

Importance of Rural Development in Poverty Alleviation

Yukio Ikemoto
Kyoto University

I . Income Distribution in Viet Nam: A Brief Survey

1. Data

In order to analyze income distribution, a household survey at the national level is needed. For Viet Nam, only one survey is available for this research, this being the *Viet Nam Living Standard Survey: 1992-93* conducted by the State Planning Committee (SPC) and the General Statistical Office (GSO). The survey is hereafter referred to as VLSS.

Unfortunately, compared to the expenditure data, the household income data is not reliable. As the VLSS report admitted, income data seems to be underestimated, and for this reason we use the expenditure distribution rather than the income distribution. This will not affect the implication of the analysis of this section because income level is highly correlated to expenditure level.

2. Expenditure Distribution

Table 1 and Figure 1 shows the expenditure distribution by quintile group.¹ The average household expenditure of Q1 and Q5 is 2,774,000 VND and 11,335,000 VND, respectively. The gap is 4.1 times. If we eliminate the effect of household size by dividing household expenditure by household size, the gap becomes bigger, that is, the per capita expenditure is 518 and 2540, respectively, and the gap is 4.9 times. This is because the poorer household has a larger household size. The Gini coefficient, an index measuring inequality, of the expenditure distribution is 0.3017, and this indicates a rather high inequality.²

¹ Quintile is a classification obtained by dividing the total population into five groups with equal numbers of population according to their expenditure level. Each quintile group contains 20 percent of the total population. In this paper we call them Q1, Q2, Q3, Q4, and Q5. Q1 contains the poorest 20 percent of the people while Q5 contains the richest 20 percent of the people.

² This level is nearly the same as the Gini coefficient of income distribution for East Asian countries. When we take into consideration the fact that expenditure distribution is more equal than that of income, the Gini coefficient of Viet Nam seems to be high as a socialist country.

3. Decomposition Analysis

Table 2 shows the result of the decomposition analysis of the Theil index, another inequality index.³ From this table we can say that the regional and rural-urban gap are very important factors of inequality in Viet Nam. Regional gap accounts for 19.7 percent of the total inequality. The gap between rural and urban areas is more important and accounts for 27.0 percent.

Table 3 and Figure 2 show expenditure distribution by region. The highest mean per capita expenditure is that of region 6 (Southeast) with 1,880,000 VND, while the lowest is 874,000 VND of region 3 (North Central). The gap is 2.15 times. The Gini coefficient of regional gap is 0.135. If we take into consideration price level, the gap is narrowed because the price level tends to be higher in more developed regions. The per capita expenditure of region 6 decreases to 1,659,000 VND while that of region 3 increases to 953,000 VND, which is higher than 941,000 VND of region 1 (Northern Uplands). The resultant gap is 1.76 times, while the Gini coefficient is only 0.100.

As Table 4 shows, rural expenditure is only half that of the urban areas. This gap does not narrow much even if price level is taken into consideration. The expenditure gap is 1.9 times if not price-adjusted and 1.8 if price-adjusted. The decomposition analysis for rural-urban areas shows little difference in the percentage contribution, at 27.0 and 25.5 percent respectively (Table 2). This indicates that the effect of price has more importance among regions rather than between the rural and urban areas.

In Viet Nam those households whose head is female have a higher average expenditure than those headed by a male, being 1,449,000 VND and 1,163,000 VND, respectively (Table 4). This case is contrary to the cases of many other countries, where a female-headed household is usually poorer than a male-headed one.

Age is not an important factor affecting inequality in Viet Nam, even though expenditure level tend to be increase as the household head becomes older (Table 5). The percentage contribution is only 3.9 percent (Table 2).

Contrary to age, household size is a very important factor affecting inequality, and accounts for 41.4 percent of total inequality (Table 2).⁴ The smaller the household size, the higher the per capita expenditure level is (Table 6). In other words, it may be said that poor households tend to be larger in size. This is also related to the fact that the size of urban households smaller than that of rural ones.

II. The Situation of Poverty in Viet Nam

1. Definition of Poverty and Poverty Incidence

Poverty is defined by a "poverty line" which is the minimum requirement for income (or expenditure). Those people whose income (or expenditure) is less than the poverty line are defined as "poor."

There are several definitions for the poverty line in Viet Nam (see Table 7). First of all, a rice poverty line has been used by Vietnamese experts, and is defined in terms of rice. 13.0 kilograms is

³ For the details of the decomposition analysis, see Ikemoto, Y., *Income Distribution in Thailand: Its Changes, Causes, and Structure*, Institute of Developing Economies, Tokyo, 1991. In Table 2 we used the quintile data to estimate the Theil index of the whole country. This procedure underestimates the inequality of the total and therefore overestimates the contribution of the factors such as region and rural-urban areas.

⁴ This percentage is overestimated because the total inequality is underestimated. See note 3.

spent for food consumption, 2.1 kilograms is for clothing and shelter, and 1.1 kilograms for other needs.⁵ The threshold income (expenditure) is in total 16.2 kilograms of rice, and below this people are defined "poor." This definition corresponds to an intake of 1,500 calories per day, which is much lower than the international standard (2,000 to 2,100 calories). Therefore the rice poverty line is not used by the World Bank.

The World Bank, on the other hand, has proposed three different kinds of poverty line depending on the international standard (2,100 calories). They are the food poverty line, the lower poverty line, and the poverty line.⁶ These poverty lines are much higher than the rice poverty line (Table 7).

Furthermore, the Government Statistics Office (GSO) proposed another poverty line, referred to as the GSO food poverty lines. This poverty line lies between the food poverty line and lower poverty line of the World Bank.⁷

Thus there are many kinds of poverty line and this complicated situation makes it very difficult to grasp the real situation of poverty in Viet Nam. If we use the rice poverty line, poverty in Viet Nam is negligible (the poverty incidence is only 1.1 percent) and we need not worry about poverty. However, this is unrealistic. According to the World Bank, the poverty incidence ranges from 24.5 percent to 50.9 percent. 50.9 percent is the poverty incidence measured by the international standard.⁸ And according to the GSO food poverty line, the poverty incidence is only 20 percent. This figure is higher than that of Malaysia (17.3 percent in 1987⁹) and Thailand (18.6 percent in 1990) but lower than that of the Philippines (39.2 percent in 1991).¹⁰

It may be said that Vietnamese researchers tend to underestimate poverty incidence. However, this is not a problem. What is more important are the changes in poverty and spatial distribution of the poor. For this purpose, this kind of survey needs to be continued in the future.

2. Poverty by Rural-Urban Area and Region

Poverty is a rural phenomenon. The poverty incidence in rural areas is 57.2 percent, and 89.8 percent of the poor live in rural areas. On the other hand, the urban poverty incidence is only 25.9 percent (Table 8). This large gap may indicate that the adjustment mechanism is not working. One obstacle may be government policy to restrict the migration from rural to urban areas.¹¹

By region (see Table 8), the highest poverty incidence is found in North Central (70.9 percent), with the second highest being North Upland (58.6 percent). These two regions account for about 40 percent of the total poor in Viet Nam. The Red River Delta and Mekong Delta also account for another 40 percent of the poor. Even though these two regions show a slightly lower poverty incidence than the national average, their large population amplifies the effect.

⁵ Needless to say, this does not mean that poor people eat only rice and pay with rice to buy goods. This is merely a calculation in terms of rice. See The World Bank, *Viet Nam: Poverty Assessment and Strategy*, 1995, pp.4-5.

⁶ For details of these poverty lines, see the World Bank, *op. cit.*, pp.115-119.

⁷ The poverty incidence derived from this poverty line is lower than that of the food poverty line of the World Bank, even though the GSO food poverty line is higher than that of the World Bank. This is because the GSO poverty line applies to the distribution of income rather than consumption expenditure. This implies that income is higher than consumption and that even the poor households save a part of their income.

⁸ We need not necessarily use the international standard because the economic and social situations differ among countries. If we make an international comparison, we should use the international standard.

⁹ This figure refers to Peninsular Malaysia only.

¹⁰ Mizoguchi, T. and Matsuda, Y. eds. *Income Distribution and Poverty in Asia* (in Japanese) Taga-shuppan, 1997.

¹¹ Such a policy may cut the linkage between rural and urban areas and a vicious circle may occur. This point will be discussed later.

From these figures two types of target group for poverty alleviation can be pointed out: One is North Central and North Upland where both incidence of poverty and number of poor people is high. Another is Red River Delta and Mekong Delta where number of poor people is large but the incidence is not so high. Both of them are important as target groups for poverty alleviation.¹²

3 . Poverty by Occupation and Type of Employment

Classified by industry and type of employment, poverty is found among those who are engaged in agriculture and the self-employed. Table 9 shows the distribution of employed population by industry and expenditure quintile. 89.7 percent of the bottom quintile (the poorest 20 percent of population) are engaged in agriculture. This figure is much higher than the national average, 71.7 percent. In contrast, in the top quintile only 41.8 percent are engaged in agriculture. Thus those who are engaged in agriculture are concentrated in the lower income class. On the other hand, those concentrated in the higher income class are manufacturing, "wholesale and retail trade," and "community and social services," all of which are urban-type industries.

Table 10 shows the distribution of population by type of activities and expenditure quintile. Those working as "farm self-employed" are concentrated in the lower income class. Those who are working as "farm self-employed" as well as "wage earners" are slightly better off but are still concentrated in the lower income class. Those who are "farm self-employed" as well as "non farm self-employed" are much better off. For those who are working as "farm self-employed," income opportunity such as "non-farm self-employed" is a good source of income to relieve them from poverty and to reduce the rural-urban gap. On the other hand, those who are concentrated in the higher income class are "non-farm self-employed" and "wage earners," and roughly correspond to the urban industries mentioned above.

Table 11 shows the distribution of population by economic sector and expenditure quintile. The "self-employed" are concentrated in the lower income class and account for 89.2 percent of the bottom quintile. In contrast, those who are engaged in the government sector are concentrated in the higher income class. For example, they account for 16.4 percent of the top quintile while their share in the country is only 6.5 percent.

Table 12 and Figure 3 show the composition of income by quintile and source of income. These clearly show the importance of income from "non-farm self-employed" and wages in increasing people's income. Table 13 and Figure 4 show the composition of income by region. The more urbanized regions such as Region 6 (Southeast) have a larger share of "non-farm self-employed" and "wages."

4 . Poverty by Ethnic Group

Classified by ethnic group, the incidence of poverty among minority groups are higher than Kinh (48.3 percent) and Chinese (14.1 percent). The incidence of poverty for the minority groups is as follows: Tay (65.9 percent), Thai (67.1 percent), Khome (76.2 percent), Muong (75.2 percent), Nung (69.8 percent), H'mong (100.0 percent), Dao (88.5 percent). However, the population of the minority groups is very small and therefore their share in poverty is also very small. On the other hand, 80.3 percent of the total poor are Kinh due to their large population share (84.6 percent). Thus the target group in terms of number is Kinh, and in terms of severity it is the minority groups.

¹² The efficiency of government budget in poverty alleviation should be taken into account when allocating budget between these two types of target group.

5. Poverty by Education

Table 14 shows the poverty incidence as a function of the educational attainment of household head. The highest incidence of poverty (65.1 percent) is found among those households whose heads received no education. However, their contribution (15.0 percent) is not so large because their population share is small (11.7 percent). The highest contribution is a figure of 39.5 percent for those households whose head finished only primary education, due to the largest population share (37.6 percent). It is noteworthy that even those households whose head finished lower secondary school could not reduce poverty significantly. Their poverty incidence is 52.8 percent, only 0.7 percent lower than that of the group which finished primary school. This is true even for those households whose head finished upper secondary school or vocational school, whose incidence of poverty is as high as 40.6 percent and 32.7 percent, respectively. This implies that higher education is not effective in reducing poverty and that educated people are not allocated effectively.

Years of schooling and literacy rate also show the same pattern (see Table 15). Years of schooling of the poorest 20 percent is 5.1 years and their literacy rate is 79.3 percent. These figures are only slightly lower than those of higher quintiles. Thus education is not effective in reducing poverty.

Table 16 shows the enrollment rate by age group.¹³ For every age group, the enrollment rate increases for every step up the income scale. For example, for the age group between 6 and 10 years old, the enrollment rate increases from 73.6 percent for the bottom quintile to 92.6 percent for the top quintile. However, the difference in the rate is not so serious until the age 14. Opportunities for the bottom quintile to continue to study after the age 15 are very limited (the enrollment rate is only 11.1 percent). Between rural and urban areas, the same pattern can be seen with the bottom and top quintile. Rural areas are disadvantaged in continuing education. However, by region the relationship between regional income level and enrollment rate is not clear. This may be due to the educational policy.

6. Poverty by Type of Infrastructure

Table 17 shows the percentage of the rural population living in communes with passable roads. At the national level, there is little difference between the poor (67.3 percent) and non-poor (74.7 percent), implying that passable roads have little impact in increasing income. This may be partly because road conditions are not good for both the poor and non-poor alike. "As far as the mere quantity of roads is concerned, Viet Nam compares rather well with other countries in the region. The qualitative picture is much less bright."¹⁴

The impact of infrastructure is different between the North and the South. The figures of the rural North show a large difference between the poor (70.4 percent) and the non-poor (89.6 percent). These figures indicate that passable roads are an important factor in alleviating poverty in the North. In contrast, in the rural South passable roads have no value in explaining poverty according to the table. This seems a rather strange result and an explanation of this phenomenon is that in the South water transportation is more important than roads.

Irrigation has a positive impact on poverty alleviation. At the national level, the non-poor cultivate much bigger areas of irrigated land than the poor (see Table 18). The gap is much wider in the South.

¹³ The enrollment rate adopted here is "age-specific enrollment rate," a definition of which is given in the note for Table 16.

¹⁴ United Nations, *Catching Up: Capacity Development for Poverty Elimination in Viet Nam*, Hanoi, 1996. The situation is the same for other rural infrastructures such as passenger transportation, electricity, and clinics. It may be said that these infrastructures are not utilized efficiently.

In contrast the gap is very small in the North. In any case, irrigation seems to be effective in reducing poverty.

The average size of total agricultural land shows the same pattern as the irrigated land (Table 19). It may be interesting to point out that the average size of agricultural land of the poor in the South (1249.4 m²) is much bigger than that of the non-poor in the North (932.4 m²). These figures indicate that agricultural land is used too intensively in the North and that the agricultural sector absorbs too much of the population.

Now we will look at the distribution of agricultural land more in detail. Table 20 shows the average area of agricultural land by region and expenditure quintile. The distributional pattern is very different among regions. For example, in Region 2 (Red River Delta) the average agricultural land per household varies very little from 2,526 m² for the top quintile to 2,983 m² for the second quintile.¹⁵ This means that agricultural land is not an important factor in explaining the expenditure (income) gap in Region 2. On the other hand, in Regions 5 (Central Highlands), 6 (Southeast), and 7 (Mekong River Delta) the average area increases as the expenditure level becomes higher. These figures indicate that especially in Region 2 agricultural land has developed too intensively.

By form of use of agricultural land, 64 percent of the total land in Region 2 is allocated land while it is only 1.7 and 0.8 percent in Region 6 and 7, respectively (see Table 21). On the other hand, long-term-use land accounts for nearly half of the total in Region 6 and 7 while it has a minor share in other regions.

Table 22 shows the distribution of agricultural land by form of use and expenditure quintile. "Allocated land" is concentrated in the lower expenditure class while "private land" and "long-term-use land" is concentrated in the higher expenditure class. "Rented land" is also concentrated in the higher class, though its share is only 5.6 percent.

III. Income Inequalization as an Incentive for Economic Growth

Increasing income inequality has been observed in many countries since the 1980s. For developed countries this is largely due to the liberalization (deregulation) or globalization of the economy and for socialist countries it is due to the introduction of market mechanisms. Liberalization was an incentive for people to invest in more productive industries, and this was the engine of economic growth of this period. At the same time, this inevitably brought about a widening income gap between the rich and poor.

This phenomenon can be explained by the well-known Kuznets' hypothesis or the inverted U-shape hypothesis. When a new and more productive industry is introduced into an economy, the income gap usually increases between the new and old sectors. When the new industry grows to become a mature industry, the income gap becomes narrower through market mechanisms. In this sense, an increasing income gap must be accepted to some extent at the earlier stages of structural change if we try to accelerate economic growth.

Thus there is a trade-off between economic growth and income inequality in the early stages of economic change. While capitalism emphasizes economic growth, socialism emphasizes equality. The introduction of market mechanisms to the socialist economy means a shift in emphasis from equity toward growth.

Here we must distinguish between equality (or income gap) and equity (or justice or fairness). If

¹⁵ The reason why the top quintile holds smaller agricultural land may be that they have other source of income such as non-farm self-employed.

the income gap is a result of fair competition (or so long as equity is maintained), the inequality will be acceptable.¹⁶

IV. The Experience of the East and Southeast Asian Countries

1. East Asian Countries

The experiences of the East Asian countries are considered as success stories which have attained both economic growth and income equality. An important factor in their success was that the leading sector was composed of small-scale labor-intensive industries. Those labor-intensive industries succeeded in absorbing abundant labor and when the labor market reached full employment, the wages of unskilled labor began to increase. On the other hand, entrepreneurs could not become too rich because of their small scale and the competitive market. As a result, income inequality began to decrease.

2. The Case of Thailand¹⁷

In Thailand the urban sector is geographically concentrated in Bangkok and the surrounding areas. It is usually argued that this makes the income gap between urban and rural areas very serious in Thailand. However, the situation is not as bad as believed because there are many channels between the urban and rural sectors. For example, rural areas supply cheap labor to the urban sector as migrants, who send their income to their villages. This transfer of income, in turn, creates markets for the urban sector. Thus there emerges a positive feedback between rural and urban areas.

The positive feedback is not limited to this aspect. The high mobility of the Thai people has another effect. The migrants often spread information and skills throughout the whole country when they return to their villages. For example, while migrants are working at factories, they learn the manufacturing skills. When they go back to their villages, they organize the village people to manufacture products based on the knowledge they learn at factories. They may be sub-contracted or independent. This is therefore a means for spreading many kinds of small scale industries in rural Thailand. An important condition for rural industries is good transportation.¹⁸

V. Lessons for Viet Nam

A lesson from the analysis of poverty in Viet Nam and the experiences of other Asian countries is to promote small-scale labor-intensive industries and to mobilize labor from agriculture to non-agricultural sectors. In a labor-abundant country, labor-intensive industries are more suitable and therefore will develop if certain conditions are met. The role of the government is to construct infrastructure such as transportation, communication, information, education, etc.

Viet Nam is a labor-abundant country and the need to absorb this labor into non-agricultural sector

¹⁶ The extent to which people will accept inequality may differ from country to country. Income gap as a result of corruption cannot be accepted under any circumstances. It is also very difficult to justify the income gap which is caused by unequal economic opportunities.

¹⁷ See Ikemoto [1991].

¹⁸ Road conditions in Thailand are much better than in Viet Nam. See United Nations, *op. cit.*, p.56.

in order to reduce poverty seems to be inevitable.¹⁹ In Viet Nam, migration from rural to urban areas is not large. Nearly half of the migration has occurred from rural to rural areas (see Table 23). Adding 21.5 percent of migration from urban to rural areas, 70 percent of all migrants were towards rural areas. Net inflow to rural areas is 9.5 percent while net inflow to urban areas is -5.4 percent, or in other words a net outflow of 5.4 percent. These figures suggest that migration in Viet Nam is more rural-oriented which results in a burden on the rural sector and an increase the rural-urban gap.

Table 24 shows the regional pattern of migration. Three sub-regions can be seen. One includes Regions 1,2, and 3 among which migrants move actively. The second one is Regions 3 and 4, with regions 6 and 7 making up the last one. Region 6 has in-migrants from the North. Positive net inflow occurs in Regions 2,3,6, and 7.

The age structure corresponds this pattern of migration (see Table 25). In Region 6 economically active people show a higher percentage than the national average. For example, the percentage for the 20-29 age group is 19.2 percent in Region 6, while the national average is only 16.2 percent. Thus we know that migration is towards more urbanized regions. Migration in Viet Nam is therefore towards more urbanized regions and at the same time to rural areas.²⁰

Limiting the migrants from rural to urban areas will aggravate the rural-urban gap by disturbing the adjustment process of the Lewis model and bringing about more pressure on agricultural land. Nevertheless, the policy of limiting the movements of migrants into the urban sector can be justified from the viewpoint of urban problems. One of the ways to solve this dilemma is to promote rural non-agricultural (but agricultural-based) industries. A development strategy to emphasize agro-based industrialization, called the "New Agro-Industrial Country" or NAIC for short, was adopted in Thailand.

In order to promote rural industries, market channels and information is important. The city has the merit of agglomeration which provide markets, information and an external economy for them. However, the policy to limit the size of urban sector seems to deprive cities of this merit of agglomeration. The linkage between agriculture and the non-agricultural sector will stimulate each other.

¹⁹ This idea is based on a classical development economics such as the Lewis model.

²⁰ One way to solve this contradiction is a large number of migrants move to the rural area of the more urbanized regions. We need more detailed data to confirm this.

Table 1 Household expenditure by quintile group

Quintile	Household Expenditure (1000VND)	Household Size (Persons)	Per Capita Expenditure (1000VND)	Expenditure Share (%)
Q1	2774	5.4	518	8.4
Q2	3863	5.1	756	12.3
Q3	5023	5.1	984	16.0
Q4	6542	4.9	1338	21.8
Q5	11335	4.5	2540	41.4
Total	6095	5.0	1227	100.0
Gini Coefficient = 0.3017				

Source VLSS

Table 2 Decomposition of inequality

	Unadjusted		Price Adjusted	
	Theil	%	Theil	%
Quintile	0.152	100.0	0.137	100.0
Region	0.030	19.7	0.010	7.3
Rural/Urban	0.041	27.0	0.035	25.5
Gender	0.015	9.9	---	---
Age	0.006	3.9	---	---
Household size	0.063	41.4	---	---

Note Theil index is used as the inequality index. Age, gender are those of household head.

Source VLSS

Table 3 Per capita expenditure by region

Region	Mean Per Capita Expenditure(PCE)		Mean PCE (Price-adjusted)		Population Share (%)
	(1000VND)	Total=100	(1000VND)	Total=100	
1	917	74.7	941	77.2	17.0
2	1124	91.6	1225	100.5	20.2
3	874	71.2	953	78.2	12.8
4	1275	103.9	1287	105.6	11.9
5	1100	89.6	991	81.3	3.2
6	1880	153.2	1659	136.2	12.6
7	1383	112.7	1323	108.6	22.4
Total	1227	100.0	1219	100.0	100.0
Gini		0.135		0.100	

Source VLSS

Table 4 Per capita expenditure by area and gender

	Per Capita Expenditure		Per Capita Expenditure (Price-adjusted)		Population Share
	(1000VND)	Total=100	(1000VND)	Total=100	(%)
Rura-Urban					
Rural	1041	84.8	1049	85.4	80.1
Urban	1978	161.2	1903	155.1	19.9
	Theil=0.041		Theil=0.035		
Gender					
Female	1449	118.1			26.9
Male	1163	94.7			73.1
	Theil=0.015				

Source VISS

Table 5 Per capita expenditure by age of household head

Age	Per Capita Expenditure		Population Share
	(1000VND)	Total=100	(%)
Under 20	796	64.9	0.2
20-24	1076	87.6	3.3
25-29	990	80.7	10.2
30-34	1143	93.1	15.1
35-39	1132	92.2	14.2
40-44	1220	99.4	11.4
45-49	1301	106.0	7.9
50-54	1338	109.0	9.0
55-59	1295	105.5	7.7
60-64	1366	111.3	8.6
65+	1423	115.9	12.3
Total	1227	100.0	Theil=0.006

Source VISS

Table 6 Per Capita expenditure by household size

Household Size (Persons)	Per Capita Expenditure		Population Share
	(1000VND)	Total=100	(%)
1	1834	149.4	2.7
2	1589	129.4	7.6
3	1522	124.0	14.3
4	1317	107.3	20.9
5	1182	96.3	19.4
6	1171	95.4	15.1
7	1084	88.3	8.5
8	1126	91.7	5.7
9	1076	87.6	2.9
10+	1208	98.4	3.0
Total	1227	100.0	Theil=0.064

Source VLSS

Table 7 Comparison of poverty line

	Poverty Line in 1993 (dong)	Poverty Incidence (%)
Rice Poverty Line	347,000	1.1
World Bank Food Poverty Line	748,000	24.5
Lower Poverty Line	955,000	41.2
Poverty Line	1,090,000	50.9
GSO Food Poverty Line	840,000	20

Source The World Bank, Viet Nam: Poverty Assessment and Strategy, 1995, p.146.

Table 8 Poverty incidence by region and rural-urban areas

	Poverty Incidence ¹⁾ (%)	Contribution ²⁾ (%)	Share of population
Viet Nam	50.9	100.0	100.0
Urban/Rural			
Urban	25.9	10.2	20.0
Rural	57.2	89.8	80.0
Region			
North Upland	58.6	19.3	15.7
Red River Delta	49.0	18.7	21.6
North Central	70.9	20.8	12.8
Central Coast	48.5	12.6	11.9
Central Highlands	50.1	3.3	3.0
Southeast	32.8	7.0	12.6
Mekong Delta	47.7	18.3	22.4

Notes

1) Poverty incidence is measured by the head count ratio which is the percentage of the poor people in the total population.

2) Contribution shows the percentage distribution of the poor people by urban/rural areas and by region.

Source The World Bank, Viet Nam: Poverty Assessment and Strategy, 1995, p.146.

Table 9 Employed population by industry(%)

Quintile	Q1	Q2	Q3	Q4	Q5	Country
Agriculture	89.7	84.6	77.8	68.0	41.8	71.7
Mining	0.3	0.3	0.3	0.2	0.4	0.3
Manufacturing	4.0	5.2	9.0	10.8	17.7	9.5
Electricity, Gas, Water	0.0	0.0	0.0	0.2	0.4	0.1
Construction	0.5	1.4	1.3	1.8	1.7	1.3
Wholesale and Retail Trade	2.7	4.5	6.6	10.0	21.1	9.2
Transport, Storage, Communication	0.7	1.2	1.0	1.8	3.2	1.6
Finance, Insurance, Real Estate	0.0	0.0	0.0	0.4	0.4	0.2
Community, Social Services	1.2	2.0	2.9	5.1	11.6	4.7
Others	0.9	0.7	1.0	1.9	1.8	1.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
Country=100						
Agriculture	125	118	108	95	58	100
Mining	110	90	97	70	130	100
Manufacturing	41	54	95	113	186	100
Electricity, Gas, Water	0	57	29	121	279	100
Construction	34	103	93	135	126	100
Wholesale and Retail Trade	29	49	72	108	229	100
Transport, Storage, Communication	46	76	64	110	197	100
Finance, Insurance, Real Estate	47	0	24	206	212	100
Community, Social Services	25	43	62	108	249	100
Others	70	54	81	149	138	100

Source VLSS

Table 10 Employed population by type of activities (%)

Quintile	Q1	Q2	Q3	Q4	Q5	Country
Farm SE	60.2	55.3	51.1	43.6	27.7	47.1
Farm SE and WE	15.3	17.0	15.8	15.5	8.7	14.4
Farm SE and non-farm SE	13.0	13.5	14.5	15.7	12.0	13.8
Non-farm SE	2.3	4.7	7.8	11.0	26.6	10.8
WE	4.9	5.2	6.0	10.2	20.6	9.6
Non-farm SE and WE	0.7	1.2	1.2	1.3	3.0	1.5
All activities	3.6	3.2	3.7	2.7	1.5	2.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
Country=100						
Farm SE	128	117	108	93	59	100
Farm SE and WE	106	118	109	108	60	100
Farm SE and non-farm SE	95	98	105	114	87	100
Non-farm SE	21	44	72	102	247	100
WE	51	55	63	107	215	100
Non-farm SE and WE	45	78	82	84	204	100
All activities	124	111	125	93	52	100

Notes SE: Self-employed, WE: Wage earner.

Source VLSS

Table 11 Employed population by economic sector(%)

Quintile	Q1	Q2	Q3	Q4	Q5	Country
Self-employment	89.2	88.3	87.1	80.6	72.0	83.2
Government	1.2	2.2	4.6	7.2	16.4	6.5
Private	9.0	8.4	7.3	10.6	10.5	9.2
Mixed	0.0	0.0	0.0	0.2	0.4	0.1
Other	0.6	1.2	1.0	1.4	0.8	1.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Country=100						
Self-employment	107	106	105	97	87	100
Government	19	34	71	110	252	100
Private	98	91	79	116	114	100
Mixed	0	0	0	175	300	100
Other	58	116	101	143	76	100

Source VLSS

Table 12 Annual per capita income by source of income(1000VND)

Source of Income	Q1	Q2	Q3	Q4	Q5	Total
Agriculture	293	395	463	471	384	401
Non-farm Self-employed	76	136	270	413	1142	407
Wages	112	137	182	264	509	241
Other Income	14	27	41	43	156	56
Total	494	694	956	1191	2190	1105
Percentage share(%)						
Agriculture	59.3	56.9	48.4	39.6	17.5	36.3
Non-farm Self-employed	15.3	19.6	28.2	34.6	52.1	36.8
Wages	22.6	19.7	19.0	22.2	23.2	21.8
Other Income	2.8	3.8	4.3	3.6	7.1	5.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source VLSS

Table 13 Annual per capita income by source of income and region (1000VND)

Source of Income	1	2	3	4	5	6	7	Total
Agriculture	505	438	358	181	550	213	515	401
Non-farm Self-employed	158	400	261	391	122	959	424	407
Wages	89	182	93	239	170	619	290	241
Other Income	48	76	51	43	10	101	36	56
Total	801	1096	763	853	852	1892	1266	1105
Percentage share(%)								
Agriculture	63.1	39.9	47.0	21.2	64.6	11.3	40.7	36.3
Non-farm Self-employed	19.8	36.5	34.1	45.8	14.4	50.7	33.5	36.8
Wages	11.1	16.6	12.2	28.0	20.0	32.7	22.9	21.8
Other Income	6.0	7.0	6.7	5.0	1.1	5.3	2.9	5.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source VLSS

Table 14 Poverty by educational attainment of household head

Level of Education	Poverty Incidence(%)	Contribution(%)	Population Share (%)
None	65.1	15.0	11.7
Primary	53.5	39.5	37.6
Lower Secondary	52.8	34.2	33.6
Upper Secondary	40.6	6.8	8.6
Vocational School	32.7	4.0	6.2
University	10.7	0.5	2.2
Total	50.9	100.0	100.0

Source The World Bank, Viet Nam: Poverty Assessment and Strategy, 1995, p.146.

Table 15 Schooling and literacy by quintile and region

	Years of Schooling	Literacy (%)
Quintile		
Poorest 20%	5.1	79.3
Second Quintile	5.7	86.8
Third Quintile	6.1	88.8
Fourth Quintile	6.5	89.7
Richest 20%	8.0	94.2
Region		
North Upland	6.5	87.6
Red River Delta	7.7	91.6
North Central	7.1	90.8
Central Coast	6.0	85.3
Central Highlands	4.1	71.7
Southeast	6.5	92.5
Mekong Delta	5.0	84.8

Source The World Bank, Viet Nam: Poverty Assessment and Strategy, 1995, p.147.

Table 16 Enrollment rate by age group (%)

Age Group	6-10	11-14	15-17	18-24
Total	84.4	69.0	25.5	4.2
By Expenditure Quintile				
Q1	73.6	54.2	11.1	1.0
Q2	83.0	65.3	16.7	1.8
Q3	87.9	69.6	21.5	2.8
Q4	91.1	74.4	28.8	4.0
Q5	92.6	81.9	44.5	9.6
By Rural and Urban Areas				
Rural	82.5	67.4	20.6	2.9
Urban	94.2	76.8	46.0	8.9
By Region				
1	80.1	65.8	22.0	3.2
2	92.7	75.7	30.4	6.2
3	90.4	76.0	19.0	3.5
4	85.1	72.0	35.0	5.3
5	67.2	71.4	13.5	---
6	89.2	71.1	31.1	4.7
7	77.0	60.5	20.6	3.5

Note "Age specific enrollment rate" is defined as the ratio of number of population of age x attending school to the total number of population of the age.

Source VLSS

Table 17 Passable road

	Total	Non-Poor	Poor
Rural North	76.8 %	89.6 %	70.4 %
Rural South	58.3 %	56.5 %	60.0 %
Viet Nam	70.2 %	74.7 %	67.3 %

Note The figures show the percentage of rural population living in communes with passable road.

Source Dominique van de Walle, "Infrastructure and Poverty in Viet Nam" LSMS working paper No. 121, p.3

Table 18 Irrigated annual land(m²)

	Total	Non-Poor	Poor
Rural North	360.1	414.8	333.4
Rural South	584.2	825.9	346.0
Viet Nam	434.0	590.3	336.8

Note The figures show the average per capita square meters of irrigated land.

Source Dominique van de Walle, "Infrastructure and Poverty in Viet Nam" LSMS working paper No. 121, p.14

Table 19 Agricultural land(m²)

	Total	Non-Poor	Poor
Rural North	902.9	932.4	888.6
Rural South	1872.8	2505.7	1249.4
Viet Nam	1222.9	1604.3	985.8

Note The figures show the average per capita square meters of total agricultural land.

Source Dominique van de Walle, "Infrastructure and Poverty in Viet Nam" LSMS working paper No. 121, p.14

Table 20 Average area of agricultural land(m²)

Region	Q1	Q2	Q3	Q4	Q5	Total
1	7623	6922	8096	7564	5830	7367
2	2705	2983	2839	2737	2526	2800
3	3859	3903	4103	4898	2168	3988
4	3721	4381	4829	3889	4428	4224
5	7027	10693	11111	10763	16826	11277
6	5696	8403	8953	9575	11078	9300
7	6168	7526	10163	11811	14998	11050
Total	4748	5293	6182	7293	9854	6381
National Average (6381m ²)=100						
1	119	108	127	119	91	115
2	42	47	44	43	40	44
3	60	61	64	77	34	62
4	58	69	76	61	69	66
5	110	168	174	169	264	177
6	89	132	140	150	174	146
7	97	118	159	185	235	173
Total	74	83	97	114	154	100

Note Average agricultural land per household.

Source VLSS

Table 21 Agricultural land by form of use and region(m²)

Region	1	2	3	4	5	6	7
Allocated Land	2616	1793	2205	1184	2494	155	85
Private Land	1470	415	492	874	3080	2781	3616
Long Term Use Land	462	209	402	371	370	4205	6278
Rented Land	301	59	48	70	1871	629	785
Auctioned Land	211	250	214	45	0	0	0
Other Land	2307	74	627	1681	3462	1528	287
Total	7367	2800	3988	4224	11277	9300	11050
Percentage(%)							
Allocated Land	35.5	64.0	55.3	28.0	22.1	1.7	0.8
Private Land	20.0	14.8	12.3	20.7	27.3	29.9	32.7
Long Term Use Land	6.3	7.5	10.1	8.8	3.3	45.2	56.8
Rented Land	4.1	2.1	1.2	1.7	16.6	6.8	7.1
Auctioned Land	2.9	8.9	5.4	1.1	0.0	0.0	0.0
Other Land	31.3	2.7	15.7	39.8	30.7	16.4	2.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note Average agricultural land per household.

Source VLSS

Table 22 Agricultural land by form of use(m²)

Quintile	Q1	Q2	Q3	Q4	Q5	Total
Allocated Land	1575	1646	1585	1401	1014	1891
Private Land	950	1213	1483	1845	3025	1438
Long Term Use Land	664	1034	1675	2489	4080	1257
Rented Land	120	256	391	548	639	360
Auctioned Land	78	173	157	142	105	166
Other Land	1360	971	891	868	991	1269
Total	4748	5293	6182	7293	9854	6381
Percentage(%)						
Allocated Land	33.2	31.1	25.6	19.2	10.3	29.6
Private Land	20.0	22.9	24.0	25.3	30.7	22.5
Long Term Use Land	14.0	19.5	27.1	34.1	41.4	19.7
Rented Land	2.5	4.8	6.3	7.5	6.5	5.6
Auctioned Land	1.6	3.3	2.5	2.0	1.1	2.6
Other Land	28.6	18.4	14.4	11.9	10.1	19.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

Note Average agricultural land per household.

Source VLSS

Table 23 Migration by area(%)

From \ To	Rural	Urban	Total
Rural	45.6	14.6	60.2
Urban	21.5	14.2	35.7
Freign Country	2.5	1.6	4.1
Total	69.7	30.3	100.0
Net Inflow	9.5	-5.4	

Note Figures show the percentage of the total migrants.

Source VLSS

Table 24 Migration by region(%)

From \ To	1	2	3	4	5	6	7	Total
Region 1	10.6	6.2	1.5	—	—	—	—	19.6
2	4.6	11.2	1.0	—	—	1.7	—	19.8
3	—	1.1	6.9	1.3	—	1.1	—	11.5
4	—	—	1.5	7.7	1.3	1.4	—	12.9
5	—	—	—	—	—	—	—	3.0
6	—	—	—	1.1	—	7.7	2.8	13.0
7	—	—	—	—	—	3.0	12.7	16.2
Foreign Country	—	1.4	—	—	—	—	—	4.1
Total	16.5	21.8	12.5	12.1	2.8	16.4	17.9	100.0
Net Inflow	-3.1	2.0	1.0	-0.7	-0.2	3.4	1.7	

Notes Figures show the percentage of the total migrants.

“—” indicates less than 1 percent.

Source VLSS

Table 25 Age structure by region

Age \ Region	1	2	3	4	5	6	7	Country
0-9	28.6	24.1	27.7	23.1	33.5	22.7	23.4	25.2
10-19	22.7	20.9	22.2	25.1	23.1	23.0	25.8	23.3
20-29	16.1	15.4	15.3	16.0	15.6	19.2	15.8	16.2
30-39	13.0	15.8	12.9	12.7	10.3	13.8	13.0	13.5
40-49	5.9	7.3	7.6	8.4	7.4	7.7	8.2	7.5
50-59	6.2	6.6	5.6	5.5	3.6	6.2	5.7	5.9
60+	7.5	10.0	8.8	9.2	6.7	7.6	8.2	8.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Country=100								
0-9	114	96	110	92	133	90	93	100
10-19	98	90	95	108	99	99	111	100
20-29	100	95	95	99	96	119	98	100
30-39	96	117	96	94	76	102	96	100
40-49	79	98	101	112	99	103	110	100
50-59	106	112	94	93	60	105	96	100
60+	88	117	103	108	79	89	96	100

Source VLSS

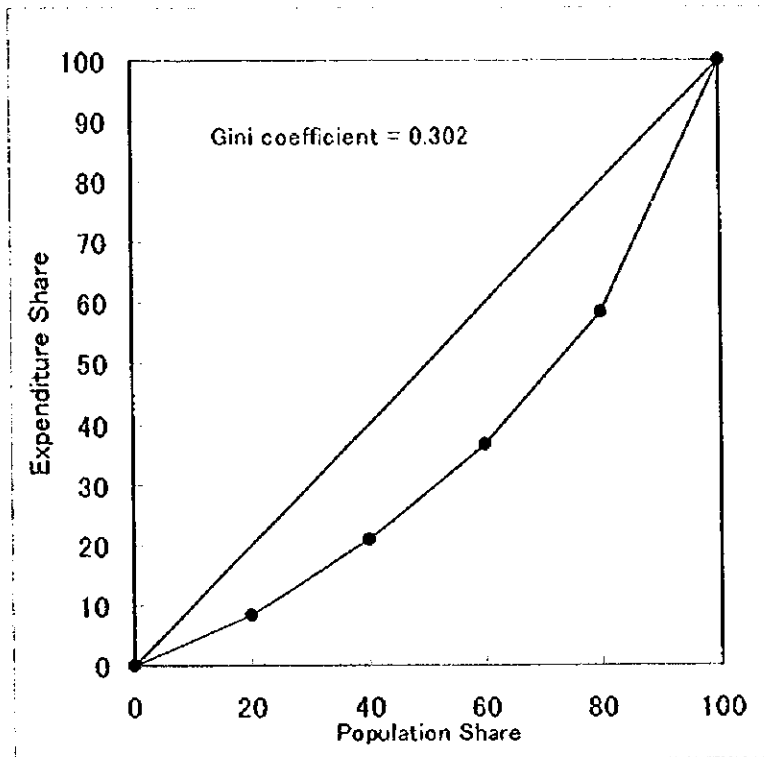


Figure 1 Lorenz curve

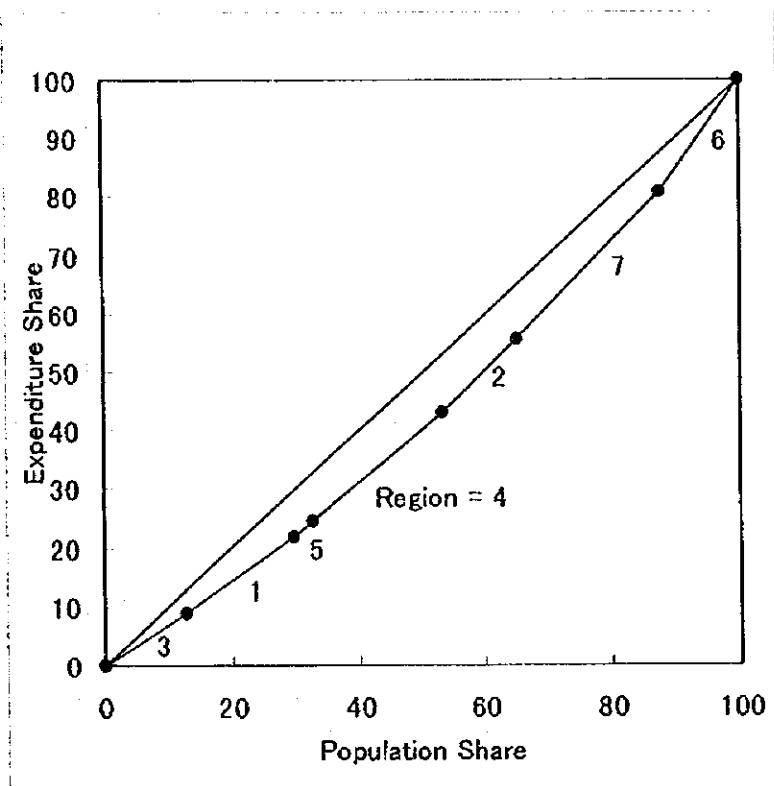


Figure 2 Lorenz curve for region

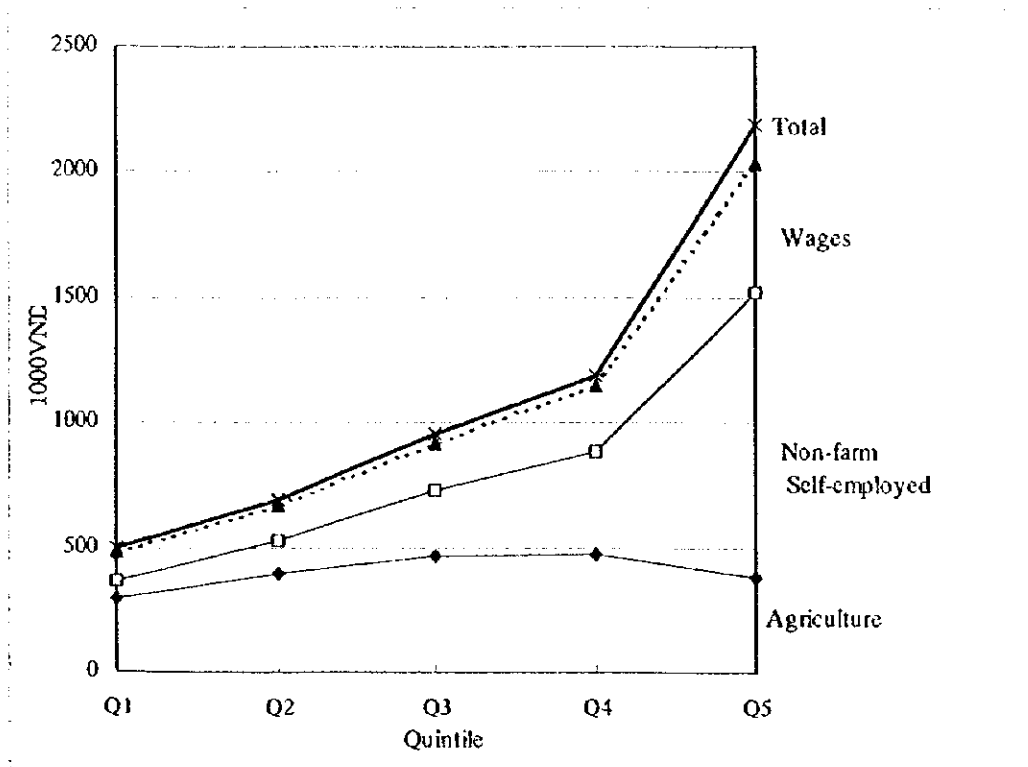


Figure 3 Source of income by quintile

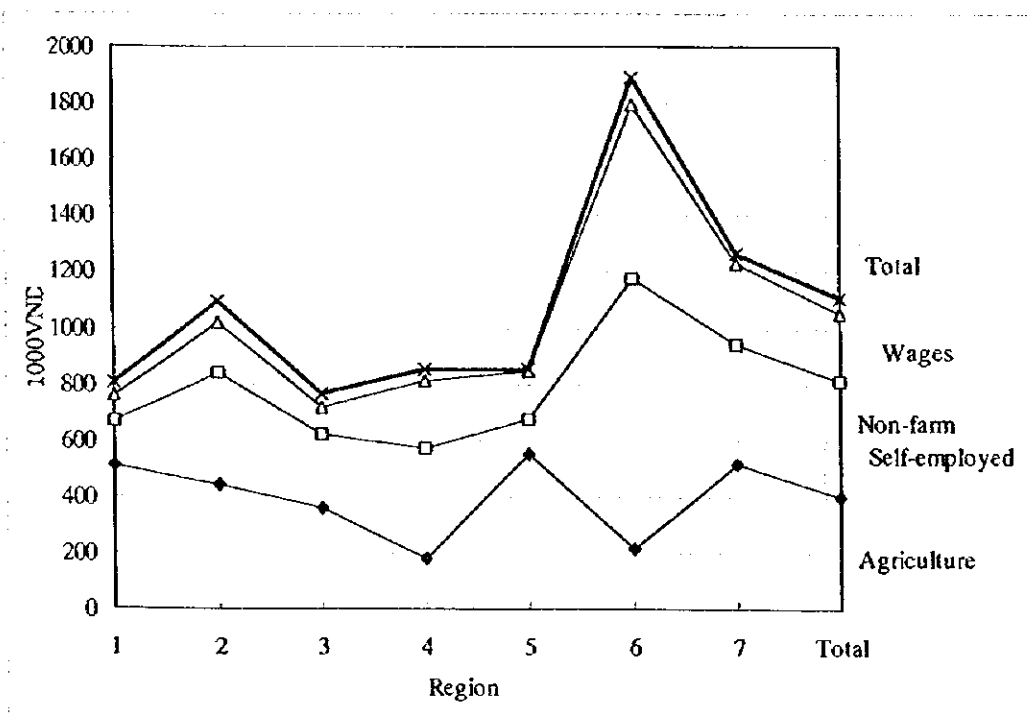


Figure 4 Source of income by region

Suggestions on the Building of Agricultural Cooperatives Unions and an Agricultural Cooperatives Information Center

Yumio Sakurai

The University of Tokyo

This paper contains suggestions on the building of a new agricultural organization to be called the "Agricultural Cooperatives Union" (*Lien Minh Hop Tac Xa*) and an Agricultural Cooperatives Information Center. These organizations, which are based on the existing agricultural cooperatives can be expected, in light of the diversification of the agricultural sector in the Red River Delta, to further the development of Vietnamese rural communities and agriculture.

I . The Importance of Agricultural and Rural Village Development in the Red River Delta

1. Gaps between Cities and Rural Villages

The absolute poverty of Vietnamese rural villages is unmistakable. In surveys done prior to 1993, some 30-36% of the rural population was below the absolute poverty line, compared to a bit over 8% of the urban population. Chronic food shortages affected 16-20% of the rural population versus 6.45% of the urban. According to government statistics for 1992-1993, rural dwellers had about half the income of urban dwellers, 928,700 dong compared to 1,815,000 dong in average annual personal income. Between 1989 and 1992, the income of farm families increased by a mere 35%. Doi Moi policies had a great impact on the development of urban industries and the growth of urban economies, but the multiplier effect on rural villages are still slight. The problem of poverty in Viet Nam is very much a rural issue.

2. Gaps between North and South

The north-south gaps that are generally referred to in discussions of Viet Nam are gaps between the Mekong Delta in the south and the Red River Delta in the north. There has already been much written on the gaps between northern and southern farmers in the area of land under cultivation, but there are also decided differences between the two regions in their urbanization rates as well.

Region	Rural population percentage	Urban population percentage
South	0.74	0.26
North	0.85	0.15

Compared to the north, the southern population is more concentrated in the cities. The southern urban population of 6.39 million is about 1.6-fold the northern urban population of 3.97 million. To this we must add the income gaps between southern and northern cities. The average monthly individual income of a northern urban dweller was only 175,000 dong; his southern counterpart had an income of 278,000 dong, 1.6-fold higher. (*Statistical Yearbook, 1994*, General Statistical Office, Viet Nam, 1995) In other words, northern farmers had a domestic urban market only 40% the size of southern farmers. Given the tendency of foreign capital to concentrate in the southern cities, this trend can only be expected to accelerate in the future. Rural poverty is one of the problems that epitomizes northern villages.

3. Staple Grain Agriculture

Being a subtropical zone, the north experiences cold winters that make it impossible to raise three crops a year. Winter crops are subject to damage from cold and drought; summer crops to damage from typhoons. These conditions render stable harvests impossible. The climate has been comparatively stable since the nineties, so that widespread damage has not been seen across the region. In the best growing districts, harvests are 13-14 tons per hectare over two seasons. However, there are some local areas each year that harvest nothing because of typhoon and drought. Overcrowding of the population, meanwhile, has compressed the average amount of land under cultivation per farmer, so that there are no surpluses even though harvests may rise. These conditions have resulted in a strong subsistence orientation in northern staple grain agriculture. Having little if any international orientation, it will be difficult for market economics to be employed here. What is more, given the topography of the Red River Delta, "new delta" at elevations of one meter or less accounts for more than 30% of the land. Being hard to drain, this land will be difficult to convert from wet paddies into fields.

By contrast, the Mekong Delta has three growing seasons for its rice crop. Because the crop is grown on "new delta," it is rarely subject to flooding, and damage from cold and drought is unknown. This gives harvests a high degree of stability. The best growing areas on the new delta areas of the Mekong Delta produce up to 15 tons a year. The northern mountainous areas and the terraces of the middle region are subject to the same poverty as the Red River Delta, but they grow mainly field crops which have the latent potential for industrialization. In that regard, these areas enjoy better conditions than the Red River Delta. They also experience less population pressure. At the current time, agriculture in the Red River Delta is the farthest from marketization.

The northern road infrastructure has seen virtually no improvement or even repair since the French colonial days. Even "national roads" are generally little more than unfinished one-lane roads, and most of the "interprefectural roads" (*duong lien huyen*) are unpaved. Most of the access roads connecting villages with the interprefectural roads are in poor condition. Nor does most of the farm population have any means of transportation apart from bicycles. There are almost no bridges over rivers except on the national roads. In most cases, the only means of crossing is by aged and obsolete ferries. Most of the few bridges that are found were constructed during the French period, and they are extremely inefficient steel bridges, in which trains, bicycles, and pedestrians share a half a lane's worth of space. Many of these bridges are superannuated and dangerous. The deplorable state of the land transportation network is a classic example of how infrastructure construction has been neglected in the decade since Doi Moi. The virtual lack of a collection network for the distribution of agricultural products impedes attempts to turn agricultural products into marketable goods.

By contrast, the Mekong Delta had a dense dispersion of terminal cities for the collecting and distribution of rice even prior to the colonial period. The roads and bridges constructed for military

purposes in the sixties remain intact, and the distribution infrastructure, which is run primarily by the Chinese, is well developed.

To sum up, infrastructure also makes it difficult for Red River Delta agriculture to marketize.

4. Income Gaps as a North-south Problem

As should be obvious from the observations above, the gaps between north and south are extremely large both for the cities and for the rural villages. The largest factors in these north-south gaps are social rather than directly economic in their origin. The north is both the political and the cultural center, and its two subregions (the mountain region and the middle reaches and delta) also have half of the population (in 1994, the north had a population of 36.4 million). The capital of Hanoi is the primary core of Vietnamese cultural and social life, and the fact that this primary core of the state is economically inferior to the south is politically and socially destabilizing to Viet Nam.

5. Summation

The rural villages of the Red River Delta that form the political and cultural center of Viet Nam are in fact an expression, in concentrated form, of the intractability of the problems that beset Vietnamese agriculture. The development of the rural villages of the Red River Delta will clarify the strategy for solving the problems in Vietnamese agriculture as a whole. Viet Nam ought to ensure the social stability of its center, and expand the results therefrom out to the poverty-stricken districts of the middle section and mountains. For these reasons, the suggestions in this paper concentrate on strategies for the development of rural villages in the Red River Delta.

II. Diversification of Agriculture in the Red River Delta

1. The Need for Agricultural Diversification

The current Five-year plan lists higher rice yields as its primary goal and advocates the introduction of hybrid rice to achieve this. The input of Chinese hybrid rice and large amounts of fertilizer resulted in many districts recording harvests of more than 7 tons a hectare during the winter and spring 1996 growing seasons. At the same time, however, the price of rice has crashed. On the spring 1997 market, standard rice carried a price of about 1,400 dong per kilo. Meanwhile, farmers have been squeezed from the other end by skyrocketing prices for fertilizer and other production factors, not to mention 15-20 taxes and public impositions, for example, the agriculture tax, contributions to the building of roads and levies, water rights fees, and contributions to the cooperative fund. The result is that net income is, on average, only about 300,000 dong per sao (360 m²). Households that produce only rice cannot make a living from it and must seek more non-agricultural income as day laborers in other parts of the country. Today, rice income accounts for less than 50% of household income. In other words, no matter how much of a bumper rice crop is produced, it does not lead to much improvement in agricultural household income.

However, Viet Nam's cities are underdeveloped, which means the non-agricultural job opportunities in the city for rural villagers are extremely limited. Most of the farmers in the Red River Delta must rely entirely on non-rice agricultural production to stabilize their cash income.¹ Rapid

¹ Since the 1990s, there has been a vast increase in the number of rural workers seeking jobs elsewhere, but most

development has been seen for many crops since Doi Moi, for example, cotton (production has increased from 4,400 tons in 1985 to 10,300 tons in 1995), soy beans (from 79,100 to 121,400 tons over the same period), sugar cane (from 5,559,700 to 10,491,400 tons), peanuts (from 202,400 to 340,200 tons), tea (from 28,200 to 40,200 tons), coffee (from 12,300 to 218,000 tons), rubber (from 47,900 to 122,700 tons), and also such highland crops as cassava, herbs, and vegetables. However, the mainstays of production remain traditional plantation crops like coffee and rubber. Even after Doi Moi, agricultural development has merely consisted of rebuilding the colonial agricultural structure, the same as was done for rice production in the Mekong Delta, and has therefore been unrelated to the farm economy of the Red River Delta. The plan for crop diversification between 1996 and 2000 does not go beyond these structures.

Only a limited number of the non-rice crops being encouraged by the central and local governments are suitable to cultivation in the delta: corn, soy beans, peanuts, sweet potatoes, and white potatoes. At the provincial level, production guidance is uniform and mechanically faithful to instructions from above, and therefore ignores local conditions. The result is excessive production of an extremely limited number of crops, which causes market prices to drop. The sharp rise in the Red River Delta rice harvest during the nineties caused the rice price to plummet in 1997 and did not, as a result, lead to any improvement in farm incomes. Agricultural diversification in the Red River Delta is first a question of developing crops that are suited to local conditions on the delta and second a question of developing markets.

2. Differences within the Delta in Agricultural Diversification

It must be understood that there are large divisions in the non-rice agricultural production of the Red River Delta due to differences in the natural, cultural, and historical environments. The Red River Delta can indeed be divided into four zones. The first zone is an oval doughnut shape composed of many layers with its centerpoints in Hanoi and Hai Phong. It also contains small, nebulous zones of similar structure around such central cities as Nam Dinh and Bac Ninh. The natural levee that runs near the cities between Hanoi and Son Tay, the low-elevation old-delta land along National Road No. 5 between Hanoi and Hai Phong, and the land along National Road No. 1 between Hanoi and Bac Ninh all 1) are close to urban markets, 2) enjoy relatively good access roads into the city, and 3) are superior to other low-elevation land in that they are able to grow crops year round, have summers that are suitable to vegetable cultivation, and have natural levees to prevent flooding. Vegetables and fruit therefore account for an extremely large proportion of their income. This, combined with a high degree of stability for their rice crops, makes this the most prosperous farming region on the Red River Delta. At the same time, proximity to the cities has given this zone well-developed traditional craft specialities. Since Doi Moi, traditional crafts have lost out in the competition with non-traditional crafts and industrial goods, but the zone has been able to replace them with subcontracting for modern industrial production and manual filling services. Relations with urban intermediaries in embroidery, and scrap steel and plastic recycling are highly developed, and the villages in this zone are notable for the fact that income from these non-agricultural areas far exceeds that from agriculture.

Zone Two consists of the flood plains bounded by the provinces of Ha Tay, Ha Nam, Nam Dinh,

of this has been as manual labor on the construction sites that have sprung up because of the construction boom in post-Doi Moi cities, or as loggers. There is little reason to believe this will be sustained forever, and even were it to be, income is a low 10,000 dong or so a day. Rural economies that depend on the income from day labor are unstable.

Thai Binh, and southern Hai Duong. This zone: 1) has no cities within it, no roads suitable for the transportation of products other than National Road No. 1, and therefore no access to the major city markets. Its only options are to supply products to smaller regional cities or to develop specialities for sale on export markets. 2) Situated in the back swamps, this zone has little in the way of low elevation lands suited to non-rice crops. The majority of the land under cultivation consists of rice paddies that are not flooded during the rainy season. Agricultural diversification is generally an extremely difficult issue for the deltas of Southeast Asia. Indeed, the deltas were originally developed for rice production, the only hydrophilic staple there is. Only a limited number of hydrophilic crops have ever been developed into international commodities.² Generally, low swamps subject to rainy seasons will have little choice but to rely on rice cultivation for the foreseeable future. In the nineties, the farmers of this region have produced:

- 1) Two rice crops: Productivity has increased from about 4 tons per hectare per growing season to about 6, but rice prices have fallen so that higher paddies have been converted to four-season cultivation of non-rice cash crops like vegetables.
- 2) Miscellaneous dry season crops (*mau*): In October and November, after the rainy season harvest, rice paddies are planted with fast-growing corn, beans, and potatoes. These, however, are generally not marketable and are consumed on the farm itself as livestock feed.
- 3) Winter vegetables: In the main, vegetables are grown throughout the year in parallel to rice on the higher lands next to the levees, on sand hills, and on land that has been artificially built up. Vegetables are also cultivated intensively on higher lands between December and January after the fall *mau* harvest. However, the area under vegetable cultivation is small and generally the varieties are limited to cabbages, salad greens, and aromatic vegetables. Farmers select the varieties on their own, cultivate them with their own technology, and transport them by bicycle into the local city for sale on the market directly to consumers.
- 4) Fish hatching: Ponds dot the residential areas of the low swamp deltas. Most of these ponds are used only for household water, but the larger ponds may be used to hatch fish, either by cooperatives or by subcontractors under an arrangement with the cooperative. The products are sold to dealers who regularly visit the villages. This production is still small scale and there are few full-time producers.
- 5) Pork: Most farmers raise 2-3 or sometimes 3-4 pigs either for market or for the family meat needs. Most of this pork is sold on the market, but the farmers also purchase an equivalent amount of meat from the market. For it to become a source of income will require that stud pigs be raised and that the scale of production be expanded. Expansions in scale are, however, impossible because farmers are self-sufficient for only a part of their pig feed and must purchase the rest from the market.
- 6) Fowl: Farm households do raise chickens and ducks, but the scale and the market are limited and these are not major sources of income. This overview should serve to illustrate the extremely weak development of non-rice agricultural production. Even still, with rice income low and production often no more than at a subsistence level, these non-rice crops are still an important

² There have been rapid declines in swamp crops like jute (from 47,084 tons to 9,496) and *coi* (from 92,800 tons to 58,600) that were traditionally produced by small farmers in the delta. The declines in jute were caused by the disappearance of Eastern European markets and a failed attempt to break into the international market. *Coi* was defeated by petrochemical products.

At one point around 1993 there was an expansion in experimental cultivation of lotus plants in the low swamps, and most of the rice paddies where production was unstable due to poor drainage switched to lotus cultivation. Since 1994, however, lotus prices have plummeted and today there is almost none in cultivation in Viet Nam.

source of cash income for the farm households in the villages of this zone. The cooperative in Coc Thanh, a village in Nam Dinh that was studied by the author, had only one market for its products, the city of Nam Dinh. But even still, and even though it was competing on price with all of the other rural villages around Nam Dinh, it managed to produce average raw income of 200,000-300,000 dong per growing season or about 1 million dong period year. Some farmers had as much as 3 million dong in raw income. On the other hand, for the 112 farms producing and selling rice, only about 200 kg (worth about; 400,000 dong) were sold per farm. Most was consumed by the farmers themselves. In other words, the general practice of delta farmers in Zone Two is to use rice to supply their own food needs and vegetables to secure cash income. On average, vegetable production brings in about 33% of household income.³ But when viewed as a source of cash income, vegetables, at 60.6 million dong, are predominant, well in excess of the 400,000 dong brought in by the sale of rice polishers or the 50,000 dong from sewing. In other words, even

³ Income

(1)	Unhulled rice	2,100 Kilos	3,150,000 dong (But all consumed on the farm)
(2)	Vegetables	Total 6,062,000 dong	
	Of which,		
	Spring vegetables	1,000 Kilos	1,000,000 dong
	Winter vegetables	2,000 Kilos	1,000,000 dong
	Rau muong	400 Kilos	200,000 dong
	Spring potatoes	300 Kilos	660,000 dong
	Green grams	15 Kilos	330,000 dong
	Peanuts	10 Kilos	22,000 dong
(3)	Fruit	Total 150,000 dong (All consumed on the farm)	
	Pomelo	120Fruits	70,000 dong
	Bananas	60 Kilos	30,000 dong
	Sugar Apple (Annona Squamosa)	10 Kilos	10,000 dong
	Kumquats, Sudachi (Citrus Sudachi)	20 Kilos	40,000 dong
(4)	By-products		
	Straw		300,000 dong
	(1 Sao (360m ²) 1 Season		20,000 dong; 8 Sao 2 Season around 300,000 dong)
(5)	Livestock	2,145,000 dong	
	Pork	230 Kilos	1,525,000 dong
	Chicken	30 Kilos	300,000 dong
	(Consumed by the farm: 22 kilos; sold: 3 kilos)		
	Eggs	150 eggs	90,000 dong
	(Consumed by the farm: 130, sold: 20)		
	By products of livestock		
	Compost	4,600 Kilos	230,000 dong (all consumed on the farm)
(6)	Work for cooperatives		
	Unhulled rice	360 Kilos	540,000 dong
	Cumulative agricultural income		9,197,000 dong
	Of which sold		4,185,000 dong
(7)	Other income		
	Wedding gift in cash		2,600,000 dong
	Interest on wedding gift in cash		540,000 dong
	Rice polisher sales		400,000 dong
	Sewing income		50,000 dong
	Repayment of loans		1,500,000 dong
	Carried over from 1993		4,500,000 dong
	Total non-agricultural income		9,590,000 dong
	Total income		18,787,000 dong

though this zone is poorly situated in terms of location, markets, and distribution, vegetable income is still indispensable to its farm households. This is the area that has the most to benefit from a diversification of agricultural production.

Zone three is bounded by the terraces and the alluvial fan compound (the "Trung Du" region) on the north, and the coastal delta on the south. This zone is at a decisive disadvantage when it comes to transportation infrastructure. In the north, it suffers from a lack of wide, flat land for rice paddies; in the south, its low, coastal swamp lands suffer from poor drainage that reduces rice productivity. Therefore, agricultural diversification has been unable to make much progress at the current time, and farm incomes are lower than in Zone Two. However, the north does enjoy a wide range of options for commercial crops like vegetables, fruits, and herbs because of its well-drained fields and abundant rainfall. In the south, the sand hills along the coast of Thai Binh and Nam Dinh provinces are also suited to commercial crops like vegetables. Were transportation conditions to be improved so that this zone had access to markets, it could expect high economic development. One example illustrating this is the Agricultural Development Plan of the city of Vinh Yen in the former province of Vinh Phu. Vinh Yen is located on the alluvial plane, bordering the foothills of Tam Dao to the north and the low swamps between the Red River levee and the foothills to the south. National Road No. 2 runs through the center of the city from east to west, connecting Vinh Yen with Hanoi proper 40 kilometers away and Hanoi Airport 20 kilometers away. What is more, to the north of Vinh Yen lies Tam Dao, the north's largest summer resort and an area slated for tourist development. The city is therefore extremely well situated in terms of market access. There are also several plans for building industrial parks along National Road No. 2 near the city. To take advantage of these strengths, the city is diversifying its land use, earmarking 25% for agriculture, 8% for permanent agricultural products, 15% for forestation, and 27% for forests. Agricultural products bring in 52.5% of farm income, but livestock now brings in 47.5%. Assistance from SIDA has resulted in the clearing of 427 hectares of mountain forests, which is scheduled to be planted mainly with sugar cane and vegetables. It has also begun cultivating flowers and house plants for the markets in Hanoi and Noi Bai. The city's plan positions it as a supplier of vegetables to adjacent industrial parks, tourist areas, and cities. There is enormous latent potential for the diversification of agriculture in the areas surrounding the delta, and local markets can be expected to expand. The problems are building the transportation infrastructure and creating the markets.

Zone Four covers the coastal areas of Thai Binh, Nam Dinh, and Ninh Binh. This area is characterized by: 1) land that is mostly less than 1 meter above sea level so that little progress has been made in the transition from wet to dry paddies and only small amounts of land are under field-crop cultivation; 2) land that is mostly below sea level at high tide and has salty soil that is unsuited to field crops (because it is reclaimed land from the 1830s); 3) a topography that is not conducive to developing field crops because most of the land is watered by tidal irrigation (*nuoc trieu thuy*), with tidal waters lacking in winter; 4) underdeveloped local cities and difficult access to Hanoi, so that the major sources of income are 2 rice crops and wages from day labor; and 5) the densest farm population in the world at 1,000-2,500 per square kilometer, with large amounts of surplus labor accumulating in the villages. These conditions mean that agriculture concentrates almost exclusively on rice, with shipments of excess unhulled rice being the main source of cash income. The zone is, however, extremely enthusiastic about introducing high-yield varieties. Active switching to hybrid rice since 1995 has brought winter harvests up to 7 tons per hectare in some areas. But for all these efforts, the increased production has failed to have any effect on farm incomes because rice prices have been falling since 1996. What is more, summer harvests are still only about 4-6 tons because of poor drainage during the season of typhoons and heavy rains. Because of this, most villages that

concentrate exclusively on rice production have average per capita incomes of less than 2 million dong. The limits to exclusive rice production have brought non-agricultural developments to these two zones.

1) Outside labor: It is common for farmers to use the winter and other off-season periods to seek jobs as laborers outside the village. This is usually unskilled and manual labor (urban construction sites, cyclo driving, and logging in the mountains) and medium-skilled labor (carpentry, masonry). Villages that send out medium-skilled labor bring in more than 60% of their income from outside work, have average per capita incomes of more than 3 million dong per year, and are among the more prosperous villages in this zone. However, this structure is supported by the urban construction boom and other bubble-like phenomena. Income structures are unstable and subject to the direct impact of changes in urban conditions.

2) Fishing: Fishing has traditionally been well-developed in the coastal villages. There are two classes of fisherman. The first works on a 12-20 horsepower boat that is either privately owned and captained or run by the fishing cooperative, fishing offshore and selling the catch to the refrigerated Chinese and Taiwanese ships that cruise the coasts. The income of fishing households averages 5-10 million dong, and the captains can sometimes have as much income as wealthy urban dwellers.

However, this is basically passive market participation; the boats have no refrigeration facilities and prices are set by the Chinese and Taiwanese, making these fishermen in effect subcontractors for the Chinese. What is more, the fishing economy is completed at sea or in large ports like Hai Phong, so that it has relatively little impact on the local economy for the size of the income involved. The second class of fisherman is the small fisherman who usually farms on the side. These fishermen go out in small boats along the coast, and they either eat their catch themselves or sell it to merchants who come through the village. The coastal catch has been declining in recent years, so that fishing income is now just a supplement to farming income.

3) Fish hatching: The Red River Delta has a 90 kilometer coastline, and its clay soil and large influx of river water make this water rich in nutrients and suited to fish hatching. Around 1992 the sandbars at the eastern edge of Giao Thuy Province began to be used to hatch lobster, crab, and tortoiseshell, while even in the interior Hai Hau Province uses tidal waters to run hatchery pools for crayfish. In all cases, however, operations are small in scale and distribution is basically monopolized by the merchants who come through town, so there is little profit.

3. Summation

This section has demonstrated the large diversity among the rural villages of the Red River Delta. What is important is that agriculture improvement projects be finally adapted to the nature of each zone.

III. Developing Markets for Non-rice Agricultural Production

1. Domestic Urban Markets

The biggest obstacle in the diversification of Vietnamese agriculture is the narrowness of the domestic market. Less than 20% of the domestic population lives in the cities and this urban population tends to concentrate in the two large cities of Hanoi and Hai Phong. The numbers are limited even when the second-tier of cities, those like Nam Dinh with populations of several hundred

thousand, are included. In the small cities of the *huyen* (counties) adjacent to farms, the only non-farmers are a few public officials. Urban markets are therefore saturated just with the production of the farms in the surrounding area. Even were there transportation infrastructure linking the rural villages with the cities, all that would happen as long as the size of cities is itself limited would be that competition caused price drops. Future development of urban markets must therefore be considered from a long-term vantage point because it will depend entirely on the distribution and development of urban industries. From a more short-term vantage point, regions will need to be more active in advertising their specialities. Thai Nguyen tea is famous around the country, and it should be possible for other agricultural products to make inroads into urban markets by developing specialities. For example, only a very small portion of Vietnamese rice is sold as specialty brands, but as the incomes of urban dwellers increase higher demand can be expected for quality rice. Even now regional specialty rices fetch prices of 3,000-4,000 dong per kilo in provincial cities, 2-3 times the price of 1,400 dong for ordinary rice. Regions need to produce local specialty rices that take advantage of their local strengths, actively advertise them, and compete for their sale on urban markets.

2. Domestic Rural Village Markets

The market for agricultural products should be sought in rural villages. According to studies of the internal markets of rural villages, there is a large amount of trading of agricultural products within villages, primarily meats. We did a study of 87 farm households in 1995 and found that they spent on average 1,066,605 dong for meat. However, the markets are still small in scale because the agricultural production structure in the Red River Delta is uniform and homogenous, which leads to overproduction and competition among villages so that market prices are low and farmers have little purchasing power. To solve this it will be necessary for regions to specialize in agricultural products that are suited to local conditions. There are two different aspects to specialization. The first is to take advantage of climatic differences at the national level so that, for example, Mekong Delta specialties are exchanged for Red River Delta specialties. The second is to take advantage of topographical differences within the region, so that in the Red River Delta vegetables grown on sand hills might be exchanged for peanuts grown on natural levees and meat raised in the lowlands. Opening up the rural village market will require that price differences be used to fuel expansion. By exchanging low-cost products rather than striving for self-sufficiency, farmers would be able to raise market prices because: 1) they would rectify the subsistence structures that dominate non-rice products, bringing the market into play in farm households; and 2) they would prevent competition between agricultural products.

3. Foreign Markets

The market for East Asian and Southeast Asian agricultural products, of which Japan accounts for 70%, is growing rapidly, but the majority is dominated by China, with Thailand also picking up a small portion. In other words, there is a very simple structure at work in agricultural trade; China is the producer and Japan the consumer. While the agricultural products of the Red River Delta for the most part overlap Chinese exports, they yet have a potential to move into the East Asian and Southeast Asian markets. To this effect, the following actions and measures are to be taken as quickly as possible. In point of fact, Zone Two, which has no source of cash income except vegetables, is beginning to export to foreign markets. Among the success stories are the cucumbers that Kim Thanh in Hai Duong Province exports to Taiwan and Japan, and the white potatoes that the Coc Thanh

Cooperative in Nam Dinh Province exports to the Netherlands. In both cases, however, the buyers have a monopoly on market information, and the producers take an entirely subordinate role in the determination of export volumes and prices. Likewise, neither case has much chance of turning large profits since they are exporting unprocessed primary goods that cannot be stored and have no added value.

1) Each region needs to develop and produce export specialities, but overproduction is already becoming a chronic problem because no coordination exists. For example, in 1996, the former Hai Hung Province had to destroy several thousand tons of cucumbers that were produced in excess of the contract. Integrated agricultural organizations are needed to provide producers with market information and engage in some form of production coordination.

2) Second, there ought to be some value added with primary, simple processing, for example, pickled cucumbers or the production of potato starch., but this is impossible for individual small-scale farmers and inefficient in terms of maintaining consistent quality. Likewise, small farmers do not have the collateral needed to borrow start-up funds. This will be something that requires collective processing at a *xa* or cooperative level.

3) Third, there needs to be a system for diversified, stable supplies driven by the exchange of information that is closely connected to consumer markets. The Japanese market currently requires large volumes of Southeast Asian agricultural products,⁴ but because of a lack of information and worries about the stability of supplies, it has given Chinese go-betweens what amounts to a monopoly. As a result, the prices charged to Japan do not reflect the benefits of local production. Since Viet Nam does not yet have a developed go-between class, this is the perfect opportunity to forge direct links between consumer markets and producer groups.

4. Export Options

Thailand exports more agricultural products to Japan than any other country in Southeast Asia. However, all of the Japanese trading houses in Thailand collect products through local intermediaries and are therefore plagued with sharp swings in prices and availability. What they would like are direct contracts with producers. According to a survey held by a Japanese trading company, the following views are shown regarding agricultural products are handled by Japanese trading houses:

1) Rice, corn, cassava, jute, etc.: There is a glut in the international market for the varieties being encouraged by the government of Viet Nam and no hope at all for them developing into export products. Tomato cultivation has developed in recent years, but the domestic market is glutted and preservation and processing are difficult so there is no hope of them becoming established on international markets.

2) Vegetables: If okra, young corn, eggplants, and white leeks could be processed domestically (frozen or prepared Chinese style), they would have enormous potential. In particular, Thailand has not succeeded in producing Japanese yams and it would be worth considering their cultivation in northern Viet Nam with its evergreen forest climate.

3) Beans: Soybeans (in the pod), soy oil, and green bean flour are widely produced in Viet Nam and would have potential if they could be frozen. However, it will be difficult to export peanuts, a crop that the government of Viet Nam is encouraging, because of aflatoxin problems.

4) Chicken: Production of *ga cong nghiep* (industrial chicken) is fairly developed for the domestic market and has potential if breeding can be better managed and refrigeration brought in.

⁴ According to a certain Japanese trading company located in Bangkok, there is high demand for white leeks to be used in yakitori and cabbage to be used in rolled cabbage.

5) Cucumbers, eggplants, turnips, white radishes: These are now being exported as raw materials for pickles from Hai Duong and Hai Phong Province through Taiwanese trading houses, where they are processed before being imported into Japan and South Korea. There is the potential for high volume exports if quality and volumes can be stabilized.

5. Export Strategy

In all cases, the following problems will need to be solved before exports can take place.

- 1) Viet Nam needs to develop ties between trading houses and producers and should set up an agriculture service that would collate information and serve as the information liaison on the Vietnamese side. There are currently a large number of Japanese trading houses in Thailand that are interested in Vietnamese agricultural products but unable to obtain any information on them.
- 2) Viet Nam needs to establish an organization to take responsibility for fertilizer management. In recent years, the interest among consumers in Japan and elsewhere in "organic products," which are produced with no or reduced amounts of chemical fertilizers and pesticides, has considerably increased. Thus in intending to penetrate into the Japanese and other markets, exporting of agricultural products needs to take this trend for granted. The trading companies in Thailand are extremely active in managing fertilization through the agricultural companies they work with.
- 3) Viet Nam needs to establish a wide-area agricultural production organization that is able to ensure stable supplies and respond to temporary demand surges. Stable supplies are the minimum condition for securing continued exports, and managing this is generally very difficult where agricultural products are concerned.
- 4) It would be desirable to have refrigeration facilities built near food processing plants where agricultural products would undergo simple washing, drying, cutting, sanitization, and packaging. In Thailand, these facilities have been built with the supervision and investment of the importers. In Viet Nam, it should be possible to set up joint ventures with cooperatives for this purpose, conditional on land provisions.
- 5) Viet Nam needs to build chilled storage facilities near producers in order to eliminate seasonality as much as possible. Highly seasonal crops tend to experience temporary gluts that cause prices to drop, which then saps the motivation to produce them, causing quality to deteriorate and inviting shady trading companies into the market. These processes are possible if links can be forged between local farm production organizations and trading companies. The development of non-agricultural production in rural villages will also be very effective in this since it will play a major role in absorbing excess labor.

IV. Building an Agricultural Cooperatives Union: a New Organization for Agriculture

1. Diversification Strategy

The agricultural diversification strategy described above can be summarized in the following points:

- 1) Development of regional specialties
- 2) Development and guidance in technology to ensure good, even quality in specialties
- 3) Development and guidance in technology for processing and preserving agricultural products
- 4) Investment in production expansion, processing, and preservation

- 5) Gathering of market information
- 6) Intervention in markets with advertising
- 7) Coordination of specialty production
- 8) Building of collection and distribution organizations

None of these are things that individual farmers can accomplish. In the main, they involve either information organizations or production organizations. Information organizations are not something that can be built by individual zones, but must cover the entire Red River Delta area. Production organizations must of necessity be cooperatives because these are the only farm organizations able to promote agricultural diversification and undertake distribution and processing services in the Red River Delta.

2. Response to Criticisms of Cooperatives

A letter dated January 17, 1997 to Committee Chairman Shigeru Ishikawa from Michael Walton, chief economist in the Office of the Vice President, East Asia and Pacific Region of the World Bank, questions our view that the government should support cooperatives in order to develop agriculture. Mr. Walton argues that the development of Vietnamese agriculture over the last decade was the result of an abandonment of the authoritarian cooperative organizations of the past. While he is all for the formation of voluntary private organizations for farmers, he believes it would be counterproductive for the government to interfere in these organizations.

There are several mis-assumptions at work in this view. First and foremost, we are not talking about agricultural policy for Viet Nam as a whole, merely for the Red River Delta. Our reasons for concentrating on the Red River Delta were explained in the preface to his paper. Certainly we recognize the fact that the dismantlement of the cooperatives in 1989 helped in the south to eliminate the sabotage that was seen during the collective labor years and brought about a rapid increase in production. Likewise, it is a fact that agricultural organizations are being formed in the south on the principle of individual participation. But it is also a fact that Viet Nam is not a homogenous region. The situation is quite different in the north. The reasons for the development of agricultural production in the Red River Delta over the past decade, and this is true for both the southern and northern deltas, is that new strains of rice have become established and stabilized, while markets have expanded for non-rice products and small wintertime irrigation networks have begun to be built. But, in the Red River Delta, it was the cooperatives that put these conditions in place. First, it was the cooperatives that provided the technical guidance by, for example, supplying elite seeds, maintaining the purity of elite seeds, and teaching farmers cultivation methods. Second, the pumping stations of the cooperatives played a much larger role than those of the state. The cooperatives have not been abandoned over the last decade. Even Resolution 100 of the Central Committee of the Communist Party, a 1981 document that was inspired by the agricultural crisis on the Red River Delta at the end of the seventies and effectively does away with collective agriculture, defined eight production processes of which it gave the cooperatives charge over four: "management of seed rice," "tilling the land," "spraying insecticides," and "fertilization." This was to be the work of the production cadres' collective labor. Farm families were given charge over transplanting, harvesting, and watering within their plots. Granted, these changes mark the initial waning of collective agricultural management, at this stage land was still collectively owned and agricultural production was managed collectively by the cooperatives. Resolution 10 of the Political Bureau of the Communist Party (1989) calls for all cooperatives to divide their land use rights evenly among farmers and to eliminate collective management and ownership between 1990 and 1993. Given the slow pace of agricultural development in the nineties, it is uncertain what impact Resolution No. 10 had on production, and it is therefore a

mistake, both in historical and statistical terms, to immediately link “abandonment” of the cooperatives with improved production on the Red River Delta. Even in the nineties, all of the cooperatives have provided water, electricity, and elite seed supply services, and as we shall see later in this paper, some have even served as intermediaries in collecting and distributing commercial crops. Many cooperatives also engage in small-scale industrial production, for example, woven cloth, bricks, and organic fertilizer. In short, cooperatives still play an important role in the farm production system.

Cooperatives were never government organizations, before or after Doi Moi. When viewed in terms of their organizations, personnel, and independence, the cooperatives were founded on traditional social organizations⁵ and in that sense can be seen as a socialist expression of a traditional village community.⁶ Today, it is common for Red River Delta People’s Committees to turn to the cooperatives to collect taxes, build and maintain schools and medical centers, and carry out other administrative and social policy functions because the committees, even though they have grown large, lack the staffing to do so. That does not mean, however, that the cooperatives should be considered subsidiary organizations to the committees. Rather the committees lack the power to carry out their duties and so they turn to local organizations for assistance. The cooperatives of the Red River Delta are not politically established organizations but the traditional social organizations of Vietnamese villages. This is illustrated by the fact that while the cooperatives in the south, where community feeling is weak, were quickly disbanded after 1989 and today are almost entirely inactive, those in the north are still intact and strong. Therefore, the most realistic and rational way to form a new agricultural organization is to base it on the existing cooperatives, which themselves are social organizations.

3. Building a Regional Cooperatives Union

That is not to say that the current cooperatives do not have their problems to be overcome in functioning as the new agricultural service institutions that we envision. Among the chief obstacles standing in their way are:

1) Funding: Currently the income of the cooperatives comes from assessments on members of 4-5% of their “contract levels” (*muc khoan*), which were set in the eighties (and are about 1/3 of today’s production levels). This money goes into the “cooperatives fund” (*Quy HTX*). The laws stipulate that 30% of the cooperative’s budget must go for production technology, 40% for administrative costs, and 30% for social welfare, which leaves them no room to undertake new operations. The reason many of the cooperatives are currently languishing is because their fatigued to function as agricultural organizations is strictly proscribed. Lacking adequate funding, they are

⁵ Strictly speaking, the *xom* or hamlet was the basic unit of society. Even prior to Resolution No. 100, the *xom* was in many cases a basic unit of production, equivalent to the production cadres. The cooperatives were federating organizations that brought together the labor forces of the production cadres and signed cultivation contracts. The heads of production cadres were chosen from among the respected party members in the *xom*. And when the agricultural crisis hit in the late seventies, it was the heads of the production cadres that came out strongest in opposition to the cooperatives.

⁶ In the seventies, when Viet Nam was on a wartime footing and natural disasters were rampant, the government confiscated large amounts of the harvest and interfered very heavy-handedly in agricultural. This led to conflict between the cooperatives and the farmers. As a result, the youth population was drained away in droves from the rural villages and agricultural production fell sharply, causing a food crisis in the late seventies. But the government did make an effort to deal with the famine, however inadequate, and the cooperatives carried out their own anti-poverty programs to counteract food shortages. There were no fundamental conflicts between producers and cooperatives or between cooperatives and the government.

unable to recruit staff. Usually there are only about 3-10 officers serving a membership of several thousand. Even the chief officers are only paid 120,000-180,000 dong a month, which means they are serving more or less as volunteers. However, given their current income levels farmers are currently paying as much as can be asked of them for taxes and public impositions and are unable to bear the cost of maintaining the cooperatives.

2) Capital: Most cooperative assets are in the form of illiquid real estate or defaulted loans to farmers. They have little liquid capital. The lending rates charged by financial institutions, however, are too high to make them feasible for long-term and service-oriented business development. The cooperatives lack the start-up capital to get new businesses going.

3) Isolation: In contrast to the administrative units of *xa*, the cooperatives are formed around the natural community units (or sometimes 2-3 of these units) of *lang*. This reflects the existing social order, but it also means that cooperatives are isolated with little interaction. On their own they will be unable to develop information exchange or production agreements, nor will they be able to accumulate capital.

To solve these problems we propose the establishment at the *huyen* level⁷ of Cooperatives Unions (*Lien Minh Hop Tac Xa*) and a central-level Agricultural Cooperatives Information Center (ACIC; *Trung Tam Thong Tin Hop Tac Xa Nong Nghiep*).

4. The Organization of Cooperatives Unions

1) The unions must not be bureaucratic agglomerations of cooperatives but links between the best cooperatives that are active in the area. The purpose of these links must be to undertake real and substantial activities. The establishment and activities of a model cooperatives union will stimulate activity in those cooperatives that are performing less well.

2) The cooperatives unions must be incorporated entities (*xi nghiep ca nhan*). They should hold assets, and should use their capital for profit-making activities, with the profits used to pay for administrative and operational costs and to enhance capital.

3) The fixed capital of the unions should come from investments by cooperative members and by the capital on the cooperative funds (*von HTX*). The funding for new businesses should come from special government funding and foreign aid administered by the Viet Nam Agriculture Bank and other institutions.

4) The unions should be independent of guidance from agricultural authorities at the *tin* and *huyen* levels. The rigid, uniform guidance given by the *tin* and *huyen* usually impairs the selection of crops suited to local conditions and the development of independent distribution. It is therefore recommended that the cooperatives be given independence from government guidance so that they are able to rekindle the independence and self-help ethic that has been traditionally seen in Vietnamese rural villages.

⁷ A subsidiary unit to the *tin* or "province." In Viet Nam, the *tin* are administrative organizations that the state can and does integrate and realign at will and that have no organic relationship to the local communities. The *huyen*, by contrast, are organically formed organizations that have traditionally seen very little change. They are the proper units to join together from the perspective of both kinship relationships and market boundaries. *Huyen* are formed from no more than 10 *xa*, which makes them a feasible unit of integration. They generally cover areas of 10-20 kilometers, which means that contact is possible by bicycle and other basic means of transportation.

5. The Functions of Cooperatives Unions

The cooperatives unions will have the following functions:

- 1) Studying the existing and latent capacities of member cooperatives.
- 2) Formulating joint production plans based on market surveys.
- 3) Facilitating loans of capital between member cooperatives.
- 4) Joint purchasing and supply to farmers of production materials.
- 5) Joint shipping to distribution markets.
- 6) Registration of existing and latent capacities with the Agricultural Cooperatives Information Center (described below).
- 7) Production of crops on consignment as mediated by the Agricultural Cooperatives Information Center.

6. Strategy for Establishing Cooperatives Unions

Below are policies for the first step in establishing new cooperatives:

- 1) Surveys of cooperative activities.
- 2) Identification of model districts with a large concentration of active cooperatives in which the building of local industries and infrastructure can be expected to have a substantial effect.
- 3) Formulation of district models by the administrators of active cooperatives, managers of industrial concerns, local government officials, and central government officials within the district.
- 4) Division of labor in the formulation of district models
Research into latent private sector, shipping and primary processing in production units: individual cooperatives.
Technology research: VASI and other research institutions affiliated with the Ministry of Agriculture.
Market research: local government, central government.
- 5) Formulation of the duties of the cooperatives union (production plans, local-level shipping, transportation to distribution institutions, etc.).
- 6) Evaluation of district models by consultants.
- 7) Organization of business entities and establishment of model cooperatives unions.
- 8) Lending of government funds to model cooperatives unions.
- 9) Start-up of activities of model cooperatives unions.

V. Establishment of an Agricultural Cooperatives Information Center

1. Purpose

The primary reasons why many cooperatives are inactive today are that they lack capital and they lack information on domestic and foreign markets. An institution is needed that can gather financial information from agricultural banks and other financial institutions, gather foreign aid information from ODA organizations and NGOs, study trends on the agricultural product markets in major domestic cities, forge ties with trading houses, agricultural federations, and cooperatives in Japan, Thailand, Taiwan, and China to gather information on foreign markets, evaluate conditions, and pass this information along to producers. The cooperatives unions and the cooperatives themselves are

local operational organizations with responsibility for production and distribution. What is needed is an Agricultural Cooperatives Information Center (ACIC; *Trung Tam Thong Tin Hop Tac Xa Nong Nghiep*) at the national level to supplement this with information on markets, trading houses, and production technology. The ACIC is an institution with the responsibility for gathering and disseminating the information required to mediate between producers and markets. In other words, the institution will study for what, how, and under what conditions trading houses and other distribution institutions should consign production to rural villages, and then introduce them to cooperatives that have the production capacity required, thereby providing support for the signing of consignment contracts between the two.

2. Functions

The following functions are envisioned for the Agricultural Cooperatives Information Center:

- 1) Gathering of information on the land resources, human resources, capital, and technology of individual cooperatives (it would be advisable to use a high-tech geographical system like that in the GIS center in order to save on labor costs and rationalize information gathering).
- 2) Gathering of information on domestic and foreign markets and finance, and provision to cooperatives unions of market and financial information.
- 3) Conducting of opinion surveys of agricultural trading houses.
- 4) Promotion of ties between cooperatives and cooperatives unions.
- 5) Mediation between outside distribution institutions and cooperatives unions.
- 6) Selection of appropriate cooperatives and cooperatives unions in light of market requirements, formulation of plans with the involvement of all three parties, and signing of contracts. At the same time, communication of producer plans to the markets, selection of markets, formulation of plans with the involvement of all three parties, and signing of contracts.
- 7) Guidance on production conditions.
- 8) Provision of information on the gathering, transportation, and delivery of agricultural products.

In other words, the Agricultural Cooperatives Information Center will function as a think-tank for agricultural production organizations.

3. Organization

We envision the following organization for the foreseeable future:

- 1) **Cooperatives Information Office:** gathers information on the agriculture, processing, human resources, and organization of cooperatives.
- 2) **Market Information Office:** Gathers information on the domestic and foreign markets for agricultural products.
- 3) **Dissemination Office:** Provides market information to cooperatives and cooperatives unions, assists in the start up of commercial crop cultivation, and assists in negotiating contracts.
- 4) **Administration Office:** General administration.

Each of these offices would have at least 2-3 specialists assigned to it. The Market Information Office in particular will require the participation of foreign experts.

4. Institutional Administration

The functions of this institution should diminish as the market participation of the producers matures. When the cooperatives unions eventually become national in scope, the institution should be disbanded. However, given the current immaturity of the markets and producers, the institution will be unable to operate on an independent profit-making basis and must therefore be seen as a service institution for rural village development. Thus, while the cooperatives should be for-profit entities, the Agricultural Cooperatives Information Center should be a government institution. It will require the participation of foreign aid funding for its establishment.

Market Potentiality of Selected Agricultural Products of Viet Nam

Arihiro Muroya

Norin-chukin Research Institute

The objective of this research is to examine and characterize main export markets in East Asia of selected agricultural products of Viet Nam. Three products, i.e., vegetables, fruits and meats, including their processed or prepared products, are considered as cases. Moreover export potential of three other products, i.e., tea, sesame and cashew nut are also reviewed. As foreign markets, Japan, Republic of Korea, Taiwan, Hong Kong, Singapore, and other ASEAN countries and China combined, are subject to the analysis. Marketing strategies of agricultural products of Viet Nam are drawn on the basis of analysis.

I. Present Situation of Major Export Markets

1. Japan

Japan is the leading food importer in Asia (Table 1). In 1994 it relied 14% of vegetables, 53% of fruits, 34% of pork, 27% of chicken, and 58% of beef that it consumed on abroad. Although the annual per capita consumption of these products has leveled off or even declined for last decade, their imports in value terms have generally increased until 1994 (Tables 1 and 2). Several factors have contributed to the growth of imports. One was import liberalization coupled with reduction in tariff rates. Continued appreciation of yen against US dollar and several Asian currencies in the late 80's and early 90's contributed to the growth. Further as the competition within food service and processing industries as well as among retailers has intensified, these industries have become more conscious of imported products as the source of low cost materials and merchandises.

Currently, China is the largest supplier of vegetables, accounting for 45% of total imports in 1996 (Table 3). Chinese exports to Japan have risen sharply due mainly to its geographical proximity and inexpensive labor. Other than traditional exports such as canned, bottled and frozen products, a dramatic increase in exports of fresh vegetables has taken place in recent years. The United States is the second largest supplier with a 24% market share, followed by Thailand with 4.9%. Imports from Taiwan peaked in 1991 and then gradually decreased. The US have steadily raised its exports to Japan with the favorable climate, sophisticated management techniques for large-scale farming and sharp appreciation of yen against the dollar. In spite of these factors, as the Chinese exports to Japan have rapidly expanded, the US market position has eroded.

Regarding fruit imports, the US ranked top, comprising 38% of the import market share in value terms, while it dropped by 7% last year. The Philippines is the second supplier of fruits with the dominant market share of banana. China is the third supplier that has an edge for canned fruits.

Regarding meats, imported beef is dominated by the US and Australia, while Taiwan has the largest share in pork, followed by the US and Denmark. Due to a drastic rise of chicken imports from China, the country replaced Thailand as the largest supplier in 1994.

In 1995, in value terms food imports from Viet Nam ranked the nineteenth among countries. Vietnamese exports to Japan are highly concentrated in marine products such as shrimp, prawn and cuttlefish. Although salted cucumber and ginger are imported as a raw material for pickles, their market shares are quite small compared with those of China or Thailand.

2. Hong Kong and Singapore

Hong Kong and Singapore share many aspects in common. Both economies do not have a substantial agricultural sector, mainly relying on their hinterland for basic foods. Although the indigenous population is not large, Hong Kong has 12 million and Singapore 7 million of tourists annually. Both markets are open and functioning as a showcase to the neighboring countries together with the re-export base.

Hong Kong traditionally relies on China for foods, however the US was very successful in penetrating into its food market last decade, enjoying approximately 20% of the market share, close to that of China in 1995 (Table 4). Due to steady income rise together with growing number of tourists, the annual per capita food consumption has become closer to that of western countries (Table 2). This trend has pushed the demand for high value-added food, which includes poultry, fresh fruits, processed fruits, vegetables and beef from the US, while Australia and New Zealand have a competitive edge in beef and dairy products. Not only western countries but also Asian and South American countries are aggressive in promoting agricultural exports to Hong Kong.

Singapore has a similar food market structure. With tariff levied only on tobacco and alcohol, there are virtually no trade barriers to foreign exporters, which actually benefits high value-added products from developed countries. However, unlike Hong Kong, the US position in food imports is comparatively low, while fresh vegetables, tropical fruits, live animals are also imported from Malaysia, Australia and China (Table 5). In spite of geographic proximity, Viet Nam's exports to these two countries are limited to a small amount of vegetables.

3. Republic of Korea and Taiwan

The Uruguay Round agreement has had a great impact on Korean agricultural imports. In line with the agreement, many agricultural products have been liberalized in the past several years and all the remaining products were liberalized on and after 1 July 1997 with the exception of rice and beef. In addition the increasing per capita income will expand the demand for agricultural imports.

Beef imports, in particular, have dramatically increased both in volume and in value and would grow further (Table 6). Imported beef currently accounts for more than half of domestic consumption. Although the beef quota will not be eliminated until 2001, the quota increases every year and imported beef is highly competitive while the supply of local meat is limited. Imports of pork and poultry meat have also expanded due mainly to the minimum access set in 1995. The import quota of frozen pork and poultry meat was lifted on 1 July 1997 and tariff on these products was also reduced which are likely to stimulate the import. The US has benefited from most of the opening up of the market. Concerning pork, the EU (specifically Denmark, UK and Ireland) is successful in penetrating the market.

Fruit consumption per capita is quickly rising as the income rises. Banana is the largest import item among fresh fruits, mainly from the Philippines. Following the market liberalization, citrus fruits such

as grapefruits, lemons and oranges, which are almost exclusively come from the US, have a great potentiality. Compared with meats and fruits, the import market of vegetables is still very much limited in Korea. The country is basically self-sufficient in almost all vegetables. Strict regulations regarding plant quarantine may negatively affect the import of vegetables, particularly fresh ones. In view of high prices and wide fluctuations in domestic supply, however, there is a potential for fresh vegetable imports. Recent growth of food processing and service industries would also raise the demand for a variety of vegetables at inexpensive prices.

Taiwan was one of the leading agricultural exporters in Asia before China emerged. Its export development was unique in having a strong linkage with the Japanese market and investment. With the rapid structural change, vegetable and fruit production for the Japanese market began to shift to Thailand in the 80's and later to China. However, such items as carrot, frozen green soybean and onion are still exported to Japan in considerable quantities. Pork is the most profitable agricultural export item. Nearly one third of hogs slaughtered was for export, practically all to Japan. However, due to the outbreak of foot-and-mouth disease in March 1997, the import of pork from Taiwan has been suspended.

Although trade barriers continue to hinder access for many agricultural products to Taiwan, food imports are on the rise with the steady economic growth. Competition is intensifying among the major exporters for gaining a share of Taiwan's growing food import market. The US position overwhelms with nearly a half of the market share in terms of value in both fruits and vegetables (Table 7).

Viet Nam ranks the fourth as a vegetable supplier with 5% of the market share in quantity. In particular, fresh or chilled vegetable imports from Viet Nam jumped in the past several years, as a result Viet Nam becomes the second supplier of fresh or chilled vegetables with a 11% market share. Viet Nam remains the ninth largest supplier of fruits, while Thailand has established a position of many kinds of tropical fruits such as durian, mangosteen and rambutans.

Over 90% of the beef consumed in the country is supplied by Australia and the US. Although imports of poultry meat is practically banned, if WTO-related trade liberalization is carried out, the US and Thailand would be able to penetrate into the market.

4. Other ASEAN Countries and China

Recent dynamic economic upswing has contributed to the expansion of upper and middle classes in these countries. Coupled with trade liberalization and a growing number of supermarkets, food imports have rapidly increased in the 90's. Trade statistics of these countries show that these countries largely import the items which are not produced in their own countries, for instance, beef and dairy products, while export tropical fruits to China and temperate fruits to other ASEAN countries.

These countries with an exception of Malaysia are densely populated, per capita income is still relatively low and a considerable part of their labor force is engaged in agriculture. They have high production potentials of most of the commodities in question. Taking these factors into consideration, it seems that most of the increased demand would be met by increased domestic production, even if industrialization and trade liberalization are proceeded.

China and Thailand are regarded as potential competitors of Viet Nam's agricultural exports. Agricultural exports of China have rapidly increased and diversified since the late 1980's (Table 8). Many foreign companies have already participated in agricultural production for exports by introducing new plant varieties and modern cultivation methods. China has become the largest destination of overseas direct investment in food industry of Japan since 1992. Chinese governments, both at central and local levels, welcome foreign direct investment in agriculture and related industries by offering privileges like tax exemption. Farmers are also eager to increase their cash

income. Its competitiveness would be kept in spite of increasing wage and other costs.

Thailand has a long experience in exporting agricultural products and established a reputation for their quality in overseas markets. Its exporting products are diversified, and shifted to processed and value-added ones as the wage level has risen (Table 9). Its agriculture has been export oriented and developed in close linkage with foreign markets and investment. It received the largest investment from Japan in food industry before China took over. Thus Thailand has been in an advantageous position to obtain information of foreign markets including market information, quality and hygiene requirements, processing and packing technologies. Due to recent wage increases, price competitiveness of agricultural products of Thailand has been eroding which has made it further upgrade the product quality in specializing high value-added products.

II. Potential for Future Exports of Vietnamese Agricultural Products

1. Vegetables

Viet Nam has a great potential in exports of salted and dehydrated vegetables, possibly frozen as well, with low labor cost and good skill. As food processors search for cheaper materials, trades of processed vegetables have increased. In particular, Japanese importers have initiated so called "development import" from Taiwan, Thailand, and then China, Viet Nam and other developing countries in East Asia. Imported vegetables are used by food catering and processing industries as low cost materials. Nearly 80% of imported vegetables of Japan in 1994 were for processing.

Whether fresh vegetables are exported temporarily at the time of crop failures in importing countries continuously, freshness is an important factor. Exports of fresh vegetable to Japan would confront strong competition with those from China which has already established itself in a firm position. Instead Hong Kong, Singapore and Taiwan can be potentially promising markets. If Viet Nam can consistently export good quality produces in reasonable prices, a penetration into these markets would be possible and promising.

2. Fruits

While overall demand for fruits in Japan has remained steady in volume over the long run, consumption of tropical fruits is increasing with a diversifying diet. As a result, import markets are being formed for relatively new products such as papaya and mango. Meanwhile, demands for banana and pineapple are not expected to noticeably increase. In other Asian markets, the supply of tropical fruits are dominated by Thailand and the Philippines. These countries have long experience in exporting tropical fruits and established the brand names. Viet Nam has to enhance the competitiveness if it intends to penetrate into the markets as a newcomer. On the other hand, there would be a good chance to export fresh fruits such as litchi and longan if they are supplied at attractive prices.

3. Meats

Concerning meat, chicken has a potential for exports if Viet Nam succeeds in broiler production and processing for export markets utilizing inexpensive labor as Thailand did in the past and China recently. Thailand has dramatically expanded its broiler exports to Japan since the late 80's through establishing joint projects with Japanese firms. However, as wage increases, its broiler exports to Japan have leveled off. Instead, Chinese exports to Japan have quickly grown as many Japanese

trading companies have been involved in large-scale broiler production in the country.

Demand for all types of meats has been increasing, especially for poultry meat, in developing countries in East Asia. According to "Food Balance Sheets" of FAO, annual consumption per capita of poultry meat in Viet Nam is merely 2.5kg in 1992-94, the lowest among ASEAN countries. It is compared with 2.9kg in Indonesia, 5.4kg in the Philippines, 10.4kg in Thailand and 11.8kg in Malaysia. In some countries the broiler integration system has already developed. This suggests that Viet Nam has a large potential of domestic market of poultry meat and an opportunity to capture the neighboring ASEAN markets.

4. Tea

Tea consumption per capita of Japan hit the bottom in 1992. Coupled with the effect of appreciation of yen against US dollar, a rise of tea imports, both green and black tea, have taken place. Although imported amounts have fluctuated year by year due mainly to the weather condition in Japan, growing sales of canned tea drinks with consumer preference to non-sugar beverages have supported the demand for inexpensive tea. From the aspect for establishing the year round supply of tea, Viet Nam has an advantage to other countries. In 1995, Viet Nam became the second largest exporter to Japan after China in terms of quantity, surpassing Taiwan. The share of China was over 70% while those of Viet Nam and Taiwan were 10% and 9% respectively. Taiwan's tea export is shifting to high quality and expensive items which may improve the market access of the Vietnamese tea to Japan.

Taiwan itself is the largest importer of Viet Nam tea in East Asia. In 1995, Taiwan imported 1,080 tons of green tea and 4,586 tons of black tea from Viet Nam (Table 7). Respective market shares to the total imports attained 68% and 71%. Like Japan, there is a growing demand for inexpensive tea for canned and blended products in Taiwan. Moreover, as tea production in Taiwan shifts to high-grade one, the importation of low to medium grade tea is expected to grow further.

5. Sesame

Japan is the largest importer of sesame in the world and relies 40% of its import on China. However, the sesame exports of China have highly fluctuated year by year according to its harvests. Increasing domestic consumption would make it difficult to continue the export at the present level. Japanese companies are seeking to diversify the importing countries. Besides Myanmar and a few other Asian and African countries, Viet Nam is regarded as a potentially important supplier to Japan, and contracted production for the Japanese market has already been initiated.

Sesame demand in East Asian countries is expected to continue to increase with their economic development and expanding health consciousness. On the other hand, sesame exports are not elastic enough to the growing demand in the future which would result in a tight market and price increase. This situation would be conducive for Viet Nam to make a new entry into the market.

6. Cashew Nut

The edible nuts consumption per capita of Japan is comparatively small compared with that of other advanced countries. Cashew nut imports of Japan almost entirely come from India, the largest cashew nut exporter in the world. In 1995, imports of shelled cashew nut of Japan amounted to approximately 6,600 tons in quantity and US\$ 37 million in value. While its imports have expanded, it remains small compared with those of the US and Europe.

Viet Nam is the third largest exporter of cashew nut next to Brazil. Its exports concentrate in India

in the form of raw cashew nut and China in cashew nut kernel. This takes place since cashew of Viet Nam is in low quality and has not diversified into various processing products. It needs technological improvement and quality upgrading if the export is to be enhanced.

III. Government Roles in Export Promotion

Since exports of agricultural products are in principle carried out by the private sector including farmers' organizations, and state companies, role of the government are basically limited to provide the basis for facilitating exports. It is therefore focused on two areas, i.e., infrastructure improvement and assistance in increasing the access to foreign markets.

Relatively high prices of fresh vegetables and fruits from Viet Nam are often attributed to the poor transport infrastructure from production sites to the product depots and further to shipping ports. Besides, lack of facilities such as freezers and refrigeration equipment at depots and ports makes it difficult to maintain the freshness and price competitiveness. A priority for agricultural export promotion, therefore, would be placed on the improvement of related infrastructure. This will in turn contributes to reduce the production cost and to strengthen the bargaining position of producers. At the same time, infrastructure improvement greatly contributes to the domestic market development through integrating small local markets.

In the past, farm products were emphasized on the quantity rather than the quality. Under a market-oriented economy, farmers must response to market requirements. Foreign markets are highly unique according to respective countries and commodities. Therefore, it is important to take necessary steps to define target markets and to obtain information on their requirements and to establish quality design and practical methods to meet the demand.

Consumers especially in high income countries become increasingly conscious of food quality. Concern about food safety is growing in recent years, as demonstrated in the fact that HACCP (Hazard Analysis and Critical Control Points) begins to be introduced among food processing and service companies as a comprehensive hygienic control system. Interest in organic products grown free or with reduced application of chemical fertilizers and insecticides is also gaining ground. Exporting products from Viet Nam need to comply with requirements for quality control and hygienic practices in order to establish its position in the world market.

In fact, producers of Viet Nam largely rely on foreign buyers who control the market to obtain information. In order to negotiate with buyers and traders and gain greater benefits, producers and their organizations should acquire and be knowledgeable to foreign market situations. The government would provide producers and these organizations with information of market trends, quality control and requirements, trade related regulations, plant quarantines and so forth. This also facilitates to exchange the information between producers' organizations and overseas buyers so as to avoid oversupplies and upgrade product quality.

In Thailand, Department of Export in Ministry of Commerce is given tasks of promoting exports including food and agricultural products. These tasks include to promote exports to markets with high potential such as the US, Japan and the EU as well as to search new markets. The Department also plays an important role in matching buyers and sellers and provides information in computerized up-to-date database. In case of the Philippines, Bureau of Export Trade Promotion in Department of Trade and Industry is responsible for export promotion. In Japan, similar roles have been assumed by a semi-governmental agency, the Japan External Trade Organization (JETRO), which is previously called the Japan Export Trade Promotion Agency.

Table 1 Imports and exports of fruit & vegetables and meat in East Asian Countries, 1985-94 (million US\$)

(1) Fruit & vegetables Imports 1)

Year	Japan	China	Korea	Taiwan	Hong Kong	Singapore	Malaysia	Thailand	Indonesia	Philippines	Viet Nam
1985	1,853	126	63	67	635	409	216	18	24	9	0
1986	2,381	155	62	88	717	426	202	14	34	18	0
1987	2,854	204	67	138	826	461	203	17	32	20	0
1988	3,520	313	110	216	1,023	572	225	28	67	42	0
1989	3,715	365	196	270	1,095	560	226	44	43	58	3
1990	3,713	396	256	328	1,133	616	232	67	60	58	1
1991	4,189	375	502	316	1,310	739	248	78	76	42	0
1992	4,608	498	399	417	1,423	775	289	106	102	65	16
1993	4,867	482	345	400	1,411	798	332	139	132	74	52
1994	5,783	561	437	479	1,523	814	387	178	198	117	8
annual growth(%)	13.5	18.0	24.0	24.4	10.2	7.9	6.7	29.3	26.5	53.3	-

(2) Fruit & vegetables Exports 1)

Year	Japan	China	Korea	Taiwan	Hong Kong	Singapore	Malaysia	Thailand	Indonesia	Philippines	Viet Nam
1985	171	1,161	116	526	193	167	89	885	75	355	36
1986	187	1,600	148	619	261	157	81	1,048	83	346	43
1987	192	1,874	226	646	298	173	99	1,184	131	382	45
1988	147	2,221	268	609	437	205	116	1,337	188	418	51
1989	132	2,260	272	636	461	204	132	1,431	162	425	41
1990	132	2,295	283	534	451	219	155	1,521	248	423	51
1991	137	2,496	277	552	555	258	157	1,699	283	495	42
1992	131	2,557	299	479	602	249	177	1,911	305	504	69
1993	111	2,635	222	433	562	290	209	1,609	296	600	59
1994	115	3,318	279	404	589	368	197	1,492	304	572	74
annual growth(%)	-4.3	12.4	10.3	-2.9	13.2	9.2	9.2	6.0	16.9	5.4	8.5

(3) Meat Imports 2)

Year	Japan	China	Korea	Taiwan	Hong Kong	Singapore	Malaysia	Thailand	Indonesia	Philippines	Viet Nam
1985	1,937	82	21	93	325	122	73	1	6	4	1
1986	2,598	98	12	107	342	124	65	1	7	5	0
1987	3,350	125	15	123	377	149	71	2	6	8	0
1988	4,322	180	67	165	443	165	75	2	7	12	1
1989	4,905	227	247	185	518	191	79	3	6	21	1
1990	5,042	219	351	173	582	199	93	4	10	24	0
1991	5,494	257	558	202	644	211	104	4	14	17	0
1992	6,474	261	563	211	695	225	103	6	21	27	0
1993	6,835	261	407	204	735	227	112	7	17	33	0
1994	7,779	316	594	237	1,000	266	131	5	25	66	1
annual growth(%)	16.7	16.1	44.6	11.0	13.3	9.0	6.7	19.6	17.7	36.1	-

(4) Meat Exports 2)

Year	Japan	China	Korea	Taiwan	Hong Kong	Singapore	Malaysia	Thailand	Indonesia	Philippines	Viet Nam
1985	6	681	28	250	27	22	6	65	7	0	7
1986	8	903	19	411	31	27	3	136	13	0	102
1987	8	1,201	35	678	43	35	9	181	9	0	16
1988	13	1,224	65	645	60	42	9	205	18	0	8
1989	14	1,197	82	539	90	45	11	248	16	0	16
1990	16	1,482	55	694	105	45	17	314	14	1	29
1991	20	1,938	43	1,026	124	43	22	436	22	1	46
1992	18	1,634	68	1,068	132	39	21	467	25	0	25
1993	19	1,760	82	1,110	187	38	20	434	21	0	26
1994	17	2,217	83	1,328	239	44	24	488	19	0	13
annual growth(%)	13.0	14.0	12.8	20.4	27.3	8.1	18.0	25.5	12.8	-	7.2

Source: FAO STAT, and Agricultural Trade Statistics of the Republic of China (for the reference to Taiwan).

Note: 1), 2) Including prepared and processed

Table 2 Food consumption per capita in East Asian Countries

(1)Vegetables (kg/year)

Country	79-81 average	84-86 average	89-91 average	92-94 average
Japan	112.8	111.9	107.9	105.8
China	69.0	73.8	81.4	85.7
Korea	191.3	174.8	180.7	189.9
Hong Kong	89.7	84.9	68.1	60.9
Thailand	39.4	34.6	30.3	30.3
Malaysia	19.7	22.6	24.7	28.9
Indonesia	15.8	19.3	22.7	23.6
Philippines	63.6	62.9	63.8	63.3
Viet Nam	40.4	42.2	46.9	47.2

(2)Fruit 1)

Country	79-81 average	84-86 average	89-91 average	92-94 average
Japan	65.3	58.1	57.2	58.7
China	12.0	15.9	23.2	28.5
Korea	35.4	45.4	70.4	83.6
Hong Kong	72.5	72.4	86.2	102.1
Thailand	132.4	96.0	91.2	92.3
Malaysia	55.5	50.6	48.9	51.9
Indonesia	29.4	32.0	31.3	32.7
Philippines	101.8	90.3	70.8	67.7
Viet Nam	44.2	50.7	53.1	52.9

(3)Meat

Country	79-81 average	84-86 average	89-91 average	92-94 average
Japan	30.0	33.4	38.0	39.7
China	14.0	18.8	25.7	33.0
Korea	13.0	17.4	24.4	34.0
Hong Kong	81.9	92.5	99.4	111.2
Thailand	17.5	18.6	19.8	21.0
Malaysia	22.8	28.7	37.4	45.9
Indonesia	4.1	6.0	7.3	8.2
Philippines	16.4	14.4	18.3	22.7
Viet Nam	10.5	14.3	15.6	17.2

Note 1) Excluding wine

Source FAO STAT

Table 3 Quantity and value of agricultural imports by commodity in Japan, 1996

Items	Quantity (metric ton)	Change from 1995(%)	Value (1,000US\$)	Change from 1995(%)	Top 3 Market Share, in value term(%)
Vegetables & preparation	-	-	3,098,906	1.4	China 44.6 US 23.7 Thailand 4.9
Vegetables, fresh and chilled	594,784	-11.2	907,050	-9.4	China 31.9 US 24.3 NZ 9.6
Onion	184,454	-25.0	76,071	-43.8	US 45.6 NZ 21.7 Thailand 9.7
Broccoli	73,767	-0.8	129,472	-4.4	US 97.3 Australia 2.1 Mexico 0.3
Pumpkin	143,790	9.1	106,546	0.0	NZ 50.9 Mexico 31.6 Tonga 9.0
Asparagus	22,199	-2.4	113,747	-5.5	US 25.0 Philippines 23.0 Australia 22.1
Vegetables, frozen	541,645	8.3	710,614	7.6	US 41.9 China 29.8 Taiwan 7.8
Potato	227,656	14.0	244,029	13.3	US 86.0 Canada 10.2 China 1.3
Green soybean	57,973	10.2	101,887	8.9	Taiwan 44.5 China 41.1 Thailand 13.7
Raw materials of pickles	263,049	3.2	262,513	25.2	China 83.1 Thailand 10.6 Viet Nam 2.5
Vegetable, prepared	-	-	710,303	-1.8	China 44.4 US 22.7 Thailand 6.3
Vegetable, dried	48,656	7.1	258,918	4.9	China 77.8 Taiwan 8.3 US 7.7
Fruit & preparations	-	-	2,563,578	-7.1	US 38.0 Philippines 15.2 China 8.6
Fruit, fresh and chilled	1,561,858	-6.8	1,392,275	-8.8	US 46.7 Philippines 26.5 NZ 7.1
Banana	818,712	-6.3	435,001	-2.3	Philippines 71.0 Ecuador 15.0 Taiwan 11.7
Grape fruits	270,479	-2.8	269,706	-2.9	US 80.6 Israel 13.7 South Africa 3.3
Orange	154,086	-14.4	159,516	-16.6	US 86.0 Australia 10.3 South Africa 3.2
Fruit, canned	203,267	-14.9	239,298	-6.7	China 24.1 Thai 19.6 South Africa 11.6
Fruit juice	218,061	-6.5	495,510	6.5	US 34.7 Brazil 25.3 Germany 5.2
Meat & preparations	2,272,412	4.8	9,615,476	-2.5	US 37.9 Taiwan 17.2 Australia 11.4
Beef, ex. offal	629,641	-2.9	2,732,747	-16.2	US 61.1 Australia 34.6 NZ 2.9
Pork, in. offal	668,867	13.2	3,876,008	3.2	Taiwan 41.4 US 22.7 Denmark 16.7
Chicken, in. offal	546,573	2.0	1,230,203	-1.7	China 38.9 Thailand 21.4 Brazil 20.8
Cashew nuts	6,563	2.3	36,560	6.9	India 94.2 Viet Nam 3.3 Indonesia 2.1
Sesame seeds	145,108	4.0	148,011	11.8	China 39.7 Sudan 14.2 Tanzania 8.7
Tea & preparations	48,536	6.6	201,469	8.7	China 44.2 Sri Lanka 13.4 UK 10.5

Source JETRO, Food & Agriculture

Table 4 Agricultural imports in value by commodity group and by country, Hong Kong, 1995 (Million HK\$)

	China	USA	Thailand	Japan	Australia	Other	Total
Live animals	2,969	40	46	2	69	241	3,366
(Market share, %)	88.2	1.2	1.4	0.1	2.0	7.2	100.0
Meat and meat preparations	1,736	4,883	235	127	285	3410	10,677
(Market share, %)	16.3	45.7	2.2	1.2	2.7	31.9	100.0
Dairy products and Bird's eggs	319	433	40	42	344	2524	3,704
(Market share, %)	8.6	11.7	1.1	1.1	9.3	68.1	100.0
Fish and preparations	2,361	6,277	1,143	1,999	1,209	6748	14,088
(Market share, %)	16.8	44.6	8.1	14.2	8.6	47.9	100.0
Cereal and Cereal preparations	534	339	1063	400	359	813	3,508
(Market share, %)	15.2	9.7	30.3	11.4	10.2	23.2	100.0
Vegetables and Fruits	3,709	4,093	960	357	686	2757	12,592
(Market share, %)	29.5	32.5	7.6	2.8	5.4	21.9	100.0
Sugar, Sugar preparations and Honey	377	92	131	209	123	968	1,901
(Market share, %)	19.8	4.8	6.9	11.0	6.5	50.9	100.0
Coffee, Tea, Cocoa, Spices, and Manufactures thereof	648	181	6	41	119	877	1,871
(Market share, %)	34.6	9.7	0.3	2.2	6.4	46.9	100.0
Feeding stuff for animals	226	158	22	20	49	186	660
(Market share, %)	34.2	23.9	3.3	3.0	7.4	28.2	100.0
Miscellaneous edible products and preparations	768	938	377	437	230	2172	4,922
(Market share, %)	15.6	19.1	7.7	8.9	4.7	44.1	100.0
Total	13,645	11,786	4024	3,664	3,474	21602	58,195
(Market share, %)	23.4	20.3	6.9	6.3	6.0	37.1	100.0

Source Hong Kong Trade Statistics

Table 5 Imports and re-exports of agricultural products of Singapore, 1995 by commodity divided to country of origin and destination (value in 1,000US \$)

Country	Live Animal	
	Imports	Re-exports
Total	361,765	7,419
Australia	349,694	5,681
Malaysia	7,546	1,737

Country	Meat & Preps.	
	Imports	Re-exports
Total	301,717	45,267
USA	94,201	918
China	53,465	442
Australia	52,310	39
New Zealand	34,414	1
Thailand	28,375	3,512
Viet Nam	52	1,190

Country	Dairy Produce & Eggs	
	Imports	Re-exports
Total	489,037	74,475
Australia	114,488	205
Malaysia	108,472	16,006
New Zealand	51,261	5
Netherlands	43,371	2,228
France	29,385	0
Viet Nam	4,608	6,375

Country	Fish & Preps.	
	Imports	Re-exports
Total	929,295	564,244
Malaysia	110,048	77,682
Thailand	109,700	49,157
Myanmar	65,058	6,063
Japan	64,516	188,236
India	52,031	754
Viet Nam	36,174	1,181

Country	Cereals & Preps.	
	Imports	Re-exports
Total	522,525	101,549
Thailand	172,175	3,301
Malaysia	102,602	38,518
USA	47,463	9,176
Australia	46,993	443
Japan	26,748	364

Country	Vegetables & Fruit	
	Imports	Re-exports
Total	1,223,383	534,042
USA	216,276	14,981
China	267,501	1,158
Malaysia	202,872	312,635
Australia	159,357	3,488
Thailand	65,819	11,188
Viet Nam	9,313	3,142

Country	Sugar & Preps.	
	Imports	Re-exports
Total	219,966	37,130
Australia	79,141	107
Myanmar	49,656	19,928
China	16,052	222
Thailand	11,629	194
Hong Kong	8,874	2,697
Viet Nam	479	1,099

Country	Coffee etc. & Spices	
	Imports	Re-exports
Total	602,897	781,398
Viet Nam	156,421	1,099
Malaysia	126,843	131,772
China	62,155	11,924
Papua New Guinea	29,985	19
Australia	15,505	58,730

Source: Singapore Trade Statistics

Table 6 Quantity and value of agricultural imports by commodity in Korea, 1995

Items	Quantity (metric ton)	Change from 1994(%)	Value (1,000US\$)	Change from 1994(%)	Top 3 Market Share, in value term(%)
Vegetables & preparations			152,200.0	-17.0	
Potato, frozen	21,904.0	19.2	19,985.0		23.1 US 88.6 Canada 11.0
Sweet corn, canned	18,144.0	69.3	19,843.0		70.6 US 75.2 Thailand 24.6
Bracken, dried	3,882.0	9.7	15,544.0		34.0 China 99.9
Potato, not frozen	2,716.0	35.7	8,652.0		44.6 US 65.5 Spain 14.5 Netherlands 9.6
Redbeans, dried	21,578.0	-1.1	7,937.0		-56.3 China 99.8
Cucumber & Gherkin	3,454.0	48.0	4,672.0		42.3 US 99.0
Onions	7,483.0	-87.3	4,592.0		-82.6 US 100.0
Kidney bean, dried	11,177.0	-24.2	4,258.0		-19.7 US 37.9 China 31.5 Canada 25.0
Fruit, nuts & their preparations			365,119.0	21.3	
Orange juices, concentrated	59,230.0	3.5	88,047.0		14.2 Brazil 76.5 US 23.3
Banana	121,538.0	-12.2	49,513.0		0.4 Philippines 89.3 Ecuador 6.6
Fruit cocktail	22,346.0	27.0	19,589.0		28.9 Philippines 65.8 Thailand 29.4 US 2.6
Orange, lemons & limes	18,416.0	355.1	17,011.0		269.2 US 99.4
Almond	3,864.0	-14.0	15,743.0		-35.8 US 99.9
Tomato paste	17,973.0	22.0	14,924.0		19.2 China 29.7 Turkey 26.5 US 24.8
Cashew nuts	384.0	69.2	2,074.0		80.2 India 84.6 Thailand 15.4
Meat & preparations			764,761.0	28.7	
Beef, ex. Offal	168,367.0	18.2	537,602.0		25.2 US 60.3 Australia 25.8 NZ 12.0
Pork, ex. Offal	36,243.0	54.8	110,804.0		43.2 Denmark 40.5 US 22.8 UK 15.3
Poultry, in. offal	35,682.0	45.9	53,724.0		32.5 US 67.7 China 19.6 France 9.0
Sesame Seeds	42,061.0	-41.8	44,015.0		-28.2 China 100.0
Tea	117.0	-61.3	704.0		-51.5 UK 22.7 Sri Lanka 16.9 China 16.4

Source Statistical Yearbook of Foreign Trade, Agricultural Co-op Yearbook

Table 7 Quantity and value of agricultural imports by commodity group : Taiwan, 1995 (ton and 1,000US\$)

Vegetables & Their Preparations			Vegetables, fresh or chilled			Vegetables, frozen		
Country	Quantity	Value	Country	Quantity	Value	Country	Quantity	Value
Total	212,692	117,091	Total	59,768	19,897	Total	11,785	10,601
USA	75,257	59,140	USA	28,629	10,674	New Zealand	5,060	4,271
China	24,610	9,774	Viet Nam	9,719	2,169	USA	2,446	2,474
Thailand	10,619	6,479	Australia	4,245	2,010	Australia	2,449	2,060
Viet Nam	19,112	6,303	Malaysia	7,139	1,759	Thailand	284	375
Canada	13,429	5,785	Indonesia	4,720	1,168	Canada	376	347
Australia	10,336	5,169	Thailand	1,168	769	China	420	254
New Zealand	6,210	4,766	Korea	1,923	577	Viet Nam(10)	198	108

Fruits & Their Preparations			Fruits, fresh or chilled			Sesame seeds		
Country	Quantity	Value	Country	Quantity	Value	Country	Quantity	Value
Total	395,239	380,377	Total	305,335	289,338	Total	34,203	21,570
USA	223,801	191,117	USA	204,499	160,168	Burma	17,900	9,799
Thailand	67,902	68,292	Thailand	37,029	46,979	India	6,451	5,079
Indonesia	11,351	16,650	New Zealand	12,907	14,888	Thailand	7,598	5,051
New Zealand	13,412	15,240	Indonesia	8,111	14,604	China	760	656
Korea, South	5,748	12,549	Korea, South	3,139	10,705	Malaysia	633	406
China	11,032	9,390	China	9,759	8,377	Viet Nam	312	165
Viet Nam(9)	9,994	6,787	Viet Nam(9)	5,923	3,992	Sri Lanka	227	134

Green Tea			Black Tea			Cashew nuts		
Country	Quantity	Value	Country	Quantity	Value	Country	Quantity	Value
Total	1,590	1,814	Total	6,475	7,686	Total	972	4,693
Viet Nam	1,080	916	Viet Nam	4,586	3,281	India	572	2,735
Indonesia	250	298	Indonesia	806	573	Indonesia	335	1,595
Thailand	149	49	Sri Lanka	660	1,029	Viet Nam	60	336
Hong Kong	8	25	Singapore	319	1,766			

Source Agricultural Trade Statistics of the Republic of China for vegetables, fruits and sesame. Monthly Statistics of Exports and Imports in Taiwan Area, the Republic of China for green tea, black tea and cashew nuts.

Note parentheses mean ranking of Viet Nam's market share

Table 8 Major agricultural exports : China, 1985 - 1995 (1,000 metric ton)

Year	Beef, fresh and frozen	Pork, fresh and frozen	Chicken, frozen	Vegetables, total	Vegetables, fresh	Fruits	Aquatic Products
1985	32	111	13	512	351	214	120
1986	26	105	28	644	431	224	167
1987	34	100	17	642	388	244	218
1988	54	64	26	766	475	298	287
1989	57	88	31	821	495	252	294
1990	97	124	38	983	544	226	358
1991	132	117	45	1,037	818	160	378
1992	30	50	1	1,380	560	146	440
1993	20	60	94	1,370	840	320	480
1994	20	100	164	1,540	860	392	570
1995	20	150	249	1,580	810	490	610
95/85(%)	62.5	135.1	1915.4	308.6	230.8	229.0	508.3

Source China Statistical Yearbooks.

Table 9 Selected agricultural exports : Thailand, 1990 - 1994 (metric ton)

	1990	1991	1992	1993	1994	94/90(%)
Garden Crop and Products	214,397	266,949	254,364	294,180	305,320	142.4
Asparagus fresh or chilled	2,172	2,395	2,185	2,330	2,275	104.7
Onion, shallot garlic leeks and other fresh or chilled	18,427	16,347	14,816	6,898	13,560	73.6
Vegetables fresh or chilled	12,840	13,369	23,040	22,054	29,197	227.4
Vegetables chilled frozen	14,327	16,578	21,993	30,507	34,971	244.1
Vegetables dried dehydrated	1,124	1,388	1,603	3,024	1,614	143.6
Young corn in airtight containers	26,777	41,145	36,766	34,557	46,187	172.5
Bamboo-shoots in airtight containers	42,639	66,960	48,683	64,658	71,199	167.0
Ginger gray and white	9,706	10,164	20,511	5,011	4,710	48.5
Asparagus prepared or preserved	678	1,116	1,394	1,250	1,000	147.5
Tomatoes prepared or preserved	13,567	13,082	9,982	11,651	13,639	100.5
Vegetable prepared or preserved	64,328	79,218	64,654	57,505	82,514	128.3
Fruits and Products	653,662	698,066	809,985	837,183	1,249,516	191.2
Bananas fresh	2,435	2,141	2,241	2,804	1,957	80.4
Mangoes fresh	5,724	3,236	3,947	2,940	3,411	59.6
Longan fresh or frozen	14,542	7,924	13,098	21,469	32,769	225.3
Durians fresh or frozen	15,654	9,550	17,507	21,201	30,245	193.2
Lichee fresh	769	563	1,447	1,862	994	129.3
Other fruit fresh or frozen	13,585	17,634	25,505	31,421	37,820	278.4
Fruit prepared preserved not in airtight containers	48,246	79,048	73,807	86,692	93,658	194.1
Pineapple in airtight containers	398,301	417,670	491,367	502,836	707,260	177.6
Longan in airtight containers	8,554	4,073	7,973	8,391	10,105	118.1
Pineapple juice	73,680	79,961	79,278	85,187	103,545	140.5
Other fruit juice	7,120	9,700	21,628	4,779	151,855	2,132.8
Tea and Coffee	60,865	33,185	70,963	59,080	68,875	113.2
Coffee not roasted	60,327	32,549	69,675	58,421	68,089	112.9
Chicken Meat, fresh chilled frozen 1)	138,945	164,176	174,829	157,081	153,043	110.1

Note 1) meat of the species Gallus domestics
Source Agricultural Statistics of Thailand.

Research Note: Diversification of Agriculture in Different Regions in Viet Nam

Viet Nam Agricultural Science Institute

In the process of agricultural development and improvement of rural economy, diversification of agriculture plays an important role. It is not fully revealed however what has taken place in Viet Nam regarding agricultural diversification for last decade. This research note intends to analyze and indicate the situation of agricultural diversification for all over the country and the Red River Delta region.

I . Methodology of the Analysis

Data of 28 products of agriculture, forestry and fishery of the whole country and seven agricultural regions are taken from the "Statistical Data of Agriculture, Forestry and Fishery 1985 – 1995" of the General Statistical Office. For the Red River Delta region, data of 16 products are considered due to their specific importance to the region. All products are valued in the 1992 price.

In order to demonstrate levels and changes of agricultural diversification, an indicator named "the Index of Diversification" is proposed. This index is based on the index of diversity used in the ecology as the Simpson index (reference to Odum, E. P., Basic Ecology, 1986).

Diversification index for the seven regions of the country is calculated in the following formula:

$$D_i = \sum_j (X_{ij} / X_j)$$

Where: D_i is the diversification index of the region i .

X_{ij} is the value of production per capita of the product j of the region i .

X_j is the value of production per capita of the product j in the whole country.

The index is the sum of the values of the production per capita of each product respectively divided by the average production per capita of the particular product of the whole country. Thus the more the number of products in the region is and the more the output of these products in the region is, the greater the index of diversification of the region is.

In calculating the index, values of production are referred to outputs of individual products, and as the basis of per capita, agricultural population is used.

II . Result of the Analysis: Seven Agricultural Regions of the Country

At first the value of production X_j of selected 25 agricultural, two forestry and one fishery products is calculated, which provides the basis for diversification in each region. Annual growth rates of these production values from previous years are also calculated as shown in Table 1. According to this table, many products have increased for the period of 1986 - 95. Coffee shows the biggest increase (the average annual increase was 36.53%) followed by cotton (26.35%), orange (15.78%), rubber (10.89%) and fishery (10.12%). Some products such as jute (-8.33%), pineapple (-4.89%) and cassava (-2.63%) have decreased. It appears that diversification has progressed for the country as a whole. By sub-sector, crop production and animal husbandry began to increase from 1993, while the value of forestry has decreased and that of the fishery shows a most rapid expansion.

Diversification indices of seven regions are shown in Table 2. The index is the highest in Northeast South, followed by Central Highland and Mekong River Delta. The least diversified regions are Red River Delta and North Central Coast. Regarding development of diversification last decade, as observed from average annual changes in diversification indices (the extreme right column of Table 2), a somewhat different picture appears from the level of diversification. Regions where diversification index has most advanced are Northeast South and Mekong River Delta while it has especially declined over the period in North Mountain and Midland, and South Central Coast.

While the index by its nature of formula is a relative notion as outputs of individual products are compared with the respective national output, it indicates nevertheless the degree of progress (or retreat) of diversification. Thus in Northeast South where diversification has most progressed among regions, ratios of rice output in the total production value have declined from 21.7% in 1985 to 16.2% in 1995, and banana, the second most important crop, from 16.3% to 11.8% in the same period. On the other hand, such products as cotton, fishery, rubber, peanuts and pig have increased at higher rates and hence their respective shares in total production. A contrary situation takes place in North Mountain and Midland where diversification index has been the lowest and decreased most among seven regions. In this region, rice and tea, the two main crops, which altogether constitutes 39.7% of total products in 1985, have not changed their position in maintaining the combined share at 38.1% in 1995. Other new crops and activities except pigs have not noticeably increased, thus failed to increase their respective shares in total production.

III. Result of the Analysis: Red River Delta Region

For the region of Red River Delta and its nine agro-ecological zones (for reference, see the note attached at the end of the text), diversification indices are calculated. Due to different composition of agricultural, forestry and fishery products, 16 products - two fishery, two forestry and 12 agricultural products - are taken. The period for consideration is ten years from 1986 to 1995. Other sources of data and calculating formula remain unchanged.

Table 3 presents annual changing rates of each product from 1986 to 1995. Rice, the dominant crop of the region, has increased at an annual rate of 7.08%. Such products as soybean, maize, peanut, beans, livestock, aquaculture and bamboo have increased at fast rates exceeding 6% per annum, while the production of a few other products like wood, cassava and potato decreased. It is conceived that diversification of production has progressed in the region as a whole. For individual products, a big increase in maize over 108% was marked in 1988 with an expansion of the crop on wet land, afterwards it decreased in 1990 and 1991. An increase in maize, sweet potato and aquaculture took place in 1992, soybean, pork and wood significantly increased in 1993 and peanut and beans in 1995.

Changes in diversification indices in nine agro-ecological zones of the Red River Delta in Table 4 show diversified tendencies for the period from 1986 to 1995. Averages of annual changes in the period are affected by exceptionally large decreases in 1994 and 1995. Among nine zones, two typical cases may be worth to be considered. One is the zone with a relatively high and advanced index over the period as in the "intensive with less upland" zone. Another case, as demonstrated in the zone of "coastal high saline", is characterized by a low and declining diversification index over the period. In the "intensive with less upland" zone, traditional activities of rice, vegetables and pig have increased but at a slower pace than the total production, while new crops like maize, sweet potato, livestock and aquaculture have emerged and increased at a faster than the average rate. In the "coastal high saline" zone, however, rice, the prevailing crop and product, has increased at a faster pace and its share in the total production, while other main activities like pig and sea fishery have instead decreased their shares. In this zone, the tendency towards the rice mono-culture seems to have strengthened.

Diversification index is an indicator of relative notion compared with the base region or zone regarding the level and development of agricultural diversification. Thus it varies depending on the extent of area or zone subject to calculation and consideration. Index for a region or a zone may also differ from the degree of diversification in individual farm households as diversification of products may offset or on the contrary amplify each other when the entire region or zone is considered. It needs therefore to carefully interpret the index figures with supporting data and information.

Note on the Nine Agro-Ecological Zones of the Red River Delta

For 71 districts composing the Red River Delta, a typological classification is carried out according to main relevant characteristics to agro-ecological conditions. Five indicators are chosen for the purpose including food crop yield per hectare of arable land, arable land ratio to total land, upland ratio to total arable land, reed area ratio to arable land, and degree of stability of summer/autumn rice yields. Using the cluster analysis, these districts are grouped into the following nine types of zones. Numbers in parenthesis are the number of districts covered by each zone.

- Intensive with rice zone (8): Intensive rice production with high level of rice yield. Little upland area.
- Coastal less saline zone (9): Coastal area with high rice yield.
- Coastal high saline zone (5): High growth of soybean, maize and cassava, particularly aquaculture shows the highest growth.
- Medium lowland zone (10): High growth of soybean, maize and sweet potato, particularly pig has the highest growth.
- Low lowland zone (11): Similar trend as for the medium lowland zone, only distinguished by its topographical feature.
- Upland zone (9): Located inside of the delta, the percentage of upland is high.
- Intensive with less upland zone (6): Intensive rice cultivation. The percentage of upland is in the middle among three intensive zones. High growth in several upland crops.
- Intensive with more upland zone (6): Intensive in rice and has the highest percentage of upland among three intensive zones. Many districts are close to Hanoi.
- Degraded soil zone (7): Located around the northern periphery of the region close to the midland area. Highest increase in rice and vegetable production.

Table 1 Annual growth rates of different agricultural products of Viet Nam

Products	(percentage change from previous year)										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	average of 1986-95
Rice	0.81	-5.63	12.56	11.74	1.20	2.06	10.03	5.77	3.03	6.10	4.77
Maize	-2.95	-1.54	45.24	2.84	-19.92	0.28	11.15	17.96	29.66	3.52	8.62
Sweet potato	10.18	12.44	-13.64	0.39	1.04	10.80	21.32	-7.26	-20.75	-11.54	0.30
Cassava	-1.96	-4.99	3.68	-8.94	-11.97	7.87	4.60	-4.59	-3.74	-6.22	-2.63
Vegetables	12.78	2.59	-3.49	8.36	2.30	-0.35	2.84	5.45	8.86	9.27	4.86
Beans	15.80	0.94	-1.25	7.37	-7.65	-0.21	-1.38	13.70	15.46	4.11	4.69
Soybean	7.08	13.11	-10.25	-3.87	5.61	-7.62	0.00	21.13	17.79	0.80	4.38
Peanut	4.74	9.20	-7.60	-3.83	3.55	10.23	-3.45	14.38	13.46	13.66	5.43
Sugarcane	-10.70	10.19	4.21	-6.24	0.99	13.58	4.99	-5.50	24.11	41.87	7.75
Cotton	4.02	-7.75	-2.79	-20.42	-14.50	199.58	50.63	-59.01	65.98	47.73	26.35
Jute	15.87	5.41	-35.92	-6.79	-30.70	6.13	2.14	-9.36	-45.18	15.11	-8.33
Rush	5.12	6.86	-19.66	-3.07	-21.96	-14.16	41.91	-9.96	-0.53	8.74	-0.67
Tobacco	-12.33	0.08	6.34	-32.79	-8.66	66.74	-25.03	-25.61	7.09	25.43	0.13
Tea	6.35	-3.38	2.60	1.60	6.71	2.12	9.36	4.74	11.45	-4.38	3.72
Coconut	16.28	11.18	8.29	7.66	-3.01	17.68	8.29	3.88	-8.93	8.08	6.94
Orange	12.81	-8.07	0.18	-2.10	18.06	1.56	32.22	55.95	14.38	32.84	15.78
Pineapple	8.17	7.66	4.17	9.05	2.04	-10.18	-37.12	-2.55	-8.72	-21.39	-4.89
Banana	0.00	0.00	0.00	0.00	0.00	5.27	6.20	2.36	-1.62	-6.75	0.55
Mango	0.00	0.00	0.00	0.00	0.00	-19.12	-19.90	6.30	13.71	12.58	-0.64
Rubber	4.47	3.47	-3.93	1.82	14.48	11.43	2.35	46.61	32.92	-4.68	10.89
Coffee	50.41	10.81	52.68	30.35	125.49	8.70	19.00	14.37	32.62	20.83	36.53
Buffalo	2.60	3.58	1.97	2.30	-0.60	0.16	0.98	2.57	0.56	-0.49	1.36
Cow	7.16	7.03	4.95	2.40	-2.53	0.47	2.11	4.10	4.01	4.96	3.47
Pork	11.57	7.37	-1.31	7.74	9.62	-8.51	11.29	10.19	9.03	5.14	6.21
Poultry	9.61	-4.01	0.36	8.88	2.44	1.51	14.19	7.18	3.30	3.10	4.66
Wood	0.00	9.31	-9.39	-2.80	36.29	-27.79	-16.31	7.35	-2.10	-1.08	-0.65
Firewood	0.00	9.25	-4.85	4.46	3.98	-5.68	0.53	4.19	-3.87	-1.64	0.64
Fishery	0.00	11.05	23.34	9.32	3.54	4.11	3.86	9.73	24.96	11.28	10.12

Source Viet Nam Agricultural Science Institute.

Table 2 Diversification Index in Different Regions of Viet Nam: 1985-1995

Region	Average of 85-95										Average annual growth rate (%)		
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994		1995	
North Mountain & Midland	24.9	25.0	25.8	24.2	25.3	24.3	21.7	20.8	22.6	20.2	20.1	23.2	-1.91
Red River Delta	17.4	17.5	17.5	18.5	18.2	18.9	17.9	17.7	18.3	16.8	15.6	17.7	-1.00
North Central Coast	19.8	20.5	20.2	19.9	19.5	19.8	19.1	17.5	17.7	18.2	19.0	19.2	-0.57
South Central Coast	26.2	25.4	23.4	23.0	23.7	23.3	22.3	20.8	22.2	21.6	21.6	23.0	-1.81
Central Highland	34.2	32.2	31.8	33.0	34.8	35.8	36.1	33.9	34.0	31.9	33.6	33.8	-0.08
Northeast South	38.2	41.2	44.0	41.4	37.9	37.1	41.5	43.3	42.8	47.6	45.9	41.9	2.09
Mekong River Delta	30.3	29.3	28.2	31.0	31.6	31.8	31.4	35.9	33.5	34.7	35.2	32.1	1.68

Source Viet Nam Agricultural Science Institute

Table 3 Annual growth rates of different products in Red River Delta Region

Product	Annual growth rates (%)										1995 average 87-95		
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Rice	1.32	17.46	7.55	-5.16	-13.69	37.16	16.42	-12.75	15.43	7.08	17.58	17.58	17.58
Maize	25.69	107.48	5.71	-25.00	-25.75	43.31	13.19	10.06	3.55	4.49	4.49	4.49	4.49
Sweet potato	26.92	-27.69	9.38	11.05	28.98	49.22	-20.48	-19.39	-17.61	-0.33	-0.33	-0.33	-0.33
Potato	52.03	-28.41	-5.46	9.19	-21.49	-7.17	0.33	-10.09	8.08	-1.05	-1.05	-1.05	-1.05
Cassava	-2.15	9.27	-4.47	-4.69	-2.48	12.09	-9.52	1.01	-8.54	-6.29	-6.29	-6.29	-6.29
Soybean	105.65	-39.34	22.92	54.38	-5.97	-4.09	66.13	36.86	151.25	19.86	19.86	19.86	19.86
Peanut	25.97	-3.09	-5.68	3.74	-9.84	-12.18	33.12	8.73	5.47	2.47	2.47	2.47	2.47
Vegetables	-4.29	-5.68	15.81	0.34	-3.43	4.98	3.62	5.40	65.02	12.62	12.62	12.62	12.62
Beans	0.81	-0.57	26.10	-8.11	1.61	-11.87	37.45	3.10	6.63	6.26	6.26	6.26	6.26
Pork	6.79	0.81	4.38	3.78	-4.74	12.19	15.46	11.05	6.63	6.26	6.26	6.26	6.26
Cattle	4.72	9.44	9.96	4.14	6.75	0.81	4.85	2.84	4.22	5.30	5.30	5.30	5.30
Poultry	1.17	5.18	9.04	8.83	2.92	8.49	8.86	5.09	5.16	6.08	6.08	6.08	6.08
Marine fishery	-13.53	-1.02	0.30	13.09	9.34	1.98	7.13	12.64	5.25	3.91	3.91	3.91	3.91
Aquaculture	11.06	5.45	0.90	2.22	-0.21	32.3	-5.52	9.72	5.95	6.87	6.87	6.87	6.87
Bamboo	18.50	13.06	-4.76	-5.63	21.85	1.20	3.33	2.39	4.26	6.02	6.02	6.02	6.02
Wood	0.18	-16.5	-13.75	4.46	8.08	-45.18	39.25	-8.67	11.51	-2.29	-2.29	-2.29	-2.29

Source Viet Nam Agricultural Science Institute

Table 4 Diversification Index in Different Zones in Red River Delta Region

Zone	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Average of 1986-95	Average annual growth rate(%)
Intensive with rice	9.18	10.20	9.94	10.08	11.01	9.58	9.77	9.90	10.56	10.44	10.07	1.96
Coastal less saline	9.29	9.47	9.70	9.64	9.49	9.98	10.11	9.94	10.60	10.59	9.88	1.50
Coastal high saline	8.79	8.61	9.14	9.02	8.53	9.05	8.49	8.08	8.06	7.87	8.56	-1.13
Medium lowland	11.10	12.15	11.31	11.42	11.44	11.00	11.52	11.57	11.32	11.17	11.40	0.17
Low lowland	11.09	11.37	11.65	11.72	12.05	12.70	12.99	12.86	11.55	10.48	11.85	-0.49
Upland	16.91	17.27	16.92	17.17	16.18	16.04	15.39	15.45	15.54	13.02	15.99	-2.71
Intensive with less upland	13.88	14.62	15.15	15.39	16.02	15.58	14.93	15.17	15.98	15.17	15.19	1.07
Intensive with more upland	15.96	13.97	14.54	13.56	12.56	12.83	12.32	11.62	11.64	10.54	12.95	-4.36
Degraded soil	16.13	15.64	14.68	14.68	15.12	14.80	15.69	16.48	17.27	13.97	15.45	-1.29

Source Viet Nam Agricultural Science Institute