Measures of Economic Status – Combining Income and Wealth into a Single Measure of the Potential Command Over Goods and Services

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The purpose of this paper is to stimulate discussion on the way that economists, statisticians and analysts treat the wealth of agricultural households and changes in that wealth not arising from production. The concept of "economic status" is revisited and the implications of using it when making comparisons of agricultural households with other groups in society is reviewed. A more explicit treatment of capital and wealth is proposed.

Introduction

Wealth is a shadowy but potent component in the factors which determine the position of the agricultural community within society. Wealth is important because it gives rise not only to income in a variety of forms but because it also provides security, freedom of manoeuvre, and economic and political power (Hill, 2000). Within society as a whole wealth seems to be much more unequally distributed than income and has a major influence on the overall degree of inequality (Atkinson, 1980).

Two aspects of wealth of importance in an agricultural policy context, neither of which has received much recent attention among agricultural economists. These are

(a) the capital gains that assets bestow on their owners.

(b) the importance of wealth as a contributor to the economic welfare of farmers.

The purpose of this short paper is to stimulate discussion about whether these subjects should be revisited as part of a renewed interest in agricultural household-firms.

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2 Capital gains and income

According to the Hicksian approach, real capital gains (and losses) form part of the personal income of the owners of assets. They differ in several respects from current income (liquidity, certainty, measurability etc.) so simple summing of the two forms is probably inappropriate. They tend to be taxed more favourably than current income, encouraging entrepreneurs to switch rewards in this form and thus escape current income measurement. They do not fit easily into the aggregate framework of the Economic Accounts for Agriculture (though there is a place for them within national accounts). Mostly they are outside the EU microeconomic farm accounting framework. Nevertheless, they should not be ignored.

It is well established in the literature that support to agricultural production is readily capitalised, with the owners of land (the asset being the least elastic in supply) being the main beneficiaries. They may, or may not, also be farm operators. Hence there has been some interest among policy analysts in the distribution of the benefit of support.

At the farm household-firm level capital gains and losses have direct repercussions for a range of behavioural issues. They carry influence on production and investment decisions within the farm business and on the consumption levels of the farm operators. They affect savings, with a higher propensity for farmers to save from gains as opposed to current income (Bhatia, 1972). One important repercussion of capital gains is probably a changed attitude towards risk among owner-managers resulting from enhanced personal wealth. According to

Hearn (1977), farmers who had experienced gains could be expected to take on investments and enterprises of higher risk characteristics and thus have a different farming pattern from those who had not. Capital gain can be turned into spending power in a variety of ways, including borrowing on the strength of an improved equity position and the avoidance of having to make provisions for pensions out of current income. In the UK farmers have differed widely in the ways that they view capital gains as benefiting their abilities to borrow, with small farms tending to stress the greater credit that gains enabled them to raise more so than medium or larger farmers with stronger income positions (Hearn, 1977). Capital gains are also a factor causing farmers to stay in the industry or to quit; anticipation of rising land prices and the preferential taxation given to capital gains, especially on retirement, has been seen as a substantial brake on structural change to a farm size pattern more in accord with the technical and economic conditions of the present (Hearn, 1977; Perry *et al.,* 1986).

3 Who calculates capital gains of agricultural households?

In the 1970s the persistently rising land prices and assets values, noted in many other industrialised countries, awoke interest in the relative size of capital gains to current income. With the subsequent downturn in the values of farmland attention subsided, and no equivalent body of literature on the implications of capital losses seems yet to have emerged.

For the EU (and UK) no official estimates are published of the agricultural industry's aggregate capital gain or loss. However, several other countries make such official estimates. Figures for gains and losses (nominal and real) in the *USA* have been calculated by the USDA, are available from 1960 onwards, and for a time were shown in the annual Farm Sector(*sic*) Review. For earlier US estimates it is necessary to turn to non-official sources. Those by Melichar (1979) were accompanied by the comment that "over the two decades preceding 1972 real capital gains averaged about one-third of net farm income." Throughout the 1970s real gain took place and at rates which exceeded Net Farm Income. Bringing the various estimates together suggests that capital gains started to become important in US agriculture in about 1968; from then on real estate started to yield more substantial and regular gains than in the earlier post-war years and these gains were at levels which had only been seen occasionally before (1950, 1956 and 1958). Most of the gain came from real estate; for the period 1947-1968 Bhatia (1970) estimated that 88 per cent of the total real gain came from this source.

The sharp drop in prices of real estate, and the capital losses, after 1981 muted interest shown in the literature in this form of reward to agriculture. However, losses had been stemmed by the late 1980s and the 1990s saw further capital gains from real estate (see Figure 1). Taking the period 1960-97 as a whole, real gains on farm land and buildings marginally exceeded losses ($32m. in 1990 values) but this was exceeded by the gains on farm debt ($166m); losses on other assets owned by the business (including stored crops and financial assets) reduced the gain in equity to $182m. Clearly, within the history of the US the years over which measurement is made can have a major influence on the impact of gains and losses on the overall rewards, and that a very long hold of land is required before a net gain may be seen.

Figure 1 USA: Estimates of capital gains and losses on real estate and farm debt, 1960-97
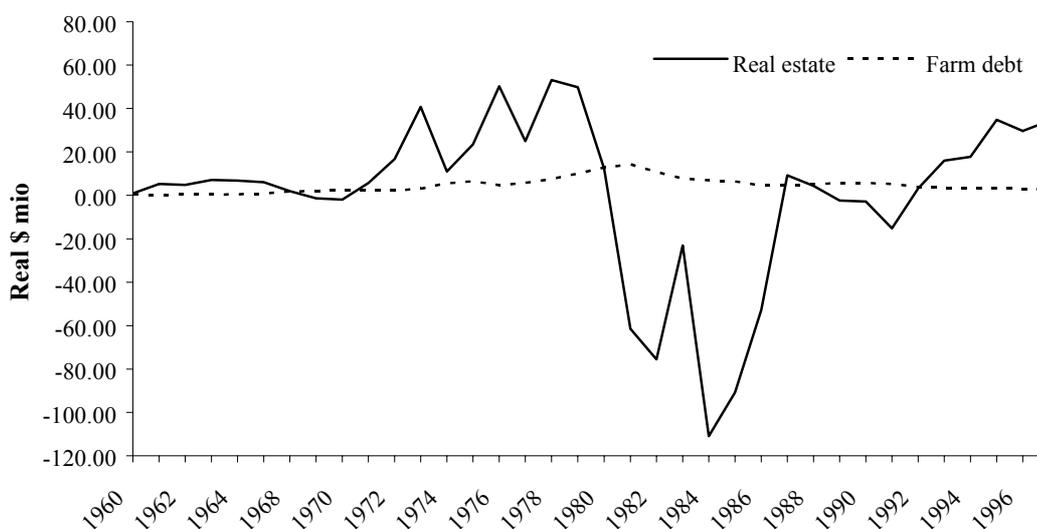
The size of capital gains to agriculture in *Canada* has received a substantial amount of attention, showing a similar pattern of rising importance compared with income over the 1970s as exhibited in the neighbouring USA (Brinkman, 1980; Chase, 1980). *Denmark* is unusual among EUR 15 member states in that it has published estimates of capital gains and losses as part of its annual official survey of the agricultural industry. The heavily indebted nature of Danish agriculture makes the inclusion of gains and losses on financial assets particularly important. *Sweden* also has a history of estimating capital gain, including those on agricultural real estate and liabilities.   One of the few attempts to study the effects of capital gains on the *United Kingdom* farming industry was made by Hearn (1977).

Studies at the level of the individual farm include those by Gardner (1975) who estimated incomes of farmers including unrealised capital gains in a "normal" year. This resulted in a substantial reduction in the number of farm families which fell below the poverty line. Harrison (1975) looking at capital gains in England through a survey of farms found that capital gains were by no means equally shared among farmers but had gone to those who had owned the most land and to those who had owned it longest. Also, farmers had not reacted in identical fashions even though they may have faced identical gains both in total and in time. In the USA there were regional differences in equity gains and losses that could be linked to income expectations flowing from policy decisions on commodity support programmes, implying that some types of farm were affected more than others (Weldon, Moss and Erickson, 1993).

The changes currently taking place in agricultural policy (lowering of commodity support prices, direct income compensations, payment for environmental service etc.) are likely to impact on assets prices and this affect the overall rewards accruing to farm household-firms, though not in a simple and uniform way. Thus a continuing "watching brief" on the issue of gains and losses would be appropriate.

Findings concerning capital gains are usually made using data related to the farm business. While agricultural capital assets may be distinguished from non-agricultural ones (though with some difficulty when dealing with shared takes place), there are theoretical and practical problems in separating off agricultural loans. Of course, if the farm operator and his family

also hold other (non-farming) assets, capital gains and losses on these will carry implications for what happens on the farm and on consumption patterns. For example, a collapse in the value of off-farm assets would be likely to have a dampening effect on the willingness to make high risk decisions in the farm's use of capital. Hence, as with balance sheets, it is desirable to have information on gains and losses based on the agricultural household-firm unit that could put the farm business in its broader context.

4 Economic status of agricultural households

There is a paradox in the fact that in many industrialised countries farmers whose low incomes are a cause for concern and the reason for government intervention in support of them are frequently holders of wealth which is substantial and typically above that of non-farmers. In the USA in 1986, the average farm equity of farm operator households whose incomes fell below the income poverty line was substantially above the all-households average net worth (Ahearn and Lee, 1991). Among the farm households in poverty, more than half consisted of families where the head's main occupation was as a farmer and where the main income of the household came from farming; these had an average farm equity (net worth) of $238,640, over three times the national all-households average. A high ratio between wealth and income for all farmers was also found in Australia. Anecdotal evidence suggests that this is frequently also found in much of the EU.

The high wealth-low income combination, particularly found among elderly farmers, should concentrate attention on how wealth enters into the assessment of economic status and the criteria for public support. It may suggest ways in which wealth can be drawn on to provide current spending power, avoiding the transfers for other sectors which most other policy mechanisms entail.

The "economic status" of an individual, that is his potential consumption of goods and services, is related to both his current income and to his net worth. Wealth represents potential spending power, and two individuals with the same current income but different amounts of assets will have different consumption possibilities. In order to express income and wealth in a common measure the usual approach is to calculate the annuity value of net worth, that is, an annual income stream of equivalence to the lump sum. This is added to conventional income to give a parameter of the total flow of economic services at the command of the consumer unit. The method was expounded by Weisbrod and Hansen (1968) in general form and later applied with particularly telling results in agricultural contexts.

The determinants of this income-equivalent are the amount of net worth (NW), the life expectancy of the recipient (n) and the rate of interest (r). The three are linked by the following formula (from Weisbrod and Hansen, 1968):

$$\text{Annuity value} = NW \times \frac{r}{1 - (1-r)^{-n}}$$

The shorter the expected life and the larger the sum annuitised, the larger will be the income stream equivalent. Normally the life expectancy would be that of the wealth owner, but in the case of couples it is not unreasonable to use that of the person expected to live the longer.

Applying the technique to farmers achieved some prominence in the 1970s and early 1980s, but has since attracted little attention. In the US, for 1966, Carlin and Reinsel (1973) found that the distribution of well-being among farm families became more equal when annuitised wealth was added to current income to give a joint measure, and that disparities between the farm and non-farm sectors were narrowed as the position of the farm families improved. Similar results were reported for farm families in North Carolina for 1970 (Gardner, 1972). In Australia investigations into the poverty of farmers in three regions of Victoria (Vincent,

Watson and Barton, 1975) found that the numbers of families falling below an income-based poverty line was substantially reduced if annuitised wealth was also considered. In Canada the method was applied at aggregate (agricultural household sector) level (Chase, 1980; Chase and Lerohl, 1981) using a range of interest rates, based on farm credit rates in the private and public sectors, and several life expectancies. The estimates relate to a time when capital gains were being received, and the conclusions were that over the period 1967-77 net worth constituted a rising proportion of the total economic well-being (status). In 1967 the average farm annuity added approximately 47 per cent total economic well-being (farm and non-farm income) and in 1977 the figure was 57 per cent.

However, the problem of using the above formula in order to assess economic status is that it provides only a notional measure of economic welfare. Chase and Lerohl pointed out that current annual income must be independent of net worth in order to add the two streams, something they achieved by removing the reward to land and capital from their estimates of the income from farming. Attempts at evaluating economic status at household level have to tackle the problem that farmers cannot in practice realise annuities based on net worths without losing the assets which form the basis for their current income. This is not the case when other forms of personal wealth are considered, with the notable exception of owner-occupied housing, where the income in kind would be lost on sale. However modification to the methodology are possible which allow for the retention of a current income-earning capacity. These are attractive for consideration because they are less open to criticism of being unrealistic and, moreover, they indicate channels by which the wealth of farmers may be released in practical agricultural policy aimed at income support. Farmers are free to sell up and exchange the proceeds for annuities, formally with financial institutions or informally by making assessments of their own life expectancies and consuming accordingly, but it is clear that this is not a common practice, at least in the UK and north America. In Denmark the custom of retiring farmers selling their land to the next generation (rather than making an outright gift) is one step in this direction, but such a system is exceptional and only applies when land is relinquished; methods of farm take-over in the EU are reviewed in Cornet *et al.,* (1991).

Two principle ways of expressing the income equivalent of net worth while retaining agricultural assets to generate current income present themselves. The first is a forward sales contract arrangement under which a farmer mortgages his property in exchange for an annuity based on the net worth of the property, but the mortgagee only assumes title to the property after the death of the farmer. Under this arrangement the value of the assets to the mortgagee, and thus the sum on which the annuity is based, is not the current sale price of the assets but rather the price at the death of the farmer, discounted to the present. Several approaches to estimating this discounted land value are possible; for Australia Sexton and Duffus (1977) assumed that present land values were solely determined by future farm income flows so that the present value of a future land value could be found by deducting the discounted income flows to be received over the expected life of the farmer. When factors other than farm profits determine land prices, as in the UK, it might be preferable to make assessments of the likely future land prices and a rate of interest on alternative investment opportunities to discount these values to the present. In the Australian example the annuity value was added to the sum of the current incomes of all family members, including off-farm earnings, investment income (from other property, which did not enter the annuitisation) and non-taxed types of income (child allowances and so on). An arbitrary interest rate of 6 per cent was used.

The results of including a forward-contract annuity arrangement on the number of Australian farms deemed to be in poverty was marked. The proportion of families in the dairy sector with incomes of less than $4,000 in 1974 fell from 19 per cent to 5 per cent. In the dried vine fruit sector the fall was from 25 per cent to 14 per cent and in the apple and pear sector from 29 per cent to 9 per cent. When classifying by age of farmer, though reduction in the proportion of low status were observed among all groups, consistently high reductions were

in evidence among families having a household head of retirement age (60 years) and over. In the dairy sector 30 per cent of families with a head of 60 years old were below the arbitrary $4,000 line on a current income basis, but only 1 per cent after annuitised net worth was included. If a practical scheme for exchanging net worth in the form of land were implemented, it would clearly have greatest significance among the older farmers.

The other land-retaining alternative, in countries which have a cash tenancy system, would be to sell the land on a sale-and-leaseback arrangement, remaining in occupation of the farm but paying a rent to the new owner. An estimate for the UK (Hill, 1982) assumed that owner-occupied farmers sold their land at prevailing tenanted-land prices (rather than at vacant possession prices) and annuities were calculated on the sums realised. For farms in the 1977-78 Farm Management Survey adding an annuity for the owned land raised the all-farm level of income by one third and lifted about half the farms with incomes below an arbitrary £2,000 to above that line.

6   Discussion

There is no doubt that any full assessment of the economic position of farmers and their households should take into account their wealth. This applies both to the absolute level of wealth (as it affects economic status) and changes in wealth, in the form of capital gains and losses, which form part of personal income but are not usually included in income accounts compiled as part of the official statistics on agriculture because they do not arise directly from production activity. When farmers have the ability to switch between the alternative ways in which their net accretion of economic power is manifest - as current income or as wealth - any partial measure of the overall position will risk a misrepresentation of the real situation. The relative high wealth-to-income ratios found in agriculture afford particular opportunities for the transformation of income into forms that minimise taxation and therefore make the inclusion of capital aspects of unusual importance.

Including capital gains with current income has a substantial effect on the income position of farmers. Up to the 1980s current incomes from in the UK were enhanced by capital gains on agricultural assets. Subsequently a fall in the price of land probably resulted in notional capital losses, though land prices surged upwards between 1993 and 1996. However, the fact that land is normally treated as a long-term asset means that only a small proportion of landowners will have suffered capital losses on their acquisition prices. In the USA the persistent rise in land prices also reversed over the early 1980s but from 1986 farm equity recovered to approaching that of the late 1970s as farmers reduced debt and asset values stabilised. Again, short-term losses can be an unsatisfactory indicator of the longer period trend. Though the relevance of capital gains and losses will vary (their magnitudes can shift alarmingly, and sometimes they will run counter to movements in current income and sometimes with it) and they are largely beyond the influence of the individual farmer, they nevertheless constitute one form of economic reward. Furthermore, agricultural and other policies can have an impact on capital gains that measures based on current income from agricultural production – the conventional measures of farming prosperity – very largely miss.

The economic status of farmers, particularly the elderly ones, are altered in a major way if the command over goods and services resulting from their net worths is also included. The proportion suffering poverty is greatly reduced, though there will be some remaining, principally those without owned land. For policy-makers not only is the magnitude of the poverty problem transformed, but ways of aiding low income households become apparent which are based on enabling farm households to make liquid the assets which they control as an alternative to supporting their incomes. Any comparisons with the economic position of other parts of society, a central feature of agricultural policy, would have to ensure that the means existed by which the fuller treatment of farmers expounded here could also be applied to the other occupation groups.

Most industrialised countries appear to be poorly provided with reliable information on the wealth of their farmers and how it compares with other groups in society. There is, first, a need for the development of a methodology for the measurement of wealth of agricultural households. Central theoretical issues would need to be resolved, such as what constitutes an agricultural household, though this would not appear more difficult than the similar tasks already achieved in the area of income measurement for the agricultural households sector.

Next, there would remain the critical issue of how data could be collected on a household basis to allow such balance sheets to be built up. For EU Member States that already have good data in the form of administrative registers, this might already be feasible. For others, particularly in countries such as the UK which lack a central statistical department with the legal authority to bring together the disparate data that already exist, new data sources would need to be developed. In the UK the Farm Business Survey is possibly the most attractive option for short-term development. It already collects limited information on non-farm income, which indirectly provides elementary indications of assets held outside the farm, and would be a starting point for widening the cover of liabilities. However, the difficulties that measurement might pose should not obscure the deficiencies of the present approach and the direction in which methodological improvements should be made.

7   Questions

- What is the opinion of the need to regularly measure capital gains and losses, to stand alongside current income measures?
- If the calculation is to be done, should this be (a) at aggregate sector or microeconomic levels (b) relate to agricultural assets only or to the household's entire holding of assets and liabilities, and (c) over what period should it be measured (such as a rolling 10-years)?
- Is economic status a useful concept to apply in the context of policy towards the agricultural community?
- If the calculation is to be done, whose assumed life should be adopted for the purpose?
- Are there grounds for excluding land or other assets from the calculation?

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