

ESTIMATING THE ABSORPTION IMPACT OF THE EUROPEAN FUNDS ON THE ROMANIAN ECONOMY

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Abstract. *Regarding European Union budget for the programming period 2014 - 2020, Romania could access the sum of 25.1 billions euros of structural and cohesion funds. Given these funding opportunities for the Romanian economy, the paper analyzes the impact of European structural and cohesion funds in the context of the European Union financial perspective 2014-2020 on the national economy. The indicators analyzed are the impact of the absorption of the European funds on GDP, employment, revenues from VAT and revenues from security contributions and personal income tax. The results show that there is no panacea, namely that according to the indicators the European funds investments should be proportionally allocated in the keys sectors in order to maximise the value.*

Keywords: European structural and cohesion funds, macroeconomic impact, economic sectors

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1. Introduction

For the 2014 – 2020 programming period, the EU efforts should be directed primarily towards the measures which contribute significantly to growth and employment. This can be done through Cohesion policy, which is

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an important European tool for investments to stimulate growth, employment and competitiveness in regions, in line with the Europe 2020 strategy and the need for fiscal discipline. The cohesion policy has a major role in establishing a balance between the economic growth and fiscal stability, which is a major challenge for the EU. In this context, it is absolutely necessary to ensure an adequate level of funding for the European policies.

According to European Commission estimates, in the last decade, the Cohesion Policy contributed to the creation of 2.4 million jobs at Community level. The Cohesion policy is important, particularly to reduce the bottlenecks and to stimulate the potential of the single market. Thus, it remains the most important instrument of the Europe 2020 strategy.

Romania, as an EU member, has received an allocation in the amount of 30 billion euros for the 2007 – 2013 programming period. The areas covered by structural funds are varied, and in Romania most of the funds (19,2 billions euros) are allocated for the “Convergence” objective through seven Operational Programmes. But, Romania can’t be praised in terms of its performances regarding the absorption capacity, the absorption rate reaching a lowly 9.69% by the middle of 2012.

Regarding the 2014 - 2020 programming period, Romania could access the sum of 25.1 billions euros through structural and cohesion funds and 21.7 billions euros the Common Agricultural Policy.

Given these funding opportunities for the Romanian economy, the paper analyzes the impact of European structural and cohesion funds in the context of the European Union financial perspective 2014 - 2020 on the national economy. The indicators analyzed are the impact of the EU absorption funds on GDP, employment, revenues from VAT and revenues from security contributions and personal income tax.

In this sense, the paper is divided into four chapters. The next chapter briefly describes the main scientific contributions in this area. Chapter three presents the methodology, the fourth chapter analyzes the results and the final part outlines the conclusions.

2. Literature review

The scientific literature presents a number of methods to estimate the impact of structural funds absorption. The possible economic effects of the European funds, presented in various impact studies based on econometric

models, reveal quite an „ambiguous” picture in the sense that some studies report a positive impact, others a non-significant one or even a negative one. According to certain studies, the structural funds could boost models GDP growth in the CEE countries by 0.7% annually, while some econometric models do not indicate more than 0.1% (Zaman, Georgescu, 2009). We point out that at the end of the programming period 2000 – 2006 a certain reduction in the gap between countries in GDP per capita was recorded, but also growing disparities within member countries and among regions, the cohesion and structural funds failing to eliminate unbalanced regional development.

A simulation with the HERMIN model on the cohesion policy impact, conducted in 2005 by the European Commission for the EU-8 plus Romania, Bulgaria, Portugal and Greece, forecasts a further increase in GDP, in average by 10% by the end of the programming period, in productivity growth rates between 3-7% and the creation of 2.5 million new jobs, representing an increase between 4-8% over the number of jobs that currently exist in these countries.

Ciupagea, Voinescu (2007) tried to evaluate, quantitatively and qualitatively, the macroeconomic impact of the structural funds for the period 2007 – 2013, on the basis of the HERMIN-type model for the Romanian economy – the HEROM model (Ciupagea, 2000). The main conclusions of the study are: the injection of funds will make, in 2020, the GDP by 25% higher, the investments will be about 25% higher, it will created more than 550,000 jobs, the real wages will increase 3-4 times during the forecast period, the budget deficit will increase noticeably because the budget spending will increase additionally by 13-18% in nominal terms, while revenues will increase slightly by 10-15%.

According to the study prepared by CEROPE in the PHARE RO 2003/005-551.02.03 - "The Impact of Structural Funds in Romania – evaluation with HEROM model", the structural funds injection will cause at the end of the horizon of the current financial period, the year 2013, an increase of the GDP by almost 15% which is equivalent to an annual growth rate above 2% for scenario " with structural funds " comparing with the scenario "without structural funds" during the next seven years. The investments will record high growth rates, with significant differences between scenarios and between periods, in favour of the scenario "with" funds and more pronounced during 2007-2013. According to the estimations, the investments will be about 20% higher due to the impact of structural funds, corresponding to annual growth differential of 0.95%.

Starting from the cited econometric model for Romania, Zaman and Georgescu (2009) try to assess the macroeconomic impact of structural funds on import and export growth in Romania, as a percentage difference between the values obtained in the scenarios „with structural funds” and „without structural funds”. It was found that the structural funds have a stronger impact on the growth of exports than on that of imports, which represents a positive phenomenon for the growth enhancement in Romania. The period 2014 – 2016 will record negative growth differences or reductions, as a result of the halt in financing from the structural and cohesion funds.

Starting from the previous experience of other countries, the same authors consider that the scenarios with different degrees of absorption rate during the period 2007 – 2013, or with an average of the absorption rate for the entire period would rather be more adequate. So they attempted to assess the impact of EU financial assistance on import and export, under the circumstances when growing differences in absorption rate from one year to another are registered, in the version 1 – pessimistic and version 2 – optimistic. After 2013, the scenarios with and without structural funds reveal the stronger impact on exports as compared to imports, but the magnitude of impact is difficult to forecast. This is due to the severe impact of the international financial crisis triggered in 2008 that could reduce the EU budget, implicitly the structural funds.

Lazea, Anghel, Biriş (2012) used a Cobb-Douglas production function to estimate the absorption impact of the European funds on the Romanian economy during 2014 - 2020. According to the estimation an absorption rate of 100% of the European funds in the period 2014 - 2020 may result in an average economic growth of 4.4%, while an absorption rate of 0% will maintain the economic growth at around 2% throughout this interval. Also an absorption rate of 100% of European funds can add the net revenues of 8.4 billion and create around 200,000 permanent jobs by 2025, mainly located in high value added sectors (manufacturing, services).

Based on these estimations, this paper aims to estimate the impact of the absorption of the structural and cohesion funds on the Romanian economy for the 2014 - 2020 programming period.

3. Methodology

In order to estimate the macroeconomic impact of the absorption of the European funds in the programming period 2014 - 2020, we aggregated the 105 branches of the national economy from input-output tables, resulting in a productive system reduced to a total of 15 sectors deemed representative for the current configuration of the Romanian economy (Dobrescu, 2009, Popa, Gafta, 2012). Table 1 explains the correspondence of the initial classification (105 branches) and the new aggregated classification (15 sectors).

Table 1

The aggregated sectoral structure

Sector Code	Sector Name	Branch codes (of the classification based on 105 branches) included in the respective sector
1	Agriculture, forestry and fishing	1...6
2	Mining	7...17
3	Food, beverages and tobacco	18...27
4	Strong labor intensive sector	28...32, 77
5	High energy-intensive sector	33, 35...40, 43...59
6	Machinery, equipment and complex technological lines	60...65
7	High tech sector	34, 67...71
8	Means of transport sector	72...76
9	Production and distribution of electric and thermal power	79...82
10	Other industry sectors	41, 42, 66, 78
11	Constructions	83
12	Trade and business	84, 96...97
13	Tourism	85, 86, 93
14	Transports, post and telecommunications	87...92, 94...95
15	Public services	98...105

We considered the main features of sectors to achieve the aggregate sectoral structure. Thus, the first group includes branches that significantly depend on the climate conditions. The production of the second one uses unskilled workforce and medium technology, its production being essentially influenced by the peculiarities of the mineral deposits. All industries linked

with agriculture are integrated into the third. The fourth comprises a large variety of labour intensive sectors - textiles, leather, pulp and paper, wood processing, furniture. The next one includes the industries that use a very high level of the energy resources (significantly higher than the national average). The sixth group covers the machine building branches, the seventh brings together the electrical and optical equipment industries, as well as the publishing houses, the polygraphy, recording and copying, and the eighth includes the industries for increasing the speed and/or the security of the transportation. This group of sectors has a crucial role in the investment process and modern civilization. The ninth group represents the quasi-generally used energy utilities. The rest of the manufacturing industries, characterized by a great heterogeneity, constitute the seventh group. All infrastructures, productive and civil constructions are included in the next group. The twelfth aggregates the service activities. The travel services are reflected separately in the thirteenth group. The fourteenth one is dedicated to transports and telecommunications. Finally, the fifteenth group aggregates the public service activities.

In order to establish the indicators to estimate the absorption impact of the European funds, the paper “Prioritizing EU policies, through their achieved advantages for Romania, regarding the participation at the negotiations for the revision of the EU budget”, (Lazea, Anghel, Biris, 2012) was used as a starting point.

Table 2

Estimating the macroeconomic impact of the absorption of the European funds in the period 2014 – 2020, as the base scenario (average annual economic growth by 3,5% that includes European funds)

	Optimistic hypothesis (100% absorption rate)	Moderate hypothesis (80% absorption rate)	Pessimistic hypothesis (60% absorption rate)
Total impact on GDP	0.9%/year	0.5%/year	0.1%/year
- structural and cohesion funds	0.7%/year	0.4%/year	0.1%/year
- Common Agricultural Policy funds	0.2%/year	0.1%/year	0
Total impact on employment	8300 persons/year	4600 persons/year	920 persons/year
Gross impact on revenues from security	0.40 billion euro/an	0.23 billion euro/an	0.05 billion euro/an

	Optimistic hypothesis (100% absorption rate)	Moderate hypothesis (80% absorption rate)	Pessimistic hypothesis (60% absorption rate)
contributions and personal income tax			
Gross impact on revenues from VAT	0.26 billion euro/an	0.16 billion euro/an	0.04 billion euro/an

Source: Lazea, Anghel, Biris, “*Prioritizing EU policies, through their achieved advantages for Romania, regarding the participation at the negotiations for the revision of the EU budget*”, (2012)

Thus, the indicators considered to estimate the macroeconomic impact of the absorption of European funds in the 2014 – 2020 programming period are:

1. Total impact on GDP
2. Total impact on employment
3. Gross impact on revenues

We propose the following hypotheses:

- The funds impact on GDP. It is assumed that the impact of structural and cohesion funds on GDP is higher in the sector with higher gross value added.
- The funds impact on employment. It is assumed that the impact of structural and cohesion funds on employment is positively correlated with the share of the labour demand in all sectors of the economy.
- Gross impact on revenues from VAT

It is assumed that the impact of structural and cohesion funds on revenues is higher in sectors with a higher output.

- The funds impact on incomes. It is assumed that the impact of structural and cohesion funds on incomes is higher in sectors where the incomes are higher.

The data for the indicators considered are for 2008, the last year for which the data are available for the 15 sectors analysed.

4. Results

4.1. Absorption impact of the European funds in the 2014 – 2020 programming period on GDP

Regarding the absorption impact of the European funds in the 2014 – 2020 programming period on GDP, we consider the following method of calculating the GDP:

$$GDP = GVA + TP + D - SP \quad (1)$$

where:

GVA – gross value added

TP – taxes on products

D – import duties

SP – subsidies on products

Given the purpose of our analysis we assume that the structural and cohesion funds do not produce distortions on net taxes ($TP + D - SP$). Thus, the impact of the structural and cohesion funds on the economy is determined, *ceteris paribus*, by the *GVA* variation.

To estimate the impact of the structural and cohesion funds for a certain sector we use the following formula:

$$Ifd_{Rn} = I_{estimated} \times (GVA_{Rn} / GVA_{total}) \quad (2)$$

where:

Ifd_{Rn} – the impact of the structural and cohesion funds for sector *n*

I_{estimated} – the estimated impact of the structural and cohesion funds, authors Lazea, Anghel, Biris (2012)

GVA_{Rn} – gross value added for the sector *n*

GVA_{total} – total gross value added

Applying this method on the data from 2008 we obtain the following results according to the figure below.

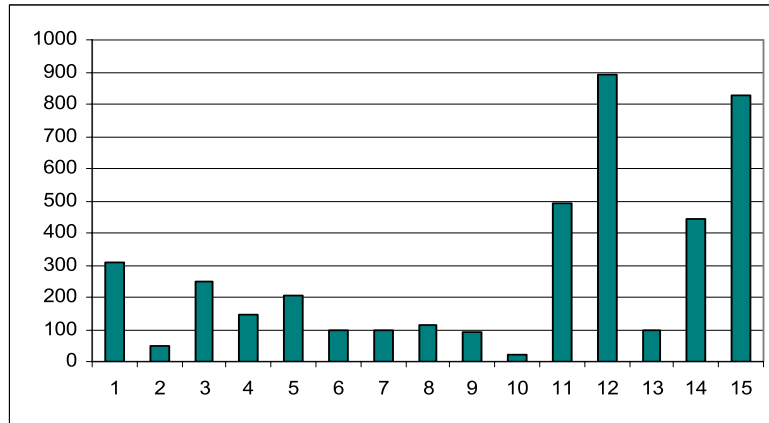


Figure 1- Absorption impact of the European funds in the 2014 – 2020 programming period on GDP (millions RON)

Source: own computations

The results show that the absorption of the European funds will have the highest impact on the following sectors: Sector 12 – Trade and business, Sector 15 – Public services, Sector 11 – Constructions, Sector 14 – Transport, post and telecommunications. Indeed, these sectors are part of the tertiary sector of the economy and its development will allow the structural convergence of the Romanian economy with the EU developed countries.

In the transition process to a market economy, the Central and Eastern European countries recorded significant increases of the productivity in the industry (Dumitru, 2008). By investing the European funds in the tertiary sector, that will generate high GVA, there will be an increase of the labour productivity in these sectors that will be reflected in higher wages on a sustainable basis. These gains will attract additional labour.

4.2. Absorption impact of the European funds in the 2014 – 2020 programming period on employment

Concerning the second hypothesis – Absorption impact of the structural and cohesion funds on employment – we use the following formula:

$$Ifd_{Rn} = I_{estimated} \times (Employment_{Rn} / Employment_{total})$$

$I_{fd_{Rn}}$ – the impact of the structural and cohesion funds for sector n
 $I_{estimated}$ – the estimated impact of the structural and cohesion funds, authors Lazea, Anghel, Biris (2012)
 $Employment_{Rn}$ – Employment in sector n
 $Employment_{total}$ – Total employment in economy
 According to this formula, the absorption impact of the European funds in the 2014 – 2020 programming period on employment is shown in Figure 2.

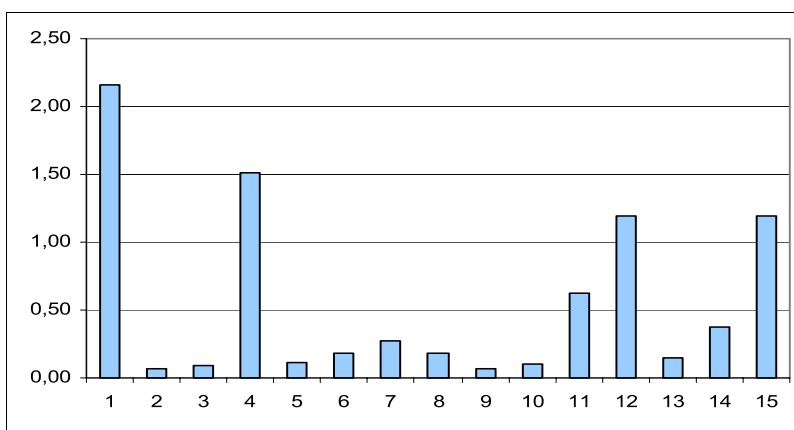


Figure 2 - Absorption impact of the European funds in the 2014 – 2020 programming period on employment (%)

Source: own computations

Analysing the data, we find that the absorption of the European funds will have the highest impact on the following sectors: Sector 1: Agriculture, forestry and fishing, Sector 4: Strong labor intensive sector, Sector 11 – Construction, Sector 12 – Trade and business, Sector 15 – Public services. These results show that the impact of the European funds is high both for the sectors that require unskilled human resources and for the sectors that required medium and high skilled human resources. In this context, we propose to invest the European funds in the sectors that retain high skilled workers. Otherwise, Romania will be negatively affected by the highly skilled labor migration towards knowledge-intensive sectors from the more developed European countries. Romania will have to promote low skilled

labor migration → labor market flexibility → – through a consistent strategy for investment in the sectors that require high skilled human resources.

4.3. Absorption impact of the European funds in the 2014 – 2020 programming period on revenues from VAT

To estimate the absorption impact of the European funds in the 2014 – 2020 programming period on revenues from VAT we use the following formula:

$$Ifd_{Rn} = I_{estimated} \times (VbTVA_{Rn} / VbTVA_{total})$$

Ifd_{Rn} – the impact of the structural and cohesion funds for sector n

$I_{estimated}$ – the estimated impact of the structural and cohesion funds, authors Lazea, Anghel, Biris (2012)

$VbTVA_{Rn}$ – revenues from VAT in sector n

$VbTVA_{total}$ – total revenues from VAT

The absorption impact of the European funds in the 2014 – 2020 programming period on revenues from VAT is presented in the chart below.

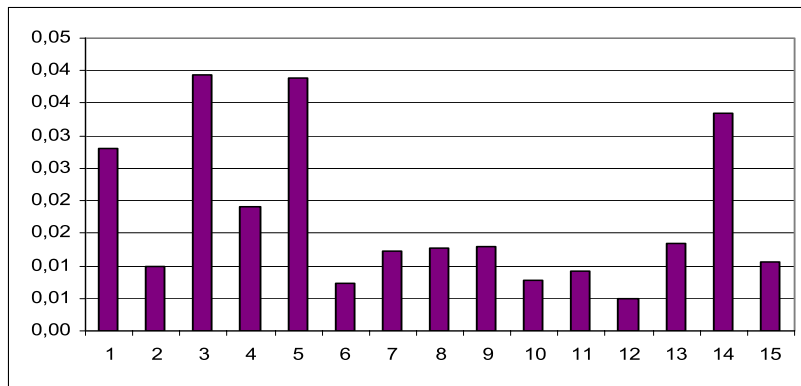


Figure 3 - The absorption impact of the European funds in the 2014 – 2020 programming period on revenues from VAT (%)

Source: own computations

The value added tax (VAT) is a tax charged in cascade on every trader involved in the economic cycle to manufacture a product or provide a service covered by the tax. After paying the VAT to the state budget, the businesses

who participated in the economic cycle have the right of deduction. In comparison with the other EU countries, Romania at 24% has a high VAT level together with Greece (23%), Hungary (27%), Portugal (23%) and Poland (23%).

The analysis of the data presented in Figure 3 show that the absorption impact of the European funds on revenues from VAT is highest for: Sector 3 – Food, beverages and tobacco, Sector 5 – High energy-intensive sector, Sector 14 – Transport, post and telecommunications, Sector 1 – Agriculture, forestry and fishing. The results are not surprising given that the food and beverages industry is the leader manufacturing branches in Romania in terms of contribution to GDP. Since Romania has the most important agricultural potential in European Union, a modernisation of this sector by investing the European funds would have beneficial effects on the state budgets revenue.

4.4. Absorption impact of the European funds in the 2014 – 2020 programming period on revenues from security contributions and personal income tax

The formula used to estimate the Absorption impact of the European funds in the 2014 – 2020 programming period on revenues from security contributions and personal income tax is the following:

$$Ifd_{Rn} = I_{estimated} \times (VbIMP_{Rn} / VbIMP_{total})$$

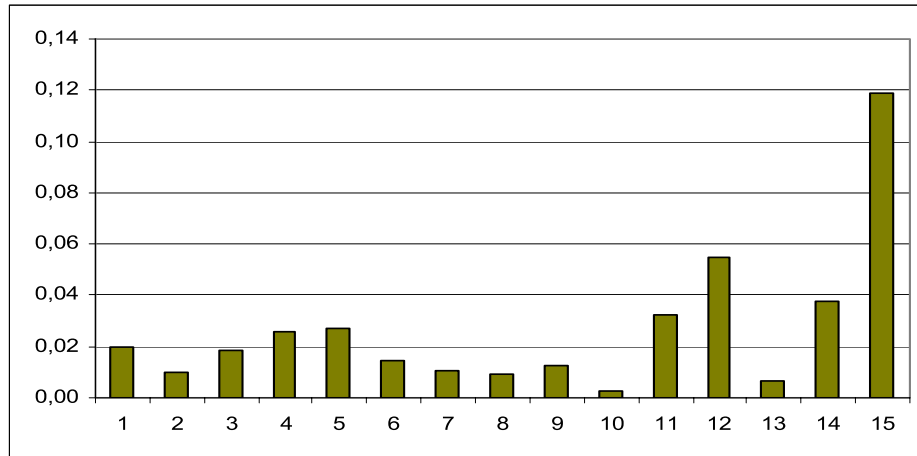
Ifd_{Rn} – the impact of the structural and cohesion funds for sector n

$I_{estimated}$ – the estimated impact of the structural and cohesion funds, authors Lazea, Anghel, Biris (2012)

$VbIMP_{Rn}$ – Revenues from security contributions and personal income tax in sector n

$VbIMP_{total}$ – Total revenues from security contributions and personal income tax

Applying this method on the data from 2008, the results are presented in the chart below.



Source: own computations

Figure 4 - Absorption impact of the European funds in the 2014 – 2020 programming period on revenues from security contributions and personal income tax (%)

Based on the data shown in Figure 4 we can see that the absorption impact of the European funds in the 2014 – 2020 programming period on revenues from security contributions and personal income tax is highest in the following sectors: Sector 15 – Public services, Sector 12 – Trade and business, Sector 14 – Transport, post and telecommunications, Sector 11 – Constructions. The results reflect the economic sectors that are more transparent in terms of income employees and where the “grey” economy (masked economic activities in order to avoid taxation) has a lower impact. In this respect, it is expected that Sector 15 – Public services are well positioned in the context in which the state firms and institutions are not as affected by the practices of “avoidance” employee contributions compared to the private sector.

5. Conclusions

The cohesion policy is an important instrument for investment at the EU level to stimulate the growth, the employment and the competitiveness in regions in line with the Europe 2020 Strategy.

Considering the finance opportunity for the Romanian economy through the structural and cohesion fund, the paper estimated the absorption impact of the European funds on the national economy in the 2014 – 2020 programming period. The analysis was performed on an aggregated structure of the Romanian economy with 15 sectors for the data from 2008. The estimated indicators are the absorption impact of the European funds on GDP, employment, revenues from VAT, revenues from security contributions and personal income tax.

From the analysis we can conclude that there is no panacea, namely that all indicators show that investing the European funds in a certain sector ensures optimal values for indicators analysed. Thus, we recommend to public authorities to use a qualitative selection criterion, to elaborate sectoral strategies, to pay more attention to the premises for the use of funds, as public policies, strategic planning, sustainability and profitability of the selected projects.

Also, in the future, I consider it is necessary to update the research on the impact of structural and cohesion funds use. A special attention should be paid to the method used to analyse the impact, as well as the interpretation of the data due to the doubts that surround the statistical economic data.

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