Impact of Trade Policy on Farm Households in Vietnam: A Case Study of An Giang, Dong Nai, and Dak Lak Province

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ABSTRACT

Trade liberalisation has played an important role in many countries' economic development, especially in Asian countries. However, the empirics of the impact of trade liberalisation on poverty have largely provided a mix picture of the trade-poverty nexus; furthermore, the question of why farm households for the most part remain poor in many leading rice export developing countries has been unsatisfactorily answered. Recent perspectives have shown that the relationship between trade liberalisation and poverty is on the whole case- and country- specific. In this context, this paper aims to analyse the impact of trade policy on farm households through a case study of three provinces in Vietnam: An Giang, Dong Nai, and Dak Lak. The study was based on a survey of some 300 farm households conducted in the provinces in 2011, whose main farm activity is rice and coffee production, which provides Vietnam's two main export products. What makes the study different from some other studies of the same vein is that it attempts to explain the impact from farmers' perception of trade policy. The main findings are that the farm households endured the inadequate trade policy, and that the farmers with better knowledge of trade policy tended to be better off. Therefore, Vietnam should accelerate the process of trade policy reform to help poor households improve their standards of living.

JEL Classification: I32, O12, O17, O24, P36

Keywords: Trade policy, welfare, farm households, Vietnam, province.

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1 Introduction

Trade liberalisation is to a certain extent believed to stimulate economic growth, and economic growth benefits the poor on average. This is one of the commonly thought pathways that trade liberalisation impacts poverty. Historically, trade liberalisation used to be thought to be an engine of growth for many countries; moreover, the miracle of some Asian countries' economic development in the 1980s and the 1990s was supportive of the role of trade openness. However, the empirical literature on the relationship has, for the most part, been criticised for inadequate methodology or data (Rodrik & Rodriguez, 2001); furthermore, the fact that a considerable part of people in transition economies or liberalised developing economies remain poor has questioned the actual impact of trade openness on poverty. Actually, a country's context of trade reform is an important determinant of the impact (Pacheco-Lopez & Thirlwall, 2009); therefore, recent perspectives have shown that the relationship between trade liberalisation and poverty is largely case- and country- specific (Berg & Krueger, 2003; McCulloch, *et al.*, 2001b). More generally, Winters suggests a framework where trade liberalisation reaches households via four channels: Enterprise, distribution, economic growth, government revenue (Winters, 2002; Winters, *et al.*, 2004). The Winters framework is overwhelmingly positive economics and plausible for its adequacy in terms of pathways and institutions.

The Winters framework lays the foundation for several studies of the same vein for Vietnam. They primarily analyse the effects of price and employment on households and poverty, as these are most visible and direct in Winters's framework. Seshan (2005) examines the effect of trade liberalisation on poverty and income distribution in Vietnam's rice sector and fertiliser market between 1993 and 1998, and finds that trade reform can account for about half of the poverty reduction among farm households. Niimi, *et al.*, (2007) use a multinomial logit model to evaluate the impact of trade liberalisation on poverty dynamics and conclude that trade liberalisation reduced poverty considerably over the period 1993-1998. Glewwe *et al.*, (2002) and Justino *et al.*, (2008) employ the model of micro-determinants of growth to investigate the impact of price and employment on household welfare; moreover, they use the household panel data from

Vietnam over the period 1993-1998, and find that during the 1990s, Vietnam gained striking poverty reduction and trade liberalisation positively impacted poverty via the labor market channel. Furthermore, Coello *et al*., (2010) use a panel dataset of households followed in 2002, 2004, and 2006, and discover that working in an export sector has a positive impact on poverty. Generally, the above studies to a certain degree depict the positive impact of trade liberalisation on poverty; however, although based on more advanced methods and mighty datasets, they do not explain the reason why the majority of farm households in Vietnam remain poor.

Motivated by the Winters framework and case-specific approach, the primary objective of this study was to examine farmers' perception of trade policy in some specific contexts to provide insights into the impact of trade policy on farm households in Vietnam. It differs from previous similar studies in some aspects. *In the first place,* the study was based on a survey of farm households conducted in three provinces in Vietnam as a case study. *In the second place,* it aims to analyse farmers' perspective to demystify how they suffer from the impact of trade policy and whether better perception of trade policy affects welfare. The objective of the study was guided by the following research questions:

How inadequate is trade policy in An Giang, Dong Nai, and Dak Lak? And how do farm households suffer from such trade policy?
Does the perception of trade policy impact welfare of farm households?

The paper is organised into seven sections. After the introduction, Section 2 reviews some key theories of trade and development that guide the study. Section 3 overviews the production and distribution of rice and coffee in Vietnam. Section 4 explains the research methods and data. Section 5 descriptively analyses the survey data. Section 6 uses a model to analyse the impact of perception of trade policy on welfare. Section 7 concludes the paper and discusses some policy implications.

2. A Review of Literature on Trade Policy and Development

Several channels through which trade affects households and poverty have been recognized. These channels are theoretically and empirically examined by McCulloch, *et*

al., (2001b), Berg and Krueger (2003), Winters (2002), Winters *et al*., (2004), Nissanke and Thorbecke (2007), Harrison (2007) and Bandaralage (2009). Most notably, Winters suggests a framework where trade liberalisation impacts households and poverty via prices of tradeable goods, long-run economic growth, employment and government revenue. Trade liberalisation, according to Bannister and Thugge (2001), can impinge upon the vulnerability of an economy or subgroups within the economy to negative external shocks that could make households living just above a poverty line falling into poverty. However, McCulloch *et al*., (2001b) contend that the direct effects on poverty for many dimensions of trade liberalisation are negligible.

Among the four pathways in the Winters conceptual framework, the effects of price and employment stand out as relatively direct and testable; hence, they draw many researches' attention. Trade liberalisation and price are closely related, because more often than not prices of tradeables link up with world prices. Trade policies, be it open, close or neutral are used to adjust the process of transmitting world prices to domestic consumers, and vice versa. Price transmission greatly influences households, especially the poor. In reality, an economy has many stages between the borders where trade policy implements and final consumers or the poor in particular that make prices of goods fluctuated. In this process, trade policy can cause price distortion, resulting from trade monopoly, distributional channel, transaction cost, and transportation cost (Winters, *et al.*, 2004).

Furthermore, McCulloch, *et al.*, (2001a) point out two factors that can block price transmission. *First*, weak infrastructure can attenuate or block price transmission due to high transport costs; therefore, remote poor households are insulated from the price effect of trade policy (Winters, *et al.*, 2004). *Second*, the changes in domestic marketing arrangements can isolate farm households from the market owing to the elimination of market institutions that makes them suffer substantial income losses. Moreover, Winters *et al*., (2004) observe that in the case of a market dominated by some sole state purchasers of export crops whose business strategy is deliberately to isolate farmers from world price changes, trade policy is totally ineffective for farm households; furthermore, the issue of price transmission is most important in agriculture where many export crops, especially those of small farmers are sold via state or private agents at prices far less than the free-on-board export prices. Therefore, the above issues of price transmission as a result of a

trade policy can explain why the majority of farm households in some developing countries are on the whole still poor, albeit the countries could be opening and leading rice exporters. Vietnam is one of the leading rice exporters in the world; however, the majority of farm households remain poor due to the inadequacy of trade policy, which is further elucidated in the next section.

3. Overview of Rice and Coffee Market in Vietnam

The inadequacy of trade policy impinging on farm households primarily lies in Vietnam's internal trade system. This section therefore overviews the markets in rice and coffee. Since initiated its transition from a centrally planned to market-driven economy in 1986, Vietnam has been struggling to reform its centrally planned trading system. However, the repercussion of the centrally planned economy has been still affecting the current performance of the market-based economy; for instance, typically inefficient state-owned enterprises legally play a leading role in the economy and receive a great deal of economic rent. Analogously, state-owned enterprises are legitimately the main rice exporters; furthermore, a high degree of state interventions, such as food security, export quotas and licenses, and cumbersome customs procedures could reduce the efficiency of the markets and income from rice and coffee, especially for farmers. Both rice and coffee are Vietnam's strategic exports, but each has its own characteristics of trading.

Mekong River Delta is the biggest rice production area in Vietnam, which produces the majority of export crops. According to the United States Department of Agriculture (USDA)'s GAIN report, Mekong River Delta accounted for half the Vietnam's paddy production in the marketing year 2011/2012 (USDA, 2012b). The rice market in this region is thus more typical than other rice markets in Vietnam, such as Red River Delta or the Central region. Generally, main participants in the rice market are farmers, private merchants, and rice exporters who are primarily state-owned food enterprises and may get the most in the agricultural value chain. Hai (2002) observes that private merchants are very diverse, including paddy private assemblers, private wholesalers, private rice millers or polishers, private retailers… According to Young *et al*., (2002), on average, about 96.5 percent of rice farmers in Vietnam sold paddy crops to traders, not to rice exporters; furthermore, export prices were typically twice as much as farm gate prices. Therefore,

the existence of numerous rice intermediaries is typical of the rice trading system in Vietnam.

Moving onto the coffee market, Vietnam is amongst the leading coffee producers in the world, with coffee export output reaching 1.26 million metric tons of coffee beans in the marketing year 2011/2012 (USDA, 2012a). Robusta is the main coffee crop in Vietnam, accounting for about 90 percent. Contrary to rice cultivation, coffee cultivation only suits some highland areas and temperatures, such as Buon Ma Thuot, Dak Lak, Bao Loc, and Lam Dong province which specialise in growing coffee. In common with rice production, coffee is consumed both in domestic market and export market. Main participants in the coffee market are farmers, middlemen or agents, processing or export companies, and domestic retailers. According to Roldan-Perez *et al*., (2009), agents and middlemen bought approximately 90 percent of coffee output. Unlike the rice market, the coffee market is more liberalised with the participation of a wide range of companies, from private to state-owned enterprises. Therefore, the presence of a great deal of trading intermediaries is a common characteristic of the two markets, which is rightly the inadequacy of Vietnam's trade policy that could substantially attenuate farmers' income and make poor farm households unchanged or worse off. This feature is further demystified in the next sections which analyse farmers' perception as well as endurance of the trade policy through a survey of farm households in An Giang, Dong Nai, and Dak Lak province of Vietnam.

4. Research Methods and Data

4.1 Study Provinces

With the aim to provide insights into how farm households suffer from trade policy to explain why farm households remain poor on the whole, the study sites should be regions that farmers at least involve in trading. The survey therefore focuses more on trade policy's effects than on poverty; hence, it does not necessarily comprise all the regions in Vietnam. In other words, the survey fields should be dominated by or at least involved in trade activities, and should contain some contrastive characteristics; moreover, they are selected in a way to allowing comparisons between regions in terms of trade system, welfare, and perception of trade policy. By the same token, the study chose 3 provinces in

Vietnam to conduct the survey, with each covering some 100 households: An Giang, Binh Duong and Dak Lak. These provinces contain some differences in economic development and trade policy as explained in what follows.

An Giang province

An Giang is in the Mekong River Delta region, the south-west of Vietnam. Located about 190 kilometres from Ho Chi Minh City, An Giang had an area of 3,536.8 square kilometres, with a population of about 2,273,150 people. Agricultural land accounts for the largest area (approximately 281,862 hectare), of which 82 percent were dominated by rice farms. Most of areas in An Giang are relatively flat and criss-crossed by networks of canals, irrigation channels, and small rivers. In 2010, An Giang's Gross Domestic Products (GDP) per capita was estimated to attain US$1,141, a little lower than the national GDP per capita.[1] Its export value was more or less US$700 million, with two biggest export earners: Rice and seafood; furthermore, its poverty rate fell from 13.15 percent in 2006 to 9.16 percent in 2010. An Giang's Provincial Competitive Index (PCI)[2] in the same year was 61.73, ranked 15th in total 64 provinces of Vietnam. Therefore, An Giang is best representative of a big rice export region with disadvantageous infrastructure.

Dak Lak province

In common with An Giang, Dak Lak is basically an agricultural province. It is the largest province in the Central Highlands of Vietnam. Dak Lak had an average population of 1,910,000 in 2010, residing in an area of 13,125 square kilometres. Located about 350 kilometres from Ho Chi Minh City, Dak Lak's economy largely relies on agriculture and forestry with coffee cultivation the dominating activity. About 82.64 percent of the area were for cultivation and agricultural land accounted for 26 percent of the cultivatable area. In contrast to An Giang, Dak Lak is a highland region with hills and mountains. In recent years, Dak Lak's GDP annual growth has averaged 11.9 percent and GDP per capita achieved US$794.973 in 2010[3], which was rather low compared to the national GDP per capita. Its export value obtained US$ 620.229 million in the same year, with

[1] Vietnam's GDP per capita in 2010 was 1,174 USD (IMF, 2012).

[2] The Provincial Competitive Index (PCI) was built by the Vietnam Chamber of Commerce and Industry (VCCI) and the project for Vietnam Competitiveness Initiative (VNCI) in 2005 to assess and rank business environment and private sector development policy across provinces in Vietnam, in the light of differences in geography, infrastructure, market size, local administration,...It is one of the best indexes to represent the provincial level of openness.

[3] This indicator was estimated by using the IMF's exchange rate of 19,498 dong per USD in 2010 (IMF, 2012).

coffee the main export commodity. With nearly 111,000 households climbing above the national poverty line each year, the poverty rate has fallen to just 10.34 percent in 2010; furthermore, Dak Lak's Provincial Competitive Index in 2010 was 58.32, ranked 32th. Therefore, coffee export and the highland characteristic make Dak Lak distinct from An Giang and Dong Nai.

Table 1: Some socio-economic indicators of An Giang, Dak Lak and Dong Nai-2010

Indicator	An Giang	Dak Lak	Dong Nai
Area (square kilometre)	3,536.76	3,536.8	5,907.236
Population (1000 people)	2,149.5	1,910	2,569.442
GDP growth (percent)	10.12	12.2	13.5
GDP per capita (US$)	1,141	794.973	1,542.6
Export (million US$)	700	620.229	7,546
Poverty rate (%)	9.16	10.34	2.93
PCI/PCI ranking	61.94/15th	57.2/32nd	59.49/25th
Main export commodities	Rice	Coffee	Manufactures

Source: Statistics Office of An Giang, Dak Lak and Dong Nai.

Dong Nai province

Quite differently from An Giang and Dak Lak, Dong Nai is a typically industrial province with virtually perfect infrastructure. It is located in the south-east of Vietnam, adjacent to Ho Chi Minh City; moreover, it had a natural area of 5,907.236 square kilometers and a population of about 2,569,442 in 2010. Dong Nai's GDP grew to 13.5 percent in 2010, with GDP per capita being US$1,542.6. Its economy's structure was dominated by industry with the industrial share in GDP being 57.2 percent, compared with 34.2 percent of service and 8.6 percent of agriculture; furthermore, its export turnover was US$7,546 million in the same year. Dong Nai was one of the wealthy provinces with the poverty rate being 2.93 percent at the end of 2010. In addition, Dong Nai's Provincial Competitive Index was 59.49, ranked 25th. Intuitively compared with An Giang and Dak Lak, industry and trade considerably contributed to Dong Nai's economic development.

In sum, the survey was conducted in the fields where trade policy was most likely to affect farm households' production. The provincial characteristics of economy, geography, and society do not invariably mirror the status quo of farm households. Rice and coffee are main export products and farm households involving in rice and coffee production probably suffer most from trade policy. Differences in infrastructure, export commodity, trade performance should tell differently interesting stories of trade policy and poverty across the provinces.

4.2 Sample and Sampling Frame

The scope of the survey confines to evaluating the effects of trade policy from farmers' point of view, it does not attempt to examine the effects of trade policy on the economy as a whole. Furthermore, farm households owning and cultivating land are the study's units of analysis, as they engage in trade-related activities and are largely the poor in Vietnam.

The underlying assumption of the study is poor households are much likely farm households; moreover, the impact of trade policy on a household is the same for every individual within the household. In terms of the sampling frame, a non-random sample of about 300 households was drawn from the local administrative list of households. As discussed previously, the reason for the non-random sample is that the purpose of the research was to examine farmers' perception and endurance of trade policy; therefore the survey should be directed at farm households who are cultivating their lands and rural or suburban areas where farm households mostly involve in trading crops, as these are the priority concern.

4.3 Design of Questionnaire

The design of the protocol for the survey was grounded on the purpose of the study, the literature on survey methodology, Vietnam Household Living Standards Surveys,[4] peers' advice, and Vietnamese farmers' general level of education. In addition to the mainstream of the protocol, the survey also proposed to pay attention to gathering other opinions if any in order to support the study's analysis later. The final questionnaire covered 39 closed and open-ended questions and six pages in length. This kind of protocol can get

[4] This is a series of national household surveys, conducted by Vietnam General Statistics Office (GSO), with the technical auspices of the World Bank.

more information aside from the mainstream questions in the form of field notes; nevertheless, it really consumed more time for an interview and the data process to categorise opinions. Besides, to measure farm households' evaluation of some issues, a ten-point rating scale, which ranges from 1 (the lowest) to 10 (the highest), was used to quantify their opinion. As a matter of fact, Vietnamese farmers are very familiar with this assessment scale from the years of school.[5]

4.4 Fieldwork

Having designed the questionnaire, the next stage was to go to the selected provinces to plan the fieldworks. The participants were anonymously chosen from the local administrative list of households, and the survey was then conducted by directly interviewing farm households. The face-to-face method was really time-consuming and costly; furthermore, some interviews were not successful as the chosen farm households had little or no knowledge or they gave biased information. To increase data quality, much more time was therefore needed to evaluate and double check the questionnaire information, by contacting them again for more information. The survey collected 329 questionnaires with the relatively complete information.

On the whole, the survey procedure can help the study with reliability and validity; however, it can hardly be generalized due to the non-random sample. Moreover, the survey likely faces two shortcomings. *Firstly*, it cannot capture the whole impact of trade policy, primarily due to the limitation of farmers' knowledge. Vietnamese farmers are generally low educated, especially those living in remote areas; thus, they do not know or care much about government policies as well as Vietnam's socio-economic issues. Therefore, on the one hand this could attenuate the quality of their responses; however, what surveyed farmers tell are true stories on the other hand. *Secondly*, the survey considered farm households as units of analysis, and it paid less attention to every individual in a household; hence, the data do not capture details of individuals. Despite the data quality concerns, the survey in fact amassed a great deal of useful and interesting information, which are analysed in the next section.

[5] The ten-point grade is universally used in Vietnam's educational system to assess study.

5. Descriptive Analysis of Survey Results

The survey focused on two main export products in Vietnam: Rice and coffee. Of 329 surveyed farm households, about 40 percent were from An Giang (*Table 2*). As aforementioned, An Giang is one of the biggest rice production provinces in Vietnam; thus, it was predicted to contain rich information about rice production and business. Dong Nai and Dak Lak accounted for 60 percent of the sample, equally divided between the two. Differently, coffee is the main product in Dak Lak, where coffee export accounts for a considerable proportion in Vietnam's total coffee export.

Table 2: Households' main production in An Giang, Dong Nai, and Dak Lak (%)

	Total	Paddy	Coffee	Cashew	Pepper	Fruit	Corn	Vegetables
An Giang	39.8	38.6	0	0	0	0.6	0	0.6
Dong Nai	30.4	24.9	0	1.5	1.8	0	1.8	0.3
Dak Lak	29.8	0	29.8	0	0	0	0	0
Total	100	63.5	29.8	1.5	1.8	0.6	1.8	0.9

Source: The survey data

Beside paddy or rice as the main crop, the farmers in An Giang and Dong Nai also grew cashew, pepper, fruit, corn, and vegetables, all of which are exportable, especially cashew, pepper, and some fruit; however, they are not Vietnam's main export products. The data therefore captured the main productions on which trade policy can impact. The analysis of the data in the following sections concentrates on some important aspects of trade policy understood by the surveyed farmers.

5.1 Income and Expenditure

Coffee production might be more productive than rice production, as Dak Lak had the highest average expenditure per capital amongst the surveyed provinces. Engaging in farming accounted for 80 percent of the farm households' source of income; furthermore, the proportion of the farm households earning a living from farming and extra works was highest in Dak Lak, and lowest in Dong Nai (*Table 3*).

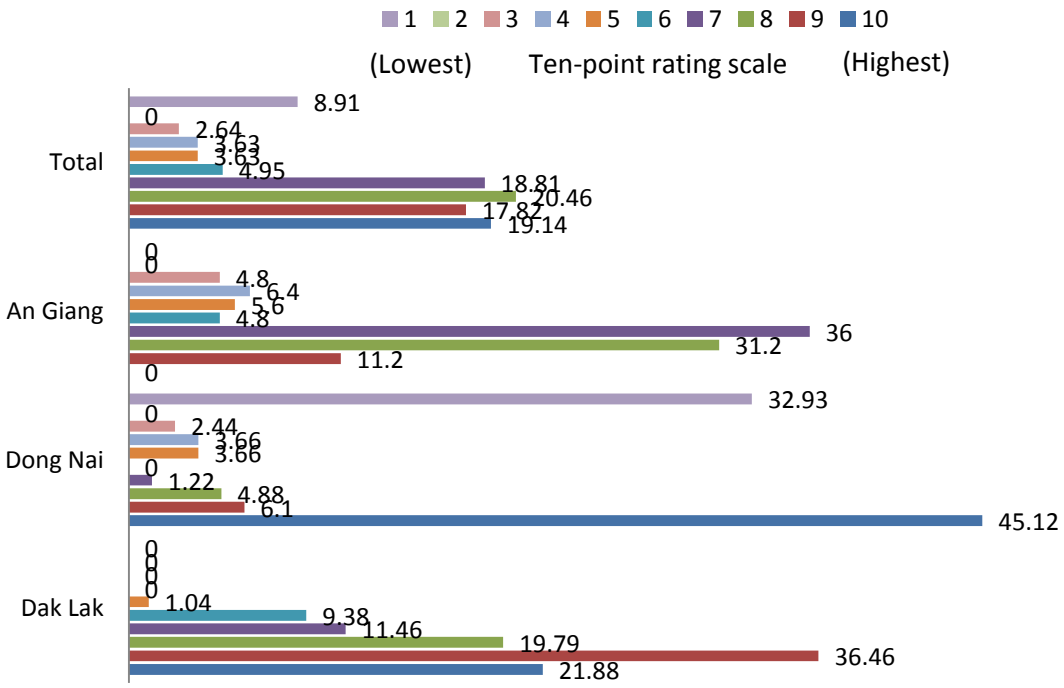
Table 3: Surveyed households' per capita expenditure and sources of income

	Total	An Giang	Dong Nai	Dak Lak
Average per capita expenditure (mill. VND)	10.6	9.6	6.6	16.0
Main income sources (%)	100	100	100	100
Farming	79.9	80.2	92	67.3
Farming and extra work	17.6	13.7	8	32.7
Others	2.4	6.1	0	0

Source: The survey data

If combined with the status quo of education where the respondents in Dak Lak were better educated (*Table A2* in Appendix), then higher educated people did not rely solely on farming; rather, they were highly capable of finding extra jobs. Creating additional jobs in rural areas is the effective way to help farm households to improve income in the low productive agriculture.

Figure 1: Surveyed farm households' estimation of sugar price change (%)



Source: The survey data

Inflation has been a big concern for poor households in recent years. The increasing prices of goods and services, especially food staples significantly reduce their little

income. Among the causes of inflation, the change in sugar price stands out as particularly noteworthy in Vietnam. Sugar used to be one of some strictly protected commodities; however, the sugar industry has still been proved inefficient despite the government's long and exacting supports to increase its competition. Consequently, Vietnamese suffered high and frequently fluctuated sugar prices. Not surprisingly, the surveyed farm households have seen sugar prices change strikingly in the last decade (*Figure 1*). Therefore, the performance of the sugar industry is an instance of the inadequacy of Vietnam's trade policy which impinged on household welfare.

5.2 Agricultural Production

Among the inputs into agricultural production, fertiliser typically accounted for about 60 percent, following by the cost of seed (about 16 percent on average) (*Table A5*). Thus fertiliser was, *inter alia*, a crucial factor making up rice productivity. A farmer may use several kinds of fertiliser, of which NPK (Nitrogen, Phosphorus, Potassium) and Kali fertiliser are mostly needful. Nevertheless, the prices of these fertilizers were highly fluctuated. *Table A5* demonstrates that the ratio of the difference between the highest price and the lowest price, or the range to the average price of NPK can reach 97 percent, especially in An Giang and Dong Nai, where farmers might mostly need fertiliser for rice crops; moreover, the ratio for Kali and other fertilisers can exceed 100 percent. As a matter of fact, Vietnam still imports some fertilisers due to the limited and unstable supply of the domestic fertiliser production. Therefore, farmers frequently endure the government's mismanagement of fertiliser import which brings about fertiliser supply shortage and a hike in fertiliser prices. Consequently, the rise in agricultural production cost substantially affects poor farm households.

Fertiliser was almost the farmers' leading concern, especially at the beginning of a crop. The change in fertiliser price strongly impacted them, as their average assessment of the level of fertiliser price change is 9.7 (*Table 4*); moreover, the purchase of fertiliser was not always easy to many, as their estimate of the difficulty in access to fertiliser purchase is 7.1. When being asked about the possible difficulties in buying fertiliser, nearly 99 percent of the respondents quoted high price as the main consideration when deciding to buy fertiliser; moreover, extreme price fluctuation was also quoted as a big impediment to fertiliser purchase.

Table 4: Surveyed farm households' remark on access to fertiliser

	Total	An Giang	Dong Nai	Dak Lak
Perception of fertiliser price change[1/]	9.7	na	9.8	9.7
Access to fertiliser purchase[2/]	7.1	6.3	6.5	8.7
Reasons for possibly difficult access (%)				
Shortage supply	2.4	5.3	1.0	0
High price	98.8	95.4	100	100
Import limitation	0.3	0.8	0	0
Low quality	2.7	6.1	0	0
Unreasonable market	2.7	6.8	0	0
Other reasons[3/]	3.0	0	10	0

Note:
1/ The perception of fertiliser price change ranges from 1 (lowest) to 10 (highest) using a ten-point rating scale. This question was not in the questionnaire for An Giang, and just added later to the questionnaire for Dong Nai and Dak Lak.
2/ The access to purchasing fertiliser ranges from 1 (most difficult) to 10 (easiest) using a ten-point rating scale.
3/ Other stated reasons included high price fluctuation; unstable market price; extreme price fluctuation; too high price fluctuation; unexpectedly up-and-down market price. These opinions were patchy.
Source: The survey data

When evaluating profitability in agricultural business, almost all the farmers in An Giang and Dak Lak stated that their agricultural production was profitable. However, the number of farm households in Dong Nai being reported to be profitable only accounted for 32.5 percent. The data may suggest that access to production resources is apparently not equal among farmers.

Table 5: Surveyed farm households' evaluation of agricultural business

	Total	An Giang n=126	Dong Nai n=80	Dak Lak n=92
Perception of profit (%)				
Profitable		100.0	32.5	100.0
Not profitable		0.0	67.5	0.0
Average real price		6,202.8	5,915.0	49,243.5
Average desired price		7,250.4	7,530.0	57,630.4
Average percentage change (%)		15.9	27.3	17.1

Source: The survey data

Besides, the difference between the average crop price that the farmers desired to sell and the price they actually sold was considerable, with the average percentage change being about 16 percent in An Giang, 27 percent in Dong Nai, and 17 percent in Dak Lak (*Table 5*). Therefore, although reported to be profitable, the farmers might not get benefits as they desired. In sum, the data suggest that agricultural production in Vietnam was unsustainable. Prices of fertiliser, the main input into agricultural production were perceived to be very high and extremely fluctuated, whilst rice and coffee crops were sold at lower prices than were thought. Hence, the profit the farmers received might not be corresponding to what they deserved. In reality, the convoluted distribution of crops was a cause for the issue.

5.3 Crop Distribution

The surveyed households had almost no idea about the rationale for selling their crop. About 84 percent of the respondents sold crops for the reason of convenience, and this ratio was highest in Dak Lak (*Table 6*). Other reasons recognised such as urgent need of money, no choice, cash payment, suggest that the crop distribution was totally unorganised. Furthermore, some surveyed farmers stated that state food companies, the chief rice exporters never bought crops direct from them; rather these companies only purchased crops from private merchants or rice agents.

Table 6: Reasons for selling crops

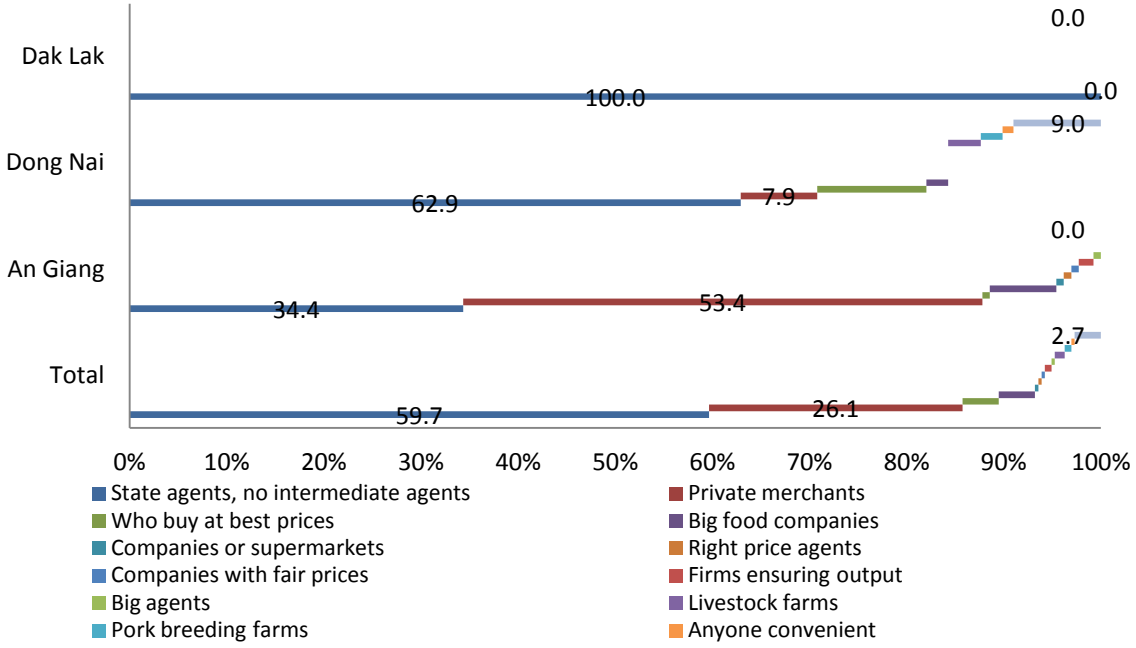
	Total	An Giang	Dong Nai	Dak Lak
Urgent need of money	41.9	37.4	58.0	31.6
Convenience	83.9	74.0	83.0	98.0
No choice	15.5	21.4	23.0	0.0
Other reasons[1/]	1.8	4.6	0.0	0.0

1/ These stated reasons were: Good price; state firms only bought export paddy, not farm gate paddy; no state agent; cash payment.
Source: The survey data

Therefore, the farmers' decision to sell a crop was unsurprisingly unprompted, and their main concern was somehow to get money as soon as possible. Furthermore, the survey data suggest that they for the most part desired to sell crops to state food enterprises, believing that they could get most returns via this distributional channel (*Figure 2*).

However, in reality, seldom did state food companies who are the main legitimate rice exporters buy crops direct from farmers to export; hence, the famers had no choice but to sell private merchants crops, as all the respondents reported that they traded with private merchants who almost altogether controlled this stage in the agricultural value chain; moreover, by nature private merchants always find the ways to lower price as much as possible to squeeze farmers' profit. The existence of a variety of trading intermediaries mirrors the poor trading system for two of Vietnam's leading export commodities. As a consequence, despite the fact that the world rice price tends to be increasing and Vietnam frequently comes first or second in rice export in the world, farm households in Vietnam typically remain poor.

Figure 2: Surveyed farm households' desired distributional channels to sell crops



Source: Table A8 (Appendix)

In the last three years, rice and coffee have seen their prices change enormously; rice price from about 42 percent to about 52 percent and coffee price approximately 151 percent (*Table 7*). To further examine farmers' perception of the fluctuation of the rice or coffee market in Vietnam, the farmers were asked to explain the reason why price of rice or coffee was lowest within the last three years. The options offered for this question focused on market factors, export, trade policy and open responses.

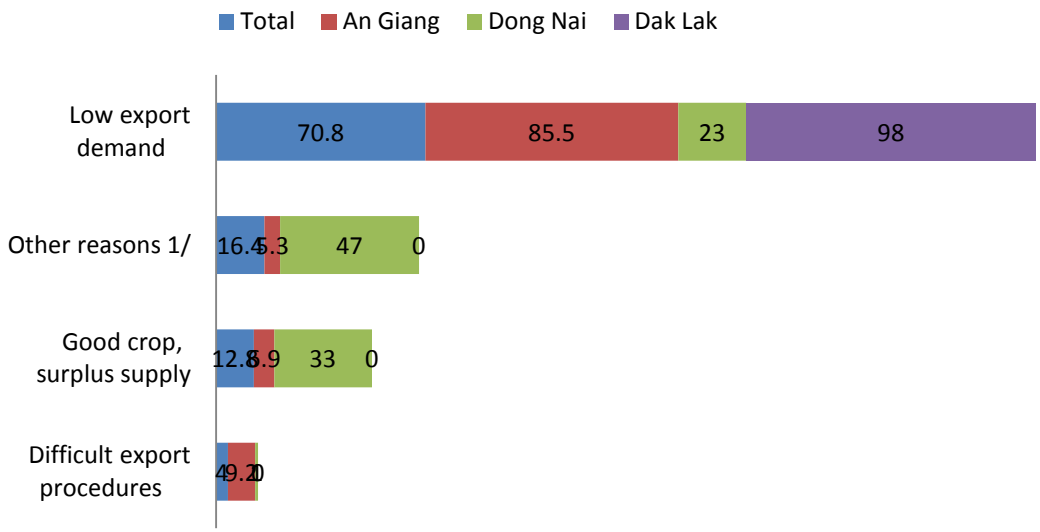
Table 7: Rice market fluctuation

	An Giang	Dong Nai	Dak Lak
The lowest price in the last 3 years (VND, average)	4,146.0	3,856.2	14,076.9
The highest price in the last 3 years (VND, average)	6,425.4	5,567.9	49,384.6
Price change (%)	51.9	42.3	150.8

Source: The survey data

The data suggest that export demand played a crucial role in rice and coffee production, especially in An Giang and Dak Lak (*Figure 3*). Notably however, the farmers in An Giang recognised the difficulty relevant to export procedure as a reason for the lowest rice price over the last three years.

Figure 3: Reasons for the lowest price in the last three years (%)



1/ These reported reasons were: Firms could not borrow from state banks, so they had no plan to purchase; too many agents; private merchants' unfair prices; low quality paddy and rice; surplus supply when harvesting; low inflation; food security; unstable market price; private merchants' purchases; price fluctuation or due to market prices; not many livestock farms; no idea; unknown.
Source: The survey data

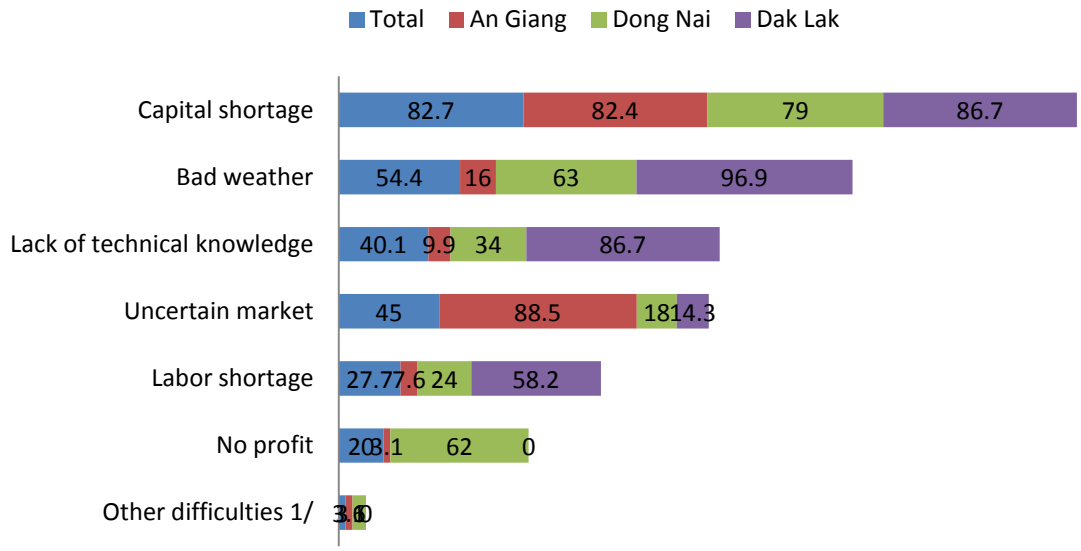
As a matter of fact, rice export shipment was occasionally delayed due to export procedure, and the halt in rice export might cause difficulties for farmers at the upstream of the rice supply chain. The mismanagement of rice distribution and export, such as unplanned procurement and storage of rice, poor market forecast, and customs procedure actually hampered rice production and export, and lowered rice quality and farmers'

profit. In addition, the inadequate trade policy might also result in other identified difficulties in agriculture.

5.4 Perceived Difficulties in Agricultural Production

Capital was the farmers' leading concern, as more or less 80 percent of the respondents quoted capital shortage as the chief difficulty in agricultural production (*Figure 4*). In addition to lacking capital, labor shortage could curb agricultural production. The data show that labor shortage considerably concerned the farmers in Dong Nai and Dak Lak because people, especially the younger probably preferred working in manufacturing factories to improve their income or migrating to urban areas to look for better opportunities.

Figure 4: Identified difficulties in agricultural production (%)



1/ Other identified difficulties were downgraded lands due to continual production; lack after-crop technique; high input prices; no drying yards; land shortage; increasing population; small profit; high fluctuation of fertiliser and bio protection drugs; low quality paddy.
Source: Table A6

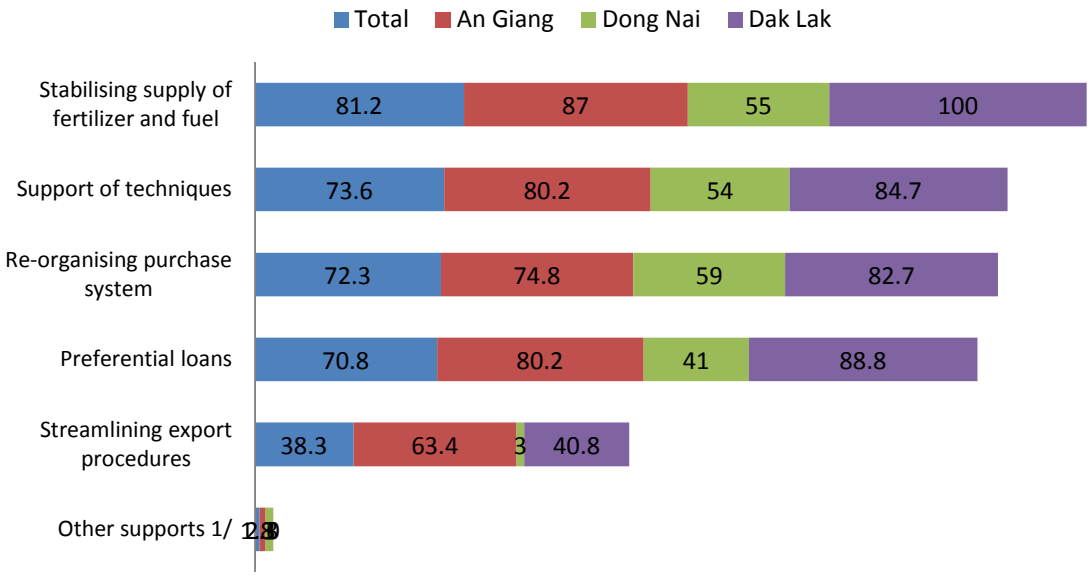
Most of the farmers in Dong Nai claimed that they did not profit from agricultural production. For those in Dak Lak, coffee production relied substantially on weather. Most importantly, more than 88 percent of the respondents in An Giang stated that rice market was unpredictable; hence the uncertainty of rice market suggests the unsustainable development of agriculture in Vietnam. Besides, the majority of the famers in Dak Lak

said that they lacked technical knowledge of coffee production. In short, the difficulties facing the farm households reveal the inadequacy of Vietnam's internal trade system and agricultural development and lead to a great appetite for supports from government.

5.5 Desired Supports from Government

Based on the perceived difficulties in agricultural production, the farmers had the desire for diverse supports from the government, of which special lending, organization of purchase system, stabilisation of fertiliser and fuel market were most crucial. About 80 percent to 90 percent of the respondents in An Giang and Dak Lak desired to have access to a preferential bank loan, whereas those in Dong Nai did not need that much (*Figure 5*).

Figure 5: Surveyed farmers' desired supports from government (%)



1/ Other desired supports consisted of building local rice storages; market-driven regional planning; providing poor households with seeds; banks' too small lending quota for agriculture; no comment.
Source: Table A10

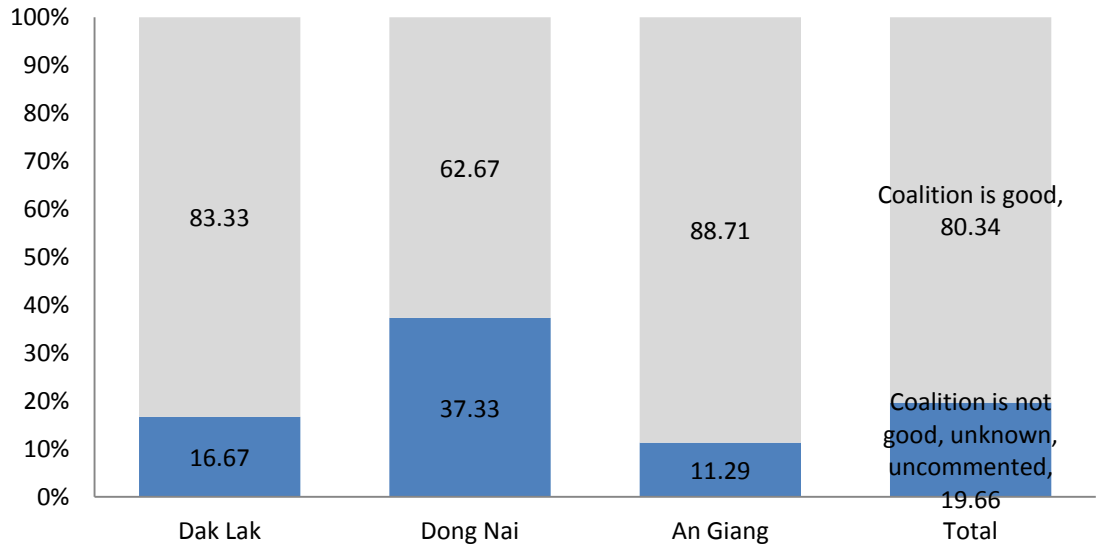
Moreover, the farmers in An Giang and Dak Lak also recognised the importance of smoothing export procedures for rice production, as they might have experienced the bottleneck on crop distribution because of delayed export shipment. As opposed to An Giang and Dak Lak, customs procedures little concerned the Dong Nai farmers since the scale of agricultural production in Dong Nai was relatively small and simple, and rice crops were primarily for home consumption. Besides, more than 70 percent of the

respondents considered that the existing procurement of rice and coffee needed to be re-organised, as they regularly sold crops for unfair prices. In addition to supports desired to facilitate output market, more than 80 percent of the respondents also hoped to stabilise the supply of fertiliser and fuel, the main input into agricultural production; furthermore, they really needed the support of agricultural technique to increase productivity. In a nutshell, the desired supports perceived by the farmers suggest the poor management of agricultural input and output markets and accelerating trade reform is essential to make them more efficient.

5.6 Perception of Coalition of Farmers, Enterprises, Banks, Scientists, and Government

Vietnam government has initiated a coalition of farmers, enterprises, banks, scientists, and authorities in order to support farmers. In this combination, enterprises are responsible for output distribution and export; banks for financing and providing banking services; scientists for supporting cultivation techniques; and authorities for generally coordinating the coalition. It is believed to be the key to sustaining agricultural development. The respondents on the whole thought highly of its role in supporting farmers (*Figure 6*).

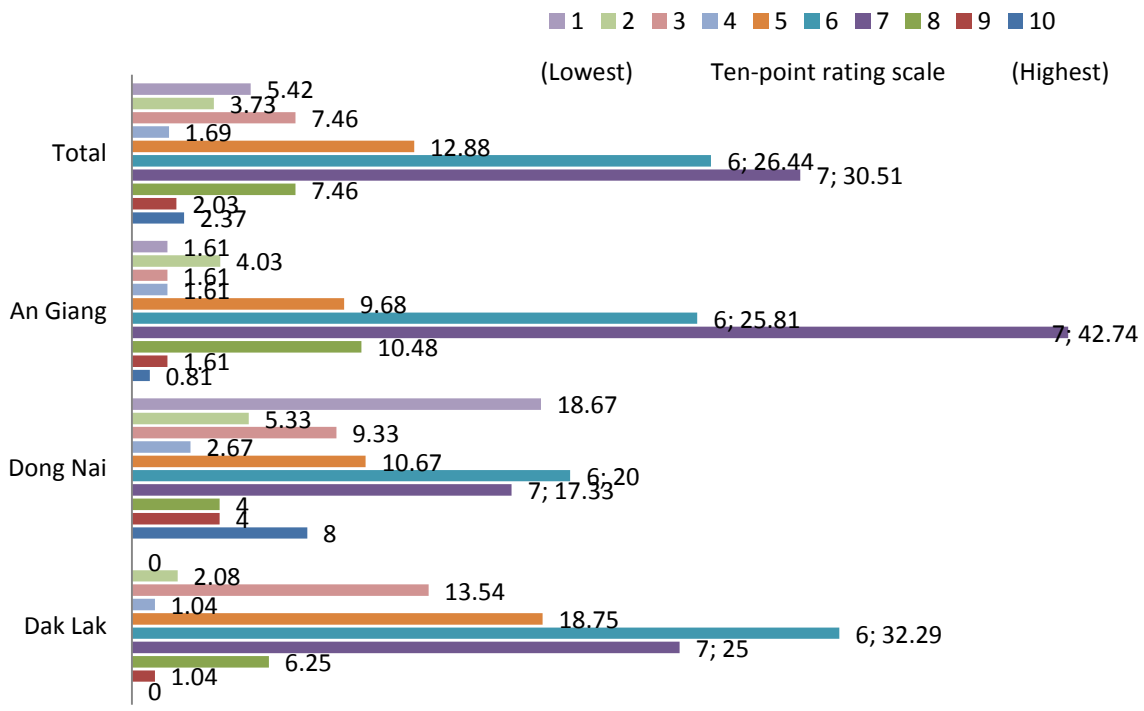
Figure 6: Surveyed farmers' overall perception of the coalition



Source: The survey data

Nonetheless, the coalition was in fact more form than content. *Figure 7* and *Table A9* indicate that in the farmers' evaluation of the coalition using a ten-point rating scale, the average and mode mark was 5.7 and 7 respectively. For further details, whilst the respondents in An Giang gave it the highest mark, those in Dong Nai found it least useful; moreover, not many surveyed farmers knew of the coalition for its dim role in helping farmers or the farmers' low knowledge. In addition, the farmers especially those in Dong Nai who gave their opinion of the coalition claimed that there existed almost no coalition, or its existence, if any, was seasonal and far more form than content. Furthermore, they downgraded its role because the coalition failed to control rice prices; to provide farmers with access to agricultural policy and information; to help farmers to have access to formal bank loans; and to forge a close relationship with farmers. In sum, the faded function of the coalition is the key to understanding the inadequate trade policy in agricultural development.

Figure 7: Surveyed farmers' evaluation of the coalition



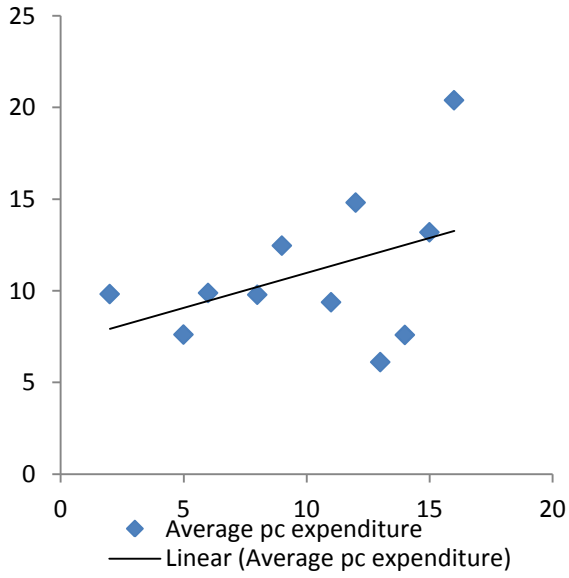
Source: The survey data.

To further elucidate the farmers' evaluation of the coalition in relation to their knowledge and welfare, *Figure 8* provides a preliminary estimate of the correlations between the

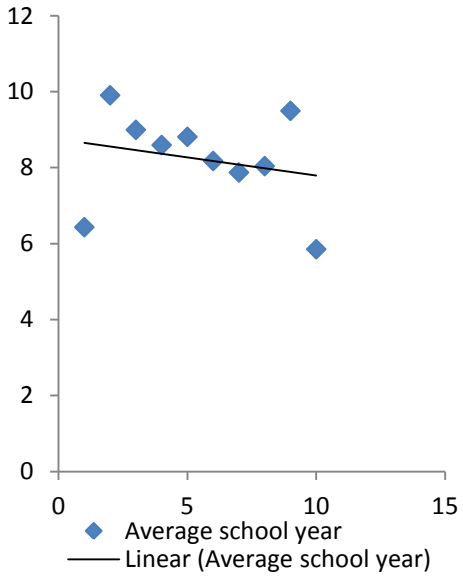
assessment of the coalition, per capita expenditure, and education. At first, as predicted, education and welfare are positively correlated (*Figure 8(a)*). This identified relationship consists with other similar studies concluding that education is essential to reduce poverty in rural areas.

Figure 8: Assessment of the coalition, per capita expenditure, and education

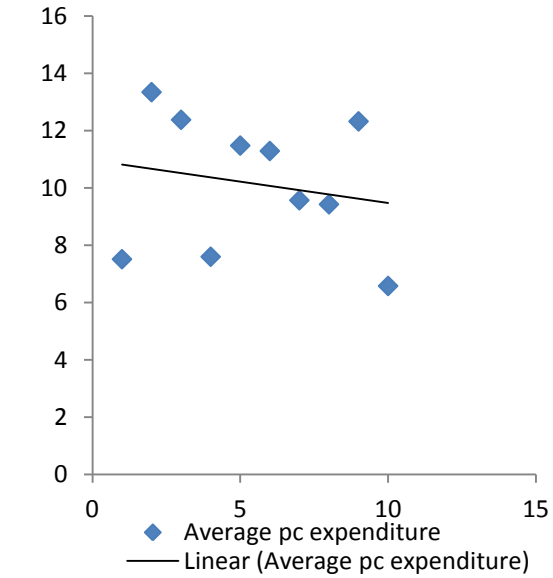
(a) School year and average pc expenditure



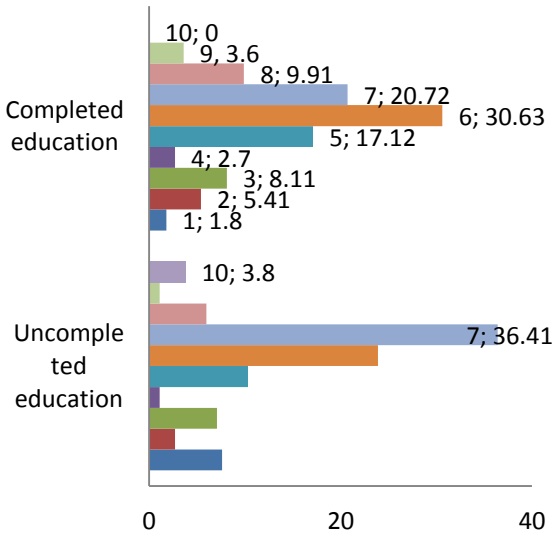
(b) Coalition and average school year



(c) Coalition and average pc expenditure



(d) Coalition and school completion



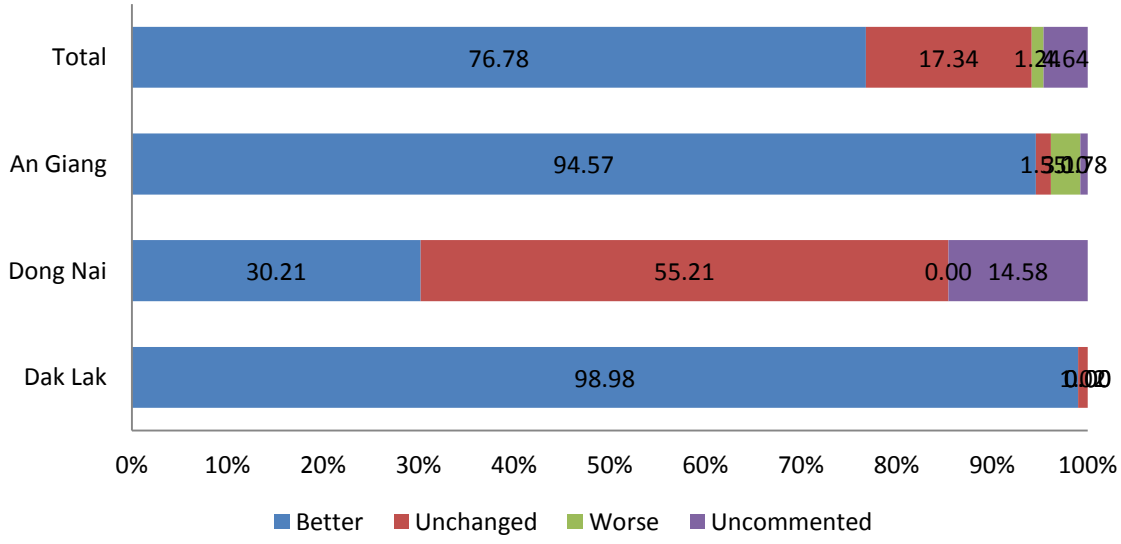
Source: The survey data.

The rest of *Figure 8* suggests that the respondents who had higher education, or higher per capita expenditure, or completed education tended to downgrade the role of the coalition. Actually, these people might much more involve in agricultural production and trading than the others, their evaluation was therefore harder and more straightforward.

5.7 Overall Remarks upon Agricultural Business Before and After 2000

At the end of the questionnaire, the farmers were asked to overall evaluate agricultural business before and after the year 2000. This milestone is more meaningful than the year 2007 when Vietnam became an official member of the World Trade Organisation (WTO) because the farmers did not have much knowledge of the WTO and its impact on the economy. Moreover, after the year 2000 the economy was relatively stable and well performed as a result of the economic reforms initiated in the 1990s and accelerated after the year 2000 to prepare for participating in the WTO. Therefore, farmers can recognise the changes in the economy before and after that time.

Figure 9: Surveyed farmers' overall evaluation of agricultural business before and after 2000



Source: Table A11

The farmers were asked to compare the two periods with three degrees of assessment: Better, unchanged, and worse. Nearly 77 percent of the respondents thought that farm business was better after the year 2000 (*Figure 9*). The percentage of the farmers with

positive perspective was highest in Dak Lak and lowest in Dong Nai. The reasons for being better were diverse; 17.1 percent of the respondents in An Giang reasoned that farm business was better for improvement in technique and productivity; 72.9 percent for high demand, price, and good export; and 7.8 percent for the role of the government in supporting farmers, which coincided with the viewpoint of 55.1 percent of the respondents in Dak Lak *(Table A11)*. The rest of the surveyed farmers gave patchy remarks, generally relevant to the government's policy, development of the economy, market stabilisation, and integration of the economy into the world economy.

For the majority of the Dong Nai farmers, farm business was unchanged after the year 2000. Forty-five percent of them reasoned that rice price was still low and agricultural production had small or no profit. Some of the respondents in An Giang viewed that farm business was worse off after the year 2000, primarily owing to poor management in agriculture, high inflation, and poor harvest. Some of the farmers in Dong Nai had no idea of the change, probably because of low education or indifference.

Generally, the preliminary analysis has depicted several aspects where trade policy proved inadequate. However, the surveyed farmers' attitude towards the coalition and farm business was on the whole positive. The analysis also reveals the relationship between the perception of trade policy and welfare. Whether farmers' awareness of trade policy affects welfare or not is spelled out in the following analysis of some main factors influencing welfare.

6. Main Determinants of Farm Household Welfare

The study goes a step further to explain the impact of trade policy perception on welfare by regression analysis. In this analysis, price change, perception of trade policy, and geographical difference were hypothetically associated with farm household welfare.

6.1 Model Background

According to Ravallion (1998), Haughton and Khandker (2009), static regression analysis is by far the most widespread tool used to explain poverty by different variables. Income equation, which postulates that real consumption or income is a function of observed

household characteristics is a conventional method used to analyse poverty. From this rudiment, two common types of model are used in the empirical poverty world: Levels regression model and binary regressand model, depending on the chosen dependent variable is continuous or binary. However, the former is conventionally preferred to the later because the latter method faces an important concern about losing information due to using a binary dependent variable.

The model in this analysis basically follows Glewwe *et al*., (2000) and Justino *et al*., (2008). Both the studies employ a model of micro-determinants of growth, and are grounded on a panel data set over the period 1993-1998 to primarily attempt to capture the dynamics of poverty in order to assess poverty progress in Vietnam during the 1990s, under the impact of a wide range of variables. However, quite different from other similar studies, this paper attempts to account for the impact of farm households' perception of trade policy on household welfare. A reduced form of the determinants of household welfare can be stated in a simple natural log linear specification:

$$\ln Y = \beta X + U, \quad (1)$$

where Y is a vector of real per capita consumption expenditure, X is a matrix of independent variables, which are conventionally characteristics of individuals, households, and communities.

The dependent variable in the study is consumption expenditure per capita, measured in natural logarithm. The study bases on the monetary dimension to measure welfare, and consumption expenditure per capita is used as a proxy for welfare, assuming that consumption is a better outcome indicator than income.

In terms of the independent variables, Haughton and Khandker (2009) group them into four general kinds: Regional, community, household and individual characteristics. Within the available survey data, at first the study uses a farmer's attitude towards the coalition of farmers, enterprises, banks, scientists, and authorities in the form of a dummy variable to capture the effect of farm households' perception of trade policy; the reference category is a farmer's negative evaluation of the coalition. From the preliminary analysis, this variable expectedly has a negative impact on welfare of farm households, since

farmers having a higher income level can get more involved in cultivation and distribution; therefore, they can more clearly understand the performance of the coalition and strictly evaluate its role in supporting farm households. The second variable is the change in output price in the last three years, which should have a positive impact on welfare, as the world price of rice and coffee tends to be increasing. A trend that could be identified from the preliminary analysis is that geographical difference likely affects welfare; therefore, a provincial dummy used could explain the effect of provincial difference in farmers' perception of trade policy. Beside the three key variables, other variables such as household size, gender, income source, land per capita, crop diversification are also included to ensure compliance with the model specification.

6.2 Regression Results

The results of equation (1) are presented in *Table 8*. On the whole, most of the coefficients of the variables are statistically significant and have expected signs. The regression is of a reasonable goodness of fit, with the R-squared being 0.665; the model approximately explains more than 66 percent of the change in the dependent variable. The mean of the variance inflation factor (VIF) being 1.25, the regression has almost no multicollinearity; moreover, the use of robust standard errors helps the regression to get rid of heteroskedasticity. Thus the model can provide some useful explanations for farm household welfare.

Table 8: Result of the regression on farm households' per capita expenditure

Independent variable	Expected sign	Coefficient	P-value
Constant term		2.21317***	0.000
Household size	Negative	-0.06831***	0.000
Head is male	Positive	-0.02065	0.623
Non-farm income source	Positive	0.09671**	0.021
Land per capita	Positive	0.75108***	0.000
More than one crop	Positive	-0.19190***	0.005
Maximum output price change in last three years	Positive	0.00002***	0.000
Good coalition of farmer,…,local authority	Negative	-0.19738***	0.001
An Giang and Dak Lak province	Positive	0.16051***	0.001
R-squared			0.665
F(8, 277)			70.31
Number of observations			286

Note: *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level

Household size and gender represent demographic of the surveyed farm households. As expected, household size has a negative impact on welfare; however, the statistical insignificance of gender suggests that gender inequality is no longer an issue in Vietnam's society. Furthermore, the results show that the surveyed farmers who had other sources of income in addition to agriculture tend to be better off; therefore, extra work is a way to improve income in rural areas. Besides, the significant positive effect of land per capita demonstrates the important role of cultivatable land in improving income. However, the impact of crop diversification is counter to the expectation that crop diversification in agriculture can improve welfare. Therefore, specialising in one crop could be more efficient for Vietnam's developing agriculture.

In the light of the variables accounting for the impacts of market and trade policy, as predicted the maximum change in output price over the last three years, which can also be a proxy for trade shock is statistically significant and has a positive impact on welfare. On average, a one-thousand-dong change in the price of output is associated with an increase in per capita expenditure of 0.002 percent, holding other things constant. The modest effect might conjecture that the farmers got little benefit from a positive trade shock. Besides, the farmers' evaluation of the coalition's role in supporting farmers is significant and has a negative impact on welfare, as expected. The coefficient of -0.19738 attached to the variable "good coalition of farmer, firm, bank, scientist and local authority" means, holding other factors unchanged, per capita expenditure of the farmers who considered the coalition was good is typically 17.9 percent lower than that of the other farmers.[6] Therefore, the farmers with a higher level of per capita expenditure tended not to think highly of the coalition. In addition, the farmers in An Giang and Dak Lak who much more engaged in trading tended to be better off compared with those in Dong Nai. On average and *ceteris paribus*, per capita expenditure of the farm households in An Giang and Dak Lak is 17.4 percent higher than that of those in Dong Nai. In a nutshell, the regression results further confirm the trend identified in the preliminary analysis; better knowledge of trade policy tends to be positively associated with standards of living.

[6] The percentage increase is given by $e^{-0.19733}$-1, which is about 0.17912.

On the whole, the analysis of the survey data suggests that farm households suffered from the inadequate trade policy in Vietnam, and better perception of trade policy is associated with an improvement in welfare. *At first*, crop distribution was totally unplanned and unregulated; big food companies who are chief rice exporters did not directly buy crops from the farmers, leaving an uncontrolled stage in crop distribution. Therefore, the farmers had no choice but to sell private merchants crops at frequently unfair prices, as they claimed. As a consequence, the uncertainty of the rice and coffee market can lead farmers to wrong decisions and losses in agricultural production. *Second*, highly fluctuated prices of rice and coffee partly imply a limited ability to control and manage the markets, given the substantial dependence of domestic production upon demands of rice and coffee export markets. *Third*, capital shortage representing a big constraint in agricultural business perceived by the farmers could be a result of the distorted market price, leading to misallocation of capital and then chronic capital shortage in the economy, not only in agricultural production. *Fourth*, in addition to lacking capital, the unstable supply of other inputs, such as fertiliser and fuel is a flaw in trade policy. *Fifth*, customs procedure, which is an important stage in the rice or coffee distribution chain from farm households to the world market still trouble exporters. *Sixth*, the dim role of the coalition of farmers, enterprises, banks, scientists, and government in supporting farmers signifies unsustainable agricultural development in the medium and long run. The preliminary analysis is further supported by the regression analysis to confirm the tendency that better perception of trade policy can help improve welfare, which can generate useful implications for policymakers. To sum up, in spite of the farmers' positive evaluation of agricultural business after the year 2000, the existing challenges they perceived will hinder sustainable development of Vietnam's agriculture and impinge upon farm household welfare.

7. Conclusion and Policy Implications

The study has analysed and compared several aspects of trade policy on rice and coffee, being perceived by the farmers across the surveyed provinces. The overall remark is the production and distribution of rice and coffee was to a large extent liberalised, but mismanaged. Therefore the farmers faced risks relevant to crop distribution, inflation, capital shortage, unstable supply of fertiliser and fuel, rice export delays; furthermore,

they lacked helps from the multi-agency coalition, which was thought as farmers' primary sources of support.

In An Giang, private merchants' domination in rice procurement from farmers can be typical of rice distribution in Vietnam. The farmers in this province might suffer most from the local poor trade system, as most of them felt displeased as trading with private merchants. As the big rice producers, they desired to reorganise the distributional system to stabilise the rice market. Therefore, the key challenge to An Giang is to reform the rice distributional system to smooth rice export and get most benefits for farmers.

Compared with An Giang, coffee production in Dak Lak was more productive and profitable. However, similar to An Giang, coffee exporters bought coffee crops from coffee agents or private traders who had assembled coffee crops from coffee growers. Consequently, the price difference between farm gate prices and the prices at which private traders sold coffee crops to coffee exporters was claimed to be considerable. Different from An Giang, coffee agents in Dak Lak were big businesses, they could use their market power to defer payment for coffee farmers until they get paid from coffee exporters; thus, coffee growers might face the risk of default by coffee agents. Therefore, Dak Lak needs to reform the coffee distribution system to secure payment for coffee production.

Differed from An Giang and Dak Lak, Dong Nai farm households engaged in less productive and small-scale agricultural production. Dong Nai is a typically industrial province, thus agriculture plays a minor role in its economic development; nevertheless, the farm households were still poor. The farmers had limited knowledge of trade policy and the role of the coalition was also dim. Rice crops were mainly domestically consumed or home-used and rice distribution was similar to An Giang. Had trade policy been efficient and consistent, and given the advantage of being adjacent to Ho Chi Minh City, farmers in Dong Nai could totally be quality rice producers, the same as those in An Giang. Therefore, trade policy reform should be consistent and all farmers can have same access to resources for agricultural production.

Therefore, each province has its own flaw in trading system. However, some general conclusions can be drawn. *First*, farm households suffer from the inadequate trade policy, especially on rice and coffee distribution. Thus, reforming the internal trading system is on the right track to improve welfare of farm households. *Second*, the identified relationship between farmers' perception of trade policy and welfare can lay the foundation for future researches of the same vein; moreover, it also implicates that trade policy reform requires farmers be fully apprised of the change in trade policy and better perception of trade policy can help farmers to rationally decide to distribute and get the most from output distribution. In a nutshell, the case study of the three provinces pinpoints the problems with Vietnam's internal trade system which deters farmers from agricultural production. It simultaneously suggests that the effectiveness of trade policy reform lies in farmers' comprehension of trade policy.

ACKNOWLEDGEMENTS

I am grateful to Tarlok Singh for helpful discussions and comments. I also would like to thank Tom Nguyen and Jay Bandaralage for their supports throughout my research.

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APPENDIX

Table A1: Regression results on farm households' per capita expenditure

Independent variable	Coef.	Robust Std. Err.	t	P>t	95% Conf. Interval	
Constant term	2.21317	0.08725	25.36	0.0000	2.04140	2.38493
Household size	-0.06831	0.01263	-5.41	0.0000	-0.09318	-0.04345
Head is male	-0.02065	0.04192	-0.49	0.6230	-0.10317	0.06186
Non-farm income source	0.09671	0.04166	2.32	0.0210	0.01470	0.17872
Land per capita	0.75108	0.12313	6.10	0.0000	0.50869	0.99346
More than one crop plant	-0.19190	0.06750	-2.84	0.0050	-0.32479	-0.05901
Maximum output price change in last three years	0.00002	0.000001	15.27	0.0000	0.000016	0.00002
Good coalition of farmer, firm, bank, scientist, and local authority	-0.19738	0.05909	-3.34	0.0010	-0.31371	-0.08105
An Giang and Dak Lak province	0.16051	0.04815	3.33	0.0010	0.06571	0.25530

R-squared	0.6649
Root MSE	0.27839
F(8, 277)	70.31
Prob > F	0.0000
Number of observations	286
Mean Variance Inflation Factor (VIF):	1.25
Residual skewness	-0.13489
Residual kurtosis	3.08404

				joint	
Skewness/kurtosis test for normality r	Obs 286	Pr(Skewness) 0.319	Pr(Kurtosis) 0.6217	adj chi2(2) 1.16	Prob>chi2 0.5612
Shapiro-wilk w test for normal data	Obs 286	w 0.99511	v 1.000	z -0.001	Prob>z 0.500335

Table A2: Surveyed farm households' education

	An Giang	Dong Nai	Dak Lak
Total	100	100	100
Able to read and write	4.6	3.0	2.0
Primary	41.2	47.0	6.1
Lower secondary	31.3	32.0	57.1
Upper secondary	19.1	13.0	30.6
Vocational training	0.8	3.0	0.0
College	1.5	0.0	2.0
University	1.5	2.0	2.0

Table A3: Agricultural productivity

Main crop	Total	An Giang Rice	Dong Nai Rice	Dak Lak Coffee
Average land area per household (ha)	0.8	1.0	0.53	0.96
Average land area per head (ha)	0.20	0.25	0.13	0.21
Ton per ha		6.7	4.7	3.8
Cost per ha (mill. VND)		12.3	8.1	81.9
Cost per ton (mill. VND)		1.9	1.8	13.8
Revenue per ton (mill. VND)		6.3	6.3	49.3
Profit per ton (mill. VND)		4.4	4.5	35.5
Sample	329	127	82	98

Table A4: Fertiliser price change

	Total	An Giang	Dong Nai	Dak Lak
NPK	*n=298*	*n=116*	*n=85*	*n=97*
Average price	12,687.8	11,958.2	13,183.5	13,125.8
Standard deviation	106.3	157.2	164.6	200.8
Maximum	20,000	18,000	20,000	15,000
Minimum	7,660	7,660	10,000	10,000
Range/average price (%)	97.3	86.5	75.9	38.1
Kali	*n=276*	*n=101*	*n=78*	*n=97*
Average price	12,769.2	12,896.8	12,801.7	12,610.3
Standard deviation	87.3	169.9	201.7	64.4
Maximum	20,000	20,000	18,000	13,500
Minimum	6,000	7,200	6,000	8,000
Range/average price (%)	109.6	99.2	93.7	43.6
Other fertilizer	*n=277*	*n=115*	*n=66*	*n=96*
Average price	12,385	16,261.7	9,240.2	9,903.1
Standard deviation	253.5	154.3	596.0	106.1
Maximum	20,000	20,000	15,000	11,000
Minimum	2,300	10,909.1	2,300	3,000
Range/average price (%)	142.9	55.9	137.4	80.8

Table A5: Composition of cost of agricultural production

	An Giang n=16	Dong Nai n=55	Dak Lak
Cost structure per hectare per crop (%)	Rice	Rice	Coffee
Seed	14.9	17.4	-
Fertiliser	66.3	57.5	-
Fuel	10.8	11.1	-
Other costs	8.0	14.0	-

Table A6: Difficulties in agricultural production (%)

	Total	An Giang	Dong Nai	Dak Lak
Capital shortage	82.7	82.4	79.0	86.7
Labor shortage	27.7	7.6	24.0	58.2
No profit	20.0	3.1	62.0	0.0
Bad weather	54.4	16.0	63.0	96.9
Uncertain market	45.0	88.5	18.0	14.3
Lack of technical knowledge	40.1	9.9	34.0	86.7
Other difficulties[1/]	3.0	3.1	6.0	0.0

1/ Other identified difficulties were downgraded lands due to continual production; lack of after-crop technique; high input prices; no drying yards; land shortage; increasing population; small profit; high fluctuation of fertiliser and bio protection drugs; low quality paddy.

Table 7: Surveyed farm households' remark on access to fertiliser

	Total	An Giang	Dong Nai	Dak Lak
Perception of fertiliser price change[1/]	9.7	na	9.8	9.7
Access to fertiliser purchase[2/]	7.1	6.3	6.5	8.7
Reasons for possibly difficult access (%)				
▪ Shortage supply	2.4	5.3	1.0	0
▪ High price	98.8	95.4	100	100
▪ Import limitation	0.3	0.8	0	0
▪ Low quality	2.7	6.1	0	0
▪ Unreasonable market	2.7	6.8	0	0
▪ Other reasons[3/]	3.0	0	10	0

Note:

1/ The perception of fertiliser price change ranges from 1 (lowest) to 10 (highest) using a ten-point rating scale. This question was not in the questionnaire for An Giang, and just added later to the questionnaire for Dong Nai and Dak Lak.

2/ The access to purchasing fertiliser ranges from 1 (most difficult) to 10 (easiest) using a ten-point rating scale.

3/ Other stated reasons included high price fluctuation; unstable market price; extreme price fluctuation; too high price fluctuation; unexpectedly up-and-down market price. These opinions were patchy.

Table A8: Surveyed farm households' desired distributional channels to sell crops

	Total	An Giang	Dong Nai	Dak Lak
Total	100	100	100	100
State agents, no intermediate agents	59.7	34.4	62.9	100
Private merchants	26.1	53.4	7.9	0.0
Who buy at best prices	3.7	0.8	11.2	0.0
Big food companies	3.7	6.9	2.2	0.0
Companies or supermarkets	0.3	0.8	0.0	0.0
Right price agents	0.3	0.8	0.0	0.0
Companies with fair prices	0.3	0.8	0.0	0.0
Firms ensuring output market	0.7	1.5	0.0	0.0
Big agents	0.1	0.8	0.0	0.0
Livestock farms	1.0	0.0	3.4	0.0
Pork breeding farms	0.7	0.0	2.2	0.0
Anyone convenient	0.3	0.0	1.1	0.0
No idea	2.7	0.0	8.9	0.0

Table A9: Surveyed farmers' evaluation of the coalition

	Total	An Giang	Dong Nai	Dak Lak
Evaluation of the coalition of farmer, enterprise, bank, scientist, and government	5.7	6.3	4.7	5.8
Opinions about the coalition (%)				
▪ Private merchants' purchase with unfair price	1.2	0.8	0.0	3.1
▪ Difficult access to agricultural policy and information due to administrative procedures	2.4	3.1	1.0	3.1
▪ No coalition in reality, formalism, seasonal combination, real desire for an actual coalition	10.0	3.1	26.0	3.1
▪ Difficult access to bank credit and food firms to sell crops	5.8	4.6	11.0	2.0
▪ No really close relationship with farmers	4.6	3.1	0.0	11.2
▪ Other remarks[1/]	4.9	0.0	10	6.1

1/ Quoted as saying the government has not yet supported, government support did not approach farmers; desiring the government to stabilise market price, support farmers in planting technique, lend farmers capital preferentially; training planting technique for farmers; expecting the coalition to exchange planting technique; high inflation; the government's slow support; ineffectively and slowly applying planting technique; difficult access to government; not ensuring output market and prices; not understanding.

Table A10: Surveyed farmers' desired supports from government (%)

	Total	An Giang	Dong Nai	Dak Lak
Preferential loans	70.8	80.2	41.0	88.8
Streamlining export procedures	38.3	63.4	3.0	40.8
Re-organising purchase system	72.3	74.8	59.0	82.7
Stabilising supply of fertilizer and fuel	81.2	87.0	55.0	100.0
Support of techniques	73.6	80.2	54.0	84.7
Other supports[1/]	1.8	2.3	3.0	0

1/ Other desired supports consisted of building local rice storages; market-driven regional planning; providing poor households with seeds; banks' too small lending quota for agriculture; no comment.

Table A11: Surveyed farmers' overall evaluation of agricultural business before and after 2000

	Total	An Giang	Dong Nai	Dak Lak
Better	76.8	94.6	30.2	99.0
▪ Improving technique and productivity; reducing after-harvesting loss; mechanising agriculture; building drying houses, warehouses; modern yielding machine	6.8	17.1	0.0	0.0
▪ High demand and prices, good export	32.5	72.9	10.4	1.0
▪ Increased quality of rice and paddy	1.9	4.7	0.0	0.0
▪ Government policies, supports of technique, loan, market, procedures	19.8	7.8	0.0	55.1
▪ Opening agricultural technical training courses	2.5	0.8	6.3	1.0
▪ Others[1/]	14.2	3.1	17.7	25.5
Unchanged	17.3	1.6	55.2	1.0
▪ Supply surplus	0.3	0.8	0.0	0.0
▪ Frequent and high fluctuation of production materials' prices, high costs	0.6	0.8	1.0	0.0
▪ Low rice price, no or small profit	13.6	0.0	45.8	0.0
▪ High inflation	0.6	0.0	2.1	0.0
▪ Others[2/]	1.5	0.0	3.1	2.0
Worse	1.2	3.1	0.0	0.0
▪ Bad agricultural management	0.3	0.8	0.0	0.0
▪ High inflation	0.3	0.8	0.0	0.0
▪ Poor harvest	0.6	1.6	0.0	0.0
No idea	4.6	0.8	14.6	0.0

1/ Quoted as saying crops easily sell, but at a low price level; the improving coalition; organising purchase outlets; smooth export; developing economy; the opening of many livestock farms; development of breeding farm; many local cashew plants; good seeds suitable to land and climate; before 2000 farmers were difficult due to market prices, after 2000 prices were relatively stable but not good enough; the impact of market mechanism; better but still slow outcomes; the government should provide more supports for farmers; more progress and the government was more attention; more socialised policy; easier trading; progress but still low; engaging globalization; more stable prices; change of market mechanism; relatively stable, but need to pay more attention to farmers; structure of market is easier; low effectiveness; a little better; need close connection with farmers; many changes of purchase system; it suits general trend of society.

2/ Other reasons for being unchanged include higher rice prices; relatively stable, but need to pay more attention to farmers.