so the government also invested a lot in infrastructure, improved processing technology and policies to facilitate export and import. These measures have brought about an increase of quality and productivity of agricutural products. Recently, Viet Nam attended the APEC forum and prepared to take part in WTO. It is said that in Viet Nam trade becomes freer and freer, which has actively impacted on economy growth in general and agriculture in particular. However, it is undeniable that Viet Nam still faces many difficulties in competition due to primitive production, backward technology, weak processing and post-harvesting industry, incomplete infrastructure and late integration into the market. But it can be affirmed that liberalization of trade has had a great impact on the agricultural development of Viet Nam. In nearly 10 years the growth rate of the agricultural sector has attained 4.5% to 5%, the value of export has increased rapidly, and many commodities have been exported to international markets. The expansion of trade has encouraged farmer households to efficiently enlarge their production.

Since starting economic reform, Viet Nam has revised many laws and policies in order to promote commodity production and open free trade. Foreign investment laws are regularly revised to facilitate foreign investors. The law on using land was updated to create favourable conditions for farm production. Administration proceduces were simplified, waste time was diminished by legal documents and by the orientation of administration reform.

The policy system on im/export was also improved; time for custom procedures and plant-animal quaratine was cut in half; export information increased; and export quotas for agricultural products (except rice) were abolished. Large and small trading volume rose, the taxes on essential products of people's life and manufacturing were decreased; and trade cheating was implemented to protect domestic production.

The policy systems of financial bank credit and investment are also suited to the market economy. The bank system, including the State bank, joint venture bank, stock bank as business units, were expanded, creating a mechanism for developing commodity production. Capital was selectively invested to facilitate infrastructure building and support for new technology. The investment policies have been revised in order to mainly invest in specialized areas with new technology that produces commodities and products.

Many policies were issued to gradually implement trade agreements of AFTA, APEC and in the future WTO. In Viet Nam, trade agreement implementation has to face many difficulties because backward technology is still applied, agricultural products are not processed and competitive abilities are weak. The policies issued in order to improve production capacity, renew technology, reform state-owned enterprises, reduce product prices, and raise product quality have had great impact on the implementation process of trade agreements. Now Viet Nam still faces many difficulties, but the government has also issued many policies and reduced 5,000 kinds of goods taxes, removed export quotas of agricultural products (except rice), etc.

The policies for increasing economic development capacity for farmer households aim to expand production scale, mainly of rice, tea, rubber, coffee, fruits and vegetables, etc. Recently, the government implemented policies to equitize state-owned enterprises, to sell part of these

enterprises to the private sector to gradually privatize state-owned enterprises. The State only owns some important enterprises. However, the implementation of those policies faces many difficulties and is too slow.

The implementation of market mechanisms and the control of value and competition rules have made the price of Viet Nam's agricultural products unstable, and sometimes the selling price cannot cover the production cost. In order to deal with the problems and maintain farm production, the government had to spend money from its budget and request that wholesale purchasers buy farmer's products at a price that is higher than floor price (especially rice). For many key materials such as fertilizer, the government had to compensate for farmer's loss.

To implement trade liberalization, by borrowing from foreign countries, the government has invested to upgrade and built more infrastructure, transport system, electricity system, ports, means of transport, and stores that aim to develop the capacity of domestic circulation of commodities and ex/import.

To implement the terms of AFTA and APEC, to join WTO in the future, the government should actively reorder state-owned enterprises, increase equitization, sell part of enterprises, remove inefficient enterprises, develop medium and small enterpries and non-state factors, create heathy competition, and it should progressively improve post-harvesting process technology to raise product quality.

However, the relationship between farmer households and organizations dealing with processing and exports has been still loose. The producers are not supported, so when the market price go down below the production cost, they suffer a loss. There are no measures to address the regulation of profit between producers and buyers, processors, and exporters. The production level is still backward, and the processing technology does not meet the volume of products resulting in the degradation of quality.

The analysis of trade policy options here is based on a limited amount of data and resources. Therefore, the findings of this study need to be further investigated. The analysis, however, does contribute to the clarification of the effects of trade liberalization on agriculture in Viet Nam.

According to the results of various simulations, some preliminary conclusion can be made. If Viet Nam removes all its export restrictions, the country's overall agricultural export of rice, coffee, tea and groundnut is likely to increase by nearly 26%. In addition to this, if the WTO agreement on agriculture is fulfilled, it will bring about a 7% increase in the world prices for Viet Nam's agricultural export commodities, so Viet Nam's agricultural export earnings of the four commodities might increase by more than 40% and returns of four commodities to farmers might increase by larger rates. In short, the analysis shows that the effect of international trade liberalization seems to be great for Viet Nam's agricultural sector. However, many difficulties and challenges emerging from world competition and the risk of economic instability caused by world trade fluctuations should be considered further.

## 5.2 Recommendations

The following are recommendations to increase agricultural production and exportation further:

- Price stability and food security for the low-income population may become a great concern of Vietnamese policy-makers, when the country liberalizes its foreign trade in the agricultural sector. Thus, there is a need to further accelerate agricultural diversification, income-generation and poverty alleviation programs in rural and marginal areas.

- In order to ensure steely flow of agricultural products from production to exportation, a well-developed organization system, operation mechanisms and infrastructural conditions are necessary for Viet Nam.
- As a country of high potential for export of agricultural products, Viet Nam needs to further improve product competitiveness in international agricultural markets through expanded programs for enhancing product quality, upgrading physical infrastructure, strengthening the banking system, reforming the inefficient state enterprise sector and creating more access for the private sector to domestic and foreign trade.
- For better marketing and exportation, investment for processing, preserving, packaging and wrapping technologies is necessary.
- For adjustment to trade liberalization, it is necessary to reform administrative procedures, to plan specialized agricultural zones and to ameriorate laws and policies.
- For Viet Nam, the shift to tariffication from non-tariff border measures and removal of import licensing procedure may result in lack of effective protection in agriculture; the current tariff level in agricultural commodities is not high compared to that of other countries. However, the application of a so-called minimum-buying price list in calculating import tax tends to increase the protection level of the current tariff system. Thus, removing this minimum-buying price list when joining regional and world trade communities may weaken the protection level of Viet Nam agricultural production compared to that of other member countries.
- Establishing really fair trade with other countries of the region and international communities under the general agreed system of binding trade protection measures is not an easy task for Viet Nam, since it lacks sufficient experience and capacity in these areas. Thus, efforts must be made to improve the technical and managerial capacity of government officers working in related fields.
- Positive measures have to be devised to implement AFTA, APEC and for integrating into regional and world markets and at the same time preparing for admission to the WTO.

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# Appendix

## 1 Econometric estimation of supply and demand function for the selected crops in Viet Nam, 1986-1997

**Model 1.1 Rice supply**

$lnSUP_{RICE} = 8.1086 + 0.2564lnRSP_{RICE}(-1) - 0.5653DUMMY_{REGION} + 0.3846lnTREND$
(24.451) (2.429) (-20.263) (10.031)
$R^2 = 0.9701$
Adj. $R^2 = 0.9645$
N = 20
DW=2.6966
$SPE_{RICE} = 0.2564$

Where:
ln = Natural log;
$SUP_{RICE}$ = Paddy rice supply in 1000 tons;
$RSP_{RICE}(-1)$ = Producer price of paddy rice divided by CPI (base year 1986) lagged one year, in 1000 dong/ton;
$DUMMY_{REGION}$ = Regional dummy variable, North VN = 1 & South VN = 0;
TREND = Trend variable 1986 = 1;
$SPE_{RICE}$ = Supply own-price elasticity for rice.

**Model 1.2 Rice demand**

$lnDEM_{RICE} = 4.8108 - 0.4650lnRDP_{RICE} + 0.5517lnPRGDP - 0.1435DUMMY_{TIME}$
(5.649) (-2.541) (7.842) (-2.175)
R2 = 0.7907
Adj. R2 = 0.7593
N = 24
DW=2.0938
$DPE_{RICE} = -0.4650$; $DYE_{RICE} = 0.5517$

Where:
$DEM_{RICE}$ = Milled rice demand in 1000 tons;
$RDP_{RICE}$ = Consumer price of rice divided by CPI (base year 1986) in 1000 dong/ton;
PRGDP = Per capita real GDP in dong;
$DUMMY_{TIME}$ = Time period dummy, 1986-88=0 and 1989-97 = 1;
$DPE_{RICE}$ = Demand own-price elasticity for rice;
$DYE_{RICE}$ = Demand income elasticity for rice.

*Appendix*

**Model 1.3 Coffee supply**

$lnSUP_{COFFEE}$ = -3.8579 + 0.9448$lnRSP_{COFFEE}(-1)$ - 4.4532$DUMMY_{REGION}$ + 2.1807lnTREND
(-1.951) (2.826) (-26.522) (8.264)
$R^2$ = 0.9819
Adj. $R^2$ = 0.9786
N = 20
DW=2.6110
$SPE_{COFFEE}$ = 0.9448

Where:
$SUP_{COFFEE}$ = Coffee supply in 1000 tons;
$RSP_{COFFEE}(-1)$ = Producer price of coffee divided by CPI (base year 1986) lagged one year, in 1000 dong/ton;
$DUMMY_{REGION}$ = Regional dummy, North VN = 1 & South VN = 0;
TREND = Trend variable 1986 = 1.

**Model 1.4 Coffee demand**

$lnDEM_{COFFEE}$ = - 77.8063 - 1.6561$lnRDP_{COFFEE}$ + 5.6705lnPRGDP + 6.8815$lnRDP_{TEA}$
(-6.134) (-1.234) (6.266) (4.452)
$R^2$ = 0.8298
Adj. $R^2$ = 0.7787
N = 14
DW= 1.9476
$DPE_{COFFEE}$ = -1.6561
$DYE_{COFFEE}$ = 5.6705

Where:
$DEM_{COFFEE}$ = Coffee demand in 1000 tons;
$RDP_{COFFEE}$ = Coffee consumer price divided by CPI (base year 1986) in 1000 dong/ton;
PRGDP = Per capita GDP deflated by CPI (base year 1986), in dong;
$RDP_{TEA}$ = Tea consumer price divided by CPI (base year 1986) in 1000 dong/ton;
$DPE_{COFFEE}$ = Demand own-price elasticity for coffee;
$DYE_{COFFEE}$ = Demand income elasticity for coffee;

**Model 1.5 Tea supply**

$lnSUP_{TEA}$ = 2.0531 + 0.1556$lnRSP_{TEA}(-1)$ + 0.8311$DUMMY_{REGION}$ + 0.7111lnTREND
(3.922) (2.224) (15.448) (4.642)
$R^2$ = 0.9446
Adj. $R^2$ = 0.9354
N = 22
DW=2.6584
$SPE_{TEA}$ = 0.1556

Where:
$SUP_{TEA}$ = Tea supply in 1000 tons of fresh tea leaf;
$RSP_{TEA}(-1)$ = Producer price of fresh tea divided by CPI (base year 1986) lagged one year, in 1000 dong/ton;

$DUMMY_{REGION}$ = Regional dummy variable, North VN = 1 & South VN = 0;
TREND = Trend variable 1986=1;
$SPE_{TEA}$ = Supply own-price elasticity for tea.

**Model 1.6 Tea demand***

$$DEM_{TEA} = -7.9028 - 0.1038RDP_{TEA} + 0.0018PRGDP + 0.8712RDP_{RICE} + 12.9774DUMMY_{REGION} - 4.9402TREND$$
(-1.364) (-4.515) (4.288) (3.702) (3.753) (-4.269)

$R^2 = 0.6587$
Adj. $R^2 = 0.5368$
N = 20
DW=2.5183
$DPE_{TEA} = -1.4553$
$DYE_{TEA} = 4.6620$

Where:
$DEM_{TEA}$ = Demand for tea in 1000 tons of dry tea;
$RDP_{TEA}$ = Consumer price of dry tea deflated by CPI (base year 1986) in 1000 dong/ton;
PRGDP = Per capita GDP deflated by CPI (base year 1986) in dong;
$RDP_{RICE}$ = Consumer price of milled rice deflated by CPI (base year 1986) in1000 dong/ton;
$DUMMY_{REGION}$ = Regional dummy variable, North VN = 1 & South VN = 0;
TREND = Trend 1986 = 1;
$DPE_{TEA}$ = Demand own-price elasticity for tea;
$DYE_{TEA}$ = Demand income elasticity for tea.
*$DPE_{TEA}$ = -0.10382[mean($RDP_{TEA}$)/mean($DEM_{TEA}$)] = (-0.10382*111.72/7.97)*
*$DYE_{TEA}$ = 0.00181[mean(PRGDP)/mean($DEM_{TEA}$)] = (0.00181*20528.16/7.97)*

**Note: The estimation of tea demand function in double-log form using data provided does not give a reliable result in terms of statistical significance of the estimated coefficients. However, the linear form in this case gives a much better outcome, which is why for the tea crop the estimation of demand behavior parameters is done using linear form in this study.*

**Model 1.7 Groundnut supply**

$$\ln SUP_{GNUT} = 3.7348 + 0.3307\ln RSP_{GNUT} - 0.3029\ln RSP_{SBEAN} - 0.3143DUMMY_{REGION} + 0.5688(\ln TREND)$$
(7.083) (4.098) (-2.588) (-5.521) (5.631)

$R^2 = 0.7902$
Adj. $R^2 = 0.7460$
N = 24
DW=2.4282
$SPE_{GNUT} = 0.3307$

Where:
$SUP_{GNUT}$ = Groundnut supply in 1000 ton;
$RSP_{GNUT}$ = Producer price of groundnut deflated by CPI (base year 1986) in 1000 dong/ton;
$RSP_{SBEAN}$ = Producer price of soybean deflated by CPI (base year 1986) in 1000 dong/ton;
$DUMMY_{REGION}$ = Regional dummy variable, North VN = 1 & South VN = 0;

*Appendix*

TREND = Trend;
$SPE_{GNUT}$ = Supply own-price elasticity for groundnut.

**Model 1.8 Groundnut demand**

$lnDEM_{GNUT}$ = - 12.5891 -1.3901$lnRDP_{GNUT}$ + 2.7664lnPRGDP - 2.6589lnTREND
(-2.492) (-1.952) (4.395) (-3.035)
$R^2$ = 0.5480
Adj. $R^2$ = 0.4633
N = 20
DW=2.11428
$DPE_{GNUT}$ = -1.3901
$DYE_{GNUT}$ = 2.7664

Where:
$DEM_{GNUT}$ = Groundnut demand in 1000 ton;
$RDP_{GNUT}$ = Groundnut consumer price deflated by CPI (base year 1986) in 1000 dong/ton;
PRGDP = Per capita GDP deflated by CPI (base year 1986);
TREND = Trend 1986=1;
$DPE_{GNUT}$ = Demand own-price elasticity for groundnut;
$DYE_{GNUT}$ = Demand income elasticity for groundnut.

Note: Demand (or supply) elasticity with respect to own price and income can be computed as follows:
*For Linear function*

$Q^D = A^D + B^D*P^D + C^D*Y$ or $Q^S = A^S + B^S*P^S$
$DPE = B^D*(meanP^D/meanQ^D)$
$DYE = C^D*(meanY/meanQ^D)$
$SPE = B^S*(meanP_S/meanQ^S)$

*For Double log function*

$lnQ^D = A^D + B^D lnP^D + C^D lnY$ or $lnQ^S = A^S + B^S lnP^S$
$DPE = B^D$
$DYE = C^D$
$SPE = B^S$

Where:
DPE = Demand elasticity relative to consumer price;
DYE = Demand elasticity relative to income;
$Q^D$ or $Q^S$ = Quantity demanded or supplied;
$A^D$ or $A^S$ = Intercept of demand or supply function;
$B^D$ or $B^S$ = Own price coefficient of demand or supply function;
$C^D$ = Income coefficient of demand function;
Y = Income.

# 2 Estimation of linear functions for linkage between consumer and producer prices of 4 major exportable crops in Viet Nam, 1986-1997

**Model 2.1 Rice consumer-producer price linkage**

$SP_{RICE} = 34.1978 + 0.5679DP_{RICE}$
(42.737)
$R^2 = 0.9881$
Adj. $R^2 = 0.9876$
No = 24 (North and South 1986-1997)
DW=1.1403
$IPTE_{RICE} = 0.964978$

Where:
$SP_{RICE}$ = Producer price of paddy rice in 1000 dong/ton;
$DP_{RICE}$ = Consumer price of milled rice in 1000 dong/ton;
$IPTE_{RICE}$ = Internal price transmission elasticity - producer price of rice vis-a-vis its consumer price (domestic central market price).
$IPTE_{RICE} = 0.567899*mean(DP_{RICE})/mean(SP_{RICE})$
$= 0.567899*1659.31/976.52 = 0.964978$

**Model 2.2 Coffee consumer-producer price linkage**

$SP_{COFFEE} = 157.4106 + 0.9035DP_{COFFEE}$
(39.931)
$R^2 = 0.9864$
Adj. $R^2 = 0.9858$
No = 24
DW=2.9517
$IPTE_{COFFEE} = 0.9767$

Where:
$SP_{COFFEE}$ = Coffee producer price in 1000 dong/ton;
$DP_{COFFEE}$ = Coffee consumer price in 1000 dong/ton;
$IPTE_{COFFEE}$ = Internal price transmission elasticity - producer price of coffee vis-a-vis its consumer price (domestic central market price).
IPTECOFFEE = 0.903522*7308.26/6760.59 = 0.976716

**Model 2.3 Tea consumer-producer price linkage**

$SP_{TEA} = -68.9351 + 0.2208DP_{TEA}$
(63.643)
$R^2 = 0.9946$
Adj. $R^2 = 0.9944$
No = 24
DW=1.9428
$IPTE_{TEA} = 1.0510$

Where:
$SP_{TEA}$ = Producer price of fresh tea leaf in 1000 dong/ton;
$DP_{TEA}$ = Consumer price of dry tea leaf in 1000 dong/ton;

*Appendix*

$IPTE_{TEA}$ = Internal price transmission elasticity - producer price of tea vis-a-vis its consumer price (domestic central market price).

IPTETEA = 0.220847*6436.36/1352.51 = 1.050972

**Model 2.4 Groundnut consumer-producer price linkage**

$SP_{GNUT} = -75.8906 + 0.6910DP_{GNUT}$
(125.232)

$R^2 = 0.9986$
Adj. $R^2 = 0.9985$
No = 24
DW=1.9292
$IPTE_{GNUT} = 1.0245$

Where:
$SP_{GNUT}$ = Groundnut producer price in 1000 dong/ton;
$DP_{GNUT}$ = Groundnut consumer price in 1000 dong/ton;
$IPTE_{GNUT}$ = Internal price transmission elasticity - producer price of groundnut vis-a-vis its consumer price (domestic central market price).

$IPTE_{GNUT}$ = 0.691022*4598.09/3101.49 = 1.0244693

**Model 2.5 Fertilizer (urea) consumer-import c.i.f. price linkage**

$lnDP_{UREA} = 0.59032 + 0.93407lnMP_{UREA} + 0.0l324lnTE_{UREA}$
(3.258) (40.693) (2.955)

$R^2 = 0.9976$
Adj. $R^2 = 0.9966$
No = 8
DW = 2.1303
$PTE_{URE\_TE} = 0.01324$

Where:
$DP_{UREA}$ = Urea consumer price in 1000 dong/ton;
$MP_{UREA}$ = Urea import c.i.f. price in 1000 dong/ton;
$TE_{UREA}$ = Import tariff-equivalent on urea in 1000 dong/ton;
$PTE_{URE\_TE}$ = Elasticity of price transmission of urea consumer price with respect to tariff-equivalent on imported urea.

**Table A 1 Average value of selected variables.**

| Variable | Mean | N | Label |
|---|---|---|---|
| $BP_{GNUT}$ | 0.57 | 24 | Border price of exported groundnut, 1000 $/ton |
| $BP_{TEA}$ | 1.28 | 24 | Border price of X dry tea, 1000$/ton |
| $BP_{COFFEE}$ | 1.57 | 24 | Border price of X coffee, 1000$/ton |
| $BP_{RICE}$ | 216.60 | 20 | Border price of X rice, US$/ton |
| $SP_{RICE}$ | 976.52 | 24 | Paddy rice producer price, 1000 dong/ton |
| $SP_{TEA}$ | 1,352.51 | 24 | Fresh tea producer price, 1000 dong/ton |
| $SP_{GNUT}$ | 3,101.49 | 24 | Groundnut producer price, 1000 dong/ton |
| $SP_{COFFEE}$ | 6,760.59 | 24 | Coffee producer price, dong/ton |
| $DP_{RICE}$ | 1,659.31 | 24 | Consumer price of milled rice, 1000 dong/ton |
| $DP_{GNUT}$ | 4,598.09 | 24 | Consumer peanut price, 1000 dong/ton |
| $DP_{TEA}$ | 6,436.36 | 24 | Dry tea consumer price, 1000 dong/ton |
| $DP_{COFFEE}$ | 7,308.26 | 24 | Coffee consumer price, 1000 dong/ton |
| $lnSP_{RICE}$ | 6.32 | 24 | Natural log of rice producer price |
| $lnSP_{TEA}$ | 7.15 | 24 | Natural log of tea producer price |
| $lnSP_{GNUT}$ | 7.89 | 24 | Natural log of groundnut producer price |
| $lnSP_{COFFEE}$ | 8.32 | 24 | Natural log of coffee producer price |
| $lnDP_{RICE}$ | 6.81 | 24 | Natural log of rice consumer price |
| $lnDP_{GNUT}$ | 8.28 | 24 | Natural log of groundnut consumer price |
| $lnDP_{COFFEE}$ | 8.39 | 24 | Natural log of coffee consumer price |
| $lnDP_{TEA}$ | 8.71 | 24 | Natural log of tea consumer price |
| NER | 7575.00 | 24 | Nominal exchange rate, VND/US$ |
| $DEM_{TEA}$ | 7.91 | 24 | Demand for dry tea, 1000 tons |
| $RDP_{TEA}$ | 424.20 | 24 | Tea consumer price divided by CPI,1000 dong/ton |
| PRGDP | 19,103.24 | 24 | Per capita GDP deflated by CPI, dong |
| CVALUE | 183,138.22 | 24 | Gross value of selected crops deflated by CPI, million dong |
| lnCVALUE | 12.07 | | Natural log of real gross value of 4 selected crops |

Based on the results of regressions shown above, SPE, DPE, DYE for the related crops in Viet Nam can be estimated as in Table A2:

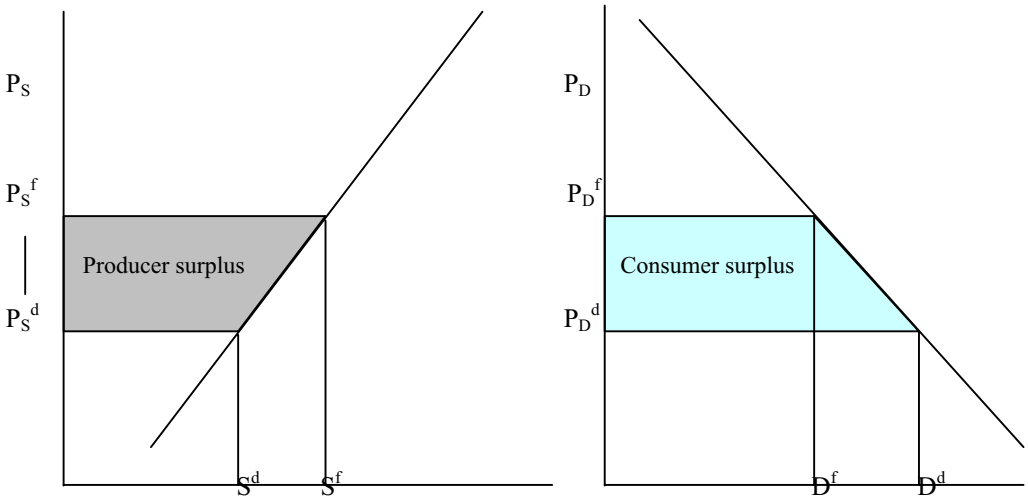
**Table A 2 Demand and supply elasticity of major crops in Viet Nam, 1986-97.**

| Crop | SPE | DPE | DYE | PTC |
|---|---|---|---|---|
| Rice | 0.2564 | -0.4650 | 0.5517 | 0.5679 |
| Coffee | 0.9448 | -1.6561 | 5.6705 | 0.9035 |
| Tea | 0.1556 | -1.4553 | 4.6620 | 0.2208 |
| Groundnut | 0.3307 | -1.3901 | 2.7664 | 0.6910 |

Where:
SPE = Supply own-price elasticity;
DPE = Demand own-price elasticity;
DYE = Demand income elasticity;
PTC = Coefficient of price transmission - producer price vis-a-vis consumer price estimated in linear form.

*Appendix*

**Figure A 1 Welfare effect of trade liberalization.**




Impact on producer price:
$DP_S = P_S^f - P_S^d$
Impact on domestic production:
$DS = S^f - S^d$
Impact on consumer price:
$DP_D = P_D^f - P_D^d$
Impact on domestic consumption:
$DD = D^f - D^d$
Impact on export volume:
$DX = X^f - X^d$
Impact on value of export:
$DVX = (P^f_{fob}*X^f - P^d_{fob}*X^d)*NER$
Impact on farmer surplus (PS):
$DFS = DP_S*S^d + 0.5*DP_S*DS$
Impact on consumer surplus (CS):
$DCS = DP_D*D^d + 0.5*DP_D*DD$
Impact on overall producer surplus (PS):
$DPS = DP_D*S^d + 0.5*DP_D*DS$
Impact on trader (exporter) profit (TP):
$DTP = NP*(P^f_{fob}*X^f - P^d_{fob}*X^d)*NER$
$= NP*DVX$
(Normal trader profit, NP, is assumed to be 5% of the world price)
Impact on trader (exporter) rent (TR):
$DTR = -IT_X*P^d_{f.o.b.}*NER*X^d$

(It is assumed that the implicit export tax embodied in export quota, mainly for rice, or in other non-tax barriers would go to traders as economic rent.)

Impact on government revenue (GR):

$$DGR = -T_X * P^d_{f.o.b.} * NER * X^d$$

Net social gain (net impact of the trade liberalization):

$$NSG = DPS + DCS + DGR + DTP + DTR$$

Where:

$DP_S$ = Change in producer price;
$P_S^f$ = Producer price under free trade regime;
$P_S^d$ = Producer price under distorted trade regime;
DS = Change in quantity supply;
$S^f$ = Supply under free trade regime;
$S^d$ = Supply under distorted trade regime;
$DP_D$ = Change in consumer price;
$P_D^f$ = = Consumer price under free trade regime;
$P_D^d$ = Consumer price under distorted trade regime;
DD = Change in quantity demand;
$D^f$ = Demand under free trade regime;
$D^d$ = Demand under distorted trade regime;
NP = Normal trader profit;
DVX = Change in total value of export;
DX = Change in export volume;
$X^f$ = Export volume under free trade regime;
$X^d$ = Export volume under distorted trade regime;
$T_X$ = Export tax in fraction;
$IT_X$ = Implicit export tax embodied in export quota, in fraction.

**Table A 3 Variables and data for estimating domestic supply, demand and price linkage functions of related crops in Viet Nam.**

| Region | CPI | Pop | GDP | $SUP_{RICE}$ | $DEM_{RICE}$ | $SP_{RICE}$ | $DP_{RICE}$ | $X_{RICE}$ | $M_{RICE}$ | $FOB_{RICE}$ | $SUP_{COFE}$ | $DEM_{COFE}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| North86 | 1.00 | 30.1 | 240 | 6,302.0 | 4,300.0 | 14.57 | 21.91 | 0 | 470 | NA | 0.50 | NA |
| South86 | 1.00 | 31.0 | 359 | 9,703.0 | 5,779.0 | 14.44 | 20.98 | 130 | 12 | 165.00 | 18.20 | NA |
| North87 | 3.23 | 30.6 | 1,120 | 6,100.8 | 4,007.8 | 58.90 | 104.81 | 0 | 300 | NA | 0.80 | NA |
| South87 | 3.23 | 31.8 | 1,750 | 9,001.2 | 5,372.5 | 58.63 | 102.55 | 120 | 22 | 142.00 | 19.70 | NA |
| North88 | 15.96 | 31.2 | 6,169 | 6,692.5 | 4,186.4 | 325.88 | 442.76 | 0 | 119 | NA | 0.70 | NA |
| South88 | 15.96 | 32.5 | 9,252 | 10,288.5 | 6,062.8 | 324.59 | 424.28 | 190 | 0 | 142.00 | 30.60 | NA |
| North89 | 26.66 | 31.8 | 10,957 | 7,298.8 | 4,370.9 | 388.11 | 575.30 | 120 | 55 | 203.00 | 0.70 | NA |
| South89 | 26.66 | 32.9 | 17,136 | 11,698.2 | 5,809.6 | 381.05 | 522.66 | 1,300 | 0 | 204.00 | 40.60 | NA |
| North90 | 44.66 | 32.6 | 16,782 | 6,908.6 | 4,068.7 | 554.10 | 985.67 | 130 | 0 | 186.00 | 0.70 | 1.61 |
| South90 | 44.66 | 33.6 | 25,173 | 12,315.4 | 5,994.7 | 542.15 | 938.54 | 1,490 | 0 | 187.00 | 91.30 | 14.49 |
| North91 | 74.84 | 33.3 | 29,149 | 6,204.4 | 3,776.9 | 1,260.03 | 2,151.16 | 0 | 6.2 | NA | 0.60 | 0.61 |
| South91 | 74.84 | 34.4 | 47,558 | 13,409.6 | 7,119.7 | 1,244.40 | 2,049.77 | 1,030 | 0 | 227.30 | 99.00 | 5.49 |
| North92 | 88.02 | 34.0 | 43,109 | 7,804.3 | 4,693.1 | 1,257.31 | 2,146.47 | 50 | 0 | 214.00 | 0.70 | 0.25 |
| South92 | 88.02 | 35.4 | 67,426 | 13,807.7 | 6,991.6 | 1,242.43 | 2,016.33 | 1,400 | 0 | 215.40 | 118.00 | 2.25 |
| North93 | 92.59 | 34.7 | 51,897 | 8,928.5 | 5,326.3 | 1,206.13 | 2,080.06 | 100 | 0 | 209.00 | 0.90 | 1.36 |
| South93 | 92.59 | 36.3 | 84,674 | 13,944.5 | 6,854.8 | 1,160.03 | 2,025.90 | 1,620 | 0 | 220.90 | 135.30 | 12.24 |
| North94 | 106.02 | 35.4 | 66,401 | 8,219.5 | 4,895.4 | 1,386.16 | 2,413.39 | 100 | 0 | 213.00 | 1.30 | 0.52 |
| South94 | 106.02 | 37.1 | 103,857 | 15,336.5 | 7,440.7 | 1,294.05 | 2,203.41 | 1,880 | 0 | 214.50 | 180.30 | 4.68 |
| North95 | 119.48 | 36.0 | 86,908 | 8,887.2 | 5,241.2 | 1,948.54 | 3,300.00 | 160 | 0 | 267.00 | 2.40 | 1.86 |
| South95 | 119.48 | 37.9 | 135,932 | 16,076.8 | 7,870.7 | 1,800.00 | 2,800.00 | 1,900 | 0 | 268.90 | 216.20 | 16.74 |
| North96 | 124.86 | 36.7 | 103,444 | 9,398.9 | 5,542.2 | 1,925.00 | 3,313.00 | 170 | 0 | 284.00 | 4.00 | 3.80 |
| South96 | 124.86 | 38.6 | 155,165 | 16,998.1 | 7,450.6 | 1,872.31 | 3,096.16 | 2,880 | 0 | 286.00 | 316.98 | 34.18 |
| North97 | 129.36 | 37.4 | 122,314 | 10,417.0 | 6,150.9 | 1,669.52 | 3,156.70 | 180 | 0 | 241.00 | 8.30 | 1.65 |
| South97 | 129.36 | 39.3 | 191,310 | 17,228.0 | 6,970.3 | 1,508.08 | 2,931.60 | 3,500 | 0 | 242.00 | 412.20 | 14.85 |

SOURCE: Data provided by Viet Nam's General Statistics Office (GSO).

Remarks:

2. CPI = Consumer price index;
3. Pop = Population, million persons;
4. GDP = Gross domestic product, billion dong;
5. $SUP_{RICE}$ = Supply of paddy rice, 1000 tons;
6. $DEM_{RICE}$ =Demand for milled rice, 1000 tons;
7. $SP_{RICE}$ = Supply price of paddy rice, 1000 dong/ton;
8. $DP_{RICE}$ = Consumer price of milled rice, 1000 dong/ton;
9. $X_{RICE}$ = Rice export, 1000 tons;
10. $M_{RICE}$ = Rice import, 1000 tons;
11. $FOB_{RICE}$ = F.O.B. price of milled rice, USD/ton;
12. $SUP_{COFE}$ = Supply of coffee, 1000 tons;
13. $DEM_{COFE}$ =Demand for coffee, 1000 tons;

(Continued)

**Table A 3 Variables and data for estimating domestic supply, demand and price linkage functions of related crops in Viet Nam (continued).**

| Region | $SP_{COFE}$ | $DP_{COFE}$ | $X_{COFE}$ | $FOB_{COFE}$ | $SUP_{TEA}$ | $DEM_{TEA}$ | $SP_{TEA}$ | $DP_{TEA}$ | $X_{TEA}$ | $FOB_{TEA}$ | $SUP_{NUT}$ | $DEM_{NUT}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| North86 | 140.00 | 145.00 | 0.5 | 2.56 | 106.4 | 12.26 | 532.70 | 2,540.05 | 9.0 | 1.400 | 97.0 | 42.8 |
| South86 | 149.89 | 157.86 | 34.9 | 2.56 | 28.4 | 3.67 | 495.21 | 2,405.60 | 2.0 | 1.400 | 114.0 | 54.3 |
| North87 | 640.00 | 650.00 | 0.8 | 2.00 | 101.9 | 11.06 | 953.02 | 4,811.73 | 9.3 | 1.450 | 120.0 | 48.3 |
| South87 | 649.97 | 678.32 | 36.8 | 2.00 | 28.3 | 3.45 | 950.11 | 4,884.20 | 2.2 | 1.450 | 112.0 | 49.6 |
| North88 | 3,000.00 | 3,075.00 | 0.7 | 1.75 | 98.8 | 8.34 | 903.65 | 4,477.69 | 11.4 | 1.410 | 104.0 | 31.7 |
| South88 | 3,090.85 | 3,178.66 | 37.3 | 1.75 | 34.8 | 3.55 | 905.40 | 4,496.56 | 3.4 | 1.410 | 110.0 | 39.3 |
| North89 | 3,015.00 | 3,145.00 | 0.7 | 1.42 | 100.4 | 8.06 | 1,001.93 | 4,965.68 | 12.0 | 1.130 | 92.0 | 42.6 |
| South89 | 3,082.90 | 3,231.60 | 57.0 | 1.42 | 35.5 | 4.09 | 998.82 | 4,884.53 | 3.0 | 1.130 | 113.0 | 57.5 |
| North90 | 4,000.00 | 4,200.00 | 0.7 | 1.03 | 102.6 | 7.40 | 1,158.52 | 5,343.72 | 13.1 | 1.000 | 93.0 | 42.9 |
| South90 | 4,221.15 | 4,498.82 | 75.2 | 1.03 | 42.3 | 5.55 | 1,093.26 | 5,213.09 | 2.9 | 1.000 | 120.1 | 60.4 |
| North91 | 6,040.00 | 6,130.00 | 0.6 | 0.82 | 102.8 | 14.74 | 1,435.95 | 6,697.08 | 5.8 | 1.100 | 91.0 | 23.5 |
| South91 | 6,503.46 | 6,866.69 | 92.9 | 0.82 | 45.6 | 7.01 | 1,402.72 | 6,655.60 | 2.1 | 1.100 | 144.0 | 63.9 |
| North92 | 6,075.00 | 6,740.00 | 0.7 | 0.79 | 112.9 | 12.26 | 1,434.50 | 7,004.42 | 10.3 | 1.200 | 76.0 | 19.1 |
| South92 | 6,905.26 | 7,229.75 | 115.5 | 0.79 | 49.9 | 7.37 | 1,424.00 | 6,735.87 | 2.6 | 1.200 | 151.0 | 71.1 |
| North93 | 6,149.00 | 7,105.00 | 0.9 | 1.34 | 114.8 | 3.94 | 1,487.67 | 7,164.61 | 19.0 | 1.240 | 107.0 | 15.9 |
| South93 | 7,251.18 | 7,612.08 | 121.7 | 1.34 | 54.8 | 8.75 | 1,477.04 | 6,886.39 | 2.2 | 1.240 | 152.0 | 50.9 |
| North94 | 10,200.00 | 10,590.00 | 1.3 | 1.59 | 127.5 | 5.47 | 1,777.07 | 8,436.74 | 20.0 | 1.130 | 108.0 | 3.4 |
| South94 | 12,116.47 | 12,634.76 | 175.1 | 1.59 | 61.6 | 8.81 | 1,774.63 | 8,109.77 | 3.5 | 1.130 | 186.0 | 67.7 |
| North95 | 12,200.00 | 15,210.00 | 2.4 | 2.14 | 121.2 | 7.22 | 1,794.41 | 8,550.42 | 17.0 | 1.350 | 136.5 | 22.8 |
| South95 | 16,917.90 | 17,921.76 | 197.6 | 2.14 | 59.6 | 10.11 | 1,786.61 | 8,323.85 | 1.8 | 1.350 | 198.0 | 84.7 |
| North96 | 10,400.00 | 11,290.00 | 4.0 | 1.45 | 130.1 | 7.99 | 1,891.47 | 8,951.46 | 18.0 | 1.450 | 146.0 | 21.2 |
| South96 | 12,870.60 | 12,898.82 | 279.0 | 1.45 | 80.4 | 13.36 | 1,868.87 | 8,926.29 | 2.7 | 1.450 | 212.0 | 89.9 |
| North97 | 11,500.00 | 14,091.00 | 6.3 | 1.90 | 153.6 | 2.69 | 1,977.80 | 8,999.93 | 28.0 | 1.500 | 154.9 | 53.2 |
| South97 | 15,135.42 | 16,118.15 | 397.7 | 1.90 | 81.5 | 12.78 | 1,934.99 | 9,007.38 | 3.5 | 1.500 | 198.0 | 97.5 |

SOURCE: Data provided by Viet Nam's General Statistics Office (GSO).

Remarks:

14. $SP_{COFE}$ = Supply price of coffee, 1000 dong/ton;
15. $DP_{COFE}$ = Consumer price of coffee, 1000 dong/ton;
16. $X_{COFE}$ = Coffee export, 1000 tons;
17. $FOB_{COFE}$ = f.o.b. price of coffee, 1000 USD/ton;
18. $DEM_{TEA}$ =Demand for tea, 1000 tons dry leaf;
19. $SUP_{TEA}$ = Supply of tea, 1000 tons fresh leaf;
20. $SP_{TEA}$ = Supply price of tea, 1000 dong/ton fresh leaf;
21. $DP_{TEA}$ = Consumer price of tea, 1000 dong/ton dry leaf;
22. $X_{TEA}$ = Tea export, 1000 tons dry leaf;
23. $FOB_{TEA}$ = F.O.B. price of tea, 1000 USD/ton dry leaf;
24. $SUP_{NUT}$ = Supply of groundnut, 1000 tons;
25. $DEM_{GNUT}$ =Demand for groundnut, 1000 tons;

(Continued)

**Table A 3 Variables and data for estimating domestic supply, demand and price linkage functions of related crops in Viet Nam (continued).**

| Region | $SP_{NUT}$ | $DP_{NUT}$ | $X_{NUT}$ | $FOB_{NUT}$ | $SP_{BEAN}$ | $DP_{BEAN}$ | Country | $DP_{URE}$ | $MP_{UREA}$ | $TE_{UREA}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 26 | 27 | 28 | 29 | 30 | 31 | by year | 32 | 33 | 34 |
| North86 | 408.56 | 595.60 | 23.0 | 0.480 | 24.03 | 25.77 | VN1990 | 1,053 | 852 | 115.71 |
| South86 | 393.75 | 586.34 | 20.2 | 0.420 | 24.85 | 26.30 | VN1991 | 2,192 | 1,808 | 202.73 |
| North87 | 1,935.67 | 2,963.10 | 33.3 | 0.490 | 183.00 | 192.00 | VN1992 | 2,276 | 1,951 | 129.62 |
| South87 | 1,899.57 | 2,874.36 | 23.0 | 0.460 | 191.25 | 207.25 | VN1993 | 1,753 | 1,490 | 114.44 |
| North88 | 2,144.90 | 3,254.45 | 40.3 | 0.520 | 921.67 | 1,018.33 | VN1994 | 2,058 | 1,866 | 5.11 |
| South88 | 2,073.82 | 3,167.78 | 31.0 | 0.460 | 1,025.50 | 1,120.00 | VN1995 | 2,834 | 2,575 | 1.28 |
| North89 | 2,149.24 | 3,277.02 | 20.2 | 0.580 | 1,483.33 | 1,567.00 | VN1996 | 2,866 | 2,588 | 19.75 |
| South89 | 2,179.21 | 3,231.61 | 16.0 | 0.530 | 1,505.00 | 1,587.50 | VN1997 | 2,435 | 2,135 | 86.75 |
| North90 | 2,241.44 | 3,392.17 | 20.5 | 0.600 | 1,573.67 | 1,629.00 | | | | |
| South90 | 2,253.43 | 3,384.42 | 18.0 | 0.540 | 1,611.50 | 1,671.50 | | | | |
| North91 | 3,029.67 | 4,420.09 | 46.3 | 0.630 | 2,605.00 | 2,641.33 | | | | |
| South91 | 3,017.65 | 4,484.50 | 22.6 | 0.590 | 2,642.50 | 2,658.00 | | | | |
| North92 | 2,949.43 | 4,397.09 | 40.8 | 0.540 | 2,781.33 | 2,839.00 | | | | |
| South92 | 2,928.45 | 4,504.09 | 20.0 | 0.500 | 2,821.50 | 2,861.00 | | | | |
| North93 | 3,938.04 | 5,849.35 | 70.5 | 0.600 | 2,931.67 | 2,978.67 | | | | |
| South93 | 3,920.89 | 5,923.07 | 35.0 | 0.550 | 2,990.00 | 3,075.25 | | | | |
| North94 | 4,407.31 | 6,379.76 | 100.0 | 0.590 | 3,526.67 | 3,630.00 | | | | |
| South94 | 4,356.10 | 6,462.52 | 24.5 | 0.530 | 3,480.25 | 3,582.50 | | | | |
| North95 | 4,434.21 | 6,403.57 | 90.0 | 0.690 | 3,949.67 | 4,114.67 | | | | |
| South95 | 4,382.67 | 6,459.88 | 25.0 | 0.660 | 4,008.25 | 4,146.00 | | | | |
| North96 | 4,750.08 | 6,883.86 | 102.0 | 0.730 | 4,184.67 | 4,456.67 | | | | |
| South96 | 4,735.47 | 6,931.84 | 25.0 | 0.680 | 4,271.00 | 4,526.25 | | | | |
| North97 | 4,948.81 | 7,243.66 | 60.0 | 0.700 | 4,657.33 | 4,862.67 | | | | |
| South97 | 4,957.39 | 7,284.10 | 24.0 | 0.650 | 4,751.25 | 4,882.50 | | | | |

SOURCE: Data provided by Viet Nam's General Statistics Office (GSO).

Remarks:

26. $SP_{NUT}$ = Supply price of groundnut, 1000 dong/ton;
27. $DP_{NUT}$ = Consumer price of groundnut, 1000 dong/ton;
28. $X_{NUT}$ = Groundnut export, 1000 tons;
29. $FOB_{NUT}$ = F.o.b. price of groundnut, 1000 USD/ton;
30. $SP_{BEAN}$ = Supply price of soybean, 1000 dong/ton;
31. $DP_{BEAN}$ = Demand price of soybean, 1000 dong/ton;
32. $DP_{UREA}$ = Demand price of urea fertilizer, 1000 dong/ton;
33. $MP_{UREA}$ = Import c.i.f. price of urea fertilizer, 1000 dong/ton;
34. $TE_{UREA}$ = Tariff-equivalent on imported urea, 1000 dong/ton (TE on urea is computed from the consumer price of urea reduced by c.i.f. price of imported urea and 10% of normal market margin. The average rate of tariff-equivalent on urea import during 1990-1997 period is estimated at 4.1%).