

Structural Change in Agriculture in the Rice Granaries of Vietnam, Fifteen Years after DOI MOI - Case Study in the Former Area of the Hoa Duc hamlet -

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Abstract

A decade after the introduction of the DOI MOI policy and agricultural reform, Vietnam was positioned as the world's second largest rice exporter, whereas rice farming itself became a grim business. The government relaxed their egalitarian land allocation policy and encouraged diversification from rice monoculture. The land price had soared in 2000 and the 2003 land law stipulated measures to prevent land speculation. The objective of the research is to identify the effect of land speculation on the structural change in agriculture in the Mekong delta between 1997 and 2002. A follow-up census of an ex-hamlet was undertaken in Can Tho (current Hau Giang) province in 2002. Data from households were stratified by land size and compared with those studied from 1993 to 1997. Branched-out households had multiplied, probably due to the appreciation in land prices. Households were differentiated at around 1 ha subject to their competencies in rice production. Diversification from rice monoculture emerged as another factor differentiating farmers at around 2ha. A ceiling in yield due to land fragmentation and expectations of the agricultural land as an appreciating asset could have affected the farmers' decision at around 3 ha whether to emigrate from or remain in the hamlet.

Discipline: Agricultural economics

Additional key words: diversification, land use, Mekong delta, pig, sugarcane

Introduction

Since adopting the DOI MOI policy in 1986, the Vietnamese government has promoted a market-oriented and open economy^{4,16}. Agrarian reform since 1988 facilitated the transformation from collectivization to household farming by stabilizing the land tenure of households and privatizing their market access^{4,12}. The 1993 land law authorized households to exchange, transfer, lease, inherit and mortgage the assigned land^{4,13,19,20}. Boosted by this reform, Vietnam became self-sufficient in rice in 1989 and then became the 2nd largest world exporter in 1997^{4,15,16}. However, the real rice price started to drop since 1990, and despite increased production, rice farmers' income remained low^{4,7,12,15}. Since 1996, the government has promoted diversification from rice farming, and virtually lifted the size limit for agricultural land use in 1998, and endorsed *Trang Trai* in 2000^{4, 16}. Planted areas for paddy and sugarcane peaked respectively in 2000 and 1999 whereas livestock, inter alia, pig production showed

annual growth rates of 6-7% in the early 2000s^{6,7}.

Meanwhile international money transfers from overseas Vietnamese have remarkably increased since 1999 after the government relaxed the regulation². A rumor surfaced that overseas Vietnamese would be authorized to obtain land use rights, and land prices soared in 2000. Ho Chi Minh City allowed migrant workers and foreign investors to purchase land use rights in 2001, but restricted trade in its agricultural land in 2002. This boosted investment in land, especially in areas exempt from restrictions such as urban suburbs. The land price hike continued until 2004¹⁷ when a new land law was implemented with measures to stabilize land prices and prevent land speculation. The emergence of nouveau riche following speculation of land use rights and their strong purchasing power became talking points at around the same time¹.

In the mid-90s, Yamazaki analyzed the agricultural structure in the Mekong delta, a renowned rice granary of Vietnam^{19,20}. Through case studies of rural communities in Can Tho province, he observed polarization of farmers' land and demonstrated land transactions subject to

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competencies in rice production. He pointed out the most frequently observed medium-sized farmers with 1-3 ha agricultural land were the most competent at rice production and limits were imposed on land expansion, following the decline in yield due to land fragmentation. He also noted the fact that medium-sized farmers actively adopted new techniques and diversified their farm products, whereupon land prices appreciated in the 2000s. As observed in Japan in the late 1960s, appreciating agricultural land prices tend to limit accumulation by competitive farmers¹⁰. This paper focuses on analyzing consecutive census data from 1997 and 2002 in a rural community in an attempt to identify the effects of land speculation on structural change in agriculture in the Mekong delta over a 5-year period. It analyzes the development of farm components and elucidates whether competitive farmers are accumulating their agricultural land.

Methods and structure

The study refers to the methods of Yamazaki, which are based on Japanese methods used to analyze differences in rice production competency^{10,19,20}.

Specifically, a census of about 350 households was undertaken in May 2002 by individual interviews, e.g. featuring family members and covering family and land use changes from the last interview in June 1997 (including 27 households additionally interviewed by February 1998)^{19,20}; income sources; land use; crops; animals; machinery; luxuries; expenditure; savings and loans. The data was stratified by land size into 7 groups with comparable totals of households: less than 0.1ha (<0.1ha); equal to and more than 0.1 and less than 0.5ha (0.1-0.5ha); 0.5-1ha; 1-1.5ha; 1.5-2ha; 2-3ha; equal to and more than 3ha (≥ 3 ha). Statistics such as totals, rates and averages are compared by groups and with figures analyzed at the previous study of 1997^{19,20}.

The land size of a household is calculated as the sum of agricultural land in use for annual and perennial crop production and for garden and ponds where fruit and animals are often raised, and the homestead. It includes long-term assigned land, land rented, borrowed, pawned, and bought by households, inherited and reclaimed, and excludes that leased out, lent out, taken in pawn, transferred and sold by households. Yamazaki²⁰ defined the group of households with 1-3ha agricultural land, most frequently observed in two censuses of the Mekong delta in 1994 and 2001, as medium-sized. This paper follows the same definition and deems the group with less than 1 ha as small-sized, and that equal to and larger than 3ha as large-sized.

The first section of the next chapter provides an

overview of the study site on the agricultural situation and how it was positioned in the Mekong delta. Subsequently, the 2nd section describes the structural change in land use between the mid-90s and around 2000s and the 3rd section discusses the agricultural land market as a prerequisite for structural change. Finally, the 4th and 5th sections analyze changes in farm composition and access to credits and family labour respectively, to identify the key determinants of structural change.

Results and discussions

1. Overview of the study site

The study site, the former area of the Hoa Duc hamlet, belonged to Hoa An village, Phung Hiep district, Can Tho province, one of the 12 provinces of the Mekong river delta region in the southern end of Vietnam in 2002 (Fig.1). It was first surveyed in 1993, following which the hamlet was rearranged and part of it was readdressed to Xeo Tram hamlet. In 2002, it comprised Hoa Duc hamlet and 21 households of Xeo Tram hamlet.

Can Tho province had a total of about 300,000 ha of land, 85% of which was used for agriculture, 60% for spring paddies, 7% for sugarcane and 4% for fish culture (data of 2000⁷). The composition of households by agricultural land size resembled the delta's average but was more concentrated on 1-3ha medium-sized farmers (data of 2001²⁰). In 2004, the Can Tho province was divided into northern Can Tho city and southern Hau Giang province, to which the study site belongs. Generally the northern part is alluvial soil, and the southern part away from the Hau river is acid sulfate soil⁵. The Hau Giang province land is less fertile and the rice yield was lower than those of both Can Tho city and the delta (4.8, 5.2 and 4.9ton/ha, respectively; averages of 2004-2006⁷). The labour share in the non-agricultural sector of Hau Giang province was also lower than those of Can Tho city and the delta (20, 46 and 25%, respectively; averages of 2000-2002⁸. Data from 10 provinces of the delta, except Long An, Tra Vinh and Soc Trang). In the mid-90s Yamazaki classified this study site as a typical rural area^{19,20}, which still seemed valid in the early 2000s.

From 1993 to 2002, the total number of households in the study site ranged between 330 and 350, and the total land size was about 270ha (Table 1). The average land size was about 0.83ha in 1997 (n=329) and 0.78ha in 2002 (n=348), even smaller than the average agricultural land size of the delta in 1998⁴, namely 1.18ha.

The study site has acid sulfate soil and limited fruit growth and aquaculture. The main crop frequently cited as the major agricultural income source in 2002 was rice, followed by sugarcane and livestock respectively. Rice

crops grow two to three times per year and once for sugarcane. Pigs were often raised to utilize home by-products, such as rice bran and broken rice as part of the feed ration.

In 2002, most households equal to and larger than 0.5ha cited agriculture as their major income source, while those of 0.1-0.5ha cited both agricultural and non-agricultural sources and those smaller than 0.1 ha cited

non-agricultural sources, half of which was temporary work, followed by trade and other sources.

2. Structural change in land use between the periods 1993 to 1997 and 1997 to 2002

(1) Change in the total number of households and causes

As shown in Table 1, a total of 12 households (hhs) had decreased from 341 in 1993 to 329 in 1997, whereup-

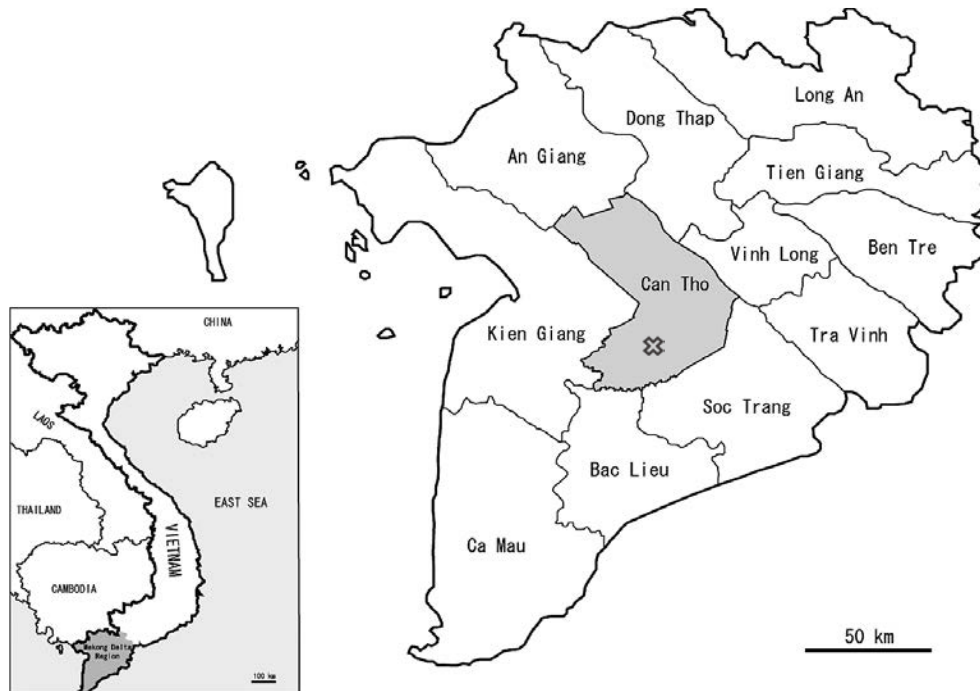


Fig. 1. Twelve provinces of the Mekong river delta and the studied site in 2002

1) Yamada's figure¹¹

2) The cross figure (⊗) indicates the ex-Hoa Duc hamlet, in the southern part of Can Tho province, named Hau Giang province in 2004. It is about 210km southwest of Ho Chi Minh City, 30km from Can Tho city and stretches along national road No. 61, about 18 km from the branch of national road No. 1.

Table 1. Number of households (hhs) and total land size by individual land size Ex-Hoa Duc hamlet, 1993¹⁾, 1997¹⁾ and 2002

Household size (ha)	Total hhs			Rate of hhs (%)			Total land size (ha)		
	1993	1997	2002	1993	1997	2002	1993	1997	2002
<0.1	73	58	81	21	18	23	1.0	1.0	2.1
0.1-0.5	76	82	87	22	25	25	19.1	21.3	26.5
0.5-1.0	95	81	65	28	25	19	68.0	58.2	45.9
1.0-1.5	44	47	62	13	14	18	54.6	57.9	76.6
1.5-2.0	20	30	21	5.9	9.1	6.0	34.3	51.5	35.5
2.0-3.0	22	24	23	6.5	7.3	6.6	50.7	56.3	55.5
≥3.0	11	7	9	3.2	2.1	2.6	42.4	25.8	31.1
All hhs	341	329	348	100	100	100	270	272	273

1) Data of 1993 and 1997^{19,20}.

2) A temple is excluded from the census.

on 19 hhs had increased from 329 in 1997 to 348 in 2002. The change was primarily attributed to movements of <0.1 and the 0.1- 0.5ha mostly living on temporary work. The former period included a government project to alleviate poverty which provided reclaimed land for the landless¹⁹. A total of 12 of the 46 emigrants in the former period participated in this project and emigrated to the neighbouring settlement¹⁹.

Table 2 shows the hhs matching in 1997 and 2002 by land size and those hhs having moved out and newly settled during these period. The newly settled hhs include those branched out from their parents and living in the study site. The 19 hhs increased in 2002 was a difference between 58 hhs having moved out and 77 new hhs, most of whom belonged to the smallest two groups of <0.5ha ((33+25)/77 new hhs and (20+19)/58 moved out hhs). The branched-out new family increased from only 2^{19,20} to 29 hhs between the periods 1993-1997 and 1997-2002. Another notable difference from the former period was the emergence of the 8 hhs (=7+1) with >=2ha land, which moved out during the latter period while land was provided to the neighbourhood.

(2) Crossroads of land users and dynamics of medium-sized farmers

Next, as shown in Table 1, two crossroads can be observed among groups either expanding or losing their land between 1997 and 2002. First is the 0.5-1ha group constantly decreasing its hhs share and the land from 1993 to 2002, instead, the larger 1-1.5 and smaller 0.1-

0.5ha groups are constantly increasing. The 0.5-1ha could be a crossroads, where subsistent rice farmers are becoming commercial ones or vice versa.

Second is the 1.5-2ha group, which shows a decreasing trend, and the 2-3ha group, which is static or slightly decreasing, while the larger >=3ha group is concurrently increasing from 1997 to 2002, contrary to the trend observed during the former period. During the previous study, Yamazaki assumed medium-sized farmers, especially the 1.5-2ha group, to be the main producers actively diversifying from rice monoculture in 1997^{19,20}. As shown in Table 2, a total of 11(=9+2) of the 30 hhs (37%) of the 1.5-2ha upgraded to larger groups in 2002. The upgrading rate was the largest among the groups, whereas another 11hhs (=3+4+4, 37%) downgraded at the same time. A highly differentiated trend was also observed in the larger groups of >=2ha in 1997. A total of 11(=1+1+1+4+4) out of 31(=24+7) hhs downgraded to smaller groups whereas 12 (=4+2+2+4) hhs remained within the groups and 8 hhs moved out as described in the previous section.

(3) Summary of the changes observed between the periods 1993 to 1997 and 1997 to 2002

The above changes can be summarized as follows: Before 1997, the 0.5-1ha was the sole crossroads whereas both >=3 and <0.1ha groups reduced the hhs due to the inferior rice yield and excessive emigration, respectively. Therefore a polarization was expressed in the form of an accumulation of medium-sized farmers. Since 1997, an-

Table 2. Matching of households between 1997 and 2002 by land size Ex-Hoa Duc hamlet

1997(ha) \ 2002	<0.1	0.1-0.5	0.5-1	1-1.5	1.5-2	2-3	>=3	Moved out	Total
<0.1	24	11	1	2	0	0	0	20	58
0.1-0.5	15	26	14	7	0	1	0	19	82
0.5-1.0	5	15	26	20	4	3	0	8	81
1.0-1.5	3	6	8	19	5	4	1	1	47
1.5-2.0	0	3	4	4	6	9	2	2	30
2.0-3.0	1	1	1	4	4	4	2	7	24
≥3.0	0	0	0	0	0	2	4	1	7
								58	329
New (Branch)	33 (12)	25 (9)	11 (7)	6 (1)	2 (0)	- (0)	- (0)	77 (29)	
Total	81	87	65	62	21	23	9	348	

Note:

- 1) "Moved out" are households which were included in the 1997 census but not that of 2002.
- 2) "New" are households which did not exist in 1997 and were new in the 2002 census. Figures in parentheses are those of branched-out households.

other crossroads emerged at around 1.5-2ha due to the highly differentiated trend of medium-sized farmers, resulting in either move-outs, an accumulation of ≥ 3 ha large farmers, or that of smaller 1-1.5ha medium-sized farmers. The smallest < 0.1 ha also increased hhs.

So, what changed the structure from the former period? First, the increase in small hhs is due to the massive number of new settlers exceeding those having moved out, while the increased 19 hhs can be effectively explained by the multiplied branch-out families alone. Agricultural land could have increased its value as an asset

and facilitated more branch-outs with a piece of land diverting part of the use for a homestead. Secondly, competencies in both rice and other diversified products could have caused the structural change in medium- to large-sized farmers.

3. Trade in agricultural land use rights observed between 1997 and 2002

(1) Trade in land use rights

According to the interview in 2002, between 1997 and 2002, agricultural land use rights were mostly traded

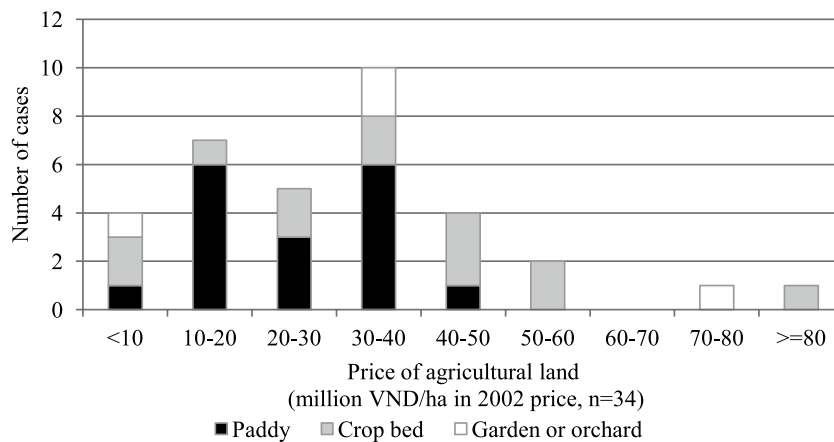


Fig. 2. Distribution of agricultural land prices Ex-Hoa Duc hamlet, 2002

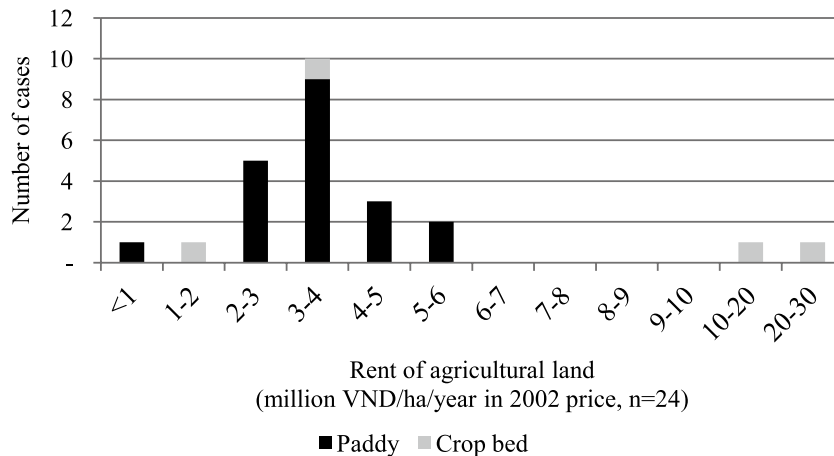


Fig. 3. Distribution of the agricultural land rent Ex-Hoa Duc hamlet, 2002

- 1) In case gold was used for land transactions, the local gold unit of cay or chi (1/10 cay) was converted to the Vietnamese dong (VND) by the following formulas: 1 cay or 10 chi (about 1 tael or 37.5 gram) of 24K gold= 4.81 (in 1998), 4.80 (1999), 4.72 (2000), 4.95 (2001), 5.92 (2002) million VND^{7,9,19,20}.
- 2) Rents paid in paddy rice with local unit of gia (=20kg) are converted into VND by the following formulas: 1/20gia or 1kg of paddy rice = 1.74 (1999); 1.56 (2000); 1.4 (2001) and 1.66 (2002) thousand VND^{7,9}. Paddy rents were usually paid in rice. An extraordinarily high rent, 36.4 million VND/ha/year, was paid by the son to his mother in gold in 2002 and this irregular data was omitted.
- 3) Above nominal price data are all converted into those of 2002⁷.
- 4) The average and median paddy prices are 24.7 and 26.3 million VND/ha (n=17), and the respective paddy rents are 3.6 and 3.8 million VND/ha (n=20).

between relatives or neighbours, some of which with middlemen. Mainly households in 0.5-3ha groups in 2002 had accumulated the land whereas those smaller than 2ha provided land by any sales or purchases, mortgaging or leases, hence there was a flow of land from the current smaller households to larger ones. As revealed by some of the answers, the majority of the agricultural land (6/11) was sold to repay debt, at a price cheaper than those sold for other reasons such as to gain capital for long-term investment or other immediate needs. This indicates reduced land size due to distress sales. Mortgaging of the land use right equally contributed to land accumulation

**Table 3. Number of parcels and distances
Ex-Hoa Duc hamlet, 2002**

Household size (ha)	Number of parcels	Distance
		km
<0.1	1.4	0.9
0.1-0.5	1.3	1.0
0.5-1.0	1.9	1.2
1.0-1.5	2.0	1.7
1.5-2.0	2.4	1.3
2.0-3.0	3.4	2.0
≥3.0	1.3	1.1
n	183	211
ave.	1.9	1.4
s.e.	0.1	0.1

Note: Distance is the sum of commuting distances from house to parcels.

as sales and lease-outs. The 0.5-1ha group was mainly renting paddies. (Data not shown)

(2) Land speculation

Figures 2 and 3 respectively show the distribution of price and rent of agricultural land, divided by paddy, crop bed and garden at the 2002 price level. The median paddy rent, 3.8 million Vietnamese dong per hectare (VND/ha), was 14.5% of that of the paddy prices, 26.3 million VND/ha. Since the rent to price rate exceeded both the bank saving interest rate of 6.4%¹⁸ and lending interest rate of 11.2% (n=156) or 9.1%¹⁸ in 2002, agricultural land had not been regarded as gaining asset value yet. But the median price of paddy land increased 1.5 times between the periods 1997 to 1999 (n=9) and 2000 to 2002 (n=8) from 21 to 31 million VND/ha, whereupon the planned renovation of national road 61 traversing the hamlet in preparation for the provincial restructure in 2004 triggered further expectations of a price hike. In fact one interviewee later informed us that he purchased agricultural land along the national road to build a new house in 1999, and sold a piece of it in 2004 at a price 20 times higher than that purchased in nominal terms. Moreover he purchased another piece of agricultural land in 2002 for speculation. Other cases included 3 hhs which kept a parcel of mixed garden 10 km from home. One of them purchased 0.5 ha in 2001 from a middleman to build a homestead and trade. These findings suggested that securing agricultural land in the early 2000s, especially along the national road, and by those with capital, involved implications of land speculation. At the studied hamlet, rice paddies were situated along the canals and

**Table 4. Indicators on major cash crops, rice, sugarcane and pig raising
Ex-Hoa Duc hamlet, 1997¹⁾ and 2002**

Household size (ha)	Harvest/ rice producer		Rice land/ cane land		Land utilization(%)		Hand tractor / total hhs(%)		Pig producers / total hhs(%)		Head/ pig producer	
	1997	2002	1997	2002	1997	2002	1997	2002	1997	2002	1997	2002
<0.1	1.0	-	1.0	-	100	-	0	0	17	11	1.5	2.1
0.1-0.5	1.1	2.0	1.2	4.1	127	169	0	1	37	24	1.8	2.0
0.5-1.0	1.7	2.1	2.1	5.2	136	176	1	0	52	32	3.3	3.6
1.0-1.5	1.7	2.1	3.1	5.7	142	181	2	2	66	44	3.3	2.9
1.5-2.0	1.9	2.1	1.4	5.5	135	177	0	0	67	43	4.7	3.1
2.0-3.0	1.7	2.3	2.5	5.7	136	187	4	9	58	48	3.1	3.1
≥3.0	2.0	2.4	4.2	3.4	163	177	14	0	29	67	5.0	5.0
All	1.6	2.2	2.2	5.1	139	179	1	1	45	30	3.1	3.0

1) Data of 1997^{19,20}.

2) Households (hhs)

3) Land utilization rate=total cultivated land size of rice paddy and sugarcane per year / total land size of the rice paddy and sugar cane*100

4) Pig number =breeders (sows) + fattening pigs

generally far from the main road, which tended to affect the land classified as mixed garden where homesteads were built. However severe restrictions on land use changes from rice production to non-agricultural purposes, as stipulated in the renewed 2003 land law, were considered a response to the national land speculation that prevailed.

(3) Feature of the accumulated land

Finally, Table 3 shows the distribution of parcels by land size groups as the result of agricultural land transactions. The average number of land parcels and the sum of commuting distances from home to the parcels tended to increase according to the land size by 3ha. The largest ≥ 3 ha group had rather consolidated land, an average of 1.3 parcels, and the shortest distance to the parcels, an average of 1.1 km. Because of the consolidated land they may have chosen to remain in the hamlet, while others may have released the fragmented land when the price climbed and moved out from there in search of better conditions.

4. Cash crop production in 1997 and 2002

(1) Land use for rice and sugarcane, and pig raising in the studied hamlet

Table 4 shows that the average number of annual rice harvests, rice to sugarcane cultivation rate and land utilization rate in 1997 and 2002 increased respectively from 1.6 to 2.2 times, from 2.2 to 5.1 and from 140 to 180% while the pig-raising rate decreased from 45 to 30%. This suggests a general trend toward rice mono-

cultivation, particularly observed in medium-sized farmers such as those with 2-3 and 1-1.5ha, who also own hand tractors. The largest ≥ 3 ha had the most rice harvests, but showed an apparently opposite trend of diversification. The rice to sugarcane rate decreased from 4.2 to 3.4 while the pig-raising rate increased from 29 to 67%.

In 2002, the hhs share of responses indicating that they employed temporary workers for tillage ranged between 60-90%, while the rate of hhs using machine for tillage per total hhs ranged from around 60-70% in the ≥ 0.5 ha groups. Both rates were proportional to land size except for the 2-3ha group that tended to utilize considerable family labour (data not shown).

The number of pigs raised per producer was generally small, 3 heads on average for both censuses. In 2002, the pig-raising rate became proportional to land size, hence landless or smaller land users reduced the rate of pig raising, but conversely increased the number of pigs per producer. The selection of pig holders might have proceeded in the period particularly for those lacking in resources such as capital and rice by-products utilized as feed.

(2) Change in product price

Fig. 4 shows the deflated monthly indices of rice and pig prices and annual sugarcane prices between 1995 and 2002. The pig price fluctuated in a 3- to 4-year cycle. The rice price also fluctuated while declining, then remaining low after 1999. The sugarcane price decreased between 1995 and 2000. The downward trend in crop sales prices required diversification of income sources. Although pig

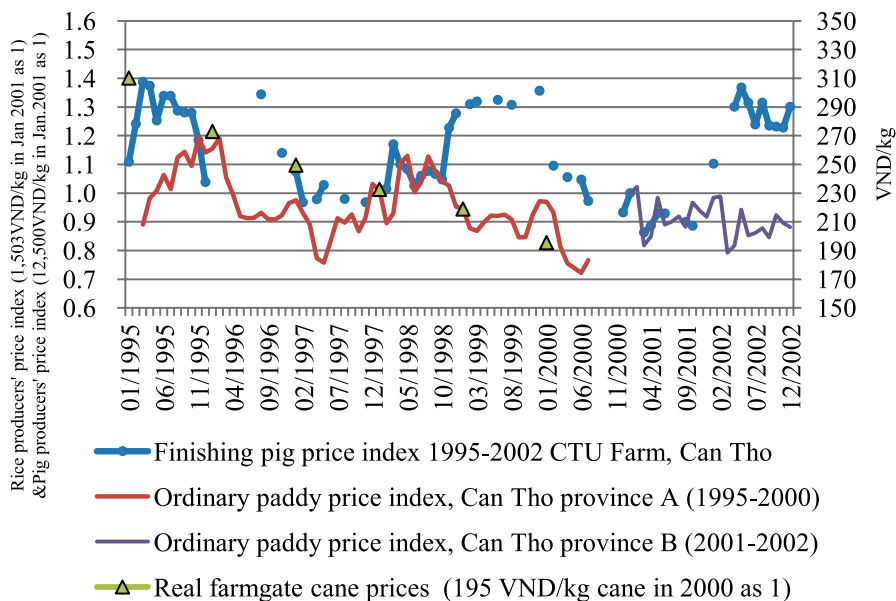


Fig. 4. Rice & pig real price indices (Can Tho province, 1995-2002) and real sugarcane price (Vietnam, 1995-2000)

Source: Paddy rice price: A⁹ and B¹⁴. Pig price from a farm in Can Tho province (1995 -2002). Indexed and deflated by CPI⁷. Sugarcane price data from Figure 5.10, p. 51³ and deflated by CPI¹⁸.

production was an option, the severe price fluctuation might have triggered selection pressure. The wide price gap between rice and pig in 2002 corresponds to findings indicating that larger farmers are raising pigs more frequently to utilize their relatively cheap and abundant by-products.

5. Credits and labour in 1997 and 2002

(1) Credits

Table 5 shows that initially, the use of individual lenders frequently observed in both small- and medium-sized hhs in 1997 had apparently decreased in 2002 and instead small hhs increased the bank access. This change can be deemed favorable, since individual lenders generally offer higher interest rates than banks.

Second, the farmers with 0.5 to 2ha land had the

Table 5. Households with loans and total loan size, and those having access to bank and individual lenders Ex-Hoa Duc hamlet, 1997¹⁾ and 2002

Household size (ha)	Loan/household		Households with loan				Bank				Individual lenders			
	1997	2002	1997	2002	1997	2002	1997	2002	1997	2002	1997	2002	1997	2002
<0.1	1.2	0.4	34	19	59	23	4	11	7	14	24	7	41	9
0.1-0.5	1.5	1.4	54	45	66	52	24	32	29	37	30	9	37	10
0.5-1.0	2.2	2.1	62	45	77	69	45	40	56	62	28	5	35	8
1.0-1.5	3.0	3.7	38	40	81	65	29	35	62	56	15	5	32	8
1.5-2.0	3.3	2.5	23	13	77	62	18	12	60	57	6	1	20	5
2.0-3.0	1.8	1.7	17	9	71	39	11	7	46	30	5	0	21	0
≥3.0	4.2	4.8	5	5	71	56	5	5	71	56	0	0	0	0
All	2.1	1.9	233	176	71	51	136	142	41	41	108	27	33	8

1) Data of 1997^{19,20}.

2) The loan size is in units of million Vietnamese dong (M. VND).

3) In case gold or paddy rice were loaned, the local unit of gold: cay or chi (1/10 cay) and that of paddy: gia (=20kg) were converted to VND by the following formulas:

1 cay (1 tael of 24K gold which weighs about 37.5 gram) = 10 chi = 4.81 million VND in 1997 or 1998, and 5.92 million VND in 2002^{7,9,19,20}.

1/20 gia or 1 kg of paddy rice = 1.66 thousand VND in 2002^{7,9}.

4) Households with loans include those with access to banks, individual lenders, relatives, mass organizations and projects.

Table 6. Number of family members and those of working age, by sex (1997 and 2002) Ex-Hoa Duc hamlet, 1997¹⁾ and 2002

Household size (ha)	Family, total			Family, 16-60yrs old			Family, total			Family, 16-60yrs old		
	1997	Women	Men	1997	Women	Men	2002	Women	Men	2002	Women	Men
<0.1	4.5	2.4	2.1	2.2	1.2	1.0	3.9	2.0	1.8	2.4	1.3	1.1
0.1-0.5	4.8	2.7	2.0	2.8	1.5	1.3	4.4	2.3	2.1	2.6	1.3	1.3
0.5-1.0	5.5	2.9	2.7	3.4	1.7	1.8	5.0	2.7	2.3	3.4	1.7	1.7
1.0-1.5	5.6	2.7	2.9	3.5	1.8	1.7	5.0	2.3	2.7	3.1	1.4	1.7
1.5-2.0	6.1	3.1	3.0	3.5	1.8	1.7	5.2	2.6	2.6	3.5	1.8	1.7
2.0-3.0	6.6	3.2	3.4	3.9	1.8	2.0	5.8	2.8	3.0	3.7	1.5	2.2
≥3.0	5.9	3.1	2.7	4.7	2.4	2.3	5.0	2.9	2.1	3.3	1.6	1.6
All	5.3	2.8	2.5	3.1	1.6	1.5	4.6	2.4	2.3	3.0	1.5	1.5

1) Data of 1997^{19,20}.

highest rate of bank use in both years: namely 77 to 81% in 1997 and 62 to 69% in 2002. The loan amount was next to the ≥ 3 ha: the 1.5-2ha had 3.3 million VND in 1997 and the 1-1.5ha had 3.7 million VND in 2002 respectively. Since the nominal and real bank interest rate decreased during the period under study¹⁸, it was assumed to reflect active investment in agricultural land, labour and inputs, rather than financial difficulties. Third, the ≥ 3 ha land users reduced their access to loans, although they had the greatest loans. They also increased the land size e.g. by investing in sugarcane land and diversified their production from rice mono-cultivation, utilizing the largest area of agricultural land as collateral.

(2) Family compositions

Table 6 shows the number of family members in 1997 and 2002 had slightly decreased from 5.3 to 4.6 on average. In both years, the 2-3ha was the largest, 6.6 in 1997 and 5.8 in 2002. At the same time, the ≥ 3 ha had reduced family members in working age from 4.7 to 3.3, most severely among groups. This finding is consistent with the increase in branch-out families and also suggests that diversification of the largest group could herald a trend requiring less family labour. In fact they were hiring temporary workers and using machine for land tillage more frequently than the other groups, as described in the previous chapter of crop production. In 2002, the group of medium-sized farmers, which showed a trend toward rice mono-cultivation, included more men than women, and large- and small-sized farmers, which had the largest pig herd or increased the herd, had more women in the family, especially those outside working age and preferring internal housework.

Conclusions

Each group of stratified households could be profiled as follows:

1. Households with < 0.1 ha land living on temporary work and non-farm business increased due to the family branch-outs; stimulated by the appreciation in agricultural land value;
2. Small-sized farmers with 0.1 to 1ha land intensified rice production, but reduced share of other cash crops. The 0.1-0.5ha lived on subsistent farming and other businesses, while the 0.5-1ha was at a crossroads, comprising both farmers expanding and losing land. Utilizing predominantly female labour at home, some intensified pig production;
3. Medium-sized farmers with 1 to 3 ha intensified rice production, but reduced the share of other cash crops. They utilized predominantly family male labour and machinery and expanded the area of paddy. The move-

outs of ≥ 2 ha farmers first emerged in the past 5 years: possibly due to the yield peaking due to land fragmentation and ascending land prices. The studied site is in an area with low fertility and the crops are more limited than elsewhere in the delta. Therefore the emigration of the 2-3ha farmers observed between 1997 and 2002 could have been an aspirational movement, e.g. seeking preferable agricultural land;

4. Finally, the large ≥ 3 ha farmers endowed with vast and consolidated land were able to acquire the greatest loan and diversified into capital-intensive businesses. They intensified rice production with multiple harvests requiring considerable input, and also diversified into less labour-intensive sugarcane production, alongside pig production utilizing redundant home resources. Since sugarcane was not an attractive product in view of its declining sales price by 2000, it might have been retained with an expectation of an appreciation in land assets in the near future.

Accumulation in both poles of the structure emerged in the last five years, but was affected by the factors other than competencies in agriculture. Competency in rice production remains the main factor differentiating small- and medium-sized farmers while there existed a ceiling at around 3ha due to land fragmentation. From the dynamics of medium-sized farmers in 1997, diversified products i.e. sugarcane and pig production seemed to have helped differentiate the farmers. The large farmers having remained in the hamlet were those who highly intensified and diversified their products; building on vast and consolidated land.

The census was undertaken at the very beginning of the land appreciation. Subsequently, the effect was limited to that facilitating family branch-outs and either move-outs or possession of consolidated land by large farmers. It tended to stimulate land transactions, yet did not limit transactions by competitive rice farmers.

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