International cooperation in developing statistics on the income of agricultural households has highlighted the need for agreement on certain aspects of the underlying methodology. These include the choice of accounting framework, definitions of a household, of an agricultural household and of disposable income. The choice of definition can greatly influence the results and usability within a policy context. International comparability of results requires national data systems to be capable of generating results using these standards as well as servicing national purposes.

1 Introduction

Before the late 1980s little interest was shown by agricultural policymakers in most developed industrialised countries or by international organisations in the income situation of farm households, the most numerous form of institutional unit engaged in agricultural production in all countries. Slattery [1966] reviewed and reported what was known on the relative income of farmers up to the mid-1960s, and found only seven countries where microeconomic data on personal incomes could be found (Denmark, Germany, Sweden, the USA, Canada, Australia and New Zealand). Very little progress was made in developing statistics over the following two decades and several important EU Member States (such as the UK, Italy and France) still lacked reliable information at the start of the 1990s, and for some the gap still exists.

The paucity of statistics has been of concern among some groups of users for some time. As long ago as 1964 the OECD, as part of its study of low incomes in agriculture, attempted to collect from the twenty-two countries that took part information concerning the incomes that farmers received from other sources and which might compensate for low earnings from farming. To its concern it found that:

…In most countries, the information available does not give a precise indication of the farm income situation. Farm families cannot be accurately classified according to their level of income; data on income received from non-farm sources are particularly deficient. These limitations are a serious handicap in devising suitable policies and in assessing the results of measures taken; attention should be given to improving the situation [OECD, 1964, p.7].

Although scraps of information about off-farm activities could be found for most, sets of microeconomic income data that permitted the identification of farms with low total incomes were only encountered in the Scandinavian countries, Austria, Germany, Canada and the USA (Australia and New Zealand were not part of the study).

Since the mid-1980s the awareness of this important gap in statistics has gathered momentum among academics and statisticians and some policymakers (see, for
example, the account given in Hill 2000). Both the first and second World Conferences of Agricultural Statisticians (1998 Washington and 2001/CAESAR, Rome) have devoted sessions to this topic.

The analysis of what information exists at national level has been hampered by the wide variety of methodologies that lie behind the figures. In particular, disparities between what is considered to be an agricultural household affect not only the numbers of households but also the level and composition of income (a point taken up below). In an attempt to provide harmonised statistics on the incomes of agricultural households within the EU, Eurostat initiated the preparation of a harmonised methodology in 1987 and published its first Manual on the Total Income of Agricultural Households in 1990, with a revised version appearing in 1995 [Eurostat, 1995] and a change of name to Income of the Agricultural Households Sector (IAHS) statistics. This methodology was seen as a development within the framework of national accounts, where the provision has long existed for the subdivision of accounts for the households sector into socio-professional groups, of which agricultural household could form one. Before Eurostat started to explore this possibility for more general use, only Germany and France seem to have taken up this option. Eurostat saw this disaggregation of the households sector as the most promising option then available as no progress was at the time possible using a microeconomic approach.

These IAHS statistics have been criticised by, among others, the Court of Auditors [2003] as being inadequate. Clearly sector-level figures are inappropriate for exploring distributional issues such as poverty. Poor coverage of years and incompleteness has hampered their usefulness (see the latest results published as Eurostat, 2002). Nevertheless, the IAHS methodology has proved to be a very useful exercise in confronting central issues of methodology that can be used more widely, such as for statistics based on microeconomic data sources that are now recognised as being the main way forwards.

From 2003 the United Nations Economic Commission for Europe (UNECE), one of the members of the Inter-secretariat Working Group on agricultural statistics (IWG-AGRI), has taken the lead on behalf of the other members in drafting a handbook on income measurement of agricultural households, to be published in 2005. It has drawn on the previous IAHS Manual and other international guides and harmonised methodologies. A number of key issues are commonly encountered that must be tackled in order to reach a better measurement of income and employment. These are the subject of this paper.

2 Accounting framework

A fundamental choice has to be made concerning the accounting framework within which statistics on income and employment are based. Essentially, this involves whether aggregate accounting or microeconomic accounting approaches, conventions and definitions are selected. Macro-micro disparities are long familiar to statisticians attempting income measurement [Ruggles and Ruggles, 1986], even where the basic
unit of the account (the household-firm) is common to both. This central choice affects many aspects of the methodology, including what constitutes a household, what constitutes and agricultural household and the definition of income.

To be internationally comparable, statistics on the income of agricultural households have to share a common conceptual framework. The United Nations’ System of National Accounts (SNA), in its latest (1993) versions (hereafter referred to as SNA93) is probably the most universally accepted set of international accounting conventions [UN, 1993]. It forms the basis of much of what statistics already exist for agriculture in countries at all levels of economic development and contains guidelines for areas of statistics not yet well developed, such as for agricultural households. The FAO’s System of Economic Accounts for Food and Agriculture of 1996 is based on it [FAO, 1996]. The SNA93 presents a sequence of accounts for households that combine their functions as both producers and consumers. These extend to the calculation of disposable income and its use for saving and investment, capital accounts and balance sheets, including net worth (which would correspond with the wealth of the households sector. However, the central focus of the SNA is on national accounting and economic aggregates. For example, the concept of disposable income of the agricultural household sector contains items in its estimation (both positive and negative) that would not be included in household-level studies or would be treated differently; this issue is taken up in a later section. Reconciliation is possible between macro and micro concepts of disposable income, given the information on the definitions used, though the existence of what are apparently different figures using the same label may be confusing for the non-expert.

The accounting framework at microeconomic level is less well-developed. However, a recent major step towards a methodological standard has been the final report and recommendations from the Expert Group on Household Income Statistics (the Canberra Group), published in 2001. This group contained representation from the statistical offices of some sixteen countries and many international organisations, including Eurostat, the International Labour Office, the OECD and the World Bank. Experience of existing projects to improve and use household-level statistics were included, notably the Luxembourg Income Study (LIS); this is not an EU project although Eurostat and the OECD are partners in it. It should be noted that the Canberra Group recommendations are not specific to agricultural households and the issue of sub-sectoring is not tackled. Nevertheless they are a useful input to considering details of a methodology that can be applied to agricultural households.

It seems quite clear that many of the most pressing problems with which policy has to deal require microeconomic statistics to illuminate them. The issue of low incomes is the prime example. The UNECE’s new Handbook will thus give emphasis to microeconomic concepts and methodology. However, it should not be forgotten that a system which sees income statistics for the agricultural households sector as within national accounts will be more consistent with the main economic accounts for agricultural productive activity from which the main indicators of the industry’s performance are mostly taken.
3 The household unit

On first examination the definition of a household is fairly straightforward. The SNA93 describes a household as follows (SNA93, para 4.132), with the addition in of a phrase that appears in the version of the SNA that is applied in the EU – the European System of Accounts [Eurostat, 1995].

A small group of persons who share the same living accommodation, who pool some, or all, of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food. [The criteria of the existence of family or emotional ties may be added].

The SNA/ESA definition of the households sector includes private households but also some units which do not form part of the coverage of household budget surveys. Examples include both communal living units (hostels and monasteries) and other institutions such as universities. However, these units are unlikely to correspond with the notion of the target group for agricultural policy and are probably better omitted from statistics on agricultural households. In any event, where households are selected for special study that are mainly dependent on agriculture for their incomes, such non-family forms are unlikely to be included.

The SNA/ESA national accounts definition may not be universally appropriate. Official definitions of households exist in the EU for use in the separate national household budget surveys that are broadly similar but differ in detail. The condition of living at the same address and sharing catering arrangements is common but differences occur in the way that living-in domestic staff and temporary residents, such as students, are treated. Household of different sizes and compositions are brought together for comparison using an “equivalence scale”, for example to express children in terms of Consumer Units\(^1\). The Canberra Group’s preference for the household defined as a dwelling concept is a reflection of the main line of its interest – consumption, income distribution and poverty.

In the present context an alternative view of what constitutes a household may be appropriate. The centre of the issue is the role played by adult family members additional to the farmer and spouse who live in the farm dwelling - usually grown-up children, parents, brothers and sisters. These multi-generational and extended households are thought to be a particular feature of the social structure of agriculture, even in many industrialised countries. While there would be little dispute over treating a husband and wife with dependent children as a single household unit for the purpose of income (and expenditure) assessment, these other adults pose a problem. Where grown-up children receive a wage, though they may make some payment to the farm

\(^1\) For a review of approaches see Hagenaars et al., 1985. It is likely that different coefficients should be applied at different levels of income, though this is not usually done. The choice of scales and equivalence figures will reflect differences in social conditions, and these are likely to change over time. It is also likely that the coefficients that should apply to agricultural households will differ from those for other socio-professional groups, reflecting the particular social conditions found there. However, it appears that whatever equivalence scales are adopted, arbitrary judgements are inevitable. It is obvious that the use of equivalence scales is made less critical if a single-budget definition of a household is adopted, in effect narrowing coverage to the couple and dependent children.
household for their keep, they probably regard their independently-earned income to be under their own control as far as spending is concerned. The case for not including these additional adults in the household unit is particularly strong where they have full-time jobs off the farm and are treated within national tax systems as separate units. To include them in the larger household unit of measurement, when they are clearly financially independent, introduces a degree of artificiality that can undermine the validity of the income statistics. However, even if such grown-up children do not contribute labour to the farm on a regular basis, it seems highly unlikely that they would not help out at seasonal labour peaks; to some extent they still form part of the agricultural labour force. The notion of personal income implies the freedom to dispose at will, and it is far from certain that, for example, the old-age pension of a retired relative living in can be regarded as at the general disposal of the household.

Ideally, a distinction should be drawn between the household as a social unit for domestic budgeting (the housekeeping unit, or single budget household\(^2\), comprising only those people who pool income and expenditure) and the household unit in the domiciliary sense (the accommodation or dwelling household, consisting of the people living under the same roof). Of course, any one farm may have more than one household associated with it, and within the dwelling household there could be several single budget households. In the absence of firm information on intra-household financial integration and the diverse forms it takes, a case exists for calculating household incomes using both concepts. This would imply data collection for all people living in the same dwelling, but only including the incomes of some of them when using the single budget household concept. Unfortunately, within the EU few countries have sufficient data for both approaches to be explored and compared. Nevertheless, the UNECE Handbook recommends that a flexible but transparent approach be taken to the definition of a household. While the target should be the concept of the single budget household, data should also be available for the complete dwelling household to facilitate comparisons, both internationally and within national data sources.

### 3 The classification of households as agricultural

Neither the SNA93 nor the Canberra Group explicitly considers what characteristics should cause a household to be classified as being an agricultural household rather than one belonging to some other socio-professional group. Yet the manner in which the agricultural community is defined strongly influences the utility of statistics to assist in policymaking decisions and analysis and carries important implications for the results, both in terms of the numbers of households that qualify and the income results.

Several criteria can be used to qualify households as agricultural, and the one which is appropriate will depend on the purpose for which the selection is needed. The issue for the EU has been discussed in the context of which households comprise the agricultural community [Hill, 1990] with a longer history of studies in the US that is particularly

\(^2\) In taxation statistics when using the fiscal household approximate to the single budget household (though the move to independent taxation of individuals is eroding this).
concerned with the recipients of the rewards from farming [Banks et al, 1989]. The main criteria that have been used include

- residence on a farm (though this requires a satisfactory definition of a farm);
- ownership of agricultural land, perhaps with a minimum size qualification to eliminate large gardens. Some but not all of these owners will be farmers, the share of owner-occupation varying widely between countries.
- contribution of some working time to agricultural production
- deriving an income from agricultural production (in which income may take any form or may be restricted to that arising from self-employment, or independent, activity such as operating a farm business for financial gain)

A common difficulty with applying each of these is the distinction that must be drawn between the consumption and production aspects of household activities. For example, hobby gardening might be considered as not being part of the economic activity that comprises the production of agricultural commodities. However, with an increase in the size of the garden, or where domestic production is for subsistence (that is, it substitutes for income-generating activity that could be used to purchase these commodities), this boundary is far less clear.

Discussion at recent international meetings seems to have settled on two-stage approach to classification. The first is to determine a “broad” coverage according to the above criteria, singly or in combination. The heterogeneity of agriculture’s structure mean that this will include many household-firms for which there may be little or no interest to users of statistics. For example, agricultural policymakers may only be interested in households that are mainly dependent on income from farming, or where they control land areas above a particular size threshold. Thus classification systems should be flexible, so that “narrow” definitions can be applied within the “broad” context, for example, drawing out only those households where income from farming is the main livelihood (income source) of the household. Various policy-relevant combinations of income derived from and the percentage of time used for agriculture, together with situations where the combinations might have policy relevance have been described [Hill, 2000][Ahearn and Lee, 1991].

Several issues of a technical nature are encountered in applying such classification systems. These include

- the practical difficulty of measuring income or labour input on a household basis, which may lead to the substitution of a system based on the income or labour of a reference person (typically the head of household)
- income instability in agriculture, that can lead to fluctuations in number of households and artefacts in the movement in average income. Solutions include the use of income averaging in a formal or informal way, or the subjective combining of several criteria, such as requesting respondents to indicate their “main occupation”. Evidence from Germany and Norway

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3 Eurostat, for its IAHS statistics, takes an agricultural household to be one in which the main income source of the household reference person (typically the head of household) is from independent activity in agriculture.
suggests that taking a three-year period removes most of the unpredictable variation in incomes [Hegrenes et al., 2001].

- the problem associated with measuring a shrinking sector. In line with the historic trend, snapshot statistics will relate to a declining number of households. Those households which are most successful in diversification into non-agricultural activities sooner or later will fall outside the agricultural group defined in the “narrow” sense and join some other. The use of a panel approach gets over this problem.

The above latter two points underline the desirability of having data that enables a study of individual cases to be made longitudinally through time. This represents a major challenge to the way that official statistics are organised; longitudinal analysis of a constant sample is at present unusual and data are not organised in ways that makes this easy. The need for this demographic approach is, of course, something that is shared by studies of businesses in other sectors.

However, far more conceptual issues are to be faced that challenge common practice in agricultural statistics. Often lying behind them in most OECD countries is the model of the family farm, a potent but ill-defined concept but where self-employment is a key characteristic. In the EU hired workers on farms and their families have not been treated de facto as part of the “agricultural community” at which the CAP is targeted. The legal status of the directors of family farms arranged as companies (for tax or inheritance reasons) who are de jure employees of their own companies has been accommodated in the EU by treating as if they were partners in unincorporated farm businesses (which they closely resemble in terms of behaviour). However, the enlargement of the EU has brought in several new Member States in which (a) the workers on large agricultural units that have legal status (typically formerly units of socialised agriculture) represent a significant proportion of the workforce in agriculture and are regarded nationally at targets of agricultural policy, and (b) subsistence production on household plots represents a substantial proportion of the output of agricultural commodities and, for the households concerned, a source of livelihood that is far above what might be regarded as “hobby” production. The proposed solution for the UNECE’s handbook is, following the lead of Eurostat’s IAHS statistics, to treat the households of employed workers on these large units as a special category, to be included or excluded from general income statistics according to analytical need.

4 The definition of income

The difference between the two approaches to agricultural household income statistics (national accounts, as represented by Eurostat’s IAHS statistics, and microeconomic household accounts) is perhaps at its sharpest when considering the concept of income and its definition. While both cover the flow of resources towards households and estimate disposable income (after the deduction of non-optional uses such as personal taxation), the details are different. This is not surprising, given that the purpose in national accounts is to trace all flows between the households sector and other sectors (including insurance, government, charities etc). In contrast, microeconomic work is
focused on distributional analysis, in particular the study of poverty, and on income as a means of improving current economic wellbeing, as reflected in the ability “today” to consume goods and services. Resource flows that result in the ability to consume “tomorrow”, such as employer contributions to pension funds and interest accumulated by these funds, are not usually seen by households as affecting their ability to consume “today” (even if they are aware of them) and are thus of less concern to microeconomic statisticians. Certain items (such as contributions to charities) appear in national accounts as deductions before the calculation of disposable income, whereas the microeconomic approach would regard them as a way of using disposable income.

Within microeconomic methodology the Canberra Group proposes a standard definition that is comprehensive in terms of its coverage of both cash and near cash items and the imputed value of fringe benefits and other income in kind. Like the IAHS definition based in national accounts, provision is made for adding to net disposable income the value of social benefits provided in kind by the state (such as education and health services) to create an “adjusted” disposable income figure. However, the Group also recognises that many imputed forms of income are contentious or are difficult to calculate. It therefore puts forward a simplified definition that omits most of these. This reduced list, however, is intended for use within the national context which is dominated by waged households and is not particularly appropriate to agricultural households. For example, it omits the imputed rental value of domestic accommodation (which can be of considerable importance in an agricultural context and is often calculated as part of farm accounts surveys) and underplays the significance of income in kind that the household obtains from being involved in agricultural production. Income in kind is particularly significant to farm households and, while being of special importance to farmers in less developed countries, is by no means insignificant in richer countries, especially to those occupiers whose main purpose is orientated towards lifestyle or hobby agriculture. The subsistence production on private household plots of workers in large-scale agricultural enterprises in some of the countries with formerly collectivised (socialised) agricultures are another example of the importance of output for own consumption and income in kind. Consequently, when drawing up its Handbook of recommendations, the UNECE has adjusted the simplified list to create a definition of disposable income shown in Figure 1.

5 Data sources

The final, and perhaps the most significant issue, can be dealt with briefly. Progress in developing data systems capable of generating official income statistics that might allow, for example, the study of poverty in agriculture or the drawing of comparisons between agricultural households and other socio-professional groups has been, in some countries, painfully slow\(^4\), thereby impeding progress in the provision of statistics at international level where completeness of coverage of countries and harmonisation in methodology are prerequisites for use at a high level (as by the European Commission).

\(^4\) Within EU15 no single satisfactory data source at microeconomic level yet exists for studying the income of agricultural households in Belgium, Spain, France, Greece, Luxembourg, Portugal, and the United Kingdom.
Figure 1 The UNECE draft Handbook recommended definition of net disposable income for application to agricultural households

Net income from self-employment (operation of unincorporated businesses, or incorporated businesses that can be treated as quasi unincorporated because of family operation and ownership) after deduction of intermediate consumption items, interest on business loans, rents on land and business property, and a depreciation allowance for capital consumption. This will include net profit or loss in money form and the value of other income in kind, such as the value of output used for barter and for own-consumption, net of cost of inputs used in their production. *(Note: more explicit treatment than in Canberra Group [2001] recommendations)*

(a) self-employment in agriculture (money income and in kind)
(b) self-employment in other industries (money income and in kind)
(c) imputed rental value of owned dwelling *(Note: Item added to Canberra Group recommendations)*

+ Cash wages and salaries, earned from dependent activity in enterprises (institutional units) that may be agricultural or non-agricultural in nature *(Note: the value of fringe benefits and other income in kind is not included)*

(= Primary income)

+ Rent received
  (a) net rents from the letting of property other than land
  (b) net rents from the letting of land

+ Other property income
  (a) net interest received (interest received less interest paid, though payments should not include interest already deducted in calculating profits)
  (b) dividends received

+ Social transfers received
  (a) Social insurance benefits from employers’ schemes
  (b) Social insurance benefits in cash from government schemes
  (c) Universal social assistance benefits in cash from government
  (d) Means-tested social assistance benefits in cash from government

+ Other current inflows
  Regular inter-household cash transfers received such as transfers from relatives living and working abroad

= TOTAL INCOME

- Current taxes on income and wealth

- Non-discretionary social contributions *(payments to social security schemes)*
  a) by members of agricultural households as self-employed person
  b) employee social contributions (only) relating to income from employment

= NET DISPOSABLE INCOME *(Note: this is not adjusted for the receipt of social benefits in kind)*
Various types of data sources can be found that have been used singly or in combination (including farm accounts surveys that also cover other sources of income, taxation records and household budget surveys). Each has its strengths and weaknesses. In particular, the fact that in some OECD countries\(^5\) many farmers are not taxed on their actual incomes but according to standard rates or for other reasons fall outside the tax net means that tax records are often not a suitable basis for income statistics. Countries that are able at administrative level to combine datasets in a flexible way (such as by forming income statistics registers) have a distinct advantage. However, in other situations national legislation may prevent such cross-linking.

6 Comments and discussion

The last five years has seen an acceleration in the concern among agricultural statisticians with the agricultural household to match what they see is a growing information need. The notion of keeping agricultural statistics up-to-date is by no means new, with attempts to avoid obsolescence going back to at least 1972 in the USA [AAEA, 1972]. The UNECE’s forthcoming Handbook on methodology will give guidance and make recommendations on key points where there is, as yet, no agreed standard with the same authority as the SNA93 and its satellites (such the Economic Accounts for Agriculture, applied in the EU and, in its earlier version, adopted by the OECD for its work on aggregate accounting). This must be seen as an essential step in filling a gap in agricultural statistics at microeconomic level, something that has been highlighted by a number of commentators.

But as work with Eurostat’s IAHS statistics has proved, devising and agreeing a methodology is, by itself, insufficient to ensure the development of income statistics for agricultural households. Basic data must exist to which that methodology can be applied. In contrast with the relative cheapness of methodological work, setting up new data sources is likely to be expensive, and modifying existing ones to enable them to service new needs may be problematic. Extending farm accounts surveys to include questions on the household may unsettle relationships between organisations collecting the data and co-operating farmers, and making better use of taxation records (where appropriate) may carry political costs.

This leads to what is perhaps the most central of the key issues. This is the challenge facing statisticians to convey to users, and especially those that provide the resources for statistics on agriculture, their concern that, for a host of reasons, information on the income of agricultural households is important. Ultimately the worth of better statistics on agricultural household incomes (leading the improved understanding of the performance of the agriculture industry, its response to policy signals, more efficient policies directed at low incomes among the farming community etc.) has to be set against the resource costs of this information, which is a political judgement.

\(^5\) For example, in the EU a substantial proportion of farmers in Germany, France and Italy are taxed on this basis.
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