

# Issues In Integrating Labour's Dual Roles of Input to Production and Social Resource

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## Abstract

The conceptual foundations of agricultural labour statistics in the EU are examined. In view of the present and anticipated uses within a reformed CAP, understanding the behaviour of the households which supply this labour is critical. Existing statistics are inadequate at answering questions concerning the diversified activities that are central to the CAP and the coverage of own-production that is significant in the new Member States.

## 1 Introduction

Labour force statistics form an established part of the array of indicators used within agricultural and rural development policy. In the European Union (EU) they are based on two sources of data, firstly general employment statistics in which people are allocated to economic sectors (such as agriculture) according to the one in which they mainly work and, secondly, surveys of agricultural holdings that cover all the labour found there, irrespective of whether agriculture is its main occupation<sup>1</sup>. These statistics have traditional roles in providing information on the size of the agricultural industry in terms of the numbers of people that are engaged in it and their basic demographic and socio-economic characteristics. Identifying the people who are engaged in agriculture is a major step in the process of assessing whether the fundamental policy aim (in the European Union) of ensuring a fair standard of living of the agricultural community is being achieved. In a separate way they also are used to monitor the extent of labour input to the production process and the characteristics of the units of production. In the EU labour input estimates are used in combination with economic accounts for the activity of agricultural production to show how the residual rewards from agriculture per unit of labour input are developing over time, a prominent indicator within the Common Agricultural Policy (CAP) and one highly sensitive to the reliability of labour input statistics. For this purpose a distinction has to be made between salaried and non-salaried labour, with the input being measured in Annual Work Units (Eurostat 2000). A related use is to calculations on how productivity is changing (both labour productivity and total factor productivity). The two roles (social orientation and factor-input orientation), while overlapping, require rather

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<sup>1</sup> The latest available edition of the annual *Agricultural Situation in the European Union* gives from the general employment statistics, for both agriculture and industry, numbers employed and separate breakdowns into paid and self-employed, full-time and part-time, and age band. Statistics based on surveys of agricultural holdings give total numbers working on the holdings, and their volume of labour in Annual Work Units. Labour is broken down into family and non-family (subdivided into regular and non-regular), by gender, whether there is other gainful employment (subdivided into main or secondary) and according to the percentage of working time spent on the holding, in three broad bands.

different conceptual bases and much confusion in the past has resulted from a failure to distinguish between them.

Important too is the period that the user of statistics is interested in. In the short term there will be an interest in statistics that show how the existing labour force is adjusting to the changing economic and technical environment, including to signals from policymakers. However, in the longer term adjustments come from the more fundamental decisions by labour to exit from agriculture. One inherent problem with statistics that concentrate on labour currently in the agricultural sector is that they omit coverage of people who have left. This gap is of particular relevance to users interested in the process of structural change and the effectiveness of rural development policy in producing an agriculture that is more economically sustainable. A feature of developed societies is that the rural labour force is often not predominantly engaged in agriculture and that the wide range of economic opportunities found there often means that the population no longer migrates to urban areas. The shift in the interest of academics and policymakers toward the identification of the socio-economic situation of rural areas, rather than solely the agricultural sector, poses a challenge in terms of collection of labour statistics as well as of other variables that are needed to monitor and analyse the whole rural labour market, both agricultural and non agricultural, and the socio-economic condition of the rural population.

However, labour is not a disembodied resource but is supplied by individuals who have choice and who live in households that are also social units. As will be demonstrated below, satisfactory explanation of behaviour and diversity in agriculture should take into account that production activities for the market take place within same unit and concurrently with domestic activities for the home. At the household level, the various decisions are non separable. As a consequence, rural statistics should recognize the household as the unit of interest and be concerned with the basis on which its members allocate their time between its various activities (market prices, opportunity costs, shadow prices etc.). A complication is that the households from which agricultural labour comes are diverse, and while the independent entrepreneurial farm family may be predominant, consideration should be given to households of hired workers, co-operative member, owner of shares in agricultural companies etc.

Taking Italy as a case study, lessons can be learned as how to gather the information needed to model rural households' behaviour in order to assess the socio-economic impact of the adjustment to changing economic and technical environment. Taking Wales as another case study, experience from evaluating its rural development programme points to how labour statistics can be improved to better reflect the needs of users in tracing the responses of households to policy instruments.

## **2 Peculiarities of farm-households' labour supply**

In most countries, at all levels of economic development, labour in agriculture is dominated by independent (self-employed) activity (that is, entrepreneurs and their families providing non-hired labour)<sup>2</sup>. Hired labour (those engaging in dependent activity in return for a wage) is in a small minority. This is in sharp contrast with the situation in most other industries and society in general, where waged or salaried labour is the largest component, though self-employment (of all sorts) may be more heavily represented in rural areas than in urban ones. This poses some particular problems for labour statistics and related income indicators in agriculture, especially those that are developed for the population in general and thus have waged labour particularly in mind.

Perhaps the prime problem is the difficulty of measuring labour input of self-employed people. In contrast with waged labour, where payment is made in exchange for a specified number of hours worked, there are no such prescriptions for entrepreneurial labour. An individual who may consider himself to be full-time in agriculture may work less or more hours than employees<sup>3</sup>. Seasonal factors may be important, so no single week in the year may be typical. While the physical labour that a farmer and his family contributes to farming operations may be quantified readily (for example, number of hours driving a tractor) this does not necessarily reflect the productivity of that labour and thus its quality as an input. Assuming the physical labour input of a self-employed farmer of 65 years is equivalent to that of a 25 year old hired man is unlikely to be valid in many circumstances. When turning to the entrepreneurial function that differentiates a farmer, problems are even greater. Time is no reliable guide to managerial input, and many examples can be found (especially among larger farms) where the operator provides no physical input into operations. Where several self-employed activities are carried on concurrently (such as combining farming with some other business) there will probably not be any conscious allocation of management time between them, particularly where they all take place on the farm). Being self-employed in several activities permits much flexibility to allocate resources, including managerial effort, as needs vary. Entrepreneurial tasks can be closely intermixed and perhaps carried on simultaneously, and for some (such as considering borrow and capital allocation) these are only meaningful if they cover all the range of activities at once. Of course, farmers who take off-farm jobs as employees have prescribed hours in that activity, but surveys commonly find that a minority

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<sup>2</sup> For EU15 in 2002 of the people for whom agriculture was the main activity, numbers of self-employed were approximately double that of employees (65m in contrast with 35m). In terms of labour input to agricultural holdings, family labour was responsible for 73% in 2000.

<sup>3</sup> The European Commission's Farm Accountancy Data Network (FADN/RICA) does not allow farmers who claim to work hours greater than a normal working week to count as more than one Annual Work Unit, though fewer hours may lead to recording as a fraction of a AWU. A similar approach is adopted in Eurostat's measure of labour input in terms of Annual Work Units. However there may be some attempt to permit a full-time worker to count for more than 1 AWU in some productivity studies. (see Eurostat 2000, para 3.22).

of farm operators claim to be employed in full-time off-farm jobs yet still manage to operate farm businesses that can be sizable undertakings.

For self-employed farmers, time spent on leisure may be difficult to distinguish between that used for work because of their close functional association (the classic example being attendance at local markets that serves commercial and social purposes). The production of food for own consumption which, for someone in another sector might be regarded as a hobby is not necessarily seen in that light by farmers and their families. In short, any attempt to measure the labour input of self-employed in simple quantity terms is fraught with difficulties. Probably only the very broadest indications can be justified.

But there are other issues of relevance to labour statistics in agriculture:

- For convenience, labour statistics have often assumed that there is only one farmer per farm. This is increasingly divorced from reality, and particularly on larger businesses the entrepreneurial role may be shared among several people (partners) who are often members of the same family (spouses, siblings, parents and children etc.). While all may be equal in decision-taking, one may be the senior, but this may vary over time and responsibilities may be split up. Where multiple entrepreneurship occurs, this can take the form of several members of the same household or be spread across several households (in the dwellings sense).
- A great deal of confusion has been caused in the past (at least in the EU) by a failure to distinguish between non-hired labour and family labour, a situation that Eurostat has taken steps to resolve by developing a target methodology (Eurostat 2000). Some family members may receive a wage for working on their farm and possess a contract of employment. Or they may be given some cash payment less than a market-level wage, with the (often unstated) expectation of financial rewards when they eventually inherit or take over the business. These fall between the categories of hired and non-hired. It is usually assumed that all non-hired labour is family, which seems reasonable, though there will be exceptions.
- When dealing with hired (non-family) labour, the traditional statistical approach has been to concentrate on its input to the production process with little attention to the households from which this labour comes. Thus, while statistics may be available on their wages from agriculture (and the cost of employing them), little is known in many countries of their overall household earnings and the incidence of poverty among them. In the EU no harmonised statistics on household income exist for this sector of the agricultural community, despite the possibility that they form part of the target of the CAP and that their rewards constitute an element in the Net Value Added by agriculture.

- Workers on large-scale agricultural units (some co-operatives, some companies) in transition countries present a particular challenge. While some only receive wages, the situation is made complex by others whose rewards come partly also in the form of profit, to which should be added the income in kind derived from household plot production, inputs to which may be derived from the large agricultural units on which they work. This household production is perhaps mainly for own consumption but also probably involves some exchange by barter or sale. It is important to encompass it in any assessment of the resources used in agriculture and the real income accruing to households. In many of the new Member States these people are numerous and seen definitely as part of the agricultural community and thus now part of the target group for support by the CAP.
- Casual or non-regular labour presents technical problems. For hired casual labour, circumstances in which it is sometimes employed (for example, large numbers of people working for short periods, and for cash) are not conducive to detailed record keeping. There is also the problem of unpaid casual labour, such as friends and relations assisting with seasonal labour demand peaks, and the black employment of seasonal immigrants without official papers. The households from which this labour comes are, of course, poorly documented.
- Business structure may hide the real nature of labour coming from households. While the large majority of the numbers of farms in OECD countries are non-incorporated (that is, are sole proprietorships or partnerships) a minority in some countries are arranged as corporations (companies). Usually these are incorporated for taxation reasons, and ownership and management remains typically within a small family group. However, where farmers are directors of these companies, strictly they are employees and their rewards come as salary, though they may also receive dividends as share owners. In practice these people can be treated in statistics as if they were self-employed without seriously distorting the overall representation of the way the labour force functions.

While analysis of labour can be made according to its employment status (self-employed, hired) and the economic unit that uses the labour (household-firm, company, co-operative), this is unlikely to be sufficient for users of labour statistics. The socio-economic characteristics of the people involved (age, gender, human capital, degree of pluriactivity etc.) and the types of household from which they come (size and composition, income level, asset structure, dominant value sets and so on) and other more policy-related classifications (members of co-operatives, subsistence producer, hobby farmer etc.) need to be available and are likely to become of increasing importance as policy shifts towards encouraging households to develop the resources currently at their disposal in ways that lead to a greater integration with the rest of the economy.

Of course, though the illustration above has concentrated on labour and agriculture, a parallel set could have been given for other sectors in rural areas.

### **3 Internal equilibrium of the household**

Understanding the way that the household reaches decisions on the use of its available labour is an important element of the concepts that underpin labour statistics. It is generally believed that it is unrealistic to assume that agricultural labour markets are competitive either in developed or less developed countries. As noted above, in the basic economic unit of agriculture (the farm-household) the production and consumption decision variables are non-separable. In such circumstances market goods and leisure are not priced at market values. The evaluation of labour, therefore, is shadow and is revealed by the value of the marginal farm product. Non-separability is present by definition in subsistence farming which can be considered as a closed micro-economy, as first described in Chayanov (1926) and Sen (1966) often isolated from both output and factor markets. The shadow wage depends on the characteristics of the workers and their hedonic value (Brown 1983, Barten 1964, Benjamin 1992). Accounting for the heterogeneity between male, female and child work allow estimating a different shadow wages for the male and female component of the family or the children employed in farming activities.

When off-farm work and hired labour is zero, i.e. when such decisions are at a corner and family and hired labour are not perfect substitutes (Deolalikar and Vijveberg 1987, Jacoby 1992), then implicit shadow prices must be adopted because the model is non separable. The labour market may be missing, or binding hours constraints (both for adults and children) and lack of contractual flexibility in the off-farm labour market may lead to a failure of the market clearing possibilities. Low subjective expectations about the probability of finding a job off-farm (especially among the elderly, low-skilled workers, children or women) may generate expected off-farm wages that are lower than a return to labour employed with certainty on their own farm. This observation is especially appropriate in less developed countries where off-farm opportunities are often lacking.

The production and consumption sides of the household economy illustrate the general equilibrium structure of the farm-household. The exogenous characteristics of the household and the enterprise affect both sides of the micro economy. Within the theory of the household enterprise this is an interesting feature since it permits testing the separability hypothesis between consumption and production decisions (Singh, Squire, and Strauss 1986, Benjamin 1992, Udry 1996). Under separability, the general equilibrium program of the household is recursive. Production decisions are not affected by the household's endowments, preferences, characteristics or decision processes. On the other hand, consumption decisions are affected by production choices since profits are part of the budget constraint.

The separation between production and consumption decisions is ensured by the household rational behaviour in presence of complete markets. Recent empirical work (Benjamin 1992, Udry 1996, Pavoni and Perali 2000) shows that production decisions do depend on farmers' preferences and endowments. The jointness in decision making is evident even in the absence of market failures when the same input, such as time, is shared across the household and home production processes, and in presence of home consumption of the household marketable product. Imperfections in the labour, credit and land markets are commonly observed (Benjamin 1992, Udry 1996, Bhalotra and Heady 2001). Under these conditions, farm production and household consumption decisions are non-separable and leisure/labour demand on the household is not independent from the on-farm demand for family labour. As a consequence, shadow wages, rather than market wages, determine adults and children's labour/leisure choices. The case of a Chayanovian farm-household closed economy, where the household members are not employed off-farm and no agricultural labourers are hired-in, is non recursive by construction (Lambert and Magnac 1994).

In the estimation of agriculture household income, the calculation of the implicit wage for household labour is a fundamental issue. Traditionally, "unpaid" family labour does not appear as an explicit cost of production but receives its rewards in the residual hybrid of entrepreneurial income (which goes under a variety of labels). Nevertheless, the implicit wage of family labour can be estimated using three different approaches.

*Accounting approach:* the value of family income can be obtained as a residual subtracting from net entrepreneurial income the remuneration of all other factors of production. The remuneration of land can be evaluated either at its rental value or it can be imputed adopting an interest rate. The cost of using owned operating capital, rather than borrowing it, can be evaluated by applying the prevailing rate in the credit market. Individual labour income is then obtained by dividing the residual by the household labour units. Note that this criterion compensates both the physical and intellectual labour. Further, the supplied hour of labour is evaluated uniformly across working family members.

*Objective market wage under competitive conditions:* this approach evaluates a hour of household labour at the prevailing market wage supposing that the labour market is at a competitive equilibrium and the farmer is indifferent between working in the farm and in the off-farm market. In this situation, the subjective (from the farmer) and objective (from the market) evaluation of the opportunity cost of working inside or outside the household coincide. This "opportunity cost" approach may differentiate the contribution of the different working household members when accounting for the individual characteristics such as age, sex, education, and location of the farm as a proxy for off-farm market conditions within an econometric estimation (Huffman 1996). The derived wage corresponds to the potential compensation that a farmer endowed

a specific level of skills could have potentially obtained if had found an off-farm employment.

*Shadow wage*: when labour markets are not competitive, as it is often the case, the family “unpaid” labour can be evaluated as the value of the marginal productivity of labour corresponding to the subjective evaluation of the disutility associated with an extra hour of work. This approach requires the estimation of a production or a cost function from which the marginal productivity can be evaluated. It is important to realize that the application of this approach implies assuming that a) the farm-household economy is non-separable, and b) adult (and child) family labour are quasi-fixed factors in the short run.

The shadow wage can be derived as the marginal effect of a change in fixed factors on total costs, which, in the long run, corresponds to total revenues or directly from the estimated production function (Jacoby 1993 and Skoufias 1994). The effective shadow wage of adult and child labour is given by the sum of the effective shadow wage with the total contribution to the marginal productivity of labour provided by the characteristics of the worker.

The knowledge of shadow wages is fundamental in order to explain individual labour choices. Farmers decide to work on the farm by comparing the shadow wage with the market objective wage when the subjective perception of the probability to find a job, either in agriculture or in other sectors, and the objective probability to be hired is equal to 1. If subjective and objective probabilities diverge, then the proper wage comparison is between shadow wages and expected market wages which thus incorporate information about the probability to find a job conditional on the level of education, age, experience and, more generally, skills of the farmers.

Shadow wages from agricultural activities can be estimated on an individual basis if data are collected about who does what in the farm. Still, the derivation of individual incomes incorporating also an assessment of the change in the household's net worth during the accounting period require that non labour income is assigned to each household member given the knowledge of the rule governing the allocation of resources within the household. Note that the shadow wage approach is often the only one available when evaluating child labour.

#### **4 Time Use and Valuation of “Unpaid” Domestic Labour**

Conventional accounting systems for households that include both the rewards from economic production in agriculture and other industries, wages actually received, interest and other property returns and miscellaneous items permit the derivation of total income and (after non-optional deductions such as tax) disposable farm household income (Hill; Eurostat; Organisation for Economic Co-operation and Development (OECD); Smeeding; Smeeding and Weinberg).



However, the family portfolio of labour choices also includes employment in domestic activities. This form of self-employment is valued at the “unpaid” equilibrium shadow wage, and, if a competitive environment is assumed, corresponds to the opportunity cost of time. The incorporation of this implicit source of income in the computation of household incomes gives the *extended* income (Lazear and Michael; Jenkins and O’Leary; INSTRAW). The sum of extended income and the value of leisure time forms the Beckerian notion of *full* income (Becker).

Under both behavioral and policy points of view, it is relevant to take into formal consideration that decisions made by the household unit are conditional on the information sets related to both the production and consumption side of the household economy. What is often neglected is that the production side of the household economy consists of both farming and domestic activities. Considering both extended and full incomes explicitly recognizes the contribution of home activities to the formation of household resources. Farm and “home produced” incomes are traditionally pooled within the family. In order to derive individual incomes, we assign these sources of income to each worker in proportion to the amount of contributed labour. We can then estimate the relative contribution of the husband and wife to the paid and unpaid sources of household income and to undertake a gender-specific analysis of the income distributions.

The implementation of the Beckerian notion of full income requires evaluating the time endowment, which is employed in both paid and unpaid working activities and leisure, and measuring non-labour incomes derived from returns on nonfarm assets and/or pensions. The accomplishment of this task requires the derivation of total farm household and extended incomes along with the evaluation of leisure time. Both farming and home production are family enterprises, the difference being that farm output is marketable, while domestic output, often composed by public components, is sold within the household at an implicit price.

Each member ( $i$ ) of a farm household of size  $N$  can allocate its time endowment among the following activities  $T = (f_i + o_i + h_i + l_i) + I_i = d_i + I_i$ , where  $f_i$  is hours of time devoted to farm labour activities;  $o_i$  is time devoted to off-farm labour either in agriculture or in other sectors (paid at the market wage) and commuting time;  $h_i$  is time devoted to unpaid home production activities;  $l_i$  is time devoted to pure leisure, such as recreational activities;  $I_i$  is time devoted to rest and personal care. The amount of disposable time is  $d_i = f_i + o_i + h_i + l_i$ .

Traditionally, economists define “unpaid work” as the time spent at home doing housework, producing goods and services for the family. Similarly, for farm households, farm labour supplied by household members is not directly paid to farm operators. Farmers remunerate themselves at an implicit wage. The time contributed by farm operators is often referred to as unpaid farm labour

(Huffman). Both farm labour ( $f_i$ ) and domestic work ( $h_i$ ) are defined as unpaid work. The availability of individual time-use data permits separating the time devoted to domestic work from the time allocated to pure leisure.

It is worth noting that this approach appears to perpetuate the simplistic view that the use of labour for agricultural entrepreneurial activities is competitive with its use for non-agricultural ones. As noted above, while this may be true for physical labour input, its validity for managerial input is less valid. But a model that accommodated non-rival circumstances would no doubt be far more complex.

## 5 Lessons from Wales and Italy

### 5.1 Case study from Italy

In response to this change about the importance of understanding the behaviour of both rural households and enterprises in the context of each specific local economies, the Institute for Studies on Agricultural Markets (Ismea) designed and analyzed, in collaboration with the *Microsimulation-Unit* based at the University of Verona, a survey aimed to collect data on the socio-economic conditions of Italian agricultural households and their incomes with the objective to meet the demand for information requested by the design and implementation of rural policies.

The objectives of the Ismea survey were to gather data on the farm and the household that could be used to describe both the structure and the behavior of the farm, and to understand household behavior and welfare as a step in evaluating the effect of agricultural and rural policies on the living conditions of the agricultural population by making use of a collective household approach<sup>4</sup>. Accordingly, a multi-topic questionnaire was designed to collect data on many dimensions of the farm and the household well-being, including consumption at the individual level, income, savings, financial wealth, governmental and intra-household transfers, education and housing.

The design of the Ismea questionnaire was inspired by the questionnaires in use for the collection of data on farm production (for example that used by the EU RICA-FADN), those on the consumption of household members (such as the one used by ISTAT), by the EU time budget and by the questionnaire used by the Bank of Italy to collect data on household incomes. The final result is a set of questions very close to those suggested by the Living Standards Measurement Study of the World Bank to assess the welfare of rural households.

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<sup>4</sup> That is, models that explicitly take into account the existence of differences in resource allocation decisions across the individuals of a same household.

An important characteristic of the questionnaire is that the attention is shifted from the traditional farm operation perspective to the farm household-firm unit one. For examples, information on the social characteristics such as gender, age, level of education, professional characteristics, etc. of each family members are collected. In addition, the questionnaire contains a stylized time sheet<sup>5</sup> describing how much time each family component is devoting to activities such as on and off-farm work, household work, child care and pure leisure time. This kind of information is useful when the work roles and off-farm labour participation of different members of the family are analyzed and to estimate shadow wages when labour markets are not competitive. This is a crucial undertaking. Market non-agricultural wages, wages for hired labour and shadow unpaid wages differ significantly across household types within the Ismea sample (Menon and Perali 2004). In addition, the data gathered in the time budgets are also essential for estimating the labour supplied to paid and unpaid working activities and the associated extended and full household incomes (Castagnini *et al.* 2004).

Another peculiarity is that the Ismea survey was designed to provide the information needed to assess the economic of policy programs at the farm level and the social impact at the household level with a special regard to labour choices and employment conditions of each member of the household. In order to allow the analyst to evaluate and measure such a socio-economic impact the Ismea survey contains a module of questions gathering information on the quality of life and on other characteristics of farm households.

There is a first group of questions on housing characteristics. The answers to these questions can be used to infer the standard of living of the agricultural household. A second group of questions collects detailed information on household consumption such as the consumption of food, either bought from the market (recording both quantities and prices) or grown on the farm, and the consumption of both semi durables and durable goods (distinguishing between goods for children and for adults). Measurement of consumption is emphasized in the questionnaires not only because consumption data can give a more direct picture, with respect to labour income, of how household individuals actually live<sup>6</sup>, but also because this kind of information allows the researcher to estimate the rule governing the intra-household allocation of material resources and time and to explain labour choices both at the household and individual level.

The first part of the questionnaire is complemented by a module containing questions on the intra-household decision making process for both farm and household decisions, on the household goods (household header growths in farm, time spent in family, farm inheritance and farm legacy), on intra-household transfers, on subjective measures about the risk associated to future investments in

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<sup>5</sup> Comparable to that used by ISTAT in the "Multiscopo survey" and in the Communitarian survey on time budget conducted by Eurisko.

<sup>6</sup> Income data indicate the living standard that the recipient could prudently afford.

agriculture and intentions about the future development of the farm. This is a set of information, usually not available in the traditional agricultural statistics, that proved to be very useful, for example, in order to tackle problems such as modelling the intergenerational transfer of household farms, or the on- and off-farm labour decisions within the farm household.

The set of data on the household welfare is completed by a group of questions on household income and wealth comparable to the survey on household income and wealth conducted by the Bank of Italy. A consistent reconstruction of non-labour income is fundamental in understanding labour choices (EI-Osta, Mishra and Morehart 2004).

In conclusion, the Ismea survey gathers a very large subset of the information on the household suggested by the Living Standards Measurement Study of the World Bank to measure labour statistics in an integrated context which allows a researcher also to provide robust explanations of labour choices both at the household and individual level. The information collected recognizes the agricultural household as the statistical unit of interest. In order to measure labour statistics and living standards of both the agricultural and the rural household, it seems necessary to extend the focus of the data collection to non farming enterprises and services by coupling the household questionnaire with a module run at the level of the rural community.

## 5.2 Case study from Wales

The Rural Development Programmes (RDPs) for the period 2000-06 that have been implemented in EU Member States carry the obligation of a mid-term evaluation by the end of 2003. To assist with the overall assessment of RDPs the European Commission put forward some required questions and prescribed indicators that were to be used to answer them<sup>7</sup>. Experience in carrying out the mid-term evaluation for the Welsh RDP (Hill and AgraCEAS 2003) and the baseline study for the parallel evaluation in England (Hill *et al.* 2002) has led to a number of lessons for labour statistics. These exercises involved making full use of all existing official statistics concerning labour in agriculture and, more generally, in areas deemed to be rural. A few special analyses of data were provided by the statistical authorities. Where the RDP evaluation encountered gaps in official statistics, these had to be filled by special surveys.

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<sup>7</sup> These include, for schemes involving aid to investment on holdings, the output per hour of labour on assisted holdings, share of working time spent on alternative activities on the holding,, number of full-time equivalent jobs maintained or created thanks to the assistance for alternative activities, the training needs of the labour force and the nature of trainees and non-pecuniary factors affecting job quality. Taking the cross-cutting questions (covering the combined impact of all RDP activities), there are questions on the age distribution and gender of labour on assisted holdings, and evidence of positive influences on the reduction in rural depopulation, employment directly and indirectly created for holders and non-family labour and whether this is full-time jobs and other than in basic agriculture and forestry. For jobs created or maintained elsewhere in the rural areas by the RDP, questions cover age, gender, pluriactivity and part-time farming.

First is the restriction imposed by a sector approach in labour statistics. Rural development involves support to the diversification of activities on holdings, yet the available statistics do not give much information on the use of the household's labour resources for other uses. Though the EU's Farm Structure Survey permits an analysis of labour according to the presence of an Other Gainful Activity (OGA), and whether this is the person's main activity or a secondary one, annual snapshots give little idea of the way in which changes are made on individual holdings, and the relatively static picture they present possibly hides a far more dynamic situation in which some changes cancel out (as is found with structural change generally in agriculture). What is needed is a panel approach with longitudinal analysis. Also, the unit of observation should be the household rather than the individual (though data at this level is important), as many diversification responses are associated with decisions at this level (such as a spouse developing an OGA).

Second, and related to the above, information on people (and households) that leave farming, some of whom may still live in the farm dwelling, is important, as is the reasons behind these readjustments in their use of resources (levels of monetary reward, other gains and losses etc.). Many farming changes (environmental, enterprise adjustment, investment, land acquisition etc.) are associated with transfers of land, associated with exit, entry and inter-generational transfers of assets. Though some structural change is made by management within its career, a great deal comes about by the disparity between the rate of entry and exit. Evidence from the USA (Gale 2003) suggests that, while the rate of exits is not greatly affected by the changing economic conditions in agriculture, and neither is the (lower) rate of entrants aged below 35 years (many of whom are likely to be farmers' sons), older new entrants are more sensitive. Presumably, the decisions of those already in established careers is much more a choice between alternatives in which the potential opportunity cost of transferring more of their time to agriculture is a major factor. Such decisions are more likely to be made on a household rather than an individual basis. In such matters it would be highly interesting to be able to trace the development of the farm/non-farm mix, and what happens to those who leave farming completely, though labour statistics are rarely set up in a way that makes this possible.

Third, despite shortcomings, labour statistics for agriculture are far better than those for other sectors in rural areas (at least in Wales and England). The overwhelming majority of self-employed people in rural area are in sectors other than agriculture (some 90% in rural England are non-agricultural)(Kempson and White 2001), leaving farmers as a small but relatively intensively studied sub-sector. Yet non-agricultural businesses are seen as drivers in the process of rural development. The lack of adequate statistics about them, their adjustment decisions and incomes was identified as a major gap. Of course, developing statistics for these entrepreneurial households encounters many of the conceptual issues outlined above for self-employed labour in agriculture.

## Conclusions

The most important conclusion is that the supply of labour reflects the nature of the households that supply it, so that the conceptual basis of labour statistics must acknowledge this relationship. This important feature calls for a redesign of agricultural surveys which should recognize the household, both farming and non farming, as the statistical unit of interest. This change would permit a more precise measurement of the investment of family time in paid off-family work and unpaid on-family activities and of the linkages of the household supply of labour with the local non-agricultural business environment.

Second, the nature of self-employment, the form which most labour takes in agriculture, makes its quantification in terms of input to the productive process problematic. Attempts to apply measures developed in the context of hired labour, for which the notion of a wage or salary forms part of a contract that requires the supply of a certain number of hours/days of input in return, to self-employment is likely to give artificial and misleading results. It is therefore important for the statistician to provide sufficient information to the economist with the aim of estimating reliable shadow wages when competitive labour markets are not in function. With this in mind, it would be important to know who does what in the farming, domestic and other productive activities. The phenomenon of pluriactivity further complicates the issue, as does the emergence of a separate management function that may be divorced from labour input among the larger farms.

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