ROLE OF FINANCIAL SUBSIDIES ALLOCATED BY THE CAP TOWARDS SLOVENIAN FARMERS

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Abstract

Financial subsidies allocated by the European Union (EU) throughout the Common Agricultural Policy (CAP) have had a positive effect on the rural development in particular in less favoured rural areas. The Farm Accountancy Data Network is an useful tool in order to estimate the impact of payments allocated by the CAP on the farm net income in a sample of European farms. Before of European Union enlargement in 2004 Slovenian farmers have benefited of specific initiatives aimed at implementing the productive agrarian fabric. Findings have pointed out as financial subsidies allocated towards stayed behind rural areas have been indirectly correlated to the dependent variable farm net income, even if the usable agricultural surface is one of the most important variable acting predominately towards the level of farmer's income and economic efficiency.

Key words: *Farm Accountancy Data Network, rural development, disadvantaged rural areas, Slovenia*

INTRODUCTION

Since the early 2000s there has been the accession of Slovenia into the European Union consequence of its own transition of socio-economic context due to the collapse of the Communist regime and the development of a new open economy. Before becoming a new comer member state, part of the EU, lots of financial subsidies correlated to the pre-accession process have implemented the socio-economic fabric in rural areas even if the amount of financial subsidies allocated by the European Union and local administrations has been similar in financial terms to other European countries as the financial initiatives have been specifically addressed towards direct payments and financial aids allocated in favour of a balanced rural development economic growth [6] [8].

In general, Slovenian farms are characterized by small agrarian surfaces with an high level of specialization in some crops such as wine, fruit, pastures and forage. Features of Slovenian farms are completely changed as a consequence of the enlargement of the EU in 2004. In fact, before this transition time because of a small agricultural surface and a significant price support of agrarian productions, Slovenian farmers were characterised by an higher level of farm net income than other not subsidised farms [4] [5].

After the enlargement of the European Union, alpine agrarian regions in Austria and in Slovenia as well have tailored their National Rural Development Plan predominately in favour of agri-environment actions and other initiatives addressed both in order to implement organic productions in farms and also in supporting less favoured rural areas aimed at reducing the out-migration from the countryside [3] [4].

The process of transition in the productive agrarian model in Slovenian countryside has been a direct consequence of the development of a post productivism model in the agricultural European model and a significant process of structural reform in its national legislative context in order to strengthen the national agriculture and food-industry [4] [5] [6] [7].

Aim of the research. The purpose of this study was to asses, using a quantitative approach, the impact of financial subsidies allocated by the Common Agricultural Policy in 10 year time, from 2004 to 2023, on the level of farm net income in Slovenian farms.

In this paper it has used the dataset published by the Farm Accountancy Data Network in a sample of Slovenian farms. In fact, in order to assess the impact of the Common Agricultural Policy on farmers in different European Countries, the European Union, since the early 1960s, by the Council Regulation number 79 published in 1965 has established an analysis on a sample of farmers through the foundation of the Farm Accountancy Data Network (FADN). According to the European Commission, this later dataset is an annual survey which covers approximately 80.000 farms and a population of 5.000.000 farms located in all countries part of the European Union able to represent more than 90% of utilized agricultural area (UAA). Farm Accountancy Data Network dataset also represents almost 90% of the total European agricultural production.

MATERIALS AND METHODS

In order to investigate and to assess the main relationships among the dependent variable farm net income in Slovenian farms and the independent variables as subsidies allocated by the second pillar of the Common Agricultural Policy (Less Favoured Areas subsidies or LFA), Utilized Agricultural Areas, environmental payments, labour input, total assets and net investments since 2004 to 2013, it has used a multiple regression model, estimating parameters by the Ordinary Least Square.

The estimation of regressors has used the open source software GRETL 1.8.6 and in its algebraic form of matrix, the multiple regression models can be so expressed [9]:

$$y = X\beta + \varepsilon$$

where y is a dependent variable and ε is the statistical error but both are vectors with n-dimensions; X is an independent variable which has a dimension n x k.

In analytical terms, the model of multiple regression in its general formulation can be written in this way [1] [2] [9]:

$$y = \alpha_0 + \alpha x_1 + \beta x_2 + \gamma x_3 + \delta x_4 + \varepsilon_{jt}$$

y is the farm net income in Slovenian farms
α_0 constant term
x_1, x_2, x_3, x_4 independent variables
α, β, γ, δ estimated parameters of the model
ε_{jt} term of statistic error.

Basis assumptions, to use a multiple regression model, are [1] [2]:
1) statistic error u_i has conditional average zero that is $E(u_i|X_i) = 0$;
2) (X_i, Y_i), $i = 1\ldots\ldots n$ are extracted as distributed independently and identically from their combined distribution;
3) X_i, u_i have no fourth moment equal to zero.

Table 1. Descriptive statistics of Slovenian farms part of FADN dataset over the time 2004-2013

Variable	Mean	Std. deviation	Min	Max
Usable Agricultural Areas (ha)	10.65	0.426	10.17	11.57
Farm Net Income (€)	5,930.70	1,248.92	3,200	7,107
Less Favoured Area payments (€)	1,108.9	47.132	1.041	1,186
Rural Development Funds subsidies (€)	2,969	710.164	1,520	4,075

Source: Own calculation on data FADN published on http://ec.europa.eu/agriculture/rica/database/database_en.cfm

There is no correlation among regressors and random noise if the value between β expected and β estimated is the same; in order to analyze if there is also heteroscedasticity on standard errors in the multiple regression model, it has used White's test on the error terms [9].

Table 2. Main correlations at a level of 10% of significance in some variables investigated in Slovenian farms over the time 2004-2013

	Usable Agricultural Areas	Farm Net Income	Less Favoured Area payments	Rural Development Funds Subsidies
Usable Agricultural Areas	1.00	n.s.	n.s.	n.s.
Farm Net Income	n.s.	1.00	n.s.	n.s.
Less Favoured Area payments	n.s.	- 0.565	1.00	n.s.
Rural Development Funds subsidies	0.589	n.s.	n.s.	1.00

n.s. not significance
Source: Own calculation on data FADN published on http://ec.europa.eu/agriculture/rica/database/database_en.cfm

RESULTS AND DISCUSSIONS

Findings using the FADN dataset have pointed out as the Slovenian farms are characterised in average by 10 hectares and the values of usable agricultural areas are in a range that does not overcome 11 hectares with a poor level of farm net income lower than 11.000 Euro and a significant level of financial subsidies allocated by the National Rural Development Plan (Tab. 1). Focusing the attention on the variable financial subsidies allocated by the National Rural Development Plan one third of payments is made by financial aids disbursed by the Common Agricultural Policy towards less favoured rural areas.

Table 3. Spearman's test results of some variables over the time 2004-2013.

	SOC	CP	EP	DP
SOC	1.00	n.s.	n.s.	n.s.
CP	n.s.	1.00	n.s.	n.s.
EP	n.s.	n.s.	1.00	n.s.
DP	-0.67**	-0.93**	n.s.	1.00
UAA	n.s.	-0.92**	n.s.	0.83**
FNI	n.s.	n.s.	n.s.	n.s.
LFA	n.s.	n.s.	n.s.	n.s.
RDP	n.s.	-0.66	0.62*	n.s.
	UAA	**FNI**	**LFA**	**RDP**
SOC	n.s.	n.s.	n.s.	n.s.
CP	n.s.	n.s.	n.s.	n.s.
EP	n.s.	n.s.	n.s.	n.s.
DP	n.s.	n.s.	n.s.	n.s.
UAA	1.00	n.s.	n.s.	n.s.
FNI	n.s.	1,00	n.s.	n.s.
LFA	n.s.	-0.56**	1.00	n.s.
RDP	0.58*	n.s.	n.s.	1.00

10% of significance; ** 5% of significance; n.s. not significance
Source: Own calculation on data FADN published on http://ec.europa.eu/agriculture/rica/database/database_en.cfm

Spearman's test correlating variables about financial subsidies allocated by the CAP and farm net income since 2004 to 2013 has highlighted, with a level of significance lower than 10% as there is an indirect correlation between the variable farm net income and financial subsidies allocated towards stayed behind rural areas (Tab. 2).
Addressing the analysis towards the investigated variables a direct correlation has also been pointed out between the variables usable agricultural areas and total financial subsidies allocated by the National Rural Development Programme in terms of

payments disbursed in the first and second pillar of the Common Agricultural Policy (Tab. 2).

Implementing the variables investigated such as subsidies on crops (SOC), compensatory payments (CP), environmental payments (EP), decoupled payments (DP), usable agricultural areas (UAA), farm net income (FNI), less favoured area payments (LFA) and total payments allocated by the Rural Development Funds (RDP) in the Spearman's test, introducing also a further constraints as the level of significance of 5%, findings have pointed out a direct correlation between total paid crop subsidies and decoupled payments (Tab. 3).

The main results in the Spearman's test with a level of significance of 5% have highlighted an indirect correlation among the variables Utilized Agricultural Area and compensated payments and also between the variables financial subsidies allocated by the Rural Development Plan and compensated payment as well.

Table 4. Main results in the multiple regression model. Dependent variable Farm Net Income

	Coefficient	Std. error	t value	p-value	significance
Constant	-6110.17	2495.77	-2.448	0.017	**
Usable Agricultural Areas	478.687	267.059	1.7924	0.078	*
Labour input	1.83483	0.90129	2.0358	0.046	**
Total assets	0.03550	0.01833	1.9366	0.057	*
Net Investment	0.565803	0.13043	4.3377	0.00006	***
Less Favoured Area payments	-6.84684	1.5902	-4.305	0.00006	***
Rural Development Funds subsidies	1.26003	0.6512	1.9347	0.057	*
Environmental payments	-1.24406	1.1412	-1.090	0.280	n.s.

10% of significance; ** 5% of significance; *** 1% of significance; n.s. not significance
Source: Own calculation on data FADN published on http://ec.europa.eu/agriculture/rica/database/database_en.cfm

Main results in the multiple regression model have pointed out as the dependent variable farm net income is correlated directly to the variables Usable Agricultural Areas, labour input, total assets and payments allocated by the first and second pillar of the Common Agricultural Policy (Tab. 4). By contrast, financial subsidies allocated towards stayed behind rural areas are indirectly correlated to the dependent variable farm net income corroborating the hypothesis according to which small farms in less favoured areas produce a poor level of income and hence they need a significant economic support aimed at contrasting the out emigration from the Slovenian countryside.

The multiple regression model has pointed out as errors are normally distributed and there is not autocorrelation; the model also fits well with the purpose of the investigation due to values of R^2 and adjusted R^2 equal to 0.84 and 0.83.

CONCLUSIONS

A positive role of financial subsidies allocated by the Common Agricultural Policy towards less favoured Slovenian farms has been pointed out; hence, it is important for a well development of rural areas to support financially small farms reducing the emigration from the countryside and impoverishment of rural areas.

Summing up, it is important to implement the financial amount allocated in favour of stayed behind rural areas able to contrast the out-migration even if it is fundamental to put in direct relation this financial support to measures able to implement the diversification in farms by the agrotourism, rural tourism and other activities deeply rooted to the rural space and rurality. This is particularly true towards enterprises characterized by young farmers able to make the most of new opportunities in order to diversify farmers's activities.

National Rural Development Plan initiatives should be addressed to implement the agrarian capital with positive impacts on the technical and economic efficiency as a consequence of a growth of enterprise's specialization. In fact, more assets and labour inputs are used, with a direct impact on the technical efficiency, higher is the level of farmer's income. The Rural Development Plan, throughout also the LEADER initiative, is one of the most important or rather maybe the unique tool in order to support these measures of socio-economical growth in rural areas by diversification in farm's activities.

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