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METHODOLOGICAL WORK TO BE UNDERTAKEN. WHO IS DOING IT?

Invited paper submitted by United Kingdom*

Summary of part one

The main methodological issues relating to the measurement of farm household income concern the concept of the household, the way that households are classified as agricultural or non-agricultural, and the appropriate indicators of income (and wealth). Much of the basic investigation has been undertaken as part of the development of Eurostat's IAHS statistics, though there is much unfinished business.

Conceptualisation has to be balanced against the need to make statistics operational by drawing on existing or potential data sources.

* This presentation comprises, as Part One, a paper on methodological issues (prepared by Berkeley Hill, Professor of Policy Analysis, University of London, and external expert to Eurostat 1986-2002 on its IAHS statistics, b.hill@ic.ac.uk) and, as Part Two, an account of the findings from a related United Kingdom study (prepared by Stuart Platt, Economic Statistics, Department of Environment, Food and Rural Affairs, United Kingdom, stuart.platt@defra.gsi.gov.uk).

I. INTRODUCTION

1. The structure of the agricultural industry of the EU is dominated, in terms of numbers, by firms owned and operated by households (household-firms). These combine the economic functions of production and consumption and are, at the same time, social units.

Understanding the economic situation of agricultural households is now recognised as a key element in designing and applying policy for agriculture and rural areas. In addition to clarifying the nature of the problems to be addressed by policy, it illuminates the way that they respond to financial signals and other instruments. The importance of statistics on agricultural households has been increasingly recognised among policy analysts and statisticians (Offutt 2002; OECD, 2002). However views differ as to the extent to which they may supplement or displace “activity based” statistics that, for historical reasons, have been dominant up to now.

2. The main methodological issues to be confronted in generating statistics for agricultural households have been tackled as part of the methodology of Eurostat’s Income of the Agricultural Household Sector (IAHS) statistics (Eurostat, 1995), still the leader in methodological development in an agricultural context. Though the IAHS is concerned primarily with aggregates, similar issues have to be faced by alternative conceptual frameworks, such as household budget surveys, or any new initiative that attempts to fill the large gap remaining at microeconomic level in statistics for agricultural households. Work by the OECD has run up against problems caused by a lack of harmonised definitions particularly at farm level (OECD, 2002). The enlargement of the EU to include countries of Central and Eastern Europe adds further challenges.

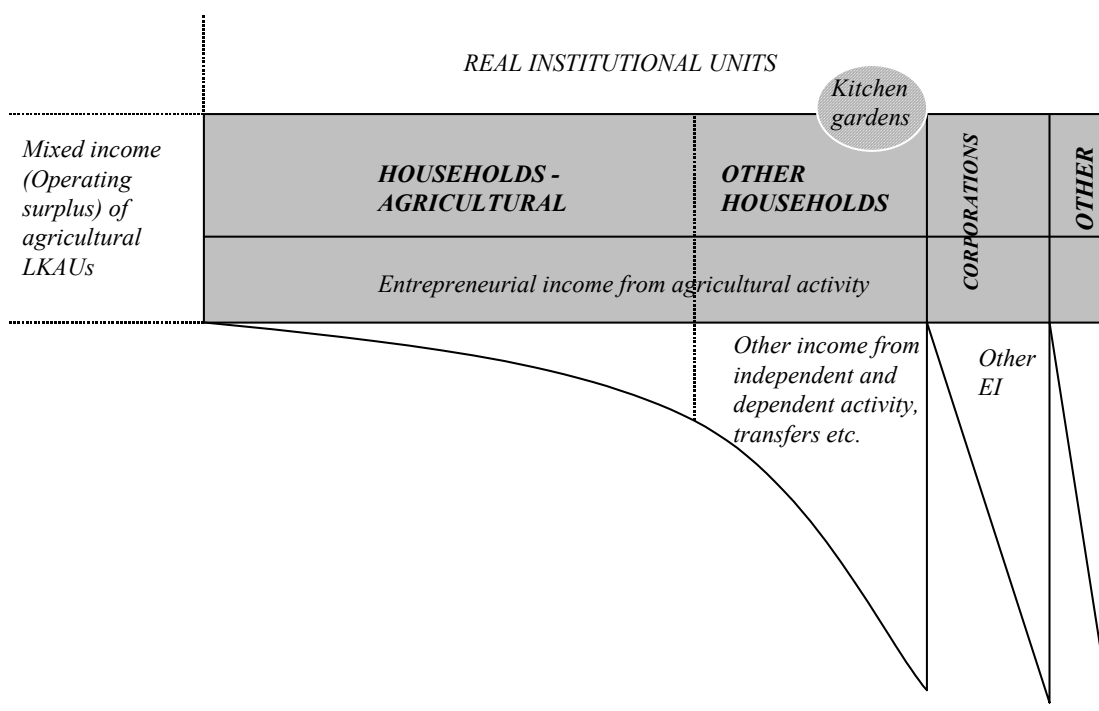
II. INSTITUTIONAL UNITS IN THE STATISTICAL SYSTEM

3. The conceptual framework for linking statistics on agricultural households to activity accounts is provided by the international standard System of National Accounts SNA93 (UN, 1993), interpreted locally as the European System of Accounts (ESA95)(Eurostat, 1996) and for agriculture generally by the FAO’s System of Economic Accounts for Food and Agriculture (SEAFA96)(FAO, 1996). Two main approaches to accounting, and the statistics derived from accounting, are given:

- Accounts for institutional units (households, companies, government etc.);
- Activity accounts for the production of goods and services, which may be broken up into agricultural activity and other types.

4. Their relationship is shown in Figure 1, in which households appear as one form of institutional unit. For institutional units the SNA/ESA provides a sequence of integrated accounts (current and capital) and balances sheets, the latter showing a net worth (personal wealth) position¹.

Figure 1. Relationship between household-firms, other institutional units and agricultural production. (from Hill, 1999)



III. DEFINING AGRICULTURAL HOUSEHOLDS

What is a household?

5. As with many familiar terms, the concept of a “household” is subject to a variety of detailed interpretations with potentially significant differences in the results in terms of numbers and incomes. The SNA contains a description of a “household” (carried over to the ESA) which is in essence a “dwelling unit”² but in practice how this is defined at national level varies. The condition of living at the same address and sharing catering arrangements is also common among the definitions adopted by EU Member States for their household budget surveys (all have one) but again there are differences, for example in the way that living-in domestic staff and temporary residents, such as students, are treated (Commission, 1985; Verma and Gabiondo, 1993)³. Some differences reflect varying socio-economic conditions, while others seem more arbitrary. The Luxembourg Income Study (not an EU activity but with Eurostat involvement) makes extensive use of data from national household budget surveys (<http://www.lisproject.org>).

6. Based on this SNA/ESA approach, the IAHS definition of a household has been drafted as follows (Box 1):

Box 1, IAHS definition of a household

Household: the household includes all members living together and includes, in agricultural households, both those who work on the agricultural holding and those who do not.

7. In the absence of an internationally *applied* definition of a household, the IAHS Manual of Methodology (Eurostat, 1995) states that the composition of households is to be defined as in the household budget surveys of Member States. This lack of complete harmonisation is a trade off against practicality⁴.

8. In order to facilitate comparisons between agricultural households and other households within countries (and, in theory, between countries) it is useful to know not only the number of households and household members but also Consumer Units (CUs). The CU is a means of bringing households of differing compositions to a common base by attributing weights to various types of household members (for example couples, single persons, additional adults, children of various age bands). These weights are termed an *equivalence scale*. A large literature exists on how such scales may be devised and applied (see Hagenaars *et al.* 1994 and other material quoted in Hill, 2000). In theory they should vary between countries to reflect differing socio-economic conditions, and a case could be made for different scales to apply for farm families and other groups where the potential for consumption of own-produced goods is less. In practice, some standard scales are commonly applied (the “OECD” one is frequently met). In IAHS statistics it is anticipated that the scales used are those applied in respective national household budget surveys.

9. In addition to the “dwelling household” unit, Eurostat has considered a definition of a “single budget” household that covers only those members of the “dwelling household” who pool income and expenditure (such as couples and dependent children) and excludes financially independent adults. In some countries extended households can be found in which many adult members (typically grown-up children living at home) have off-farm jobs and do not contribute their income to the common budget of the household-firm that operates the farm. In such circumstances the economic situation of the household-firm is (probably) better explained in terms of the income of a unit narrower than the dwelling that excludes them. However, because of lack of data, such a unit is not yet universally applicable within the EU.

10. It should be noted that the EU Household Panel can, in theory, adopt a range of groupings, from the dwelling household downwards, because data are collected relating to individuals separately. This “variable geometry” for the household unit is not usually available in datasets. However, there are too few agricultural cases in the Household Panel for this to be a useful source of data in most countries.

What is an agricultural household?

11. The heterogeneity of households engaged in agricultural activity means that the definition of an agricultural household chosen can have a substantial impact on both the number of households covered and the income picture that emerges (see, for example, results for Ireland described in Hill, 1988).

Basis of classification

12. The intuitive basis for classifying household as agricultural is that they are engaged in agricultural activity. What the agricultural community comprises and thus what it means to be “engaged” in agriculture has never been well defined by policy makers (Hill, 1990), and several interpretations are possible. For the purpose of IAHS statistics, households that work solely as employees on farms (dependent activity, or hired workers) are *not* considered to be agricultural households. This decision was taken early in the methodological development of IAHS statistics on advice from the Agricultural Statistics Committee (Eurostat, 1995); it reflects both statistical practicality and the implied target group for support under the CAP.

13. Thus, currently in IAHS statistics methodology, to be eligible for classification as an agricultural household there must be some income-generating self-employment (independent activity) in agriculture⁵. This convention is under review in the light of EU enlargement (see Eurostat, 2002 and below).

Criteria

14. In theory, different subgroups are likely to be needed to meet different purposes, so a flexible system of selection of self-employed households might be advisable (for example, those with output or land-holding above a certain size, or those with labour inputs above a certain level, or those with incomes above a certain level, or those with various degrees of income dependency on farming). In reality, attention is likely to focus on two “standard” approaches in which policymakers have shown interest.

- A “**broad**” coverage, containing all households that derive *some* income from independent activity in agriculture (other than income solely in kind that is of a “hobby” nature)⁶. It corresponds to the entire width of the household sector in Figure 1.
- A “**narrow**” coverage, designed to include those *primarily dependent* on agriculture for their livelihood. This group might be seen as the prime targets of income support policy directed at the “agricultural community”.

15. Subtracting the “narrow” from the “broad” leaves a highly heterogeneous group of “marginal” households for which agriculture is typically of little importance (for example generating only some 5% of household income in Germany in 1983, 14% in Ireland in 1987)(given in Eurostat, 2002 and earlier reports).

16. Use of a “narrow” definition facilitates the comparison of incomes between agricultural households and other socio-professional groups; such comparisons are important

to assessing the performance of the CAP in relations to its policy objectives. The SNA/ESA provides a recommended methodology for grouping households into sub-sectors (of which agricultural households could be one) which allows comparisons on a consistent basis⁷. IAHS statistics has developed its own “minimum list” of socio-professional groups between which comparisons can be made (including household of other entrepreneurs, of waged employees, all households etc.).

17. For practical reasons, Eurostat’s IAHS statistics has adopted a household classification system based on the **main income source of the household’s reference person** (Eurostat, 1995). The idea is that this is the highest income earner, who will normally be the head of the household. How this person is designated varies from country to country, and may be selected by self-declaration or more complex algorithms. Countries where this is not possible (e.g. France) have applied a system based on the main *time allocation* or a more subjective occupation or trade group label. This appears to conform with the approach taken to the allocation of households (by the occupation of the head of household) in the EU network of household budget surveys.

18. The combined IAHS “narrow” and “broad” definitions are as follows:

Box 2 IAHS definitions of an agricultural household

An agricultural household (“narrow” definition) is one where the main income of the household reference person (typically the head of household) is from independent activity in agriculture (farming). A range of other socio-professional groups can be established on the same basis for the purpose of comparison. A second, supplementary, “broad” definition of an agricultural household includes all households where any member has some income from independent activity in agriculture.

19. Because rewards from agricultural production are inherently unstable, there is a danger in any income-based classification system that classifying according to income measured in a single year could cause substantial short-term variations in the size of the agricultural households sector. In turn, this has been found, in certain circumstances, to give results for average incomes that move in an unpredictable (and sometimes perverse) way when compared to other indicators of the profitability of agricultural production (as exhibited by Denmark’s early contributions to IAHS statistics). To avoid this, stabilising mechanisms are encouraged, such as classifying groups on the basis of incomes averaged over (say) three years, or more subjective judgement of “main income” over a run of years, or by reclassifying only periodically.

IV. DEFINING INCOME

20. The second key issue in methodology relating to income measurement of agricultural households is the definition of income to be adopted. Two distinct methodological approaches are available, that of national accounts and microeconomic accounting. These are in theory reconcilable though macro-micro harmonisation is a well-known problem in household income statistics (for example, see Ruggles and Ruggles, 1986).

21. The SNA/ESA provides a framework definition that covers all flows to and from the households sector; this can be adapted to apply at the sub-sector level (the agricultural

households sector) by including flows to and from other households. In essence, this is the approach adopted by Eurostat in its IAHS statistics, in which the definition of income represents an amalgamation of four accounts in the SNA/ESA sequence; the *production account*, *generation of income account*, *entrepreneurial income account*, *allocation of primary income account*, and *secondary distribution of income account*. The balancing item is Net Disposable Income (NDI), the sum that is available for consumption spending (determining standard of living) and saving. An outline definition is given in Figure 2.

22. It should be noted that this definition, taken from the framework of national accounts, includes some elements that reflect its origins (in which inter-sectoral transfers have to be recorded) and that would not normally appear in microeconomic data sources. Thus, while the main elements are common to both aggregate and microeconomic approaches, there will be differences in detail (Harrison, 1999). For example, household-level accounts would normally not show operating surplus; rather, they would show (entrepreneurial) income net of interest and rent payments, which in the IAHS formulation are deducted later in the series. Such differences should not be overstated; in Ireland they represent only about 15% of total household resource levels (Hill, 1995). The definition makes no reference to capital gains as a form of income nor to wealth as determinant of economic status, things that have been of concern to previous IWG.AGRI meetings.

Figure 2. Definition of Net Disposable Income (Eurostat IAHS statistics)

The concept which forms the centre of the IAHS income measure for agricultural households is **net disposable income**. It is defined as follows:

- (1) Net operating surplus (mixed income)⁸ from independent activity
 - a) From agricultural activity
 - b) From non-agricultural activity
 - c) From imputed rental value of owner-occupied dwellings
- (2) Wages (compensation to members of agricultural households as employees), from agricultural and non-agricultural activity
- (3) Property income received
- (4) Non-life insurance claims (personal and material damage)
- (5) Social benefits (other than social benefits in kind)
- (6) Miscellaneous inward current transfers
- (7) Total resources (sum of 1 - 6)
- (8) Property income paid
- (9) Net non-life insurance premiums
- (10) Current taxes on income and wealth
- (11) Social contributions
- (12) Miscellaneous outgoing current transfers
- (13) Net disposable income (7 minus 8 - 12)**
- (14) Social transfers in kind
- (15) Net adjusted disposable income (13 plus 14)

See notes on the following page.

Notes for use of this definition in the context of microeconomic data sources:

Net operating surplus (Items 1a and 1b) is replaced by entrepreneurial income (that is, net of interest and rent payments related to production, and net of insurance premiums).

Net operating surplus from imputed rental value of owner-occupied dwellings is often omitted.

Non-life insurance claims (receipts) are ignored – conceptually they form part of capital accounts.

Item 7 becomes Total Income.

Item 8 is blank, having been subsumed in Item 1a and 1b.

Miscellaneous outgoing current transfers do not include transfers that are deemed to include payments of a voluntary nature (such as to churches).

Items 13 and 14 are not covered.

23. In reality, for generating IAHS statistics most Member States do not follow this national accounts definition exactly, typically omitting items that are not available. For longitudinal analysis these omissions are not likely to be a severe handicap, though comparisons between countries are impeded. Consequently, thought has been given by Eurostat to a simplified definition of disposable income that omits the more contentious items.

24. Another significant methodological issue relating to both income measurement and to classification is the period over which income is measured. The convention of the single year accounting period may not be appropriate for application to agricultural households where farmers expect and make normal provision for some degree of income variation without changing their consumption levels. Averaging over, say, three years is likely to give an income picture that is more in line with what determines farmer behaviour and also substantially reduces the number of low income cases. Regrettably little research seems to have been done using income averaging at the farm household level (but see Hegrenes *et al.* 2001 for a recent application in Norway).

V. MODELS FOR MAKING CALCULATIONS

25. A survey of available statistics on agricultural household incomes shows that two main approaches are used to generate results at sector level (Eurostat, 1995). The first is to use microeconomic surveys which can be raised to national levels. These include household budget surveys, taxation records and other special surveys, either singly or in combination. Each type has its advantages and disadvantages (see Figure 3). For example, farm accounts surveys can be used where these collect data on the whole range of activities undertaken by the household, though they will not contain data for other socio-professional groups. All tend to be rather slow in generating results, which can only be available after data (usually retrospective) have been collected, checked and processed.

Figure 3. Three main forms of microeconomic data

<i>Data source</i>	<i>Advantages</i>	<i>Disadvantages</i>
Household budget surveys	<ul style="list-style-type: none"> ▪ Agricultural households and other socio-professional groups on a comparable basis 	<ul style="list-style-type: none"> ▪ Only periodic (typically 5 or 7 years) ▪ Few agricultural cases in northern countries ▪ Income data of poor quality ▪ Dwelling is not always the most appropriate unit
Taxation records	<ul style="list-style-type: none"> ▪ Agricultural households and other socio-professional groups on a comparable basis ▪ Relative reliability of data 	<ul style="list-style-type: none"> ▪ Reflects taxation conventions and coverages ▪ Many farmers are not taxed on actual incomes, or escape tax net ▪ Difficult to obtain access to data
Farm accounts surveys	<ul style="list-style-type: none"> ▪ Official system already in place for monitoring farm incomes 	<ul style="list-style-type: none"> ▪ In many countries do not cover income from outside the farm ▪ Poor coverage of persons other than the farmer and spouse ▪ Does not automatically generate figures for other socio-professional groups

26. Countries differ widely in the availability and reliability of microeconomic data (Hill, 2000; OECD, 2002). Some (such as the Scandinavian countries) have several good datasets, several of which can be linked together (by means of personal identity numbers) to form a comprehensive database that can be interrogated for a variety of statistical purposes. On the other hand, some other countries have no satisfactory source of such data. For example, neither France nor the UK can at present provide microeconomic data on the overall income situation of their agricultural households that can be used to generate national estimates or to study the distribution of incomes.

27. The other main approach is to start from the households sector account within national accounts, and to break them down into separate sub-sector accounts for a range of socio-professional groups, of which agricultural households would be one. This is done using distribution agents taken from microeconomic data sources. These may be unsatisfactory as primary data but are more acceptable as a key to distributions (taxation data is often used in this way). Indirect estimates may also be possible, such as developing a key for social benefits from knowing the age distribution of the population in agricultural and other households. The macroeconomic approach has the advantages of (a) building on the already-harmonised base of national accounts; (b) consistency of results with other economic aggregates; (c) generating comparable results for a range of other (non-agricultural) socio-professional groups, and (d) (often) better timeliness. Countries using this approach have included Belgium, Germany, Spain, France, Italy and Portugal. However, most have now suspended their calculations.

28. These two approaches can be used in combination. Each has its relative advantages and drawbacks. However, prime among these are that the microeconomic approach usually enables distributional information to be generated, while the macroeconomic starting point usually generates comparable figures for other socio-professional groups. Further discussion is given in Eurostat (1995).

VI. IMPACT OF EU ENLARGEMENT

29. A major issue has arisen through the planned enlargement of the EU and the introduction of significant numbers of large scale-agricultural units that have their own legal status and that are far removed from the “family farm model” that underlies many income statistics. Such units are already found in the unified Germany, but accession of Candidate Countries from 2004 will bring them into much greater prominence. Replies to a Circular Note from Eurostat have shown that a range of organisational forms are encountered – joint stock companies, limited liability companies, co-operatives, partnerships etc., though in some countries the business structure is not yet stable. Candidate Countries indicated that, in some at least, the households that work on these large units are considered as part of the agricultural community and are seen as intended beneficiaries of agricultural policy.

30. Agricultural households operating private farms in these countries will be subject to the existing methodology. In addition, for the next version of the IAHS Manual of Methodology, Eurostat has proposed to provide for the inclusion of income estimates for households found on large-scale enterprises in the form of an “add-on”, along the lines of the present provision for family operated and owned companies (which are treated as *quasi*-agricultural household units)(see the future developments section of Eurostat, 2002). In the interest of simplicity and clarity, Eurostat is proposing that the “add-on” should apply to households working on all large-scale agricultural enterprises, irrespective of the form of the legal structure that these units now take. To be included, the household’s reference persons must work on the large agricultural units and this job must be their principal occupation (in terms of income or, failing that, of time). It is assumed that this will be the case for most reference persons. This will necessitate a clarification of what constitutes a “large-scale agricultural unit”, possibly using a size criterion. This issue is probably best handled at national level.

31. The solution appropriate to the “broad” definition of an agricultural household is more problematic. While the “broad” coverage should obviously include the households of private farmers (deemed to be all those selling to the market and thus generating some income from this activity) and of all workers on large units (to be consistent with the above treatment of reference persons found on them), the issue is complicated by the significant amounts of agricultural production of a subsistence nature that takes place on private plots. This has been accommodated by a small proposed change in the Manual that includes subsistence producers but excludes hobby producers, a distinction intended to be consistent with the EAA. However, this solution should only be regarded as provisional.

VII. DATA DEVELOPMENT AND METHODOLOGICAL INVESTIGATION

32. Perhaps the most significant issue in the development of income statistics for agricultural households is the availability of basic data from which the statistics can be built. As noted above, in Europe the situation varies widely between countries. Setting up new data sources is highly expensive and generally ruled out. Thus the focus shifts to making better use of what already exists ('adding value'), or of making marginal additions to established data collection exercises to improve their utility. Though the prime candidate for development might seem to be European Commission's FADN/RICA system, attempts to expand its coverage to non-farm income (to enable it to approximate to income figures for the household of farmer and spouse) have met with political and institutional resistance (Robson, 1996). Also the survey is primarily aimed at the holdings that generate most of the agricultural production; by applying a minimum size threshold (which varies between countries) it excludes households some of which would satisfy the definition of being agricultural households. Solutions to this fundamental data problem have to be sought on a country-by-country basis.

33. In the meantime, the methodological issues outlined here have to be explored using data wherever it can be found. The LIS database and accompanying research papers are a useful resource for general issues relating to households (equivalence scales etc.). However, for specifically agricultural issues recourse needs to be made to datasets that have sufficient numbers of agricultural cases. In Europe the richest possibilities exist in the Scandinavian countries (with their integration of several microeconomic datasets) and Ireland (integrating household budget surveys and farm accounts surveys). The USDA's ARMS farms survey has already demonstrated some of the insights that can be gained from a rich microeconomic databank (Mishra *et al.* 2002), and co-operation could lead to further analysis relevant to underpinning agricultural household statistics internationally.

NOTES

¹ For activities only some of this sequence can be drawn up. Strictly, these only include the production account (balancing item Net Value Added) and the Generation of income account (balancing item Mixed Income). The next in the series (Entrepreneurial Income account with its balancing item of Entrepreneurial Income) involves the deduction of interest paid and rent paid. These only relate to institutional units (households and companies). Under the EAA Entrepreneurial Income is estimated, but to link this with an agricultural activity requires assumptions about the relationship between the activity and the households (or corporation) that undertake production. These assumptions are increasingly unsafe.

² 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 (ESA93 para. 4.132). There are general recommendations for the treatment of paid domestic servants (to be excluded) and people temporarily absent, such as short stays in hospital or prison etc. (included). Institutions like religious orders, long-stay hospitals and long-sentence prisons are treated as single institutional households.

³ For the UK the household is defined thus: A household comprises one person living alone or a group of people living at the same address, sharing their meals and the household, and having sole use of at least one room. All persons in a household must receive from the same person at least one meal a day and spend at least four nights a week (one, if they are married) in the household. The household includes staff, paying guests and tenants, and also anyone living in the household during the period in which expenditure is recorded. Persons who normally live in the household, but who are absent for a period of more than one month, are excluded (Eurostat, 1985).

⁴ In some EU Member States, a small minority of family farms (typically the large ones) are arranged as companies, often for fiscal convenience. In reality, they remain family owned and operated, with a management structure similar to that of household-firms. Provision exists in the IAHS methodology for treating these as quasi-unincorporated units and including income results for them as an “add-on” to those for household-firms.

⁵ Strictly, there is no requirement that the household’s own labour must be put into the on-farm activity (as a farm owned by the household, could be operated entirely with hired labour), though in reality this will almost always be the situation.

⁶ This coverage is similar to that used by the US in its reporting on its operator-households (Mishra et al., 2002).

⁷ The ESA recommendation is that households are to be allocated to sub-sectors according to the largest income category (employers' income, compensation of employees, etc.) of the household as a whole. When more than one income of a given category is received within the same household, the classification must be based on the total household income within each category (ESA 2.78). If the main income source of the household as a whole is not available for sectoring purposes, the income of the reference person constitutes the second-best characteristic to be used for classifying purposes. The reference person of a household is normally the person with the largest income. If the latter information is not available, the income of the person who states that he/she is the reference person may be used for sub-sectoring households (ESA 2.85).

⁸ Under the new SNA (1993)/ESA (1995), operating surplus and mixed income are alternative names for the same balancing item. Mixed income is the term used in the context of unincorporated enterprises owned by members of households in which the owners or other members of their households may work without receiving any wage or salary. Though farms are usually of this form, for the purpose of the TIAH methodology the term operating surplus is used for this item; this is done to avoid potential confusion between mixed income and other microeconomic income concepts from which interest and rents have already been deducted.

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