

# VIETNAM'S AGRICULTURE: IS THERE AN INVERSE RELATIONSHIP?

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## **ABSTRACT**

This paper asks whether there is an inverse relationship between size of farm and output per unit of land in rural Vietnam. Evidence indicates that access to land has become increasingly stratified, and that changes in the choice of technique have also occurred. It is demonstrated that agrarian production and productivity have been unleashed as a result of these changes. Decomposing the sources of accumulation, it is demonstrated that purchased machinery and equipment are an important source of growth. Evidence from the Mekong Delta indicates that farms of different sizes appear to utilize different technical coefficients of production, and that these differences in production systems appear to have an effect on yields. As a consequence, an inverse relationship between size of farm and output per unit of land cannot be substantiated.

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## I. INTRODUCTION

In an important paper published two decades ago, Francesca Bray argued that ‘wet-rice cultivation is not...subject to economies of scale’ (Bray, 1983: 19). According to Bray, this is because growth in yields in wet-rice societies is a result of the intensification of farming, in which, given restricted technical coefficients of production, double cropping, transplanting, judicious seed selection and the application of fertilizers serves to raise productivity. These productivity enhancements are supposedly both scale- and resource-neutral (Mooij, 2000: 217). As a result, in ‘wet-rice societies there is little trend towards the consolidation of holdings and the polarization of rural society into managerial farmers and landless labourers’ (Bray, 1983: 13).

Bray’s argument was subjected to a vigorous critique a decade ago, when White (1989: 23) argued that the characteristics of a crop could not explain the presence or absence of rural class polarization. The purpose of this paper is not to revisit White’s critique, but to add to it, by placing Bray’s argument within a long-standing debate in agrarian political economy. According to Bray, the capacity of small-sized farms to utilize scale- and resource-neutral production intensification measures facilitates productivity improvements, which means that smaller farms generate, on a per unit of land basis, higher yields than larger farms. In other words, there is an inverse relationship between rice output per unit of land and farm size that helps explain why ‘a farm of two hectares will support a family’ (Bray, 1983: 9). This paper questions this argument, in the context of one specific wet-rice economy: Vietnam. Macrolevel production data and microlevel field research are used to suggest that Vietnam’s rice economy does not appear to clearly demonstrate the presence of an inverse relationship between size of holding and productivity per unit of land, as would be expected according to Bray’s argument. The paper will demonstrate that access to land is becoming stratified, albeit from a narrow base. Further, the paper will demonstrate that differences in the technical coefficients of production can be witnessed between farm households when grouped according to size of operational holding. It will be argued that this refashioning of the production system governing rice cultivation is a consequence of the transformation in rural relations of production resulting from the decollectivization of Vietnamese agriculture in the 1980s and that these processes can explain why the evidence needed to substantiate the presence of an inverse relationship is in doubt.

The paper is structured as follows. Following this introduction, section II briefly reviews the inverse relationship, arguing that it is a highly contested field of enquiry within agrarian political economy. Section III examines the process of agrarian transition in Vietnam since the early 1980s, and documents the outcome of this process for food crop production, productivity, and the agrarian structure of rural Vietnam. It is demonstrated that access to land is become stratified. Section IV reviews existing macrolevel evidence on the sources of agrarian accumulation in Vietnam, and demonstrates that growth appears to be linked to the choice of technique. In particular, the use of modern machinery and equipment are important determinants of growth. Section V provides field-level evidence from two surveys that complements the findings of section IV. The data tentatively suggests that when grouped by size of operational holding, there are clear differences between farms in the technical coefficients of production. In particular, larger farms appear to use a choice of technique that is more intensive in its used of hired labour-power and capital equipment. The data also appears to indicate appears to indicate that it is these farms that are, to a greater or lesser extent, more productive, in terms of yields per unit of land. Thus, the field evidence needed to substantiate the presence of an inverse relationship in Vietnamese agriculture is not found. It is suggested that this evidence may appear to indicate the emergence of a small strata of richer peasants that use a choice of technique that is more intensive in its use of hired labour-power and capital equipment than the small peasants that dominate the Vietnamese countryside. It will be further suggested that in this light it is not surprising that the evidence needed to substantiate the presence of an inverse relationship is weak: it is possible that farm productivity may have become linked to the scale of production as accumulation has proceeded in rural Vietnam. Section VI offers some conclusions.

## **2. THE INVERSE RELATIONSHIP**

Ellis (1993: 206) has succinctly summed up the finding that ‘a volume of evidence across different countries seems to reveal an inverse relationship between farm size and yields per unit area’. The origin of this revelation lies in evidence collected in pre-revolutionary Russia and China. However, there can be little doubt that it was the voluminous theoretical and empirical debate that took place in India in the 1960s that led to the

inverse relationship becoming a key debate within agrarian political economy (see Dyer, 1997: 23, fn 4 for an extensive set of references).

Berry and Cline (1979) are commonly regarded as the definitive statement on the inverse relationship. In a study encompassing evidence from Asia and Latin America, they find that the data consistently demonstrates that small farms have greater total factor productivity (Berry and Cline, 1979: 16). Their findings suggest in turn that small farms provide the maximum output given the available land area, foster superior rates of labour absorption, and thus promote a more equitable distribution of income. They conclude that the 'expansion of the small-farm subsector of agriculture' through vigorous land reform policies 'warrants serious consideration in almost all developing countries' (Berry and Cline, 1979: 4). Since the publication of Berry and Cline's work, 'the constant generation and analysis of data...continues to confirm the finding of an inverse relationship' (Dyer, 1997: 10).

The evidence supporting the presence of the inverse relationship is that of a statistically significant association. If this is the case, it is necessary to elaborate possible explanations as to why this association is witnessed. In a comprehensive review of the literature, Dyer (1997) has identified three general classes of explanation. The first is land fertility, and is based upon the argument that smaller farms are located on land of better quality. This could be a consequence of land fragmentation through inheritance, or a result of investment patterns amongst larger farms that focus upon the most productive land in order to maximize the return from the investment. It could also be a consequence of the fact that, as several studies in India indicate, smaller farms may have a larger share of their farm under irrigation (Rao, 1963). However, there is no reason to assume that inheritance patterns result in the inequitable distribution of the best land, to the detriment of some inheritors and the benefit of other inheritors. There is also no reason to assume that larger farms, notwithstanding the possibility that they may disproportionately invest in more productive land, are still not investing absolute amounts per unit of less productive land that exceeds that of small farms located on similar, less productive land. Finally, evidence on the share of farm area under irrigation does not account for 'the quality of irrigation facilities on various farm sizes, nor its effectiveness' (Dyer, 1997: 35). It would thus appear that land fertility explanations should more properly be described as hypotheses.

The second general class of explanation contains two separate, but interrelated, arguments. The first argument is that farms become more complex organizations as they become larger, and are thus subject to managerial diseconomies of scale. Smaller farms do not face this constraint, and are thus, on a per unit basis, more productive. One particular managerial advantage of small farms is a greater knowledge of local agroecological conditions, which can permit greater intensity of land usage as well as a more optimal choice of crop mix. As Dyer stresses, even if this were a plausible possibility, it would still be necessary to assess whether managerial diseconomies could be potentially offset by technical economies of scale. It could also be mentioned that superior local knowledge is wholly consistent with asymmetrical regional, national and international information, which could more than offset the supposed benefits of being small. As a consequence, the organizational argument ‘is not wholly convincing’ (Dyer, 1997: 29). The second argument is related to the first, in that it is suggested that as farms increase in size and become more complex organizations, they have to increasingly manage wage labour. Wage labour brings along with it the need to develop appropriate incentive structures, which entail additional costs, as well as the associated costs of supervising wage labour. By way of contrast, small farms, in that they rely heavily on family labour, face much lower motivational and supervisory costs. The problem with this argument is that it assumes that small farms are more reliant on family labour than on waged labour, and this assumption, while it may be true, is, again, not so much an explanation as a hypothesis.

The third class of general explanation offered by Dyer is that of factor intensity, and in particular labour intensity. Derived from a classic paper by Amartya Sen (1962), this explanation argues that smaller farms use more labour per unit of land than do larger farms, and this greater labour intensity explains why smaller farms produce greater yields per unit of land. The reason for this difference is squarely neo-classical in logic: large farms hire labour, which they pay a wage based on their marginal product. Small farms use family labour that continues to work until their marginal product equals zero. Berry and Cline (1979) provide some evidence to support the differential labour intensity explanation of the inverse relationship. However, Sen’s approach is predicated upon the assumption that family labour and wage labour are clearly separable categories and that they are per-

fect substitutes, an assumption that, once again, appears to be more of a hypothesis than an explanation (Dyer, 1997: 37).

Sen's theoretical position that small and large farms face different relative prices for labour has been extended by a number of economists in a deeper neo-classical direction (see, for example, Bardhan, 1973 or Griffin, 1974). They generalize Sen's approach, arguing that small and large farms face different relative factor prices for land, labour and capital. As a result of different relative factor prices, larger farms tend to undervalue the contribution of land to production, and thereby adopt a choice of technique that promotes an extension of the cultivated area, or they substitute relatively cheap capital for labour and mechanize their production process. The analytical problem with this approach, as argued by Patnaik (1979), is that it 'assumes the same production function for all farm sizes and systems of production' (Dyer, 1997: 41). It is, as Sen (1966: 444) himself admitted, an unrealistic assumption, one that must, as a consequence, be treated, at best, as a working hypothesis and not as an explanation.

Clearly, the orthodox arguments that have been proposed to explain the inverse relationship are somewhat lacking. As Dyer notes, this is because orthodox explanations that emphasize differences in quantities of factor inputs are only partial explanations, and because explanations that emphasize qualitative differences in factor inputs have either logical or empirical flaws. Indeed, even the authoritative Berry and Cline are aware of the extent of the weaknesses in the arguments. They note that despite the evidence that they themselves marshal to support the presence of the inverse relationship, it may not be present 'in the very smallest farms in a few countries' (Berry and Cline, 1979: 128). They also note that large farms may be able to reap economies of scale if and when they mechanize their production processes (Berry and Cline, 1979: 138).

In this light, an alternative, class-theoretic explanation of the inverse relationship has been developed. First explored by Byres (1977), it has been given its fullest expression in the work of Dyer (1997). Dyer's argument is that it is the intensity of factor utilization that must result in the inverse relationship. However, unlike marginalist explanations, that render factor utilization a function of relative prices, Dyer argues that factor utilization is a

function of the relations of production, which in agriculture are normally reflected in tenuous relations, and ultimately the differential resource constraints that define class relationships. Dyer thus argues that to understand the inverse relationship it is necessary to place it within a more dynamic process in which the emergence of differentiated access to the forces of production is both a result of and an influence upon stratified access to the means of production and thus peasant class differentiation amongst farm households. With peasant class differentiation, exploitative relationships develop between rural dominant classes and smaller poor and marginal peasants. Exploitative relationships force factor intensification upon poor peasants, and this in turn results in higher cropping intensities, higher labour inputs per hectare, and higher yields. As Dyer writes, 'the poor peasant maximizes output because...survival...depends on it...[T]he factors driving a poor peasant to intensify labour effort are more important than the factors permitting him to do so' (Dyer, 1997: 52). By stressing the central role of exploitation, Dyer's approach offers a clear alternative to the orthodox explanations. At the same time, Dyer's approach also suggests reasons why the inverse relationship might break down. Simply put, if as a consequence of the development of 'proto-capitalism' in agriculture technology is introduced that is not scale neutral but rather particularly advantageous for larger scale proto-capitalist farms, then the survival-driven 'competitive advantage' of the smaller, more marginal farm may be more than offset by the technological edge accorded to larger scale farms that adopt the new choice of technique. As a consequence, the inverse relationship would break down.

It would be extremely interesting to examine the comparative merits of the orthodox and class-theoretic approaches in the Vietnamese context. Such an examination would seek to substantiate whether or not an inverse relationship was witnessed, and explain why. However, data constraints do not permit this kind of comprehensive investigation. Rather, this paper will seek to demonstrate a somewhat weaker but still important point: namely, that the available data does not unambiguously demonstrate the presence of an inverse relationship in Vietnamese agriculture. In so doing, the paper will demonstrate that differentiated access to land is developing in rural Vietnam, and that there is evidence of differences in the technical coefficients of production witnessed across different farm sizes. This

demonstration is consistent with, if not conclusive evidence in support of, the class-theoretic approach. Thus, the paper lays a preliminary foundation for more detailed research using a class-theoretic methodology in rural Vietnam.

### **3. AGRARIAN TRANSITION IN VIETNAM, 1975-2000**

Vietnam's post-unification pre-reform agrarian structure was built upon an extensive collectivization campaign conducted in the north of Vietnam between 1958 and 1960 and in the south of Vietnam between 1976 and 1978. In 1979 the average size of a co-operative in the north of Vietnam was 202 hectares, on which an average of 378 households lived and worked (Que, 1998). This average however masked wide variation: in some areas, co-operatives were in excess of 1000 hectares. Almost 97 per cent of rural northern Vietnamese households belonged to the 4151 co-operatives that were in existence. In southern Vietnam, the situation was much different in 1979. In 1979 there were only 272 cooperatives, and in 1980 only 24.5 per cent of farm households belonged to a co-operative. This figure however conceals regional variations in the south. In the central coastal regions, by 1980 84 per cent of agricultural households had joined co-operatives, in which land, animals and other means of production were collectively owned and basic production teams established to perform agricultural tasks. By way of contrast, by 1980 in the Mekong Delta only 1.7 per cent of farm households had joined co-operatives. Moreover, it would appear that some co-operatives listed as such in official reports did not exist in actuality, with farmers continuing to farm their own individual holdings under the guise of a notional 'co-operative' (Kerkvliet, 1995: 69; Que, 1998: 32). Those farms in the south of Vietnam that did not join co-operatives continued to work the household's holding using predominantly family labour, as they had done before unification. However, the often-coercive efforts by the state to force households into co-operatives resulted in petty commodity production becoming increasingly squeezed. As a consequence, an increasing amount of land was left fallow and many farm households 'retreated' into subsistence farming predicated upon the singular production of use-values.

In the latter half of the 1970s, when a collective agrarian structure was established in Vietnam, there was a precipitous decline in per capita foodgrain availability. This decline is illustrated in Figure 1. This occurred despite a sharp rise in foodgrain imports.

Vietnam was facing an agrarian crisis, and the cause of the crisis was twofold in nature (Akram-Lodhi, forthcoming). The first cause related to the incentive structure. As has been noted by Kerkvliet (1995: 68), there was 'little or no incentive to work diligently nor disincentive to farm poorly' in collective agriculture. Certainly, the incentive structure of collective agriculture resulted in low prices for farm output produced in excess of the quota, consumer subsidies that devalued the outcomes of collective labour, and an overvalued exchange rate that encouraged imports (Men, 1995: 39). Repressed procurement prices in particular led to a procurement crisis. The second cause related to investment. In the period between 1976 and 1980 there was an inadequate amount of investment in agriculture. This was in large part due to the heavy industry bias of the State Planning Commission. The consequence of inadequate investment in agriculture was that in many parts of the country the productive capacities of the sector deteriorated in the late 1970s.

The weaknesses of the collectives had long been recognized amongst peasants and local cadres of what is now known as the Communist Party of Vietnam (CPV). The success of local initiatives in the 1970s to alter the relations of production of collective agriculture encouraged the CPV to begin a process of restructuring that ultimately decollectivized agriculture and unleashed a process of agrarian transition (Akram-Lodhi, forthcoming). Table 1 documents the extensive set of changes to agrarian relations undertaken in Vietnam since 1979. These changes cover tenurial arrangements, access to inputs, resource allocation decisions, output marketing and taxation. They have thus fundamentally transformed rural relations of production, replacing central planning with state guided, but nonetheless market-based commodity production. Of these reforms, probably the most important are Resolution 10 of 1988, the 1993 Land Law, and, perhaps, Resolution 6 of 1998. These reforms had the effect of transforming access to land, the principle agricultural means of production, by reestablishing peasant family farming as the basic production unit in agrarian Vietnam.

While decollectivization initially resulted in an apparently equitable distribution of much of the arable land in rural Vietnam, evidence indicates that a stratification of landholdings quickly began to emerge. More recent evidence is demonstrated in Table 2, which arrays landholdings for all households with agricultural land by expenditure quintiles. Of course, it must be stressed that farms in rural Vietnam are small. The average size of a

farm in the Mekong Delta in 1998 was 1.2 hectares, and even this was four times the average size of a farm in the Red River Delta (World Bank, 1998: 10). At the same time, agro-ecological conditions vary. Nonetheless, in Table 2 it is clear that holdings of land generally rise with per capita expenditure quintiles. For the wealthiest, holdings of annual crop-land are almost 1.4 times the area of the poorest expenditure quintile. The differences between the wealthiest and the poorest expenditure quintiles is even more striking for perennial crop land, with the richest quintile having holdings 6 times the size of the poorest quintile. The figures for perennial crops are extremely important, as they suggest the capacity to shift away from rice production—the principle agricultural use-value—and diversify into higher-value food and industrial crops capable of generating exchange-value. Indeed, wealthier households have expanded the proportion of their land dedicated to perennial crops during the 1990s. Thus, whereas the wealthiest rural households devoted 15 per cent of their land to perennial crops in 1993, by 1998 this figure had risen to 37 per cent (General Statistical Office [GSO], 1994: Table 5.1.1; GSO, 1999: Table 5.1.2). Such a shift can, by facilitating further agrarian accumulation by wealthier households, promote further differentiation of agrarian assets. It is, in this light, of interest to note that the number of households in the 1998 Vietnam Living Standards Survey (VLSS)<sup>2</sup> that sold land was 10 times the number of households that sold land in the 1993 VLSS (GSO, 1994: Table 5.1.21; GSO, 1999: Table 5.1.10). The average price of crop land, in current Vietnamese dong (VND), jumped from VND 11.9 million in 1993 to VND 26.1 million in 1998, a period in which, it can be noted, inflation was very low. Moreover, it should be noted that these figures, by excluding land rented-in, probably underestimate the extent of stratification of landholdings in rural Vietnam. Even though Vietnam's rural land market was not officially recognized at the time, it was quite active by 1998 when, according to the VLSS, 15.3 per cent of farm households rented out land while 5.9 per cent of farm households rented in land (GSO, 1999: Table 5.1.6).

Mechanisms underpinning land concentration in rural Vietnam have been explored

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<sup>2</sup> In 1993 and 1998 the GSO undertook two nationally representative living standards surveys, with financial and technical assistance from multilateral and bilateral donors. The first Vietnam Living Standards Survey (VLSS) surveyed 4800 households. The second VLSS surveyed 6000 households, including 4300 that had been surveyed during the first VLSS.

in a recent study of one province where the problem appears to be acute (Oxfam (GB), 1999). The study identified seven reasons why rural households had liquidated landholdings. The first reason was formal sector credit, as some people that took out formal loans for the first time found that they were unable to meet their obligations and had as a consequence been forced to sell their land. The second reason was output failures, which resulted in the need to sell land to repay accumulated debts. The third reason was the operation of land markets which, although not officially recognized, had made the sale or mortgaging of land considerably easier while at the same time serving to exclude those who lacked land from earning enough money to purchase land. The fourth reason was the increased prosperity of some, which had given them both the resources and the willingness to buy additional land in order to enhance their productive base. The fifth reason was that many farmers with a very small holding of land had come to believe that the returns to productive activity in farming were less than engaging in wage labour. The sixth reason was that there were more wage labouring opportunities, and thus although rural wages are low the relative return to rural waged labour has increased. The seventh reason was that salinization and poor irrigation had, on occasion, led to low land values that had in turn encouraged sales by very small farmers. It can be noted that these mechanisms have been confirmed in more recent fieldwork in two southern provinces (Akram-Lodhi, 2001a; Akram-Lodhi, 2001b).

Four interrelated points can be made regarding the stratification of landholdings in Vietnam in the 1990s. The first is that landlord tenant relations, including sharecropping, have returned to rural Vietnam during the 1990s (GSO, 1999: Table 5.1.6), albeit on a limited scale. Thus, as noted above in 1998 some 15 per cent of agricultural households rented-in land and some 6 per cent of agricultural households rented-out land. The second point is that landlessness in rural Vietnam is increasing. In 1993, some 8.2 per cent of rural households did not have any land. By 1998, this figure had increased to 10.1 per cent (PWG, 1999: Table 2.4). In 1998, some 9.8 per cent of agricultural households sold land, but only 2.5 per cent of agricultural households bought land (GSO, 1999: Table 5.1.10). The growth in landlessness was particularly pronounced in the southeast region around Ho Chi Minh City, and in the Mekong Delta, the 'rice bowl' of Vietnam. The third point is that fragmentation of landholdings has increased significantly since decollectivization. For

example, in the Red River Delta, where the average size of a farm is less than 0.3 hectares, the average number of plots that constitute an operational holding are between 8 and 9 (World Bank, 1998: 10). The fourth point is that the stratification of landholdings helps explain Resolution 6 of 1998. Although the 1993 Land Law stipulated a maximum farm size of 3 hectares, by 1995 there were already 113700 farms in excess of 5 hectares and 1900 farms in excess of 10 hectares. Indeed, in some southern provinces it is possible to come across privately owned farms in excess of 1000 hectares (Akram-Lodhi, 2001a). While these farms constituted only 1.1 per cent of farm households, it is worth stressing that 66 per cent of these farms were in the Mekong Delta (World Bank, 1998: 10). In a sense then Resolution 6 was simply an *ex post* recognition of changes in the agrarian structure that had already occurred. In February 2000, when the state reiterated its intention to implement Resolution 6, it was revealed that these so-called 'large scale' farms generated an average household income of US\$7500 per year, well above the average per capita national income of US\$350 (*Vietnam Investment Review* 14 February 2000). Resolution 6 suggests that there are those in the state and in the CPV that want land stratification to continue, and that these people have, in effect, won any argument that might have occurred within the CPV and the state.

Re-emergent peasant farm households have responded to the new agrarian environment in rural Vietnam vigorously since decollectivization, transforming the rural labour process. Table 3 demonstrates changes in the structure of inputs between the late 1970s and the mid-1990s. As is demonstrated in Table 3, in the period between the late 1970s and the mid-1990s the amount of arable land per capita declined. However, despite this decline, the total amount of land devoted to cereal production, primarily rice, increased by 31 per cent. This extension of the area devoted to rice was accompanied by an intensification of production. The proportion of the cropped area irrigated increased by more than 28 per cent; the use of fertilizers increased eightfold, and the number of tractors increased more than fourfold. Clearly, there have been major changes in the technical coefficients of rice production in Vietnam. The only area in which the choice of technique did not radically alter was in the use of hired labour, due to ongoing restrictions on employment issued by the state. Given such restrictions, it is possible that the resulting distortions in the relative prices of factor inputs resulted in a 'capital bias' in the choice of technique. This possibil-

ity is examined below. This is not to say however that household farm employment has not restructured. Between 1993 and 1998 household farm employment of males decreased by 0.3 per cent per annum, while household farm employment of females increased by 0.9 per cent per annum (PWG, 1999: Table 3.2). Farm production is, in this sense, becoming 'feminized'.

The aggregate impact of rural restructuring on per capita output in Vietnam was demonstrated in Figure 1. In order to assess the significance of the growth of foodgrain production since the late 1980s, median growth rates can be plotted on a scatter plot and a negative reciprocal regression line fitted to the trend. This is done in Figure 2, which demonstrates a rise in estimated median growth rates from about 2 per cent a year in the early 1960s to about 6.5 per cent a year by the late 1990s. Moreover, just as importantly, the pattern is heteroscedastic, with variation around the regression line visibly diminishing over time. Similar patterns can also be observed for food availability and per capita food availability, although the growth rates are not nearly as dramatic. Clearly, the transformation in rural relations of production has brought forth a dynamic supply response. As Jansen (1998: 9) observes, the growth in gross agricultural output was a function of two factors: intensity and yields. In 1987, just prior to formal decollectivization, the ratio of the sown area to the cultivated area stood at 1.24. The transformation of the relations of production resulted in an expansion of double and triple cropping. Thus, the ratio of sown area to cultivated area has grown rapidly, to stand at 1.43 in 1995. In terms of yields, in 1979-81 cereal yields per hectare amounted to 2049 kilograms. By 1996-98, this had risen to 3754 kilograms per hectare (World Bank, 2000: Table 3.3). It is a dramatic improvement in agrarian productivity.

So far, this paper has noted the radical restructuring of rural relations of production that occurred in Vietnam during the 1980s and 1990s. It has suggested that differentiated access to land in rural Vietnam has been proceeding, and has further discussed developments in the use of non-land inputs. Finally, the paper has demonstrated the impressive supply response that followed from these changes. From a political economy perspective, there can be little doubt about the cause of these processes: the transformation in rural re-

lations of production. The transformation has sharpened the determinate role of the law of value in rural resource allocation, production and distribution in Vietnamese agriculture. However, notwithstanding the primary role of the relations of production, how important have other factors been in agricultural productivity growth? It is to this question that the paper now turns.

#### **4. SOURCES OF AGRARIAN ACCUMULATION IN VIETNAM**

The World Bank, the Asian Development Bank, and UNDP (2000: 12) have recently argued that 'the successful growth of agricultural production during the 1990s was largely due to increased labour and capital inputs, which combined accounted for 87 per cent of the growth'. It is unclear where the figure claimed by the three institutions comes from. Therefore, this section will investigate sources of agrarian accumulation in more detail, taking as a given the primary role that should be accorded the transformation in rural relations of production.

There can be little doubt that investment plays a major role in explaining agrarian accumulation. As van Donge, White and Nghia (1999: 43) put it, 'the supply response that came (about after decollectivization) was possible due to centrally directed investments in the previous period'. In 1981-1985, the share of investment in agriculture as a proportion of total government investment was 18.3 per cent (Fforde and de Vylder, 1996). Although this was a decline relative to 1976-1980, economic circumstances had changed. Vietnam's ongoing integration in the trading block of the communist countries gave it access to trade-based development co-operation, official development assistance, and technical aid, all of which served to loosen the investment constraints facing the rural economy in the late 1970s. In addition, some of the larger investments made during the late 1970s came on stream, and started to have an effect on production and productivity. Moreover, between 1986 and 1988, just prior to formal decollectivization, investment in agriculture as a proportion of total government investment increased, to stand at more than 20 per cent, further loosening the constraints facing the rural economy. It is for this reason that van Donge, White and Nghia, 1999: 43) stress that 'in the early eighties massive investments were made in agriculture'. Much of this investment was directed at further extending the irri-

gated area in the Red River Delta, while other investments were directed at developing the production of tropical crops such as coffee and rubber in the Central Highlands.

The growth in the trend rate of growth of foodgrain production demonstrated in Figure 2 would suggest that the supply response brought about by a reallocation of property rights and investment has not exhausted itself. Granted, in the period between 1988 and 1998, the share of public agricultural investment in total public investment was only on the order of 13 per cent (van Donge, White and Nghia, 1999: 43). Thus, as demonstrated in Table 4 in 1998 public investment in agriculture constituted 13.9 per cent of total public investment, 14.7 per cent of the government budget and 3.73 per cent of agricultural GDP. If agriculture had received investment commensurate with its share of GDP, it would have received double its allocation of government resources. Moreover, the mid-1990s boom in foreign direct investment (FDI) into Vietnam—in 1995 FDI was equivalent to 8.8 per cent of GDP—totally missed the agricultural sector. Of the US\$16.6 billion of implemented FDI that had flowed into Vietnam by October 2000, only 5.2 per cent had been directed at agriculture and forestry (*Vietnam Economic Times*, November 2000).

Table 4 and the sectoral allocation of FDI suggest that an explanation for agrarian accumulation over and above the transformation in the relations of production in the 1980s and 1990s cannot be public or foreign investment. If investment has played a role in the 1990s, it has been private investment. Unfortunately, data on aggregate private investment in agriculture is not available, and thus inferences cannot be drawn. However, there are proxies that suggest that private investment in rural Vietnam in the 1990s increased. As indicated in Table 1, in the early 1990s Vietnam created a rural financial system. This consists of the Vietnam Bank for Agricultural and Rural Development (VBARD), the People's Credit Funds (PCFs), and the Vietnam Bank for the Poor (VBP). The VBARD is the largest rural financial institution, with over 2500 branches (World Bank, 1998: 39). By the end of 1995, loans to agricultural households accounted for 79 per cent of all credit issued (Jansen, 1998: 12). At the end of 1997, the VBARD had loans outstanding with 3.7 million households. Some 67 per cent of these loans were in agriculture, and 80 per cent were short term. The average size of loan outstanding was US\$430, which, it should be noted, was well in excess of per capita national income (World Bank, 1998: 39). The PCFs had, by the end of 1997, some 497000 shareholding members, and some VND 1200 billion in loans

outstanding, an average of US\$172 per loan (World Bank, 1998: 39). It can be noted that the average size of outstanding loan amounted to one-half per capita national income. The bulk of these outstanding loans were also short term. The VBP operated through the VBARD network, and offered loans at subsidized, below-market interest rates to those deemed 'poor'.

The creation of the rural financial system may have brought about a significant change in the structure of access to credit in rural Vietnam. According to the 1997-98 VLSS (GSO, 1999: Table 8.2.1), some 54 per cent of rural households owed money, of which 43 per cent had been obtained from informal sources. This situation appears to differ greatly from that reported in the 1992-93 VLSS (GSO, 1994: Table 8.2.2). In the earlier survey, some 47 per cent of rural households were indebted. Thus, between 1993 and 1998 rural debt increased. However, in the earlier survey some 73 per cent of rural debt was owed to informal sources. Thus, between 1993 and 1998 there has been a decline in the importance of informal sources and a corresponding increase in the importance of formal rural financial institutions. Finally, in both the earlier and the later survey fewer households in richer expenditure quintiles were in debt when compared to households in poorer expenditure quintiles (GSO, 1999: Table 8.2.3; GSO, 1994, Table 8.2.7).

Some 64 per cent of all rural loans in the 1997-98 VLSS had been taken out to acquire working capital, and some 4 per cent had been taken for basic investment (GSO, 1999: Table 8.2.7). Clearly, then, private debt has been used to fund spending on the means of production, which, it would be thought, would have an effect on agrarian performance. In order to investigate the relationship between the means of production and agrarian performance, Jansen's (1998: Table 2) estimates are presented in Table 5. Jansen constructs a log-linear Cobb Douglas production function in which agricultural output is a function of land, labour, livestock, fertilizer and machines, in order to estimate the contribution of each factor to output growth and productivity growth.

Table 5 demonstrates that in the period of collective agriculture the attempt to strengthen co-operative farming led to an expansion of the sown area and investment in machinery and equipment, although much of this investment was to replace existing machinery and equipment (Akram-Lodhi, forthcoming). However, the investment and incentive weaknesses of the system fostered declining productivity. Following Directive 100,

co-operatives shifted to household contracts, in order to improve incentives. Farming intensity increased, as evidenced by the rise in the contribution of fertilizer to growth, and by the increased importance of labour in agricultural growth. Productivity improved considerably. However, the growth regime engendered by Directive 100 quickly lost momentum, even though productivity continued to improve. Finally, Resolution 10 formally decollectivized agriculture. This led to an expansion of the sown area. However, it also led to increased application of working capital, in particular fertilizer. Finally, in the presence of restrictions on the use of labour-power, it also led to spending on investment goods, that is to say machinery and equipment. Productivity growth *per se* petered out, and 'agricultural growth is...mainly determined by the increase in purchased inputs' (Jansen, 1998: 11). Of course, the acquisition of investment goods is consistent with the growth of debt noted above.

In the introduction, it was noted that Bray argued that wet-rice production utilized scale-neutral technologies. However, even Berry and Cline (1979) accepted the fact that mechanization was scale-biased, and could result in a breakdown of the inverse relationship even given the limited technical coefficients used in wet-rice cultivation. If Jansen's analysis is correct, it would appear that growth in decollectivized agriculture in Vietnam has been driven by the purchase of machinery and equipment. This is consistent with the evidence presented in Table 2, which indicated a shift in the choice of technique between the collective and decollectivized periods. However, it is well established these inputs are neither scale- nor resource-neutral. This suggests that it is possible that use of these key production inputs may be differentiated. If such were the case, there would be differences in the technical coefficients of production across farms.

It has already been demonstrated by some differentiation in access to land has been witnessed in rural Vietnam during the 1990s. If there were indeed differences in the technical coefficients of production found in rice-producing farms, the class-theoretic approach to the inverse relationship would suggest that the presence of an inverse relationship might not be able to be substantiated in rural Vietnam. Therefore, the paper now turns to present evidence on the choice of technique and on yields from two case studies undertaken in the Mekong Delta in the late 1990s.

## 5. THE INVERSE RELATIONSHIP IN VIETNAM: TWO CASE STUDIES

### 5.1 Case 1

#### 5.1.1 *The data*

The data used in this section comes from a field survey in 4 provinces of the Mekong Delta during May and June 1999<sup>3</sup>. Given that the previous discussion highlights the possible role of modern machinery and equipment in fostering agrarian growth, one district in each province was purposively selected because of its relatively high performance in terms of rice production. Within each district local authorities gave permission to gather data in two communes that, based on agroecological conditions, visual observation, focus group discussions and production outcomes, appeared to be reasonably representative of the district. Within each commune residences were randomly selected for the survey. In total, 160 households in the 8 communes were administered a closed question survey examining the input choices and output outcomes of the 1998-99 winter-spring paddy crop. The sampling procedure appears to have produced a set of data that is reasonably consistent with that generated by other surveys in the Mekong Delta.

#### 5.1.2. *The results of the survey*

Table 6 describes the inputs and yields experienced during the 1998-99 winter-spring paddy crop. In the sample, the average size of a farm was 10.71 cong, with one cong being equivalent to 1000 square meters. The minimum was 1.6 cong and the maximum was 36.4 cong. The distribution of farm sizes displayed in Table 6 shows that over 60 per cent of the farms in the sample were between 5 and 20 cong, and that only 11 per cent of the farms in the sample had holdings in excess of 20 cong. The distribution of farms in the sample is consistent with the distribution of farms in the Mekong Delta as a whole (Binh, 2000: 57). In the sample, some 12 per cent of farms lease in some land to supplement their operational holdings. Those that leased out land tended to be farms with holdings that were inadequate to support their household, and which therefore opted for participation in the labour market. However, these households were unwilling to reveal the extent of the land

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<sup>3</sup> The survey was conducted by Tran Thuy Binh for their MA thesis, organized under the auspices of the Vietnamese-Dutch Project for MA Programme in Development Economics, and is available in the Project Library.

that they leased out. Be that as it may, the sample does contain landlords, the Vietnamese equivalent of owner-occupiers<sup>4</sup>, and owner-tenants.

Table 6 demonstrates that an average of 67 labour days per hectare was devoted to the winter-spring rice crop. Although family labour was clearly important for the production of the crop, the purchase of labour-power was also very important. Exchange labour, which had been important in the past, has all but disappeared. As a result, almost 42 per cent of labour requirements of farms were met through the hiring of labour from the local labour market. Wage rates varied according to the task that is performed, and were often paid at a piece rate. Males received wages that were between 1.5 and 2 times that paid to females. Although more hired labour was used on larger farms than on smaller farms, the relationship is not linear. It should be noted however that some of the small farms that hired in labour did so to replace family members who were in fact hiring themselves out to larger farms. Nonetheless, if the commodification of labour and the concomitant development of the labour market is a key structural feature of the development of capitalism (Lenin, 1968), it would appear that rural capitalism is indeed developing in the sample.

In terms of non-labour inputs, farmers used an average of 262 kilograms of seed per hectare. There is no systematic relationship between seed utilization and farm size. Similarly, although farms spent an average of VND 1199000 per hectare on fertilizer, there is no systematic relationship between fertilizer use and farm size. Surprisingly, however, Table 6 appears to indicate a broadly inverse relationship between renting machinery and farm size. Farms of less than 5 cong spent on average VND 1046500 per hectare on machinery rental, while farms of more than 20 cong spent only VND 877000 per hectare on machinery rental. The reason for this inverse relationship is that, as demonstrated in Table 6, larger farms owned more machinery and equipment. In Table 6 farms with holdings of more than 20 cong owned 68.6 per cent more machinery and equipment than those farms that had holdings of less than 5 cong. Overall, there is a positive relationship between the value of owned machinery and equipment and farm size.

However, the positive relationship between farm size and size of non-land assets actually masks the extent of differentiated access to the means of production. Within the

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<sup>4</sup> The Vietnamese equivalent of an owner-occupier would be a farm in possession of a land use certificate.

sample some 55 per cent of households owned no machinery or equipment. These households all had farms of less than 10 cong. By way of contrast, 9 households owned non-land assets worth more than VND 5 million, and 4 households had non-land assets worth more than VND 20 million. These 4 households all had farms of more than 20 cong. The non-land assets owned by these 4 households consisted of tractors, pumps and threshers. Indeed, these 4 households possessed 75 per cent of the large tractors that were owned in the sample. There thus appears to be some differentiation in ownership of technology by size of farm in the sample.

At the same time, these households—call them ‘rich peasants’—were substituting hired labour and machinery for family labour. Thus, the 4 households with the highest value of non-land assets used an average of 31 days of hired labour per hectare on their holdings of more than 20 cong. When hired labour utilization is arrayed by value of non-land assets, this was the highest use of hired labour in the sample. There thus appears to be an emergent group of peasants with larger landholdings, larger amounts of capital stock, and larger use of hired labour.

This can be contrasted to smaller peasants who do not possess capital stock, and thus who have a smaller total asset base. Admittedly, the use of hired labour was, at 28 days per hectare when arrayed by value of non-land assets, also high on farms that had a small non-land asset base and hence a small total asset base. However, the motivation behind the use of labour-power is different between the richer peasants and smaller peasants. For the small peasants, hired labour was often used to substitute for family labour that was hired out. At the same time, farmers that did not own modern machinery and equipment still needed it, and they had to pay VND 320000 per hectare for it, a very large component of overall farm costs. In hiring this machinery, farmers also had to hire the labour necessary to operate the machinery, and this also helps explain the recourse to hired labour on small peasant farms. Farms that hired modern machinery and the labour necessary to operate it did so from rich peasants. Therefore, rich peasants were receiving income from land, labour and machinery.

## 5.2 Case 2

### 5.2.1 *The data*

The data used in this section comes from a field survey in three exclusive paddy-producing districts of one province of the Mekong Delta during April and May 1998<sup>5</sup>. The districts surveyed differed from those examined in Case 1. Within each district data was gathered in individual communes and, in the case of one district, a state farm that, based on agroecological conditions, visual observation, focus group discussions and production outcomes, appeared to be reasonably representative of the district. Within each commune residences were randomly selected for the survey. In total, 100 households were administered the short closed question survey examining the input choices and output outcomes of the 1997-98 winter-spring paddy crop. Once again, the sampling procedure appears to have produced a set of data that is reasonably consistent with that generated by other surveys in the Mekong Delta.

### 5.2.2. *The results of the survey*

Table 7 describes the land, labour and machinery inputs, and yields, experienced during the 1997-98 winter-spring paddy crop. In the sample, the average size of a farm was 14.6 cong. The distribution of farm sizes displayed in Table 7 shows that 50 per cent of the farms in the sample were less than 15 cong, and that only 9 per cent of the farms in the sample had holdings of 25 cong or more. The distribution of farms in the sample is thus broadly similar to that of Case 1, and indeed with the distribution of farms in the Mekong Delta. However, in the sample there was no recorded leasing of land either in or out. Thus, the sample consists of only the Vietnamese equivalent of owner-occupiers.

Table 7 demonstrates that an average of 87 labour days per hectare was devoted to the winter-spring rice crop. Although family labour was important for the production of the crop, the purchase of labour-power was very important. Almost 73 per cent of labour requirements of farms were met through the hiring of labour from the local labour market. Although family labour inputs increase with the size of the holding and then start to reduce

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<sup>5</sup> The survey was conducted by Pham Le Thong for their MA thesis, organized under the auspices of the Vietnamese-Dutch Project for MA Programme in Development Economics, and is available in the Project Library.

as farm size exceeds 15 cong, there is also a clear linear relationship between labour hiring and size of farm. As noted above, while the use of hired labour was relatively high on small farms, the motivation behind the use of labour-power is different between the richer peasants and small peasants. For the small peasants, hired labour was often used to substitute for family labour that was hired out. Again, if the commodification of labour and the concomitant development of the labour market is a key structural feature of the development of capitalism (Lenin, 1968), it would appear that rural capitalism is emerging.

In terms of machinery, farmers used modern machinery for an average period of 24 hours during the 1998 winter-spring paddy crop. Table 7 demonstrates a clear positive relationship between farm size and use of modern machinery, with farm of 30 cong or more using more than 12 times the amount of modern machinery of that used by the smallest farms. The simple correlation coefficient between average size and use of modern machinery stands at 0.985, indicating the strength of the relationship. Moreover, larger farms owned more machinery and equipment while farmers that did not own modern machinery and equipment still needed to hire it and the labour necessary to operate it. Farms that hired modern machinery and the labour necessary to operate it did so from rich peasants. Therefore, rich peasants were receiving income from land, labour and machinery.

Table 7 also demonstrates a positive relationship between yields per hectare and size of farm. Across the sample, the average yield is 6458 kilograms per hectare. However, this average masks wide variation. The smallest farms have an average yield of only 1393 kilograms per hectare, while the largest farms have an average yield of some 16000 kilograms per hectare, a productivity record that is more than ten times that of the smallest farms. Moreover, larger farms are not just the most productive but are also the farms with the heaviest reliance upon hired labour and modern machinery. Indeed, the simple correlation coefficient between modern machinery and yields stands at 0.978, indicating the significance of the relationship. Clearly, within the sample, there appears, as in Case 1, to be an emergent group of rich peasants with larger landholdings, larger amounts of capital stock, and larger use of hired labour.

### **5.3 The inverse relationship in the Mekong Delta**

Tables 6 and 7 tentatively suggest that the technical coefficients of production can be differentiated on the basis of the size of operational holding, and that such differentiation is having an affect on productivity. In Table 6, there is an admittedly weak positive relationship between farm size and yields per hectare. Although weak, and not statistically significant, this positive relationship nonetheless reinforces the argument of the previous section that the main source of agrarian accumulation in the period following decollectivization has been the purchase of modern machinery and equipment. In Table 7 a similar relationship is found, but this time the result does appear to have statistical significance. The transformation of property rights during the 1980s that facilitated agrarian accumulation appears to have led not only to differentiation in ownership of land use certificates but also differentiation in the technical coefficients of production on farms of different sizes. The evidence is consistent with, but not conclusive proof of, the class-theoretic approach to the inverse relationship. The separation of the direct producers from the means of production, a process that is embodied in differential ownership of land and capital inputs, is the key structural feature of the development of the capitalist mode of production, as it is separation that fosters the emergence of exploitation. Differentiation may thus in turn explain why the presence of an inverse relationship is not substantiated in these two cases, as might be expected in a smallholder rice society such as the Mekong Delta. Farm productivity in larger sized farms may be becoming linked to the scale of production, rather than the compulsion of survival.

One final point can be made about the emerging class of rich peasants that may be appearing in the Mekong Delta of Vietnam. As noted, these rich peasants obtain income from land, labour and machinery. There has thus been a diversification of their livelihood strategy. However, this diversification is not one that has been forced upon them. Rather, diversification represents a response to underlying processes that have altered the land and non-land means of production of the households and has fostered the emergence of rural labour markets and hence labour-power (Ellis, 2000: 55-57). In this sense then diversification is a logical outcome.

## 6. CONCLUSIONS

This paper has asked whether there is an inverse relationship between size of farm and output per unit of land in rural Vietnam. The paper began by briefly reviewing the literature on the inverse relationship, and suggested that the class-theoretic approach developed by Dyer (1997) offered a more convincing account of why or why not an inverse relationship might be witnessed. The paper then noted the process of decollectivization in Vietnamese agriculture during the 1980s, and the impact of this transformation on the rural relations of production. Some evidence appeared to indicate that access to land was becoming increasingly stratified. At the same time, it appeared that changes in the choice of technique had also occurred. It was demonstrated that agrarian production and productivity were unleashed as a result of these changes. Decomposing the sources of accumulation in the post-1988 period, it was demonstrated that purchased machinery and equipment were an important source of growth. Evidence from the Mekong Delta indicated that farms of different sizes appeared to utilize different technical coefficients of production, and that these differences in production systems appeared to have an effect on yields. As a consequence, an inverse relationship between size of farm and output per unit of land could not be substantiated. Rather, it appeared that processes of peasant class differentiation might be underway, with the apparent emergence of a stratum of rich peasants with relatively larger landholdings, relatively larger quantities of capital stock, relatively greater recourse to hired labour-power, and larger yields per unit of land. These rich peasants could be set alongside the great mass of the small peasantry, with relatively smaller landholdings, relatively smaller quantities of capital stock, relatively lesser recourse to hired labour-power, and lower yields per unit of land.

In Vietnam, the World Bank, the state, and the CPV have all stressed the need to diversify agricultural production and develop rural non-farm employment (World Bank, 1998). As stated by the World Bank, Asian Development Bank, and UNDP (2000: 12), 'Vietnam needs to adopt the a seemingly paradoxical stance of giving a high priority to raising agricultural productivity while recognizing that success can come only as agriculture declines as an employer of labor'. The findings of this paper suggest that an enthusiasm for rural diversification should be set alongside the processes underpinning the diversification process. In other words, is the process of agrarian change making diversification

possible, or is change making diversification necessary? These two possibilities are in line with Ellis' (2000: 55) distinction between diversification out of necessity and diversification out of choice. The social processes underpinning diversification differ according to the position of the household in the agrarian structure. The fact that diversification by the rich peasants is occurring does not necessarily mean that diversification for poorer small peasant households that continue to be engaged in agriculture is necessarily a good thing. If land, labour and capital markets work to favour rich peasants, there is clearly a need for caution.

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## TABLES AND FIGURES

**Table 1:** The agricultural reform process, 1979-2001

Policy measures	Objectives	Main features	Impacts
The 1979 sixth Party plenum on 'some urgent problems in improvement of economic management'	To encourage all co-operatives to fully utilise available resources to boost output and help overcome economic difficulties and food shortages	1. Recognizing the importance of economic incentives in economic development 2. Widening the autonomy of co-operatives 3. Accepting aspects of a market economy such as market-determined prices	The Do Son experiment was recognized and other co-operatives were allowed to experiment in contracting out land to members for family production. Food production recovered.
Directive 100 of 1981 on 'Output contracts to labour groups and individuals'	To provide more economic incentives to farmers so that the efficiency of resource use improved, output would grow, and the 1980 food crisis would not be repeated.	The co-operative contracted out land to households against an output quota to be returned back. The cooperative retained overall control of the production process. Income distribution shifted from a per head quota to a labour force participation basis.	Farmers received greater freedom to allocate family labour and dispose of output in excess of the quota. Farmers' income improved in both cash and kind.
The 1983 Agricultural Tax Ordinance	To unify and rationalise the tax base across the country, to encourage farmers to utilise fallow land, and to expand cropped area by both extensive and intensive means.	Agricultural tax shifted from a focus on output and area to a focus on quality, area and average yield. The tax was in paddy, and the rate was fixed at 10 % of average output for 5 years. Reclaimed land was not subject to tax for 3 to 5 years.	The total sown area increased. Fallow land was brought back into use, and land was reclaimed for annual and perennial crops.
The 1986 <i>doi moi</i> (renovation) programme	To transform a centrally planned economy into a state-regulated market economy, in order to surmount an ongoing economic and social crisis.	The state officially recognized the co-existence of five economic sectors: state, state capitalist, capitalist, cooperative and private. The leading role of the state sector, and the regulatory role of the state, was emphasized.	Agriculture slowed into stagnation, due to inappropriate incentive structures and natural calamities.
The 1987 partial liberalization of food trade	To create a national food market capable of meeting planned food consumption targets by smoothing the flow of food across the country, subject to state control.	The abolition of the policy of district level food self-sufficiency in place since the late 1970s. State companies retained their monopoly in the inter-provincial shipment of food.	Food imbalances were reduced across the country as food production in surplus-producing regions was encouraged. Transaction costs in food trading were greatly reduced.
Resolution 10 of 1988 on 'Renewal of economic management in agricul-	To overcome the food crisis of 1987 and early 1988, the management	The farm household formally became the basic economic unit in the rural	The food crisis ceased. Farmers gained greater control over the alloca-

<p>ture' and Resolution 6 of 1989 on the farm household</p>	<p>and production of agriculture was to be radically reorganized to encourage rapid growth by transforming the existing structure into a diversified, commodity-based agriculture.</p>	<p>economy, with co-operatives acting to support farm households. Co-operatives contracted out land to farm households for 15 years for annual crops, and 40 years for perennial crops. Capital stock and working capital were rented or bought by farm households from co-operatives. Farmers had to pay agricultural taxes and irrigation fees to the government. Output quotas are retained, but eased, allowing farm households to keep a minimum of 40 per cent of average output. The quota was fixed for 5 years. Private food marketing was explicitly recognized.</p>	<p>tion and utilization of land, labour and financial resources, and collective agriculture quickly lost its meaning.</p>
<p>The trade and price liberalization of 1989</p>	<p>To end the subsidy regime used in the economy, and thus further spur the growth of the market.</p>	<p>Most macro- and micro-economic prices were liberalized, albeit to a differing extent. The quota procurement system was ended. Price controls were ended. The exchange rate was devalued. Positive real interest rates were introduced. Internal trade was liberalized. The private sector was allowed entry into a wider range of business activities, except strategic sectors. The private sector was allowed entry into international trade, except in strategic goods such as rice and fertilizer.</p>	<p>Agriculture grew rapidly, and in particular rice production, transforming Vietnam from being a net rice importer into being the third largest rice exporter in the world. Farm incomes increased, and rural living conditions improved in absolute terms.</p>
<p>The rural financial reforms of 1990 to 1995, and in particular the authorization of lending to rural households in 1993.</p>	<p>The Vietnam Bank for Agriculture and Rural Development (VBARD) was established in 1990 to meet the growing credit needs of farmers, traders and agribusiness. The People's Credit Funds (PCFs) were established between 1993 and 1995 to mobilize idle savings by providing</p>	<p>The VBARD took over the State Bank of Vietnam's (SBV) rural network of branches and expanded it. Acquiring credit from the VBARD required collateral, and land use certificates were the most commonly accepted form of collateral. Mass organizations were widely used to distribute</p>	<p>Private credit's share in total credit rose from 10 % in 1991 to 82 % in 1995. Increasing numbers of farms got access to credit, allowing them to sustain the expansion of production, and develop processing, storage and transport capacities. This speeded up the commercialisation of agriculture.</p>

	<p>ing local access to savings institutions, and to provide local access to credit for borrowing households and businesses.</p> <p>The Vietnam Bank for the Poor (VBP) was established in 1995 to contribute to hunger eradication and poverty alleviation.</p>	<p>credit and collect repayments, in order to reduce transaction costs and risk. PCFs are member-owned and seek to recover the costs of their operation.</p> <p>The VBP is a non-profit bank that operates through the VBARD network but which receives support from the SBV, in that it operates using SBV-subsidized interest rates.</p>	<p>tion of agriculture in both the domestic and international arenas. The PCFs and VBP allow many to escape from poverty.</p>
The 1993 Land Law and the 1993 land use tax ordinance	To provide farm households with more rights over contracted land, and in particular to secure long-term tenurial arrangements, in order to improve the allocation and utilization of land, encourage investment, and increase the reclamation of land.	<p>Land tenure was extended to 20 years for annual crops and 50 years for perennial crops. Farm households could exchange, transfer, lease, inherit and mortgage land use rights. Households were limited to 3 hectares per farm for annual crops. Agricultural land use tax was reduced from an average of 10 % of yearly output to 7 % of yearly output. Perennial crops farmed on newly reclaimed land were exempted from tax.</p>	<p>The total sown area increased, especially for perennial industrial and export crops. Investment in land increased, boosting fertility and yields. The two contributed to high agricultural growth rates.</p>
The Price Stabilization Funds (PSFs) of 1993.	To stabilize agricultural incomes and consumer supplies during periods of sharp price fluctuations.	<p>Exporters and importers were subjected to an excess profit tax. The government used these revenues to subsidize credit for state-owned enterprises (SOEs) so that they would continue to procure when farm gate prices fell and transport inputs and outputs to remoter, food deficit and disadvantaged regions.</p>	<p>The procedures for releasing the revenues to the SOEs were complex. Moreover, those SOEs that received resources were not those that bought and sold agricultural inputs and outputs to and from farmers. Thus, the results were poor.</p>
Decision 250 of 1998	To allow private companies to export rice	<p>A proportion of the rice export quota was to be licensed to five private companies.</p>	<p>State owned enterprises remained dominant in rice exports.</p>
Resolution 6 of 1998 on the farm economy and the 1998 Land Law	To recognize the position of farm households operating holdings in excess of the legal 3-hectare maximum by legalizing the role of land accumulation and	<p>The operation of the land market was further clarified, with provisions regarding the leasing, transfer, and accumulation of land in excess of 3-hectare ceilings. Legal</p>	<p>Too soon to say.</p>

	larger scale farms in the agricultural sector.	restrictions on the hiring of labour were to be removed, with negotiable salaries between employers and employees. Income tax rates for large-scale farms were to be cut from 30 % to 5 %.	
The agricultural trade liberalization of 2001	To end the rice export quota and the fertilizer import quota	All firms were to be allowed to export rice and import fertilizer.	Too soon to say.

Source: adapted from van Donge, Whie and Nghia (1999); *Vietnam Investment Review* (various issues).

**Table 2:**  
Landholdings for all households with agricultural land in square metres, by expenditure quintiles, 1998

Expenditure quintiles	Area of landholdings		
	All land	Annual crop land	Perennial crop land
I (poorest)	6437	3600	613
II	6953	3928	845
III	7138	4625	1016
IV	6928	4414	1485
V (richest)	9856	5081	3527

Note: Landholding includes land rented-out but excludes land rented-in

Source: Government of Vietnam-Donor-NGO Poverty Working Group (PWG) (1999): Table 2.5.

**Table 3:**  
Key indicators of production inputs

Input	1979-1981	1995-1997
Arable land per capita, in hectares	0.11	0.07
Land under cereal production, in thousands of hectares (*)	5963	7799
Irrigated land as a share of crop-land	24.1	31.0
Fertilizer use per hectare of arable land, in hundreds of grams	302	2566
Tractors per 100 hectares of arable land	38	178

Note: (\*) is for 1996-1998.

Source: World Bank (2000): Table 3.2.

**Table 4:**  
Public investment in agriculture, 1992-1998

Year	Public investment as a % of GDP	Public agricultural investment as a % of GDP	Public investment as a % of the government budget	Public agricultural investment as a % of the government budget	Public agricultural investment as a % of agricultural GDP
1992	Not available	0.77	Not available	4.13	2.30
1993	Not available	0.63	Not available	3.14	2.16
1994	Not available	0.98	Not available	4.60	3.47
1995	5.5	1.27	22.84	5.73	4.46
1996	6.3	Not available	26.52	Not available	Not available
1997	6.7	0.88	29.12	3.79	3.36
1998	7.1	0.99	32.64	4.79	3.73

Source: interpolated from Government-Donor Working Group on Public Expenditure Review (PER) (2001): Table 1.1 and 3.2

**Table 5:**  
Accounting for agricultural growth, 1976-1995

Period	Gross output growth	Contribution to output growth					
		Sown area	Labour	Fertilizer	Livestock	Machinery	Factor productivity
1976-80	2.03	1.57	0.74	-1.36	0.09	1.16	-0.17
1980-84	6.57	0.32	0.92	3.31	0.38	0.54	1.11
1984-88	2.40	0.51	0.66	0.15	0.44	-0.75	1.38
1988-95	5.03	0.97	0.65	0.97	0.22	2.18	0.02

Source: Jansen (1998): Table 2.

**Table 6:**  
Inputs and yields in the Mekong Delta, winter-spring crop, 1999

Size of operational holding	Proportion of observations	Total labour days per hectare	Hired labour as a share of total labour	Fertilizer use per hectare (VND 000)	Machinery rental cost per hectare, (VND 000)	Value of owned machinery and equipment (VND 000)	Yield per hectare, in metric tons
Less than 5 cong	27.4	78	38.4	1149	1046.5	1438	6.05
5 to 10 cong	31.1	66	39.4	1360	957.7	1681	6.28
10 to 20 cong	30.4	61	45.9	1142	994.1	2233	6.45
More than 20 cong	11.1	63	44.4	1030	877	2425	6.46
Average		67	41.8	1199	985	1917.5	6.29

Source: compiled from Binh (2000): Tables 11, 7C, 8C, 10C, 26, 31 and 33

**Table 7:**  
Inputs and yields in the Mekong Delta, winter-spring crop, 1998

Size of operational holding, in cong	Proportion of observations	Average area, in cong	Family labour, in mandays	Hired labour, in mandays	Machinery utilization, in hours	Yield per hectare, in metric tons
0-5	19	3.5	21.51	10.67	4.11	1.39
5-10	21	6.8	31.60	23.45	5.75	3.00
10->15	10	12.0	51.09	48.67	15.91	5.67
15->20	3	18.4	31.75	62.00	28.66	7.77
20->25	38	22.1	15.65	99.72	41.69	9.84
25->30	8	26.0	9.88	130.81	38.99	10.79
30+	1	32.0	2.00	146.00	53.33	16.00
Average	100	14.6	23.54	63.50	23.94	6.46

Source: compiled from Thong (1998).

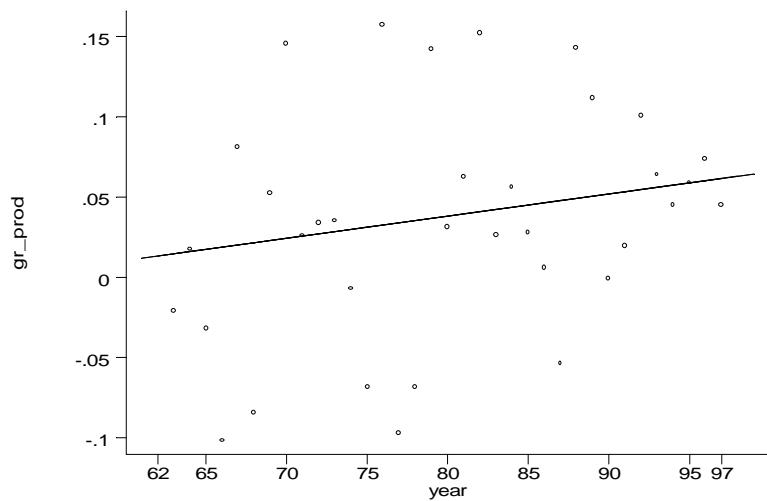
**Figure 1:** Per capita foodgrain availability, 1961-1997



Source: author's calculations from Food and Agriculture Organization, 1999<sup>6</sup>.

<sup>6</sup> Production data obtained from the Food and Agriculture Organization's web site for the pre-1975 period is for both the northern and the southern halves of Vietnam. This data appears to be the only available consistent agricultural data set for the entire of Vietnam from the early 1960s to the present.

**Figure 2:**  
Growth rates in foodgrain production, 1962-1997



Source: author's calculations from Food and Agriculture Organization, 1999.