FARM INCOME ON FULL AND PART-TIME FARMS – 2005

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Abstract

The Teagasc National Farm Survey (NFS) is undertaken annually to determine the financial situation on Irish farms. The principal measure of the income arising from farming activities is Family Farm Income (FFI) per farm. In addition to analysing farm income by system and size of farm, NFS data can also be analysed for Full-time and Part-time farms to determine the variation in income that occurs. In this paper the variation in FFI on Part-time and Full-time farms is analysed by system of farming. In the NFS Full-time farms are defined as those which require at least 0.75 Standard Labour Units to operate, as calculated on a Standard Man Day (SMD) basis. Farms are therefore divided into Full-time and Part-time on the basis of the estimated labour required to operate their farms as distinct from labour available, which is often in excess of that required. The total number of farms represented nationally is 111,115. Full-time farms represent the larger more commercial sector of farming and in 2005 accounted for 38% (or 42,300) of all farms represented by the NFS. Fifty five percent of Full-time farms were in the two dairying systems with 34% in the drystock systems with the remaining 11% in the Tillage systems. Of the 62% of farms which were Part-time, 88% were in the drystock systems. The average FFI on all Part-time farms in 2005 was €11,372, ranging from €16,933 on Dairy farms to €9,995 on Sheep farms. On 58% of Part-time farms either the farm holder or spouse had an off-farm job and on 94% of farms, there was another source of income – either from an off-farm job, pension or social assistance. Full-time farms are two and a half times the size (ha) of Part-time farms and represent the more commercially viable sector of farming.

Keywords: family farm income, full-time farms, part-time farms, standard labour units

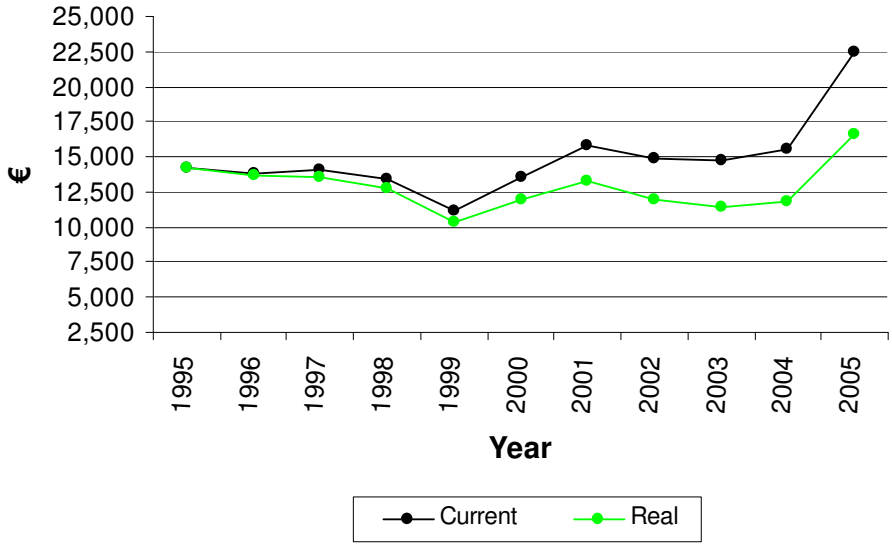
Introduction

The Teagasc National Farm Survey (NFS) is undertaken annually with its primary objective to determine the financial situation on Irish farms by measuring the level of gross output, costs, income, investment and indebtedness across the spectrum of farming systems and sizes,. The NFS is responsible for provision of data on Irish farms to the EU Commission. The principal measure of the income arising from farming activities is Family Farm Income (FFI) per farm, representing the financial reward to the family labour, management and capital investment in the farm business. This is calculated by deducting all the farm costs (direct and overhead) from the value of farm gross output. It does not include income from non-farming sources and thus may not be equated to household income. For 2005 year there are 1177 farms included in the analysis, representing 111,115 farms nationally. Figure 1 shows average Family Farm Income (FFI) per farm in current and real terms over the period 1995 to 2005. The data shows farm income in 2005 was 58% above that for 1995 in current terms and when inflation (CPI) is taken into account that FFI has increased from €14,236 in 1995 to €16,651 in 2005, an increase of 17% in real terms. The trend in FFI in current and real terms is shown in Fig 1. The main reason for the increase shown from 2004 to 2005 is the once-off carryover of arrears of direct payments from 2004.

For all farms in 2005 FFI increased from €15,557 per farm in 2004 to €22,460 in 2005 – an increase of 44.4%. This phenomenal increase in 2005 farm incomes was due mainly to the change in EU policy from a coupled to a decoupled system, implemented in Ireland in the 2005 year. In 2005 Irish farmers received an average once-off payment of €5,266 per farm due to the carry-over of arrears from the 2004 coupled

direct payments. Thirty four percent of the increase in average farm income was due to this exceptional payment viz. Family Farm Income (FFI) would have increased by 10.4 per cent from 2004 to 2005 were it not for this direct payment arrears. Across the different farm systems, size groups and regionally there is variation in FFI per farm.

Figure 1: Family Farm Income per Farm (€) 1995- 2005



Full-time and Part-time Farms

In addition to analysing farm income by system and size of farm, NFS data can also be analysed for Full-time and Part-time farms to determine the variation in income that occurs. This paper focuses on the variation in FFI on Part-time and Full-time farms. Thirty eight per cent of the total population (or 42,300 farms) are classified as Full-time farms. During 2006 a supplementary survey on the NFS sample was also undertaken to determine farmers' perception as to whether they were full-time or part-time farms. Results of this are also further analysed in this paper.

In the NFS Full-time farms are defined as those which require at least 0.75 Standard Labour Units to operate, as calculated on a Standard Man Day (SMD) basis. , whilst Part-time farms require less than 0.75 labour units Farms are therefore divided into Full-time and Part-time on the basis of the estimated labour required to operate their farms as distinct from labour available, which is often in excess of that required. Standard labour requirements are measured in SMD for each farm enterprise and these are used to estimate overall labour required to operate the farm. A SMD is based on eight hours of work supplied by a person over eighteen years of age. The number of SMD required per hectare for different crops and per head for various categories of livestock is used to calculate the total number of SMD required to operate the farm. The presence of an off-farm job is not taken into consideration in the definition.

Figure 2: Population of Full-time and Part-time Farms - 2005

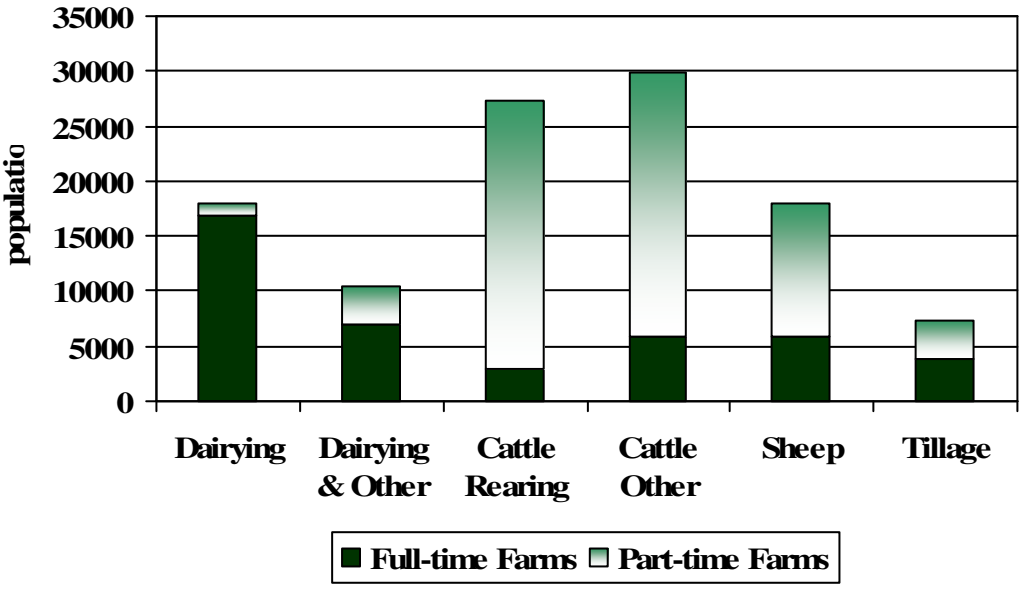


Figure 2 shows the population of Full-time and Part-time farms, by system, in the NFS for 2005. The majority of part-time farms are in the three drystock systems, namely Cattle Rearing, Cattle Other and Sheep whilst the majority of full-time are in the specialist Dairying system.

Table 1: Full-time and Part-time Farms by System of Farming - 2005

System	Dairying	Dairying Other	Cattle Rearing	Cattle Other	Sheep	Tillage	All Systems
Full-time Farms							
% of Population	15	6	3	5	5	4	38
UAA (ha)	45.8	67.3	53.7	64.9	69.0	88.3	59.6
Family Farm Income (FFI) €	41,357	49,102	29,240	42,132	28,529	44,709	40,483
Direct Payments €	19,712	35,632	35,565	49,372	34,472	43,503	31,724
DPs as a % of FFI	48	73	122	117	120	97	78
% of Farms Off-farm Jobs	51	41	50	45	57	47	49
Part-time Farms							
% of Population	1	3	22	22	11	3	62
UAA (ha)	20.0	20.3	24.2	21.9	25.4	27.7	23.5
Family Farm Income (FFI) €	16,933	8,807	10,812	12,481	9,995	13,209	11,372
Direct Payments €	7,771	12,083	14,280	16,444	12,957	14,013	14,567
DPs as a % of FFI	46	137	132	132	130	106	128
% of Farms Off-farm Jobs	42	39	62	60	55	57	58

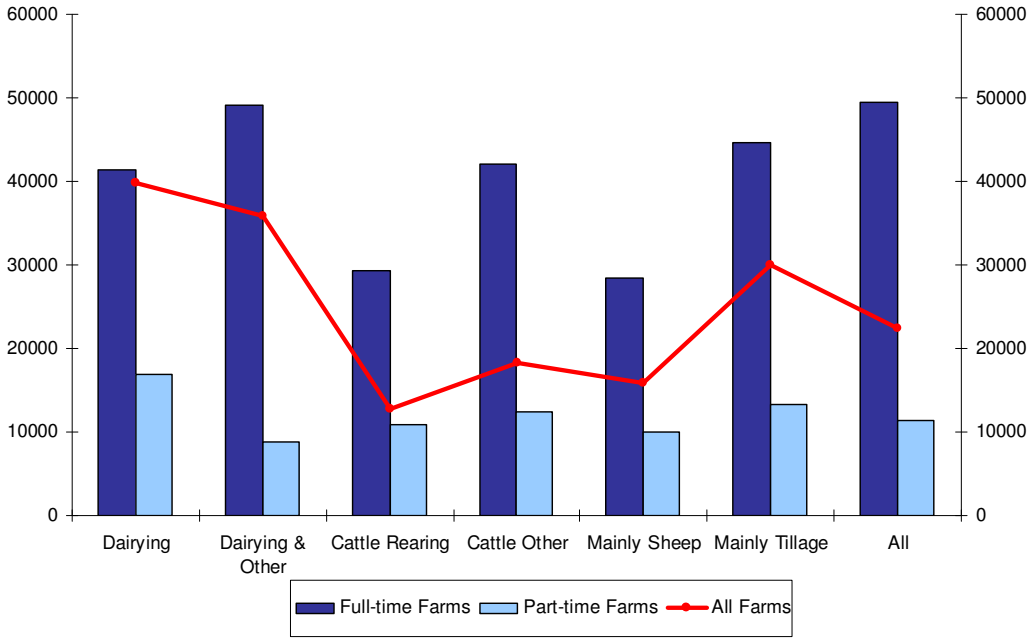
Source: Teagasc, National Farm Survey 2005

Data in Table 1 show FFI, farm size measured in Utilised Agricultural Area (UAA) Direct Payments (DP) and off-farm employment for Full-time and Part-time farms by system of farming in 2005. The total number of farms represented nationally is 111,115 and population estimates are shown for each category of farms. Full-time farms represent the larger more commercial sector of farming and in 2005 accounted for 38% (or 42,300) of all farms represented by the NFS. Although Full-time farms account for only 38% of the population they contribute over two and a half times of gross output compared to the Part-time farms. Fifty five percent of Full-time farms were in the two dairying systems with 34% in the drystock systems and the remaining 11% in the Tillage systems. As highlighted also in Table 1, the average FFI on Full-time farms was €40,483, ranging from €49,102 on Dairying and Other System to €28,529 on the Sheep System. Direct payments contribution to FFI ranged from 48% on Dairy farms to 122% on Cattle Other farms and was 78% for all farms. Overall either the farm holder or spouse had an off-farm income on 49% of all Full-time farms. The incidence of off-farm jobs was higher on Full-time dairy farms than on Part-time dairy farms at 51%. However, on 18% of Full-time farms the farmer had an off-farm job, while on 38% of farms the spouse had an off-farm job.

Of the 62% of farms which were Part-time, 88% were in the drystock systems. The average FFI on all Part-time farms in 2005 was €11,372, ranging from €16,933 on Dairy farms to €9,995 on Sheep farms. Figure 3 highlights the difference in FFI between Full-time and Part-time farms and compares this to FFI on "All" farms. Direct payments as a percentage of FFI ranged from 46% on Dairy farms to 137% on

Dairying and Other farms. Direct payments (DP) include all subsidies paid to farmers and in 2005 include arrears from the 2004 accounting year plus the Single Farm Payment (SFP), Rural Environment Protection Scheme (REPS) and Disadvantaged Area Compensatory Allowance Scheme (DACAS). On Drystock farms DP account for more than 100% of FFI when market based output is not sufficient to cover total costs. On 58% of Part-time farms either the farm holder or spouse had an off- farm job and on 94% of farms, there was another source of income – either an off-farm job, pension or social assistance. Farmers on part-time farms were older (56 years) than those on Full-time farms (51 years) and 62% were married compared to 75% on Full-time farms.

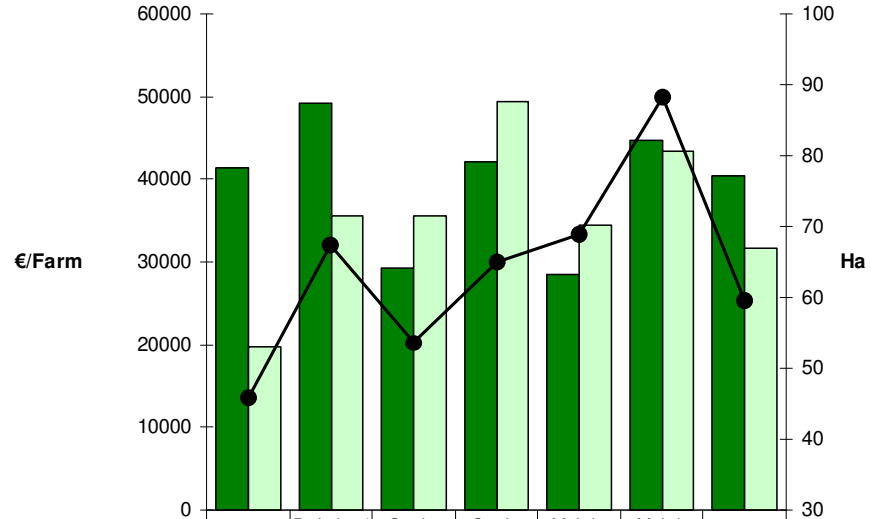
Figure 3: Family Farm Income (FFI) on Full-time and Part-time Farms – 2005



Data in Fig. 4 details FFI, direct payments and farm size for the full-time farms by farming system. In 2005 the normal pattern of income distribution between full-time farm systems changed due mainly to the unusual direct payment situation. The Dairying Other System and Tillage system had the highest FFI per farm at €49,102 and €44,709 respectively, followed by Cattle Other at €42,132. In previous years the Specialist Dairy system and Tillage always had the highest farm incomes when confined to full-time farms.

Details of FFI, direct payments and farm size for Part-time farms are detailed graphically in Fig. 5

Figure 4: FFI, Direct Farm Payments/Subsidies for Full Time Farms by Farming System - 2005



	Dairying	Dairying/ Other	Cattle Rearing	Cattle Other	Mainly Sheep	Mainly Tillage	All
FFI	41357	49102	29240	42132	28529	44709	40483
Direct Payments	19712	35632	35565	49372	34472	43503	31724
Farm Size (Ha)	45.8	67.3	53.7	64.9	69.0	88.3	59.6

Approximately 68,800 of farms were part-time with an average FFI of €11,372, ranging from €16,934 on the specialist Dairy Systems to €9,995 on the Sheep system. The average cash income on part-time farms was €13,583 in 2005 compared to €9,015 in 2004. Average direct payments and subsidies were €14,567 in 2005 i.e. 128% of FFI, reflecting the general situation on drystock farms (88% of part-time farmers in drystock systems) where output from the market place is insufficient to cover total production costs. Farmers in these drystock systems, and indeed in the Mainly Tillage system, will need to re-plan their enterprises and enterprise mix to take account of the decoupled policy introduced in 2005.

On 58% of these Part-time farms either the farmer or spouse had off farm employment and on 94% of farms there was another source of income – either from off farm job, pension or social assistance. The farmers on part-time farms were older (56 years) than those on full-time farms (51 years) and 62% were married compared to 75% on full-time farms.

Summer Survey 2006

In Summer of 2006 an additional questionnaire was undertaken on the NFS sample. One of the questions included on this survey was to determine farmers' perceptions as to whether they regarded their farm as a Full or Part-time farm based on the standard labour unit requirements. This survey represented a population of over 95,000 farmers, with over 44.,000 of those farmers regarding their farm as Full-time. Results by system of farming are detailed in Table 2. Overall 46% of farmers considered their farm to be Full-time, with the highest incidence occurring in the Dairying system, at 85%.

Table 2: Do you consider this farm a full-time Farm?

System	Dairying	Dairying Other	Cattle Rearing	Cattle Other	Sheep	Tillage	All Systems
			%				
Yes	85	67	30	33	43	45	46
No	15	33	70	67	57	55	54

Source: Summer Survey – NFS 2006

When results of the survey are compared with farms which are actually calculated as Full-time in the NFS, it is interesting to note that only 35% of NFS farms are calculated as Full-time as compared to 46% that regarded their farms as Full-time. The highest incidence of Full-time farms occurs in the Dairying system with 93% of farms in this system calculated as Full-time, whilst only 85% of farmers in this category regarded their farm as Full-time. The drystock farms, namely Cattle Reraing, Cattle Other and Sheep farms, all overestimated their labour requirements (SMDs) with Tillage farms scoring exactly the same as that which was calculated for their farms.

Table 3: Calculated on NFS as Full-time Farms

System	Dairying	Dairying Other	Cattle Rearing	Cattle Other	Sheep	Tillage	All Systems
			%				
	93	55	10	17	29	45	35

Source: Summer Survey – NFS 2006

Conclusions

Full-time farms are two and a half times the size (UAA) of Part-time farms and represent the more commercially viable sector of farming. Over half of all Full-time farms are in Dairying Systems even though Dairy systems only account for 25% of all farms nationally. The income was higher on the Full-time farms, with the highest FFI in the Dairying Other system. Direct payments as a percentage of FFI were higher on the Part-time farms. Full-time farms were demographically more viable than Part-time farms, with a higher percentage of households having at least one member below 45 years of age. More farms consider themselves as Full-time farms than those defined as Full-time in the NFS. Overall 35% of NFS farms are calculated as Full-time as compared to 46% that regarded their farms as Full-time farms. The highest incidence of Full-time farms occurs in the Dairying system with 93% of farms in this system calculated as Full-time, while only 85% of farmers in this category regarded their farm as Full-time. Drystock farms overestimated their labour requirements (SMDs) with more farms in these systems considering themselves Full-time than what were actually calculated as Full-time farms.

References

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STRATEGIES OF POLISH FARMERS – AN ATTEMPT OF CLASSIFICATION

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Abstract

In the paper results of the study on strategies of Polish farmers are presented. For a sample of 100 commercial family farms researched in the year 1996 the survey has been repeated in the year 2006. Ex-post analysis of farmers' decisions in the key strategic areas revealed a distinct pattern of behavior which allowed to identify six basic types of strategies. Growth oriented strategies, in particular strategy characterized by expansive increase of farm area and scale of animal production resulted in a noticeably high increase of agricultural income. There is also a relatively large group of farmers implementing reduction strategies. This leads to the conclusion that ongoing structural changes in Polish agriculture may be accelerated in the near future.

Keywords: Polish farmers, strategy

Introduction

Agriculture was one of the first sectors of the Polish economy to experience the effects of economic transformation, which began in 1989. Market liberalization resulted in the increase of prices of inputs, largely due to the removal of subsidies, as well as the imports of agricultural and food products competing successfully with domestic production. This led to a decrease of real agricultural income [Woś 1998, Józwiak 1998]. Since mid 1990s agricultural policy in Poland has undergone further changes due to preparations for accession to the EU, and since 2004 Polish agriculture has been included in the Common Agricultural Policy. The dynamic changes in Polish agriculture at the end of the previous century and the beginning of the 21st century brought about many threats, but also created opportunities for farmers. The vast majority of farmers from commercial farms took advantage of these opportunities, adjusting their farms to the new policy and market environment. Some, however, were not able to face the new challenges, which resulted in a deterioration of their financial situation.

In the study, on which this paper is based, an attempt has been made to find out what strategic choices farmers had made before the Polish accession to the EU and how effective farmers' strategies were. In general, it is rather unique that farmers, especially from small scale family farms, develop any formal, strategic plans. However, it does not mean that they do not apply any kind of long-term strategies. These are visible in ex-post research, when a course of actions and decisions made are analyzed.

This survey is based on the assumption that every farmer implements a strategy to some extent, even without being aware of the theory of strategic planning and management. According to H. Mintzberg [1989, 1992], strategies are not only a result of formal planning process, but also a reflection of evolutionary character of organization's functioning. As Mintzberg states, all decisions and actions within an organization create a certain pattern, which might be interpreted as a kind of strategy.

Methodology

The panel survey was conducted in 2006 on a sample of 100 commercial farms from various regions of Poland. The same farms had been researched in a different project carried out in 1996[47]. In both cases structured interviews were conducted to obtain the data.

In 1995, the average size of the farm was 20,6 ha of agricultural land. At that time, the average farm size in Poland was about 6 ha. This is an indication that all the researched farms belonged at that time to the group of family commercial farms.

Detailed interviews enabled a comprehensive analysis of the farms' organization and performance, and provided information on changes that occurred in the surveyed farms between 1995 and 2005. The changes observed within the farms became the basis for identification of strategy types implemented by farmers. In order to identify the strategies, areas of farm management which can be considered strategic have been distinguished. Furthermore, methods of multi-dimensional analysis (cluster analysis and principal components analysis – PCA) have been applied.

Identification of strategies realised by farmers

Following some suggestions from the general theory of strategic decisions [e.g. Niedzielski and Fedejko 1995, Olson 2001] areas of strategic decisions (of strategic importance) possible to examine in farm businesses have been determined:

Farm area – differences in the farm size were expressed by the percentage change of the agricultural land between year 1995 and 2005 and also by percentage share of land lease;
Investment activities – described by a factor calculated as follows: value of the investment realised between 1995-2005 (in fixed prices) divided by the value of fixed assets in 1995;

Type of investment financing – described by the indebtedness factor of the assets due to loans taken and by the factor determining the share of EU subsidies in financing farm investments

Animal production scale and importance – described by the percentage change of livestock units number on a farm between 1995-2005 and the share of revenue from animal production in the overall farm revenue

Crop production intensity – expressed by the percentage change of material costs calculated per hectare of crop production

Production specialization degree – expressed by the factor describing the share of revenue from main activity in the overall farm revenue

Income source diversification – expressed by the factor describing the share of non-agricultural income in the overall farm income

Strength of farmer – customer links – expressed as the share of production delivered under long-term agreements in the overall sales value.

[47] Majewski E., 2002. Economic and organizational conditions for dissemination of Integrated Farming System in Poland. Wyd. SGGW, pp. 190.

Thus established indicators were used for identification of farmers' strategies. The first stage of the analysis showed farms, which in 2006, relied mainly on non-agricultural sources of income. Such farms accounted for 10% of all the farms and their rate of income from non-agricultural sources was more than 50%. They were excluded from statistical analysis because the majority of variables used for describing the strategy characterize agricultural functions of a farm, whilst in this group non-farming functions prevail over the agricultural ones. The strategy for this group of farms was named "reduction strategy with income diversification". Since variables describing diversification of income sources in other farms did not noticeably differ, they were excluded from further analysis.

In order to divide the rest of the farms into groups of similar strategic functioning areas, a two-phase cluster analysis was conducted. Classification into groups was based on the k-mean method, which due to optimisation enabled the formation of k-clusters. They are characterised by a maximum variability between each other and a minimum variability within each one [Internet Handbook Statsoft]. The use of this method means, however, that the researcher has to make an arbitrary decision on the number of clusters [Aldenderfer and Blashfield 1984]. In order to avoid this, initial analysis using hierarchical agglomeration method (Ward method, Euclid distances) was conducted in phase one, as suggested by Guidici [2003, after Harańczuk 2005]. This led to accepting 5 clusters as an optimum solution.

In the second phase, the iterative k-mean method was used to group the farms into 5 clusters. Calculations have been done using Cluster analysis module of Statistica. The final classification of farms into groups and the characteristics of each cluster according to the strategic areas is shown in Table 1.

Table 1: Average values of variables describing farm strategic function areas

Cluster		Variables									
No.	No of farms	Farm size change [%]	Land lease [%]	Investments	Indebtedness	Use of EU funds for investment [%]	Change in scale of animal production [%]	Importance of animal production [%]	Change in crop production intensity [%]	Specialization [%]	Customer links sterength[%]
1	6	-40	3	0	1	0	-4	66	-66	65	0
2	19	-2	4	24	3	0	43	70	-13	75	33
3	29	108	35	126	20	7	222	81	3	82	58
4	29	65	16	17	13	0	94	71	-12	72	22
5	7	82	12	16	7	32	-100	0	71	100	33
6*	10	-14	3	16	1	0	-7	39	-7	83	5

*group with dominance of non-agricultural income, excluded from cluster analysis
Source: Own research.

The quality of this division was tested using multi-dimensional variance analysis, which confirmed the statistical significance of differences between the mean values of the characteristics of every group of farms.

Thus determined clusters may be referred to as strategic groups which, according to the assumptions made, consist of farms implementing similar strategies. The method of classifying the strategies applied in strategic management is usually a two-dimensional matrix. It facilitates determination of the strategy or construction of the strategic groups' map. In case of a multi-dimensional model, as in this situation,

where it takes into account different aspects of farm's operations, the application of the classical approach proved to be impossible because of interpretation problems. That is why it was decided to simplify the model by applying factor analysis. The aim was to reduce the number of variables characterising a farm and achieve a better recognition of the data structure [Rummmel 2002, Trucker and MacCallum 1997]. This was supposed to facilitate drawing conclusions about the farmers' strategies in different clusters. In this analysis the principal components analysis (PCA) was applied. Before conducting factor analysis, correlation between the primary variables was checked using the correlation matrix. Because the average correlation coefficients were bigger than 0.3, factor analysis was necessary [Sokołowski, Sagan 2005]. The number of main components was determined using the Keiser criterion (only factors whose value was above 1 were kept/left). Three separated, mutually independent, principal components jointly accounted for almost 60% variances of the original variables analyzed [Table 2].

Table 2: Values of selected principal components

Principal component no.	Eigenvalue	% total variance	Cumulated Eigenvalue	Cumulated % total variance
1	2,9	29	2,9	29
2	1,9	19	4,8	48
3	1,1	11	5,9	59

Source: Own research.

In order to determine relation between the selected principal components and original variables, factor loadings were analyzed [Table 3].

Table 3: Factor loadings

Initial variable	Selected principal components		
	Factor 1	Factor 2	Factor 3
AREA	0,82	0,05	0,06
LEASE	0,61	0,01	-0,27
INVEST	0,77	-0,15	0,27
DEBTS	0,64	0,31	-0,24
FUNDS	0,13	0,14	0,80
SCALE	0,73	-0,23	0,32
LIVEST	0,38	-0,68	-0,04
INTENS	0,08	0,81	-0,04
SPEC	0,22	0,14	0,45
SALE	0,01	0,73	0,28

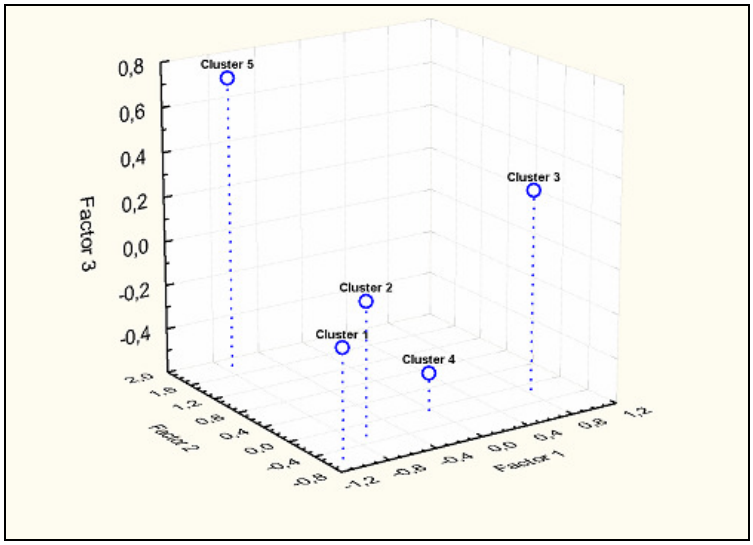
Source: Own research.

They might be interpreted as correlation coefficients between the processed variables and the primary variables [Internet Handbook Statsoft]. Factor loadings were subject to Varimax rotation in order to achieve more clarity. The character of variables correlated with different factors enables different interpretations of the situation [Rószkiewicz 2003]. The analysis showed that factor one (principal component) is loaded mainly by such variables as: area changes, rate of land lease, investment coefficient, indebtedness coefficient and changes in animal production scale. The variables grouped in this factor pointed to the development features. Factor two was related mainly to the production type and with the variable determining the strength of farmer – customer links. High value of this indicator suggests great importance of crop production and lower of animal production. The third factor, of the smallest weight in explaining the overall variability, was loaded mainly by the variable describing the rate

of EU subsidies and, to a smaller extent, by the one describing production specialization degree. The results of the factor analysis suggest that the variables grouped in the first factor were of key importance for explaining the overall variability. It means that factor one had the greatest influence on the strategies adopted by farmers.

In the further part of the analysis, factor values were calculated in order to estimate the importance of each factor for the identified clusters of farms. Values of individual factors were calculated for every farm and then the mean values were derived for each cluster [Figure 1]. The received values of factors do not have the straightforward representation in figures but can only be interpreted in terms of their overall meaning. [Wójcik 2006], which points at the difference in their position in the 3D space. The analysis shows that clusters number one and two have reached the lowest values for factor one suggesting growth. At the same time, the farms from group one are characterised by a low weight of factor number two, which means decreasing intensity and rather low importance of crop production. The highest value of factor one (growth) was reached by farms from cluster 3, while farms from cluster 4 were in the middle of the range. Cluster number 5 reached the highest values of factor two, which suggests high importance of the intensity of crop production and low of animal production, and of factor three, which means large share of EU subsidies in investment financing and high degree of specialization (similar to cluster 3).

Figure 1: Factor values for the determined groups of farms.



*Source: Own research***.**

The analysis, however, did not give the answer to the question of what strategies are implemented by farmers in each group. Still, it was helpful in interpreting the volumes of the variables characterising particular clusters [table 1]. The results of the factor analysis and the original parameters describing particular clusters helped determine the strategy types applied by farmers in the identified groups:

Cluster one: Simple reduction strategy. The farms in which this strategy was implemented, were characterized by low values of all three factors selected in the factor analysis. Compared to the initial situation (original parameters), the average farm area in this group was reduced by 40 % and intensity decreased. There were no investments made between 1995 and 2005. Moreover, farms in this group are of the lowest degree of specialization and have no formal links with customers.

Cluster two: Continuation strategy. These farms showed slightly higher values of all three factors. Comparison with the initial situation shows that the area of agricultural land has not changed. Similarly, the scale of animal breeding and production intensity have remained the same. The scale of investment

did not guarantee the replacement of fixed assets. The links between farmers and customers were of medium strength.

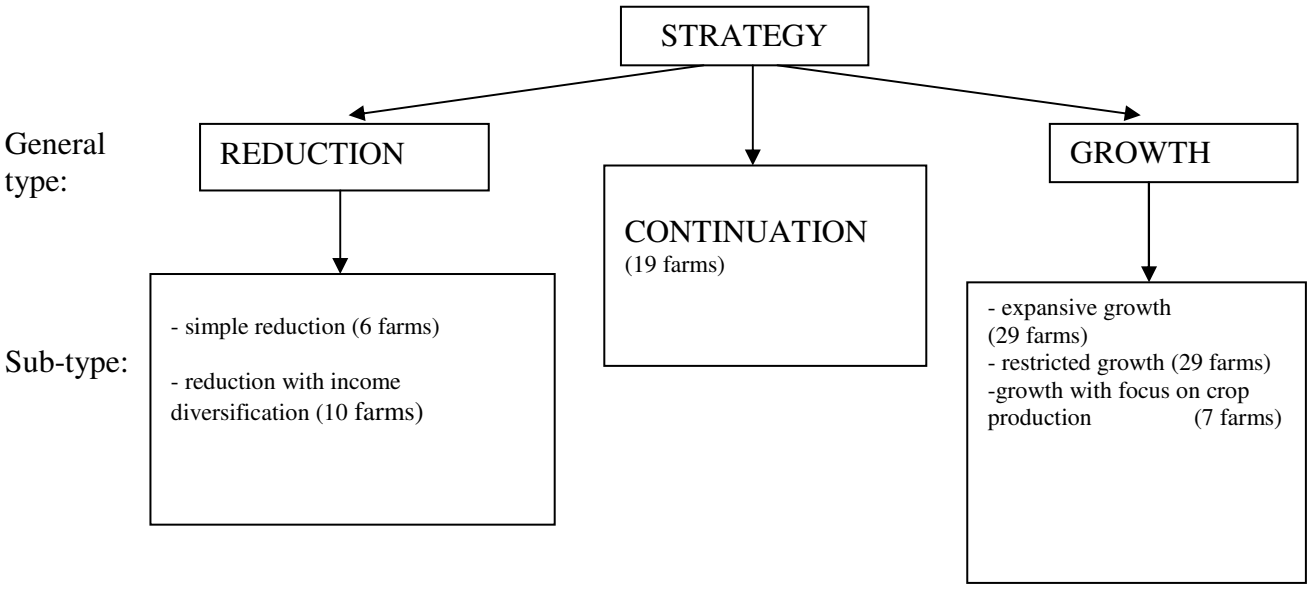
Cluster 3: These farms showed the highest level of the growth related factor. The area of agricultural land has more than doubled and the number of animals has increased by 220%. Investments between 1995 and 2005 exceeded the value of the fixed assets in 1995. The farms in this group have the highest share of land lease and the highest indebtedness rate. Animal production is of the greatest importance within this group, same as links with customers. The strategy for this group is called Expansive growth strategy.

Cluster 4: The value of factor one in this case was lower than in cluster three but higher than in all other clusters. Values of factor two and three were at the average level. The analysis of the initial variables showed that these farms are similar to farms in cluster three in terms of direction of changes but the scale of changes is much lower. Therefore, the strategy for this group is called Restricted growth strategy.

Cluster 5: The farms in this cluster had similar value of factor one as farms in cluster two and the highest values of the two other factors. More detailed analysis showed that the relatively low value of factor one is caused by the abandonment of animal production, although all the other factors clearly indicate growth. In this case, animal production proves to be of no importance and crop production is intensified. That is why the strategy for these farms is called Growth with the focus on crop production strategy.

The last group selected at the beginning of the analysis consists of farms relying mainly on non-agricultural sources of income. The strategy for these farms is called Reduction strategy with income diversification. For these farms agricultural production was constantly reduced (reduction in area, animal production scale and crop production intensity). The observed value of the investment ratio is the result of fixed asset purchases made for other than agricultural activities (e.g. for services). Figure 3 presents obtained strategy types**.**

Figure 3: Strategies accomplished in the researched group of farms.



Strategy and financial performance of farms

The characteristics of farms belonging to different strategic groups clearly indicates that all growth oriented strategies have resulted in significant improvement of economic performance of farms (table 4). Farms with reduction strategies noticeably decreased the production scale in the period 1995-2005 and

the level of net farm income in the year 2005 was close to zero. In diversified farms off-farm incomes were too low to compensate sufficiently the reduction of farm income and, consequently, the disposable household income decreased in relation to the year 1995.

Table 4: Farms' characteristics according to the strategy applied.

Strategy			Simple reduction	Reduction – diversifi-cation	Continuation	Expansive growth	Restricted growth	Growth with focus on crop production
Farmer's age			55	46	48	41	42	45
Area of agricultural land [ha]	1995		19,3	16,3	18,6	25,2	20,5	19,5
	2005		11,6	13,1	18,3	52,4	32,3	35,5
Number of animals [livestock unit] 1995	1995		8,7	6,3	12,8	16,9	12,7	5,2
	2005		7,4	5,8	18,3	54,4	24,7	0,0
Net farm income [thousand PLN]	Per farm	1995	-3	13,3	7,2	30,5	10,1	-3,8
		2005	0,8	-1,6	28,1	95,0	44,0	24,3
	Per fully employed person 2005		0,4	-1,4	15,5	40,2	20,5	14,7
Disposable income [thousand PLN	Per farm	1995	29,9	38,1	47,8	75,5	48,3	42,4
		2005	19,8	29,8	54,4	138,1	72,0	42,9
	Per family member 2005		7,0	6,9	13,1	28,4	15,1	6,8

Farms which apply continuation strategy achieve relatively good results due to high productivity of land and efficiency of investments. Slightly lower incomes in 2005 were achieved by farms which pursued the strategy of "focusing on crop production". It must be stressed however that production on these farms was dominated by cereals, which are less profitable than other crop production activities. Despite the limited growth of scale of production, farms belonging to this group registered the biggest growth of agricultural income in the period of 1995-2005.

The highest income level was achieved by farms which applied „expansive growth" strategy which led to a significant increase in both the land area as well as the scale of animal production. It should be stressed that in 1995 farms of this group were characterized by only slightly bigger production potential while the level of agricultural income was considerably higher. The above leads to a conclusion, that thanks to the increased economic power, these farms were capable of expansive growth, which resulted in increased distance to the other farms, in terms of both, production scale and profitability.

Conclusions

The ex-post research showed that long-term activity of farmers revealed a distinct pattern of behaviour which may be called a strategy. The proposed method proved to be an effective way to conduct identification and classification of strategies implemented by farmers. In the examined group of commercial farms there were three basic strategy types applied – reduction, continuation and growth -

which comprised sub-strategies showing differences in directions of changes in farm organization. Growth strategies were applied by over 60% of the examined farms.

Strategy types adopted by farms strongly correspond with the nature of structural changes occurring in Polish agriculture. Over the recent years considerable portion of agricultural land has been transferred to larger farms; similarly, the process of animal concentration has advanced. Appearance of a large number of farms applying growth strategies and improving their financial standing allows us to anticipate continuation of the present trend of farm structural changes in the years to come. The rate of changes may be considerably accelerated if we assume that the number of farmers retiring from farming (e.g. because of old age) will increase, which would release limitations on the land resources.

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