

# Structural Economic Changes in China and Vietnam: Policy Issues and Consequences for Agriculture\*

---

*Clem Tisdell*

*Professorial Research Associate*

*Risk and Sustainable Management Group*

*School of Economics*

*The University of Queensland*

*Brisbane, 4072, Australia*

*Email: [c.tisdell@economics.uq.edu.au](mailto:c.tisdell@economics.uq.edu.au)*

---

\* A paper prepared for the 9<sup>th</sup> Biennial Pacific Rim Conference of the Western Economic Association International to be held April 26-29, 2011 at QUT, Brisbane, Australia and to be presented in the *Contemporary Economic Policy Session*, "Agriculture, Biofuels and Pacific Rim Issues", 2.45pm – 4.30pm, Tuesday, April 26, 2011. The preparation of this paper was assisted by support from the ACIAR-sponsored research project "Improving the Competitiveness of Pig Producers in an Adjusting Vietnam Market", Project Number LPS/2005/063, managed by ILRI. I wish to thank Dr. Ma. Lucilla Lapar for her suggestions on an earlier version of this paper.

# **Structural Economic Changes in China and Vietnam: Policy Issues and Consequences for Agriculture**

## **ABSTRACT**

This paper outlines sectoral economic changes that have occurred in China and Vietnam following their market reforms and rapid economic growth. Both economies have experienced increased urbanization and a decline in the relative contribution of agriculture to GDP and to employment. There has been considerable movement of labor from agricultural to non-agricultural employment. Such movements are, however, not costless to farm families, particularly if migration is involved. The role of China's town-and-village enterprises in facilitating switching from agricultural to non-agricultural employment is discussed. Economic growth has resulted in considerable alterations in the composition of agriculture in China and Vietnam. A prominent trend is the expansion of livestock production relative to crop production. However, domestic livestock supplies have been outpaced by rising demand and in recent years their prices have risen. This has led some policy makers to argue that the heavy dependence of China and Vietnam on small-scale household producers of agricultural products is the main bottleneck. They favor policies to increase production by commercial enterprises. It is argued here that because both the economies of China and Vietnam are still in transition, it is economic to have agricultural products for which there is a high demand supplied by both households and commercial enterprises, even though this dual system is likely to disappear eventually.

# **Structural Economic Changes in China and Vietnam:**

## **Policy Issues and Consequences for Agriculture**

### **1. Introduction**

The economic growth of mainland China and Vietnam has been accompanied by substantial structural economic change. This growth has resulted in growing urbanization and considerable expansion of the secondary and tertiary sectors of their economies relative to their primary sector (mainly agriculture) and important structural alterations have occurred within these sectors. This paper examines important policy issues that have arisen for the agricultural sector of these economies in adjusting to this transition and compares and contrasts the experience of these countries.

The economic growth of both China and Vietnam and accompanying structural changes in their economies has been stimulated by their market reforms. These market reforms began in China in 1979 but did not start in Vietnam until 1986, that is almost two decades later. Both countries began their economic reforms in agriculture.

Chinese policy-makers specifically mentioned that it was their intention to commence their economic reforms in agriculture and rural areas and then extend them to the remainder of the economy (Tisdell, 2009a). A step-by-step guided approach to economic reform was adopted by China. The household agricultural responsibility system replaced the collective system of agricultural production and gradually farmers were given greater freedom to respond to market signals (Tisdell, 1993, Ch. 9; 1995, Ch. 9). An important feature of China's economic reforms was its encouragement of town-and-village enterprises. This led to the expansion of industrial production in rural areas and gave local communities considerable scope to make their own economic decisions. The development of these enterprises proved to be an important stepping

stone in the transformation of China's economy. As discussed later, they facilitated movement from agriculture to other sectors of the economy.

Although Vietnam adopted similar market reforms after it began its policy of *Doi Moi*, renovation, in 1986, the development of town-and-village enterprises was not central to its policy. Nevertheless, it decollectivized agriculture, allocated land to rural households and placed emphasis on market systems as means to allocate resources. Vietnam's market reforms progressed rapidly once the introduction of *Doi Moi* was announced in 1980 and it has been contended that this announcement 'was followed by a series of reforms that effectively ended the system of resource allocation by central planning by 1989' (Son, et al., 2006).

## **2. Comparative Aspects of Urbanization and Changes in the Major Economic Sectors in China and Vietnam**

Since beginning their market reforms both China and Vietnam have experienced considerable urbanization and significant sectoral change. They had a major decline in the relative importance of the agricultural sector (the primary sector) and substantial expansion in the relative size of the secondary (manufacturing) and tertiary (services) sector. This pattern accords with the theory of Colin Clark (1957) about the relationship between the sectoral composition of economies and their economic growth and development.

China, however, is much more urbanized now than Vietnam. At the end of 2009, it is estimated that 46.6% of China's population lived in urban areas with the remaining 53.4% resident in rural areas (Anon, 2011a). (Note that all of the statistics given in this paper apply to mainland China and exclude Hong Kong and Macau). It is still the case that the majority of Chinese live in rural areas but the difference between the size of its rural and its urban population continues to fall rapidly. The United Nations Population Fund (2007) estimates that by 2015 an equal number of people will live in rural and urban areas in China. There is no doubt that urbanization in China has been very rapid following its reforms. According to the 1982 Census, only 20.6% of its population was urbanized but this more than doubled by 2008. Although changes in how

urbanization is measured affect the Chinese statistics (Anon, 2011*b*, p. 3), there is no doubting that the increased urbanization of China has been very rapid.

In 2008, 28% of Vietnam's population was urbanized according to official statistics (General Statistics Office of Vietnam, 2009). This is a considerably lower degree of urbanization than in China. Almost three out of every four Vietnamese continue to live in rural areas. Despite differences in the way that urbanization is measured in China and Vietnam, it is clear that Vietnam remains less urbanized than China. This may partly be a consequence of Vietnam starting its economic reforms later than China and possibly not having as great an economic advantage in manufacturing (Tisdell, 2009*b*).

Nevertheless, urbanization in Vietnam is now occurring very rapidly. In 2008, the estimated growth rate of Vietnam's urban population was 3.57% and only 0.33% for its rural population (General Statistics Office of Vietnam, 2009, p. 39). The disparity is due to a high rate of rural-to-urban migration. This movement is reflected in a decline in employment in agriculture in Vietnam and in its contribution to GDP. In 2000, agriculture and forestry employed 23.492 million persons in Vietnam but by 2008 this had fallen to 21.950 million persons (General Statistics Office of Vietnam, 2009, p. 51). Consequently, agricultural employment decreased from 62.5 per cent of Vietnam's employed population in 2000 to 48.9 per cent in 2008. In the same period, employment in manufacturing rose from 3.55 million to 6.306 million to account for about 13.5 per cent of Vietnam's employment in 2008. Consequently, the tertiary sector accounted for almost 37.6% of employment.

As a percentage of Vietnam's GDP, the contribution of industry and construction rose from 36.73 per cent in 2000 to 39.73 per cent in 2008, the contribution of the service sector remained relatively steady: it was 38.74 per cent in 2000 and 38.17 per cent in 2008. There was a decline in the contribution of agriculture, forestry and fisheries to GDP in the same period from 24.53 per cent to 22.10 per cent (General Statistics Office of Vietnam, 2009, p. 72). Despite the fall in the number of those employed in agriculture, the gross output of agriculture (at constant 1994 prices) increased throughout the period 2000-2008. It rose over the whole period by approximately 40 per cent. Nevertheless, it exhibited a slower rate of growth than Vietnam's

GDP at constant 1994 prices. Vietnam's GDP increased by almost 80 per cent in the same period.

The comparative sectoral statistics for China are as follows with the statistics for Vietnam for 2008 are shown in parenthesis. The distribution of these labor force in China in 2008 was in agriculture, 39.5% (48.9%), for industry, 27.2% (13.5%) and for services, 33.2% (about 37.6%) and the contribution to GDP of these sectors was estimated for 2010 for China to be agriculture 9.6% (22.1%), industry, 46.8% (39.73%) and services, 43.6% (38.17%). Thus the relative economic importance of the agriculture sector in Vietnam's economy remains much higher than its comparative importance in China. Industry makes a substantially larger contribution to China's GDP than it does in Vietnam and is a more important source of employment of the labor force. The service sector is of similar comparative importance in both economies but it makes a relatively larger contribution to GDP in China than in Vietnam.

The proportion of China's employed population engaged in agriculture has continued to decline with its economic development and so too has the relative contribution of agriculture to China's GDP. Whereas in 1978, agriculture accounted for 28.1 per cent of China's GDP by 2006, this had fallen to 11.8 per cent and in the same period, the percentage of its employed population engaged in farming declined from 70.5 per cent to 42.6 per cent (Ministry of Agriculture of China, 2009a, p.1). The percentage of the workforce engaged in farming in China is lower than in Vietnam. Nevertheless, both China and Vietnam now have less than half of their workforce engaged in farming. However, the relative contribution of Vietnam's agriculture, fishing and forestry sector to its GDP is almost twice that in China. Consequently, Vietnam is more heavily dependent on agriculture than China for its economic output.

An interesting feature of China's rural development is the high proportion of employed persons engaged in non-farming activities in rural areas. This proportion rose substantially after China began its economic reforms, presumably because of China's promotion of town-and-village enterprises. Rural non-farm employment as a percentage of rural employment increased quite rapidly from 1980 onwards and by 2005, had reached 42.6 per cent (Ministry of Agriculture of China, 2009a, p. 2). Vietnam appears to have had less development of rural non-farm employment and slower establishment of rural non-farm enterprises compared to China.

### **3. Exit of Agricultural Workers to Urban-based Industries**

With economic development, it is usual for rural-to-urban migration to take place and for the numbers employed in agriculture to decline. This is partly a consequence of the changing composition of consumer demand as the levels of personal income rise. Personal expenditure on agricultural products is less income elastic than that on manufactured goods and services. Furthermore, it has been suggested that in labor-surplus economies, the marginal productivity of agricultural labor is low or even negative (Lewis, 1954). However, as discussed by Cao and Tisdell (1992), several concepts of surplus labor exist. Lewis (1954, 1965) hypothesized that in such economies a perfectly elastic supply of labor would be available for the development of their industrial sectors, at least in the early stages of their economic development. One of the factors that Lewis did not consider in his analysis is the transaction costs incurred by agriculturalists in switching to urban-based employment. Government policies that reduce these transaction costs can add to economic efficiency in the allocation of resources. However, if the transaction costs involved in labor movements are very low, this can destabilize markets subject for example, to cobweb-type reactions (cf. Tisdell, forthcoming; Tobin, 1978).

The incomes of farmers are likely to remain below the incomes of those employed in urban-based industries if the transaction costs of farmers in moving to urban-based industries is high. Consequently, the value of the marginal product of labor in agriculture will remain below that in urban-based industries.

The transaction costs involved in switching from farming to urban-based employment can include extra transport costs in traveling to and from work, the cost of shifting one's place of domicile in many cases, uncertainty about the comparative benefits of urban-based employment, questions about the permanency of employment and the prospect of obtaining employment in urban areas. The size of the possible sunk costs involved in relocating employment is likely to be a major consideration. Both in China and Vietnam if a farm family moves off its land, it may lose possession of it and be unable to recover its investment in improving the property because (despite reforms) a completely free market does not exist for the marketing of agricultural land

(Tisdell, 2009b). Therefore, a farm family may incur some sunk costs in moving off its allocated agricultural land.

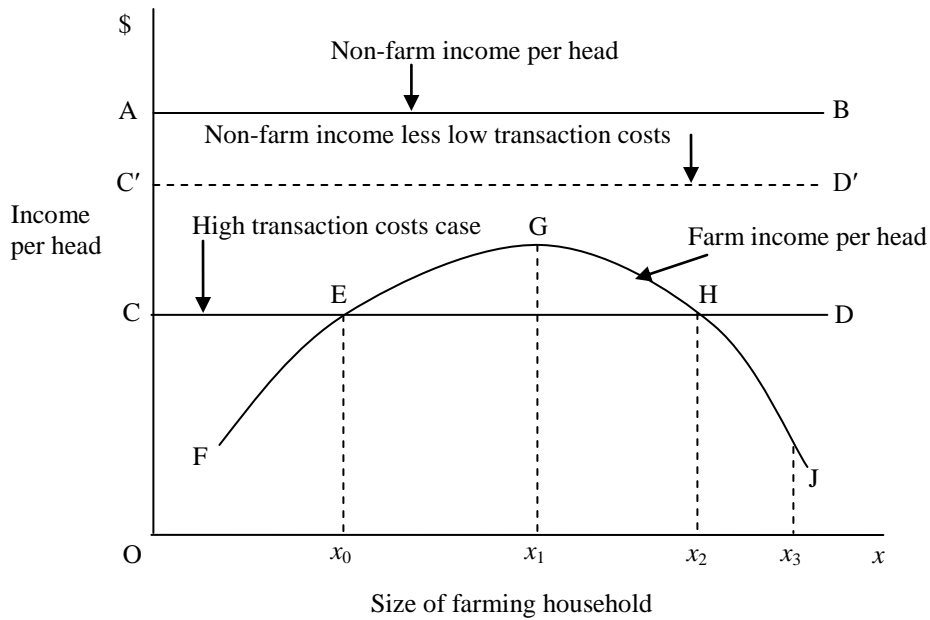
The transaction costs involved in relocating employment are usually lower for younger members of a family than older ones because they have fewer location-specific assets and often have the option of returning to their family's abode if their relocation is not satisfactory. Furthermore, the cost to farmers of relocating to urban-based employment is likely to be relatively low if this employment is near the current location of farmers. China's policy of encouraging the development of town-and-village enterprises was very effective in encouraging farmers to switch from farming to urban-based employment because this employment was available locally. It is also possible that these town-and-village developments provided a stepping stone for migration to other urban areas, such as cities. This type of leap-frogging migration was observed in Britain during the early stages of the Industrial Revolution.

Vietnam has not placed the same degree of emphasis on the development of decentralized non-farm enterprises as China. However, Vietnam is now undertaking some regional decentralization of its industrial development, presumably to help reduce its surplus of agricultural labor (see Kirk and Tuan, 2009). In fact, Table 84 of the *Statistical Yearbook of Vietnam* (General Statistics Office of Vietnam, 2009) indicates that since 2000, there has been, a rapid increase in the number of non-farm individual businesses in provinces where farming is the predominate economic activity with a significant rise in non-farm employment in rural areas.

### *Illustrations of relevant theory*

Farmers can be expected to demand a sufficiently higher income in urban-based income in urban-based employment to compensate them for any transaction costs involved in switching their employment. They will, therefore, deduct from their expected non-farm income an allowance for their transaction costs of switching employment and compare this adjusted income with their current income. A very simplified example of this is illustrated in Figure 1 for a farming household.





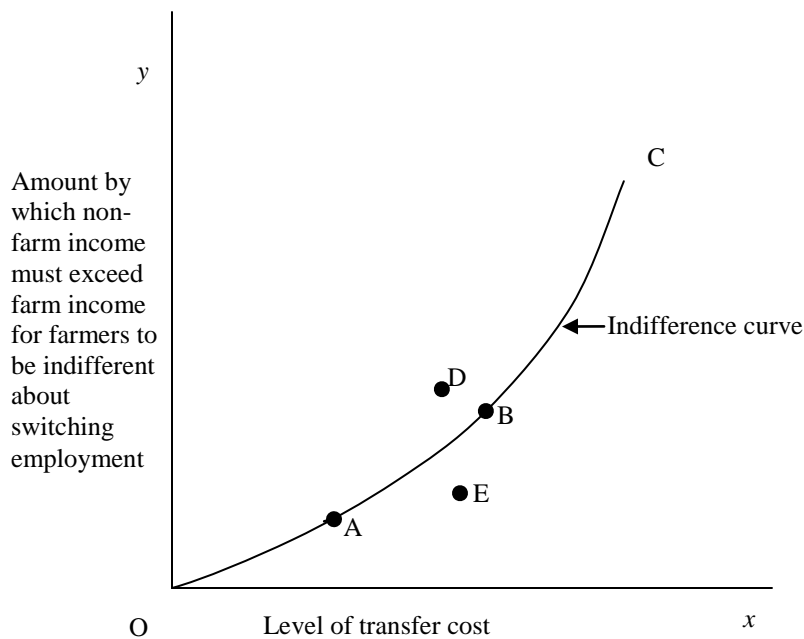
**Figure 1:** An illustration of transaction costs as a barrier to members of farming households switching to non-farm employment.

In this figure, the curve, AGJ, represents the income per head that the family is able to earn from farming as a function of the number of family members involved in farming. For simplicity, all family members are assumed to be equally placed. Suppose that each member can earn OA per head in non-farm employment. However, switching to this employment involves transaction costs. These reduce the effective non-farm income available to family members. If the transaction costs are low and say reduce the level of effective non-farm income to OC', the whole family will find it worthwhile to switch to non-farm employment. On the other hand, if these costs are relatively high, none of the family may switch employment or only a few may do so.

Suppose that the level of effective non-farm income after allowing switching costs is OC. Then if the number of family members is in the range  $x_0 < x < x_2$ , no family members will find it worthwhile to change from farming to urban-based employment. If the number of family members exceed  $x_2$ , those in excess of  $x_2$  will find it worthwhile to shift to off-farm employment. If the size of the farm household is less than  $x_0$ , all the family will find it worthwhile to shift to

off-farm employment. This assumes that the household only relies on its family for the supply of labor. This is usual in labor surplus economies. Given the above, members of small farm households or large ones appear most likely to seek off-farm employment, other things being held equal.

While the extent to which the income from non-farm employment must exceed that from farm income can be expected to rise with the level of transfer or transaction cost, the relationship is probably non-linear. It is likely to increase at an increasing rate, particularly if the sunk cost component rises with these costs and the level of non-farm income is uncertain. The type of relationship shown in Figure 2 by curve OABC is likely to apply.



**Figure 2:** Farmers will demand an income premium from non-farm employment to compensate for transfer costs, and most likely this involves a non-linear relationship. Given the indifference curve shown in this figure, a farmer is willing to transfer to non-farm employment if the situation corresponding to point D prevails but not if that corresponding to point E applies.

### *Policy implications*

Several policy measures can reduce the transaction costs incurred by members of farming households in taking up non-farm employment. These include measures to locate industry close to villages where farming families live, government subsidies for relocation of farm workers, and increased compensation for investment in agricultural land or for relinquishing it. The latter can be facilitated by measures to increase the marketability of agricultural land and by strengthening property rights in such land. Furthermore, institutional impediments to migration can be relaxed in cases where this is a constraint.

It should, however, be remembered that locating industry close to farming areas may not always be economic. In addition, rural locations of industries may only be efficient for a limited period of time in some localities. In short, rural industrialization can sometimes be costly and economically short-lived. Nevertheless, the rural location of industry may still be economically worthwhile as part of the economic adjustment process. For example, the location of many of China's town-and-village enterprises may prove to be uneconomic in the long run but they will have served their economic purpose before this. In a dynamic context, bear in mind that it can be economically optimal for enterprises and industries to rise and fall in a locality. Thus, even if many of China's town-and-village enterprises turn out not to be economically viable in the long-term, they may in the shorter-term have been economically valuable and useful as stepping stones to further economic development. Their contribution must be assessed both in its dynamic and institutional context.

## **4. Structural Change Within The Agricultural Sector**

Not only has the structure of the economies of Vietnam and China altered considerably with their economic reforms and growth but so also has the composition of their agricultural production. A prominent feature has been the increase in the relative importance of livestock production as a component of total agricultural production. This change has been in response to rising domestic demand for livestock products, mainly as a result of rising levels of per capita income. The demand for livestock products is positively related to income levels and as incomes rise, some

substitution of livestock products for non-livestock products occurs. Other factors that have contributed to the growing demand for livestock products are rising populations and most likely, greater urbanization. Increased urbanization has probably been conducive to a change in tastes in favour of greater consumption of livestock products, particularly in China.

The altering structure of China's agricultural sector is evident from Table 1. The general pattern has been for the relative contribution of crops to its agricultural production to decline and for the contribution of livestock products to rise strongly. Table 1 also indicates that the share of forestry in total agricultural production has remained fairly stationary in China's reform period and the share of fisheries (which includes aquaculture) after rising is now either stationary or declining slightly. The Ministry of Agriculture of China (2009*b*) has announced that China's aim is to increase the relative contribution of its livestock industry to its total agricultural production (livestock plus crop production) so that it accounts for 50% of this total.

**Table 1:** Percentage composition of China's agricultural production by type of produce, 1970-2004

Type of Production	1970	1980	1990	2000	2004
Crops	82	76	65	56	51
Livestock	14	18	26	30	35
Fishery	2	2	5	11	10
Forestry	2	4	4	4	4
Livestock ÷ Crops and Livestock	14.6	19.4	28.6	34.9	40.7

*Source:* Based on Huang et al. (2006, Table 4)

A similar trend is evident in the composition of Vietnam's agricultural production, as can be seen by comparing the last line of Table 1 with Table 2. The relative contribution of China's livestock production to its total agricultural production is much larger than that of Vietnam. This is partly a reflection of the fact that per capita income in China is much higher than in Vietnam and that China began its market reforms well before Vietnam did. Furthermore, it is conceivable that Vietnam has land and climatic endowments that give it a comparative economic advantage in crop production rather than in livestock production.

**Table 2:** Percentage composition of Vietnam's Gross Agricultural Output 1995-2008

<b>Type of Production</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2007</b>	<b>2008 (Prelim)</b>
Crops	78.1	78.2	73.5	73.9	71.5
Livestock	18.9	19.3	24.7	24.4	27.0
Service	3.0	2.5	1.8	1.7	1.5
	100.0	100.0	100.0	100.0	100.0

*Source:* Based on General Statistics Office (2009, Table 90)

Both China and Vietnam have been unable to meet their increased demand for livestock products solely by using their own resources. The expansion of their livestock industries has depended to a large extent on the import of coarse grains and soybeans to add to their supply of livestock food. In addition, there has been increased import of some livestock products.

Huang et al. (2006) argue that in recent times, China has increasingly specialized in agricultural production in which it has a comparative international economic advantage. Huang et al. (2006, Figure 4) claim this on the basis that China's positive balance of international trade in labor-intensive agricultural goods has increased since 1984 whereas it has become more negative in relation to land-intensive agricultural goods. They expect this pattern of trade to continue until at

least 2020 (Huang, et al., 2006, Figure 7). China's imports of coarse grains, oilseed, sugar, milk, beef and mutton, fiber and wheat are expected to increase. China is predicted to be self-sufficient in rice, horticulture, pork and poultry, fresh and processed foods and to have some scope for increasing its exports of these items.

A similar study does not appear to be available for Vietnam but it appears that as Vietnam's economy has become more open, its international trade in agricultural products also increasingly reflects its relative abundance of labor and its relative shortage of land. Major agricultural imports of Vietnam include food for livestock (such as coarse grains), wheat and wheaten flour, dairy products, edible oils and cotton. Vietnam has a very high level of imports of fertilizer. Its main agricultural exports are coffee, rice, rubber, cashew nuts, tea and fresh or processed vegetables and fruit, all of which appear to be relatively labor-intensive products. It is a large exporter of fish products, most of which is produced by means of aquaculture.

Vietnam has very limited imports of red meat mainly because of the strong preference of the Vietnamese consumer for fresh meat purchased from traditional market outlets (Lapar, et al., 2009). Such imported meat must of necessity be chilled, frozen or processed. This gives considerable natural protection to Vietnamese meat producers (Tisdell, et al., 2010). This is particularly important for the survival of Vietnam's pig industry because its cost of production is high by international standards. Because pork is a favored meat in diets of Vietnam, the price of pork is of widespread concern to Vietnamese consumers.

Son et al. (2006, Table 13) report that Vietnam has a comparative international economic advantage in the production of cashew nuts, coffee, rice and tea but a substantial cost disadvantage in pork production. The authors consider the long-term export potential of Vietnam to be high for rice, coffee, cashew nuts and pepper, to be medium for tea and for fruit and vegetables, and to be low for pork (Son, et al., 2006, Table 14). Given the apparent economic disadvantage of Vietnam in pork production, one might have expected substantial imports of pork to Vietnam. This has not occurred so far due to the preferences of Vietnamese for fresh pork, the slow growth of supermarkets in Vietnam (Maruyama and Trung, 2007) and the resistance of Vietnamese to purchasing fresh food from supermarkets. It is however, not clear that this situation will be maintained in the long-term because the habits and tastes of the

Vietnamese could alter with economic growth, urbanization and modernization. Furthermore, constraints on the domestic supply of pork could increase the price of pork so much that Vietnamese are increasingly forced to search for substitutes, such as imported pork.

In the period 1996-2006, Vietnam's domestic supply of pork rose from 14.76 kgs per capita to 29.77 kgs per capita but its annual rate of increase tapered off in 2006 (Tisdell, 2009c). In 2005, pig numbers in Vietnam peaked at 27.4 million head and since then have declined. The number of pigs in 2006 was 26.9 million, in 2007 it was 26.6 million and for 2008 the preliminary estimate was 26.7 million (General Statistics Office of Vietnam, 2009, p. 289). Therefore, Vietnam's stock of pigs now appears to be approximately stationary. In this situation, yields will need to rise if the volume of local pork supplies is to continue to increase.

Both increased yields and rising pig numbers expanded Vietnam's production of pork in the period 1996-2006. Growing pig numbers were the major contribution to this growth in the early part of the period and increased yield was the prime contributor to increasing levels of pork production in the latter part of this period (Tisdell, 2009c). The expansion in the volume of Vietnam's pork production was facilitated by an increase in its import of pig food which in turn reflected the greater openness of Vietnam's economy to international trade. Both the rising number of pigs and their changing genetic composition in Vietnam have increased Vietnam's demand for imports of pig food. In the 1990's policies were adopted in Vietnam to import exotic breeds of pigs to Vietnam to raise pig yields. Exotic large white pigs (often crossed in Vietnam with the local Mong Cai breed) have proven to be popular and now most of Vietnam's pig stock has a substantial infusion of exotic genetic material. To produce high yields, these genetically improved pigs need better quality food than that for local breeds of pigs and much of this pig food has to be imported. Because substantial diffusion of exotic pig genes has already occurred within Vietnam's pig population, the scope for further genetic improvement to increase pig yields in Vietnam may be limited. It seems that growing demand for pork is starting to outpace supply in Vietnam. This is reflected in the substantial rise in the price index for livestock products (particularly prices received for domesticated animals, such as pigs) as can be seen from Table 3. Also cattle and buffalo numbers have declined recently in Vietnam (General Statistics Office of Vietnam, 2009, p. 289).

**Table 3:** Producer's price index of livestock products and for domesticated animals (excluding poultry) for Vietnam 1995-2008

<b>Year</b>	<b>Livestock products</b>	<b>Domesticated animals</b>
1995	100.0	100.0
2000	113.0	110.5
2004	132.6	141.2
2005	133.2	145.6
2006	130.6	140.6
2007	152.0	161.1
2008	243.0	274.5

*Source:* Based on General Statistics Office (2009, Table 218)

The Vietnamese Government is aware that domestic supplies of livestock products (given present institutional arrangements) are unlikely to expand as fast as the domestic demand for these products. This has led it to adopt a policy favoring greater production of these products by private (registered) enterprises rather than households in the expectation that these private enterprises will be able to achieve economies of scale and be more responsive than households in expanding supplies to meet the growing demand for livestock products (for further discussion see Tisdell, 2010*b*). Nevertheless, households still account for the supply of the bulk of Vietnam's agricultural output and most of its livestock-related production.

The individual holdings of households of agricultural land are small and most agricultural households have few livestock. With the growth of the economies of China and of Vietnam, pressures are likely to mount for larger-sized agricultural holdings, for the extension of property rights in agricultural land, and for the marketing and transfer of agricultural land to become less restricted and easier to accomplish.



The question arises of whether small-scale household headed agricultural production remains economic in China and Vietnam and for how much longer the current situation is likely to last. There is a tendency for emerging policies in China and Vietnam as far as livestock production is concerned to favor larger sized commercial units over household production. Let us consider this matter.

## **5. Small-scale Household Agricultural Production Versus Large-scale Commercial Production**

### *Size of agricultural units*

On average the size of agricultural landholdings and the number of livestock kept by farmers both in Vietnam and in China is small. However, in some cases, large holdings by commercial enterprises do exist, for example, in Xinjiang in China (Zhao and Tisdell, 2010), and commercial farming enterprises as distinct from households operate on a larger scale than household agriculturalists.

Vietnam's last agricultural census (2006) revealed that 68.76 per cent of agricultural households had less than a half hectare of land and that 94.22 per cent had less than two hectares of land. In China, the average land holding of agricultural households is just under half a hectare and is also small. In 2008, it was 0.483 hectare and in 2003, 0.463 hectare (Wu, 2009, p. 503). Thus, the average size of holdings of agricultural land by households seems to be increasing slowly following China's land reforms in 2003 which gave holders of agricultural land assured tenure of their land for 30 years. However, a period of 5 years is too short to detect accurately the trend in the size of land holdings.

Furthermore, households in Vietnam holding livestock operated on a very small scale according to its 2006 agricultural census. The majority (80.11 per cent) of agricultural households had chickens, most (65 per cent) kept pigs, and 27.8 per cent possessed cattle. About two-thirds of households with chickens had fewer than 20 head. Over half of households keeping pigs (56.78 per cent) only had one or two pigs and a further 27.8 per cent had 3-5 pigs. The fact that only 2 per cent of Vietnam's agricultural households keeping pigs had more than 20 pigs further

underlines the point that small-scale pig production is the current norm in Vietnam. Vietnam has a comparatively small stock of cattle. Seventy per cent of agricultural households having cattle in Vietnam only possess one or two head. Furthermore, large herds of cattle are rare. Only about one per cent of rural households have more than ten head of cattle.

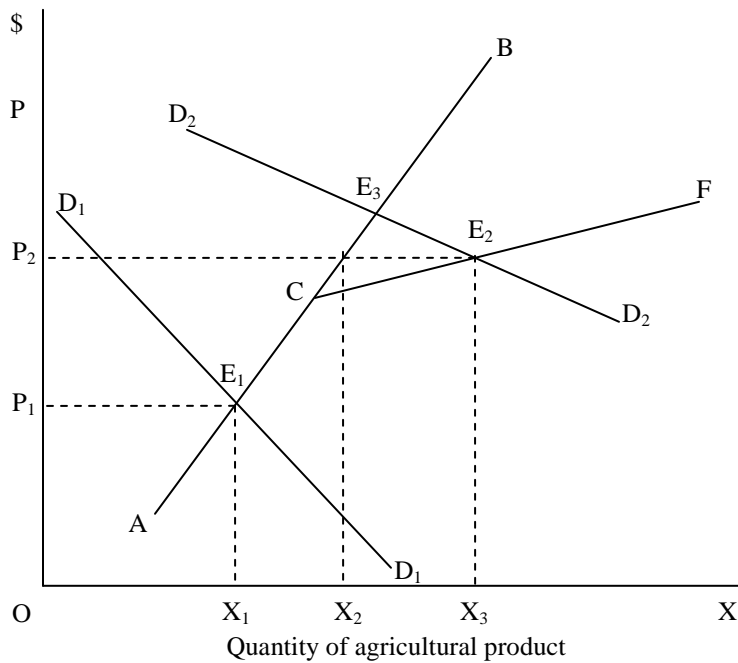
*The economies of small-scale household farms versus large-scale commercial ones*

Doubts have been raised about whether agricultural production by small-scale household farms is still economic in China and Vietnam. Some policy-makers in these countries believe that they are not economic and support the introduction of policies to encourage the development of larger-scale commercial farms. In some agricultural industries (particularly in livestock production) a dual system of production by small-scale household farms and larger scale commercial farms is developing. Nevertheless, small-scale household-operated farms still account for the major share of agricultural production in China and Vietnam. The predominance of these household units is a reflection of the fact that both China and Vietnam have labor surplus economies and this surplus is most marked in rural areas. Nevertheless, the surplus is being reduced as a result of economic development and structural change, as is most evident in China's case.

Some economic theory can be usefully developed and applied to elucidate the changing economic of agricultural supply by households versus larger-scale commercial enterprises in China and Vietnam. With economic development two forces operate in most agricultural industries to increase the proportion of their total production economically supplied by commercial suppliers. The demand for the agricultural product rises (if the agricultural product is not a Giffen good) and the opportunity cost of household labor increases as real wages in the urban sector rise. Consider a rise in the demand for an agricultural product, other things being held constant.

In Figure 3, the supply curve of this product, X, is assumed to be relatively steep and is shown by the line AB. The supply from commercial producers is assumed to be shown by the difference between line CF and CB. Therefore, the supply of commercial producers is more elastic than that

of households. One expects the production of commercial suppliers to be more capital-intensive (less labor-intensive) than that of households and to make greater use of marketed inputs (probably sourced from a wide geographical region) than households. For low volumes of supply, the costs of supply by commercial are higher than those of households



**Figure 3** An illustration that with rising demand for an agricultural product, it becomes economic for a growing proportion of it to be supplied by commercial producers. In this case, household production remain economic and actually increases as demand for the agricultural product rises.

In the case shown in Figure 3, when the demand for product X is relatively low, it is most economic for households to solely supply the market. For example, when the demand curve is as identified by the line  $D_1D_1$  market equilibrium is established at  $E_1$ . However, once demand expands sufficiently, it becomes economic for both households and commercial producers to supply the market. For example, when demand is as indicated by the line  $D_2D_2$ , it is most economic for households to supply  $OX_1$  of the market and for commercial producers to supply the remaining quantity,  $X_3 - X_2$ , of market supplies. Note that in the case illustrated, production by commercial suppliers of X is also accompanied by increased supply by households, even

though the quantity supplied by households is less than if there was no commercial production. In the absence of commercial production the market equilibrium would be at  $E_3$  after the increase in demand. Commercial production moderates the price rise that would otherwise occur.

The pattern illustrated in Figure 3 appears to have occurred in recent years in pig production in Vietnam. With increased demand for pork both households and commercial piggeries have increased their supply of pigs but increased demand has outpaced the growth in supply and pork prices have risen substantially (Tisdell, 2010a).

With continuing economic growth in China and in Vietnam, the labor surplus in agriculture can be expected to decline as a result of rural-to-urban migration. As a result, the opportunity cost of the labor in agricultural households can be expected to increase in the long-term. Households as a source of agricultural supply based on labor-intensive methods will decline. The number of household producers remaining in agriculture will decline and those households remaining in agriculture can be expected to adopt more capital-intensive methods and become more commercial in their operations. Traditional household agricultural production will disappear eventually. In effect, line AB in Figure 3 shifts to the left and upwards.

While traditional household agricultural production can be expected to disappear eventually as a result of sustained economic growth, the above theory indicates that in economic transition in countries such as China and Vietnam, it is most economic to have a combination of traditional household agricultural producers and commercial producers. Policies intended to replace household agricultural production by commercial production appear misguided in the economic transitional stage of development.

## **6. Conclusions**

Structural change in agriculture in China and Vietnam is primarily a consequence of changes in the non-agricultural sectors of their economies that have resulted from their sustained economic growth. Since beginning their market reforms, both China and Vietnam have experienced a surge

in urbanization associated with the expansion of employment in manufacturing and other urban based industries. Nevertheless, urbanization in China is more marked than in Vietnam. China's agricultural sector is relatively much smaller than Vietnam's and its industrial sector is comparatively much larger. The growing importance of urban-based industries has stimulated rural-to-urban migration in both countries. Nevertheless, despite the earlier theory of Lewis (1954, 1965), the supply of agricultural labor to urban-based industries is not perfectly elastic because transaction costs are involved in changing occupation. These can be considerable if migration is involved.

China's policy of promoting town-and-village enterprises kept the cost to farmers of switching from agriculture to urban-based employment low (OECD, 2002). These enterprises were a stepping stone for reducing China's agricultural labor surplus. Vietnam, on the other hand has only given attention to promoting rural-based non-agricultural enterprises more recently. According to an OECD report (OECD, 2002, p.10), town-and-village enterprises "have been the main vehicle for absorbing the exit of workers from agriculture" in China. This report also observes that the contribution of those enterprises to economic growth has waned in recent years (OECD, 2002, p.11) . As discussed above, many town-and-village enterprises may have already served their purpose and will no longer be economic as China's restructuring continues.

The economic growth of China and Vietnam has resulted in major changes in the composition of their agricultural production. A marked trend has been the expansion of livestock production relative to crop production. A primary reason for this is that the demand for animal products (animal protein) is more income elastic than that for most products derived from crops. Livestock production contributes relatively more to agricultural production in China than in Vietnam. This is partly a reflection of the fact that per capita income in China are higher than in Vietnam. Increasing demand for livestock products has outpaced the increase in domestic supply and their real prices have risen sharply in some cases. Imports of these products has not averted this price trend because strong preferences (at least in Vietnam) exist for fresh meat – chilled, processed and frozen meat are considered to be inferior.

These increased prices have led policy-makers in China and Vietnam to consider ways of expanding domestic supplies of livestock products. One view is that this can be achieved

economically by expanding commercial production rather than household production. These policy-makers consider household production to be inefficient. However, as argued above, household agricultural production is an efficient component of agricultural production in economies, such as those of China and Vietnam, that are still in economic transition. In such economies a dual agricultural system of production by households and by commercial enterprises is likely to be economic. Nevertheless, with continuing economic growth, the opportunity costs of household agricultural producers can be expected to rise and household production will be replaced eventually by commercial production.

## 7. References

- Anon (2011a). Urbanization in the People's Republic of China Retrieved March 22, 2011, from [http://en.wikipedia.org/wiki/Urbanization\\_in\\_China](http://en.wikipedia.org/wiki/Urbanization_in_China)
- Anon (2011b). Economy of the People's Republic of China Retrieved March 22, 2011, from [http://en.wikipedia.org/wiki/Economy\\_of\\_the\\_People%27s\\_Republic\\_of\\_China](http://en.wikipedia.org/wiki/Economy_of_the_People%27s_Republic_of_China)
- Cao, Y., and C. A. Tisdell (1992). China's surplus agricultural labour force: Its size, transfer, prospects for absorption and effects of the double-shock economic system. *Asian Economic Journal*, **6**, 149-182.
- Clark, C. W. (1957). *The Conditions of Economic Progress* (3rd ed.). London: Macmillan.
- General Statistics Office of Vietnam (2009). *Statistical Yearbook of Vietnam 2008*. Hanoi: Statistical Publishing House.
- Huang, J., J. Yang, and S. Rozelle (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*. Bangkok: Regional Office for Asia and the Pacific, Food and Agricultural Organization of the United Nations
- Kirk, M., and N. D. O. Tuan (2009). Land-based policy reforms: Decollectivization and the *Doi Moi* system in Vietnam *IFPRI Discussion Paper*. Washington DC: International Food and Policy Research Institute
- Lapar, M. L. A., N. N. Toan, N. N. Que, M. Jabbar, C. A. Tisdell, and S. Staal (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 the 27th Conference of the International Association of Agricultural Economists.
- Lewis, W. A. (1954). Economic development with unlimited supplies of labour. *The Manchester School*, **22**, 139-191.
- Lewis, W. A. (1965). *The Theory of Economic Growth*. London: George Allen and Unwin.
- Maruyama, M., and L. V. Trung (2007). Supermarkets in Vietnam: Opportunities and obstacles. *Asian Economic Journal*, **23**, 19-46.
- Ministry of Agriculture of China (2009a). Status of agriculture in national economy. *Agriculture Overview* 24th January. Retrieved 31 March, 2010 Website of Ministry of Agriculture of The People's Republic of China
- Ministry of Agriculture of China (2009b). Agriculture in China Retrieved 31 March, 2010 Website of Ministry of Agriculture of The People's Republic of China
- OECD (2002). *China in the World Economy: The Domestic Policy Challenges, Synthesis Report*. Paris: OECD
- Son, D. K., N. N. Que, P. Q. Dieu, T. T. T. Trang, and M. Beresford (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*. Bangkok: Regional Office for Asia and the Pacific, Food and Agricultural Organization of the United Nations
- Tisdell, C. A. (1993). *Economic Development in the Context of China*. London: Macmillan.
- Tisdell, C. A. (1995). *Zhong Guo De Jing Ji Fa Zhan* Beijing: Chinese Development Press. [*Economic Development in the Context of China*. Translated by Yang Ruilong].
- Tisdell, C. A. (2009a). Economic reform and openness in China: China's development policies in the last 30 years. *Economic Analysis and Policy*, **39**(2), 271-294.
- Tisdell, C. A. (2009b). Economic growth and transition in Vietnam and China and its consequences for their agricultural sectors: Policy and agricultural adjustment issues. *Regional Development Studies*, **13**. (in press).
- Tisdell, C. A. (2009c). Trends in Vietnam's pork supply and structural features of its pig sector. *The Open Area Studies Journal*, **2**, 52-71.
- Tisdell, C. A. (2010a). The competitiveness of small household pig producers in Vietnam: significant research and policy findings from an ACIAR sponsored study and their limitations *Economic Theory, Applications and Issues* (Working Paper No 63). Brisbane, Queensland, Australia: School of Economics, The University of Queensland

- Tisdell, C. A. (2010b). The survival of small-scale agricultural producers in Asia particularly Vietnam: General issues illustrated by Vietnam's agricultural sector, especially its pig production. In A. Salazaar and I. Riva (eds.), *Sustainable Agriculture: Technology, Planning and Management* (pp. 315-328). New York: Nova Science Publishers.
- Tisdell, C. A. (forthcoming). *Competition, Diversity and Economic Performance*. Cheltenham, UK and MA, USA: Edward, Elgar.
- Tisdell, C. A., M. L. A. Lapaar, S. Staal, and N. N. Que (2010). Natural protection from competition in the livestock industry: Analysis, examples and Vietnam's pork market as a case. In T. H. Lee (ed.), *Agricultural Economics: New Research* (pp. 155-170). New York: Nova Science.
- Tobin, J. (1978). A proposal for international monetary reform. *Eastern Economic Journal*, **4**, 153-159.
- United Nations Population Fund (2007). State of World Population 2007 - Online Report: United Nations Population Fund, from [http://www.unfpa.org/swp/2007/english/chapter\\_1/different\\_speeds.html](http://www.unfpa.org/swp/2007/english/chapter_1/different_speeds.html)
- Wu, Z. (2009). Change in farmland transferring in rural China since 2003 *China Rural Report 2008 of the Research Center for the Rural Economy*. Beijing: Chinese Financial and Economic Press.
- Zhao, X., and C. A. Tisdell (2010). The sustainability of cotton production in China and in Australia: Comparative economic and environmental issues. In A. Salazar and I. Rios (eds.), *Sustainable Agriculture* (pp. 265-289). New York: Nova Science Publishers Inc. .