Aspects of the Definition and Classification of Farms

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This paper examines what, precisely, is meant by a 'farm' and considers various attributes of farms relevant to an assessment of the structure of European agriculture. A measure of average farm size is proposed to cope with the uncertain count of the population of farms. The issue of tenure may also be complex, with some farms consisting of separate parcels of land, each with different tenure situations. Finally, although many European farmers are often described as being 'part-time', there are a number of different criteria on the basis of which farmers, and also farms, may be classified as being part-time.

Key Words: Farm; Agricultural holding; Farm Size; Agricultural landownership; Part-time farming.

1. Defining a Farm[1]

The term 'farm' is used, in common parlance, to refer to a unit engaged, wholly or mainly, in agricultural production. However, this usage begs some important definitional issues – particularly of a 'unit' and of 'agricultural' production. Of these, the definition of 'agriculture' is the simpler, this being defined within the related systems of industrial classification: at world level, the ISIC; at EU level, the NACE (now Rev.1.1); and, at UK level, the Standard Industrial Classification (SIC, 2003). The first two of these include specifications to the 4-digit level while the national equivalent includes the option of further detail (5th digit) in the specification. Within the UK SIC, Division 01, 'Agriculture, Hunting and Related Service Activities', comprises 5 Groups (at the 3 digit level) and 16 Classes and Subclasses (at the 4 and 5 digit levels).

With regard to the unit itself, there is an important distinction to be drawn between the concepts which, in the context of broader national statistics, are referred to as the 'enterprise' and as the 'establishment'. In the System of National Accounts 1993[2], the term 'enterprise' is used to describe an institutional unit in its capacity as a producer of goods and services, with an institutional unit having been defined as an economic entity that is capable, in its own right, of owning assets, incurring liabilities and engaging in transactions with other entities. An 'establishment', on the other hand, is defined as an enterprise or part of an enterprise that is situated in a single location and in which only a single (non-ancillary) productive activity is carried out or in which the principal productive activity accounts for most of the value added.

The basic unit used in the annual Agricultural and Horticultural Census conducted in the United Kingdom is the 'holding', the guideline definition of which (operated pragmatically and subject to agreement with the farmer) is that 'it comprises land on which agricultural activities are carried out and which is, by and large, farmed as one unit having regard to such supplies as machInery, livestock, feedingstuffs and manpower'[3]. It is however recognized, on the Census forms, that several holdings may be run by the same holder (these being those 'in the same occupancy/partnership'). It follows that the number of holdings will be greater than that of the number of farm businesses (i.e. enterprises in the terminology of the SNA) and that their average size will be smaller. This distinction between the concepts of a holding and of a farm business is clearly of vital importance to considerations of the structure and conduct of agriculture.

Another issue which is specific to agriculture, or at least to industries in which small-scale units run by self-employed persons are common, is that of defining the set of units which constitute the 'population' of units (i.e. holdings). This issue arises because there is inevitably a degree of arbitrariness about what constitutes an agricultural holding. The option of defining it in terms of units which sell at least part of the produce is not considered acceptable because of the possible exclusion of large holdings linked to, and producing for, certain types of institutional units (schools, prisons etc.) and also of holdings producing for the domestic consumption of large and possibly extended families. However, dismissing this option means that, in principle, any unit producing any form of agricultural produce (of which cut flowers and picked fruits are examples) could be considered to constitute an agricultural holding. In practice the categorization of a productive unit as an agricultural holding is likely to be affected by the scale of its production, the extent of its land area and any administrative requirements and regulations which may affect it and its need for recognition by public authorities. It thus follows that the cut-off point for the categorization of an agricultural productive unit as a 'holding' is likely to be imprecise and to vary both between countries and through time.

This factor has a considerable influence on the comparability, both across countries and through time, of measures of average farm size and provides a strong case for defining average farm size in a very specific and somewhat unusual way (see below). To some extent this problem may be reduced by focusing attention on, and producing statistics covering, only a subset of the totality of holdings; for example, for many years, the practice in the United Kingdom countries was to distinguish between 'main' and 'minor' holdings on the basis of some specified criteria relating to the scale of their activities and their inputs. Such a distinction may lead to the identification of a fairly clearly defined set of 'main' holdings for any one country and point in time but comparisons through time and across space are still likely to be hindered by changes and differences in the criteria (including between the four countries of the United Kingdom).

A further problem in the identification of the set of holdings in a country may arise from the classification of let land. The normal practice is to include most rented land within the holding of the lessee but the position may not be so straightforward in the case of land let out for a specified short period. For example, within the United Kingdom, the practice until relatively recently was to stipulate that land let for a period of less than a year should be returned, within the annual Census, by the lessor, such land thus possibly constituting a separate holding. However this practice has now been changed so that such land is to be recorded by, and attributed to, the lessee. The effect of this change, which was first made in Northern Ireland (where the 'conacre' system is common), was to reduce the number of holdings and to increase their average size. However other developments, notably the need to monitor animal movements, have resulted in the identification of a larger number of separate holdings, though many of these have very little land. The consequence of these changes is thus to affect both the apparent number and the average size of agricultural holdings, an issue to which attention is now turned.

2. Measures of Average Farm Size[4]

One important conceptual issue in specifying a measure of average farm size is that of selecting the measure of farm size to which the average (or any other presentation or summary of the frequency distribution) should relate[5]. As stated by Lund (1983: 188), "there is no generally accepted measure of farm size in the economics literature to guide the choice in the specifically agricultural context. Various measures of output, sales or turnover; of inputs, both flow and stock based (e.g. number of employees or value of fixed capital); and of the incomes (accruing or capitalised) of a company's equity holders have been used in different contexts"[6]. Moreover the most obvious measure in the agricultural context, land area, may be a poor economic (as opposed to geographic) measure of farm size since land is so variable in its agricultural attributes and farms of different types can require vastly different areas of land for the same value of output. The possibility of weighting land areas on the basis of a land (quality) classification system could be considered but would raise problems, including the attribution of weights. Other commonly used measures of farm size are ones based on the stocking of different types of animals and areas sown under different crops, these often being weighted together on the basis of the typical gross margins earned or the typical amount of manual labour involved. These weighting approaches have yielded, respectively, the standard gross margin (SGM) and the standard man day (SMD)/ standard labour requirements (SLR) measures. The former of these may now be expressed in terms of European Size Units (ESUs), these reflecting (periodically revised) evaluations of the standard gross margins earned from the livestock or the land uses.

The final issue to be considered is that of choosing an appropriate measure of average with which to describe average farm size. It might of course be argued that, given the above problems and the width of the frequency distribution of farm size, it is preferable to present the whole frequency distribution rather than a single summary statistic. That is a valid point but there will inevitably be instances when a single measure is required. Unfortunately both of the more common measures of central tendency (the arithmetic mean, and indeed other means, and the median) are sensitive to the total number of observations on the basis of which they are calculated and hence to the problems involved in defining the population of holdings.

It therefore seems desirable to calculate a measure of average farm size so that it is insensitive to the inclusion, or otherwise, of holdings (or potential holdings) at the bottom end of the size distribution. One way of doing this is by using the conventional measures of average size but focusing only on those holdings above a certain size threshold. However this approach is subject to problems due to possible inter-temporal and inter-spatial variations in the classification criteria.

An alternative approach is to adopt a measure of average farm size which is inherently insensitive to the inclusion or otherwise of 'holdings' at the bottom end of the frequency distribution. One such measure appears to have been first utilised in this context by Britton (1950). It is somewhat akin to the median in that it is based on a ranking of the separate units (e.g. holdings) by size. However instead of focusing on the size of that unit which lies in the middle of the distribution (or, more precisely, at which the cumulative percentage frequency distribution reaches 50%), it focuses on the size of the unit at which the cumulative sum of the variable under examination (e.g. area) reaches 50% of the total sum of the variable.

Describing this measure of central tendency in this way allows it to be appreciated intuitively but, to fully explore its various attributes, it has to be defined in formal mathematical terms. Just as the mean (x,f) may be defined as

$$(1) \qquad \mu = \int_{min}^{max} x.f(x).dx$$

where x is the measured variable, f(x) its probability distribution function and the integral is taken over the whole range of the distribution; and the median (x,f) may be defined as the point ν satisfying the equation

$$(2) \qquad \int_{min}^{\nu} f(x).dx = \int_{\nu}^{max} f(x).dx = 0.5$$

where the integral is taken from the minimum of the distribution to the point n; the alternative measure g(x,f) may be defined as the point γ satisfying the equations

$$(3) \qquad \int_{min}^{\gamma} x.f(x).dx = \int_{\gamma}^{max} x.f(x).dx = \tfrac{1}{2}\int_{min}^{max} x.f(x).dx = 0.5m$$

where $0 \leq min \leq x \leq max$. In practice this measure is likely to be evaluated from the second of these expressions since this specifies it in terms of the upper, more readily observable, part of the distribution. These equations hold for discrete as well as continuous distributions but, in the special case of a finite population or sample of size n, it is more usual to adopt the notation:

$$(4) \qquad \sum_{x_i \geq \gamma} x_i = \tfrac{1}{2}\sum_{i=1}^{n} x_i$$

The measure is thus the point in the distribution which divides the aggregate in half in the same way as the median divides the population of units in half when they are ranked according to size. For this reason, and lacking any other obvious name, it has been proposed (Lund and Price

1998) that the measure be called the <u>mid-aggregate point</u>. It may be noted that Britton described the measure as the 'equatorial' size of holding and, in its application to data on areas, as the 'median of the frequency distribution of acreage by size of holding'.

There is a geometric interpretation of these definitions which, in addition, describes the essential symmetry between the median and the mid-aggregate point. This makes use of the Lorenz curve more commonly associated with concentration measures such as the Gini coefficient. In the construction of this the units are first ranked according to size and then the percentage (or proportionate) cumulative sum of the size measure is plotted on the vertical axis and the corresponding cumulative sum of units on the horizontal axis. The median is then the size of the unit corresponding to the point at which the vertical line from the 50% point on the horizontal axis meets the Lorenz curve and the mid-aggregate point is that at which the horizontal line from the 50% point on the vertical axis meets the curve.

The characteristics of the newly proposed measure, and of other measures of central tendency, may be illustrated (see Table 1) using data on the size distribution of agricultural holdings in England obtained from the annual June Censuses of Agriculture and Horticulture, 1987-2000. The June Census for 2000 was the last one for which the data was split between that relating to 'main' and to 'minor' holdings, those above or below certain specified size thresholds. Part (a) of the Table relates to the total area of all holdings (main & minor) and Part (b) to the total area of main holdings only, the latter being the coverage of the averages (i.e. arithmetic means) published, through to 1999/2000, in the annual volumes of 'Farm Incomes in the United Kingdom', (DEFRA, annual). It will be seen that the mean and the median areas calculated for main holdings and for all holdings differ considerably, the former exceeding the latter in 2000 by 13.9% (mean) and 43.9% (median). By contrast, the difference in respect of the mid-aggregate point is only 1.0%, illustrating the lesser sensitivity of this measure to the truncation of the data set for the types of distributions of farm size observed in the United Kingdom[7].

Exact calculation of the mid-aggregate point, and of the median, requires access to the individual holding values whereas the mean can be calculated from summary statistics alone. However, and as illustrated in Table 1, the mid-aggregate point may be estimated by interpolation from the published frequency distribution tables. The resulting estimates are shown in the final column of Table 1 and are seen to be very close to those obtained from the direct method.

It will also be seen that the mid-aggregate points exceed the corresponding mean and median measures by considerable margins, particularly when the comparison relates to all holdings. This is not however considered to be a weakness of this measure; rather it reflects the extent to which the other measures are affected by the inclusion of data on very many small holdings. In particular it is of note that, in year 2000, only 18% of the total land area on (all) holdings was on holdings with an area less than the mean area and only 4% was on those with an area less than the median area. The corresponding percentage for the mid-aggregate point is, by definition, 50%. It follows that the mid-aggregate point is likely to provide the better indication of the holding size from which the typical unit of agricultural production originates – at least for distributions of farm size broadly akin to those in the United Kingdom.

Parts (c) and (d) of Table 1 present similar comparisons of the measures of central tendency for Standard Man Days (SMDs) and Standard Gross Margin (SGMs) respectively, though with these comparisons necessarily restricted to main holdings only. These comparisons show similar patterns to those presented in Parts (a) and (b) of the table: the values of the mid-aggregate points are higher than those of the mean and the median and also show the greater increase over the period.

Table 1. Comparisons of Measures of Central Tendency: Agricultural Holdings in England.

Part (a) : Total Area of All holdings (main and minor)

Year	Number of holdings	Total area ('000 ha.)	Mean	Median	Mid-aggregate point (direct method)	Mid-aggregate point (by interpolation)
1987	192,885	9515.9	49.33	15.75	137.69	137.84
1990	188,132	9441.2	50.18	16.32	137.63	137.56
1993	190,242	9466.5	49.76	15.39	139.80	139.74
1996	179,220	9340.1	52.12	16.42	145.08	145.56
2000	167,855	9130.2	54.39	16.10	159.09	159.61

Part (b) : Total Area of Main holdings (only)

1987	155,785	9424.5	60.50	27.24	139.60	139.69
1990	150,652	9351.0	62.07	28.58	139.35	139.39
1993	153,422	9371.2	61.08	26.73	141.69	141.70
1996	145,638	9250.5	63.52	27.70	147.10	146.96
2000	146,347	9069.5	61.97	23.17	160.65	160.26

Part (c) : Standard Gross Margins (ESUs)

Year	Number of holdings	Total (million)	Mean	Median	Mid-aggregate point (direct method)	Mid-aggregate point (by interpolation)
1987	155,785	8106.7	52,038	20,097	129,235	129,534
1990	150,652	8033.5	53,325	19,733	134,274	134,250
1993	153,422	7772.5	50,661	16,592	133,894	134,796
1996	145,638	7734.3	53,106	16,578	142,754	142,543
2000	146,347	7424.7	50,734	11,491	155,284	155,154

Part (d) : Standard Man Days

1987	155,785	88.320	567	243	1,320	1,323
1990	150,652	88.193	585	235	1,405	1,413
1993	153,422	87.719	572	225	1,373	1,375

Table 2 provides comparisons of the measures for selected EU member states, with the data relating to Agricultural Area as recorded in the 1997 EU Farm Structure Survey. Although this survey was conducted along common lines across the EU, the size threshold for the inclusion of a holding in the survey differed between member states, thus inevitably affecting comparisons of the mean and median sizes of holdings in the different member states. Since individual holding data are not made available, both the median and the mid-aggregate point have been interpolated from the published frequency distribution tables. Unfortunately, the published ranges do not cover the diversity of holding sizes in the various member states sufficiently adequately to allow

calculation of each of the measures; where these statistics fall within either the lowest (0 - <2 ha) or the highest (≥100 ha) size groups no interpolation has been attempted.

It will be seen that the United Kingdom has the largest average holding size, and Greece and Italy the smallest, for two of the three measures shown. For these three member states the mid-aggregate point confirms the impression given by the other two measures. However, this measure gives a rather different impression of average holding size for the other nine member states. It suggests that average holding size is relatively larger in Portugal and Spain and relatively smaller in the other seven member states than is suggested by the mean and median. This difference reflects the relatively greater proportions of the agricultural area in Portugal and Spain which is on large holdings.

Table 2. Comparisons of Measures of Central Tendency: Agricultural Area on Holdings in the European Union, 1997 Farm Structure Survey

Member State	Number of holdings	Total area ('000 ha)	Mean (ha.)	Median (ha.)	Mid-aggregate point (ha.)
Belgium	67,200	1,382.7	20.58	12.07	40.08
Denmark	63,200	2,688.6	42.54	26.03	71.80
Germany	534,400	17,160.0	32.11	12.26	75.26
Greece	821,400	3,498.7	4.26	2.16	8.64
Spain	1,208,300	25,630.1	21.21	4.37	> 100
France	679,800	28,331.3	41.68	23.57	84.71
Ireland	147,800	4,342.4	29.38	21.06	40.40
Italy	2,315,200	14,833.1	6.41	< 2	24.90
Luxembourg	3,000	126.6	42.20	34.90	78.79
Netherlands	107,900	2,010.5	18.63	10.79	34.99
Austria	210,100	3,415.1	16.25	7.55	30.71
Portugal	416,700	3,822.1	9.17	< 2	91.21
Finland	91,400	2,171.6	23.76	17.74	32.62
Sweden	89,600	3,109.1	34.70	16.98	67.86
United Kingdom	233,200	16,168.9	69.33	27.44	> 100

3. Land Tenure[8]

Another aspect of the structure of agriculture is the land tenure arrangements. Agricultural land is sometimes classified into that which is 'owned' and that which is 'rented'. For example, the Agricultural Census forms for England and Wales used to require a split of the area of each holding between two such categories though the current form seeks a split between types of agricultural tenancy and an explicit recording of land rented in or let out on short-term lets.

However the categorization still appears to presume that the occupier and owner of the holding are either identical or wholly distinct. That this is not always the case was revealed very

clearly by a detailed survey of agricultural land ownership conducted by the then Ministry of Agriculture, Fisheries and Food in 1978. This survey, conducted in one local authority district in the West Midlands region of England, the Wyre Forest, was originally designed as a pilot study for a national survey along similar lines though, with changing political interests and priorities, the latter was never undertaken. The survey was thus designed to assess the extent of different land occupation and ownership arrangements and to ascertain the best means of gathering information on these.

The survey was designed by the MAFF with significant contribution and support from the Country Landowners' Association, the National Farmers' Union, The Royal Institution of Chartered Surveyors and the Forestry Commission. The survey procedure was inevitably somewhat complex since it involved contacting first the occupiers of land, who could be identified from the Census register, and then asking them to detail each area of land within their holding having a separate ownership arrangement before, in the case of rented land, contacting the relevant land agent and/or land owner. All occupiers of agricultural land in the 13 parishes within the District of Wyre Forest were invited to take part. Those in one large parish (Rock) were asked to complete a questionnaire during an interview whilst the remainder received postal questionnaires. In those cases where the occupier, or their immediate family, were not involved in the ownership of the holding (or of some part of it) a further, and different questionnaire, was sent to the owner, in some cases after they had been contacted via a land agent. Finally, a separate questionnaire was sent to owners of woodland who had not been covered in the other stages of the survey.

The response rates for each of these separate stages were very satisfactory. A total of 421 questionnaires were despatched to occupiers and completed questionnaires were received from 285 (68%); the response rate being higher for the interview approach (84%) than for the postal questionnaire (60%). A total of 74 questionnaires were then despatched to owners with a response rate of 61%. However the total response rate (54%), measured in terms of coverage of land, was inevitably somewhat below that for each of the separate stages in the process.

The questionnaires asked for information about the occupiers and owners of land, their status (individual, company etc.) and the area of land involved in each separate ownership. Of the 285 holdings, 228 (80%) were occupied by individuals though these accounted for less than 60% of the area. Joint occupation and partnerships accounted for a further 16% of holdings but, whereas joint occupiers tended to own the whole of their holding, there were several partnerships occupying 'wholly rented' and 'mixed tenure' holdings. Only 4% of holdings were occupied by private companies but, like holdings occupied by partnerships, these tended to be of above average size.

Of the 285 holdings, a total of 170 could be described as 'wholly owned' because the whole of the holding was owned by a person, persons or group identical to the occupier. Another 34 holdings could be so described because, for example, the occupier owned all the holding jointly with others (e.g. as a shareholder in a private company) or because they owned part singly and part jointly with others. A total of 30 holdings were described as of 'mixed tenure' because the occupier had some direct ownership interest in one or more parts of the holding but not in some other part(s). However, on 10 of these holdings, the rented part of the holding was owned by another member, or other members, of the occupier's family. Finally, a total of 51 holdings could be described as 'wholly rented' 20 of which, however, were rented from relatives of the occupier(s). Thus the occupier or members of their family had an ownership interest in at least part of 254 (89%) of the holdings, with the corresponding percentage for the land area being 80%. This percentage is rather higher than a nearly comparable figure from the Census returns, that being that 64% of the land area of the holdings of survey respondent was 'owned' as opposed to

'rented'. A part of the difference between these two percentages is attributable to the ownership being within the family though without the occupier themselves having a beneficial interest and other part to recording differences. For the 212 holdings then classified within the Census as being 'statistically significant' (the earlier term corresponding to 'main' as opposed to 'minor' holdings) the survey results gave a figure of 69% on the basis of Census definitions compared with 64% shown by the Census results. In particular the Census appeared to overstate the number of holdings of 'mixed tenure' as compared to the survey results, probably because in some cases when the holding consisted of parcels of land in different ownerships the occupier was found to have a beneficial interest in each part.

Both the design and conduct of this survey indicated the complexities of agricultural land occupation and ownership and the consequent difficulties associated with collecting and analyzing information on these subjects. It did however indicate the diversity of occupation and ownership arrangements which exist albeit, in this instance, in one not randomly selected locality.

4. Part-time farming[9]

It is generally agreed that part-time farming is now common in European agriculture and probably still of growing importance. However the term 'part-time' is rarely defined in discussions of its growth and importance, a fact of particular note since there are several meaningful definitions of the term in common use.

The meaning which is perhaps in most common use is effectively that reported in CEAS (1977) as having been favoured by a workshop held at Wye College. This was : 'the practice of a farm-based household in which one or more members are gainfully engaged in work other than, or in addition to, farming the family's holding. Logically this definition, and similar ones in Gasson (1988) and Kada (1980) could result in a farmer working for normal hours, or more, on a large farm being described as 'part-time' simply because some other member(s) of the household have some other form of gainful employment, possibly (but not necessarily) in addition to working on the farm. The adoption of such a definition would probably mean that the majority of all UK farms, including many of the very largest, would be described as 'part-time' at some stage in the family life cycle.

It must, of course, be acknowledged that the definition quoted above can be considered as a rather extreme version of one in more common usage: that a farmer is part-time if they themselves have any other form of gainful employment. However even this definition differs from two others in common parlance outside the specifically agricultural context. The term is most commonly used to refer to the practice of working less than the standard time (i.e. hours per week) associated with a particular job or occupation. This use is clearest in the case of employees, though is followed for all people working on the holding (including the principal farmer) in the Agricultural Census form for England. The term 'part-time' is also used in common parlance to refer to the gainful activities of a person which are considered secondary (usually in terms of time) to their main occupation: thus a person might describe themselves as being a teacher but having some other 'part-time' job. In this usage it is the secondary job which is being described as 'part-time' and not the primary one.

In addition to these definitions, which clearly apply –at least in the first instance – to persons, part-time farming is sometimes defined with respect to the attributes and size

of the holding rather than the persons running it. For example, in the UK, the sizes of holdings were measured, for many years, in terms of Standard Man Days and are now (from the 2004 Census) being measured in Standard Labour Requirements (SLRs), both of these measures being derived by summing the labour requirements estimated to be normally required on the basis of the holding's cropping areas and numbers of livestock. For the new measure one SLR is defined as a annual labour requirement of 1900 hours. Holdings with a SLR above 1.0 are grouped into classes described as 'small', 'medium' and 'large'; however those with a SLR below 0.5 are described as 'very small spare-time' while those with a SLR between 0.5 and 1.0 are described as 'very small part-time'. Thus the term part-time is now being used in two different ways in UK agricultural statistics and with neither usage corresponding to that common, with respect to farming (but not other gainful activities), in the media and in farming circles. It is thus necessary for the intended meaning of the term to be clearly stated whenever it is used.

Fortunately it is possible to examine empirically the extent of correspondence between the different definitions of part-time farming. For example, on the basis of data from the Agricultural Census in England it has been possible to compare the split of the principal farmer(s) and spouse(s) between whole-time and part-time and the size of the holding measured in SMDs. For example, in England and Wales in 1989, there were nearly twelve times as many whole-time as part-time 'principal farmers and partners' on holdings requiring 250 or more SMDs per year. A similar comparison should be possible now, given the adoption of the SLR measure of holding size: moreover the comparison could be conducted on the basis of data for each holding rather than simply the overall aggregates. Information on the relationship between the different criteria for classifying farmers and farms as part-time is also provided by the Farm Business Surveys (part of the FADN) conducted in the United Kingdom. For example, an analysis of owner-occupied farms in the 1978/79 Liabilities and Assets surveys in England showed linear correlations between SMDs and actual labour units which ranged from 0.75 to 0.89 depending on farm type.

More information on the relationship between the time-spent working on the holding and the size of the holding has been provided by the EU Farm Structure Surveys though in this case the size of the holding has been measured in ESUs rather than a required labour input measure. However these surveys have also provided a classification of holders, by size group of their holding, according to whether they had another gainful occupation and whether this other occupation was their major occupation or a subsidiary one. Both the existence of other gainful occupations and their importance (i.e. as the major occupation) have been found to be greatest for farmers on smaller holdings. There thus appears to be a substantial correspondence between the classifications of farmers and their holdings as 'part-time' on the basis of the different definitions of part-time. However it is suggested that this empirical observation does not remove the need for clarity with respect to the definition being adopted: the correspondences are not perfect and their extents can only be meaningfully examined on the basis of clear definitions relating to each of the uses of the term 'part-time'.

5. Conclusions

There is no single conclusion to this paper. Its purpose has been to provide some information relevant to an examination of the structure of European agriculture and, in particular, to the very wide spectrum of holding sizes and forms of institutional unit which currently co-exist within it.

NOTES

1. Earlier discussions of this issue are to be found in Britton and Hill 1975, pages 15-23, and in Burrell et. al., pages 78-85.

2. See paragraphs 4.3, 5.17 and 5.21 of the System of National Accounts 1993, prepared under the auspices of the Inter-Secretariat Working Group on National Accounts 1993.

3. MAFF 1995, page 2-1.

4. This section draws heavily on material first published in Lund and Price 1998 and updated and extended in Lund and Price 2003.

5. An alternative to choosing a single measure of farm size is to specify a wide range of measures and then consider the relationships between the variable of interest (e.g. total factor productivity) and each of them in turn. This approach was adopted by Power and Watson 1983.

6. A review of the issue of defining and measuring the size of a firm, and a statistical comparison of various alternative measures, was provided by Bates 1965.

7. It should however be acknowledged that the mid-aggregate point could be more sensitive to the inclusion or otherwise of small holdings when the distribution of holding sizes is bi- or multi-modal and such that approximately half of the total land area/ agricultural area is on very large holdings and about half on very small holdings. Such a situation has prevailed in some eastern European countries.

8. This section draws heavily on material first presented in Lund and Slater (1978) and summarized in Lund and Slater (1980).

9. This section draws heavily on material first published in Lund (1991).

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