

ECONOMIC THEORY, APPLICATIONS AND ISSUES

Working Paper No. 61

**An Economic Study of Small Pigholders in
Vietnam: Some Insights Gained and the Scope
for Further Research**

by

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An Economic Study of Small Pigholders in Vietnam: Some Insights Gained and the Scope for Further Research

ABSTRACT

Some relevant background to this research project is provided by outlining selected features of Vietnam's pig industry. Then the main findings (in the view of the author) from this ACIAR-funded research are presented. These results include (1) natural protection given to Vietnam's pig producers from imports as a result of the nature of the preferences of Vietnamese consumers; (2) the importance of household labour, especially that provided by females, in the husbandry of pigs held by households; (3) the existence, or otherwise, of scale economies as a function of the number of pigs held by households, (4) the import dependence for pig food of Vietnam's pig industry and the way in which it varies with the number of pigs kept by households; (5) specialization in pig production, (6) regional differences in the economics of pig production; (7) economic discrimination in the supply of inputs to household producers of pigs and in their sale of pigs; (8) the size of pig-holdings and the use of professional services, such as veterinary services and extension services; and (9) findings about miscellaneous matters, such as the genetic composition of the pig stock. Scope for future research in relation to these aspects is also highlighted, and the need is raised for considering the economics of increasing quality standards and certifying the quality of pork. The economics of increasing the scale of pig producing units is given particular attention.

JEL Classification: Q1

An Economic Study of Small Pigholders in Vietnam: Some Insights Gained and the Scope for Further Research

1. Introduction

Interesting results have emerged from the ACIAR-sponsored project “Improving Competitiveness in an Adjusting Vietnam Market,” particularly as far as the economic status of holders of small stocks of pigs is concerned. Small pigholders account for the majority of Vietnam’s stock of pigs. It is households (as distinct from registered pig farms) that account for virtually all of Vietnam’s small holdings of pigs. In 2006, for example, households having 5 pigs or less accounted for 83.4% of pig stocks held by Vietnamese households and households accounted for about 90% of pig stocks and registered farms the remainder (Tisdell, 2009a). Thus households possessing small stocks of pigs continue to dominate Vietnam’s pig industry, even though their relative share of total pig production is declining slowly.

In the last few decades, economic mechanisms used to direct and allocate resource-use in Vietnam have undergone considerable change as a result of this increased adoption of market mechanisms and the greater openness of Vietnam to international trade. A programme, *Doi Moi* (Renovation), for the reform of Vietnam’s economic system so as to make it more market-oriented was adopted by the Vietnamese Government in 1986. According to Son et al. (2006), “this was followed by a series of reforms that effectively ended the system of resource allocation by central planning by 1989. Reforms since 1990 have therefore, been aimed at adjusting the institutional and regulatory framework in order to ensure that markets can function well.”

Pig producers have had to adjust to this economic transition which potentially could have reduced the relative competitiveness of small pigholders and the comparative international competitiveness of Vietnam’s pork industry. Given these changes, how have smallholders of pigs managed to remain competitive and how generally has Vietnam’s pig industry been able to cope? This study (which used sample surveys to examine the retail market for pork in Vietnam and to obtain information about the production situation facing household suppliers of pigs) throws considerable light on the above question and the economic status of small pigholders.

In discussing this matter, I'll first make a few observations on trends in pig production in Vietnam, outline factors that provide natural protection to Vietnam's pig producers (as discovered in this research by a survey of a sample of Vietnam's consumers) and highlight important results that have emerged from the sample survey of household pig producers in Vietnam. Differences in the nature of employment and in the use of local and home-produced pig food were observed between small holders and large holders of pigs. Regional differences in specialization in stages of pig production were also observed. Comments will be made on these and other findings about the nature of pig production and subjects that need further research will be highlighted.

2. Trends in Vietnam's Pig Production and Consumption of Pork

In the period for which I have statistics (1996-2006), Vietnam's volume of pork production showed a steady upward trend with a slight tapering off in growth in 2006. In this period, almost all of Vietnam's supply of pork came from domestic producers and per capita consumption of pork in Vietnam almost doubled. How was this increase made possible? Both increased pig stocks and greater yields played a role, but a role that varied during this period. Before 2004, increases in pig numbers with some increase in yields explains the trend but from 2004 onwards increased yield is the dominant contributor to the expanded production of pork in Vietnam (Tisdell, 2009a). Vietnam's pig population peaked at 29.4 million head in 2005 and in the period 2006-2008, remained fairly stationary at levels slightly below 27 million head (General Statistical Office of Vietnam, 2009, p.289). Hence, increasing pork production in Vietnam has become increasingly dependent on raising yields.

Given their relative importance, small producers must have contributed to the upward trend in Vietnam's pork production. It can be inferred that this increased production required a substantial rise in the total amount of pig food utilised in Vietnam. Presumably, this was reflected in rising imports of grain and other food used for pigs as well as greater domestic inputs of pig food. This aspect has not yet been researched. The greater openness of Vietnam's economy would have given greater scope for its import of raw materials required for the production of pig food, and the increased presence of multinational companies in Vietnam involved in the milling and

distribution of animal food would also have facilitated this. It is likely that in the absence of greater import of grains required to produce pig food that the expansion in Vietnam's pork supply would have been restricted. A corollary is that Vietnam's pork production has become increasingly dependant on imported imports needed to produce pig food. These aspects are worthy of study, particularly local constraints on increased supply of pig food. This pattern of development is not unlike that of China which has substantially increased its import of course grains in order to increase its supply of food for livestock (Huang et al., 2006).

3. Natural Market Protection

Surveys of samples of representative consumers in Hanoi and Ho Chi Minh City as part of this study revealed that Vietnamese consumers have a strong preference for fresh pork which they prefer to buy from traditional market outlets (Lapar et al., 2009; Tisdell et al., 2009). This helps to protect the Vietnamese pig industry from imports of pork which by necessity for preservation purposes are either chilled, frozen or processed, and which are usually retailed in supermarkets or similar food outlets. This has provided a significant level of protection to the local pig industry because chilled, frozen and processed pork from North America costs less than Vietnamese pork. This natural protection is important for the survival of Vietnam's pig industry because according to Son et al. (2006) it is internationally uncompetitive in view of its comparatively high cost of production.

The lack of development of supermarkets in Vietnam (Maruyama and Trung, 2007) has also partly been favourable to the survival of small holders of pigs. Supermarkets tend to favour a standardised product and want easy traceability of the product. This may comparatively favour larger pig producers. Although supermarkets would not deal directly with individual pig producers, middlemen will and would reflect the demand of supermarkets if they want to obtain sales to these.

4. Employment: Gender and Other Aspects Revealed by the Survey of Producers

Note that my remaining observations about pig production in Vietnam mainly relate to a preliminary report of the Center for Agricultural Policy (CAP) and the International Livestock Research Institute (ILRI) and results from their survey of pig producers in Vietnam (CAP and ILRI, June 2009).

Samples of household producers of pigs (900 in total) in six provinces of Vietnam were surveyed. The aim was to use purposive sampling to obtain a reasonably representative sample of conditions facing pig producers and the economics of the pig production taking into account regional variations in Vietnam. While the full diversity of conditions was not captured, significant pig producing provinces were included in the sampling. The geographical extent of sampling was limited by the amount of resources available. It might have been interesting, for example, to have included a province in the North West region where pig numbers are low and yields are well below the national average.

From the sampling data, it was found that household pig producers mostly rely on family labour for the husbandry of their pigs and the degree of reliance on family labour tends to increase as their holdings of pigs become smaller. Female contribute more labour hours to tending pigs than males and the relative dependence on female labour tends to increase as pig-holdings become smaller. Hired labour involves the payment of wages whereas family labour does not. Only holders of larger pig stock tend to hire labour. Son et al. (2006) reported that registered commercial farms in Vietnam hire more labour than household farmers. Nevertheless, even in their case, family labour is a large component of their labour and hired labour tends to be for casual employment.

A number of economic inferences can be drawn from these results. Employing family members in the raising of pigs by households can be economically efficient if family members are unable to find paid employment elsewhere in the economy. This is often the case for rural women. This observation is supported by that of Son et al. (2006) who also point out that rural women are limited in their scope for accepting employment away from their household because of their child rearing duties. This

means that very often, the opportunity cost of employing family labour in household enterprises is much less than the going wage rate for such labour.

In addition, if employment off-farm is available, the transaction cost of that employment has to be taken into account. Taking advantage of off-farm employment usually involves transport costs and sometimes relocation costs. There are also likely to be costs in terms of lower on-farm income.

Furthermore, work on household farms may add to family security, ensuring them of at least a subsistence income in difficult economic times when job shedding may occur in market-dominated labour markets. Off-farm jobs may not be very secure, especially in an economy in transition.

In some circumstances (but not all), on-farm employment of household members helps to reduce poverty, assists the employment of women and provides economic security for families. The economic desirability of that employment requires the overall state of an economy to be taken into account. For example, one must consider the extent to which the manufacturing and service sectors grow and are able to absorb surplus labour from the agricultural sector and provide those employees with security of employment (see Son et al., 2006).

5. Scale Economies

This study tried to throw light on how the costs of production for a representative (average) household pig producer might vary with its scale of operations. It was claimed that the data indicates that there are economies of scale in farrow-to-wean; diseconomies in farrow-to-finish and scale neutrality in grow-to-finish systems of production. The results, however, could be quite sensitive to how pig food is valued, especially household-produced food and local supplies which account for a larger proportion of the pig food used by small holders than large holders of pigs except in the case of the farrow-to-wean stage of pig production. In the latter stage, Vietnamese pig producers are highly dependent on purchased commercial pig food. Given the quality of the data, however, the results do not seem to be conclusive. Problems arise

in how to assign costs to the use of pig food and how to allow for the opportunity cost of labour.

The largest component of the cost of raising pigs is pig food. For those specializing in the farrow-to-weaner stage of pig production or farrow-to-finish stages of pig production, feed costs exceed 70% of operating costs (excluding household labour costs) and those concentrating on grow-to-finish, these costs exceed 54% of operating costs, the imputed cost of household labour excluded (CAP and ILRI, June 2009, p.63). It was found that those households holding fewer pigs rely much more on their own produce and local produce to feed their pigs, compared to larger producers who rely more on marketed produce supplied ultimately by animal food production mills. The economic cost of the latter is likely to be considerably higher than that of the former. The former should be costed at a much lower level than the latter. To determine this cost is not easy. When account is taken of such factors, production of pigs by smallholders may be more efficient than appears to be the case at first sight. In other words, small producers can be low cost suppliers of pigs. However, this may not be so for those who specialize in farrow-to-weaner production because they rely heavily on purchased pig food. Nevertheless, as demand for pork increases, they cannot efficiently supply the whole of the market for pork and their share in the market can be expected to decline for reasons outlined in Tisdell (2009c).

In a transitional situation, a market combination of small household pig producers and larger suppliers is likely to be most economical. However, as the economy grows and more opportunities to be employed off-farm for household members increase, the opportunity costs of working on a household's farm increase. This can be expected, in due course, to reduce the number of smallholders of pigs.

6. Observations on the Import Dependence of Pig Production in Vietnam and Its Variation with the Size of Pig-Holdings

It was mentioned earlier that increased pork production in Vietnam was facilitated by its rising imports of pig food. This pattern of dependence may continue. An investigation of constraints on the supply of pig food domestically is needed to throw more light on this matter.

The study found that smallholders of pigs make comparatively greater use of their own produce and local produce in rearing pigs than larger holder do. If this pattern persists and the structure of Vietnam's pig industry changes from one in which there are fewer small producers and more large-sized producers, this can be expected to result in rising imports of pig food by Vietnam and add to pressures on its balance of payments. Further, examination of export trends and relationships of relevance to Vietnam's pig industry could be worthwhile.

7. Specialization in Pig Production

In Western economies, it has been found that there has been a long-term tendency towards more specialization in agricultural production and in favour of a greater scale of production on individual farms (Skolrud et al., 2009). This process has evolved over a considerable period of time. One should not expect this pattern of development to occur **quickly** in transitional economies, although it could occur at a faster rate than that experienced in Western economies. A major restriction on the process in transitional economics could be restrictions on farm sizes and on the transferability of property rights in these.

This research project investigated some aspects of specialization in pig production in Vietnam, namely the extent to which pig producers specialize in different stages of pig production. Greater specialization in different stages of pig production was observed in the sample of producers from the Red River Delta region than in the south of Vietnam. However, the reasons for these differences in specialization are not know. This would be worthy of investigation. More research could be done on examining the economics of specialization by farmers in different stages of pig production. Comparisons with Western practice in this regard would also be interesting.

There was little investigation of the extent to which householders specialize in pigs compared to other forms of agricultural production. Nevertheless, some attention was given to the revenue obtained by the rural households surveyed from different types of livestock. How diversified by products produced are farming households rearing pigs? What are the economic advantages and disadvantages of such diversification? To what extent is increased pig production on individual farms likely to be at the expense

of their diversity in production? Increased scale of production of pigs by households would most likely be accompanied by less product diversification. In turn, this would result in greater dependence on markets to supply pig food, much of which is imported. Diversification issues are worthy of more research.

8. Regional Differences in the Economics of Pig Production

Geographically, Vietnam is a very diverse country and consequently, the economics of pig production can display considerable variation. Not only do the number of pigs present vary considerably between regions but there is also substantial variation in pig yields (Tisdell, 2009a) For example, in 2006, the highest pork yields were estimated to have been obtained in the Mekong River Delta (123kgs per pig in the stock) and the lowest in the North West region (39kgs per pig in the stock). Hence, on average pork yields per pig in the regional stock were over three times higher in the Red River Delta than in the North West. What explains such differences? Are they justified on economic grounds? These issues could be investigated. In general, regional differences in Vietnam's pig industry would warrant further research.

Also the way in which regional differences in pig production in different regions of Vietnam have changed and how they can be expected to alter as Vietnam's economy develops further would be worthy of research. For example, as Vietnam's transport infrastructure improves more interprovincial trade in pigs and pork is likely to occur. How will this change the pattern of pig production in Vietnam?

A problem at present seems to be that there is little available data on interprovincial trade in pigs and pork. More information about this trade would be useful.

9. Economic Discrimination in the Supply of Inputs to Household Producers of Pigs and in their Sale of Pigs

This research collected evidence about whether smallholders of pigs were being discriminated against in their purchase of inputs and in their availability of credit. Differences in the terms and conditions for the purchase of inputs were found but it

does not appear that they arose as a result of discrimination. It was possible in most cases to explain variations in these conditions, by differences in market transaction costs. Market transaction costs per unit of sales tend to be higher for smallholders of pigs than for those with a larger number of pigs.

It also appears that smallholders obtained fewer loans than larger holders of pigs. However, it seems that the former had less demand for such loans.

On the whole, differences in market transaction costs tend to favour households that hold large stocks of pigs and disfavour those with smaller stocks. There is no obvious way in which small holders can avoid this disadvantage.

10. Size of Pig-Holdings and Use of Professional Services such as Veterinary Services and Extension Services

Perhaps surprisingly, the study found that smallholders of pigs were more likely to use veterinary services than large holders. One possible reason was that large holders are more experienced in diagnosing maladies in pigs and treating them themselves. Whether this is so is not known. Another possible factor could be the smallholders more frequently encounter veterinary problems in raising their pigs but once again, there is no concrete evidence for this. We cannot be sure that risk of disease outbreaks in pigs is greater in the case of smallholders than for those holding larger number of pigs.

The study found that most households having pigs made little use of extension services. This does not appear to be due only to their limited availability but also may reflect the fact that in most cases the extra economic value perceived by households to be provided by these services was less than the added cost required to access them.

11. Miscellaneous Matters

Other interesting information also emerged from the survey of producers undertaken as a part of this project. It emerged that the most popular type of pig was that

involving a cross of Large Whites and Mong Cai. However, since the provinces included in the producer survey were not amongst the most marginal producers of pigs in Vietnam, different compositions of pig varieties may be present in more outlying provinces; for example in provinces in the North West which experience harsh weather conditions such as severe cold snaps at times.

Household producers surveyed perceived several constraints on the supply of pig stocks and breeds. Many complained of the high price and inadequate supply of high quality genetic stock. These constraints seem, however, to be a result of market conditions. In the longer term, the market should adjust the supply and composition of stock to reflect demand. A more serious problem is the absence of the guaranteed genetic composition of purchased stock. This seems to be a particular problem in Ha Tay province where pig producers are relatively specialized in different stages of pig production. They, therefore, have to trade more frequently in pig stocks than pig producers in most other provinces. It is well known that when buyers are uncertain about the quality of a product to be purchased that this results in economic losses (see, for example, Akerlof, 1970). However, it is not clear whether it would be economic to introduce a government-sponsored certification scheme to rectify this problem. In some countries certification schemes are in place for seeds intended for planting crops for example, the variety and the germination rate are sometimes guaranteed.

Also another interesting result from the survey is that holders of large stocks of pigs are more likely to complain about market conditions than those with small stocks of pigs. For example, large holders of pigs more frequently complained about rises in the price of pig food. This is not surprising because this food involves a major cost outlay for them.

12. Notes on Some Emerging Issues Involving Pork Quality Standards

Of course, the pig industry in Vietnam will not remain stationary. To some extent, its future depends on the development of the whole of the Vietnamese economy because most industries and different markets are interdependent.

One major development that could have a significant impact on Vietnam's pig industry is improvements in Vietnam's transport infrastructure. This improvement is liable to facilitate interprovincial trade and may make it more economical for provinces that are more distant from Hanoi and Ho Chi Minh City to supply these markets with pork. This could result in some changes in the regional supply of pigs and pork in Vietnam. The possibility of this occurring could be a subject for research. This raises the issue of quality standards for pork and the desirable degree of their uniformity throughout Vietnam.

While in principle, higher quality standards are desirable, it needs to be borne in mind that ensuring such standard is not costless. Therefore, it is necessary to compare their extra benefits with the additional costs and different consumers may have different levels of demand for the government imposing higher standards.

Suppose that inspections are to be made and/or conditions are to be imposed to ensure that pork meets a particular health standard. The question then arises about the extent to which it is economical to see that this standard is satisfied. Assume that pork which meets the standard is certified as doing so. The demand of consumers for certification might be as shown by relationship ABCD. The per unit cost of certification of pork might be like line EBF. This is assumed to be of this simple form for illustration purposes. Given this relationship, it is only economical to ensure that X_1 of the supply of pork satisfies this standard. If X_2 is the total supply of pork, requiring all pork to meet the standard would result in disbenefit to buyers equal to the area of quadrilateral BCDF, which has been cross hatched, it being assumed that consumers pay for the higher standard. However, in practice, the incidence of the cost of the higher standard will normally fall partly on consumers and partly on producers. The main point however, is that enforcing the same standards on all pork supplies is unlikely to be economic.

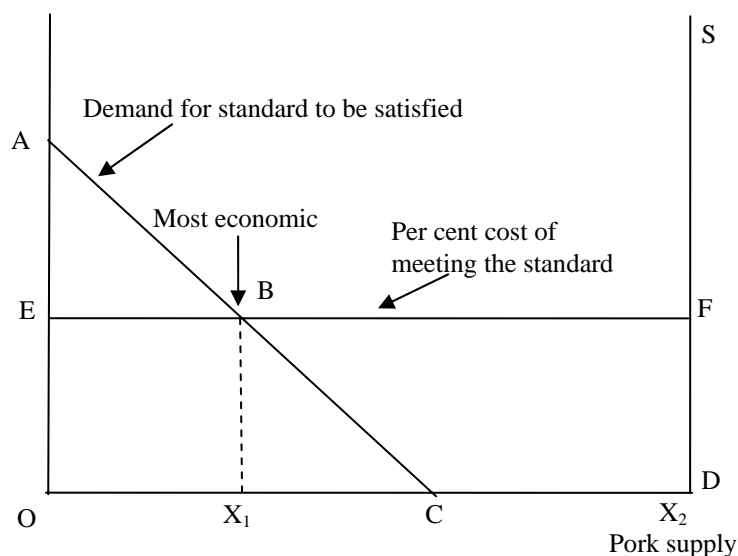


Figure 1: The introduction of quality standards for pork involves economic considerations. It may not be economic to ensure that all pork supplies meet a targeted standard. If that is done in the case illustrated, an economic loss equivalent to the hatched area occurs.

The demand for high quality standards is likely to be related to income levels. As income levels rise, the demand curve shown in Figure 1 is liable to shift upward. Higher income groups in cities may have a strong demand for higher quality standards but it would not be economically desirable to impose these standards on all consumers.

The above model involves several simplifications. However, its main purpose is to show that the adoption of food standards has economic implications. For one thing, the model assumes that consumers are knowledgeable about food standards and food quality. However, as research by Delia Grace from ILRI indicates, this is frequently not so. For example, consumers of milk in Assam were found to be poor judges of milk quality (Grace et al., 2007).

An alternative economic approach to deciding on appropriate food standards would be to apply health economic models to the problem. In principle, cost-benefit models of the type applied to controlling environmental health problems are relevant (see, for example, Tisdell, 2009, Ch. 13). These models can be expected to indicate that higher

food quality standards tend to become more economic as incomes rise. Conversely, they are less economic, the lower are incomes in a society.

Note that if economies of scale exist in compliance with food standards, imposing standards for a food item will tend to become more economic as the size of market for the food item subject to a standard increases. Thus both scale economies and higher incomes make it more economic to adopt higher food standards.

13. Is Increasing the Size of Vietnam's Pig Producing Units the Way to Make its Pig Industry More Competitive Internationally?

Many policy-makers in Vietnam seem to believe that by increasing the scale of production of its pig-producing units, Vietnam's pig industry will become more competitive internationally and that this will also improve quality standards in the industry. An FAO report (Son et al., 2006) also states that increased scale of production by individual agricultural units in Vietnam will lower per unit costs of Vietnam's agricultural production. However, it does not provide concrete evidence about these economies.

There is little available evidence that larger scale production units for livestock in Vietnam will substantially lower its average cost of livestock production given the current stage of its economic transition.

In fact, large units may experience higher costs of production than smaller units and they are likely to be more dependent on commercial food purchases and imports of commodities for feeding livestock. However, even if they do have high per unit costs, Vietnam may need supplies from such units to help meet its increasing demand for livestock products, as I have argued elsewhere (Tisdell, 2009c).

The following question also arises: If large scale livestock units are more profitable (economic) than small-scale units, why do they not evolve naturally at a desirable pace? Is it because such units require a greater land area than that which is available to households and that the required amount of land is difficult to secure? If this is so, why is it difficult to secure? Have the land reforms in Vietnam (Son et al., 2006)

proved to be inadequate in freeing up the market in land and if so, why? Are there still too many constraints on transfers of agricultural land and if so, what are they? Or is it that households are very reluctant to transfer their land? These are all questions to which it is worthwhile seeking answers.

14. Conclusions

In my view, several important findings have emerged from this research project. They include the following:

- (1) Because of the strong preference of Vietnamese consumers for fresh pork purchased from traditional market outlets, Vietnamese pig producers enjoy substantial market protection from pork imports. The slow growth of supermarkets in Vietnam reinforces this protection. The continuation of this trade protection depends on Vietnamese lifestyles not altering radically.
- (2) Household pig producers rely mostly on family labour and women tend to spend more time than men in tending pigs. Given lack of alternative employment opportunities (and other considerations), this seems to be economically desirable given the current state of Vietnam's development and economic transition.
- (3) Findings about economies of scale in relation to size of the number of pigs held by producing units have in my view, been inconclusive on the whole. Nevertheless, the study did indicate that the presence of economies of scale could be different for different stages of pig production. In any case, given the level of demand for pork in Vietnam, producers with different levels of costs are able to survive in the market, that is both some higher cost producers and some with lower costs can survive. This is normal.
- (4) It was found that those units with smaller pig stocks were less dependent on imported pig food than those with larger pig stocks. Smaller producers relied more on their own produce and locally produced pig food. However, small producers are unable to meet all of Vietnam's demand for pork because the availability of domestically supplied pig food is limited.

- (5) In the sample survey of household producers of pigs, it was discovered that pig producers in the Red River Delta specialize to a greater extent in different stages in pig production compared to those in the south of Vietnam. Reasons for this difference have yet to be explored. Also the extent to which holders of pigs diversified their agricultural production and why were not examined.
- (6) While some information about regional differences in pig production systems was gathered (for example, about differences in specialization by different stages of pig productions), there is scope for further study of these differences such as reasons for large variations in regional pig yields and the economics of these differences.
- (7) Research was conducted to find out if small holders of pigs are disadvantaged by economic discrimination in relation to supply of inputs and their sale of pigs. While small holders suffered economic disadvantage to some extent in accessing input markets, these are largely explained by the higher per unit market transaction costs arising from small market exchanges. Economic discrimination does not seem to be a major problem.
- (8) The survey results revealed that small holders of pigs are more likely to access veterinary services than larger holders. This result seems to be contrary to popular opinion. The reasons for this relationship are not completely known but one reason given was that those with a large number of pigs are more knowledgeable about pig husbandry and, therefore, do not require as much veterinary assistance. Most holders of pigs were found to make little use of extension services.
- (9) The majority of pigs held by the households surveyed were crosses of Large Whites and Mong Cai.
- (10) Households holding larger stocks of pigs complained most frequently about price variations, particularly the rising price of pig food. This is not surprising because they are more market dependent than smallholders as revealed by this research.

Significant results have emerged from this research and a number of areas have been identified that would benefit from future research. These matters include the domestic supply of pig food versus imports of this food, further consideration of supply chains for pig food, inter-provincial trade in pigs, pork and pig food, the extent and economic reasons for specialization (diversification) by those holding pigs, and the likely

changes in the pattern of regional pig production. More attention could be given to regional differences in systems of pig production and variations in the economics of this production. Another significant issue is the economics of enforcing higher standards and quality control in the industry and the certification of the quality of pork. It could be claimed that one of the contributions of this project has been to identify issues in Vietnam's pig industry that would benefit from future research. It was observed that the per cost costs of production of larger sized pig producing units do not have to be lower than for small holders for them to be able to market their produce in Vietnam.

15. References

- Akerlof, G. (1970). The market for lemons: quality and the market mechanism. *The Quarterly Journal of Economics*, 84, 488-500.
- CAP and ILRI. (June 2009). A Descriptive Report on Pig Producer[s] in Vietnam (Preliminary Results). Center for Agricultural Policy, Hanoi.
- General Statistics Office of Vietnam (2009). *Statistical Yearbook of Vietnam 2008*, Statistical Publishing House, Hanoi.
- Grace, D., Patwari, P. and Choudhury, B. (2007). Report on milk quality pathways and perceptions in Assam. *Mimeo*, (Draft 2, 19 Feb, 2007). International Livestock Research Institute, Nairobi, Kenya.
- Huang, J., Yang, J. and Rozelle, S. (2006). China's rapid economic growth and its implications for agriculture and food security in China and the rest of the world. *Rapid Growth of Selected Asian Economies: Lessons and Implications for Food Security China and India*, Regional Office for Asia and the Pacific, Food and Agricultural Organization of the United Nations, Bangkok.
- Lapar, M.L.A., Toan, N.N., Que, N.N., Jabbar, M., Tisdell, C.A. and Staal, S. (2009). *Market outlet choices in the context of changing demand for fresh meat: Implications for smallholder inclusion in pork supply chain in Vietnam*. Paper presented at the 27th Conference of the International Association of Agricultural Economists, held at Beijing, 16-22 August, 2009.
- Maruyama, M. and Trung, L.V. (2007). Supermarkets in Vietnam: Opportunities and obstacles. *Asian Economic Journal*, 23, 19-46.
- Skolrud, T.D., O'Donoghue, E.O., Shumway, C.R. and Melhim, A. (2009). Identifying growth and diversification relationships in Washington agriculture. *Choices: The Magazine of Food, Farm and Resource Issues*, 24(1), 45-48.

- Son, D.K., Que, N.N., Dieu, P.Q., Trang, T.T.T. and Beresford, M. (2006). Policy reform and the transformation of Vietnamese agriculture. *Rapid Growth of Selected Asian Economics. Lessons and Implications for Agriculture and Food Security Republic of Korea, Thailand and Vietnam*, Regional Office for Asia and the Pacific, Food and Agricultural Organization of the United Nations, Bangkok.
- Tisdell, C.A. (2009). *Resource and Environmental Economics: Modern Issues and Applications*, World Scientific, Singapore, New Jersey, London.
- Tisdell, C.A. (2009a). Trends in Vietnam's pork supply and structural features of its Pig Sector. *The Open Area Studies Journal*, 2, 52-71.
- Tisdell, C.A. (2009c). The survival of small-scale agricultural producers in Asia particularly Vietnam: General issues illustrated by Vietnam's agricultural sector, especially its pig production. *Economic Theory, Applications and Issues*, Working Paper No. 56. School of Economics, The University of Queensland, Brisbane, 4072, Australia.
- Tisdell, C.A., Lapar, M.A., Staal, S. and Que, N.N. (2009). Natural protection from international competition in the livestock industry: Analysis, examples and Vietnam's pork market as a case. *Economic Theory, Applications and Issues*, Working Paper No. 59. School of Economics, The University of Queensland, Brisbane, 4072, Australia.

APPENDIX

A Copy of the Power Point Slides Used in Presenting this
Paper at the Workshop held in Hanoi

An Economic Study of Small Pig-Holders and Markets in Vietnam: Some Insights Gained and the Scope for Further Research

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Coverage

- Introduction
- Trends in Vietnam's Pig Production and Consumption of Pork
- Natural Market Protection
- Employment: Gender and Other Aspects Revealed by the Survey of Producers
- Scale Economies
- Observations on the Import Dependence of Pig Production in Vietnam and Its Variation with the Size of Pig-Holdings
- Specialization in Pig Production

Coverage (cont.)

- Regional Differences in the Economics of Pig Production
- Economic Discrimination in the Supply of Inputs to Household Producers of Pigs and in their Sale of Pigs
- Size of Pig-Holdings and Use of Professional Services such as Veterinary Services and Extension Services
- Miscellaneous Matters
- Notes on Some Emerging Issues Involving Pork Quality Standards
- Is Increasing the Size of Vietnam's Pig Producing Units the Way to Make its Pig Industry More Competitive Internationally?
- Conclusions

1. Introduction

- The importance of households as pig producers in Vietnam is well known. In 2006, households accounted for about 90% of Vietnam's stock of pigs.
- Households with small stocks of pigs account for the major portion of pigs held by households. In 2006, households having 5 pigs or less accounted for 83.4% of the stock of pigs held by households.

Introduction (Cont.)

- In recent decades, Vietnam's economy has become more market-oriented and open to international trade. Household producers of pigs have had to adjust to those changes. This ACIAR-sponsored research was designed to consider the ways in which household pig producers, especially smaller scale producers, have fared in this new environment and adjusted to it. A part of the study also involved determining the nature of the new market environment.

2. Trends in Vietnam's Pig Production and Consumption of Pork

- Between 1996 and 2006, Vietnam's pork production and consumption almost doubled. Smallholders made a substantial contribution to this increased supply. The pig population of Vietnam peaked in 2005 – slight decline since then.
- Both rising pig stocks and increasing yields played a role in expansion of this supply.
- However, this required of rises in the import of pig food. This was facilitated by the increased openness of Vietnam's economy to international trade.
- Scope exists for future research to outline more precisely the import implications of the expansion of Vietnam's pig industry and the constraints on its domestic supply of pig food.



3. Natural Market Protection

- It has been found that Vietnam's pig industry enjoys a high degree of natural market protection.
- This is because Vietnamese consumers prefer fresh meat and to buy this meat from traditional market outlets. Therefore, imports (which are chilled, frozen or processed) are considered to be inferior to local fresh meat.
- This protection is reinforced by the slow growth in the number of supermarkets in Vietnam and the lack of demand for 'fresh' food from these outlets. This probably is beneficial to smallholders of pigs.



4. Employment: Gender and Other Aspects Revealed by the Survey of Producers

- Household producers of pigs rely mostly on family labour and females make the major contribution to the husbandry of pigs.
- On the whole, the relative contribution of women in terms of labour hours tends to bear an inverse relationship to the size of the household's stock of pigs.
- The opportunity costs of employing family labour is usually less than the going wage rate.
- The opportunity to employ family labour in rearing pigs has several economic benefits in a transitional economy.

5. Scale Economies

- The results of the research seem to be inconclusive as far as the presence and importance of scale economies are concerned.
- Food costs are the major costs in rearing pigs, and the scale results are sensitive to how those costs are estimated.
- Small producers make greater use of their own produce and local produce to feed their pigs. If such produce is given too high a price, it will inflate the costs of small holders of pigs. This needs to be considered.
- In any case, the level of demand for pork in Vietnam is such that the market is able to provide economic support to suppliers with different levels of costs, as pointed out in Tisdell, (2009b).

6. Observations on the Import Dependence of Pig Production in Vietnam and its Variation with the Size of Pig-Holdings

- As pointed out already, rising pig production in Vietnam has been partly made possible by greater import of pig food.
- Although smallholders of pigs rely to a greater extent on their own produce and local produce for their pig food than do larger holders of pigs (and hence, are less import dependent) there are constraints on these supplies.
- Future research into Vietnam's scope for increasing its supply of domestically produced pig food would be worthwhile.

7. Specialization in Pig Production

- It was found that pigholders in the Red River Delta are more specialized in different stages of pig production than those surveyed in the South of Vietnam.
- The reasons for this difference is not known. It could be investigated.
- The extent to which holders of pigs engage in product specialization (diversification), and why, was not investigated. This could be investigated in future research.

8. Regional Differences in the Economics of Pig Production

- Only limited study was done of regional differences in pig production.
- Substantial differences exist in Vietnam in pig yields which is not surprising given the geographical diversity of the country. Yields in the Red River Delta are more than 3 times those in the North West region. Why? There is room to consider the reasons for such regional differences.
- Also more attention should be given to determining the interprovincial trade in pigs, pork and pig food and how it might change as Vietnam's infrastructure improves.

9. Economic Discrimination in the Supply of Inputs to Household Producers of Pigs and in their Sale of Pigs

- On the whole, smaller pig-holders obtain less favourable terms and conditions for buying pig food than those with larger stocks of pigs. The differences seem to be due to differences in market transaction costs rather than discrimination.
- Small pig-holders less frequently obtain credit than larger pig-holders. However, small holders seem to be more anxious to avoid debt than holders of many pigs.

10. Size of Pig-Holdings and Use of Professional Services such as Veterinary Services and Extension Services

- It was found from the sample, that the frequency with which smaller pig producers use veterinary services is higher than in the case of large producers.
- The reasons for this are not well known. There are a number of **possible** reasons e.g. smallholders encounter more health problems with their pigs; large holders are more knowledgeable about diagnosing and treating pig diseases.
- Most pig-holders made little use of extension services.

11. Miscellaneous Matters

- Crosses of Large Whites and Mong Cai dominate the pig stock of those households surveyed.
- Whether this would be so in other provinces is not clear, for example, in the North West it may not be so.
- It was found that large producers complained most frequently about price variations, especially rises in the price of purchased pig food. That is not surprising because they are most dependent on the purchase of processed pig food to feed their pigs.
- In any case, the upward spiral in pig food prices seems to be adding to the economic pressures on Vietnam's pig producers.

12. Notes on some Emerging Issues Involving Pork Quality Standards

- The development of improved transport infrastructure in Vietnam should increase inter-provincial trade in pigs and pork.
- This may result in the Vietnamese government trying to increase quality control in pork supply and more widely applying its standards geographically.
- However, the extra cost of doing this will need to be compared with the benefits. Economic considerations are involved.

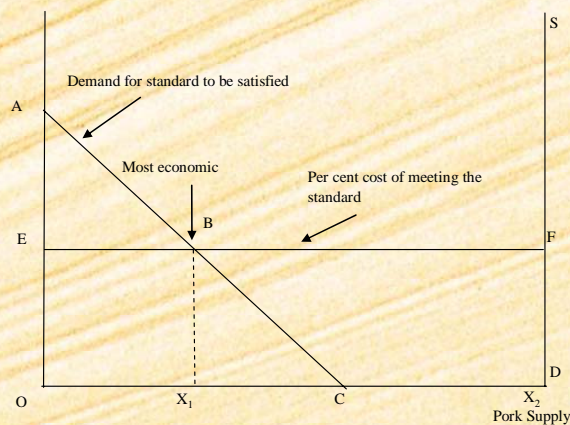
Notes on some Emerging Issues Involving Pork Quality Standards (Cont.)

- Analysing the economics of quality standards is complex but is worthwhile considering. The economics of signalling a quality standard can be illustrated by a simple case.
- Figure 1 can be used to illustrate the fact that economics should be taken into account when setting standards for and signalling pork quality.
- Suppose that a standard is set and that pork which satisfies this standard is certified as meeting it.
- Then the relationship ABCD might represent the demand for pork certified as meeting this standard.

Notes on some Emerging Issues Involving Pork Quality Standards (Cont.)

- For simplicity suppose that line ED represents the per unit cost of ensuring and certifying that pork meets this standard.
- Let X_2 represent the total supply of pork.
- It will only be economic to ensure that a quantity of pork equal to X_1 satisfies this standard.
- If all pork is required to meet the standard, a reduction in economic welfare equivalent to the hatched area would occur.

Notes on some Emerging Issues Involving Pork Quality Standards (Cont.)



The introduction of quality standards for pork involves economic considerations. It may not be economic to ensure that all pork supplies meet a targeted standard. If that is done in the case illustrated, an economic loss equivalent to the hatched area occurs.

13. Is Increasing the Size of Vietnam's Pig Producing Units the Way to Make its Pig Industry More Competitive Internationally?

- Although some claim this to be true, concrete evidence is lacking.
- But even if the average costs of production of commercial large-scale pig producing units is higher than for small-sized household suppliers, their supply is still required in Vietnam's pork market.
- However, once Vietnam's economy develops further, smaller-sized household producers will tend to disappear.

14. Conclusion

- I'll not repeat a summary of the main findings from this research. It is in my paper.
- Nevertheless, it is clear from what I have said that significant results have emerged from this research both in relation to demand and supply issues affecting Vietnam's pig industry, its household producers and especially small-scale household pig producers.
- A number of areas that would benefit from future research have also been identified. A useful outcome of this research project has been to help identify gaps in knowledge as far as the economic performance of Vietnam's pig industry is concerned.

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