

Agricultural Policy and Regional Development via CAP Policies: The Case

of the Central Macedonia

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Abstract: Numerous and major economic and social problems have been experienced by the Greek economy over the last years, as a result of the economic crisis and instability, one of the most critical issues is unemployment, which has reached high levels that are difficult to control and reverse, at least in the short run. Within the context of consideration that is given to possible ways to address unemployment, there is debate about the role of the agri-food and farming sectors. More specifically, the role is investigated of support policies for the farming industry, primarily through funds from the Common Agricultural Policy (CAP), whether they played a role in either supporting or boosting employment during the period of the crisis. Nevertheless, it is known that supporting employment both within the industry, and indirectly in the economy overall, has never been a key target of any policy within the context of the CAP.

To examine the key objective of the report, two different approaches are used. The regional Input-Output model and the methodology of the Social Accounting Matrix (SAM).

Key words: agricultural policy; regional development; impact analysis

JEL codes: J21, D57, R15

1. Introduction

Through the years, support policies for the farming industry, primarily through measures from both pillars of the Common Agricultural Policy (CAP), have been aimed at sufficiently supplying the market with foodstuffs, supporting farmers' income, driving up productivity, and competitiveness in the industry, as an effect, protecting the environment, etc. Supporting employment, both within the sector and indirectly in the economy overall, has never been a key target of any policy. However, the policies of the CAP that were mostly associated with the second pillar, i.e., rural development measures, were an exception Even in these cases, policies were not directly aimed at supporting employment, but rather indirectly, i.e., through jobs that would be created in other sectors and

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industries related to farming and the agricultural sector. However, as a result of the economic crisis that has been going on for about a decade, both on a national and EU level, unemployment is one of the key issues that have emerged, and which plague all the member states, and Greece in particular, where the rate of unemployment reached 23.5% (ELSTAT, 2017). There are numerous issues that are related to the high rate of unemployment, on both an economic and social level, and that is the reason why, following the stabilization of key financial indicators of the economy, economic policy makers plan development measures that are aimed at driving up employment and reducing unemployment. The absence of a target to support employment in economies through the CAP through the years, has been acknowledged by policymakers in Brussels, and especially the President of the European Commission, Jean-Claude Juncker, who asked the European Parliament to conduct a study, in order to examine the role of the CAP in creating jobs (European Parliament, 2016).

Actually, in the farming industry, substantial funds were allocated to the Greek economy through the two pillars of the CAP. In this context, this report examines whether Rural Development (Pillar II) has contributed towards maintaining existing jobs or creating new ones in farming, as well as in the other sectors of the economy. To serve the objectives of this research report, the Region of Central Macedonia was selected, since farming is a major industry in the area, while many other sectors of the economy demonstrate strong activity and contribution to the local economy, at the same time. In order to examine the aforementioned research aim, special attention is paid to the regional Input-Output model, through which, it is possible to record the impact (both direct and indirect) on employment, which results from implementing measures to support farming. The next step in this report is to illustrate the correlation between the CAP and employment, along with key published studies that discussed the subject, followed by the methodology that was used, leading finally to the results and conclusions drawn.

2. CAP and Employment

Many researchers have been involved in the assessment of the economic impact that results from the implementation of the CAP on supporting employment and the economic development of rural areas. Manos et al. (2013), Bournaris and Manos (2012), and Viaggi et al. (2011), through Multiple Criteria Mathematical Programming, showed that the CAP policies that have been implemented so far have had a negative impact on employment in rural areas. Manos et al. (2010), Manos et al. (2008a, 2008b), Mattas et al. (2005a, 2005b) point out that the absence of coupled support for growing tobacco has had a negative impact on employment in the area under investigation. Alston and James (2002), de Gorter and Meilke (1989), Dewbre et al. (2001), Gardner (1983), Ciaian et al. (2015), and Guyomard et al. (2004) studied the types of subsidies (both coupled and decoupled), and it was made obvious that their use reduces the number of jobs in farming. Dewbre and Mishra (2007), and Petrick and Zier (2011) reached the same conclusion, since they showed, by using static and dynamic modeling methods, that farming subsidies have a negative impact on employment growth in disadvantaged areas. Olper et al. (2014), by using both static and dynamic modeling methods, argue that coupled support is a more effective measure in keeping rural population in rural areas, compared to decoupled support. Fasterding and Rixen (2006) believe that organic farming and diversification of production can create new jobs in the countryside. However, in another article by Rumanovska (2016), the positive impact of the CAP on supporting employment is demonstrated, since the CAP for 2007-2014 contributed significantly to employment in the primary production sector of the Slovak Republic.

It was made clear that the CAP policies did not yield the desired result throughout the previous years, in terms of employment in rural areas, while the measure of subsidies not only failed to help in keeping a workforce in the agricultural sector, but also caused the population to migrate to cities, while effective measures to support employment were never taken.

The target of the new CAP for 2014-2020, through the two pillars, is to provide support and aid rural development, foster knowledge and innovation, boost the competitiveness and outreach of the sector, increase or maintain employment in rural areas, promote social cohesion, and finally, set the foundations of economic and environmental sustainability (European Commission, 2017). At this point, a new understanding can be added, i.e., the fact that the second pillar that refers to rural development, is aimed at the regionalization of the CAP by supporting its regions, with special importance attached to supporting the agricultural sector, and creating and maintaining sustainable jobs, in order to address the economic crisis, and lead to an economic boom (Alexiadis et al., 2013).

3. Methodology and Statistical Data

In order to examine the key objective of this report, i.e., the role of the CAP in maintaining and supporting employment, the Region of Central Macedonia (RCM) was selected as the area under investigation. To identify the major sectors and industries in the Region that have a positive contribution towards supporting or driving up employment in Central Macedonia, as well as explore whether farming can contribute to an increased regional product and income, the EU multipliers and elasticities are used.

Employment multipliers (type I) show what will happen to the economy as a result of a change in employment by one point in the sector under investigation; they also study the sectors, in terms of their potential. On the other hand, elasticities identify the key sectors by taking into account their final demand level (Loizou, 2001).

Through the multipliers of the Social Accounting Matrix, it will be attempted to identify the impact of changes in specific variables of the economy that are regarded as exogenous and constitute the economic policy instruments that apply to endogenous variables, which are considered to be economic policy targets, such as increased output and employment per sector, or increased income for a specific category of households.

The national input-output matrix (I-O) of the Greek economy for year 2010 was used, over a group of 65 sectors of economic activity, according to the Statistical Classification of the Sectors of Economic Activity (STAKOD-08) and the NACE Rev. 2 of the European Union, which was further grouped into 35 sectors. Data were readjusted for 2016, while the application of the GRIT hybrid method resulted in the regional I-O matrix for the RCM. To calculate intermediate demand and primary input for the RCM, the methodology that was applied is presented in Mattas et al. (2006) by using the quotient of Flegg et al. (1995) and sectoral employment in the RCM for 2016. The Gauss statistical program was used for the calculations.

To construct the Social Accounting Matrix, the following components were used, in addition to the regional Input-Output matrix:

The 2016 Household Income and Expenditure Survey

Area-specific business surveys

National Statistical Service data on taxes and government transfers

Regional information on property incomes, and government transfers from and to the 'rest of the world'.

The Social Accounting Matrix of the Region of Central Macedonia is composed of five groups of Accounts: The sectors of economic activity (35×35), the factors of production (skilled and unskilled labor, land, capital), institutional stakeholders (households, firms, and the public sector), while the institutional sector of households is divided into six groups; first in rural and urban households, depending on whether they live in rural or urban areas, and then in wealthy, middle, and rural households, according to the per capita expenditure of each household, the accounts of capital and the rest of world.

4. Results

4.1 Input-output Model

From the results, major industries and sectors in the region were identified first. More precisely, the furniture and other manufacturing sector has the highest output multiplier (2.28), while, if for some reason there is a rise in the final demand of farming by one million euro, this rise will result, both directly and indirectly, in a rise in the gross regional product by 1.64 m euro. The fisheries sector is in the second place with a multiplier of 2.27, followed by the timber sector (2.12) and the food sector with a multiplier value of 1.89. The trade sector (1.06) and the education sector (1.04) have comparatively low output multipliers, since they do not show strong intersectoral activity.

In terms of the income multiplier, the timber and wood manufacturing sector ranks in the first place. A rise in the income of this sector by one million euro will result in an overall rise in household income for all sectors in the RCM by 6.65 million euro. The food sector has the second highest income multiplier (2.29), followed by the farming sector (2.12), the fisheries sector (1.69), and the furniture sector (1.68). The 30th the 31st places in the ranking of the sectors, according to the level of income multipliers, are held by the sectors of wholesale and retail trade (1.01) and education (1.00).

According to Table 1, the highest employment multiplier (10.02) is held by the timber and wood and cork manufacturing sector, because for each additional person that is employed in the sector, the overall employment level of the local economy will rise by 10.02 persons. Another sector with a fairly significant employment multiplier for the RCM seems to be the fisheries sector, since each additional person that is employed by this sector will cause a rise in the overall employment level of the local economy by 2.18 persons. It is followed by the furniture sector (1.89), and the farming sector (1.06), while the food sector has the ability to cause increased multiplier effects on the overall employment level in the RCM, as a result of its own employment, since it has an output multiplier of 1.26 and ranks in the 20th place out of a total of 31 sectors of economic activity.

The trade sector seems to have the highest output and income elasticities. A rise in its final demand by 10% will result in a further rise in the output and income of all sectors in the RCM by 0.15% and 0.204%, respectively. The farming sector has low income elasticity (0.011), since its final demand has a very small share in the total gross product. On the other hand, based on income elasticity (0.028), it is in the tenth place, and therefore, it has the potential to cause multiple effects on increased household income in the economy.

Some sectors seem to differ in terms of ranking, when it comes to multipliers and elasticities, which is due to final demand. That is, the shares of final demand of these sectors are low, compared to their total output. The biggest part of their output stays within the system and is used by the production sectors.

Sector	Output				Income				Employment			
	ОМ	R	OE	R	IM	R	IE	R	EM	R	EE	R
Farming	1.64	21	0.011	6	2.12	10	0.028	10	1.06	26	0.02	13
Fisheries	2.27	2	0.000	30	1.69	16	0.056	7	2.18	8	0.00	23
Foodstuffs	1.89	14	0.006	12	2.26	9	0.023	13	1.26	20	0.02	14
Wood	2.12	6	0.049	3	6.65	1	0.018	16	10	1	0.03	10
Furniture	2.28	1	0.000	25	1.68	17	0.013	22	1.89	11	0.00	25
Trade	1.06	28	0.150	1	1.01	30	0.204	1	1.06	28	1.04	29
Education	1.04	29	0.040	4	1.00	31	0.045	8	1.01	31	0.04	7

 Table 1
 Output, Income, and Employment Multipliers and Elasticities for the RCM, 2016

OM: output multiplier, OE: output elasticity, IM: income multiplier, IE: income elasticity, EM: employment multiplier, EE: employment elasticity, R: ranking of the sectors

4.2 Social Accounting Matrix

Major sectors in the Region of Central Macedonia with the highest multipliers of the Social Accounting Matrix are presented in Table 2. In these sectors, the biggest effect will be produced by an externally caused change. Therefore, the sectors of education services, administration and support activities, other service provision and public administration activities, and defense and social insurance hold the highest places in the results of the Social Accounting Matrix model. The importance of the service sector is justified, since the Region of Central Macedonia has a highly developed tertiary sector, with the biggest part of the economically active population being employed in it.

Nevertheless, the farming sector seems to hold a major place. In terms of the direct output multiplier, the arable crops sector and the fruit sector rank in the middle, and therefore, a change in the demand of these sectors will have a significant on other sectors of the regional economy, as well. Another sector with equally positive cumulative results seems to be the foodstuffs, beverages, and tobacco sector. Therefore, a change in the demand for foodstuffs by one point will increase the total production of input of the sectors that participate in it, by 1.93m euro.

According to the open M2 multiplier, the farming sector ranks in the first four positions. It is the sector that shows the highest rise in the demand for products, if household expenditure rises by one point. In terms of comparing the cyclical effects (M3 multiplier), the fruit sector is in the third position and the arable crops sector in the sixth position. The farming sectors have the potential to cause the most cyclical effects compared to the other sectors of the region under investigation. They also cause cumulatively significant cyclical effects on the other sectors.

Finally, the position of the farming sector seems to be quite high, based on the total multiplier (M) of the Social Accounting Matrix. It shows a high total multiplier effect, because it causes strong overall effects on the other sectors, when its demand changes.

4.3 Impact Analysis

To assess the economic impact that resulted from the implementation of the 2014-2020 Rural Development Programme (Pillar II), the I-O matrix for the RCM was used. Both the direct and indirect impact is studied, which is caused on output, income, and employment, as a result of a change in the final demand of a sector. This impact assessment for all of the sectors together, as well as for each individual sector in an economy, is performed through a Leontief matrix, using the I-O multipliers as indicator-tools.

As it is illustrated in Table 2, 43m euro is allocated to the RCM by the 2014-2020 RDP. From the implementation of the programme, the total change in the produced output of the local economy is 76m euro, i.e., the total change in the sectoral output is by 78% greater than the original amount of the intervention. This means that each euro invested in the context of the RDP in the RCM results in a benefit of 0.78 euro in gross production value, due to the multiplier effects among the sectors of economic activity in the regions of the sample. Following that, the total change in income, as a result of the input of funds from the 2014-2020 RDP, amounts to 99m euro, while the total change in employment reaches 109,820 employees, with the number of employees in the RCM rising by 3.7%.

The biggest intervention results from the measures of axes 2 and 3, which refer to investments for the development of forest areas and promotion of new and innovative farming technologies (11,762,474 euro), promotion of the food supply chain, and risk management in farming (11,631,294 euro). The total change from the measure of axis 2 in the output produced amounts to 23m euro, in income to 38m euro, and in employment to 53,088 employees. On the other hand, the total change from the measure of axis 3 in the output produced, income, and employment is set at 18m euro, 23m euro, and 26,351 employees, respectively. On the contrary, the measures with the lowest level of intervention are the measures of axis 5, which are associated with the sustainable management of resources and climate change, for the production of higher quality output (8%), and also the measures of axis 1, which refer to actions associated with knowledge, information, and innovation in the farming sector (4%).

Table 2Change in the Output Produced, Income, and Employment in the RCM as a Result of the Implementation of the
2014-2020 RDP (In Euro and Number of Employees)

Measures	Investments	(%)	Production output	(%)	Income	(%)	Employment	(%)
Axis 1	1,752,685	4.0	2,925,060	4	3,919,551	4	2,765	3
Axis 2	11,762,474	27.4	23,781,188	31	38,681,133	39	52,910	47
Axis 3	11,631,294	27.1	18,880,956	25	23,414,372	23	25,867	23
Axis 4	9,124,704	21.3	16,592,431	22	18,054,739	18	15,447	14
Axis 5	3,446,976	8.0	6,132,615	8	6,286,739	6	5,289	5
Axis 6	5,216,370	12.1	8,161,682	11	9,452,874	9	7,542	7
Total	42,934,505		76,473,931		99,809,407		109,820	

In terms of impact analysis per production sector, the secondary sector receives the biggest benefits (44%) from the implementation of the 2014-2020 RDP, followed by the primary production sector (24.5%), and the tertiary production sector. The primary sector (farming, fisheries) absorbs 5% of the increase in the output produced; the tertiary sector participates with a percentage of 35%, while the secondary sector is in the leading position with a share of 61% in the increase of the output produced. Regarding income, the secondary production sector continues to reap the benefits (64%) from the 99m of income that is generated for the RCM, while the primary sector absorbs only 5%, and the tertiary sector 32%. Finally, employment, as a result of the implementation of the 2014-2020 RDP on the secondary sector, increases by 0.3% of the total change in employment, followed by the tertiary sector (Table 3) seems to be the most favored from the implementation of the 2014-2020 RDP, when it comes to employment, together with the tertiary sector, while the secondary sector is

most favored in terms of income.

Table 3	Intersectoral Distribution in the Change of the Output Produced, Income, and Employment in the RCM, As A Result
	of the Implementation of the 2014-2020 RDP (in Euro and Number of Employees)

	Primary	(%)	Secondary	(%)	Tertiary	(%)
Production output	3,587,504	5	45,981,494	61	26,376,509	35
Income	4,644,060	5	63,452,073	64	31,320,023	32
Employment	2,311	8	81,820	0.3	26,641	92

From the above, it emerges that there is a direct support to the primary production sector through the 2014-2020 RDP, in terms of output, income, and employment.

5. Conclusions

Through the I-O model for the RCM, which was composed of 31 sectors, the potential was demonstrated of its most dynamic sectors to create additional employment effects. The 7 sectors of the RCM that can have a positive contribution to the growth and promotion of employment are the sectors of farming, fisheries, foods and beverages, wholesale and retail trade, and wood and furniture. These are followed by the education sector. A change in the employment of these sectors will result in a positive change in the output, income, and employment of other sectors in the RCM. However, the farming sector seemed to have the biggest number of intersectoral transactions with the other sectors, and has the potential to show the strongest multiplier effects on the local economy, since it boosts the total gross value of output, employment, and household income. An impact analysis resulted in highlighting the significance of the implementation of axis 2 measures, which have the capacity to drive up employment in the primary production sector. Thus, the RCM, by utilizing the resources of the 2014-2020 CAP programming period, and also by taking advantage of its special characteristics, has the potential to contribute towards stabilization and partial support of employment.

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