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## **Agriculture role in social-economic resilience to major economic crises in Romania**

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# AGRICULTURE ROLE IN SOCIAL-ECONOMIC RESILIENCE TO MAJOR ECONOMIC CRISES IN ROMANIA

MONICA MIHAELA TUDOR<sup>1</sup>

**Abstract:** *The objective of this analysis is to investigate the capacity of agriculture to actively contribute to reducing vulnerabilities and the degree of exposure of Romania's economy to shocks caused by major economic crises. The role of agriculture, as economic and social resilience factor, is analyzed from the perspective of primary sector contribution to the attenuation of shock and to the recovery following the economic-financial crisis that started in 2008.*

*The primary sector contribution to counterbalancing the negative effects on GDP and labour employment generated by the recent economic crisis, by increasing the turnover in agriculture and reasserting the role of occupational outlet, in the conditions of shortage on the labour market, represent a few arguments in favour of the assertion that Romania's agriculture is a system with relatively high resilience to shocks and at the same time a supplier of economic and social resilience for the entire economy.*

**Key words:** *resilience; agriculture; economic crisis; Romania.*

**JEL Classification:** *O11, Q1, E24.*

## INTRODUCTION

Given the importance of the primary sector (agriculture) in the economy and rural life, an analysis of this branch of national economy, from the perspective of its contribution to Romania's economic resilience, has been developed in this study. The objective of this part of research has in view the investigation of agriculture capacity to actively contribute to reducing vulnerabilities and the degree of Romania's economy exposure to shocks caused by major economic crises, such as the last global economic and financial downturn that affected our country as well. The role of agriculture, as economic resilience factor, is analyzed from the perspective of primary sector contribution to the attenuation of shocks and to the recovery after the economic and financial crisis that started in the year 2008.

## MATERIAL AND METHOD

In the present paper we analyzed the economic resilience across counties, having in view the following parameters:

- *time to recover the decline of gross domestic product (GDP) at county level*, which expresses the capacity of the economies of Romanian counties to recover from external shocks, hence the economic resilience of the economic systems of counties (dependent variable);

- *variation of turnover in the primary sector*, on the one hand, and the *secondary and tertiary sectors*, on the other hand, in order to capture whether and to what extent agriculture has contributed to mitigating the shock and to recover from the crisis, at the level of different territorial units (independent variables). *The turnover of active enterprises* is an important predictor of the development level of the economy, regardless of the territorial aggregation level – national, regional, county level, etc. The trajectory of an economy on the curve of the economic cycle is decisively conditioned by turnover evolution in time;

- *variation of the employed population during the stages of the recent economic and financial crisis* (strong decline: 2008-2010; recovery from crisis: 2010-2014), analyzed on a comparative basis – primary sector (agriculture) versus the rest of the national economy, so as to get a clear picture of the importance of agriculture as social security and stability supplier and in reducing the impact of shocks generated by economic contraction in the rest of the economy.

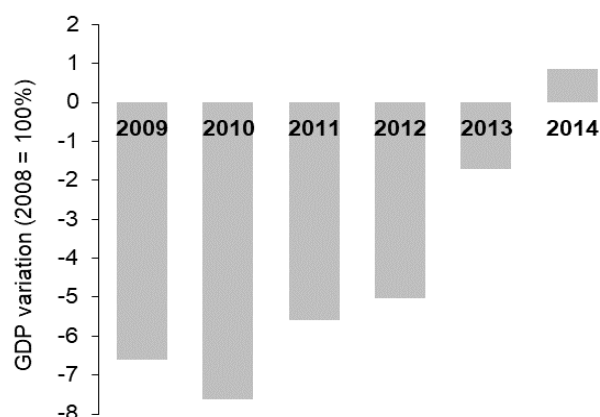
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## RESULTS AND DISCUSSIONS

The last world economic crisis produced its effects on Romania's economy mainly after 2008, its implications being revealed by the contraction of gross domestic product by 6.6% in 2009 compared to 2008. The economic decline also continued in the next year, GDP value reaching 92.4% in 2010 compared to the year when the crisis started (Figure 1).

Figure 1. GDP evolution in Romania in the period 2009-2014



Source: own calculations based on NIS, TEMPO on-line and National Commission for Economic Forecasting data, <http://www.cnp.ro/ro/prognoze>.

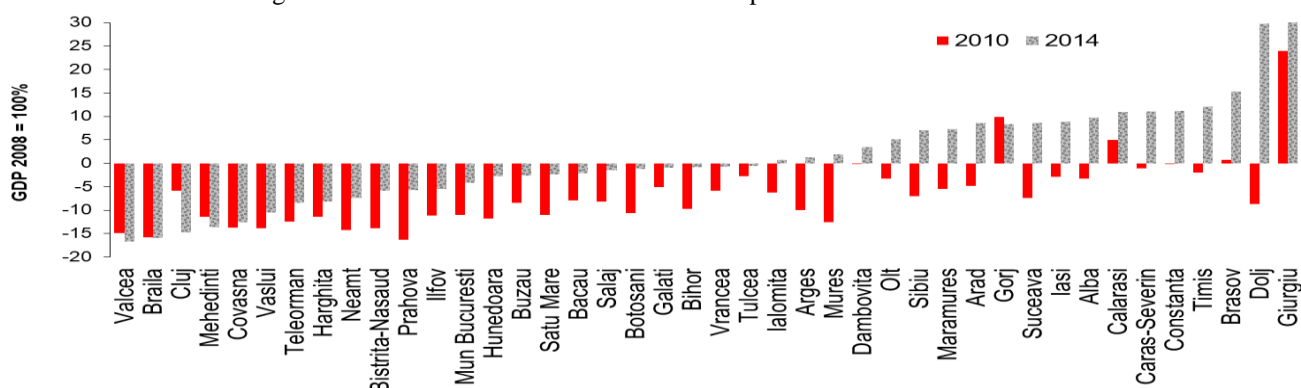
The statistical data reveal that since 2011, Romania's economy has followed a slowly ascending trajectory, the year 2014 representing the moment of full absorption of the losses caused by the economic crisis. Across counties, both the incidence of economic depression and the recovery of GDP level from 2008 feature significant disparities, some counties being more affected by the crisis than the others, while their ability to get out of crisis has also varied significantly (Figure 2).

The ranking of the 42 counties by the GDP annual average rate for the period 2008-2014 reveals that 23 county economies on the left side of Figure 2 have low resilience, not being able to recover the GDP losses

from the crisis. Furthermore, in some of these counties (Vâlcea, Cluj, Mehedinți, Brăila), the economic decline was even stronger in 2014 compared to 2010, which was considered the peak year of the period of crisis. In the same period, the other 19 counties (placed on the right side of Figure 2) were able to recover from the decline caused by the crisis, thus being considered systems with relatively high economic resilience (Zaman & Georgescu 2015, p. 283).

The analysis of statistical data, across counties, reveals the existence of a statistically significant correlation between the magnitude of the economic decline due to the economic crisis (GDP variation at county level in 2010 compared to the year 2008) and the ability to recover to the GDP level from 2008. Thus, in the counties where the crisis had a lower impact, which thus proved to be more resilient to external shocks, GDP contraction was recovered faster.

Figure 2. GDP variation across counties in the period of economic crisis



Source: own calculations based on NIS, TEMPO on-line and National Commission for Economic Forecasting data, <http://www.cnp.ro/ro/prognoze>

It is stated in many circles, both by journalists and academics, that agriculture has represented the branch of the national economy with leverage effect, significantly contributing to counterbalancing the economic crisis effects upon the entire Romanian economy. We shall next try

to test the plausibility of these assertions that we put forward as hypotheses of this part of the study. The multiple linear regression method was used for our purpose. In our analysis, we shall consider the counties as functionally integrated subsystems from the economic and social point of view. The statistical data used in the analysis cover the period from the beginning of crisis until the recovery of economic performance gaps caused by the crisis and they are collected at the level of county administrative-territorial units.

In order to test the previously mentioned research hypothesis, we appreciate that the analysis of turnover by activity sectors, and mainly turnover evolution in time, enable us to test the primary sector contribution to the Romanian economy re-launch after the economic crisis. The territorial disaggregation of these indicators may provide significant indications of the relation between economic re-launch and agriculture.

The analysis, at national level, of the statistical data on the turnover structure of active local units reveals that throughout the last economic-financial crisis, the contribution of the primary sector of the Romanian economy to the total amount of revenues from the sale of goods, execution of works and provision of services increased significantly. Thus, while at the beginning of the economic crisis, agriculture accounted for only 1.22% of total turnover of enterprises from Romania, in the year 2012 this share reached 2.55% (Table 1). Simultaneously, the contribution of secondary and tertiary sectors to total turnover decreased.

Table 1. Structure of turnover from the local units, by national economic activities, 2008-2012

	-%-				
Activities of national economy	2008	2009	2010	2011	2012
Agriculture, hunting and related services	1.22	1.60	1.74	2.33	2.55
Forestry and forest operation	0.28	0.33	0.36	0.37	0.38
Fisheries and aquaculture	0.02	0.04	0.02	0.02	0.02
Total industry, constructions, trade and other services	98.47	98.02	97.89	97.29	97.06

Source: own calculations based on NIS, TEMPO on-line data

In real terms, these data reveal that during the economic crisis, the decline of the Romanian economy was mainly determined by the contraction of turnover in the secondary and tertiary sectors, while agriculture seemed to have an effect of counterbalancing the economic decline produced in industry, constructions and services.

The analysis of statistical data available in the territory, referring to turnover variation compared to the beginning of the economic crisis, creates a picture of how the main economic sectors are acting on GDP evolution. The multiple linear regression model reveals that GDP variation across counties (as dependent variable), during the economic crisis, is directly linked to turnover evolution (as independent variable) from the secondary and tertiary sectors, agriculture having the effect to partially offset the contraction of economic systems at county level.

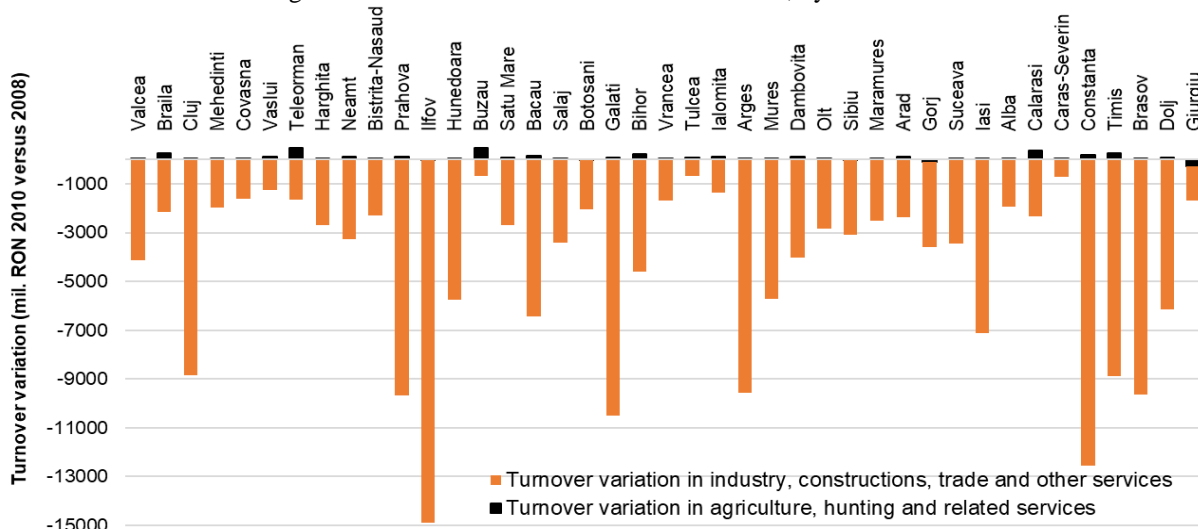
Thus, both in the peak year of the economic crisis (2010) and in the recovery period (2012 is the last year for which there are statistical data available by counties), the turnover of active enterprises in agriculture, hunting and related services was obviously higher than that in the year 2008, in all counties, except for Gorj. The average annual growth rate of turnover in the primary sector reached 20.5% in the period 2008-2012, only one county having a negative rate (Gorj), while in only six other counties turnover in agriculture increased by less than 10% on the average. For the remaining 35 counties of Romania, the average value of transactions with agricultural goods and services increased by 10 up to 50%. Thus, the analysis across counties reconfirms that agriculture had a positive contribution to national economy, counteracting the negative effects of the economic crisis.

On the other hand, the secondary and tertiary sectors, which have the greatest contribution to turnover creation at national level, continued to have, in the year 2013 (the last year for which data are available), values of sales of goods and services lower than those in the year when the crisis started, in most counties. For the period 2008-2013, the average annual turnover growth rate, cumulated for the secondary and tertiary sectors, was negative (-5%). At county level, only one of the 42 counties had a positive average annual growth rate of turnover in industry, constructions and

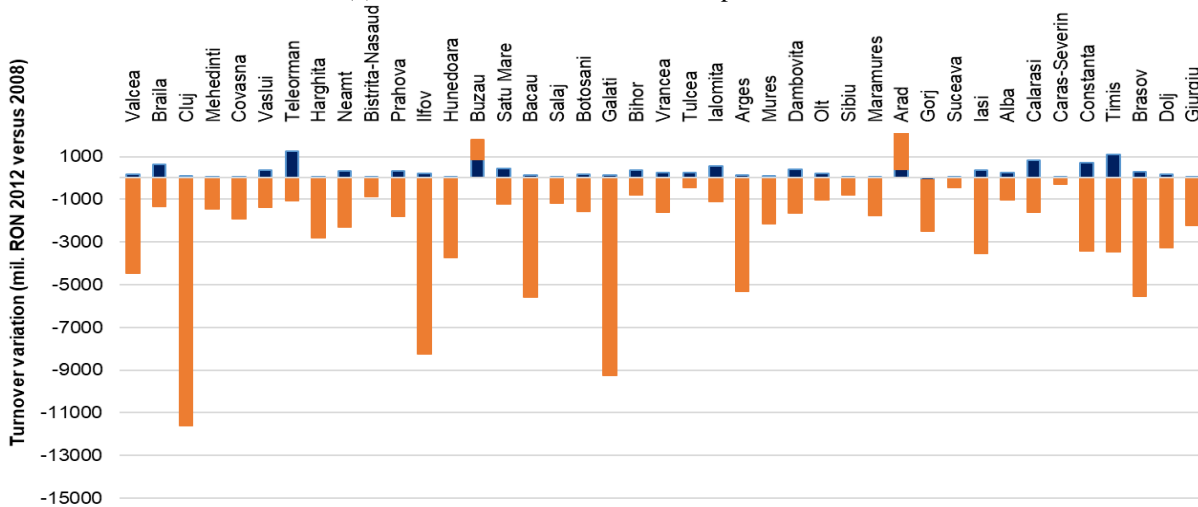
services (Arad), while for half of the counties, the annual decreases of turnover value in the secondary and tertiary sectors ranged from -5% to -15%.

The statistical data at county level reveal that in the peak year of the economic crisis (2010), the active enterprises in the secondary and tertiary sectors reduced their activity in all counties, while the turnover of enterprises in the primary sector stagnated or slightly increased in all the administrative-territorial units of the country (Figure 3a). Thus, the resilience to crisis of active economic operators in agriculture proved to be quite strong.

Figure 3. Turnover variation of local active units, by counties



(a) Turnover variation in 2010 compared to 2008



(b) Turnover variation in 2012 compared to 2008

Source: own calculations based on NIS, eDemos On-line and TEMPO on-line data

While the active enterprises in industry, constructions and services continue to recover the efficiency from the period 2009 – 2010, the primary sector continues to improve its capacity to produce economic value and its contribution to the recovery of the county GDP. The graphic illustration of the variation of turnover on local active units by activity sectors, for the year 2012 reveals, more clearly, the capacity of economic operators from the primary sector to follow a growth trajectory, which can also mobilize the other economic sectors to which they supply raw materials.

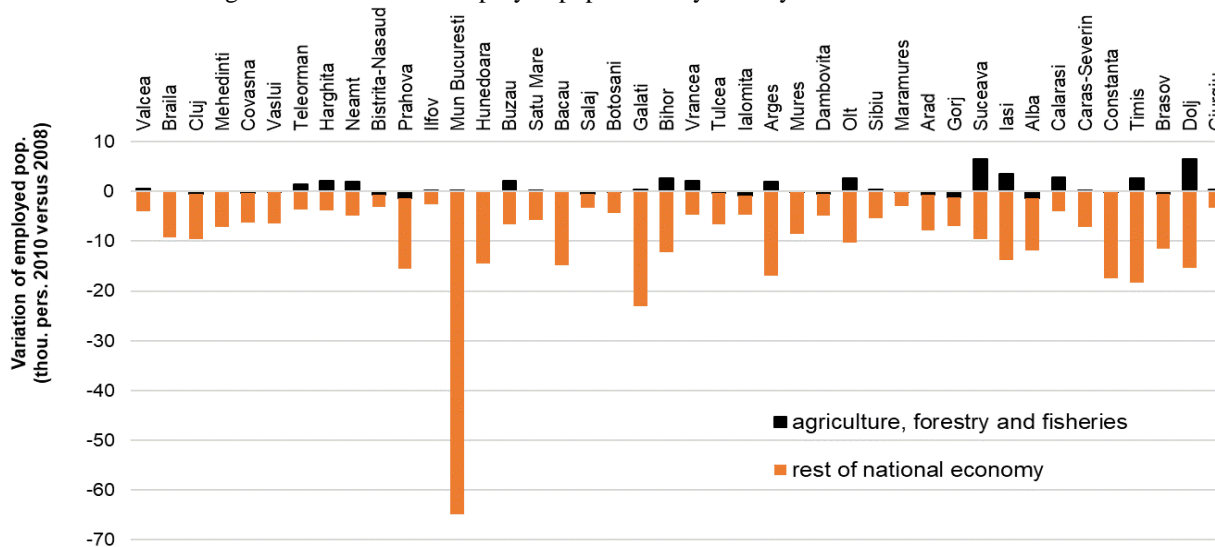
The primary sector has a stronger upward dynamic in the counties with higher economic resilience (the 19 counties that recovered before 2014 the GDP losses following the economic crisis, which are placed on the right side of Figure 3). It is worth mentioning that, for the other counties as well, with lower economic resilience, agriculture is the sector with turnover increases,

compared to the remaining business segment, whose turnover is decreasing. This confirms the contribution of agriculture to the improvement of the economic parameters of the economic systems of counties.

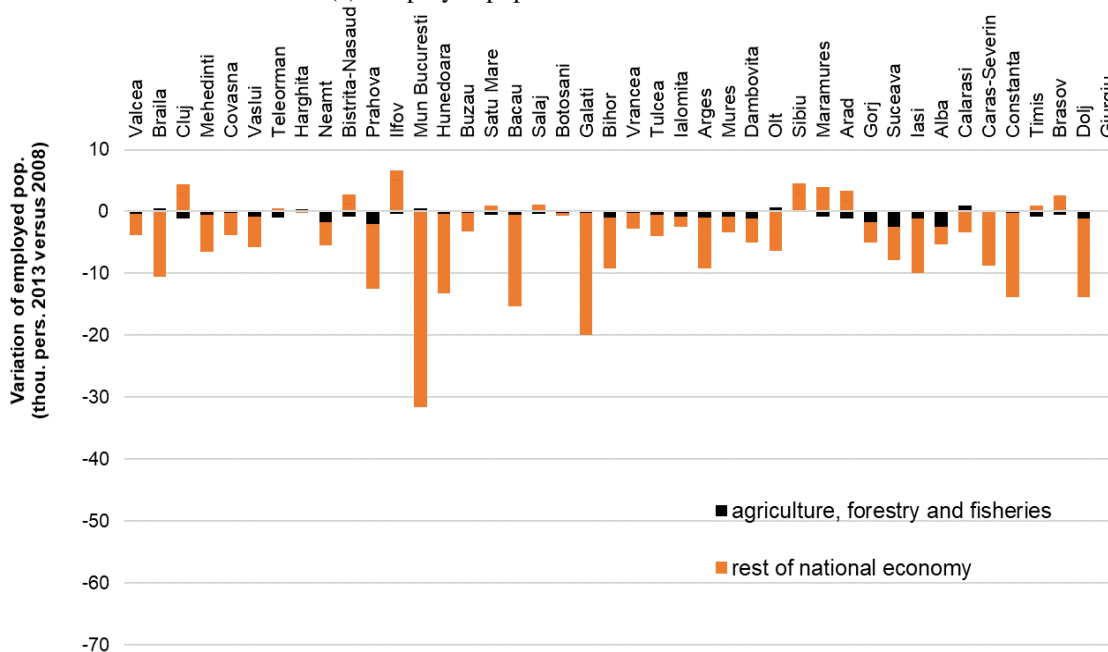
The increase of turnover in the primary sector of Romania's economy is associated to the increase of the insertion degree of agricultural production into the market. Thus, the share of the value of sold agricultural products and services in total value of agricultural production practically doubled in the period of economic crisis, from about 17% in 2008 to 38% in 2012 at national level.

Completing the analysis of turnover evolution with the analysis of employed population gives us the possibility to create an overall vision of the impact of economic recession at the level of Romanian counties and of their resilience to crisis.

Figure 4. Evolution of employed population by activity sectors and counties



(a) employed population in 2010 versus 2008



(b) employed population in 2013 versus 2008

Source: own calculations based on NIS, TEMPO on-line data

In this context, agriculture represented a high resilience system, not only from the perspective of its contribution to turnover, but also by the employment stability it provides to the active population. Thus, while in overall national economy, the volume of the employed population was down by 6.1% in the year 2010 compared to 2008, the population employed in agriculture

increased by 1.4%. The return of the active population to the primary sector is associated to economic regress. Yet, from social resilience perspective, the capacity of the primary sector to absorb the labour surplus released from other sectors constitutes a stabilization factor of the economic system and of settling down potential conflicts stemming from the lack of occupational opportunities. The downward occupational mobility, from the secondary and tertiary sectors to the agricultural sector, continued until 2012; in the year 2013, as the industry showed signs of recovery, the occupational mobility trend was reversed. However, the total volume of employed population remained by 2.5% lower in 2013 than in 2008, due to the contraction of labour market in the manufacturing industry and constructions, in particular (Zaman & Georgescu 2015, p. 289).

Under the impact of economic crisis, in the period 2008-2010, in the counties with high economic resilience, placed on the right side of the graph from Figure 4a, a greater labour transfer from the tertiary and secondary sectors to the primary sector can be noticed. In these counties, the faster economic recovery was due to the layoffs from industry, constructions and services, a process with higher intensity than in the counties with lower economic resilience, placed on the left side of the graph. The adaptive response of active population, materialized into the downward occupational mobility during the crisis, enabled a faster recovery of the economic system at county level, followed by the increase of labour demand in the secondary and tertiary sectors after 2010.

In the period of economic recovery, 2011-2013, although the counties with economic resilience recovered the GDP loss, the increase in the supply of jobs in the secondary and tertiary sectors did not follow the same pace as GDP, the number of employed persons being lower than that from 2008 in 15 out of the 19 counties (on the right side of Figure 4b), counties that recovered from the decline caused by the crisis. Out of the other 23 counties with low economic resilience, only 3 had favourable conditions for the increase of the volume of employed population, the transfer of labour from the primary primary sector to the other economic sectors having a lower incidence in these counties than in the counties with high economic resilience.

## CONCLUSIONS

The agricultural sector contribution to counterbalancing the negative effects of the recent economic crisis on GDP and labour employment, by increasing the turnover value of agriculture and reaffirming the role of occupational outlet in the context of shortage on the labour market, represent a few arguments in favour of the statement that Romania's agriculture is a system with relatively high resilience to shocks and at the same time a supplier of economic and social resilience for the entire economy.

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