

## **Agriculture: A Critical Resource in Rural Development**

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### **Abstract**

The role of agriculture in shaping the rural environment cannot be ignored. Neither can the role which supports to agriculture play in directing agricultural development. On-farm investment is a key element in determining the future viability of the farm. A major criticism of the Common Agricultural Policy was that too much support went to too few farmers. In an era of environmental concerns, increasing concerns about food safety and rural depopulation, balanced rural and agricultural development is a high priority. This paper examines the role of investments in supporting farm viability and the role which grants play in stimulating this investment. The paper draws on data collected in three countries, the United Kingdom (Northern Ireland); Greece and the Republic of Ireland. The results show quite clearly that it is the larger better resourced and wealthier farmers who have invested most and who have gained most from grant aid. These supports have done little to stimulate development on a large percentage of small and medium sized farms whose future viability is seriously at risk. These farmers are leaving the countryside, services and infrastructure are being withdrawn and the rural environment is changing. In countries like the Republic of Ireland where farms are predominantly family farms and where farming is still the major source of employment in rural areas, the consequences for the rural environment are critical.

### **Introduction**

The rural countryside as we know it today has evolved through interaction between man, mainly farmers and the land. While agriculture or more correctly farming is declining in importance in the EU, its impact on the environment is still tremendous. Farm land covers over 80 percent of the territory of the EU and thus changes in farming or its people will have significant long-term consequences for the rural countryside. In recent times, two impacts in particular can be closely associated with changes in farming. The development of high input farming systems, with the concentration of greater numbers of farm animals and their residues in some areas, while on the other hand many areas in Europe where farming is in decline are suffering from severe depopulation, loss of infrastructure and services and a breakdown in traditional social structures. The maintenance of critical numbers of farmers in rural areas is directly related to the incomes which they can obtain. Investment and State or EU supports for investment or improvement of farms, particularly in countries that are heavily dependant on livestock farming, are critical factors in creating sustainable futures.

Agriculture is an extremely important sector in the Irish economy. Within the European Community Ireland is one of the most rural and agrarian based societies. Excluding the Dublin metropolitan area over 60 percent of the population live in rural areas (i.e. outside areas having a population of greater than 1,500) Almost 12 percent of the workforce are

employed in agriculture and agriculture accounts for over 19 percent of total exports. Irish agriculture has developed at a very rapid rate over the last 20 years. This development has been supported by Ireland's entry into the EU. Irish farming is comprised almost completely of family owned and run farms with over 90 percent of farms being family owned. There is very little leasing of land and only a small portion of land enters the land market each year. Irish farms are on average small with over 50 percent of farms being less than 20 hectares in size. Irish farming also differs significantly from many parts of mainland Europe. Irish farmers are mainly livestock farmers, less than 10 percent of the farmed area is cropped compared to approximately 40 percent for mainland Europe. Phelan and Markey (1991) outlined the different categories of farmers that were emerging in Ireland influenced substantially by the CAP. These were:

1. A small group of resource rich farmers who have the capacity to compete in the markets of Europe. This group comprises the larger dairy farms, and some quite large drystock and tillage farms;
2. Farmers with considerable agricultural resources but where even at the most efficient production levels agriculture alone would not be able to provide a viable future. This group are comprised of small to medium sized dairy farms, the majority of drystock farms and some tillage farms;
3. Resource poor farmers where little progress or where decline over the last two decades had been the norm.

In Ireland there is limited rural industry and therefore the welfare of households involved in agriculture is of critical importance to rural development. Phelan, (1997, p.2) in examining the centrality of agriculture to rural development estimates that over 60 percent of rural people are either directly, indirectly or income dependent on agriculture. Investment is a key component of future viability on farms and should not be limited to those farmers who are already well resourced. This paper outlines recent investment trends in Ireland and makes comparisons between similar situations in UK (Northern Ireland) and Greece. Are investments (and the State or EU supports to investment) being used to obtain maximum use of local resources and their use in the creation of a sustainable rural environment, are questions which are central to the discussion. The data was collected in 1993 under the EU CAMAR funded programme, 1991 to 1994.

### **The Role of Investment**

The restructured Common Agricultural Policy (CAP) and the General Agreement on Tariffs and Trades (GATT) have changed the emphasis in farming from increased production to; (1) diversification; (2) product quality improvement and production efficiency and (3) greater marketing orientation. It is generally recognised that growth in agriculture is fuelled by investment. This investment comes in many forms. It comes as human capital embodied in the farmers, training, experience and advice. It comes in the form of better quality animals and crops, a better quality of machinery and buildings. Finally investment comes in the form of additional buildings, machines and livestock, ( Higgins and Collier, 1986, p.1 ). Farm investment is determined by many factors; EU and government policy, market trends, income levels, availability and cost of finance and investment characteristics of farmer and the farm place.

In an analysis of investment in Irish agriculture over the 1970-1984 period, Higgins and Collier (1986, p.103) found that the type of farm making significant levels of investment was relatively large, had good stocking rates and a high percentage of dairy cows. It was found that the level of investment on farms was highly associated with their existing level of capital. This implies that a good deal of investment was accounted for by the replacement of the existing stock of capital. The level of income generated on the farm was also a major determinant of investment. This was so for two reasons. Firstly, having a relatively high income meant that the farmer had the funds to finance investment. Secondly, a high level of income would imply that the farmer was getting a good return from existing resources and hence would find it profitable to invest further. (Agri and Food Policy Review, 1990, p. 20). Investment must be paid for from current income and from borrowing which itself must ultimately be paid for from future income. If farmers are not generating adequate income, or if they have not the prospects of generating such surplus income, then levels of investment expenditure will be depressed.

Between 1986 and 1989 investment on Irish farms was about 25 percent of farmers income. The high repayment schedules incurred as a result, combined with a drop in farming incomes put severe financial pressure on many farmers where a high proportion of that money was borrowed (Mahon, 1990, p.6).

Farmers can secure new capital from three broad sources namely:

1. Savings out of farm income
2. Borrowing from outside the industry
3. Government and EU grants

"It is well documented that farmers are good savers and much of the investment on farms actually comes from farmers own savings rather than external borrowing" (Sheehy, 1985, p.196). However the numbers using credit grew sharply in the 70's, but the repayment difficulties which some experienced, increased the caution of both the farmers themselves and the lending institutions. Farmers with favourable attitudes towards credit tended to be more successful and to have higher Gross Margins (GM's) than those with less favourable attitudes.

Power and Roche (1993) found that much of the finance farmers used in 1992 was generated on the farm. Where there were loans, they were mainly associated with bigger farms, with sixty-three percent of all borrowers in the 40-80 hectare farm size groups. There was also a strong relationship between Family Farm Income and the overall level of borrowing.

While every farm situation is different, and so must be examined disparately, generally small farmers, and cattle farms under 40 hectares have little or no borrowing and subsequent investment capacity. Dairy farms with 20 hectares and a quota of 20,000 gallons, have nil borrowing capacity, based on average efficiency levels. This is a major problem considering that farmers with 20,000 gallon quotas or less, account for two-thirds of all dairy farmers in the country ( Mahon, 1990, p.7). On a 100 acre dairy farm with a 40,000 gallon quota, the maximum borrowing capacity is £1,000 per hectare.

For drystock farmers, according to Mahon, the position is more serious, reflecting the lower incomes in this sector. In effect, no drystock farmer with 25 hectares or less has any

borrowing capacity. Where efficiency is very high (£500 per hectare), the capacity to borrow for investment purposes is £125 per hectare on 40 hectare farms, rising to £500 per hectare on farms of 60 hectares. In reality, unless family living expenses can be kept extremely low, repayment capacity does not exist on most drystock farms.

Mannion et al (1984, p.57), found that the level of grant aided investment was strongly associated with farm size, the greatest investment (effecting the greatest change in size of enterprise) taking place on larger farms.

Grants have been identified as an important source of funds for investment. There is no documented evidence to ascertain whether grants acted as an incentive to investment or were complementary to investment that would have taken place anyway even in their absence. The history of grant aided development in Ireland suggests, however, that they are those who are predisposed to development that get the greatest benefit from grants. In Leavy's examination of the Farm Modernisation Scheme (Leavy, 1986, p.223), he found that key factors which influenced increases in gross margins were the increase in total investment, the level and the increase of investment in livestock and the level of gross margin achieved. This would support the idea of the importance of matching funds in the uptake of grants.

### **The CAMAR Study**

The study was carried out in three countries in Europe, Greece, Northern Ireland and the Republic of Ireland over the period 1992 to 1994. This paper draws on material collected as part of the CAMAR study ("Constraints in the Competitiveness of EU Agriculture : A Comparative Analysis) and examines the extent and degree of investment in land, buildings and machinery on sample farms in Northern Ireland, the Republic of Ireland and Greece. It also examines the relationships between key farm, household and external factors and investment.

Before making comparisons it is important to briefly describe the sampling procedures used and the representativeness of the samples to the national situation particularly regarding Northern Ireland and the Republic of Ireland. In each country, the areas chosen were selected on the basis of presenting a useful cross section of local farming conditions; a prosperous farming area; a less prosperous farming area with off-farm income earning opportunities; and a less prosperous area with little off farm opportunities.

In Northern Ireland the areas selected were Ballymoney; Fermanagh and Dungannon and a grid square system of sampling was used. When the Northern Ireland CAMAR sample was compared with DANI census statistics for Northern Ireland, it was found that the CAMAR sample had a slightly higher proportion of dairy farms (8%) and non LFA (Less favoured Areas) beef and sheep farms (5.5%). The sample was slightly lower on LFA beef and sheep farms (9%). In terms of business size the Northern Ireland CAMAR sample had a slightly lower proportion of small farms and a slightly higher proportion of large farms. The total number of farms sampled was 786.

In Greece, two communities were chosen. Molos is a coastal community of approximately 3,000 people where farming is the single most important activity in over 80 percent of households. In essence, Molos can be described as having a dynamic agriculture and good economic structure giving reasonable lifestyles to most of its inhabitants. Its agriculture

includes cereals, fruit and vegetables, tobacco and livestock. Tsouka on the other hand is a semi-mountainous community characterised by poor household demography and high levels of out migration. Agriculture is by far the most important sector, there is little off-farm employment. Enterprises include fodder crops, sheep and goats, cereals and a small amount of tomatoes and olives.

In the Republic of Ireland, the areas selected were Cavan, Clare and Wexford. The sampling unit used was first DEDs and then townlands, with all farmers in the townlands with 2 ESU (Economic Size Units) being the target population. Again, while the sample taken cannot be considered as being representative of the national situation, when comparisons were made with Teagasc National Farm Survey (1992) data on key variables such as income, enterprises, age etc. the differences were quite small. The number of farmers interviewed in the Republic of Ireland was 885.

Table 1. Number and Percent of Respondents by Level of Total Farm Investment 1989-1993

ECUs	All	NI	Greece	ROI
None	1089 (51.1)	344 (43.8)	289 (62.8)	456 (51.5)
<13,500	363 (17.0)	142 (18.1)	60 (13.0)	161 (18.2)
13,500-35,500	325 (15.3)	135 (17.2)	63 (13.7)	127 (14.4)
>35,500	354 (16.6)	165 (21.0)	48 (10.4)	141 (15.9)
Total	2131 (100.0)	786 (100.0)	460 (100.0)	885 (100.0)

Just under 50 percent of respondents invested money in their farms over the period 1989 to 1993. The average level of investment for farmers who invested was 40,809 ECUs per farm. The extent of investment was highest in NI where 56.2 percent of farmers made investments. The corresponding figures for ROI and Greece were 48.5 percent and 37.2 percent respectively. Degree of investment also varied between countries with farmers in NI, investing more on average per farm than was the case for either Greece or ROI. Table 1 shows that 21 percent of farmers in NI invested more than £35,500 ECUs per farm while the percentages in these categories in the ROI and in Greece were much lower. The average investment per farm in NI (for those who made investments) was 46,461 ECUs per farm, in ROI it was 38,948 ECUs and in Greece 30,869 ECUs.

When one examines the investment patterns across the different investment areas of new buildings, existing buildings, machinery, land purchase and land improvement, it is clear that the extent and level of investment in NI for each area is greater than for either of the other two countries. Investment in buildings amongst Greek farmers was particularly low reflecting the different climatic conditions between the two climatic zones. The extent of farm enlargement is occurring at a faster rate in NI and Greece than in ROI with 12 percent of NI farmers buying land compared with just over 6 percent in the ROI and 11 percent in Greece. More than 6 percent of NI farmers purchased land costing in excess of 40,000 ECUs while the corresponding figures for ROI and Greece were 2.9 and 2.2 percent respectively. A very topical issue currently is the type of farmer who is buying land. In NI 56 of the 91 farmers

who bought land were dairy farmers, while in the ROI, 59 farmers bought land, 28 of whom were dairy farmers.

It could be argued that comparing total investment per farm across the three countries favours countries with larger farm sizes as farmers with larger farms could reasonably be expected to invest more. A better comparison might be made if one compared countries on investment per hectare or per ESU (Economic Size Unit). Examining investment per ESU would control for the size of the farm and the intensity of the enterprise.

When the size of farm and intensity of enterprise is controlled for the differences were not as great as observed earlier. NI still showed the highest levels of investment, but there was little difference in the figures for the ROI and Greece.

The fact that over 50 percent of farmers in the Republic of Ireland have not invested suggests that they are downsizing and come mainly from the category identified as resource poor by Phelan and Markey, 1991. They would also correspond to those identified by Van der Ploeg 1994 as being in the *M-Position*. A recent analysis of 13,436 farm households in county Mayo (Frawley, 1997) showed that only 2 percent of farmers in this county could be classified as being in the "progressive sector". This coupled with information (Phelan, 1997) which showed that over 50 percent of primary principal occupation farm households obtained less than £15,000 per annum gross household income, shows the critical situation facing the majority of Irish farm households.

### **Factors Influencing Investment**

There are many factors which influence investment on farms. A review of existing literature suggests that income, availability of loans, availability and level of grants are amongst the most important. Farm characteristics such as type of enterprise, level of management and disadvantage area status as well as household characteristics such as education, stage in the family life cycle and the presence or absence of off-farm employment are also likely to be important.

#### **Credit**

In many parts of Europe during the late seventies and early eighties there was significant investment in farming. Much of this investment was aided by the availability of credit. During the late eighties and early nineties the use of credit by farmers slowed somewhat. It is therefore of interest to examine the use of credit on respondent's farms and to make comparisons between countries.

A very high percentage of farmers stated that they had no outstanding loans in July of 1993 (81.4 percent). There was little difference between NI and the ROI with around 80 percent stating that they had no loans.

Table 2. Distribution of Respondents by Level of Outstanding Loans 1993

ECUs	All	NI	Greece	ROI
None	1735 (81.4)	630 (80.2)	402 (87.4)	703 (79.4)
<10,000	137 (6.4)	48 (6.1)	21 (4.6)	68 (7.7)
10,000-20,000	109 (5.1)	42 (5.3)	22 (4.8)	45 (5.1)
>20,000	150 (7.0)	66 (8.4)	15 (3.3)	69 (7.8)

Fewer people in Greece had borrowed money with over 87 percent of farmers having no loans. The average outstanding loan for those who borrowed money was approximately 26,000 ECUs for NI and ROI and just over 18,000 ECUs for Greece. Respondents were also asked to indicate the proportion of their investment which they borrowed. Big differences occurred here between NI and the ROI with 50 percent of farmers who borrowed money in NI borrowing a quarter of their investment, while in the ROI, one third of respondents borrowed three quarters of their investment. This suggests that farmers in Northern Ireland were able to finance more of the investment through own resources or through grants than was the case in the ROI.

### Grants

Grants are a common method of encouraging and supporting particular types of development. However, many people criticise the way they are applied because they assist mostly those who already have significant resources thus widening the gap between bigger and smaller farms. Table 3 shows the extent and level of usage of grants by survey respondents.

Table 3. Distribution of Respondents by Amounts (in ECUs) of Grants Received 1989-1993

ECUs	All	NI	Greece	ROI
None	1627 (76.3)	496 (63.1)	424 (92.2)	707 (79.9)
<10,000	243 (16.1)	213 (27.1)	19 (4.1)	111 (12.5)
10,000-20,000	114 (5.3)	43 (5.5)	12 (2.6)	59 (6.7)
>20,000	47 (2.2)	34 (4.3)	5 (1.1)	8 (0.9)

The proportion of farmers who obtained grants in NI was much greater than in either Greece or the ROI. Approximately 40 percent of farmers in NI obtained grants while 20 percent did likewise in the ROI and under 10 percent in Greece. It is of interest to examine the significance of the use of credit and grants as a means of stimulating investment and this is shown in Tables 4 and 5. It must be borne in mind, however, that some farm investment may not qualify for grants and some farmers will not seek grants, because of the bureaucratic procedures involved.

Table 4. Relationship Between Level of Outstanding Loans and Total Investment (Average Investment ECUs per Category for Farmers who Invested )

Loans Outstanding (ECUs)	All	NI	Greece	ROI
None	28,739 (n=650)	31,154 (n=289)	25,720 (n=113)	27,283 (n=248)
<10,000	24,950 (n=136)	27,052 (n=47)	22,314 (n=21)	24,312 (n=68)
10,000-20,000	44,265 (n=109)	58,282 (n=42)	31,610 (n=22)	37,369 (n=45)
>20,000	106,315 (n=147)	122,073 (n=64)	80,547 (n=15)	97,169 (n=68)

In 1993 the majority of farmers who made investments over the previous 5 years had no loans for these investments. However, where loans were still outstanding, considerable investments had taken place.

One of the striking points from Table 5 is the extent to which farmers in the different countries have used grants. In NI for example 65 percent of farmers who made investments over the previous 5 years stated that they had obtained grants, the comparable figure for Greece was 25 percent, while for ROI it was 40 percent. Because of the political situation in Northern Ireland the grant giving climate is much better than in the ROI. It would seem that farm households have been able to benefit significantly from the schemes.

Table 5. Relationship Between Level of Grants Used and Total Investment (Average Investment ECUs per Category for Farmers who Invested)

Level of Grant ECUs	All	NI	Greece	ROI
None	33,692 (n=541)	42,006 (n=154)	25,526 (135)	32,986 (252)
<5,000	29,629 (220)	25,554 (150)	69,386 (6)	35,452 (54)
5,000-10,000	48,931 (121)	57,134 (62)	32,648 (13)	42,476 (46)
>10,000	74,101 (160)	88,041 (76)	58,340 (17)	62289 (67)

It is also of relevance to examine the areas of investment of farmers who obtained grants. As expected, machinery and land purchase were prominent areas, but so also was the area of new buildings. On further examination, it was found that this latter type of investment was mainly on dairy farms. There was a significant relationship between the use of grants and the level of investment made. The difference in the levels of investment particularly in Greece and ROI between those obtaining grants of 5,000 to 10,000 ECUs and more than 10,000 ECUs is quite striking. The higher levels of grants obtained were associated with a sizeable quantities of investment. This would suggest that grants have been particularly successful in stimulating investment. Work carried out by Leavy 1992 showed that from the period 1973 to 1988 grant support for agricultural investment in the ROI accounted for 11 percent while for industry it was 15 percent. He also showed that the internal rate of return (IRR) ranged from 24 percent for suckler cows in non-disadvantaged areas to over 45 percent for mid-season lamb in

disadvantaged areas. It could be argued therefore that moneys invested in agriculture give quite a favourable rate of return.

## Income

Income can be viewed as an outcome of investment as well as a factor which influences investment. However, on farms where income is a limiting factor, it is reasonable to expect that priority will be given to family living needs, thus curtailing the amount of income available for investment. It has been noted earlier that over 50 percent of farmers stated that they made no investment over the 5 year period 1989 to 1993. Table 6 shows the relationships between income and investment for the participating countries.

Table 6. Relationship Between Income and Levels of Total Investment (Average Investment ECUs per Category)

Income (ECUs)	All	NI	Greece	ROI
<6530	2,614 (493)	2,855 (152)	1,009 (67)	2,872 (274)
6,530 – 13,120	8,788 (557)	7,741 (176)	3,773 (127)	12,020 (254)
13,120 – 25,490	18,294 (539)	21,305 (166)	10,763 (149)	21,072 (224)
>25,490	47,008 (542)	52,062 (292)	26,734 (117)	53,746 (133)

There was a strong significant positive association between income and investment. This was most pronounced in NI and the ROI. For the sample as a whole, farmers with incomes in excess of 25,000 ECUs made investments almost 18 times that made by farmers with incomes of less than 6,530 ECUs and over 5 times that of those with incomes of between 6,530 ECUs and 13,120 ECUs.

Table 7 shows very clearly that they are those with higher incomes who are best able to avail themselves of grants. Those with incomes in excess of 25,000 ECUs obtained on average 12 times the amount of grants as those in the low income category i.e. 6,530 ECUs or less. Across the three countries, the wealthiest 27 percent of farmers obtained 54 percent of the grant aid. The question must be raised as to the percentage of those farmers who would have invested without grant aid and if the grant aid could have been used more productively to stimulate investment on farms with lower incomes and where income is at risk. While on the one hand there is need to create an efficient industry this must be balanced with equity and proper use of tax payers money. Certainly it could be argued that the 25 percent on the highest incomes, where 8 percent of their total investment came from grant aid would probably have made the investments even if grants were not available.

## Farm characteristics

Farm size and total ESUs on the farm were positively associated with investment, with larger farms having the greater levels of investment. Two-thirds of the total investment occurred on one-third of farms i.e. those farms of greater than 35 hectares in size. The top one-third of farms (in terms of total ESUs) accounted for over 75 percent of the total investment. In NI the figure was 80 percent, in the ROI it was 71 percent and in Greece 62 percent. Farms were

grouped into 7 farming systems using the EU farm type categories. The average investment for the different farm types is shown in Table 8.

Table 7. Relationship Between Income and Grant Level (Average Grant Level ECUs per Category)

Income (ECUs)	All	NI	Greece	ROI
<6,530	330 (493)	449 (152)	148 (67)	309 (274)
6,530 – 13,120	1,094 (427)	934 (175)	-	1751 (252)
13,120 – 25,490	2,320 (538)	3,827 (166)	737 (149)	2,255 (223)
>25,490	4,060 (535)	4,821 (287)	2,341 (115)	3,913 (133)

Olive farmers feature strongly in the 'no investment' category. Other grazing, specialist beef and crop farmers have a higher than average percentage of respondents in the 'no investment' category. Specialist intensive and dairy farmers are the two enterprise types that stand out as having a greater than average percentage of respondents in the high investment category. Dairy farmers also have a percentage of respondents well above average in the medium investment category. Farmers who were classified as mainly dairying invested in excess of 33,000 ECUs on average in their farms in the previous 5 years, in NI the figure was 46,313 ECUs while in the ROI it was 24,365 ECUs. Specialist beef and mixed livestock have higher than average percentages of respondents in the low investment category (less than 13,500 ECUs).

Table 8. Distribution of Respondents Past Investment by EC Farm Type

Investment (ECUs)	Crops	Olives	Dairy	Spec. Beef	Other g'zing	Spec. Int'ive	Mx. c./ l'stock	Total
None	228 (55.6)	76 (88.4)	183 (31.8)	383 (58.4)	170 (58.4)	14 (45.2)	36 (43.9)	1090 (51.1)
<13,500	57 (13.9)	7 (8.1)	94 (16.3)	138 (21.0)	57 (19.6)	-----	10 (12.2)	363 (17.0)
13,500 to 35,500	63 (15.4)	2 (2.3)	120 (20.9)	86 (13.1)	36 (12.4)	3 (9.7)	15 (18.3)	325 (15.3)
35,500 +	62 (15.1)	1 (1.2)	178 (31.0)	49 (7.5)	28 (9.6)	14 (45.2)	21 (25.6)	353 (16.6)
Totals	410 *(19.2)	86 (4.0)	575 (27.0)	656 (30.8)	291 (13.7)	31 (1.5)	82 (3.8)	2131 (100)

\*( ) reflects the percentage of respondents within each farm type

Table 9 summarises the amount of investments made on farms with different enterprises and the levels of grants obtained for Northern Ireland and the Republic of Ireland. From Table 11, it is possible to calculate the percentage of investment that was grant aided. Overall 11 percent of investment in NI was grant aided while in the ROI it was 9 percent. There was quite a degree of variance between farm sizes and farming systems in this regard. The figure of 9 percent can be compared with Leavy's figure of 11% for the Republic of Ireland for the period 1973 to 1988. State grants went from 8 percent in 1973 to a high of 24 percent in 1980 and dropped back again to 7 percent in 1988. The average contribution of grants to total investment was 11 percent over the 15 year period. Thus almost 90 percent of moneys invested came from farmers themselves.

Table 9. Summary of Investments and Grants (ECUs) for NI and ROI by Enterprise and Farm Size

	Northern Ireland		Republic of Ireland	
	Investment	Grant	Investment	Grant
All Farms	26,087 (n=782)	2,871	18,880 (n=885)	1,748
<b>&lt;15 ha</b>				
All	6,520 (n=200)	993	2,599 (n=151)	379
-Dairy	7,755 (n=11)	2,131	1,901 (n=36)	363
-Spec. beef	3,394 (n=122)	428	2,650 (n=85)	361
-Mixed ls.	4,750 (n=48)	608	1,373 (n=24)	203
-Spec. Inten	48,295 (n=11)	8286	21,147 (n=3)	2847
<b>15 - 34 ha</b>				
All	11,901 (n=244)	2,032	11,514 (n=375)	1,358
-Dairy	13,781 (n=55)	2,520	14,699 (n=146)	2,527
-Spec. beef	7,428 (n=127)	1,588	4,483 (n=150)	729
-Mixed ls.	16,237 (n=48)	1,720	1,858 (n=57)	88
-Spec. Inten	85,624 (n=4)	23,516	-	-
<b>34+ha</b>				
All	47,905 (n=338)	4,603	33,442 (n=357)	2,745
-Dairy	59,255 (n=171)	4,558	38,689 (n=155)	3,814
-Spec. beef	34,995 (n=85)	6,390	20,451 (n=87)	1,558
-Mixed ls.	33,163 (n=52)	3,381	18,279 (n=59)	1,594
-Spec. Inten	95,442 (n=4)	1,302	57,950 (n=2)	18,300

## Household characteristics

Farmers with secondary levels of education on average invested twice as much as those with primary levels of education. This relationship was strongest in Greece and weakest in the ROI. A similar situation was observed with regard to the education levels of the farm operators spouse (for married respondents). It was noted that the vast majority of respondents with a particular level of education married spouses who had similar levels of education. Agricultural education was also positively associated with investment. The relationship was strongest in the case of the ROI. Investment where agricultural education was present was over double that where it was absent.

Households based on age of the farm operator and the presence or absence of a successor were divided into three groups. Households which comprised respondents over 50 years of age and where no apparent successor was present were classified as having poor household structure, while those households where the farm operator was young or where a successor or young family was present on the farm were classed as having a good household structure. Middle aged households where no families were present were classed as being in the moderate category. Using this classification, the association between household structure and investment was analysed. Levels of investment were very strongly associated with household structure. Households which were classified as having good household structures had levels of investment over double those with moderate structures and almost 6 times those with poor structures. It is also worth noting that just over 50 percent of households were classified as being in the good category and over 75 as having good or moderate household structures.

It has often been stated that part-time farmers use off-farm income to develop the farm. It is of interest therefore to compare investment levels on part-time and full time farms. However, it must be borne in mind that full time farms are on average larger than part time farms. Investment on farms where the operator was full-time on the farm was almost double that where an off-farm job was present. The trend was similar for all countries. However, when controls were introduced for farm size the picture varied somewhat. There was little difference in the smaller farm size categories between those with and without off-farm employment. However, in the ROI farmers with off-farm jobs who were in the less than 15 hectares category invested twice as much as those without off-farm employment. On larger farms, full-time farmers were the bigger investors.

The presence of off-farm work by the spouse of the farm operator also influenced investment. In NI, investment was similar both where the spouse had and had not off-farm work. In Greece, investment was almost 50 percent higher where the spouse was working and in ROI it was 13 percent higher.

## Future investment

Respondents were asked to indicate their investment intentions regarding land, buildings and machinery. Approximately 30 percent of farmers planned to invest in their farms over the five year period 1989 to 1993. The average planned investment per farm was 20,361 ECUs. This varied greatly across countries with almost 50 percent of Northern Ireland farmers planning to invest while only 10 percent of Greek farmers and 23 percent of ROI farmers planned investment.

## Conclusions

Investment is a critical factor in influencing farm competitiveness. The large numbers of farms that have invested little and where little future investment is planned will eventually have a big influence on the future viability of these farms. This is quite serious, given that 75 percent of households were classified as having good or moderate household structures. Two-thirds of the total investment occurred on one-third of farms i.e. those farms of greater than 35 hectares in size which had higher incomes. Dairying had a strong influence on investment and particularly on investment in land purchase where half the purchases of land were by dairy farmers. The top one-third of farms in terms of total ECUs accounted for over 75 percent of the total investment.

Grants are a common method of encouraging and supporting particular types of development. However, many people criticise the way they are applied because they assist mostly those who already have significant resources thus widening the gap between bigger and smaller farms. The information provided in this analysis supports this hypothesis. The study clearly shows that they are households with higher incomes that are best able to avail themselves of grants. Those with incomes in excess of 25,000 ECUs, got 12 times the amount of grants as those in the low income category i.e. 6,530 ECUs or less. Across the three countries the wealthiest 27 percent of farmers obtained 54 percent of the grant aid. Given current concerns about rural development and increased concerns about the environment arising from intensification, one would seriously question the open ended use of development grants as a mechanism for creating a sustainable rural countryside.

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