

## Structural features of European union farms

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## STRUCTURAL FEATURES OF EUROPEAN UNION

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### KEYWORDS

CAP, Structural Policies, Farm Structure, EU, Economic Situation

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The CAP was created to regulate the EU agriculture which is diverse in many respects. Very important, from a policy point of view, is the diversity of farm structures across the EU. The importance of farm structures derives from the repeatedly stated determination within the EU to maintain a viable rural sector in which the basic concept remains the family farm. Keeping people in rural areas is closely linked to the employment/income possibilities existing in these areas, which in turn depends partly on the profitability of farming. A thorough examination of the farm structures helps in assessing the relevance of the common price policy to deal with structural diversity and reveal the areas where structural measures should be targeted.

The farm structures, which are closely related to the personal welfare of the farming community, are examined here in both a spatial as well as a temporal sense. The spatial dimension reveals the diversity of structures across the EU which an agricultural policy has to accommodate. In a temporal sense, the evolution of a number of key structural variables is examined in an attempt to identify the future trends but also to draw some conclusions about the impact of the CAP on the farming structures so far.

The EU provides rich statistical material for the study of structures. The two main sources are the Farm Structures Surveys and the Farm Accountancy Data Network (FADN) of which extensive use is made in this section.

### STRUCTURAL FEATURES BY ECONOMIC SIZE

The analysis of farm structures begins with Table 1 which presents the frequency and cumulative distributions of the number of farms and the standard gross margin (SGM) by economic size. In 1987, the year of the Farm Structure Survey from which table 1 has been constructed<sup>1</sup>, there

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<sup>1</sup> Two more farm structure surveys have been carried out after 1987, one in 1989/90 and one in 1993, but only selected results have so far appeared in the Eurostat publications. Some of the 1993 results appear in a later table but the latest survey with which a fuller analysis of the structures can be carried out is the 1987 survey.

were about 8.6 million farms in the EU with an average farm size of 13.4 hectares. The distribution of the number of farms is very skewed. Almost forty percent of the farms have an economic size up to two ESU<sup>2</sup> and the average farm size, in terms of UAA, of this size class is only 2.2 hectares. Only 1.1 percent of the farms had a farm size greater than 100 ESU and 17.2 percent had a size greater than 16 ESU. About three quarters (71.4 percent) of the farms in the EU have a size of less than eight ESU and, assuming a uniform distribution of the number of farms within the class of 6-8 ESU, these farms have a size of less than 10.9 hectares (last column of Table 1).

**Table 1** Frequency and Cumulative Distributions of the Number of Farms and Standard Gross Margin (SGM) Share (1987)

| Size Class | Number of farms |       |                             |                             | Share of SGM |                             |                             | UAA/<br>farm<br><br>ha |
|------------|-----------------|-------|-----------------------------|-----------------------------|--------------|-----------------------------|-----------------------------|------------------------|
|            | '000            | %     | less than class upper limit | more than class lower limit | %            | less than class upper limit | more than class lower limit |                        |
| ESU        |                 |       | %                           | %                           |              | %                           | %                           |                        |
| All farms  | 8593.7          | 100.0 | -                           | -                           | 100          | -                           | -                           | 13.4                   |
| 0-2        | 3415.1          | 39.7  | 39.7                        | 100.0                       | 3.3          | 3.3                         | 100.0                       | 2.3                    |
| 2-4        | 1463.6          | 17.0  | 56.7                        | 60.3                        | 4.5          | 7.8                         | 96.6                        | 4.9                    |
| 4-6        | 780.9           | 9.1   | 65.8                        | 43.3                        | 4.1          | 11.9                        | 92.1                        | 7.7                    |
| 6-8        | 485.2           | 5.6   | 71.4                        | 34.2                        | 3.6          | 15.5                        | 88.0                        | 10.9                   |
| 8-12       | 606.8           | 7.1   | 78.5                        | 28.6                        | 6.4          | 21.9                        | 84.4                        | 15.0                   |
| 12-16      | 369.4           | 4.3   | 82.8                        | 21.5                        | 5.5          | 27.4                        | 78.0                        | 20.4                   |
| 16-40      | 966.8           | 11.3  | 94.1                        | 17.2                        | 26.4         | 53.8                        | 72.5                        | 32.5                   |
| 40-100     | 409.8           | 4.8   | 98.9                        | 5.9                         | 26.1         | 79.9                        | 46.1                        | 62.4                   |
| >100       | 96.1            | 1.1   | 100.0                       | 1.1                         | 20.0         | 100.0                       | 20.0                        | 161.3                  |

Note: UAA=Utilised Agricultural Area; ESU=European Size Unit.

Source: CEC, Farm Structures Survey, 1987. Main Results.

Clearly small farms dominate the EU agriculture. On the other hand, large farms dominate farm production as is indicated by the share of standard gross margin accounted by these farms. Thus, twenty percent of the SGM is produced by about one percent of the largest farms. Also about three quarters (72.5 percent) of the SGM is produced by only 17.2 percent of the farms. Because so much of the subsidisation of agriculture through the price system is directly linked to the value of production, these last figures match very closely the assertion of Commissioner MacSharry, when he presented the reform proposals in 1990, that about 20 percent of the farmers receive about 80 percent of support under the CAP. The distribution of farms and SGM show that support through higher prices benefits mostly the farmers who need it least, while keeping marginal farmers in production at a high budgetary cost.

<sup>2</sup> In this definition, the size of farms is defined in ECUs of gross margin rather than physical units of area or labour, which is more usual. More specifically, the ESU (European Size Unit) measures size in terms of Standard Gross Margin (SGM), which is a measure of the value of gross output less variable costs per hectare (in the case of crops) or per animal (in the case of livestock). This measure is standardised for each region and product. The SGMs and ESU equivalent can vary over time. Thus, in the 1991/92 FADN results one ESU was equivalent to 1200 ECUs of '84 SGMs.

**Table 2** Structural Features of EU12 Farms by Economic Size

| 1         | 2            | 3            | 4            | 5           | 6           | 7                      | 8                                       | 9  | 10                     | 11                     |
|-----------|--------------|--------------|--------------|-------------|-------------|------------------------|---|--|------------------------|------------------------|
| Size      | UAA/<br>Farm | SGM/<br>Farm | AWU/<br>Farm | UAA/<br>AWU | SGM/<br>AWU | Holders<br>aged<br>>55 | Share of<br>farms<br>owner-<br>occupied | Share of<br>family labour<br>in total labour | Holders<br>With<br>OGA | Spouses<br>with<br>OGA |
| ESU       | ha           | ESU          | Unit         | ha          | ESU         | %                      | %                                       | %  | %                      | %                      |
| All farms | 13.4         | 10.9         | 1.1          | 12.7        | 10.3        | 54.3                   | 64.9                                    | 82.1   | 30.2                   | 15.0                   |
| 0-2       | 2.3          | 0.9          | 0.5          | 5.0         | 2.0         | 62.3                   | 89.5                                    | 92.2   | 37.5                   | 18.0                   |
| 2-4       | 4.9          | 2.9          | 0.9          | 5.8         | 3.4         | 58.2                   | 82.2                                    | 92.9   | 33.0                   | 13.9                   |
| 4-6       | 7.7          | 4.9          | 1.1          | 7.2         | 4.6         | 54.8                   | 77.1                                    | 91.7   | 28.7                   | 13.4                   |
| 6-8       | 10.9         | 6.9          | 1.2          | 8.8         | 5.6         | 51.1                   | 72.9                                    | 91.5   | 26.3                   | 11.7                   |
| 8-12      | 15.0         | 9.8          | 1.4          | 10.8        | 7.1         | 48.7                   | 68.8                                    | 90.5   | 24.0                   | 13.1                   |
| 12-16     | 20.4         | 13.9         | 1.5          | 13.2        | 9.0         | 45.9                   | 64.4                                    | 89.0   | 20.8                   | 13.7                   |
| 16-40     | 32.5         | 25.4         | 1.9          | 17.6        | 13.8        | 37.9                   | 58.1                                    | 83.1   | 16.8                   | 14.2                   |
| 40-100    | 62.4         | 59.5         | 2.5          | 24.7        | 23.5        | 31.3                   | 56.8                                    | 63.2   | 14.1                   | 15.7                   |
| >100      | 161.3        | 194.3        | 6.3          | 25.8        | 31.0        | 36.4                   | 61.7                                    | 21.8   |                        |                        |

UAA=Utilised Agricultural Area; SGM=Standard Gross Margin; AWU=Annual Work Unit; OGA=Other Gainful Activity.

Source: CEC, Farm Structures Survey, 1987

Table 2 presents additional information about EU farms classified by economic size. The small size of farms is also confirmed by the number of Annual Work Units (AWU) per farm. On average in the EU, 1.06 AWUs are employed per farm or, on average, a farm with 12.7 hectares of land is required to employ a person on a full-time basis (1 AWU). However, small farms are more labour intensive and therefore the farm sizes, in terms of utilised agricultural area, which can provide employment for one AWU are smaller. Thus, in the size class 0-2 ESU only five hectares of land are required to provide employment for an AWU. The UAA per AWU increases as the economic size of the farms increases and at the large farm end of the distribution 25.8 hectares of land provide employment for one AWU. Large farms are apparently more capital intensive than small farms. Higher capital intensity has contributed to higher labour productivity (as measured by SGM per AWU) in larger farms (column 6). SGM per AWU in the largest farms (larger than 100 ESU) of the EU is more than fifteen fold that for the smallest farms (0-2 ESU) while this magnitude gets monotonically increasing with larger sizes. However the difference in SGM per farm between the smallest and largest farms is greater than 200 fold as it increases much faster than labour productivity when moving towards larger farms. The family character of the EU farms is confirmed in column 10 of Table 2. The share of family labour in total labour in the average EU farm is 82.1 percent. The share of family labour in the farms of economic size up to 4 ESU is more than 80 percent, whereas in farms with size less than 12 ESU, more than 90 percent of labour employed comes from the family. In addition, farm families own, on average, about two-thirds of the farm land. The share of owner-farmed land is greater for small farm sizes while large farmers rent a larger proportion of their utilised agricultural area than small farmers.

One factor which facilitates the adjustment towards an agricultural sector with a smaller number of farmers is the retirement of the elderly ones. The information on this factor is promising. As is shown in column 7 of Table 2, more than half of the farmers in the EU have an age greater than 55, which is the threshold age to which early retirement schemes are applied. It is also encouraging that the proportion of older farmers is larger in small farms while in farms of economic size larger than 16 ESU only about one third of farmers have an age greater than 55 years.

The exit of older farmers serves two purposes. First, larger and more viable farms may be created, which is particularly important in areas dominated by small farms. Second, some of the retiring farmers will be replaced by younger and more dynamic ones. The number of farmers will be reduced if retiring farmers do not have successors. In a major study covering many and diverse EU

regions (Arkleton Trust, 1993), 34 percent of the farmers aged 55 and over in the study areas were certain in 1991 that they have no successors. This is compared to just under half who were certain of having a successor and 19 percent who were hoping to have a successor. These shares are indicative of the potential that exists in facilitating adjustment through the retirement of older farmers. In this study also, it was found that there is a strong relationship between succession expectation and outcome which is based on exits that took place between 1987 and 1991 (the period of the study). Furthermore, the incidence of farmers being certain of having no successors is strongly associated with smaller farms, low level of total household income and a "good" labour market.

If the continuous increases in farm subsidisation are to be avoided, and it has become clear in the EU that this situation cannot continue for much longer, alternative income sources can keep some farmers in the farming business on a part time basis. The available information is encouraging on this front also. Thus (column 10), nearly one-third of the farmers in the EU have another gainful activity. As expected, small farmers, who need most additional income sources, have the larger rates of dual activity. In addition to the farm holders, on average, 15 percent of the holders' spouses have another employment outside the farm, although, in this case, the proportion does not vary much with different farm sizes.

### **STRUCTURAL FEATURES BY MEMBER STATE**

The structural characteristics analysed above for different farm sizes are repeated for the different member states in Table 3. The first column of this table shows that the number of farms is very unevenly distributed among the member states. For example, a country of the size of France has approximately the same number of farms as Greece, while this number is about four times greater than the number of farms in the United Kingdom and half the number of farms in Spain. The country with the largest number of farms is Italy (32.3 percent of total), followed by Spain (20.6 percent) and Greece (11.0 percent). With the addition of Portugal (7.3 percent of the farms) these Mediterranean member states of the EU account for 71.3 percent of the total number of farms, while the utilised agricultural area they occupy is only 41.2 percent of the total. As a consequence, the average farm size (in terms of UAA) in these countries is smaller than the EU average. Average UAA per farm is especially low in Greece, Portugal and Italy (4.1, 5.3 and 5.6 hectares). The member state with the largest farm size is the United Kingdom (67.2 hectares) which is nearly seventeen times larger than that of Greece. Large farm sizes also exist in Denmark, Luxembourg, France and Ireland.

Comparing the distribution of the number of farms (column 1) with the standard gross margin share (column 2), their relationship is not very close. The share of the SGM commanded by the four Mediterranean countries (Greece, Italy, Spain and Portugal) is about half of their share in the total number of farms (38.9 percent compared to 71.3 percent), which constitutes another indication of their relative small size. Also, it is interesting that two member states, France and Italy, produce nearly half (45 percent) the total SGM in the EU, an indication of the large concentration of agricultural production in these two member states, in which 38.7 percent of utilised agricultural area and 40 percent of agricultural labour in the EU are located.

As a result of these differences, it appears (column 4) that the SGM per farm is very unevenly distributed among the member states. The United Kingdom, which has the largest farms, in terms of utilised agricultural area, has the highest Standard Gross Margin per farm also, while Portugal is at the other extreme, followed by Greece, Spain and Italy. In the northern part of the EU, Ireland is the member state with the lowest SGM per farm (very close to the Italian figure) despite its relatively large farm sizes, in terms of UAA. The opposite is true for the Netherlands. In general, however, high ratios of SGM per farm tend to be associated with high ratios of UAA per farm, which must reflect the product mix.

**Table 3. Structural Features of Farms in EU12 and the Member States**

| EU12/<br>Member<br>State | 1            | 2               | 3            | 4            | 5            | 6           | 7           | 8                      | 9                           | 10                           | 11                                  | 12                                  |
|--------------------------|--------------|-----------------|--------------|--------------|--------------|-------------|-------------|------------------------|-----------------------------|------------------------------|-------------------------------------|-------------------------------------|
|                          | No of farms  | Share<br>Of SGM | UAA/<br>farm | SGM/<br>farm | AWU/<br>farm | UAA/<br>AWU | SGM/<br>AWU | Holders<br>aged<br>>55 | Share of<br>owner<br>farmed | Share<br>of family<br>labour | Holders<br>with<br>OGA <sup>1</sup> | Spouces<br>with<br>OGA <sup>1</sup> |
|                          | '000(%)      | %               | ha           | ESU          | Unit         | ha          | ESU         | %                      | %                           | %                            | %                                   | %                                   |
| EU12                     | 8593.7(100)  | 100             | 13.4         | 10.9         | 1.1          | 12.7        | 10.3        | 54.3                   | 64.9                        | 82.1                         | 30.2                                | 15.0                                |
| Belgium                  | 92.5(1.08)   | 2.4             | 14.8         | 23.9         | 1.1          | 13.8        | 22.3        | 44.3                   | 31.7                        | 94.8                         | 32.6                                | 8.5                                 |
| Denmark                  | 86.9(1.01)   | 3.3             | 32.2         | 34.9         | 1.3          | 24.6        | 26.7        | 45.1                   | 81.7                        | 75.9                         | 32.8                                | 44.4                                |
| Germany                  | 705.1(8.2)   | 12.7            | 16.8         | 16.7         | 1.2          | 13.9        | 13.9        | 33.0                   | 63.6                        | 89.8                         | 43.0                                | 8.0                                 |
| Greece                   | 948.2(11.0)  | 4.2             | 4.1          | 4.1          | 0.9          | 4.5         | 4.6         | 56.0                   | 77.1                        | 85.8                         | 33.4                                | 8.3                                 |
| Spain                    | 1772.6(20.6) | 10.1            | 13.9         | 5.3          | 0.9          | 15.2        | 5.8         | 58.2                   | 69.8                        | 78.9                         | 29.6                                | 11.5                                |
| France                   | 981.6(1.1)   | 23.0            | 28.6         | 21.9         | 1.5          | 19.2        | 14.7        | 48.6                   | 46.7                        | 76.1                         | 31.8                                | 27.7                                |
| Ireland                  | 216.0(2.5)   | 2.1             | 22.7         | 8.8          | 1.2          | 19.3        | 7.5         | 50.7                   | 96.0                        | 88.0                         | 36.5                                | 55.8                                |
| Italy                    | 2773.9(32.3) | 22.1            | 5.6          | 7.4          | 0.8          | 7.3         | 9.7         | 59.6                   | 80.0                        | 86.4                         | 24.0                                | 13.9                                |
| Luxembourg               | 4.2(0.05)    | 0.1             | 30.4         | 20.0         | 1.6          | 18.9        | 12.5        | 38.7                   | 51.7                        | 54.1                         | 18.8                                | 6.6                                 |
| Netherlands              | 132.0(1.5)   | 6.4             | 15.3         | 45.2         | 1.8          | 8.7         | 25.5        | 41.1                   | 64.5                        | 79.8                         | 23.6                                | 1.3                                 |
| Portugal                 | 631.4(7.3)   | 2.6             | 5.3          | 3.9          | 1.5          | 3.6         | 2.6         | 58.4                   | 66.3                        | 87.8                         | 38.3                                | 15.1                                |
| U.K.                     | 249.2(2.9)   | 11.3            | 67.2         | 42.2         | 2.1          | 32.2        | 20.2        | 48.1                   | 62.6                        | 59.8                         | 23.9                                | 22.5                                |

Note: UAA=Utilised Agricultural Area; SGM=Standard Gross Margin; AWU=Annual Work Unit; OGA=Other Gainful Activity.

Source: CEC, Farm Structures Survey, 1987.

As expected, member states with large farms tend to employ more annual work units per farm (column 5). The average farm in three southern states (Italy, Spain and Greece) is not large enough to provide employment for even one AWU. This is not the case in Portugal which has a surprisingly high number of AWUs per farm although it has the lowest figure of SGM per farm. Hence, in column 7 Portugal has the lowest SGM per AWU also which is close to half of the second lowest ratio (Greece). Denmark, the Netherlands, Belgium and the United Kingdom occupy the top places in the SGM per AWU ranking. At the other end we find, in addition to Portugal, Greece, Spain, Italy and Ireland. The SGM per farm variable is important because it is closely related to the income from farming which is also important. At this stage, only a vague picture of agricultural incomes can be obtained.

The size of farms, in terms of UAA, capable of providing employment for one AWU are given in column 6. There is a large variation in these farm sizes reflecting the different labour intensities in production and the different composition of farming types in the various member states.

There are no great differences in the share of family labour in total labour among the member states. With the exception of Luxembourg and the United Kingdom, more than three quarters of farm labour comes from the family. In Belgium, less than one third of farm land is owner occupied. At the other extreme is Ireland with 96 percent of land being owner occupied. There is no obvious north-south distinction with regard to this variable, which rather relates to long standing tradition and legislation. Some differentiation in the scope of applying early retirement schemes exists. The member states with younger farmers are Germany and Luxembourg while the southern member of EU (Italy, Portugal, Spain and Greece) have the older farmers but the deviations from the EU average are small. In general early retirement schemes could be applied to all EU members states. Finally, some variation exists among the member states in the number of farmers holding another gainful activity with the largest proportion being that of Germany and the smallest in Portugal. The variation is much greater in the case of spouses.

### STRUCTURAL FEATURES IN LESS FAVOURED AREAS

Farms located in less favoured areas (LFAs) present a special interest for EU policy-makers because their viability is curtailed by poor factor endowment. Special provisions already exist for these

areas where structural rather than price policies can play a more important role. Without special assistance, farming in these areas becomes very difficult, leading in the long-run, to depopulation and desertification with obvious consequences for the social fabric and the environment.

Nearly half (44.7 percent) of EU farms are located in LFAs (Table 4) but there is significant variation around this average among the member states. Thus, in Luxembourg all farms are located in LFAs while, according to the 1987 Farm Structure Survey, none of the farms belongs to this category in Denmark and the Netherlands. Among the other member states, in Portugal, Greece, Ireland and Germany, more than half the number of the farms is located in a less favoured area. With regard to the farms located in mountain areas those constitute an almost exclusive feature of the Mediterranean member states. The proportion of farms located in mountain areas in Greece, Italy and Spain is about one-third of the farms in LFAs while for Portugal this proportion is 46.7 percent.

The average farm size, in terms of UAA, in EU12 is almost the same as the case of all holdings while in most member states is larger, probably reflecting lower population densities in these areas. Average farm size in EU12 farms located in mountain areas is about half of that in all holdings probably reflecting shortage of arable land.

**Table 4** Structural features of farms in Less Favoured Areas

| EU12/<br>Member<br>State | All farms    |              |             | Less favoured areas          |              |              |             | of which: Mountain areas     |              |              |             |
|--------------------------|--------------|--------------|-------------|------------------------------|--------------|--------------|-------------|------------------------------|--------------|--------------|-------------|
|                          | UAA/<br>farm | SGM/<br>farm | SGM/<br>ha  | Percent of<br>total<br>farms | UAA/<br>farm | SGM/<br>farm | SGM/<br>ha  | Percent of<br>total<br>farms | UAA/<br>farm | SGM/<br>farm | SGM/<br>ha  |
|                          | ha           | '000<br>ECU  | '000<br>ECU | %                            | ha           | '000<br>ECU  | '000<br>ECU | %                            | ha           | '000<br>ECU  | '000<br>ECU |
| EU12                     | 13.3         | 10.8         | 0.81        | 44.7                         | 13.1         | 7.0          | 0.53        | 24.9                         | 7.1          | 4.2          | 0.59        |
| Belgium                  | 14.8         | 23.9         | 1.61        | 14.2                         | 21.2         | 18.0         | 0.85        | -                            | -            | -            | -           |
| Denmark                  | 32.2         | 34.9         | 1.08        | -                            | -            | -            | -           | -                            | -            | -            | -           |
| Germany                  | 16.8         | 16.7         | 0.99        | 52.8                         | 15.6         | 13.4         | 0.86        | 3.5                          | 13.3         | 8.8          | 0.66        |
| Greece                   | 4.0          | 4.1          | 1.03        | 60.0                         | 4.6          | 3.7          | 0.80        | 35.8                         | 4.4          | 3.4          | 0.77        |
| Spain                    | 13.8         | 5.2          | 0.38        | 36.2                         | 17.5         | 5.5          | 0.31        | 30.9                         | 12.4         | 4.2          | 0.34        |
| France                   | 28.6         | 21.9         | 0.77        | 33.0                         | 29.9         | 15.4         | 0.52        | 1.0                          | 30.2         | 15.2         | 0.50        |
| Ireland                  | 22.7         | 8.8          | 0.39        | 59.7                         | 18.3         | 5.4          | 0.30        | -                            | -            | -            | -           |
| Italy                    | 5.6          | 7.4          | 1.32        | 46.3                         | 6.1          | 5.2          | 0.85        | 33.2                         | 5.6          | 4.6          | 0.82        |
| Luxembourg               | 30.2         | 19.9         | 0.66        | 100.0                        | 30.2         | 19.9         | 0.66        | -                            | -            | -            | -           |
| Netherlands              | 15.3         | 45.2         | 2.95        | -                            | -            | -            | -           | -                            | -            | -            | -           |
| Portugal                 | 5.2          | 3.8          | 0.73        | 65.8                         | 6.2          | 3.6          | 0.58        | 46.7                         | 3.5          | 3.0          | 0.86        |
| U.K.                     | 64.4         | 40.4         | 0.63        | 36.2                         | 84.5         | 22.9         | 0.27        | -                            | -            | -            | -           |

Source: CEC, Farm Structure Surveys, 1987.

The less favoured nature of farms in these areas is reflected in the Standard Gross Margin per farm. Average SGM per farm located in the LFAs in EU12 is about two-thirds of the average in all holdings. Because the average farm size in the LFAs is not different from the general average, this difference reflects productivity differences per unit of land. Lower SGM per farm has been recorded in all member states except Spain, where the farm sizes in the LFAs are considerably higher than in all holdings. The difference is greater in the case of the United Kingdom where SGM per farm in Less Favoured Areas, despite having larger average farm size, is almost half comparing to that of all farms. The situation is even worse in mountain areas where the average SGM per farm is about one-third of that in all holdings.

### THE EVOLUTION OF CERTAIN STRUCTURAL FEATURES

Only a few consistent series of farm structure characteristics exist in the EU. The main breaks in the series are due to the successive enlargements. Table 5 presents the evolution of some farm

structure characteristics taken from four Farm Structures Surveys for EU10, as well as recent information for EU12 and EU15.

In the two-and-a-half decades before 1993, the number of farms declined by 34 percent in EU10 leading to a similar increase in the average farm size. This development can be considered as relatively small, given such a time span. Apparently the process towards a more viable agriculture is slow. It seems that the strong subsidisation of EU agriculture has kept many marginal producers in business.

**Table 5** Evolution of certain structural characteristics in the EU and the member states (1966/67 - 1993)

| EU/Member state | Year of the survey | Total no of farms   | UAA Per farm      | SGM per farm     | AWU per farm     | Percent of holders aged >55 |
|-----------------|--------------------|---------------------|-------------------|------------------|------------------|-----------------------------|
|                 | Year               | '000                | ha                | '000 ha          | AWU              | Percent                     |
| EU15            | 1993               | 7814.8              | 16.4              | ..               | ..               | ..                          |
| EU12            | 1993               | 7264.0              | 16.4              | ..               | 1.0              | 53.2                        |
| EU10            | 1966/67            | 8097. <sup>1</sup>  | 11.6 <sup>3</sup> | ..               | ..               | ..                          |
|                 | 1975               | 6792.1 <sup>2</sup> | 13.2 <sup>4</sup> | 6.4 <sup>5</sup> | 1.2 <sup>2</sup> | 45.5 <sup>4</sup>           |
|                 | 1987               | 6217.2              | 14.0              | 13.7             | 1.1              | 52.8                        |
|                 | 1993               | 5391.1              | 16.7              | ..               | 1.0              | 52.4                        |
| Belgium         | 1966/67            | 214.8               | 7.4               | ..               | 1.3              | 37.9 <sup>0</sup>           |
|                 | 1975               | 138.1               | 10.6              | 9.4              | 1.0              | 33.8                        |
|                 | 1987               | 92.6                | 14.8              | 23.9             | 1.1              | 44.2                        |
|                 | 1993               | 76.3                | 17.6              | ..               | 1.1              | 48.2                        |
| Denmark         | 1966/67            | ..                  | ..                | ..               | ..               | 41.4 <sup>6</sup>           |
|                 | 1975               | 132.3               | 22.4              | 12.4             | 1.3              | 44.2                        |
|                 | 1987               | 86.9                | 32.2              | 34.9             | 1.3              | 37.9                        |
|                 | 1993               | 73.8                | 37.1              | ..               | 1.4              | 46.1                        |
| Germany         | 1966/67            | 1246.0              | 10.2              | ..               | 1.9              | 34.6 <sup>5</sup>           |
|                 | 1975               | 907.9               | 13.7              | 8.2              | 1.4              | 26.4                        |
|                 | 1987               | 705.1               | 16.8              | 16.7             | 1.2              | 33.0                        |
|                 | 1993               | 606.1               | 28.1              | ..               | 1.3              | 33.3                        |
| Greece          | 1966/67            | 991.5               | ..                | ..               | ..               | ..                          |
|                 | 1975               | ..                  | 3.4 <sup>4</sup>  | 3.8 <sup>5</sup> | ..               | 50.6 <sup>4</sup>           |
|                 | 1987               | 953.3               | 4.0               | 4.1              | 0.9              | 56.0                        |
|                 | 1993               | 819.2               | 4.3               | ..               | 0.9              | 57.1                        |
| France          | 1966/67            | 1708.0              | 17.6              | ..               | 1.8              | 44.5 <sup>5</sup>           |
|                 | 1975               | 1315.1              | 22.4              | 9.6              | 1.5              | 38.7                        |
|                 | 1987               | 981.8               | 28.6              | 21.9             | 1.5              | 48.6                        |
|                 | 1993               | 801.3               | 35.1              | ..               | 1.3              | 41.6                        |
| Ireland         | 1966/67            | ..                  | ..                | ..               | ..               | ..                          |
|                 | 1975               | 228.0               | 22.3              | 4.1              | 1.4              | 51.5                        |
|                 | 1987               | 217.0               | 22.7              | 8.8              | 1.2              | 50.6                        |
|                 | 1993               | 159.4               | 26.8              | ..               | 1.5              | 42.0                        |
| Italy           | 1966/67            | 2980.5              | 6.0               | ..               | 1.4              | 53.4 <sup>5</sup>           |
|                 | 1975               | 2664.2              | 6.2               | 3.2              | 1.1              | 54.7                        |
|                 | 1987               | 2784.1              | 5.6               | 7.4              | 0.8              | 59.6                        |
|                 | 1993               | 2488.4              | 5.9               | ..               | 0.7              | 61.4                        |
| Luxembourg      | 1966/67            | 8.6                 | 15.6              | ..               | 2.0              | 49.8 <sup>6</sup>           |
|                 | 1975               | 6.2                 | 21.9              | 10.2             | 2.0              | 47.0                        |
|                 | 1987               | 4.2                 | 30.2              | 19.9             | 1.6              | 45.3                        |
|                 | 1993               | 3.4                 | 37.4              | ..               | 1.7              | 38.2                        |
| The Netherlands | 1966/67            | 247.0               | 9.0               | ..               | 1.4              | 32.9 <sup>6</sup>           |
|                 | 1975               | 162.6               | 12.8              | 17.8             | 1.6              | 32.6                        |
|                 | 1987               | 132.0               | 15.3              | 45.2             | 1.8              | 41.1                        |
|                 | 1993               | 119.7               | 16.8              | ..               | 1.9              | 43.7                        |
| United Kingdom  | 1966/67            | ..                  | ..                | ..               | ..               | ..                          |
|                 | 1975               | 280.6               | 58.7              | 15.3             | 2.2              | 44.5                        |
|                 | 1987               | 260.1               | 64.4              | 55.6             | 2.0              | 50.7                        |
|                 | 1993               | 243.5               | 67.3              | ..               | 1.8              | 42.6                        |

|          |         |        |      |    |                  |      |
|----------|---------|--------|------|----|------------------|------|
| Spain    | 1987    | 1791.7 | 13.4 | .. | ..               | ..   |
|          | 1993    | 1383.9 | 17.9 | .. | 0.8              | 53.1 |
| Portugal | 1987    | 635.5  | 5.2  | .. | ..               | ..   |
|          | 1993    | 489.0  | 8.1  | .. | 1.2              | 61.9 |
| Austria  | 1979/80 | 308.2  | 11.9 | .. | ..               | ..   |
|          | 1993    | 267.4  | 12.9 | .. | 1.2              | ..   |
| Finland  | 1979/80 | 224.7  | 11.6 | .. | ..               | ..   |
|          | 1993    | 191.9  | 14.0 | .. | 1.0 <sup>1</sup> | 46.4 |
| Sweden   | 1979/80 | 117.9  | 31.4 | .. | 1.2              | ..   |
|          | 1993    | 91.5   | 36.7 | .. | 1.1              | 43.0 |

1. The 1970/71 figures for Denmark and the United Kingdom and the 1975 figures for Ireland have been used.

2. The 1977 figures for Greece have been used.

3. As in footnote 1 and, in addition, the 1970/71 figures for Greece have been used.

4. The 1977 figures for Greece have been used.

5. 1979/80.

6. 1970/71.

Source: CEC, *Farm Structure Surveys*, 1966/67, 1975, 1987 and *Rapid Reports* 10/95.

The decline in the number of farms has not been uniform among the member states. Thus, in some member states the decline, since the 1960s, has been considerable (Belgium, Germany, France and the Netherlands), while in some others (Greece, Italy and the United Kingdom) the decline has been very small. Especially in Italy, a surprising increase in the number of farms was recorded between 1975 and 1987, which, however, was followed by a decline between 1987 and 1993. Similar are the changes in the average farm sizes. The available information for Spain and Portugal starts in 1987. From this year up to 1993, the number of farms declined considerably in both countries with Spain experiencing a decline of 23 percent in a period of only six years. This decline in the number of farms led to Spain being the only southern EU member state with an average farm size greater than the EU average. The number of farms also declined in the case of the three new member states. Austria and Finland have average farm sizes close to the EU average while in Sweden the average farm size is the second largest in the EU, after the United Kingdom.

The SGM per farm more than doubled between 1975 and 1987 (no data for the 1993 survey on SGM have been released yet). In some member states the increase in SGM per farm was rather dramatic at a time when farm sizes were increasing rather slowly. The largest increases were recorded in the United Kingdom, Denmark and the Netherlands where SGM per farm increased by 3.6, 2.8 and 2.5 times respectively. At the other extreme we find Greece.

The decline in the number of farms has been associated with a decline in farm employment. As a consequence, the number of AWUs per farm has remained fairly stable, reduced from 1.2 to 1.1 between 1975 and 1987 in EU10 and to 1.0 in EU12 in 1993. The most significant reduction in employment per farm has been recorded in Italy and Germany. On the other hand the reduction in the number of farms has led to an increase in employment per farm in the Netherlands. Employment per farm in the three new member states is close to the EU12 average. With regard to the proportion of farm holders who have an age greater than fifty five years, the dominant trend is for this proportion to increase. The 1975 results seem to be oddly out of trend in some cases while in 1993 the proportion of farmers over-55 decreased in France and Ireland compared to the 1987 survey results. Therefore, the farming population is ageing despite the early retirement schemes that have been applied so far.

## INPUT INTENSITIES IN THE COMMERCIAL FARMS IN THE MEMBER STATES

The farm structures described so far involve only two inputs: land and labour. However, the Farm Accountancy Data Network (FADN) provides information on more inputs but for the commercial farms only. These are the farms which, according to the measure used, generate significant production. This criterion differs among the member states. Thus, the cut-off point for Portugal is 1

ESU, for Greece, Italy, Spain and Ireland it is 2 ESU and for the other member states it ranges from 4 to 16 ESU. Thus, in table 6 more inputs appear for the commercial farms of EU12. The number of commercial farms in EU12 is nearly half the total number of all farms and their number depends critically on the definition used. Average farm sizes (column 2) are, as might be expected, larger since small farms, in ESU terms, are, by the definition of commercial farms, excluded. Columns 3 and 4 give the land and labour inputs per commercial farm and their distribution across the member states is analogous to that presented earlier for all farms. In column 5 we see that the consumption of intermediate inputs accounts for half the value of commercial farm production. The figures are very similar for all member states except Greece where the proportion of intermediate consumption is about half of that in other member states.

The variation in the amount of fixed capital per farm is considerable and it becomes even greater in the case of non-land fixed capital. However, because larger farms tend to be associated with larger amounts of fixed capital, the input intensities per hectare were calculated and they are given in columns 9-11. These three columns together with the value of output per hectare (column 8) give the production function in tabular form from which some interesting observations are made.

**Table 6** Input intensities in EU12 farms

| EU12/<br>member<br>state | No of<br>farms | Average<br>farm size | UAA<br>per<br>farm | AWU<br>per<br>farm | Intensity<br>of IC | FC<br>per<br>farm | NLC<br>per<br>farm | Value of<br>output<br>per ha | AWU<br>per<br>100<br>ha | IC<br>per<br>ha | NLC<br>per<br>ha | Share<br>of<br>crop<br>products |
|--------------------------|----------------|----------------------|--------------------|--------------------|--------------------|-------------------|--------------------|------------------------------|-------------------------|-----------------|------------------|---------------------------------|
|                          | 1              | 2                    | 3                  | 4                  | 5                  | 6                 | 7                  | 8                            | 9                       | 10              | 11               | 12                              |
|                          | '000           | ESU                  | ha                 | AWU                | %                  | '000<br>ECU       | '000<br>ECU        | ECU                          | AWU                     | ECU             | ECU              | %                               |
| EU12                     | 4441           | 18.7                 | 22.3               | 1.50               | 50                 | 131.9             | 50.2               | 1903.5                       | 6.7                     | 947.2           | 2249             | 51                              |
| Belgium                  | 51.9           | 40.6                 | 25.6               | 1.65               | 51                 | 175.9             | 99.8               | 3875.9                       | 6.4                     | 1969.7          | 3896             | 33                              |
| Denmark                  | 81.4           | 39.5                 | 34.8               | 1.19               | 57                 | 203.0             | 154.0              | 2699.8                       | 3.4                     | 1525.4          | 4425             | 36                              |
| Germany                  | 372.7          | 29.1                 | 29.6               | 1.56               | 58                 | 221.3             | 115.0              | 2655.2                       | 5.3                     | 1530.0          | 3883             | 31                              |
| Greece                   | 498.6          | 7.1                  | 6.4                | 1.78               | 29                 | 52.5              | 10.6               | 2511.1                       | 27.8                    | 718.3           | 1661             | 76                              |
| Spain                    | 689.4          | 8.0                  | 20.4               | 1.16               | 47                 | 100.1             | 25.7               | 1048.4                       | 5.7                     | 489.0           | 1258             | 68                              |
| France                   | 559.7          | 36.5                 | 45.3               | 1.62               | 51                 | 116.4             | 71.2               | 1715.6                       | 3.6                     | 873.8           | 1572             | 53                              |
| Ireland                  | 140.0          | 14.0                 | 34.4               | 1.20               | 57                 | 163.0             | 40.9               | 865.2                        | 3.5                     | 493.5           | 1190             | 13                              |
| Italy                    | 1359           | 12.7                 | 10.0               | 1.37               | 56                 | 122.7             | 35.3               | 2619.2                       | 13.7                    | 992.0           | 3526             | 70                              |
| Luxembourg               | 2.3            | 32.5                 | 50.8               | 1.64               | 57                 | 409.0             | 181.9              | 1723.4                       | 3.2                     | 976.5           | 3579             | 20                              |
| Netherlands              | 94.0           | 63.8                 | 22.2               | 2.08               | 55                 | 449.0             | 206.7              | 7562.1                       | 9.4                     | 4135.6          | 9312             | 44                              |
| Portugal                 | 451.5          | 5.0                  | 11.6               | 1.59               | 53                 | 41.7              | 17.1               | 825.1                        | 13.7                    | 438.4           | 1476             | 57                              |
| U.K.                     | 140.3          | 69.2                 | 109                | 2.39               | 59                 | 468.9             | 128.9              | 1311.9                       | 2.2                     | 767.7           | 1180             | 43                              |

Source: CEC, Farm Accountancy Data Network, 1991/92 Results.

Note: IC=intermediate consumption; FC=fixed capital; NLC=non-land fixed capital.

Firstly, considerable variation is observed in the value of production obtained from one hectare of land among the member states. Portugal and Ireland produce an agricultural output per hectare, the value of which is less than half the EU average, or nearly one-tenth of the figure for the Netherlands. The case of Spain is similar to Portugal and Ireland while the value of production per hectare in the United Kingdom is considerably less than the EU average. Belgian farmers come second, in terms of value of production per hectare, but their figure is about half of that for the Netherlands. Still above the EU average is a group of four countries (Denmark, Germany, Italy and Greece). France and Luxembourg have similar figures, both of which are below the EU average. The position of Greece and Italy in this ranking may be a surprise, given the small farm sizes in these member states (an obstacle to the achievement of economies of scale), while a significant proportion of farms are located in less favoured areas.

A determinant of the value of production per hectare is the output composition, especially the crop/livestock production shares. This is particularly important in the case of Ireland where only 13

percent (column 12 ) of the value of farm production comes from crops and a measure of value of production per livestock unit would in this case represent better performance.

Input intensities are very important determinants of the value of production per unit of land but also reveal information on the diverse production technologies used across the member states. Columns 9-11 in Table 6 indicate that input intensities vary considerably across the member states. The ranking of the member states according to total factor intensity requires proper weighting of the different factors of production. However, roughly, it can be seen that low non-land input production takes place in Ireland, the United Kingdom and Spain. The least labour intensive farm production is that of the United Kingdom (only 2.2 AWUs per 100 hectares) and the most labour is that of Greece (27.8 AWUs per hectare). In fact high labour intensity seems to be the reason for the relatively high values of production per hectare recorded, since the other two inputs (intermediate consumption and non-land fixed capital) are employed at rates lower than the EU average. Relatively labour intensive agricultural production also takes place in Portugal and Italy and in the Netherlands. Spain is the only Mediterranean member state which employs labour at a rate lower than the EU average.

The Netherlands is the member state with the highest application rate of non-land inputs. This intensive production seems to be the reason for the high returns per hectare. The use of intermediate inputs in the Netherlands is nearly ten times greater than that in Portugal and nearly nine times than that in Spain and Ireland. Below the EU average are also the United Kingdom, Greece and France, while above average intermediate consumption is found in: Belgium, Germany, Denmark, Italy and Luxembourg.

The variation of non-land fixed capital inputs among the member states is somewhat smaller. The Netherlands again lead the ranking followed by a group of member states (Denmark, Belgium, Germany, Luxembourg and Italy) which have an above average use of these inputs. At the other end of the spectrum are the United Kingdom and Ireland, which have the least capital intensive agriculture in the EU followed by Spain, Portugal, France and Greece.

Thus, we see that common agricultural production technology can by no means be assumed for the different member states while input intensities can adequately explain the differences in the production value per hectare. The different input intensities certainly have implications for the environment which increasingly has become the concern of the policy makers. On the other hand, the relationship between input intensity and the value of production, which is associated with income from farming, has so far been in the centre of the policy debate on agricultural policy in the EU.

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