

**LAND USE AND AGRICULTURAL  
COMMERCIALIZATION. THE CASE OF  
NAMDINH PROVINCE (VIETNAM)**

*Nguyen Do Anh Tuan*

Ph.D Scholar, 1999-2003

Institute of Social Studies

The Hague – The Netherlands

Tel: 00-31-(0)70-4260543

E-mail: [tuan@iss.nl](mailto:tuan@iss.nl)

[ndatuan@yahoo.com](mailto:ndatuan@yahoo.com)

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# **Land Use and Agricultural Commercialization**

## *The Case of Namdinh Province (Vietnam)*

Efficient use of land is a firm basic to increase agricultural productivity and to promote agricultural commercialization. One of the most efficient ways is to put land under the management of farm family. In Vietnam, since 1988 the dismantle of cooperative system and then the reallocation of land to peasant households have greatly increased land productivity. However, there are controversies about land structure and farm size. On the one hand, agricultural commercialization is considered a way to develop agricultural sector, and to improve living standards of peasant households. This process needs land accumulation and labor specialization among peasant households. In contrast, government policies tend to impose an equal distribution of land among peasant households as socialist ideology still pre-empts land accumulation and class differentiation within peasant societies. In addition, some may grasp the argument that there is an inverse relation between farm size and productivity, hence the existing distribution of land have contributed to both two objectives: efficiency and equity.

The paper tries to put some thought into the above debate through the investigation of Namdinh province, which carries typical character of the Red River Delta in Vietnam. It is expected to clarify the relations between land accumulation and income inequality, between farm size and agricultural productivity during the process of agricultural commercialization in Vietnam<sup>1</sup>.

### **I. Research Methods**

Debates around land policies are the clues for investigation of this study. The looking at a specific province is expected to clarify controversies on those policies. Then policy implications will be drawn out. To do such tasks, two points need to be considered. First, land policies are politically sensitive, and therefore are often made by political rather than economic considerations. As a result, changes to existing structure of land, aiming to increase land productivity and agricultural commercialization, are acceptable only if political constraints are relieved. With such objective in mind, the study will touch upon not only economic but also political considerations on the use of land. Further more, after reviewing other studies on the

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<sup>1</sup> Another issue regarding to debate on land policies in Vietnam is the balance between crop diversification and the requirement of food security. Nevertheless, the study cannot cover this issue, as it requires analysis at macro levels. Readers interested in the latter issues may look up Timmer (1994); Minot and Goletti (2000).

impact of the existing land structure on agricultural commercialization, the present study will focus on economic and political feasibility of alternatives for land policies.

Second, the significance of policy implications from this study depends largely on the representativeness of the studied site. Namdinh province is selected for two reasons. Firstly, it carries three typical characters of Vietnam's agriculture<sup>2</sup> at present: (i) high density of population and limited supply of land; (ii) transition from centrally planning to market system in the entire economy, and from collective to small-holding peasant household system in agriculture; (iii) transformation from subsistence to commodity production in agricultural. Located in the Red River Delta, Namdinh province is dominated by agricultural sector, which generates more than 40 per cent of GDP, and more than 85 per cent of population still lives in rural area. Therefore, the development of agricultural sector has a decisive impact on economic performance of the entire province and living standards of most of the people. Secondly, land is very limited, so growth of agricultural productivity and peasant income needs the application of land-saving technology and the diversification of agricultural production towards crops that have higher value per unit of products. This in turn requires the promotion of commodity exchange between agricultural and non-agricultural sectors. Namdinh has somehow favorable conditions, compared to other provinces, to develop commodity production in agriculture. Land productivity of rice crops is recorded as the highest in the country. Namdinh has a good rural transportation and educated people. Besides, the technology extension system of the province operates quite effectively. This system not only transfers new technologies to peasant households but also adapts new seeds appropriate for conditions of the province. Despite those resource endowments, Namdinh is still one of the poorest province and share of marketed surplus in total agricultural output is lower than that of the whole country. Therefore, it is suggested that measures to relieve difficulties faced by Namdinh are highly applicable for the country as a whole, in terms of promoting agricultural commercialization and improving living standards of peasant households.

Before going further, there are some descriptions on the data used in the paper. Most of the secondary data were obtained from General Statistical Office (GSO) of Vietnam, Namdinh Statistical Office (NSO), and Namdinh Office of Agriculture and Rural Development (NOARD). In addition, discussions with policy makers in Namdinh gave a good overview on the concerning problems and institutional network in the province. Primary data were collected from a survey conducted in June-July 2000. For this survey, income levels of peasant households were taken as the proxies for the development of agricultural commercialization. As a result, three districts Haihau, Yyen, Trucninh, were selected, according to the decreasing order of income. Those

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<sup>2</sup> Typical characters of Vietnam's agriculture are reviewed in T.K. Nguyen (1998). The evidence on Namdinh may be seen later in the paper.

districts also reflect typical characteristics of agricultural sector in Namdinh province, in terms of soil, crop structure, irrigation system, employment structure and market access, etc. Similarly, three communes with different levels of income were surveyed in each district. For each commune, 20 peasant households were investigated. Within this commune group, the principle for selection was 6 households with high levels of income, 8 with medium levels and 6 with low levels. Such *ex-ante* assessment of income levels was taken from the discussions with policy makers and staff at provincial, district and commune levels. Nevertheless, households within each income group in a commune were randomly selected.

The survey was conducted for a research project “Analysis on challenges for the development of agricultural commercialization in Namdinh province” sponsored by Vietnam-Netherlands Research Program<sup>3</sup>. Therefore, questionnaire covered all aspects of peasant households on the way to develop an agricultural sector with commodity production, such as production, land allocation, technology, market and price, investment and credit, etc. Interviews were carried out with the assistance of chairmen or accountants of cooperatives in 9 communes, who were in charge of handing out questionnaire to peasant households in the sample and explaining the questions. After a month when the peasants filled out the questionnaire, members of the research group came to collect and checked the records<sup>4</sup>. If it was incomplete or inconsistent, the questionnaire would be returned to the households for correction. After data cleaning (excluding inconsistent records), the survey ended up with 155 records of peasant households in 9 communes of Haihau, Yyen and Trucninh districts - Namdinh province.

## **II. Background on Land Use in Vietnam**

### **1. Land Supply and Land Structure in Vietnam**

Vietnam is a densely populated country with 0.15 ha of land per capita. Compared to other neighbor country in Southeast Asia, the availability of land is too low to generate a sufficient amount of income, hence marketed surplus from agricultural sector. Land expansion is limited though the State has invested considerably on land reclamation and irrigation system<sup>5</sup>. In addition, agricultural population grows too fast, so the increase in land supply cannot compensate to maintain the amount of land per capita. During the 1990s, cultivated area increased 1.5 per cent annually, while agricultural population rose at 2 per cent per year on

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<sup>3</sup> This project focuses on three challenges to agricultural commercialization: land use, technology transfer, and access to market and terms of trade for agricultural products. The present paper discusses a specific issue, regarding to land use and agricultural commercialization. All arguments and errors are sole responsibility of the author.

<sup>4</sup> The questionnaire includes cross checking questions in order to ensure the reliability of data filled by households.

<sup>5</sup> Up to 1997, there had been only 1.4 million hectares of unused arable land (Chung, 1997: 58; GSO, 1999b: 28).

average. Therefore, land per capita in agricultural sector was reduced from 0.154 to 0.149 ha (Jamal and Jansen, 1998: 10; GSO, 1999b: 12, 28).

With this limited availability of land, the acceleration of agricultural labor productivity, income and marketed surplus depends largely on the pattern of land use. Besides the increase in crop intensity, higher agricultural income requires the acceleration of land yield both in kind and in cash. As the sustainability of ecology system has come to its threshold<sup>6</sup>, agricultural diversification towards crops with higher unit value and husbandry play an increasingly important role to raise agricultural marketed surplus. However, agricultural production, in practice, is mostly oriented towards subsistence purpose<sup>7</sup> and changes in crop structure occur very slowly. 65 per cent of agricultural output is generated from food production and over 70 per cent of cultivated land are used for food production. In addition, land fragmentation impedes the application of new technology in agricultural production and the transformation in crop structure (GOLA, 1998). Land accumulation takes place very slowly. Only 10 per cent of households participate into land sale and purchase, of which only 2.5 per cent come from agricultural sector<sup>8</sup>. Most of land sale and purchase concentrates in forestry land and the area of new settlement such as the North Mountain, the Central Highland and the Eastern South. In the Red River Delta, the sale and purchase of land are rare (GSO, 2000: 215, 220).

A major obstacle to land accumulation in Vietnam is the stagnation in structural change. In the 1990s, economic growth was maintained at high level of 10 per cent per year. Particularly, growth was recorded as high as 14 and 18 per cent annually in industry and service sectors. As a result, agricultural share in total GDP declined from near 40 per cent to 25 per cent, since the sector accelerated at lower speed of around 5 per cent per annum. Nevertheless, 80 per cent of population still lives in rural area and this number did not show any declining tendency recently. Most of new labor force is absorbed by agricultural sector (World Bank, 2000: 140-145). In fact, agricultural sector has become the sink of underemployment (Jamal and Jansen, 1998). As a result, high population pressure on land makes it difficult for households that are willing to buy or sell land. Such slow structural changes in turn may be explained by the over-concentration of industries in some big urban centers like Hanoi and Hochiminh City (UN, 1994: 4).

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<sup>6</sup> There is evidence of the over-use of inputs such as fertilizers and pesticides. During the 1990s, only 4 per cent of agricultural growth were explained by the increase in total factor productivity (Jamal and Jansen, 1998: 11-12; World Bank, 2000: 46).

<sup>7</sup> Marketed surplus accounts for less than 50 per cent of total agricultural output (GSO, 2000: 224-225).

<sup>8</sup> 80 per cent of the sale of agricultural land is purchased by urban households (GSO, 2000: 220). It suggests that land is used as an asset against risk, hence its productivity is not expected to be high.

Consequently, besides the limited availability of land there are 3 major challenges to the promotion of efficient use of land and agricultural commercialization in Vietnam. First, changes in crop structure take place slowly. Second, land is fragmented and land accumulation is impeded. Third, structural change is stagnated, as industries are concentrated in only some big cities.

## **2. Land Policy and Land Allocation**

Resolution No. 10 promulgated in April 1988 has changed fundamentally Vietnam's agriculture. The collective system was dismantled and replaced by the peasant households. Land was relocated to peasant households for 10-15 years for annual crops, and longer for perennial crops. Peasant households became autonomous units in agricultural production. After paying a fixed amount of agricultural tax, the households owned the entire surplus and being free to sell it in the free markets. Such changes gave strong incentives to the peasants, particularly in food production. The most important achievement was food export from 1989 though Vietnam had got to import annually 0.5 to 1 million tons of food up to 1988.

Nevertheless, impacts of such changes limited themselves within subsistence crops. Development of commercial crops was impeded. From the perspective of land policy, there were 4 limitations to agricultural commercialization. First, duration of land use rights was not long enough to encourage households to invest in agricultural production. Second, land transfer was not allowed, hence discouraging land accumulation, specialization and commodity production in agriculture. Third, land use rights were not used as collateral, hence preventing households from borrowing loans for agricultural investment. Fourth, local government still played dominant role in deciding crop patterns for specific type of land. Most of land was used for food production, due to the bias for food security. Agricultural diversification and commercialization were not encouraged sufficiently.

Land Law issued in 1993 tried to deal with the above limitations. Land use rights were legalized through granting land certificates. The new Land Law and corresponding regulations brought about 3 fundamental changes in land use. First, it establishes a framework within which farming families are provided with stable and long term rights to use land, namely 20 years for land planted with annual crops such as rice, and 50 years for perennial crops and forestry. Stability is fostered by giving the users the priority when reallocation comes at the end of the period. Second, the Law forms the basis for the establishment of genuine economic management of land by specifying rights and obligations of users. Land-use right may be transferred, mortgaged, rented, exchanged, or inherited, although some discretion is left to local authorities to recognize the transfer some of these rights. Land users have to comply with several obligations,

such as the use of the land for its specified purpose, the responsibility for the protection of the land, and the payment of taxes on transfers and other revenues stemming from the land use. Third, land users are given land use certificates, which assure rights to the land, hence encouraging agricultural investment. In addition, the documentation of land rights (certificates, registers) is expected to reduce uncertainty and information asymmetry between borrowers and lenders by making land a credible form of collateral.

Nevertheless, with the purposes of reaching the right balance of efficiency, equity, sustainability in the allocation of land, and ensuring food security several constraints or safeguards were stipulated in the Law. First, land ceilings are imposed on the various types of agricultural and forestry land<sup>9</sup>. Second, land excess the ceiling, held prior to October 1993, is treated unequally wherein the excess land only receives a land use right for half the allocation time of land held below Land Law limits. On completion of this period, if the household still wishes to use the land, then the State can lease the land back to the householder for a time limit. Third, a 3 years limit is imposed on the leasing of annual land between individuals. Fourth, there are restrictions on land use, wherein land must be used for the purposes when allocated.

### **3. The Practice of Land Allocation**

Under Resolution No. 10, in practice, the land was distributed in two or three rounds. In the first round, 70 per cent of the former cooperative land were equally distributed to peasant households, in order to till for basic consumption. In the second round, more or less than 30 per cent of cooperative land were given to households who were able to farm more extensively and efficiently<sup>10</sup>. In the third round the land was rented on the bidding basis<sup>11</sup>. Implicitly, land distributed in the second and third rounds was for commodity production.

Due to the difference in history, the processes and patterns of land allocations differed greatly between the two major deltas in the North and South. *In the North*, present allocations of land use rights were determined largely by the reform of 1988. Land was supposed to be

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<sup>9</sup> Agriculture land for annual crops, in the two Southern regions shall not exceed 3 hectares per household. In other provinces and cities under central authority the limit shall be 2 hectares. For perennial crops agriculture land for each household shall not exceed 10 hectares for the flat or delta land and 30 hectares for mid range and mountainous land. The limit for the allocation of cleared land, bare hills, waste land, and reclaimed coastal land to households and individuals shall be stipulated by the People's Committee of the provinces and cities.

<sup>10</sup> However, in practice the plots for the distribution in the second round were often those reserved for the newly returned, such as discharged soldiers. In the long run, land of this category would become land distributed in the first round.

<sup>11</sup> Often set aside for bidding were unused lands or water surfaces, areas that were difficult to cultivate and would require special investment.

allocated on the basis of needs (usually indicated by the size of households) and also the ability to farm the land (i.e. the number of household members who can work on the land). This method of land allocation was based on the policy of an equal distribution of each category of land use among all households; i.e. all households in a commune are allocated an equal share of the high yield and inferior yielding lands. In practice, depending on the size of the commune and diversity of fertility of land, a household may have received many small plots (each household having on average, 4 to 15 plots with total area of 0.23 ha) dispersed widely over the commune with none being contiguous one to another (IFPRI, 1996: 13). Such land fragmentation imposed negative effects on production efficiency, land productivity, hence impeding marketed surplus and commodity exchange of agriculture.

*In the South*, oriented towards the establishment of commercial small farms, land was returned largely to previous owners or holders. Compared with the Red River Delta, land distribution in the Mekong River Delta was more unequal. Therefore, in Mekong River Delta, land was less fragmented, relatively to Red River Delta.

### **III. Land Use in Namdinh Province**

#### **1. Land Supply and Land Structure in Namdinh Province**

Land is limited relatively to the growth of population in Namdinh province. Table 1 shows that Namdinh's land per capita is the lowest in the country. In the 1995-1998 period, while rural population grew 2.3 percent agricultural land decreased 0.3 percent per annum, on average. Thus, land/man ratio decreased from 605 m<sup>2</sup> to 588 m<sup>2</sup>. It is expected that 2000 ha of land will be reclaimed but this is offset by the decline in the existing area devoting to construction (NOARD, 2000: 17). With the increasing population pressure on land, growth of income and commodity production from agriculture depends largely on labor transfer to non-agricultural sector and efficiency of land use.

Cultivation accounts for a dominant share of about 80 per cent in total agricultural output, and this share showed no declining tendency during the 1990s (Table 2). Share of husbandry maintains at the level of 20 per cent. This number is slightly higher than that of the entire country; but it is largely resulted from high agricultural labor surplus. Table 3 shows that within cultivation sector, most of land is used for food production (88%), especially rice production (82%). Those figures are high relatively to other regions in the country. In addition, such land structure has been established and consolidated for many years, hence no change in this structure is expected in the coming years (NOARD, 2000: 3). Therefore, growth of cultivation sector has to come from the acceleration of land yield.



**Table 1. Agriculture Land, 1995-1998 (ha).**

Region	1995		1998	
	Land/ household	Land/man	Land/household	Land/man
Whole country	0.70	0.15	0.72	0.15
Mekong River Delta	1.22	0.23	1.16	0.22
Red River Delta	0.26	0.06	0.25	0.06
Namdinh	0.24 (2381m <sup>2</sup> )	0.06 (605m <sup>2</sup> )	0.23 (2338m <sup>2</sup> )	0.06 (588m <sup>2</sup> )

Source: Calculation by author based on data from GSO (1999b); NSO (1999).

**Table 2. Crop Structure\*, 1990-1998 (%)**

	Namdinh			Vietnam		
	Cultivation	Husbandry	Service	Cultivation	Husbandry	Service
1990	79.0	20.1	0.8	80.2	16.6	3.1
1995	79.3	19.7	1.0	80.4	16.6	3.0
1998	77.7	21.3	0.9	80.4	16.9	2.7

\* 1994 constant price

Source: Calculation by author based on data from GSO (1999b); NSO (1999).

**Table 3. Land Structure, 1998**

Region	Crop Intensity (crops/year)	Land Structure (%)		
		Food	Rice	Non-Food
Vietnam	1.44	73.0	62.9	27.0
Mekong River Delta	2.11	86.7	83.8	13.3
Red River Delta	1.55	82.7	73.1	17.3
Namdinh	2.23	87.7	81.8	12.3

Source: Calculation by author based on data from GSO (1999b); NSO (1999).

Namdinh has made significant investment in irrigation system<sup>12</sup>; hence the crop intensity of the province is quite high, and even higher than that of provinces in Mekong River Delta where crop intensity is recorded as the highest one in the country. In addition, the application of new technologies has fostered yield, as rice yield in Namdinh is the highest one (5.75 tons/ha/year) in the country (GSO, 1999b: 77-78). However, compared to the entire country in general and the Red River Delta in particular, land yield in Namdinh is relatively high only in subsistence crops such as rice and other grains (Table 4). For other crops with higher unit value (except peanut), land yield in Namdinh does not show any superior to other provinces. In

<sup>12</sup> More than 80 per cent of land is irrigated in the province (NOARD, 2000: 19).

addition, special fragrant rice, with high unit value, still accounts for a very small (8%) share in total land for rice production (NOARD, 2000: 28-29).

**Table 4. Land Yields of Selected Crops, 1998 (tons/ha)**

Region	Rice	Grain*	Peanut*	Soya Bean*	Banana	Orange
Vietnam	2.70	2.30	1.43	1.11	13.68	5.62
Mekong River Delta	4.07	2.55	1.96	2.05	11.53	6.95
Red River Delta	5.13	2.80	1.51	1.35	18.27	4.43
Namdinh	5.75	2.63	2.32	1.24	17.50	3.83

\* Rice equivalent

Source: GSO (1999b)

## 2. The Practice of Land Allocation in Namdinh

Namdinh has made good achievement in speeding up the process of granting land certification. Up to 2000, almost all peasant households have received land certificates<sup>13</sup>. Land allocation was decided in 1988 and based on the policy of an equal distribution of each category of land use amongst all households<sup>14</sup>. Even land for bidding<sup>15</sup> in the third round of allocation was also equally distributed, as there was strong pressure of population and labor surplus.

Land holding per household is so low both because of limited supplies of land and low level of land accumulation. In the survey, there is only one household using more than 0.5 ha<sup>16</sup>. Small size of land holding prevents households from participating into commodity production though land yield is recorded at high level already. Even in households with large land holding, share of marketed surplus is also lower than that of normal households in the entire country (Table 5). Apart from limited supplies of land, small size of land holding results from low level of land accumulation. Taking the bidden land is the only way to increase land holding, but the opportunity to use this type of land is also very limited. There is no evidence of land transfer among households within the survey.

<sup>13</sup> This achievement is superior to the general index of entire the country recorded at 75 per cent only (NOARD, 2000: 38; N.H. Nguyen, 1998: 35).

<sup>14</sup> All households in a commune are allocated an equal share of the high yield and inferior yielding lands.

<sup>15</sup> This land accounts for 10 per cent of total land area (NOARD, 2000: 20-21).

<sup>16</sup> This indicator is lower than that of the entire country, in which here are about 20 per cent of households using more than 0.5 ha and 10 per cent using more than 1 ha. Particularly, such indicators in the Mekong River Delta are 70 per cent and 35 per cent, respectively (T.P. Do, 1998).

**Table 5. Marketed Surplus Ratio** (% of total output)

Region	Rice	Other grains
<b>Vietnam</b>	44.8	53.1
<b>Namdinh</b>	23.3	12.1
< 200m <sup>2</sup>	0.0	0.0
200-400m <sup>2</sup>	7.6	6.6
400-600m <sup>2</sup>	27.7	16.6
600-800m <sup>2</sup>	28.5	9.3
> 800m <sup>2</sup>	37.9	15.9

**Source:** GSO (2000: 224-225); Household Survey in Haihau, Yyen, Trucninh Districts (Namdinh province) conducted in June-July, 2000.

**Table 6. Land Fragmentation**

Region	Land/ household (m <sup>2</sup> )	Number of plots	Largest plot (m <sup>2</sup> )	Distance from house (m)	Smallest plot (m <sup>2</sup> )	Distance from house (m)
Vietnam	10140	5	4830	1200	2250	900
Mekong River Delta	18260	2	10000	1700	5290	1000
Red River Delta	2370	8	600	1200	150	700
Namdinh	2370	5	1077	1016	169	220

**Source:** IFPRI (1998); Household survey in Haihau, Yyen, Trucninh districts (in Namdinh province) conducted in June-July 2000.

With such limited size of land holding, Namdinh's households have tried to consolidate the existing area of land. Compared to other provinces in the Red River Delta with the same level of land holding, indicators of land consolidation in Namdinh shows a better result in terms of smaller number of plots, larger area/plot and closer contiguity between plots (Table 6). Land allocation was based on the rational use of irrigation system and the maintenance of edges among plots. Often, land was firstly allocated to groups of relatives (around 5-7 households), and this would be further distributed within the group. Such kind of distribution made it easier for households to co-operate, in order to prevent land fragmentation that generates difficulties for water supplies and increases production cost. However, with limited land holding, indicators of land consolidation in Namdinh were still inferior to those of the entire country, and particularly to those of the Mekong River Delta.

In conclusion, with very limited supplies of land, Namdinh has attempted to consolidate land for higher yield. However, it is not enough to promote commodity production in agriculture. This requires two things: (i) encouraging skillful farmers to accumulate land; and (ii) promoting

the development of rural industries and enabling easier transfer of land for households being willing to participate into non-farm activities in rural area.

#### **IV. Land Accumulation and Income Inequality**

Land accumulation in Vietnam confronts a major political constraint as the ruling Communist Party, driven by Marxist ideology, is threatened by the tendency that land accumulation may lead to severe income inequality. Within Marxist perspectives (Bernstein, 1982; Ellis, 1993: Ch. 3), this relation is ultimate in the market economy, and mainly attributed to the phenomenon of interlocked markets. The process starts by the forced commercialization of peasant economy since peasants are forced to earn cash income to pay for tax and other goods and services such as health care and education; or they are forced to grow commodity crops in a given land settlement. The participation into market exchange makes the peasants vulnerable to market risks and seasonal uncertainties. Meanwhile, landlords with large land holdings take advantages of bigger capital and easy access to market and to new technology.

As a result, peasant households are less competitive than landlords are when they move incentives from maximizing use-value to maximizing exchange-value and profit. So a risky accident may lead peasant households to fall into big debt, and often they have to mortgage or sell their land. Then they may either participate into “reserved unemployed army” in the urban area or become tenants for the landlords. In contrast, landlords will become richer as they may increase price of inputs sold to peasants (through lending credit), raise land rent (as land is highly demanded by tenants), or reduce price of output (by paying in advance). The peasants will be poorer, and have to keep selling their land. This process continues until the peasants sell up all of their land and become the proletariat in capitalism.

There are two implications from the above framework. First, inequality of land holdings and income must be higher within each region rather than between regions. Secondly, the less availability of land of a region, the higher inequality of land holdings and income in that region will be. Bearing those two points in mind, the study will show that these Marxist perspectives are not conclusive in the case of Namdinh province.

**Table 7. Land Distribution in Namdinh (per households and per capita)**

Region	Gini		Theil T		Land per (m <sup>2</sup> )	
	HH	Man	HH	Man	HHs	Man
<b>Namdinh</b>	0.220	0.198	0.067 (67.2)	0.054 (51.0)	2329	475
<b>Haihau District</b>	0.212	0.203	0.075 (51.0)	0.073 (30.6)	2196	465
Haiminh Commune	0.087	0.046	0.016	0.003	1231	205
Haitan Commune	0.181	0.111	0.068	0.024	2084	571
Haigiang Commune	0.115	0.123	0.021	0.024	2709	542
<b>Yyen District</b>	0.079	0.170	0.061 (93.0)	0.023 (69.9)	2565	507
Yenninh Commune	0.218	0.260	0.031	0.017	1991	364
Yenduong Commune	0.206	0.094	0.066	0.016	3052	603
Yentri Commune	0.198	0.097	0.064	0.017	2803	567
<b>Trucninh District</b>	0.168	0.199	0.046 (82.0)	0.062 (71.4)	2176	450
Trungdong Commune	0.215	0.208	0.073	0.074	1852	348
Liemhai Commune	0.128	0.150	0.027	0.035	2204	511
Tructuan Commune	0.097	0.132	0.016	0.030	2549	524

\* Number in the parentheses below Theil T shows the percentage of Theil T resulted from inequality within regions

**Source:** Household survey in Haihau, Yyen, Trucninh districts (Namdinh province) conducted in June-July, 2000.

A glance at Table 7 shows that land is distributed very equally. Both Gini and Theil T coefficients<sup>17</sup> of land inequality are very low. For the province as a whole, Gini and Theil T

$$^{17} \text{ a/ Gini} = 1 - \sum_{i=1}^N (F_i - F_{i-1})(Y_i + Y_{i-1})$$

where N: the serial order of the observation in the sample from lowest to highest value

F<sub>i</sub>: percentage of the cumulative households (or population) added to the i<sup>th</sup> group

Y<sub>i</sub>: percentage of cumulative area of land (or income) of the i<sup>th</sup> group

Gini coefficient reflects the inequality in the distribution of land (or income) of the households (or population). It may get the value from 0 to 1. 0 expresses absolute equality, 1 signifies absolute inequality.

$$\text{b/ Theil T} = \sum_{i=1}^N (Y_i/Y) * \ln(Y_i N/Y) = \sum_{j=1}^m (Y_j/Y) * T_j + \sum_{j=1}^m (Y_j/Y) * \ln(Y_j/Y)/(N_j/N)$$

where N: total number of observations in the sample

Y: total land area (or income)

Y<sub>i</sub>: land holding (or income) of the i<sup>th</sup> observation

m: number of groups

T<sub>j</sub>: Theil T of j<sup>th</sup> group

Y<sub>j</sub>: Land holding (or income) of j<sup>th</sup> group

classified by each individual are lower than those classified by households. It suggests that land holding of each household be determined by size of the household. In addition, percentage of Theil T for the entire province resulted from inequality within regions, declines from 67.2 to 51 as the classification changes from households to individuals. It also implies the equal allocation of land. The minor difference in land holdings between households is largely explained by difference in the size of households and in land availability among districts and communes.

As percentage of Theil T resulted from inequality within region is still significantly high, one may doubt the equality of land distribution in each region. However, looking at land distribution in each district, one may see that the two implications from Marxist theories are invalid. In Haihau district, Gini and Theil T coefficients are the highest in the province but percentages of inequality within the region are the lowest. In addition, Gini and Theil T coefficients of both 3 communes are lower than those of the district as a whole. It means that majority of land inequality stems from inequality between communes in the district. It can be seen more clearly by looking at difference in land availability between communes. Land/household of Haigiang is 2.2 times that of Haiminh, and land/man of Haitan is 2.8 times that of Haiminh. Another implication is that land inequality between regions in Haihau contributes considerably to land inequality within region of the entire province, as Gini and Theil T coefficients of the district are the highest. Further more, Gini and Theil T coefficients are lowest in Haiminh where land/household and land/man are also lowest, relatively to other communes in the district. It means that land shortage is not a cause of land accumulation and the emergence of landless peasants.

In Yyen district, land inequality is the lowest in the province. However, Table 7 shows that 93 per cent of Theil T for households comes from inequality within communes. This can be explained from difference in size of households within communes like Yenduong and Yentri, rather than land inequality within communes<sup>18</sup>. It is worth to note that Gini coefficients in Yenninh commune are high relatively to other communes in the survey, while land/households and land/man are low. It is mainly attributed to the fact that there are 3 landless households who move to non-farm activities in this commune. If canceling those 3 households in calculating

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$N_j$ : total number of observations in  $j^{\text{th}}$  group

Theil T coefficient ranges from 0 to infinity, but rarely it is bigger than 1. The higher Theil T, the higher inequality is. This index is superior to Gini in that it can be disaggregated into inequality within groups and inequality between groups.

<sup>18</sup> In those 2 communes, Theil T coefficients for households are higher than the whole district while those for man are lower.

Theil T, land distribution in Yenninh commune is even more equal than the other 2 communes of the district.

In Trucninh district, land distribution is also equal, as Gini and Theil T coefficients of the district are lower than those of the entire province. Land inequality within communes like Liemhai and Tructuan is insignificant, as Gini and Theil T coefficients of such communes are lower than those of the district. Only the case of Trungdong commune, where Gini and Theil T coefficients are high relatively to the district and other communes in the entire province, should be considered with cautions.

***Table 8. Land Distribution in Trungdong Commune - Trucninh District***

(per household and per capita)

Region	Theil T		Land per (m <sup>2</sup> )	
	HH	Man	HH	Man
<b>Trungdong Commune</b>	0.073 (65)	0.074 (41)	1852	348
Trunglao Village	0.045	0.006	1456	260
Dongthuong Village	0.049	0.046	2292	458

**Source:** Household survey in Haihau, Yyen, Trucninh districts (Namdinh province) conducted in June-July, 2000.

A careful looking at Trungdong commune shows that it is likely to have 2 different distribution of land (Table 8). The reason is that survey in Trungdong commune was conducted in 2 villages (Trunglao and Dongthuong) with considerably different characters. Table 8 shows that Theil T coefficients of those 2 villages are lower than that of the commune. In addition, land/household and land/man in Dongthuong are respectively 1.6 and 1.8 times higher than those in Trunglao. It means that considerable share of land inequality in Trungdong commune stems from land inequality between villages rather than within villages. Further more, land/household and land/man of Trunglao village are the lowest among communes in the survey. Nevertheless, Theil T coefficients of this village are also very low compared to Dongthuong village and other communes in the province. It implies once again that land scarcity does not lead to land accumulation.

In brief, the above observations may bring about 3 tentative conclusions. First, majority of land inequality comes from difference in land holding between regions rather than within regions. There is no clear evidence of land accumulation. Second, land holding of households still depends on the size of households. Besides showing the absence of land accumulation, it in turn gives evidence to the fact that land is mostly used to produce subsistence crops for consumption within the households. Third, there is no evidence of the negative relation between

land availability and land inequality within regions. Instead, land accumulation may take place in region where there is strong development of non-farm activities (Yyen district).

Is there any relation between land distribution and income distribution? Looking at Table 9, there is no clear evidence of this relation. Firstly, Gini and Theil T coefficients of income distribution<sup>19</sup> are considerably higher than those of land distribution, and income inequality within group is much higher than land inequality within group. Secondly, Gini and Theil T coefficients of 3 districts are likely to vary with income per capita in the usual inverse U-shaped curve (Kuznets, 1955; Ahluwalia, 1976). Thirdly, using contingency table and Chi-square test shows that there is no covariation between land distribution and income distribution (Appendix A).

**Table 9. Distribution of Land and Income in Namdinh (per capita)**

Region	Income/man/year			Land/man		
	Gini	Theil T	Income (1000d)	Gini	Theil T	m <sup>2</sup>
Namdinh	0.372	0.218 (78.4)	2219	0.198	0.054 (51.0)	475
Haihau District	0.316	0.168 (83.7)	2880	0.203	0.073 (30.6)	465
Trucninh District	0.291	0.136 (84.0)	1762	0.199	0.062 (71.4)	450
Yyen District	0.408	0.281 (92.8)	2072	0.170	0.023 (69.9)	507

**Source:** Household survey in Haihau, Yyen, Trucninh districts (Namdinh province) conducted in June-July, 2000.

So, what can explain inequality in income distribution that is quite high in Namdinh compared to other provinces? The answer mainly comes from differences in crop and employment structures. Firstly, Table 12 shows that there is an inverse relation between income per capita and share of cultivation in total income. Secondly, even in Haihau district where soil is the most fertile in the province, the richest commune is Haitan where share of husbandry in total income is the highest. In other 2 districts with less fertile land, the richest communes are Trungdong and Yenninh, where share of non-farm activities in total income are the highest. Thirdly, within each district, Gini coefficients are highest in those 3 communes (Haitan, Trungdong, and Yenninh) where shares of non-cultivation in total income are the highest. It is

<sup>19</sup> These coefficients are quite equivalent to those of the entire country. According to the Living Standard Survey held in 1998, Gini and Theil T coefficients of Vietnam were 0.35 and 0.23, respectively; for the Red River Delta, they were 0.32 and 0.19; for the rural sector of the Red River Delta, they were 0.25 and 0.11 (GSO, 2000: 272-273).



worth to note that even in Trungdong commune where land is use very intensively and land yield is the highest in the entire province, share of non-farm activities in total income is still dominant.

**Table 12. Composition of Income Sources of Peasant Households in Namdinh**

Region	Composition of Income (%)						Income per capita (1000 d)	Gini
	Total	Annual Crops	Perennial Crops	Husbandry	Non-farm	Wages and Subsidies		
<b>Namdinh</b>	100	38.9	2.2	21.5	28.3	9.1	2219	0.372
<b>Haihau District</b>	100	37.0	2.2	24.6	25.0	11.2	2880	0.316
Haiminh Commune	100	15.7	1.9	26.2	53.2	3.1	2084	0.243
Haitan Commune	100	36.5	1.6	32.8	16.2	13.0	3834	0.307
Haigiang Commune	100	48.1	2.9	15.8	19.7	13.6	2668	0.277
<b>Yyen District</b>	100	38.6	0.3	13.5	38.4	9.1	2072	0.408
Yenninh Commune	100	27.1	0.0	8.6	52.0	12.3	2624	0.399
Yenduong Commune	100	53.5	0.2	20.4	14.2	11.7	1514	0.385
Yentri Commune	100	36.4	0.7	12.2	46.7	4.0	2006	0.391
<b>Trucninh District</b>	100	41.1	4.0	26.3	21.6	7.0	1762	0.291
Trungdong Commune	100	31.2	0.5	24.6	37.0	6.7	2241	0.252
Liemhai Commune	100	46.3	7.7	27.2	8.8	10.0	1575	0.311
Tructuan Commune	100	47.1	3.8	27.5	18.2	3.5	1311	0.200

**Source:** Household survey in Haihau, Yyen, Trucninh districts (Namdinh province) conducted in June-July, 2000.

However, one question remains: Is there any tendency for the rich to accumulate land from the poor with increasing income inequality? Besides obstacles imposed by the aforementioned land policies, incentives of rich households to accumulate land are impeded by low expected return from agricultural investment. This is based on 3 evidences. Firstly, land transfer and land lease is very rare among households. In the survey, there are only 4 cases of land leasing among households, while 39 households leases in land from bidden land of the commune that is also equally allocated. Up to 75 per cent of households state that they want to lease in more land just because of having labor surplus and assuring food consumption.

Secondly, cultivation of annual food crops in land allocated in the first and second rounds is mainly used for the purpose of self-consumption. Most of cash income comes from non-food production. In fact, Table 13 shows that cash revenue from food production is lower than cash expenditure on food production (except Haihau district where soil is the most fertile in the province). In other words, food producers are ‘buying food for consumption’ themselves.

**Table 13. Composition of Net Cash Income of Households in Namdinh**

Region	Total	Annual Crops	Perennial Crops	Husbandry	Non-farm	Wages and Subsidies
Namdinh	100	-12.1	3.5	49.7	44.8	14.1
Haihau District	100	3.3	2.3	45.7	33.1	15.5
Yyen District	100	-17.9	0.5	38.0	64.3	15.2
Trucninh District	100	-21.0	7.3	63.9	37.9	11.8

Source: Household survey in Haihau, Yyen, Trucninh districts (Namdinh province) conducted in June-July, 2000.

Thirdly, of households being unwilling to lease out land, 80 per cent state that they want to assure self-consumption. Meanwhile, of households being willing to lease in more land, only 40 per cent belong to the high-income group (Groups 3 and 4 classified by the adjusted criteria of VLSS 1998), of which only 30 per cent are willing to invest in food production.

In sum, there are 3 conclusions from the above analysis. First, there is no sign of land accumulation in Namdinh province. Second, income inequality mainly comes from the differences in crop and employment structures among households. There is no clear relation between land accumulation and income inequality. Finally, most of land is used for subsistence crops. Low level of commodity production is causally related to low level of land accumulation. Besides other measure to assist the peasant households like credit, technology and market policies, agricultural commercialization really needs land accumulation and the development of land market. In addition, land accumulation also requires that development of non-farm activities to absorb labor surplus from agriculture.

## **V. Farm Size and Productivity**

As suggested in the last section that agricultural commercialization needs land accumulation. However, one may question that land accumulation may lead to dualism in land holding. As there is an inverse relation between farms size and land productivity, such a land structure may lead to a decline in land productivity in general, hence reducing efficiency of agricultural production. This relation often reasons economically from 2 points (Griffin, 1979; Ghatak and Ingersent, 1984: Ch.6; Ellis, 1993: Ch.10). Firstly, small farmers confront low opportunity cost of labor combined with high prices of land; therefore they use land intensively and generate high yield. In contrast, in large farms where opportunity cost of land is relatively lower, land is used extensively hence land yield is low. Secondly, large farmers take advantages to get access to credit and input supplies. In addition, the management and supervision of labor become more difficult as farm size increases. Therefore, such market imperfection often initiates

large farmers to substitute capital for labor. In developing countries, where land and capital are scarce while labor is abundant, such pattern of resource allocation leads to social inefficiency. Therefore, an equal distribution of small-holdings is called for.

In practice, such economic mechanism does not operate well in the case of Namdinh province due to 2 reasons. First, most of households still have considerable time of labor surplus. Second, production of subsistence crops is dominant in agriculture therefore peasant households are not willing to make cash payment for buying capital goods or hiring in labor. As a result, there is no clear evidence on the inverse relation between farm size and land productivity in Namdinh (Table 14).

***Table 14. Rice Yield, Land Holding and Land Fragmentation***

Region	Yield (kgs/ <i>sao</i> /crop)	Land Holding ( <i>saos</i> /households)	Number of Plots	Area/plot ( <i>saos</i> )
Namdinh	195.7	6.52	5.38	1.67
Haihau District	213.2	6.10	2.86	2.67
Yyen District	173.8	7.08	8.54	0.99
Trucninh District	196.1	6.04	5.3	1.2

\* For a sake of simplicity, unit of land is measured in *sao*: 1 *sao* = 360 m<sup>2</sup>.

**Source:** Household survey in Haihau, Yyen, Trucninh districts (Namdinh province) conducted in June-July, 2000.

Nevertheless, there is significant difference in land productivity among regions in Namdinh. Besides difference in soil fertility, crop intensity and irrigation, difference in land yields among regions may come from different levels of land fragmentation. Looking at Table 14, land yield is negative related to the number of plots per households and positively related to area per plot. Statistical test shows that there are interdependence between land yield, number of plots and area per plot even at 1% significance, meanwhile there is no statistical relation between land yield and land holding of households even at 5% per cent significance (Appendix B).

It is worth to note that there are 3 distinct concepts: scale of farm, land holding (farm size) and size per plot. Optimum scale of farm requires a minimum amount of land holding, in order to utilize economies of scale. Small-holding does not necessarily generate optimum scale of farm<sup>20</sup>. Further more, even small farm size may bring about high land yield, it does not mean that fragmentation of land into many plots generates high land yields. In fact, land fragmentation just leads to lower land productivity and inefficiency due to 2 reasons. First, it puts obstacles to

<sup>20</sup> Jamal and Jansen (1998: 11-12) and Akram-Lodhi (2001: 16) show that there were changes in technical coefficients of agricultural production along with the economic reform, as further further agricultural growth required the increase in purchased inputs that favor large land holdings.

irrigation system, hence impeding the application of new technologies to get higher yield. Second, both the small sizes of plots and farms disutilize the indivisibility of certain inputs, hence increasing cost of production.

**Table 15. Income of Annual Crops per *sao* per year in Namdinh**

(classified by area per plot; 1000 dong)

Area/plot ( <i>sao</i> )	Revenue/ <i>sao</i>	Cost/ <i>sao</i>	Profit/ <i>sao</i>
0-1	697	558	140
1-2	801	559	242
2-3	850	593	257
3-5	940	564	377
> 5	940	523	417

**Source:** Household survey in Haihau, Yyen, Trucninh districts (Namdinh province) conducted in June-July, 2000.

Looking at Table 15, up to the area of 3 *saos* per plot, the former reason may explain the increase in profit per *sao* from annual crops. Though cost of production rises, revenue increases faster. As a result, profit per *sao* increases from 140,000 dongs to 257,000 dongs. Beyond 3 *saos*, the increase in profit per *sao* is attributed to the latter reason. Though revenue per *sao* is unchanged, cost per *sao* declines as larger size of plot makes use of indivisibility of inputs. As a result, profit per *sao* increases from 377,000 to 477,000 dongs. Particularly, increase in profit is the biggest ( $377,000 - 257,000 = 120,000$  dongs/*sao*) when size of a plot comes over 3 *saos* as both the 2 effects operate. It implies that size of a plot should be at least more than 3 *saos*, and it even would better to be higher than 5 *saos*. With the land holding of 6 *saos* on average, efficiency requires that each household in Namdinh cultivates in only 1 to 2 plots of land. As described in section III, Namdinh has made good achievement in terms of consolidating land during the process of land allocation, hence further consolidation of land requires land accumulation.

In sum, there are 3 conclusions from the analysis on farm size and productivity. First, land holding in Namdinh is not large enough to retard land productivity, hence reducing production efficiency. Second, land fragmentation is the main reason for low yield and high cost of production. Third, land holdings should be concentrated into 1-2 plots for each household. As the potential for further exchanges of land plots is limited, further consolidation of land requires land accumulation.

## VI. Conclusions and Implications

Land accumulation in Namdinh does not come to a point that may lead to income inequality and reduce land yield and production efficiency. Instead, the main reason for low productivity stems from land fragmentation. Land consolidation based on the accumulation of land is the major measure to promote land productivity and agricultural commercialization. Land accumulation requires, *inter alia*, the development of land market. It will both encourage skillful farmers to make further investment in agriculture and the transfer of labor surplus to non-agricultural sector, which in turn foster the development of agricultural commercialization.

Namdinh province carries out typical characters of Vietnam's agricultural development. Even it is where land yield is the highest, the allocation of land certificates is effective and land fragmentation is not as serious as that of other provinces. Therefore, policy implication from the case study of Namdinh may be somehow generalized for Vietnam as a whole. First, land accumulation requires the removal of market imperfection and the reduction in transaction costs. At low income level, land transfer and land lease needs the assistance of banking system in terms of setting land rent (by measuring the discounted return from land) and giving credit to households who are willing to buy land. In addition, administrative procedure for land transfer should be simplified as it make a high transaction cost relatively to the existing small amount of land holding. Second, the development of rural non-farm activities is the most effective way to withdraw labor surplus from agriculture. This in turn fosters land accumulation among the remaining peasant households. Therefore, land accumulation may needs the State assistance for the development of non-farm activities as well as the decentralization of industrial development. Third, duration of land-use rights should be extended to 50 years for annual crops, and 3-year limitation of land lease should be removed. This will encourage households to make long-term investment on land. Fourth, the land ceiling of 3 ha for annual crops should be removed, as it is neither effective nor efficient. In the Red River Delta, this constraint is not binding, as land holding is still very small. In addition, it only discourages households' willingness to accumulate land. Even in the Mekong River Delta where land accumulation is high, such policy is infeasible. Households with more 3 ha may either transfer some land to their relatives or moves to grow perennial crops. Such result only impedes agricultural specialization and reduces production efficiency. It would better to deal with land and income inequality by applying progressive land tax.

## Appendix A

**Table A1. Contingency of Land and Income distribution** (classified by quintile groups)

Land	Income					Total
	I	II	II	IV	V	
I	5	5	7	9	5	31
II	12	6	6	4	3	31
III	5	9	7	5	5	31
IV	7	5	6	4	9	31
V	2	6	5	9	9	31
Total	31	31	31	31	31	155

- Each quintile group is selected on land and income per capita of households that are arranged in increasing order.
- Pearson  $\chi^2(16) = 20.000$ ; Pr = 0.220  
At 5% significance,  $\chi^2(16) = 26.296 > 20.000$  implies that the independence between land and income distribution can be accepted.

**Source:** Household survey in Haihau, Yyen, Trucninh districts (Namdinh province) conducted in June-July, 2000.

**Table A2. Contingency of Land and Income Distribution**

(classified by income groups of VLSS, 1997-1998)

Land	Income					Total
	I	II	III	IV	V	
I	0	2	1	0	3	6
II	3	12	7	10	1	33
III	12	21	14	14	9	70
IV	5	9	7	13	8	42
V	0	2	0	1	1	4
Total	20	46	29	38	22	155

- Classification in this table is used to avoid the overlap of figures with the same value between groups in Table A1. Figures on land per capita of households ranges from 0 to 1035 m<sup>2</sup>, then is divided into 5 groups with the interval of 200 m<sup>2</sup> between the groups. Meanwhile, income per capita of households is grouped by criteria of the Living Standard Survey (GSO, 2000: 318). Such criteria are adjusted for inflation of 12 per cent from 1998 to 2000. As a result, the incomes per capita of 5 groups are: Group 1 - 844000 dong/year; Group 2 - 1584000 dong/year; Group 3 - 2341000 dong/year; Group 4 - 3557000 dong/year; Group 5 - 7339000 dong/year.
- Pearson  $\chi^2(16) = 18.3897$ ; Pr = 0.302  
At 5% significance,  $\chi^2(16) = 26.296 > 18.3897$  implies that the independence between land and income distribution can be accepted.

**Source:** Household survey in Haihau, Yyen, Trucninh districts (Namdinh province) conducted in June-July, 2000.

## Appendix B

**Table B.1. Contingency of Land Yield and Number of Plots (quintile groups)**

Yield	Number of Plots					Total
	I	II	III	IV	V	
I	3	2	6	7	11	29
II	2	4	8	6	9	29
III	1	2	10	10	6	29
IV	12	8	5	3	1	29
V	11	13	0	3	1	28
Total	29	29	29	29	28	144

- There are only 144 households reporting land yield and number of plots.
- Pearson  $\chi^2(16) = 65.4570$ ; Pr = 0.0000

At 1% significance,  $\chi^2(16) = 31.9999 < 65.4570$  implies that the two distributions are dependent.

**Source:** Household survey in Haihau, Yyen, Trucninh districts (Namdinh province) conducted in June-July, 2000.

**Table B.2. Contingency of Land Yield and Area per Plot (quintile groups)**

Yield	Area per Plot					Total
	I	II	III	IV	V	
I	14	4	5	2	4	29
II	3	10	5	6	5	29
III	9	8	1	9	2	29
IV	2	5	10	7	5	29
V	1	2	8	5	12	28
Total	29	29	29	29	28	144

- There are only 144 households reporting land yield and number of plots.
- Pearson  $\chi^2(16) = 51.2521$ ; Pr = 0.0000

At 1% significance,  $\chi^2(16) = 31.9999 < 51.2521$  implies that the two distributions are dependent.

**Source:** Household survey in Haihau, Yyen, Trucninh districts (Namdinh province) conducted in June-July, 2000.

**Table B.3. Contingency of Land Yield and Land Holding (quintile groups)**

Yield	Land Holding					Total
	I	II	III	IV	V	
I	3	6	7	6	7	29
II	2	5	4	8	10	29
III	4	5	6	8	6	29
IV	12	8	6	2	1	29
V	8	5	6	5	4	28
Total	29	29	29	29	28	144

- There are only 144 households reporting land yield and number of plots.
- Pearson  $\chi^2(16) = 26.0541$ ; Pr = 0.0530

At 5% significance,  $\chi^2(16) = 26.2962 > 26.0541$  implies that the two distributions are independent.

**Source:** Household survey in Haihau, Yyen, Trucninh districts (Namdinh province) conducted in June-July, 2000.



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