

Greek Farms Viability for Business Financial Support

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Abstract: The aim of this paper is to examine the economic profile of the Greek farms according to their viability level and the financing regime linked to their investments, through the programme “Agricultural Development–Restructuring of the Countryside 2000-2006”. At the outset, the Cluster Analysis methodology is applied and a typology is developed of farms incorporated into the Regional Operational Programmes. The typology is determined by five economic parameters (family labour, gross income, variable costs, fixed production costs and subsidies), pertaining to the farms’ current status as described in the business plans. According to the results, there are three farm clusters with a different viability profile. These clusters have low, medium and high values of the parameters, respectively. First cluster is characterised by low capital intensity and productivity, second cluster consists of farms with medium capital intensity and productivity and with high proportion of the subsidies in the family farm income and finally third cluster comprises farms with high capital intensity and productivity. It is recommended, policy measures to be diversified among the three clusters and focus on incentives in the first cluster, on continuing the investment financing in the second cluster, which is the one most severely affected group by the recent reform of the Common Agricultural Policy and financing of special actions for the farms of the third cluster. An additional finding of the study is that the viability profile of the clusters is related to the educational level of the farmers. It is essential to improve the farmer’s educational level in order to be increased the farms viability level and achieved a more efficient implementation of the funding programme. Finally, it is believed that the results and the subsequent recommendations of this research will help the policy makers to plan an effective business financial support scheme in the agricultural sector.

Key words: Financial support · viability · business plans · typology · cluster analysis · agricultural policy

INTRODUCTION

After a decade of radical changes and reforms on global level, Greek agriculture is today going through a period of particular importance for its future development. Its adjustment to the new, globalized environment will essentially depend on the terms and conditions that will affect the growth and improvement of its structures and reinforce the competitiveness of Greek products on the international market [1].

The limited competitiveness of the Greek agricultural sector has been studied and recognized by numerous researchers [2,3]. Various factors of an economic, social and demographic nature, such as the small size of agricultural plots, multi-fragmentation, the use of outdated technology, deinvestment, high production costs, the absence of any link between production and the marketplace, the age and educational profile of those

involved in agriculture, have all contributed towards a constant deterioration of the conditions governing the function and trade activities of Greek agricultural farms and have ultimately led to a reduced level of competitiveness. An indicative example is the fact that out of approximately 820,000 agricultural farms in Greece, it is estimated that less than 40% (320,000) are financially viable (4).

A major opportunity for improving the competitiveness of Greek agriculture was presented by the 3rd Community Support Framework (CSF). Within the framework of the Operational Programme “Agricultural Development – Restructuring of the Countryside 2000-2006”, the project “Investments in Agricultural Farms” aims to promote investments in agricultural farms, with the primary objective of creating the necessary preconditions for improving the economic level of the farms in combination with the sustainable development of the

agricultural sector. The beneficiaries of the programme are natural persons or partner farms active in the field of primary production of agricultural or stock-breeding products and in their initial processing and trade. These beneficiaries are invited to present a detailed dossier with full details concerning the present level of economic viability of the farm (existing status) and also select the target level that the farm should reach after the Improvement Plan has been completed (future status).

The basic objective of these programmes (through the business plans) is to ensure funding for investments in agricultural farms, with the ultimate aim of upgrading their infrastructure and applied technology and securing the transition of farms from their present level of economic viability to a higher and more secure level. Thus, the business plans can function as a tool for transforming Greek agriculture, in its present form, into a business venture, in which new technologies, innovation, modern know-how and infrastructure will all serve to strengthen the competitive character of Greek agricultural farms.

The development of typologies for agricultural areas has been studied extensively, particularly in relation to plant production [5-8]. Consequently, various homogeneous zones of agricultural development have been defined, i.e. spatial units-clusters with common or similar characteristics, regarding the applied cultivation systems, the available production factors and common development problems. Nevertheless, there are no research papers that arrive at conclusions concerning the implementation of any agricultural or funding policy through the application of typologies.

The present paper aims to study the profile of the farms and analyze the business plans with which they participate in the project "Investments in Agricultural Farms" of the Operational Programme "Agricultural Development – Restructuring of the Countryside 2000-2006". Furthermore, the paper also includes proposals on agricultural policy measures aiming at a more effective implementation of the funding programme for investments in agricultural farms.

MATERIALS AND METHODS

The data used in this study was obtained from the business plans (improvement plans) submitted to the Region of Central Macedonia authority. In total, during the three planning periods for the years 2001-2002, 181 improvement plans were received from the following prefectures: Thessaloniki, Pella, Imathia, Kilkis, Serres and Chalkidiki (Table 1). Of these, for the purposes of

Table 1: Geographical distribution

Prefectures	Number of business plans	Percentage (%)
Thessaloniki	40	33.6
Pella	22	18.4
Imathia	17	14.3
Kilkis	14	11.7
Serres	16	13.5
Chalkidiki	10	8.5
Total	119	100.0

Source: Region of Central Macedonia Authority

similarity and comparability between farms, 62 improvement plans regarding stock-breeding enterprises were excluded from the sample. Thus, the final sample consists of 119 farms involved in plant production, which develop substantial investment activities.

Using the improvement plans as a basis, we determine the basic financial results of the farms, such as family labour, gross income, variable costs, fixed production costs and the percentage of subsidies [9]. More specifically, family labour (FL) refers to the value of family labour (hours of work \times daily wage of an unskilled worker) and variable costs (VC) refer to the cost of third-party seasonal work (operating machinery or manual), the cost of materials (seeds, fertilizers, medication, heating, etc.) and the circulating capital interest. Fixed costs (FC) refer to the annual charge of the fixed capital costs that include depreciations, foreign capital interest, net property interest, fixed capital maintenance, fuel-lubricants, rent for third-party land, multi-annual plantations, buildings, land reclamation and machinery, as well as insurance costs. Gross income (GI) refers to the farm's income from the sale of the quantities produced (primary and secondary products) and its revenue from other sources, including subsidies. The percentage of subsidies reflects the share of the total subsidies in the family farm income.

In order for farms to obtain financial assistance under the framework of this policy, they must be able to prove their financial viability, mainly through the use of the following indicators [10,11]:

- Family Farm Income (FFI).
- Used family labour on the farm counted in Family Work Unit (1 FWU=1750 hours).

Based on the above-mentioned indicators, farms are divided into the following categories [12]:

- a. Viable farms, that render an FFI per used FWU higher than the reference income (the Ministry of

Agricultural Development annually determines the reference income as equal to approximately 80% of the comparable income) and use at least one FWU. Based on the percentage of the subsidies in the formulation of their FFI, viable farms are split into two types:

- a₁. Viable competitive, in which the share of subsidies in the formulation of the FFI, is up to 20%.
- a₂. Viable non-competitive, in which the share of subsidies in the formulation of the FFI, is over 20%.
- b. Potentially viable farms, in which the FFI per FWU ranges between 80 and 100% of the reference income, while it is estimated that at least one FWU is employed.
- c. Declining farms with signs of economic recovery, in which the FFI per FWU is less than 80% of the reference income and where the above-mentioned restriction (“at least one FWU” etc) is not valid.
- d. In addition, small farms can also receive financial support, as long as their owners are “new farmers” and it has been less than three years since their first crop.

Based on the above, declining farms barely manage to cover their minimum living costs and consequently cannot secure a minimum owned capital through saving (since they do not have any extra-agricultural income), so as to participate in an investment programme that would ensure their viability. On the contrary, potentially viable farms more than cover their minimum living costs and are therefore in a position, through suitable programming, to collect the capital required as their own contribution for the realization of an investment plan that would guarantee their viability. Finally, the viable farms in the first category more than cover the mean living costs of households with farming as the main profession and therefore can secure the capital required for a renewal and increase of their productive potential [13].

Hierarchical Cluster Analysis was used to develop the typology of the agricultural investments, based on their financial output [14, 15]. The parameters used for the analysis were family labour, gross revenue, variable costs, fixed costs and the percentage of subsidies. The Ward criterion was used for the construction of the clusters and the square of Euclidean distance as a measure of the dissimilarity of the agricultural investments [16]. The analysis was carried out using the SPSS V. 11.5.

The following categories were examined in relation to the viability profile of the farms:

- small farm,
- declining with signs of economic growth,
- potentially viable,
- viable non-competitive,
- viable competitive.

The classification of farms according to various levels of viability, in their current status, was carried out in accordance with the data included in the relevant improvement plans.

RESULTS AND DISCUSSION

The Cluster Analysis highlighted three groups – farm clusters. The first cluster S_1 includes 71 farms (59.7%), the second cluster S_2 includes 35 farms (29.4%) and the third cluster S_3 includes 13 farms (10.9%).

The profile of the clusters pertaining to the farms’ current status, based on the predefined parameters, is presented in Table 2.

Based on the coefficient of determination R^2 [17], the relative significance of the variables used for the cluster formation is given in descending order: fixed costs, gross revenue, percentage of subsidies, variable costs and family labour (Table 2). Therefore, in order of significance, a major role in cluster formation is played by the permanent capital, the farms’ productivity and subsidies, expendable capital and the value of family labour.

The grouping of the three clusters is carried out based on the low, medium and high values of the economic parameters used for their formation. As regards subsidies, the first cluster of farms is characterized by the lowest percentage, while the second cluster by the highest.

Table 3 presents the viability profile of the three groups. The first cluster consists of potentially viable farms (42.3%), declining farms with signs of economic growth (31%) and almost the total number of small farms (18.3%). This cluster mainly includes farms which, due to size (small farms) or mismanagement, barely cover their minimum living costs and therefore cannot afford the minimum owned capital required for their participation in investment programmes that could render them potentially viable. The farms in this cluster need to develop major investment activities in order to arrive at a satisfactory financial outcome and therefore have a minimal chance of surviving on their own resources and continuing their productive activities. More specifically, if we examine the farms in this cluster, we observe that the “declining”

Table 2: Characteristics of the clusters showing the current status of the farms in the sample

Farm Clusters-Groups	Family labour (€)	Gross income (€)	Variable costs (€)	Fixed costs (€)	Subsidies (% of FFI)
S₁					
Mean	3089.85	39781.35	20115.25	9532.66	19.35
Standard deviation	1913	26204.24	14217.87	5295.80	19.96
Sample size	71	71	71	71	71
S₂					
Mean	5819.52	65071.24	22739.01	18256.97	67.99
Standard deviation	2656.15	28113.64	13296.60	9827.07	36.51
Sample size	35	35	35	35	35
S₃					
Mean	7875	172209.54	64112.32	45573.07	36.85
Standard deviation	1995.30	62894.35	31853.85	16981.89	25.09
Sample size	13	13	13	13	13
Total					
Mean	4415.44	61686.50	25693.35	16035.82	35.57
Standard deviation	2751.38	51722.56	21400.23	14029.14	33.98
Sample size	119	119	119	119	119
R ²	0.391	0.612	0.402	0.625	0.407

Source: Study's analysis

Table 3: Farm clusters in relation to their viability profile

Clusters	Farms	Small farm (1)	Declining with signs of economic growth (2)	Potentially viable (3)	Viable non-competitive (4)	Viable competitive (5)	Total
1 st	Number	13	22	30	3	3	71
	%	18.3	31.0	42.3	4.2	4.2	100
2 nd	Number	1	14	15	3	2	35
	%	2.9	40.0	42.9	8.6	5.7	100
3 rd	Number	0	0	7	5	1	13
	%	0.0	0.0	53.8	38.5	7.7	100
Total	Number	14	36	52	11	6	119
	%	11.8	30.3	43.7	9.2	5.0	100

Source: Study's analysis

farms are the main target of restructuring measures (e.g. early-retirement schemes for their owners), since the production factors released through such measures (e.g. agricultural land), can prove useful for the expansion and modernization of potentially viable farms [18]. It is also considered essential for support to be given to small agricultural farms owned by young farmers through suitable measures (e.g. support measures for Young Farmers), so that they may reach a high level of production and not further aggravate the structural problems of the EU [19].

The second cluster consists of declining farms with signs of economic growth (40%), potentially viable farms (42.9%), viable non-competitive farms (8.6%) and competitive farms (5.7%). It also includes one small farm (2.9%). This cluster mainly involves farms that can

participate in investment programmes either marginally, through proper programming, or with great facility. In particular, the potentially viable farms display a significant level of production and their agricultural income covers the needs of the agricultural family. Through the absorption of additional amounts of production factors (investment subsidies, low-interest loans, priority access to released land, etc), they can indeed develop into viable farms [20]. In general, potentially viable farms are the object of structural policies which aim to convert them into financially viable businesses.

The third cluster consists of potentially viable farms (53.8%), viable non-competitive farms (38.5%) and viable competitive farms (7.7%). This cluster includes farms which are in a position to raise the necessary capital for the realization of an investment plan, either by more than

Table 4: Educational level of the owners of the farms

Educational level	No. of farms	Percentage (%)
Higher education	7	5.88
Secondary education	65	54.62
Elementary education	47	39.50
Total	119	100.00

Source: Study's analysis

Table 5: Farm clusters in relation to the owners' educational profile

Clusters	Farms	Elementary Education	Secondary education	Higher education	Total
1 st	Number	42	29	0	71
	%	59.2	40.8	0.0	100
2 nd	Number	5	28	2	35
	%	14.3	80.0	5.7	100
3 rd	Number	0	8	5	13
	%	0.0	61.5	38.5	100
Total	Number	47	65	7	119
	%	39.5	54.6	5.9	100

Source: Study's analysis

covering the mean living costs of the agricultural household, or through suitable programming. The farms in this cluster possess sufficient production factors and the financial potential in order to be able to make the necessary investments as required and follow their own course of modernization. It is believed that such farms are in a position to respond to modern market demands, i.e. to maintain or increase their competitiveness [21] and could therefore operate with limited or no financial support. Subsequently, if more farms are incorporated into this category, then the EU will be able to reduce the financial assistance provided by the FEOGA fund [22].

As regards the educational level of the owners of the farms participating in the funding programme, 47 have an elementary education, 65 have attended secondary school and 7 are higher education graduates (Table 4). It has been pointed out that the educational level of the owners of agricultural farms is related to their developmental potential and viability [23, 24]. Table 5 presents the educational level of the farm owners, as regards the typology clusters.

The first cluster exclusively consists of owners with an elementary or secondary education level. The majority of owners in the second cluster have completed secondary education, while the educational level of the owners improves even more in the third cluster, since most are higher education or secondary school graduates. As we can observe, the viability profile of the farms and

their owners' educational level are closely linked. Thus, farms with the financial means to participate in investment financing programmes are characterized by owners with a relatively high level of education.

CONCLUSIONS AND RECOMMENDATIONS

The results of this study can assist in formulating conclusions and recommendations regarding the policy measures that should be applied for each group of farms.

The 1st cluster includes farms with low capital intensity and reduced productivity, while subsidies do not form a major part of their agricultural family income. Consequently, it is proposed that the policies regarding this group should follow two directions: a) aim at improving the financing status of the potentially viable and viable farms in the group (which account for approximately 50% of the farms in the 1st cluster) through their continued participation in investment programmes, b) provide incentives to the remaining 50% of the cluster and thus urge many owners of declining or small farms to withdraw from agriculture (e.g. early retirement schemes), or encourage mergers between small farms, or finally offer special incentives to specific population groups (e.g. programmes for young farmers).

The 2nd cluster consists of farms with medium capital intensity and productivity, while it is worth noting that subsidies constitute the largest percentage (68% on

average) of the agricultural family income of these farms. Consequently, these farms will face an acute problem in future due to competitiveness and a potential viability problem with the decoupling of subsidies from production, according to the new CAP. It is therefore recommended that the relevant policy measures focus on supporting the potentially viable, viable and competitive farms in this group through investment programmes (57% of the farms in cluster 2). Since this group will be the one most severely affected by the changes brought about by the new CAP, it is essential that investment financing be mainly directed towards the above-mentioned farms.

The 3rd cluster comprises farms with high capital intensity and productivity, while subsidies contribute to a fairly significant but not very high percentage to the formulation of their agricultural family income. The policy measures in this cluster, should be split as follows: a) financing of investments for approximately 50% of the farms (potentially viable farms), so that they become viable, b) financing of special actions for the 2nd group of this cluster (for about 50% that are already viable), such as the use of new technology and innovation (e.g. organic farming), the acquisition of modern know-how and the adoption of sustainable agricultural practices (e.g. financing measures for reducing the nitrates in the subsoil).

Another observation from the analysis is that the clusters of farms related to owners with a high educational level present the capacity to provide owned capital for their participation in investment programmes. Consequently, it is essential to improve the educational level of farmers, so that an ever-increasing number completes secondary and higher education. In this way, they will be better equipped to deal with the competitive conditions of modern agriculture, without requiring financial support for their activities. However, it should be noted that even for the farms in the 3rd cluster, it is considered even more essential to continuously educate farmers on issues such as business skills, financing and marketing, so that they are able to comprehend the necessity of sound management and are also informed about issues related to the global market of agricultural products.

After depicting the situation regarding the financing of agricultural investments and dividing the farms into clusters, the present study recommends that policy measures for farms be split accordingly. We believe that the study will thus assist in the application of a financing

policy for agriculture, since it precisely indicates how the measures will be divided between the clusters. Undoubtedly, an interesting next step would be to evaluate the farms following the implementation of their investment activities, so as to determine the validity of the project itself.

REFERENCES

1. Galanopoulos K., E. Kamenidou, V. Tziakas and A. Mitsopoulos, 2004. Technological progress in agricultural production: Analysis of Improvement Plans in Central Macedonia. In the Proceedings of the 7th ETAGRO Conference, pp: 79-90.
2. Mattas, K., 1996. The GATT agreements and the Prospects of Adaptation for Greek Agriculture. Proceedings of the 1st NARD Conference: Potential contribution of the biomass to the agricultural and industrial growth of Greece, National Agricultural Research Foundation, pp: 41-44.
3. Zioganas, Ch., 2003. Agriculture Economic Development. Ziti Publication, Thessaloniki, (in Greek).
4. Ministry of Agricultural Development and Food, 2003a. Subsidy regime for agricultural farms (CMD 532/2003). Available at: http://www.minagric.gr/Greek/data/par_coded.pdf
5. Karanikolas, P. and N. Martinos, 1999. Spatial Differentiation of Greek Farming towards 2010. Papazisis Publications, Agricultural University of Athens, pp.245-307, (in Greek).
6. Kobrich, C., T. Rehman and M. Khan, 2003. Typification of farming systems for constructing representative farm models: two illustrations of the application of multi-variate analyses in Chile and Pakistan. *Agricultural Systems*, 76: 141-157.
7. Karami, E., 2006. Appropriateness of farmers' adoption of irrigation methods: The application of the AHP model. *Agricultural Systems*, 87: 101-119.
8. Riesgo, L. and J. Gomez-Limon, 2006. Multi-criteria policy scenario analysis for public regulation of irrigated agriculture. *Agricultural Systems*, Vol. 91 (1-2): 1-28.
9. Doll, J. and F. Oragen, 1984. *Production Economic*. John Wiley and Sons, New York.
10. Ministry of Agricultural Development and Food, 2003b. Sustainable Agriculture in a Developed Countryside. The vision of a decade for Greek farming and the countryside. Athens, (in Greek).

11. Commission of the European Community, 1985. A future for Community agriculture: Commission guidelines following consultations in connection with the Green Paper. COM(85)750.
12. Ministry of Agricultural Development and Food, 2001. Subsidy regimes of the community support framework 2000-2006 for investments in agricultural farms, (CMD451/2001). Available at: http://www.minagric.gr/Greek/data/apof277753_220702.doc.
13. Tsiboukas, K., S. Tsoukalas, V. Karanikolas and E. Nellas, 2000. The financial viability of farms in Greece under the framework of the agricultural structural policy. In the Proceedings of the 5th ETAGRO Conference, pp: 79-9.
14. Hair, J., R. Anderson, R. Tatham and W. Black, 1995. *Multivariate Data Analysis With Readings*, 4th Edition. Prentice-Hall International, INC., USA.
15. Coakes, S. and L. Steed, 1999. *SPSS Analysis without Anguish*. Singapore: John Wiley and Sons, Inc.
16. Sharma, S., 1996. *Applied Multivariate Techniques*. New York: John Wiley and Sons, Inc.
17. Hinkle, D., W. Wiersma and S. Jurs, 1988. *Applied Statistics for the Behavioral Sciences*, 2nd Edition. Boston: Houghton Mifflin Company.
18. Lowe, P., H. Buller and N. Ward, 2002. Setting the next agenda? British and French approaches to the second pillar of the Common Agricultural Policy, *Journal of Rural Studies*, 18: 1-17.
19. European Commission, 2004. General Division for Agriculture: CAP reform summary. Newsletter Special Edition, Brussels.
20. Fennell, R., 1999. *The Common Agricultural Policy. Continuity and Change*. Themelio publications, Athens.
21. Zioganas, Ch. and E. Nikolaidis, 1995. The impact of Innovation on the Structure and Efficiency of Farms. *Quarterly Journal of International Agriculture*, 34: 35-47.
22. Hill, B., 1996. *Farm incomes, Wealth and Agricultural Policy*, 2nd edition. Avebury, Aldershot.
23. Papadopoulos, D., 1995. From negotiations to networks. A study of the responsibilities' orbits at the interface between a rural bureaucracy and dynamic farmers in Greece, MSc thesis, MAKS-Dept of Extension Science, Wageningen Agricultural University, Netherlands.
24. Shucksmith, M., 2004. Young People and social exclusion in rural areas. *Sociologia Ruralis*, 44: 43-59.