PROPOSALS TO PREVENT THE REDUCTION OF THE GROSS DOMESTIC PRODUCT DURING THE CRISIS PERIOD

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Abstract

The economic evolution of a country under normal conditions depends on the quantity of goods and services, expressed in value, achieved over a period of time. The structure of the factors is known, based on resources and uses, which contribute to achieving these results. In the analyzed time interval, monthly, quarterly or annually, the most representative result indicator, Gross Domestic Product, is calculated.

The article attempts such an analysis, using data series from previous periods. From these interpretations, a series of correlations appear, which, if maintained, ensure at least constant macrostability and evolution for a predictable period of time. However, the study carried out proposes an analysis to you during periods of economic-financial crisis. Such a crisis occurred in the period 2008-2010, in the case of Romania, when it was part of the global economic-financial crisis. It should be noted that this state of decline of the world economy was triggered by the correlation between the monetary mass in circulation and the need for monetary mass, according to the production of goods and services existing at one point in the world market. Without going into details, we just point out that the disruption of this correlation on the basis of the monetary mass was triggered on the axis of the very massive Chinese exports of value, to the United States of America.

Currently, the study is focused on such a state of crisis and suggests some measures (attitudes) that should be taken. The authors emphasized the interpretation of the economic effect of the investments in the field of R&D on the growth of the Gross Domestic Product in the European Union. The study has relevance for the general analysis in previous periods. Currently, when humanity is facing the COVID crisis 19, the economic situation that will follow will have a new connotation. The global economy as a whole will enter the recession. In fact, there will be an unprecedented drop in the production of goods and services, which will trigger, again, a surplus of money in circulation. This evolution will trigger the increase of the number of unemployed (unemployment rate) and especially of the mass of the unemployed population, the increase of the inflation rate, the reduction of the average

gross and net wage incomes of the population, the decrease of the volume of the exports and of the imports, with the maintenance of the deficit of the external balance and other trade destructive at national level. All in one place will have the effect of lowering the standard of living of the population. It should not be overlooked a fact, which from a numerical point of view will not be modified by the current Coronavirus pandemic, that among the population of the globe of approx. 7.54 billion people and natural resources will deepen the imbalance.

The article, based on a similar study, under the current conditions, should be extended by considering other variables with effect on the growth of the Gross Domestic Product, not only of investments and research-development-innovation.

Keywords: *research and development, European Union, indicator, financing, investments, economic-financial crisis*

JEL Classification: *G32, O30*

Introduction

The article is based on the study performed on the role that investments, especially in the field of research-development and innovation, have on the growth of the Gross Domestic Product, that is, of the economic growth. The study, being oriented towards analysis in the Member States of the European Union, highlights certain evolutions of the Member States. A comparative study is being conducted with other regions around the globe, resulting in the European Union's strategy not being sufficiently effective, especially in the case of the Eastern and Central European countries, which later joined the European Community. This is how the European Union development theory appeared in two stages (speeds). The objectives set by the European Union, in the framework of the short, medium and long term development strategy, cannot ensure the faster growth of the economies left behind from a technical-scientific point of view and, obviously, economically because the altruistic principle no longer works. Including the distribution of the Community budget, although it is carried out on the basis of the economic stimulus criterion, it cannot be accessed by the remaining states.

The article emphasizes the importance of investing in research, development and innovation, but states with lower results cannot make such an investment. Graphic representations are used to highlight important aspects. Also, a series of indicators are analyzed, in order to highlight the situation in some Member States, but also to compare the evolution in the Member States of the economic community.

Literature review

Anghelache and Anghel (2019) highlighted the importance of science and innovation in the development of EU member states. Anghelache, Anghel, Dumitrescu and Avram (2018) analyzed a number of aspects of Romania's strategy in the field of research and innovation. Anghelache, Anghel, Marinescu and Mirea (2017) studied the EU strategy in the field of science and technology. Anghelache and Anghel (2017) performed a detailed analysis of Romania's economic-financial and social path in the ten years since joining the EU, underlining the results obtained by each sector of the economy. Barbosa and Faria (2011), as well as Buesaa, Heijsa and Baumert (2010) studied some elements of innovation in Europe. Cincera and Veugelers, R. (2013) stressed the importance of supporting young innovators. Dachs and Pyka (2010) tried to identify the effects of internationalization of innovation. Isaic-Maniu, Anghelache, Mitruț and Voineagu (2007) analyzed the results of the R&D activity in Romania. Pinto (2009) addressed the issue of innovation diversity in the U.E. Rodríguez-Pose (2008) addressed some aspects of innovation systems.

Research methodology, data, results and discussions

The field of RDI research, development and innovation plays a major role in the Europe 2020 Strategy, being decisive for achieving smart and sustainable growth and meeting societal challenges. In addition to the direct and immediate impact (the production of products, processes or services, innovative and environmentally friendly, scientific publications, patents), the RDI also has a wider economic impact translated by grabbing higher market shares, achieving greater productivity, increasing industrial competitiveness and more efficient use of resources.

The analysis of the RDI policy in the EU Member States is based on a two-step approach. The first step is to identify, for each Member State, based on a set of performance indicators, the main political challenges that will lead to highlighting the bottlenecks that impede the full contribution of the RDI for smart, sustainable and inclusive growth. The second stage consists in assessing the adequacy of the political answers to the identified problems.

The Public Innovation Research System made up of higher education institutions and other authorities and agencies that carry out research and innovation, such as public research centers and institutes, play a basic role in producing knowledge and training specialists needed for innovation within companies. private or public. The qualitative evaluation of this RDI system within the EU 28 allows the identification of its Member States where this issue can be addressed and resolved. The evaluation of the quality of

the public RDI system can be carried out with the help of several relevant indicators such as „bibliometrics", used to evaluate the impact of scientific publications in generating new scientific data; number of grants / grants „European Research Council" received by the researchers of a country and assimilated to the awards of scientific excellence; number of universities in the international rankings. All these indicators show that between Western Europe and Eastern Europe there is a major difference in the quality of public RDI systems. Another visible demarcation can also be highlighted between the Nordic and southern European countries. Thus, Greece, Portugal, Spain and France are below the EU average and maintain an intermediate position between Eastern Europe and Central and Northern Europe.

Consistent with both indicators presented, Latvia, Bulgaria, Croatia and Romania are the member countries of the European Union with the lowest quality of the public RDI system and with the weakest scientific basis. For these countries, strengthening RDI capacity requires increasing investments and coordinating them with major reforms to increase their efficiency. The Netherlands and Denmark, followed by Sweden and the United Kingdom, as well as Belgium are the EU Member States with the strongest scientific base. The main challenge for these countries is to transform this scientific base into world-class innovations, with an increased economic force that through commercialization can ensure the EU's international competitiveness on the global stage. In France and Finland, the scientific level of performance does not rise to the level of public expenditure on research and development, which suggests a problem related to investment efficiency.

According to the analysis conducted between 2006 and 2016, some EU countries, such as Denmark and Germany, funded the public research system even after the economic crisis broke out, maintaining a high level of public spending on research and development, and other countries from Central and Eastern Europe (Estonia and the Czech Republic) show a strong increase in RDI intensity as a result of using European structural funds from 2007. On the other hand, countries that have allocated sources well below the EU 28 average for the RDI and before 2007, they have further reduced these allocations even after 2007. In this situation, Romania, Bulgaria, Croatia and Hungary are located. The low financing of the RDI in these countries leads to delays in the development of the knowledge-based economy in these countries.

However, increasing the R&D funding taken individually is not sufficient, as ambitious national reforms are needed to increase economic efficiency and stimulate public and private investment in R&D. The national reports prepared by the European Commission have identified a series of

reforms around three priorities: quality of strategy and development of policy-making process; the quality of the programs, resources and mechanisms of prioritization and financing; and the quality of high-performance research and innovation. In some Member States, such as Croatia and Romania, research institutes face excessive fragmentation, which represents a major obstacle to increasing the efficiency of the public research system.

Countries with a low level of performance on the indicator of public-private cooperation are most often also those with an overall scientific basis of lower quality. However, some Member States with a medium or even scientific excellence clearly do not have as high a level of public-private cooperation as one would expect. This situation includes Portugal, Italy, Luxembourg, Ireland (Member States with an average scientific quality base), as well as, for example, Denmark and Sweden (despite scientific excellence).

The European Commission's country reports identify a number of factors that explain the low level of public-private cooperation that needs to be addressed. One of them is the lack of harmonization between public research capacity and economic needs. For example, in Luxembourg, investments over the last three decades in research have not necessarily been made following global assessments of economic activities related to their development potential. Smart specialization strategies should concentrate resources where they can develop competitive economic activities; it is important to encourage cooperation between science and the business environment, public spending and mobilizing private investments. Also, the public support system must be designed so that public research capacity can be mobilized to meet the needs of industry and the economy. This requires, in particular, the encouragement of public research, especially at the institutional level (for attracting the business environment) and at the level of researchers (by recognizing the experience in the private sector, where the career will continue in the public research sector). It is also important to integrate PhD students in the industry and to develop funding schemes for public-private research and marketing projects.

The EU is far behind other regions that lead in terms of economic competitiveness based on research, development and innovation. Therefore, it is essential to accelerate reforms at national level to remove regulatory barriers and to ensure a favorable investment environment that will stimulate European companies to invest in R & D & I activities.

While some Member States have shown a strong increase in the intensity of investments in RDI to catch up with the other states, others have experienced negative trends in the period 2007-2013. This category includes Romania, Luxembourg, Cyprus, Latvia, Spain, Great Britain, Sweden and Finland.

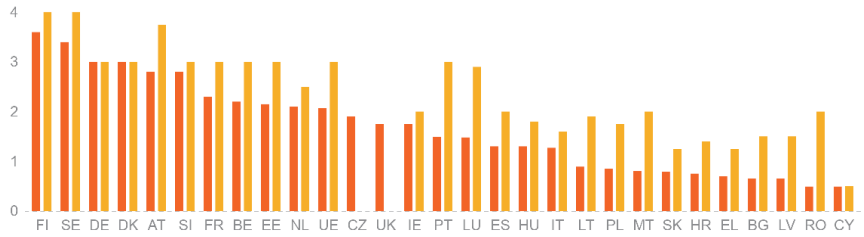
Increasing the support given to SMEs with the potential for rapid growth in innovative sectors can contribute to accelerating structural changes and transforming the European Union into a knowledge-based and innovation-based economy. EU economic growth will be critically dependent on SMEs with the potential for rapid growth as they can create more jobs. At present, in the European Union, SMEs with potential for rapid growth are growing slower than in the US or in countries in other emerging countries, and fewer of them are world-wide companies.

In addition to the factors linked to the scientific basis, the European Commission's reports identify other factors and issues that need to be addressed in order to support R&D investments. These are often issues related to the availability, accessibility and efficiency of direct public support for RDI and other incentives to make RDI investments. Administrative tasks related to public support can be important obstacles especially for SMEs. For this reason, the credit schemes developed to support CDI investments or the facilities offered to companies investing in this field, need to be well regulated so that the real needs of SMEs and companies in the early stages of development are taken into account.

Another problem identified is the lack of adequate skills. This situation is the result of the non-correlation of the academic curriculum with the labor market. Also, access to finance is an essential factor. In general, promoting a favorable business environment and investments in research and development and innovation requires the mobilization of a coherent set of policies. In many Member States, the key issue is to ensure the strengthening of corporate governance.

The target for increasing the intensity of RDI investments in GDP (2012 - 2020)

Figure 1



Data source: Eurostat; the data are processed by the authors

The intensity of research and development as a percentage of GDP reflects the degree of research and development carried out in a country, both in the public and in the private sector. The Europe 2020 strategy has set a target of 3% of the CCDI intensity for the whole European Union and most of the Member States have adopted a national RDI intensity target to be reached by 2020. Statistically, the European Union is still performing well in the world, in RDI field. With only 7% of the world's population, the EU accounts for 24% of global research spending, 32% of high-impact scientific publications, and 32% of patent applications. The EU is the destination of 30% of the world's direct investment, a higher percentage than the US or Japan.

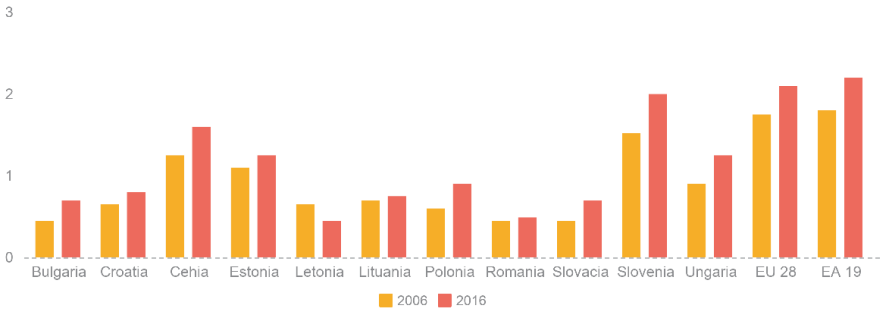
The objectives of the Financing Programs for the period 2014-2020 follow the framework of the European Union's growth strategy for the next ten years. Europe 2020 has emerged from the need to manage the future of the EU, addressing the structural weaknesses it faces and the new social challenges in the long term: globalization, pressure on resources, aging of the population. The priorities of the Europe 2020 strategy mean growth that has the following characteristics: smart, through more efficient investments for the development of a knowledge and innovation economy; sustainable, due to a decisive shift towards a more competitive, greener and more efficient economy in terms of resource utilization; inclusive, promoting job creation and poverty reduction.

Specifically, the European Union has set five ambitious goals to be achieved by 2020 within the established priorities: employed workforce: 75% of persons between the ages of 20 and 64 to be active; innovation: 3% of EU GDP to be invested in research and development; education: reducing school dropout rates below 10%; at least 40% of the young generation complete the cycle of higher education; social inclusion: with 20 million people less exposed to the risk of poverty; climate change and sustainable energy: reducing greenhouse gas emissions by 20% (finally even 30%) lower than in 1990; 20% of the energy is produced from renewable sources; 20% increase in energy efficiency.

To stimulate progress on each priority theme, the Commission presented seven flagship initiatives that will engage both the EU and the Member States: „An Innovation Union", „Youth on the Move", „A Digital Agenda for Europe" , „A resource-efficient Europe", „An industrial policy for the age of globalization", „An agenda for new skills and jobs", „The European platform for combating poverty".

Expenditure intensity in RDI / GDP 2006 compared to 2016 for ECE countries

Figure 2



Data source: Eurostat; the data are processed by the authors

Over the past decade, the EU has maintained its position on the world market much better than the United States, however, in terms of R&D investment, the EU has made insufficient progress towards achieving Europe 2020 of RDI in 2020 of 3% of GDP. In 2013, for example, the RDI intensity of EU 28 was 2.01%, which puts it at a lower position than other countries in the world. This means that European firms have invested less in research and development compared to other regions of the world (EU has allocated 1.28% of GDP; China has allocated 1.51% of GDP, US 1.96% of GDP, Japan (2.6% of GDP). In 2016, the RDI intensity in EU 28 was about 2.1% and EA 19 of 2.2%.

The figure above analyzes for each Member State in Central and Eastern Europe, the real increase of the RDI intensity reached in 2016 compared to 2006. The intensity increased during the mentioned period, but most of the Member States need a much faster increase of the RDI intensity. to reach the target for 2020. The situation is all the more difficult for Romania, Luxembourg, the United Kingdom and Finland, which should reverse the downward trend. In Spain, Sweden and Croatia, the situation from 2007-2013 can best be described as stagnation. While Denmark, Cyprus and Germany have achieved their goals, or will soon reach the level of ambition of these goals, it can be questioned. Slovenia, Slovakia, Hungary, Ireland, Estonia and Belgium to some extent seem to be on track to achieve the goal, but the sustainability of recent trends should be carefully evaluated in each case. For example, in Estonia, the increased intensity of research and development is largely concentrated in the shale gas sector, reflecting more a circumstance than a general tendency to support R&D in the country.

Conclusions

From the analysis of this article, based on the study performed by the authors, a series of theoretical and practical conclusions are drawn. Thus, it is obvious that investments in the field of research, development and innovation play an important role in the development, on multiple levels, of each state and of the European Union as a whole. It is necessary to support and attract all EU member states in large-scale projects, which will have an effect on the development of all states. The budgetary allocations should be directed to the Eastern and Central European states that later joined the European Union. In times of crisis, especially economic and financial, the strategy of the European Union must be based on the principle of self-help in the affected areas. In this respect, it can be concluded that, in the case of the current Covid 19 pandemic, the European Union did not play a special role. It would have been necessary, according to the criterion of budgetary rectification, the European Union to have issued an emergency directive, which would allocate a significant amount to the states that have developed the industry of equipment production and materials specific to this pandemic, which will then be delivered. free to all Member States. This aspect becomes important and it is not excluded that when the economic-financial crisis starts, the Brexit process will be extended.

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