CHAPTER 2

RICE PRODUCTION AND MARKETING IN VIET NAM

This chapter provides information on rice production in agro-economic regions and the whole country. The rice production mainly focuses on rice-sown area, rice yield, rice output, and fertilizer and pesticide use. In addition, information on rice marketing performance is also presented.

2.1 Trend of rice production in Vietnam

Table 2.1 presents the changes in rice production in Vietnam in the period 1980-2000. Although rice land area slightly reduced in this period, sown area of rice was gradually increased. Moreover, rice production has made steady increase in yield as follows: 2.1 tons/ha, 3.7 tons/ha, and 4.2 tons/ha in 1980, 1995, and 2000 respectively. Therefore, gross output of rice has increased from 11,647.4 thousand tons in 1980 to 32,529.5 thousand tons in 2000. Rice production has increased 1.7 times over the ten-year period, from 1990 to 2000 (Nguyet, 2002).

Table 2.1: Rice production in Vietnam in the period 1980-2000

Year	Cultivated land ('000 ha)	Sown area ('000 ha)	Yield (tons/ha)	Gross output ('000 tons)
1980	4,275.3	5,600.2	2.1	11,647.4
1985	4,296.6	5,718.3	2.7	15,859.3
1990	4,108.9	6,042.8	3.1	19,225.1
1995	4,203.5	6,765.6	3.7	24,963.7
1999	4,213.4	7,653.6	4.1	31,393.8
2000	4,267.9	7,666.3	4.2	32,529.5

Source: General Statistical Office, 2001

Rice production in Vietnam has increased rapidly over the years. The main reasons for the impressive increase in rice production can be explained as follows:

- The Government has paid great attention to improving infrastructure such as irrigation and drainage system that facilitated expansion of rice growing area.

- The number of rice growing season has been made possible from single crop season to two or three crop per year.

- The modern rice varieties with high yield, pest and disease resistant varieties were adopted.

Rice production has been positively affected by renovation policies that brought about changes in agricultural development through implementation of market-oriented economy. Thereafter, household has been considered as the production unit, thereby farmers have been encouraged to utilize their own endowments and inputs in the best possible way.

The impressive progress in rice production has brought Vietnam from a food - deficit country to rice exporting country. In the period 1990-2000, rice was ranked first among the agricultural exporting commodities. Value of rice export significantly increased over the period, for instance 27 million US$, 54 million US$, and 668 million US$ in 1990, 1995, and 2000, respectively (Table 2.2).

Table 2.2: Export of agricultural commodities

Unit: million US$

Commodities	1990	1995	1997	1998	2000
Rice	27	54	870	1024	668
Rubber	16	18	191	12	170
Tea	2	33	48	51	53
Coffee	25	49	491	59	485
Cashew nut	13	13	133	11	130
Pepper	12	-	63	64	142
Processed meat	28	12	29	-	11.6
Marine products	22	62	781	81	1,475
Total	1,731	5,198	9,415	9,365	14,308

Source: General Statistical Office, 2001

2.2 Rice production in agro-economic regions in Vietnam

The climate throughout Vietnam is tropical. Land use types are diversified mainly according to the topographical features of the country. Vietnam are classified into seven agro-economic regions, based on the difference in natural condition, infrastructure and market integration, including: Northern Uplands, Red River Delta, Northern Central Coast, Southern Central Coast, Central Highlands, Southeastern Region, and Mekong River Delta. The following section aims to describe rice production in these zones.

2.2.1 Northern Uplands

This vast mountainous and hilly area occupy an area of 10 million hectares, equivalent to 31 percent of total land area of 33 million hectares of the country (Table 2.3). This region is influenced by both the tropical monsoon and northern winds giving this region a distinct climatic characteristic from the rest of the country. It is cold in the winter and hot in the summer. Average rainfall is about 2,400 mm, concentrating in July and August. Inhabitants of this region are composed of many

ethnic minorities representing a larger share of the population and spread all over the place with a density of about 102 people per square. This is one of the poorest regions in Vietnam. Soil of this region is degraded gray soil. Tea, cassava, and maize are more important crop than rice. The cropping intensity ratio was low, 1.47 times in 2000 (Table 2.3).

Irrigated rice is grown in the narrow mountain valleys and upland rice is grown in the slope area. In 2000, rice was planted in 687 thousand hectares, accounting for 8 percent of the whole country. Rice yield was 3.45 tons/ha (Table 2.5). However, its rice yield was lower as compared with those of other regions. This region was the largest rice-deficit area (Minot and Goletti, 2000).

Table 2.3: Land utilization of Vietnam in 2000

Region	Total land area ('000 ha)	Agriculture land		Cropping intensity (time)
		Area ('000 ha)	Proportion in total area (%)	
North Uplands	10,519	1,305.3	12.40	1.40
Red River Delta	1,267	857.6	67.68	1.80
Northern Central Coast	5,130	725.3	14.13	1.64
South Central Coast	3,302	545.6	16.52	1.90
Central Highlands	4,465	1,233.6	27.62	1.25
South East	4,448	1,707.8	38.39	1.47
Mekong River Delta	3,964	2,970.2	74.92	2.00
Whole country	33,104	9,395.4	28.38	1.63

Source: General Statistical Office, 2001

Table 2. 4: Average farm size and cultivated rice area by regions in 2000

Unit: ha/household

Region	Farm size	Cultivated rice area
Northern Uplands	0.43	0.29
Red River Delta	0.23	0.23
North Central Coast	0.30	0.27
South Central Coast	0.41	0.27
Central Highlands	0.74	0.32
South East	0.92	0.63
Mekong River Delta	1.10	0.91
Whole country	0.49	0.41

Source: General Statistical Office, 2001

Table 2.5: Rice production by regions in 2000

Region	Sown area ('000 ha)	Yield (tons per ha)	Output ('000 tons)	Share (%)
Northern Uplands	687.1	3.45	2,370	7.29
Red River Delta	1212.6	5.52	6,693	20.59
Northern Central Coast	695.0	4.06	2,821	8.68
South Central Coast	422.5	3.98	1,681	5.17
Central Highlands	176.8	3.36	594	1.82
South East	526.5	3.19	1,679	5.16
Mekong River Delta	3945.8	4.23	16,690	51.34
Whole country	7666.3	4.24	32,505	100

Source: General Statistical Office, 2001

2.2.2 **Red River Delta**

The Red River Delta has 1,267 thousand hectares of agricultural land (Table 2.3). Today, it is one of the most densely populated regions in the world, with more than 1,000 inhabitants per square kilometer. As shown in Tables 2.3 and 2.4, the land size was small (0.23 ha/household) and the cropping intensity ratio was 1.4 times. Rice was grown by 95 percent of the rural households and accounted for 81 percent of

agricultural land (General Statistical Office, 2001). Moreover, rice yield increased 3 percent in the period 1980-1987 and 6.5 percent in the period 1987-1995 (Hien, 1998).

In 2000, rice yield reached about 5.52 tons/ha, the highest yield among regions. The Red River Delta devoted 20.59 percent of national rice production (Table 2.5). This region ranked second biggest rice producing region in Vietnam, after the Mekong River Delta. Annually, the Red River Delta produces a surplus of several hundred thousand tons for shipment to surrounding regions.

It is more difficult to evaluate the potential for further expansion of rice production area in the Red River Delta. The National Institute for Agricultural Planning and Projection was pessimistic about area expansion, noting that each year 2,000 hectares are absorbed by urban and industrial development. The institute argued that cropping intensity can and will increase, but the additional sown area will be devoted to vegetables and other crops as farmers diversify their production to meet the demand from urban consumers (National Institute for Agricultural Planning and Projection, 1995). Thus, in the Red River Delta, any increase in paddy production will probably depend on improving yield rather than area expansion or intensification.

2.2.3 **Northern Central Coast**

The Northern Central Coast consists of a narrow coastal plain and a chain of rugged mountainous valleys. Climate of this region is attributed to rather cold weather in the winter season and dry and hot wind in the summer, and much impacted by storms. Population density is about 167 people per square kilometer and resident is concentrating in small delta area along the coastline. The ethnic minorities live in the mountain and practice slash and burn farming. As shown in Table 2.5, in 2000 this region had 695 thousand hectares of rice-sown area, accounting for 9 percent of the whole country and rice yield reached 4.06 tons/ha. Rice yield of this region was lower than those of the Red River Delta and the Mekong River Delta. The Northern Central Coast was also the rice-deficit region.

2.2.4 **Southern Central Coast**

The Southern Central Coast has the similar climate to those of the rest of the southern part of Vietnam, except some extremely dry locations in the dry season. This region has a sizable fishing industry. Alluvial deltas are suitable for rice production and many other cash crops, such as sugar cane, peanuts, bean, and rubber. In 2000, agricultural land area (725.3 thousand hectares) was the smallest area as compared with those of remaining regions (Table 2.3). However, average of rice farm size (0.27 ha/household) was still higher than that of the Red River Delta (Table 2.4). The area sown to rice was 422.5 thousand hectares, accounting for 5 percent of country's rice-sown area. Rice yield was 3.98 tons/ha. This region was also the rice-deficit area.

2.2.5 Central Highlands

Among the seven agro-ecological regions of the country, the Central Highlands is ranked as the second largest region and its area (45,300 square kilometer) is 4 times larger than the Red River Delta. Population density is about 45 people per square kilometer. The mild temperature and humidity of this region is favorable for high value crops such as coffee, rubber, mulberry, cashew, and pepper. Coffee is the dominant crop in agricultural production and has been growing rapidly. In 2000, the Central Highlands had about 176.8 hectares of rice-sown area, accounting for 2 percent of those of country. Rice yield was 3.36 tons/ha (Table 2.5). Annually, this region also needs to import rice from other regions.

2.2.6 South Eastern

Soils of these southeastern uplands belong to two major groups: red dish brown, basaltic soils adjacent to the highlands, and degraded gray soils, with patches of acid sulfate soils. In 2000, rice-sown area of this region was 526.5 thousand hectares and rice yield was 3.19 tons/ha. This region was also the rice-deficit area.

2.2.7 **Mekong River Delta**

The monsoon rain cause high flow of the Mekong river during September to October causing annual flood on the entire delta. On the contrary, during the dry season, water table moves deep into the soil profile, leading to drought. The Mekong Delta soils are young alluvium, about 40 percent of those are affected by acid sulfate soil and seasonal saline soils. In contrast to the Red River Delta, larger-scale rice cultivation (1.1 ha/household) in the Mekong River Delta is a relatively recent phenomenon.

Because it is much larger than the Red River Delta, the Mekong River Delta accounts for more than half of Vietnam's rice production. In the period 1995-1998, this region generated a rice surplus ranging from 4.5 to 6 million tons per year, most of which were exported while the remaining was shifted to other regions of the country (Minot and Goletti, 2000).

As shown in Table 2.3, the average rice cropping intensity in Vietnam was 1.63 times. The Agricultural Census of 1994 reported that out of the total paddy area, 8.8 percent was triple cropped, 55.2 percent double cropped, and 36 percent single cropped. Triple rice cropping was practiced on 5 percent of the rice land, implying that double-cropped rice accounted for 51 percent and single-cropped rice 44 percent (Minot and Goletti, 2000).

The other five regions have majority of rural households growing rice, but the yields and cropping intensities were lower than the Red River Delta and the Mekong River Delta. As the result, all five regions were rice deficit areas. Table 2.6 describes the picture of rice seasonal distribution of production by regions in 1996. It shows that, in January, April, September, and November the demand of rice of the whole country exceeded the rice production output, and meanwhile in the remaining months rice production amount were higher than domestic consumption. Consequently, the surplus rice was about 2 thousand tons for export. The seasonal variation in rice production also affected rice-marketing performance in Vietnam.

Table 2.6: Seasonal distribution of production by regions

Month	1	2	3	4	5	6	7	Country	Rice output gap ('000 tons)
	(% of annual production)								
Jan.	0.0	0.0	0.0	0.0	0.0	0.0	3.4	1.8	-715
Feb	0.0	0.0	0.0	18.3	0.0	0.0	11.6	7.3	46
March	0.0	0.0	0.0	28.8	16.3	24.6	36.0	21.7	2,051
April	0.0	0.0	6.6	8.0	17.0	7.3	7.3	5.4	-206
May	23.3	26.2	46.9	2.7	11.9	0.0	2.4	12.6	793
June	22.2	27.6	0.0	19.0	0.0	3.2	4.0	10.6	514
July	2.3	0.2	0.0	15.8	0.0	23.4	21.7	13.4	898
Aug.	0.0	0.0	33.4	3.4	2.4	27.3	12.2	10.4	489
Sep.	8.6	4.4	13.2	3.1	26.0	6.7	0.6	3.9	-414
Oct.	25.1	35.0	0.0	0.8	12.4	0.0	0.0	9.0	292
Nov.	18.5	6.6	0.0	0.0	6.4	6.4	0.8	3.6	-455
Dec.	0.0	0.0	0.0	0.0	7.7	1.1	0.0	0.2	-935
Total	100	100	100	100	100	100	100	100	2,357

Source: IFPRI, 1996

Note: 1,2,3,4,5,6 and 7 are Northern Upland, Red River Delta, Northern Central Coast, Central Highlands, South East, and Mekong River Delta, respectively.

As mentioned above, the increase in rice yield of Vietnam over time was contributed by many factors, of which fertilizer application and crop protection were crucial factors.

2.3 Fertilizer and pesticide use

In 1980, fertilizer utilization for rice was equivalent to 22 kg/ha. Fertilizers application rate climbed to 57 kg/ha in 1983 and to 85 kg/ha by 1990. Since 1990, fertilizer use has increased three-fold, reaching 200 kg/ha (1.5 million tons of nutrients) in 1996 (FAO, 2003). This growth was attributed to the liberalization of fertilizer imports. In 1991, central and provincial state owned enterprises, that earned foreign exchange, were allowed to directly import fertilizer. Vietnam does not have

much of a domestic fertilizer industry, thus fertilizer supply was heavily dependent on the import of fertilizer. Over this period, there was no tariffs on imports, fertilizer imported were tripled in terms of quantity.

In Vietnam, 92 percent of rice farmers used chemical fertilizers. Farmers applied from 170 to 182 kilograms of fertilizer per hectare, but the application levels were higher in the deltas. Table 2.7 shows some typical fertilizers, which was used by rice growers in two main rice-producing regions.

Table 2.7: Fertilizer use in rice production

Unit: kg/ha

Region	Urea	NPK	SP	Potash	DAP
Red River Delta	170-200	80-35	196-274	30	0
Mekong River Delta	131-165	88-91	5-34	6-14	40-100

Source: IFPRI, 1996

Note: the range refers to averages for different seasons; NPK refers to compound fertilizer. SP is supper phosphate, and DAD is diammonium phosphate.

Organic fertilizers were used by more than two-thirds of the rice farmers in Vietnam, but there were wide regional differences. The proportion was more than 80 percent in the north and South Central Coast but less than 30 percent in Central Highlands, Southeast, and Mekong River Delta. The use of organic fertilizer was falling due to the rising opportunity cost of labor and the falling of inorganic fertilizer price.

With regard to pesticide use, it was reported that most of rice growers used insecticides, and more than 80 percent of rice farmers in the two deltas own sprayers, Dung (1994) and Dac (1996). In addition, weeds were more often controlled by physical methods rather than herbicides. The growth rate for rice yield and fertilizer consumption in South East Asia was estimated as follows:

Table 2.8: Growth rate of rice yield and fertilizer consumption in South East Asia

Country	Increase in rice yield (% per year)		Increase in fertilizer consumption (%)		
	1967-1990	1990-1999	Nitrogen	Phosphorus	Potassium
Cambodia	0.7	2.5	22.6	3.4	0
Indonesia	4.0	0	4.6	-5.4	-1.0
Laos	4.4	2.0	26.5	15.8	10.4
Malaysia	1.6	0.5	3.7	4.7	6.5
Myanmar	2.5	0.9	12.2	11.7	-2.3
Philippines	3.4	-0.4	0.3	1.8	2.1
Thailand	0.5	1.5	16.2	4.7	9.6
Vietnam	2.2	2.1	15.1	16.4	37.2

Source: Mutert and Fairhust, 2002

Over the past three decades, Thailand has maintained its position as the region's major rice exporter among the South East Asian countries. Vietnam was the rice importer in the 1980s, but began to export rice during the 1990s. In 2000, Vietnam exported more than 4 million tons of rice. The increase in rice production in both Thailand and Vietnam were clearly correlated to the increase of NPK fertilizer use during the past 20 years (Mutert and Fairhust, 2002). As shown in Table 2.8, growth rates of the consumption of chemical fertilizers were the highest in Vietnam and small or negative in Indonesia and the Philippines during the 1990s, particularly following the economic crisis in 1997.

The success of rice sector was the combination of both production and marketing factors. Marketing plays an essential role in transferring rice from producers to consumers. Rice marketing performance is like the synthesis picture, illustrating marketing channel, price, and marketing cost, etc.

2.4 Rice marketing performance

Data from General Statistical Office (1994) indicated that 84 percent of the rural households in Vietnam grow rice and 50 percent of rural households sell rice (Table 2.9).

Table 2.9: Proportion of rural households growing and selling rice

Unit: %

Region	Proportion of rural households growing rice	Proportion of rural households selling rice
North Uplands	94.1	36.6
Red River Delta	95.0	60.4
Northern Central Coast	88.0	40.8
South Central Coast	82.9	33.3
Central Highlands	80.9	14.7
South East	57.4	58.5
Mekong River Delta	73.9	75.5
Whole country	84.5	50.7

Source: General Statistical Office, 1994

The Red River Delta and the Mekong River Delta are well known for rice production, which are heavily commercialized. The marketed surplus in the two deltas was over 60 percent in all seasons. The Mekong River Delta is more commercialized than the Red River Delta with a peak of marketed surplus of 95 percent occurring during the rainy season. Other regions of the country are less commercialized, particularly the mountainous areas in the North and the Central Highlands, as well as the South and the North Central Coast. According to the IFPRI (1996), some aspects of rice marketing performance including marketing channel, price variability, marketing costs, and profitability were reported as follows:

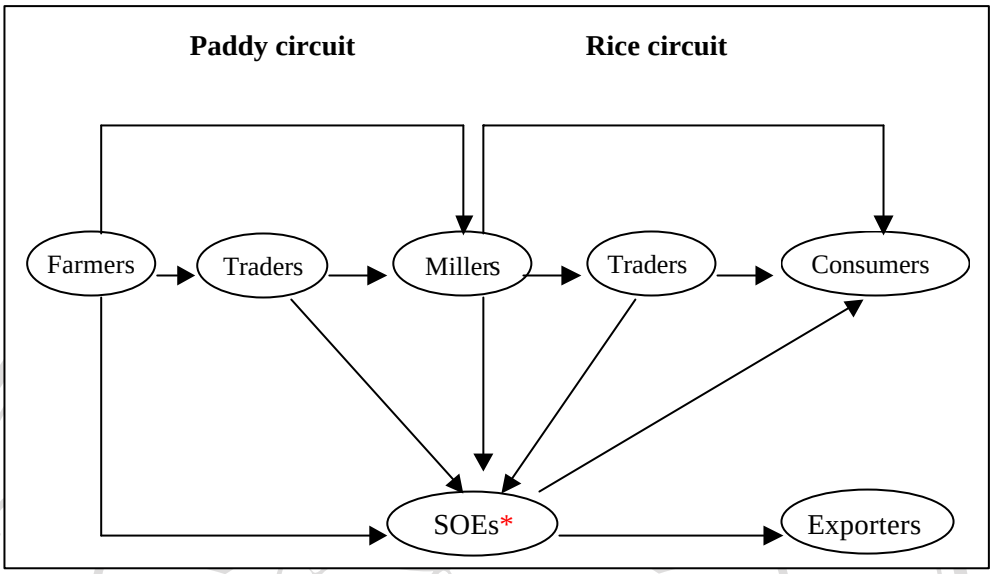

Figure 2.1: Rice marketing channel in Vietnam (IFPRI, 1996)
Note: * State Owned Enterprises

As shown in Figure 2.1, the main agents involved in the rice marketing in Vietnam were farmers, traders, millers, and State-Owned Enterprises (SOEs). The overall purposes of these channels were to transport and store the paddy produced by farmers, to transform it into rice, and to distribute it to consumers both for domestic consumption and exports. Traders included assemblers, wholesalers, and retailers. SOEs engaged in rice marketing system were mainly the Food Companies that exist at the district, provincial, and regional level.

Paddy marketing was dominated by private traders, who procured 96.5 percent of total marketed rice surplus from farmers (Table 2.10). Millers and SOEs also bought rice from farmers, but their importance relative to traders was marginal. This was consistent across different regions and seasons. The seasonality aspect showed the relatively more important role of millers during the rainy season, presumably due to the need to dry the paddy. With 2 percent of paddy procured from farmers, the extent of SOEs stabilization was quite limited.

Table 2.10: Marketing channels for farmers

Unit: %

Season	Proportion of total paddy sold by farmers to		
	Miller	Trader	Others
Winter- Spring	1.2	96.9	1.9
Summer- Autumn	1.1	96.9	2
Rainy	8.2	90.7	1.1
Whole year	1.6	96.5	1.9

Source: IFPRI, 1996

Traders were the main customers of farmers and they were the main suppliers of SOEs in the Mekong Rive Delta. The difference between rice marketing in the north and the south is the composition of customers. In both regions, assemblers were the main suppliers of wholesalers and millers. In the Red River Delta, the distribution system of rice was directed mainly to domestic consumers, whereas in the Mekong River Delta, the distribution system was oriented heavily toward SOEs. Moreover, in the Red River Delta, consumers were the main customers of SOEs, while in the Mekong River Delta SOEs rice sales were destined mainly to exports or to other SOEs.

In a market economy, price is the main incentive for agricultural production and marketing. Price affects revenues, costs, and profits of various marketing agents. Price signals are transmitted over time and over space and affect the allocation of resources. If the transmission of price signals is imperfect, then the performance of the marketing system will be suffered.

Macroeconomic stabilization in the early 1990's has percolated down to the rice sector. Rice price inflation declined about 650 percent in 1987 to about 20 percent in 1995. Macroeconomic stabilization has also implied a much lower intra-year price variation: the coefficient of variation of monthly rice prices was 0.05 in the period 1991-1995 as compared to 0.27 in the period 1986-1990. Macroeconomic policies, however, have contributed to declining real price of rice in the period 1989-1995.

In the period 1991-1995, the range between seasonal peak and trough was about 9.8 percent. The seasonal variation was slightly higher in the north than in the south (10.9 versus 8.5 percent). Seasonality of price was a reflection of seasonality of production. Marketing costs and profitability are also importance aspect in marketing performance. The private sector had lower marketing costs than SOEs. On the average, unit cost of SOEs in the Mekong River Delta was US$ 44/ton, whereas it was US$ 6.55/ton for large millers. The main components of these higher costs for SOEs were higher labor and transportation costs.

Market reforms have promoted marketing activities and improved the profitability of various marketing agents as witnessed by the surge in investment of the private sector at the beginning of the 1990s. Millers have responded earlier with investment in new machinery, particularly in the Mekong River Delta. Traders have also responded with their activities. Consumers were better off because of lower price of rice.

2.5 Vietnam in the world rice market

From being a chronic net rice importer in the 1980s, Vietnam has transformed itself into the world's second largest exporter of rice after Thailand in the late 1990s. This remarkable achievement has been supported by economic policy reforms initiated in 1986 enabling market forces to play a greater role in the disposition of economic resources.

It can be seen from Table 2.11, the rice exports of the world and Vietnam have been increased in the period 1989-2001 and share of Vietnam's rice export in the world market was quiet stable. After seven years, the position of Vietnam among major rice exporters dramatically rose, with an average of over 2 million tons of rice export over the past four years. Vietnam was among the three major exporters, together with Thailand and the US. In the period 1989-1995, rice export of Vietnam was 11 percent of total rice production and has grown at 8.4 percent annually. The

export growth has not compromised food security of the country as measured by the rice calories per capita per day (IFPRI, 1996).

Table 2.11: Vietnam's rice export and its share in world export

Year	World rice export (million tons)	Vietnam's rice export (million tons)	Vietnam's share in world export (%)
1989	15.2	1.4	9.3
1990	12.5	1.6	13.0
1991	13.2	1.0	7.9
1992	16.1	1.9	12.1
1993	16.8	1.7	10.2
1994	18.0	2.0	11.0
1995	22.5	2.0	8.8
1996	20.4	3.0	17.2
1997	20.9	3.6	17.1
1998	28.6	3.8	13.3
1999	25.2	4.5	17.0
2000	23.5	3.4	14.0
2001	26.7	3.7	14.0

Source: FAO, 2003

In terms of quality, rice export quality has increased dramatically over the last seven years. Vietnam had a reputation in the early 1990s for being an exporter of cheap and low-quality rice. It has recently gained a reputation for better quality rice. Rice export of 5 percent broken rice showed an impressive rate of growth of more than 106 percent in the period 1989-1995. At the same time, lower quality of rice (35 and higher broken percentage) has declined from 88 percent of the total to less than 5 percent. This was the result of technological advancements and improvements in the milling process, polishing and rice variety, which correspond more closely to the demand of foreign buyers (IFPRI, 1996).

In terms of price, the export prices Vietnam receives are becoming closer to world price, as defined by Thai price. In 1990, export price of 5 percent broken rice was 40 percent below the 5 percent broken Bangkok price, whereas in 1995 it was just 11 percent below. This has been the result of improved milling technology and acquired experience in international markets (IFPRI, 1996).

Vietnam's future performance on world rice market depends on continued reform of domestic policies and liberalization of the trade regime. However, it is equally clear that continued success of Vietnam's rice exports depends crucially on increased market access and the disciplining of other countries' use of trade-distorting domestic support measures and export subsidies (Nielsen, 2002).