EU FUNDING – A POSITIVE IMPACT ON GDP?

POP Andrada
Babeș-Bolyai University, Faculty of Economic Studies and Business Administration, Finance Department, Cluj-Napoca, Romania
andradadianapop@gmail.com

Abstract: *A large number of countries believe that their economy has been boosted thanks to the EU funds. This is difficult to say yes because everyone comes up with different results. Experts in the field have performed numerous and diverse studies on this topic, using different types of methodologies and tools. Several hypothesizes have been tested and the general agreed conclusion is that the main reason for these results is not the amount of money obtained from the EU, but the way they are used. The pro-development way of utilizing the funds has increased the probability to generate valid economic growth. Moreover, long-term planning and strategic implementation regarding EU funds have proven to be more effective than short-time solutions. This paper proposes to analyze the impact of EU funds on the gross domestic product in ten European countries by using linear regression. The Member States must wish and plan for a sustainable, healthy growth, which will not cause the accumulation of risks, imbalances, and painful tensions, however, it will cause inevitable corrections in the future. To do this, countries need to focus on qualitative and not just quantitative growth, which will also determine the convergence of production structures and endowments with infrastructure, not just revenues. This would mean an increase in endowments with production factors. The focus is therefore on increasing the growth potential, an unobservable but extremely important variable of the economy. Many financial experts emphasized that countries of Central and Eastern Europe will spend EU money on the development of roads and railway infrastructure. There is a big recommendation on focusing on Research and Development, which is a tool that could help the economies of the region in the long term. The EU should motivate these countries to absorb the funds as quickly as possible by reprimanding the governments. Experience of best practices is a key element in EU funding and also the trigger for readjusting the framework and mindset of national stakeholders.*

Keywords: *GDP; EU funds; panel analysis; linear regression.*

JEL Classification: *E20; N34; C23.*

1. Introduction

Understanding the patterns and determinants of economic growth has been a central motivation in the field of economics. In the context of European integration, which has helped to successively link Member States' economies with one another, the degree to which growing interrelationships have benefitted poorer and/or more recent entrants into the EU is of particular relevance. Economic convergence has been a long-standing policy objective underpinning EU economic policy coordination

and financial assistance. Moreover, efforts to deepen and complete Europe's Economic and Monetary Union aim at creating more jobs, boost growth and investment, and increase social fairness and macroeconomic stability.
The degree to which economic convergence takes place, and under which conditions, remains a contested issue in both theoretical and applied economic research.
The analyses of different financial experts indicate that the amount of money obtained from the European Union is not the most significant aspect, but more importantly the pro-development way of utilizing the EU funds. Some analysts, such as Gary Marks (1992), have agreed that EU funds were a form of “side payment” that is given to poorer European Member states to compensate for potential losses caused by the processes of privatization or liberalization of their markets. In other words, the European funds represented “a response to new concepts of fairness and equality” developed inside the EU institutions and among the European Member States. From this political standpoint, the effectiveness of EU funds appeared to be a secondary matter. However, even in academic financial literature on the effectiveness of EU funds, very few papers benefit from or even mention the accumulated findings of almost four decades of research in foreign aid.
Member States need European funds to complete the structural reforms, some of which still refer to the provision of basic infrastructure or the development of human resources, and others to the technological leap needed to recover the gaps from the euro area countries. But, first of all, these countries need EU funds for the continuity of the European project. The paper is structured in 5 sections. The first section presents an introduction to European funds. The second section shows the results of various studies identified in the financial literature. The third section describes the research methodology used to analyze the impact on GDP growth. Section four presents the data used and the results obtained in this research. The last section shows the findings of the study.

2. Literature review

One of the principal tools of the European integration process has been solidarity, which was manifested in the funding set aside to support economic convergence within the European Union. Financial literature presents controversial results regarding the use and impact of European Structural and Cohesion funds on the economic growth of Member states.
Sarantis (2009) studied the impact of EU funds on regional income growth in 13 regions in Greece over the period 1990–2005. This period in Greece was characterized by the acceleration of the European integration process. The researcher used an extended reduced-form model of Barro and Sala-i-Martin (1992). The empirical results showed a positive impact of EU funds on regional growth, illustrating the recent growth performance in Greece. On the other side, Albulescu and Goyeau (2013) found that the absorption rate of EU funds has no effect on the short-term GDP growth rate, but in the long-term the impact is negative. The research was made on 27 EU countries for the period 2007-2011 by using a panel

and identifying the instruments through a system GMM estimator (a model proposed by Blundell & Bond, 1998).
Due to the different used methodology, the empirical evidence has provided contradictory and mixed results. Some results are showing a positive long-run impact of EU funds on economic growth (such as Midelfart-Knarvik & Overman, 2002; Puigcerver-Peñalver, 2007; Ramajo et al., 2008). Nevertheless, several studies find a negative impact (Dall'erba & Le Gallo, 2008; Checherita et al., 2009) or a weak positive effect (Boldrin & Canova, 20015; Esposti & Bussoletti, 2008; Lolos, 2009). These contradictory results are due to the poor quality of data on cohesion and structural funds at the regional level.
Paun (2015) is seeing EU funds as consistent support for weak economies of the new EU members in the Eastern European area. Also, EU funds are seen as local authorities, which are obsessed with the "absorption rate", "reimbursement rate" or "contracting rate". Furthermore, GDP growth became an obsession of each country, so the absence of this growth is seen to create social convulsions. Nevertheless, the EU funds should be used to boost growth. Moreover, this growth proposed by the European Union is not a durable one, because it is far from market conditions.
A few types of research found a conditional effect of EU funds on GDP growth, but the effect was not a direct one, such as the impact of regional aid was positive only in the presence of institutions (Rodríguez-Pose and Garcilazo, 2015), or when the stock of human capital is high and the government is decentralized (Bähr, 2008), or when the funds are managed efficiently (Wostner and Šlander, 2009). Some experts found positive effects only in specific sectors of the economy (Rodriguez-Pose and Fratesi, 2004) and for specific funding objectives or only at some levels of analysis (Le Gallo et al., 2011).
Nekrep et all (2018) analyzed the impact of EU funds on research and development on GDP growth. Their study is made on EU28 countries during the period 1995-2013 by using a quadratic regression model. The study showed a causal link between variables of the concave parabola, EU's target of reaching 3% of GDP spent on R&D to be achieved by 2020 seems in support of reaching maximum productivity in the EU.
Fidrmuc et al (2019) studied the impact of EU funds on the economic growth of European regions, using 2SLS. They estimated a spatial model to account for inter-regional spillovers. The empirical results show a significant and positive effect of EU funds on regional economic growth in the EU. Also, their results confirm the positive impact of institutional quality; the improvements in economic development across the EU do not necessarily require the only redistribution: institutional reform can also help boost growth performance. We estimate an augmented version of the standard Solow-Swan growth model on the NUTS2 regions over the period 1993-2013.

3. Research methodology

To analyze the impact of the EU funds on economic growth, we have achieved the following linear regression based on a balanced panel:

$GDP = c_1 + c_2 * FUN + \varepsilon t$
Where:
GDP - Gross Domestic Product
FUN – EU funds
ε t - the residual variable

While claiming that EU funds have a positive impact on the economic growth of European countries, we formulated the hypothesis:
H_0: EU funds increase GDP growth
and the competing alternative hypothesis also deriving from prior theoretical and empirical research:
H_A: EU funds decrease or have no impact on GDP growth
The data sample comprises 120 observations, the analyzed period being 2007 - 2019, the frequency of the data is annual. The analysis is made only on the Gross Domestic Product and EU funds in ten European countries (Annex 1). The regression was done in Eviews. The data were taken from the Eurostat database. Data on EU funds and gross domestic product are expressed in percentage terms, as well as an increase from one year to the next.

4. The results obtained

4.1. Descriptive statistics

The table below presents the descriptive statistics of the analyzed variables. The average of the variables analyzed is positive throughout the analyzed period. The minimum value of the variables analyzed is negative, which means that in the analyzed period, the analyzed countries experienced fewer decreases in GDP and EU funds.

Table no. 1: Descriptive statistics of analyzed values

	GDP	FUN
Mean	0.01125	0.582897
Median	0.031741	0.49967
Maximum	1.040742	9.956773
Minimum	-0.81321	-0.98452
Std. Dev.	0.1878	1.153492
Skewness	-0.87394	4.679239
Kurtosis	18.22437	37.89083
Jarque-Bera	1174.183	6524.757
Probability	0	0

Source: Own work in Eviews

According to Skewness, the gross domestic variable distribution has the elongated right tail. As regards the distribution of the EU funds variable, it has the elongated left side (the value is negative).
According to Kurtosis coefficient values, the distributions have a value greater than 3, therefore the analyzed distributions are sharper than the normal distribution (leptokurtosis).

4.2. Interpretation of the results obtained

According to the results obtained, other factors are influencing GDP as R^2 is only 15.3 %. In other words, only 15.3% of the GDP variation is explained by the variation of EU funds.
The evolution of EU funds has a positive influence on GDP. The impact is not statistically significant, as the probability is above the 10% threshold (prob.= 0.8933). The EU funds coefficient is 0.02014, which means that for a unit EU funds increase, GDP will increase by 0.02014 units.
The regression will look like this:

$$GDP = 0.010077 + 0.02014 * FUN + \varepsilon t$$

The EU membership is generally considered as an important factor for the Czech post-accession economic growth. Furthermore, in the first years after the European Union accession, the GDP of Czech experienced unprecedented growth. This growth was accompanied by the increase in labor costs, by the increase of investments - due to the weight of the manufacturing sector in the whole economy - and by the strengthening of the Czech crown. During the period 2000-2017, the investments in the Czech Republic have had an annual average of 27.5 % of GDP, which is one of the highest levels at the EU level. Also, the level of public investment dropped around 4% of GDP during 2018-2019, due to the strong influence of the EU funds cycle.
Cyprus joined the European Union in 2004 to catch up with the EU average in terms of economic growth and income. The EU funds invested in Cyprus over the period 2004-2020 were €1.7 billion under the European Structural and Investment Funds, respectively €98 million under the Juncker Plan from 2014. These funds have had very positive results on GDP growth, not only due to EU funding but also to the efforts of Cyprus to reform and become an attractive place for businesses and for investors to settle and thrive. The evolution of GDP per capita in Cyprus has grown by 31% in the period 2003-2018 and compared to the EU average this evolution reflects the severe impact of the global economic crisis on the Cypriot economy.
Since 1981, Greece has been a major beneficiary of EU funds. Also, for decades, the average EU funds transfers ranged from 2.4-3.3% of the country’s annual GDP. In 2018, Greece had received around €16 billion European funds, which was the equivalent to 9% of the 2017 annual GDP of Greece. Due to the exceptional measures, Greece was the first EU country to have fully absorbed all the EU funds available for the period 2007-2013. Also, Greece is the second top absorber of European funds for the period 2014-2020 due to exceptional measures.

Furthermore, Greece ranked first in the EU regarding the total expected investment under the European Fund for Strategic Investments, compared to its GDP. In 2017, after almost a decade of contraction and stagnation, Greece's economy started to grow again and continued to recover in 2018, in terms of both growth and employment. Economic growth is projected to exceed 2% in 2020. Investment is set to become the biggest contributor to GDP growth. Some academic studies have analyzed the impact of EU funds on the medium- to long-term economic growth in Greece. The results of most studies show a positive correlation between EU funds and GDP growth (Funck and Pizzati, 2003; Fagerberg and Verspagen, 1996; Pereira, 1997; Cappelen, et al. 2003; Puigcerver-Peñalver, 2004). Also, Funck and Pizzati (2003) used Hermin model simulations for the period 2000-2006 and demonstrated that the impact of EU funds on GDP reached 6%. Surprisingly, a few experts obtained a different conclusion: European funds did not improve growth performance. One study, in this case, is the research of Ederveen et al., 2006.
The economic situation of Hungary is different; it hardly depends on European funds. The growth of the Hungarian economy was only 4.6% during the period 2006-2015, without EU funds sent by the EU to Hungary in the framework of the period 2007-2013 funding cycle, GDP growth would have been only 1.8%. Despite the big amount of EU funds received by Hungary, this country was ranked last in group ten in the World Economic Forum's competitiveness report; in 2006, Hungary was placed first or second in the seventh group. There are some reasons why the Hungarian economy did not grow in the first ten years since its accession to the European Union. One reason is the state authorities' irresponsibility, while the population was indebted due to foreign currency loans risk; the authorities increased the wages without an economic foundation for it. Another reason was the receiving EU funds, which has started very slowly. It is known that EU funds for the period 2007-2013 started to arrive after 2009. Furthermore, all of this has been upset by the global economic crisis, which has pushed back worldwide economies.
The majority of Poles agree with the idea that their country`s membership in the EU is beneficial, especially due to the economic benefits that it brings in the fields of economic development, improvements in the quality of Poles' lives, and new professional opportunities. Some financial analysts think that Poles are one of the strongest euro-enthusiasts across the European Union. When the global financial crisis hit EU member countries in 2008, Poland was the only country that avoided a serious recession and whose GDP did not shrink. Many experts said that EU funds that fed the Polish economy played an important role. Their argument is based on the fact that EU funds carry instruments for planning, controlling, and evaluating EU expenditure. The Polish Ministry of investment and development analyzed EU funds' impact on GDP, and his result showed an increase of at least 0.5 percentage points each year in GDP. Also, the difference in gross domestic product between Poland and the European Union average decreased by 21% during 2004-2016 due to the cohesion policy.
The financial experts agree that the impact of EU funds on GDP growth has been significant in Portugal. In the absence of EU funds; the public investment will be greatly affected in Portugal. During the period 1994-1999 EU aid in Portugal was for

3.3% of GDP. Also, the GDP rose by 9.9% in 1999. The strong economic performance has partly driven by the economic cycle and potential growth has improved significantly. Based on the experts of the EU Commission, potential growth was already identical to the EU average at 1.6 % in 2018, respectively 1.7 % in 2019. This is a significant improvement from the trough of -1.3 % from 2012. Also, the positive economic development during the past years has stabilized the country's per capita income relative to the EU average in the range of 77-78%.

Evaluations on how European money has influenced the evolution of the economy have been completely lacking in Romania. Some studies show that European funds contributed 10 percent to the growth of the gross domestic product. This means that 10% of the total economic growth is due to the absorption of European funds. According to the data of the Ministry of European Funds, without this contribution to economic growth, the GDP of Romania would have been, even in 2018, below the peak level of 2008. The use of European money led the Romanian economy over the GDP of 2008. A finding valid for the entire analysis on the European funds is that the important effects in the economy begin to appear visibly from 2011, that is to say, four years after Romania accedes to the European Union. From the total growth of investments, a quarter is brought by European funds. Also, these funds influence the creation of new jobs and the unemployment rate. Thus, the employment rate is about 4% higher due to EU funds. As for the unemployment rate, at the end of 2015, this would have been 3% higher without attracting European money. The effects on consumption and average wage were also positive.

Spain has been the biggest recipient in absolute terms, it set to receive almost EUR 200 000 million during the period 1989-2020. In relative terms, the largest amounts were received during the period 1993-2003, when Cohesion Policy was over 1% of GDP per year; furthermore, Spain received 25 % of the total funds. Spain is currently the third-largest recipient and it is receiving 8% of the funds, while Cohesion Policy is contributing around 0.3% of GDP annually. Many experts agree that GDP growth in the second half of the 80s was mainly driven by European funds. Spain is one of the most pro-EU countries and due to its integration in Europe; these funds have been part and parcel of Spain’s modernization. EU accession provided funds to develop infrastructure in Spain, while EU and eurozone membership have made macroeconomic policy more disciplined, improved the financial conditions, and lured foreign direct investment for Spanish companies to make acquisitions abroad and facilitated export growth.

Since 2004, Slovakia has experienced a sustained GDP growth due to its integration into the European Union. An exception is the global financial crisis of 2008-2009, respectively the Eurozone crisis of 2011-2012. In recent years, the GDP of Slovakia has returned to growth, due to the return of internal and European demand and EU funds. Some financial analysts have found a modest impact on the EU funds on growth.

During the EU accession process, Slovenia’s basic development goal was to exceed the average economic development of the enlarged EU to be able to improve and secure social security, faster development, respectively to improve the environment.

GDP growth was held back mainly due to slow progress in projects supported by the EU funds. So, these funds have an important influence on GDP evolution.

5. Conclusions

Many financial experts emphasized that countries of Central and Eastern Europe will spend EU money on the development of roads and railway infrastructure. There is a big recommendation on focusing on Research and Development, which is a tool that could help the economies of the region in the long term. The EU should motivate these countries to absorb the funds as quickly as possible by reprimanding the governments. Furthermore, the economists involved in the assessment of the impact of EU funds on economic growth suggest that an important tool is the amount and speed of spending of the funds alone, so the quality of their use is not important in the context of the economic situation.
The analyses regarding the impact of EU funds on economic growth in each European country are discussed and published so rarely, furthermore, the politicians are focused on the individual amounts and programs. In other words, this sad truth confirms that especially Eastern European countries are having a short-sighted approach to EU funds; they simply want to gorge themself with these funds. It is not so important the speed of spending of European funds or the level of contracted funds or the number of participants in EU-funded projects, but more important is the real impact of EU programs on population behavior, on the labor market, on consumption and the overall condition of the economy.

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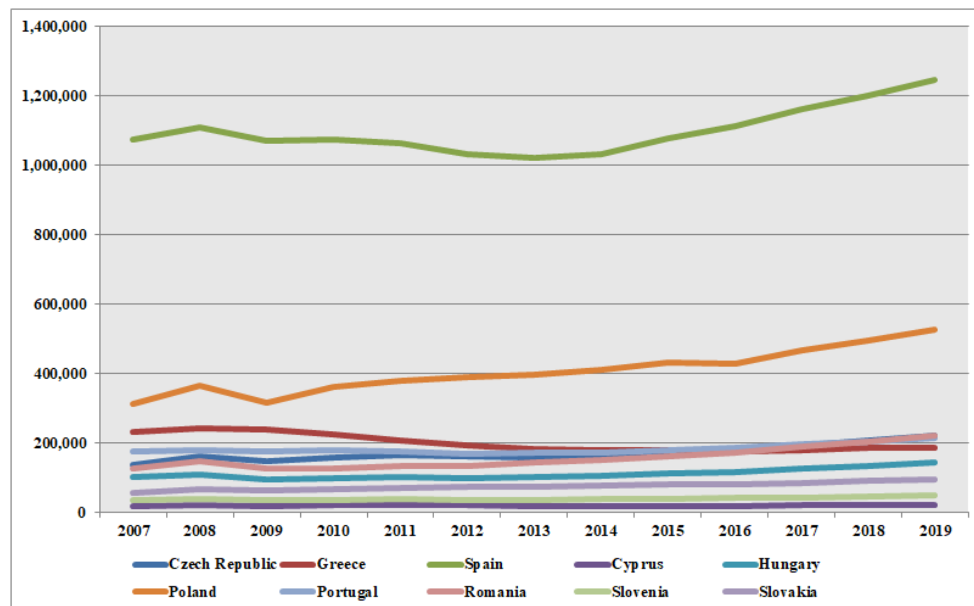
Annex 1: Evolution of GDP in EU10 countries



Source: Eurostat