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DOES FISCAL CONVERGENCE LEAD TO TAX CONVERGENCE? EVIDENCE FROM THE EUROZONE

Ioana Laura ȚIBULCĂ*

Abstract

Taxation is a major factor in political, economic, social and fiscal policy decisions. The current study looks at the eurozone Member States in order to establish if fiscal convergence towards the Maastricht criteria leads to tax convergence. The research method is sigma-convergence based on three different variation measures (the coefficient of variation, the Gini coefficient and the Theil index). The overall tax burden is used to define national tax systems. The research period is 1995-2013.

Keywords: taxation, sigma-convergence, fiscal convergence, eurozone

JEL classification: H20, H30

1. INTRODUCTION AND LITERATURE REVIEW

In the European Union, one of the main concerns of decision makers regarding fiscal policy is to reduce tax competition between Member States. One of the ways we can accomplish this goal is to achieve a higher degree of fiscal convergence between Member States. Using convergence as a means of analysis for economic phenomena is not a new idea (Barro and Sala-i-Martin, 1992). However, in the literature, there are various definitions for the concept of "convergence" when it is used in regard to taxation. Furthermore, even for the definition of "fiscal convergence" there is no universally accepted opinion or at least one definition that most researchers can agree on.

Thus, the literature distinguishes between the notions of "fiscal convergence" and "tax convergence". The first of these refers to the convergence of the Member State towards the Maastricht criteria and is widely used by researchers in this field. Some recent examples would be: Hutchison and Kletzer (1995), Holzmann *et al.* (1996), De Bandt and Mongelli (2000), Buti and Giudice (2002), Blot and Serranito (2006), Kočenda *et al.* (2008). The second term refers to a convergence of tax systems of the EU Member States. This sense is used, among others, by Esteve *et al.* (1999), Sosvilla Rivero *et al.* (2001), Zodrow (2003), Delgado Rivero (2006), Kemmerling (2010), Delgado and Presno (2011) in their published studies on this issue. In other words, fiscal convergence towards the Maastricht criteria does

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not have the same meaning as the notion of tax convergence of national tax systems, with all the elements that they bring together. When the scientific analyzes concern the convergence of the eurozone members, the differences between the two meanings come out clearly.

The eurozone (also called the euro area) comprises of the 19 Member States of the European Union (Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain). It is a monetary union. Besides these official eurozone members, there are four other countries that use the euro under a special agreement, although they are not part of the European Union (Andorra, Monaco, San Marino and the Vatican). There are also countries that use the euro without any formal agreement (Kosovo and Montenegro). As a general rule, any state that becomes a member of the European Union undertakes the obligation to become a member of the eurozone, when it meets the accession criteria (the Maastricht criteria). Nevertheless, the United Kingdom, for example, has opt-out clause which states that the UK may not join the eurozone even if it fulfills the Maastricht criteria.

A special case in the European Union is that of Denmark, which also benefits from an opt-out clause, but is currently in ERM II (Exchange Rate Mechanism). This is the last step before joining the euro area and it means that the national currency is pegged to the euro and it can fluctuate only within a very narrow margin (+/- 2.25% in the case of the Danish kroner). Although there are no guarantees in this regard, in the following study we considered that Denmark will become a member of the eurozone in the shortest time possible.

The current study is an analysis of tax convergence trends registered by the eurozone members. The hypothesis to be tested is that the existence of convergence towards the Maastricht criteria leads to tax convergence as well. The analysis method is sigma-convergence based on three different measures of diversity: the coefficient of variation (CV), the Gini coefficient and the Theil index.

2. RESEARCH METHODOLOGY AND DATABASE DESCRIPTION

Sigma-convergence refers to reducing the dispersion of the values recorded for the characteristics of certain objects (tax systems of the Member States of the eurozone, in this case) to be examined. Quantification methods used most frequently for σ-convergence analysis are the standard deviation or the coefficient of variation (CV). However, there are other indicators that can be used and which have interesting properties: the Gini coefficient, Atkinson index, Theil index and logarithmic deviation (MLD). In the current study we will be using the CV, the Gini coefficient and the Theil index.

The *coefficient of variation (CV)* can be calculated and interpreted in two different situations: in a single variable analysis and in the interpretation of a model. The standard formulation of the CV, the ratio of standard deviation of the mean, applies for a single variable analysis. In this context, the CV is calculated as the ratio of the square root of the errors' mean and the average of the dependent variable. In both cases, the CV is often presented as the given ratio multiplied by 100. The CV for a single variable is intended to describe the variable's dispersion in a manner that is independent of the variable's unit of measure. The more the CV increases in value, the greater the dispersion of the analyzed variable.

The results of empirical studies that will be discussed in more detail in the subsequent section refer to the CV calculated based on the formula shown in equation (1).

$$CV_t = \frac{\left(\frac{1}{n} * \sum_{i=1}^{n}(Y_{it} - \overline{Y}_t)^2\right)^{1/2}}{\overline{Y}_t} \quad (1)$$

where n is the number of objects (Member States of the eurozone, in this case), t is the year for which the coefficient of variation is calculated, i represents each of the Member States taken into account in the analysis, and Y is the annual overall tax burden for member state i ($\overline{Y}$ is the annual average tax burden for the eurozone).

The *Gini index*, known as the Gini coefficient, was first introduced in the literature by Italian statistician Gini (1912), later being named after its creator. This index is a statistical measure of dispersion and was originally used to analyze the distribution of the income of a nation among its residents. The Gini index takes values between 0 and 1, where 0 represents perfect equality and 1 represents maximum inequality. In the empirical studies whose results will be presented in the subsequent section, the Gini index will be used to measure sigma-convergence of the tax systems of the eurozone members. Therefore, a decrease in the value attached to the Gini coefficient from one year to another will show a trend of convergence, while an increase in the index will be indicative of the lack of tax convergence.

By including the Gini index in the research methodology we hope to confirm and consolidate the results obtained using sigma-convergence based on the variation coefficient. The Gini index was determined for each year based on the formula shown in equation (2).

$$GINI = \frac{1}{n}\left[n + 1 - 2 * \left(\frac{\sum_{i=1}^{n}(n + 1 - i) * Y_i}{\sum_{i=1}^{n} Y_i}\right)\right] \quad (2)$$

The variables are the same as in equation (1): n is the number of states included in the analysis and Y_i is the annual overall fiscal pressure for state i. However, in value of the Gini index is one of special significance because it shows rank relating to a specific state in a given year in terms of the tax burden.

In order for the Gini index to be correctly calculated, it is necessary for the variables to be placed in ascending order (from the state with the lowest tax burden to the state with the highest tax burden) per year. Therefore, the value of variable i will not be the same for a particular state from year to year, but will change based on the value of the tax burden registered in that state as compared to the values established for other Member States of the eurozone.

The *Theil index* is a tool for analyzing convergence and it is currently widely used in numerous scientific articles. However, most of this research focuses on the idea of income convergence (Wu, 1999; Cuadrado-Roura *et al.*, 1999; Galbraith and Garcilazo, 2005; Monfort, 2008). Terrasi (2002) uses the Theil index in a regional analysis of convergence in the European Union. The research is carried out for four different groups of countries EU9, EU12.1 (excluding East Germany), EU 12.2 (including East Germany) and the EU15. The author uses different time periods and compares national results with the results for the regional alterative aggregated approach in order to determine whether the influence of national factors will be replaced by European ones as a result of the integration process in the European Union.

In the studies which will be presented in the subsequent section, the Theil index is used in order to establish the existence or lack of tax convergence between the Member States of the eurozone.

The Theil index is calculated as shown in equation (3), where Y_i is the annual overall fiscal pressure for a country and $\bar{Y}$ is the average of the tax burden for all the eurozone.

$$THEIL = \frac{1}{n}\sum_{n}^{i=1}\left(\frac{Y_i}{\bar{Y}} * \ln\frac{Y_i}{\bar{Y}}\right) \tag{3}$$

As can be seen, unlike the coefficient of variation, for the Theil index it does no matter how many items (eurozone Member States) are included in the analysis. For each year an average is calculated for the eurozone and any individual value is adjusted according to the average. A final adjustment is made by dividing the results by the number of countries included in the analysis.

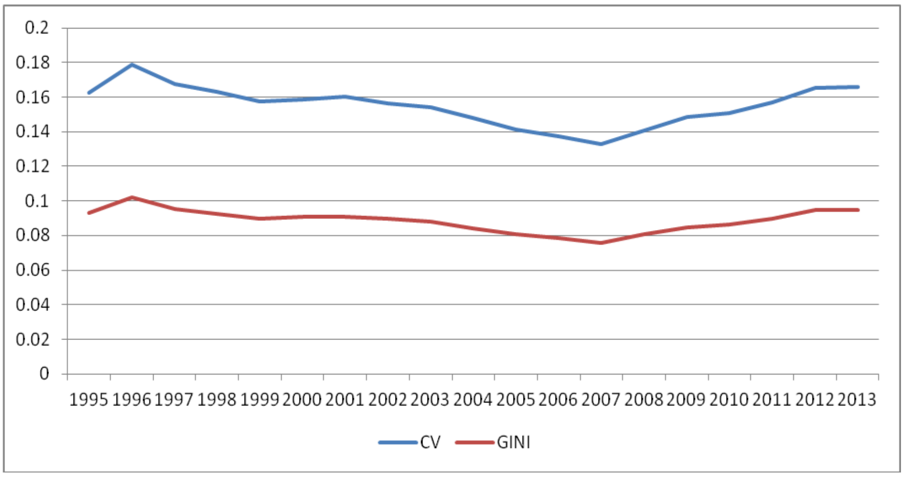
Just as for the Gini coefficient and the coefficient of variation, in any convergence analysis based on the Theil index we are looking for a downward trend over the studied period.

The research database includes information regarding the total receipts from taxes and social contributions (including imputed social contributions) after deduction of amounts assessed but unlikely to be collected, presented as a percentage of the GDP, on an annual basis. The information was collected from the Eurostat, online database, for the time period between 1995 and 2013. Unfortunately, at present, data for 2014 is not yet available. The data represents the overall tax burden for 20 Member States of the EU (the 19 eurozone members and Denmark).

The data was split into three different work databases. The first one contained information regarding the 19 euro area members, the second one comprised of information for those same 19 eurozone members and Denmark, while the third database included information for only 12 “old” eurozone members (countries that have adopted the euro prior to 2002: Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and Greece). For each work database the three coefficients were calculated and tax convergence tendencies were analyzed. The results are presented in the following section.

3. RESEARCH RESULTS

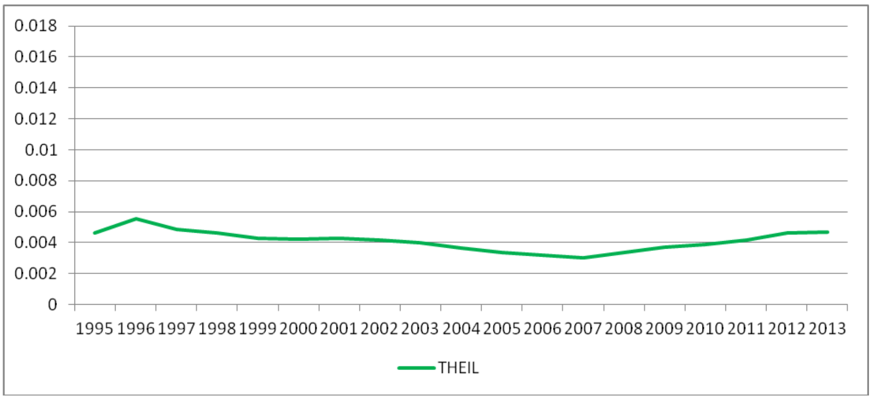
The first part of the empirical analysis is based on information currently available for the 19 Member States of the euro area for the period between 1995 and 2013. Figures 1 and 2 show the results of the analyses performed. The values for all three indicators were not presented on a single chart as values obtained by calculations based on the Theil index are considerably lower than the other two sets of values. Consequently, these low values did not allow observations regarding the trend followed by the Theil index as compared with the other two coefficients.



Source: own calculus

Figure no. 1 – Tax convergence in the eurozone – CV and Gini index (1995-2013)

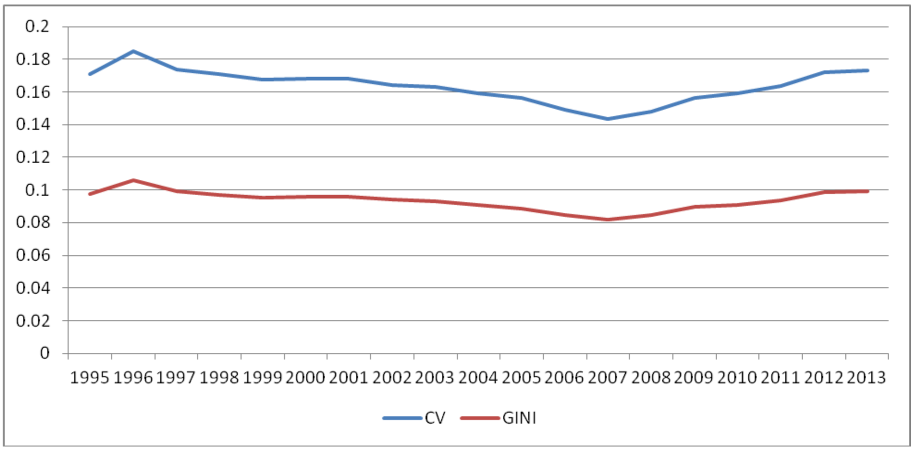
If we compare the two charts, we see that the trend is the same whatever approach is used. Thus, each method not only complements the other, it also contributes to reinforcing the results. For all three coefficients the minimum value, which is called a peak of convergence is reached in 2007, while the maximum values appears in 1996. Overall, the three coefficients do not present a downward trend. However, for the period between 1996 and 2007 there is a constant decrease in the values of all three coefficients from one year to the next. Therefore, these results allow us to consider those years to be a period of convergence of the taxation systems of the Member States of the euro area.



Source: own calculus

Figure no. 2 – Tax convergence in the eurozone – Theil index (1995-2013)

Unfortunately, the trend for recent years is an ascending one. This points to a lack of tax convergence in the eurozone starting with 2007. The values for 2012 and 2013 do not surpass those for 1996, but they are much higher than those registered in 2007. As 7 new states have joined the euro area since 2007, we may conclude that fiscal convergence does not seem to also lead to tax convergence for the eurozone Member States.



Source: own calculus

Figure no. 3 – Tax convergence in the eurozone and Denmark – CV and Gini (1995-2013)

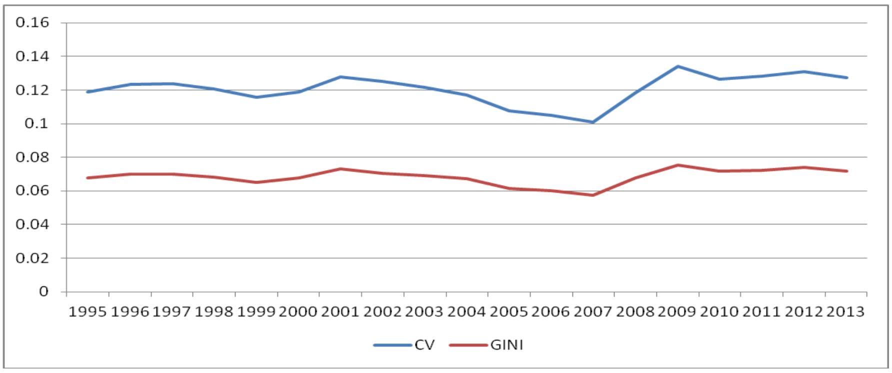
The second part of the research aims to establish if the addition of Denmark to the eurozone will in any way change the previous conclusions regarding tax convergence. Therefore, the analysis was renewed this time taking data from Denmark into account. Therefore, the results in Figures 3 and 4 present the findings for 20 countries (the current 19 members of the euro area and Denmark).Similar to what we found earlier, and if the charts are to be compared, we can note that the values for all three coefficients (CV, Gini and Theil index) give rise to identical lines on the charts. Moreover, these developments are surprisingly similar to those that resulted from the previous analysis.

Source: own calculus

Figure no. 4 – Tax convergence in the eurozone and Denmark – Theil index (1995-2013)

There is the same lack of fiscal convergence for the whole period of analysis, but there is a convergence period between 1996 and 2007. The peak of convergence for this wider region was also recorded in 2007 and 2013 seems to indicate, perhaps, the beginning of a new period of fiscal convergence for the 20 countries included in this analysis.

All in all, it must be concluded that the addition of Denmark to the eurozone will not significantly affect overall trends in the convergence of national tax systems. These national taxation systems were defined based on the total annual tax burden in each state. The data that was analyzed and processed covers a period of almost two decades, which lends further credibility to the results we obtained.



Source: own calculus

Figure no. 5 – Tax convergence in the "old" eurozone – CV and Gini index (1995-2013)

In the last part of the research the aim was to determine if the initial research hypothesis can be confirmed at least for the 12 "old" members of the eurozone, countries that adopted the euro prior to 2002. In order to answer this new question, the three coefficients were again calculated and an analysis of tax convergence tendencies was undertaken for these 12 countries. The results are presented in Figures 5 and 6.

Source: own calculus

Figure no. 6 – Tax convergence in the "old" eurozone – Theil index (1995-2013)

As was the case for the previous two research directions, for these 12 eurozone members, the charts show the same evolution for all three coefficients. All three reach the maximum values in 2009, while the peak of convergence is 2007 according to all three coefficients.

However, there is no clear downward trend which points to the conclusion that there are no tax convergence tendencies, not even for countries that have been part of the monetary union for some years now. There is a slight descending tendency form 2001 to

2007, still that is not enough to consider this a tax convergence period. Overall, the lines on the chats are almost constantly parallel to the horizontal axis. This only comes to reinforce the lack of tax convergence conclusion. Therefore we must give a negative answer to the last research question, There is no clear evidence to support a claim that fiscal convergence leads to tax convergence for the 12 “old” Member States of the eurozone.

4. CONCLUSIONS

The current study consists of an analysis of convergence of the national tax systems of the euro area. The aim was to answer the question whether attainment of the Maastricht criteria and being a member of a monetary union leads to the convergence of tax systems. The scientific analysis was performed using sigma-convergence and it could not reveal evidence to enable the validation of an affirmative answer to the original research question. However, the conclusions are in line with previous research conducted regarding tax and fiscal convergence in the European Union, such as: Ayala and Blazsek (2012), Onorante (2004), Țibulcă (2015a), Țibulcă (2015b).

The general conclusion of the research is to reject the initial hypothesis. The empirical analysis was focused on sigma-convergence calculated using the variation coefficient, the Gini index and the Theil index. The individual tax systems were defined using the overall annual tax burden recorded according to information collected for the period between 1995 and 2013. The analysis underwent three different stages. Firstly, the current 19 Member States of the eurozone were taken into account. Secondly, Denmark was added to the initial research group. Lastly, the research was narrowed to only 12 countries that joined the eurozone prior to 2002. In all the situations, the results pointed to similar conclusions.

Looking at the research results, it can be said that no evidence was found to support the claim that fiscal convergence towards the Maastricht criteria leads to convergence of the taxation systems of those countries.

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NEW INSTITUTIONAL ECONOMICS' PERSPECTIVE ON WEALTH AND POVERTY OF NATIONS. CONCISE REVIEW AND GENERAL REMARKS ON ACEMOGLU AND ROBINSON'S CONCEPT

Joanna DZIONEK-KOZŁOWSKA[*], **Rafał MATERA**[**]

Abstract

Many thinkers made attempts to explain differences in economic development between countries, and point out what should be done to foster development. We review briefly some spectacular theories focused on these fundamental problems. We use the tools of economic analysis and the methods characteristic especially for institutional economics and economic history. However, the paper's central aim is to analyse and assess one of the newest voices in that still open discussion coming from Acemoglu and Robinson and presented in their "Why Nation Failed? The Origins of Power, Prosperity, and Poverty". Their book is brimmed with compelling illustrations, which we acknowledge as its strongest point. While the accuracy and coherence of their generalisations leave much to be desired. The analysis of those examples let to infer that the most important element encouraging or hampering economic development is the common participation of the people in economic and political processes.

Keywords: new institutional economics, inclusive institutions, extractive institutions, economic development, Daron Acemoglu and James A. Robinson

JEL classification: N20, O50, B53

1. INTRODUCTION

One of the goals of the paper is to review briefly some spectacular theories focused on the analysis including a few fundamental economic questions. Why did some national economies manage to succeed, while the others failed? Can economic prosperity and poverty be viewed as a consequence of specific cultural patterns? And finally, how to effectively create effective economic institutions and eliminate the destroying ones? These questions may be answered from the research perspective of various fields of economics. However, we would rather use the tools of economic analysis and the methods characteristic of institutional economics. In addition, we could not omit the contributions from economic history, the history of political systems, economic and political thought, and jurisprudence.

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Regarding the aim and scope of the paper, an interdisciplinary approach seems to be indispensable. Nevertheless, the underpinnings of the article's theoretical framework lie into the scientific output of institutional economics and economic history, whose one of the main research goals is to identify the factors determining the socio-economic development. In the two recent decades, many scientific investigations have been based on the so-called "triangle paradigm", i.e. on the some kind of balance between economy, society and policy. This approach has been promoted both at the national and global level. Viewed from such a perspective, the close collaboration between history and economics appears to be unavoidable. Both sciences should make the good use of the new analytical tools and methods as well. That is why economic history ought to gain from the contributions of the history of political systems and jurisprudence. It should not separate itself from the history of economic doctrines and economic theory. What is worth underlining, is the fact that one of the most promising paths towards integration of social sciences leads through the multidimensional role of institutions in social, political and economic life.

2. CONCISE REVIEW OF MOST SPECTACULAR WORKS ON WEALTH AND POVERTY OF NATIONS

Global financial crisis, which began in 2008, apart from the disruptions in economies of most countries in the world, led to the impairment of the authority of economists, and to some extent to the impairment of the subject of economics itself. The following questions were posed: what were the causes of the crisis, who is responsible for its outbreak, how does the crisis differ from the previous ones, is the world on the verge of another great depression? Also, the question arose why politicians and economists responsible for economic policy did not warn in time against the oncoming threat. Academics and publicists discussed heatedly the reason why, despite the continuous development of the theory of economics and the advancement of research methods applied by economists, once again they failed to prevent perturbation in the world economy. Such voices in a sense forced the economists and policymakers to account for the circumstances. It is striking, however, that diagnoses and recipes for recovery presented in specialized journals as well as in the media directed at the wide public were significantly diversified.

Similar heterogeneity is characteristic of explaining the development differences between countries. However, the explanation of the nature of this problem is so difficult, as it has to take into account the long period analysis of the economic performance of many countries. Moreover, the last global financial crisis has once again launched a growth of economists' interest in this crucial topic. But the problem of the causes of wealth and poverty in the world has been the subject of investigation of thinkers since the beginning of economics as a scientific discipline. Already the father of economics and economic history – Adam Smith – entitled his *opus magnum* (issued in 1776) "An Inquiry into the Nature and Causes of the Wealth of Nations". After World War II, with the growing popularity of theories of economic growth, an increasing group of scientists began to adopt a global perspective. To apply such theories, they had to deal with the issue of huge disparities of income in the world. Within the framework of development economics it was sought to explain the differences between industrialized, capitalist states and the poor ones that have just entered the path of growth. This issue used to be a primary consideration of Gunnar Myrdal`s work – with a title directly referring to the work of Smith – "Asian Drama: An Inquiry into the Poverty of Nations" (published in 1968).

Today we are still trying to answer the question: how did individual countries and societies come to a state in which there are today? Many new inspiring works devoted to this subject were issued at the turn of the second and third millennium. Amongst the authors analysing the question were both economic historians (Rondo Cameron, David Landes, Angus Maddison, Robert Allen, Gregory Clark, Alan Beattie) and economists of institutional school (Douglass C. North, Mancur Olson, Deepak Lal, Joseph Stiglitz, Jeffrey Sachs, Angus Deaton). Amongst the authors Daron Acemoglu and James A. Robinson`s new work "Why Nations Fail. The Origins of Power, Prosperity and Poverty" enjoys a special position. The authors, using a number of historical examples, tried to explain the sources of differences between rich and poor countries (Acemoglu and Robinson, 2013, p. 3). The work refers to other classical lectures on economic history in recent years such as: "Wealth and Poverty of Nations. Why Some Are So Rich and Some So Poor" by David S. Landes; "A Concise Economic History of the World: From the Paleolithic to the Present" by Rondo Cameron and Larry Neal; Angus Maddison's studies (including the "World Economy. A Millennial Perspective") or to "False Economy. A Surprising Economic History of the World" by Alan Beattie. Causes of inequality in the world were also explained by Robert C. Allen in his "Global Economic History".

After reading the elaborates mentioned above, it can be concluded that there is no single leading cause of inequality in the world but one needs to indicate the importance of a wide variety of factors: <u>geographical</u> which are associated with technological development reducing burdens of "bad geography" (Allen, 2011, p. 14); <u>cultural</u> "that provides the key to path dependence" (North, 1994, p. 364) but understood rather as developing the skills of individuals in order to break down cultural barriers, which can be achieved by better education; <u>institutional</u> (including political and legal ones) as well as associated with the extraordinary "<u>accidents of history</u>" (e.g. a revolution or a sudden change of the government). It should be emphasized that most of the authors looked for various factors determining the causes of wealth and poverty, not trying to make evaluation which of them have bigger or smaller impact on the level of economic development. Besides the contemporary "classics" of economic history, the issue of global wealth and poverty was raised by many influential economists in the third millennium. A common feature of the majority of conceptions undertaking development issues was the belief that institutional changes were inevitable. The greatest differences occurred between the followers of liberalism, spontaneous order supporters: e.g. Deepak Lal (2006) who is a continuator of the thought of Friedrich August von Hayek and Milton Friedman, and supporters of formal solutions who argued that the lack of planning on a global scale increases inequality and hinders development: e.g. Joseph Stiglitz (2002), Paul Krugman (2004) or Jeffrey Sachs (2005). The latter position ought to be considered as a mainstream in modern development economics.

The participants of the contemporary debate on global poverty argue that it is extremely difficult to go off the course from particular path of development, but governments should be advised to adhere to some golden rules they should follow: not to isolate the economy from the rest of the world; to plan the development of their cities, but at the same time not to delegate too much power to local governments in order to keep the unity of the state; not to follow the obsessive belief in the importance of religion; not to justify the authority that ignores property rights and the rule-of-law. As far as poor countries are concerned, they should worry less about trade policy and more about customs procedures; focus on the fight against the destructive corruption but worry less about "predictable bribes"; and last, but not least: be aware when the country enters the wrong path as soon as possible to escape from it (Beattie, 2009, p. 300). These are issues institutional economics can comment on. Difficulties of entering the correct path of development do not increase with the advancement of the world economy's integration. On the contrary – one could observe new examples of winning states. Globalization multiplies the opportunities of the countries ruled by competent elites, but also causes the broadening of gaps between those which are successful and those which are not. Many new studies on global wealth and poverty abandon traditional narrative of undisturbed chronology. Instead, they focus on particular sectors of the global economy and the case studies of their development paths. For numerous contemporary authors, it is far more important to elucidate the relationships and differences, success and defeat, prosperity and crisis, center and periphery rather than show the full image.

3. INCLUSIVE AND EXTRACTIVE INSTITUTIONS. THE CORE CONCEPT OF ACEMOGLU AND ROBINSON

Another important aim of the paper is to explain the role of political and economic inclusive and extractive institutions. Those terms were introduced by two outstanding scientists, Daron Acemoglu (MIT professor in economics, J.B. Clark's medal winner) and James A. Robinson (Harvard University professor in economics and political sciences), in their book "Why Nations Fail. The Origins of Power, Prosperity and Poverty" (2013). The authors claim that "[c]ountries differ in their economic success because of their different institutions, the rules influencing how the economy works, and the incentives that motivate people" (Acemoglu and Robinson, 2013, p. 73). Their conception lies within the boundaries of the new institutional economics and the authors were largely inspired by the theory of development proposed by Douglass C. North, who was one of the most recognizable representatives of that stream. It is worth stressing, that Acemoglu and Robinson applied their ideas to a vast historical and geographical research horizon, referring to specific examples of economic and political institutions from different periods and countries (mostly Anglo-Saxon, the UK and the USA, but also Latin-American, such as Argentina, Brazil, Mexico, Peru, not to mention China, Russia, including the Soviet period, and numerous African countries). Despite their wide approach, Acemoglu and Robinson's work lacks of information about institutional experiences from the Central-Eastern Europe, namely such countries as Poland (although mentioned once in the whole book) or Romania.

The Acemoglu and Robinson's concept should unquestionably be placed at the institutional end of the spectrum of the theories of economic development. The authors leave it without a shadow of doubt, announcing the core of their book as being "about the effects of institutions on the success and failure of nations – thus the economics of poverty and prosperity" (Acemoglu and Robinson, 2013, p. 44). Their mantra-frequently repeated message is that institutions are the crux of the matter: they are important for both economic development and growth, and as such are the key factor to explain differences in economic performance over the centuries. Incidentally, the very words 'institution'/'institutions' repeat themselves more than thousand times on 500+ pages (1265 times, to be precise).

However, for those, who are acquainted with the institutional economics analysis and institutional theories of economic development in particular, Acemoglu and Robinson's "institutions matter" declaration may look a bit confusing at the first glance. The source of this bafflement is in the meaning attached to the very word "institution" and their assessment of the "culture hypothesis".

The crucial issue which remains to be analysed in the greater details is Acemoglu and Robinson's recipe for economic success. The already presented aspects of their concept imply their solution must be related to the institutions, political and economic. Yet, what kind of institutions and in which manner should be established to improve economic performance? As it has been pointed in the first section of the article, the vast majority of contemporary scholars engaged in the research on economic growth and development agrees with the classical economists' diagnosis that to increase wealth of nations the most beneficial social environment is the one based on economic freedom and the rule-of-law. Over time the theorists of liberalism add to this picture political liberties and democracy. Acemoglu and Robinson are in this group. They claim the institutional order "must feature secure private property, an unbiased system of law, and a provision of public services that provides a level playing field in which people can exchange and contract; it also must permit the entry of the new businesses and allow people to choose their careers" (Acemoglu and Robinson, 2013, pp. 74-75). However, this "old wine" is poured into new bottles, as in their own words "[t]he central thesis of this book is that economic growth and prosperity are associated with inclusive economic and political institutions, while extractive institutions typically lead to stagnation and poverty" (Acemoglu and Robinson, 2013, p. 91).

It turns out the key dividing line is the split between inclusive and extractive institutions. But what are they? Those notions are not defined precisely, though it may be concluded that the inclusive institutions are those which allow for greater participation both on the economic and political dimension of social life, while extractive may be seen as barriers to entry that eliminate some groups from economic or/and political arenas. Inclusive political institutions "make power broadly distributed in society and constrain its arbitrary exercise". Whereas the inclusive economic institutions are "those that allow and encourage participation by the great mass of people in economic activities that make best use of their talents and skills and that enable individuals to make the choices they wish" (Acemoglu and Robinson, 2013, pp. 74-75). On the contrary, extractive institutions "are designed to extract incomes and wealth from one subset of society to benefit a different subset" (Acemoglu and Robinson, 2013, p. 76). The notions 'extractive state' and 'extractive institutions' appeared as early as in the article published with Simon Johnson (Acemoglu *et al.*, 2001, pp. 1370,1376).

The socio-economic system based on inclusive institutions is the one, which gives incentives for economic activity and as such, it fosters "economic activity, productivity growth, and economic prosperity". An impact of extractive institutions is exactly the opposite. Still, the effect of institutional order for the economic performance should not be regarded as a decisive criterion whether the particular set of institutions is extractive or inclusive. In fact, the systems founded on both types may generate some growth. Acemoglu and Robinson even stress that in many extractive states longer or shorter periods of economic prosperity occur. What is more, economic growth may be somehow supported by the governing elites of the extractive states, since it is in their own interest to have more wealth produced to be extracted. The difference between economic growth which takes place in the systems of extractive or inclusive institutions is that in the former case (i.e. under extractive institutions) the growth is never long-lasting and sustainable. The reason is in the very character of this institutional framework that hinders free initiative and impedes technological progress which is the essential prerequisites of economic growth. How long such a growth may happen is too difficult to predict, however, in the light of the examples Acemoglu and Robinson provide, it may be concluded that those periods of economic progress in extractive states might even spread over a couple of centuries at times. As it happened in the case of Maya culture or Roman Empire (Acemoglu and Robinson, 2013, pp. 143-149, 157-176).

It means the establishment of the inclusive institutions is not a necessary precondition of economic development, however, without them the pace of growth is slower. Looking from this perspective, it would be interesting to invert the line of reasoning and ask about the character of the institutional order in those countries which are going through long-term difficulties with economic performance (as e.g. Japan or the EU15 countries). Japan is ranked 20th in Heritage Foundation 2015 Annual Index of Economic Freedom per 178 countries evaluated, whereas the EU15 countries except for Greece, Italy and France are placed in the upper quarter of the ranking. According to the Freedom House last report all those countries are assessed as "Free" with highest scores (excepting Greece) in both 'civil rights' and 'political freedom' categories (Miller and Kim, 2015, pp. 21-26). May this be read as a sign of those states major problems with the inclusiveness of their institutions even if it seems they are both market-orientated and democratic? It is not our intention to provide an answer to such a question, but rather to indicate that a bit surprisingly, Acemoglu and Robinson's theory coax to ponder not only over the causes why nations fail, but also over the current state of the most advanced economies of the world.

Turning back to the analysis of the content of Acemoglu and Robinson's concept, they stand by their thesis that the political institutions determine the economic ones. Furthermore, they claim the positive feedbacks may be noticed in both cases, which means the extractive political institutions lead to the extractive political rules, and the inclusive political institutions facilitate the emergence and maintenance of the inclusive economic ones. The former situation they name "the vicious circle", while the latter is labelled "the virtuous" one. The tendency to support the same genre of institutions in the case of the extractive institutions is explained by (1) the ruling elites fear of possible reallocation of political power that might be caused by the changes of the character of economic institutions and (2) their actions to belay their political supremacy by protecting the economic benefits they are able to obtain thanks to their influence on the economic rules. In turn, in the case of the inclusive institutional framework, the safety net results from the political influence of many groups which participate in defining new rules and regulations and are able to care for their own economic interests in that very manner.

Yet, if we accept that those two "circles" operate, how was it actually possible to break the self-reinforcing mechanism of economic failures and step into the path to prosperity? To begin with, Acemoglu and Robinson admit that changing an institutional drift is never easy. What is needed is a critical juncture, which, as it has been mentioned before, may be caused by some fundamental changes in technology or turbulences in the international environment significant enough to shake the distribution of political power in society. However, not every critical juncture leads to the changes in the type of institutions. When it comes to the extractive states, besides this fortunate one (i.e. a change from the extractive to inclusive institutions), there are two more probable scenarios: the survival of the ruling group or a success of a new extractive one. Such a new group can even modify some institutions, though not their extractive essence. In other words, the people governing a given state may change, but the institutional order they create in many cases remains extractive.

To make the matter worse, the path of institutional change is not possible to predict. It means, what Acemoglu and Robinson avow, that "[t]he outcome of political conflict is never certain, and even if in hindsight we see many historical events as inevitable, the path of history is contingent" (Acemoglu and Robinson, 2013, p. 332). It should be indicated though that in the case of Acemoglu a change of approach may be noticed, since in his "Introduction to Modern Economic Growth" (2009) he stated: "Such a study will not only help explain why some societies choose or end up with institutions that do not encourage economic growth, but it will also enable us to make predictions about institutional change" (Acemoglu, 2009, p. 121).

So is there anything that may be done to increase the odds of turning the path of nation's development to the inclusive institutions' side? Unfortunately, as it turns out, not much.

Acemoglu and Robinson accentuate (1) the endeavours to create broad coalitions or social movements, which can effectively support the changes toward inclusive states, (2) 'the presence of some degree of centralised order', (3) previous experiences with political pluralism and civil society, even if on a moderate scale, (4) free media (partially free at least), and (5) having luck (without giving any closer hints how to obtain such a desirable outcome) (Acemoglu and Robinson, 2013, pp. 306, 460-462). The problem is the content of all the above points refers rather to the favourable circumstances, not the guidelines what may be done to bring about the change. The authors of "Why Nations Fail" are aware of that and brave enough to admit "[t]he honest answer of course is that there is no recipe for building such institutions" (Acemoglu and Robinson, 2013, p. 460). Thus the applied side of their own concept they seek mostly in showing that, contrary to the beliefs of many experts and economic advisers it is simply not possible to "engineer prosperity". And that is why they issue a stern warning on the economic and humanitarian assistance and foreign aid organised via international organisations by pointing to impossibility to initiate economic development with the external help without deep changes in the underdeveloped countries, institutional order and the scandalous wastage of the engaged resources, which is striking in comparison to the level of destitution of those to whom it should be headed (Acemoglu and Robinson, 2013, pp. 450-456). Hence, fully accepting this critique, it must be stated that when it comes to the practical dimension of their theory, unfortunately there is not much that may be particularly useful. In assessing the postulates stemming from the culture hypothesis Acemoglu bitterly remarked that "any advice to a society that it should change its culture is almost vacuous" (Acemoglu, 2009, p. 112). Yet his own calling to have broad coalitions, centralised order, previous experiences with political pluralism and civil society, access to free media and luck regrettably is vacuous no less.

4. CONCLUSIONS

Following Acemoglu and Robinson's idea, it should be repeated that economic success is not just the result of geographical location, terrain, possession of water resources, natural resources, cultural perspective, religion, or luck, but economic decisions affecting the activation of inclusive economic institutions, which are an outcome of political choices. According to Acemoglu, : "Though this sort of institutional perspective has a long pedigree, it is actually interesting that most of what's written in both the popular media and academia emphasize other factors, such as the geography or cultural perspectives, or things such as enlightened leadership (how clever leaders and good economic advisers are crucial for economic success)" (The World in Crisis). The decisions of authorities have a huge impact on enabling institutions to include new social groups in economic activity and exert strong influence on removal of the institutions that exclude a part of society out of these activities.

Inspired by the concept of Acemoglu and Robinson, new studies can be argued in favour of the decisive influence of institutions on the economic status of each country: whether inclusive or extractive, political or economic. Acemoglu and Robinson's concept is to be considered an institutional interpretation of history as it tries to answer the question of how history shapes the institutional development paths of nations. The theory of "path dependence" is used also as a reference point. This approach can be exploited for analysis of all development processes particularly sensitive to their own history and strongly dependent on their previous course.

It is worth to highlight the long-term effects of inclusive and extractive institutions and compare the systems in many selected countries during different historical periods. Only the study conducted over a wide spatial and temporal depiction (using the Fernand Braudel's term –

longue durée) can result in answering questions set above. The possible confirmation of the occurrence of similar inclusive and extractive institutions in the countries under study can help understand the difficulties in quick and smooth achieving by one state the development levels of other states (*the catching-up process*). On the other hand, the results may help in raising the awareness of the societies, scientific elites and, especially, the political elites, that widening the area of influence of inclusive institutions is the only chance of obtaining sustainable development. We accept the arguments of Witold Kula (one of the most influential Polish economic historian) who postulated to refrain from monographic descriptions of institutions themselves and promoted the primacy of macroeconomic issues. He voted for giving priority to long-term research instead of closing the narrow limits of time and for striving to create a typology and formulate generalizations understood as the discovery of regularities (Kula, 1983, p. 753).

The results of Acemoglu and Robinson‘s book should be valuable for policy makers in the countries analysed and should be used in the educational policy of governments, especially by comparing the outcome with the results yielded by the authors for selected countries. In this case, social sciences have a large role to play in shaping public policy, the importance of which increases with socio-economic development. After studying Acemoglu and Robinson's concept the readers should also refer to the meaning of cultural factors, the role of religion or, in general terms, the significance of institutions in the development of societies. It is worth "to identify them in the context of the discussed problems of wealth and poverty of nations, reminding the reader in a way that the non-solved question has been a major issue of economic research for years, put on a kind of pedestal of the problems analysed in economics by the father of the discipline – Adam Smith" (Dzionek-Kozlowska and Matera, 2015, p. 9).

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FISCAL CONSTRAINTS IN THE EUROPEAN UNION – WHEN MORE IS LESS?

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Abstract

This paper examines the implications of fiscal rules measured through the Fiscal Rules Index and fiscal institutions that supervise fiscal policies on key aspects of fiscal policies such as public debt and budget deficits. Our goal was to identify the specific links between fiscal rules, institutions and fiscal policies, to support any rethinking of public policy matters. Our results confirm that the government's consolidated debt is influenced by both fiscal rules and institutions. Through this research we have showed that an increased number of institutions and fiscal rules is closely related to an increase in public debt levels. We explained this influence by stating that cause may consist in not having one strong and independent institution, but more institutions more or less independent that divide key responsibilities. Also our results indicate that budget deficits aren't influenced either by supervising institutions or fiscal rules.

Keywords: fiscal rules, institutions, fiscal policies, public debt, budget deficits

JEL classification: H30, E61, H63

1. INTRODUCTION

Since the current crisis, economists, politicians and the general public, argue the role of fiscal rules, especially in the context of high public debt levels. There is no denial of the fact that the need to maintain tight fiscal rules is absolutely necessary in order to ensure sound public finances and to maintain the credibility of a government to meet its obligations.

The key advantage of fiscal rules is that they do not allow governments to implement weak or inadequate fiscal policies that may lead to increasing public debt and public deficits. In other words, as critics argue, it reduces the power of policy-makers. Putting no strains on policy-makers unfortunately leads as some state to situations as the current crisis in Greece that implies high levels of public debt that cannot be counteracted through the usual fiscal policy mechanisms.

It is our goal to reveal through this paper which are the connections between fiscal rules, fiscal institutions and fiscal policies and to show how they influence each other. A smaller number of fiscal rules means that the fiscal policy of a country isn't highly regulated

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and submitted to control. Also, a smaller number of fiscal rules means that governments have few guidelines in conducting their fiscal policies.

Our results indicate that fiscal rules (measured through the Standardized Fiscal Rules Index) conduct to an increase of the governments consolidated debt, which it may seem strange at a first sight, but it can be explained by the fact that although fiscal rules exist they aren't enforced. Looking through our database we noticed the fact that the Fiscal Rules Index became positive and registered huge gains in the crisis period and after, period of time defined through increasing public debt and public deficits through most of EU member states. So, even if new fiscal rules were imposed, the timing couldn't be worse. Also this is the case of fiscal institutions, by which an increased number didn't conduct to smaller government's debt levels.

The public deficit doesn't seem to be influenced in any way by fiscal rules or the number of institutions, just only as we have expected by the government expenditure and revenue levels as percentage of GDP.

We organized our paper as follows. Section 1 represents our introduction. Section 2 marks our literature review and develops our key hypotheses. Section 3 describes the data sources and variables used in our analysis. Section 4 discusses the methods that we used in our analysis. Section 5 marks our empirical results, while in section 6 we summarized our conclusions and key findings.

2. LITERATURE REVIEW

The current economic and financial turbulence in the European Economic and Monetary Union boosted up by the crises in Greece has sparked a fiery debate on the viability of the common currency. The current debates also include major subjects as fiscal rules and their role in the current state of EMU. The situation of Greece also brought into discussion elements like fiscal transfers and the rules that should accompany them. (Evers, 2012, pp. 507-525)

At the European level, most of the economists when thinking about fiscal rules tend to resemble them to the Stability and Growth Pact. Because treaties like the one we mentioned regulate the actions of sovereign states, they often suffer from a fundamental implementation problem owing in large part to the absence of an effective and independent enforcer, as stated by Beetsma and Debrun (2007, pp. 453-477). The means by which constraints on fiscal policies influence the macroeconomic stability and welfare were analyzed by Pappa and Vassilatos (2007, pp. 1492-1513), which state that fiscal authorities can enhance welfare by targeting the regional output gap. On the other hand, targeting local inflation is less successful giving the fact that inflation stability is supervised by the central bank. We state that the key role of fiscal rules isn't represented by promoting welfare at a regional and general level, but to enhance supervision on fiscal policy-makers in order to obtain sound public finances and stability at a macroeconomic level. But, as pointed out by Sacchi and Salotti (2015, pp. 1-20), when strict fiscal rules are introduced, discretionary policy becomes output – stabilizing, results being easier to obtain by using rules regarding balanced budget, and less rules that influence expenditure, revenues or debt. Also, this conclusion is sustained by Albuquerque's (2011, pp. 2544-2599) results that indicate the fact that bigger countries and bigger governments have less spending volatility, the political factor not playing a role in this regard. Thus, imposing rules on balanced budgets still remains the best option. The credibility crisis regarding the sustainability of public debt can actually be resolved by implementing fiscal rules and enforcing them. One important factor is the fact that these rules may reflect stability oriented preferences of a state's voters and politicians. Conservative fiscal preferences may lead to the establishment of rules and lower risk premia, a critic well known in the literature. (Heinemann *et al.*, 2014, pp. 110-127) On subject, other authors in field support the strengthening of national rule-based fiscal governance. Numerical fiscal rules can operate as enforced constraints as long as there is commitment to comply with them. (Iara and Wolff, 2014, pp. 222-236) In the EU for example, Reuter's (2015, pp. 67-81) results indicate that countries comply with their fiscal rules in only about 50% of the analyzed timeline. Although countries in almost half of the analyzed period didn't comply with their fiscal rules, it seems that having them as numerical targets still affects policy-makers, urging them to comply at least partial. Another know critic is the limited ability of governments to react to business cycle fluctuations. Analyzing the data from 48 US states, Fatás and Mihov (2006, pp. 101-117) proved that strict budgetary restrictions lead to lower policy volatility and that fiscal restrictions reduce the responsiveness of the fiscal policy to output shocks (also see Canova and Pappa, 2006, pp. 1391-1414). Daniel and Shiamptanis (2013, pp. 2307-2321) suggest in this regard that restrictions as fiscal rules require that the response of the primary surplus to debt to be relatively strong, expressed as long-run equilibrium deviations.

For their analyses on fiscal rules and fiscal policies, most of the authors used a two or a three-country model. Such an analysis was conducted by Andrea Ferrero (2009, pp. 1-10), the author suggesting that fiscal policies should stabilize idiosyncratic shocks, thus allowing for permanent variations of government debt. In general, optimal targeting rules formalize the balance between the different stabilization objectives that policy-makers want to achieve in order to fulfill their commitments. But, by using aggressive countercyclical tax revenue gap rules although increases welfare gains, it also conducts to a modest increase in the fiscal instrument's volatility. (Kumhof and Laxton, 2013, pp. 113-127) However, as Bergman and Hutchison (2015, pp. 82-101) state, high government efficiency combined with strong fiscal rules is the best combination that facilities countercyclical policy responses to GDP movements or volatility. Using the QUEST model of the European Commission, Breuss and Roeger (2005, pp. 767-788) analyzed the largest countries members of EMU (France, Germany and Italy) from the point of implementing the SGP fiscal rule. Sticking to the SGP rule is advantageous at least in the long-run but, depending on the shocks that countries have to face, although the rule may become harmful in a very short-run. Contrary, Brück and Zwiener (2006, pp. 357-369) proved that the deficit targeting rule enforced through the SGP leads to less stabilization than an expenditure target, the authors suggesting that the deficit rule should be replaced by an expenditure rule augmented by medium-term targets. But, in general it is agreed that a fiscal rule should boost discipline and credibility. Also, a fiscal rule should lead to a reduction in macroeconomic volatility and be easily understood by all interested parties. The ills that fiscal rules should remediate are fiscal indiscipline, volatility and low credibility of authorities (Garcia *et al.*, 2011, pp. 649-676).

Fiscal rules, such as the excessive deficit procedure and the SGP rule (Stability and Growth Pact) tend to constrain the governments behavior. But governments may have found a way to avoid these rules by using creative accounting, fact revealed by authors like Von Hagen and Wolff (2006, pp. 3259-3279). In order to design a fiscal policy rule with a better chance of success, it is necessary according to Reicher (2014, pp. 184-198) to understand the past behavior of the systematic portion of the fiscal policy. The author also states that fiscal policy rules are analogous to monetary policy rules, an important role in this picture being detained by anti-cyclical fiscal transfers as a tool to prevent too much output volatility.

As we have seen so far, designing fiscal rules is one of the most difficult tasks for policy-makers and supranational institutions. A huge number of variables influence the designing and enforcing of fiscal rules. One of these variables is the form of governance specific to countries. At one moment or another, each form of governance will succeed the task of engaging into reforms at an institutional level. The analyses conducted by Hallerberg, Strauch and Hagen (2007, pp. 338-359) revealed that delegating decision-making to the minister of finance effectively improves fiscal discipline in countries where the ideological dispersion of government is relatively small. (Chatagny, 2015, pp. 184-200) Contrary, states with a higher degree of ideological dispersion in government present a higher degree of stringency of the fiscal targets, confirming the fact that strengthen fiscal discipline depends on the type of government, political environment and constitutional characteristics.

Considering the papers and results presented so far, we establish for our article two main hypotheses:

H1: Fiscal rules lead to a reduction in debt levels and public deficits of EU members.

H2: A higher number of institutions that supervise fiscal policies conducts to a higher fiscal discipline, thus to lower public debt and deficits levels.

3. DATA

3.1. Sample composition

We used in our analysis data composed of 28 countries, meaning the member states of the European Union, the sample period being 1995-2013 (annual records). We used dummy variables such as member of the EU (1), nonmember of the EU (0), member of EMU (1), nonmember of EMU (0).

Table no. 1 – Fiscal rules index, number of institutions, government consolidated debt, public debt and logarithm of GDP per capita

Country	Number of observations	FRI	NOI	GCDGDP	PDGDP	GDPCAPL
Austria	19	0.136	4.105	70.178	-2.452	10.302
		0.685	*0.315*	*7.008*	*1.51*	*0.171*
Belgium	19	0.165	2	105.71	-1.931	10.246
		0.195	*0*	*12.475*	*1.943*	*0.174*
Bulgaria	19	0.364		39.241	-1.157	7.907
		1.256		*26.896*	*3.47*	*0.572*
Croatia	19	-0.489	0.157	48.925	-4.025	9.062
		0.947	*0.374*	*15.053*	*1.88*	*0.242*
Cyprus	19	-0.941		60.068	-3.473	9.792
		0.32		*12.764*	*2.678*	*0.247*
Czech Republic	19	-0.365		26.468	-4.263	9.141
		0.473		*10.666*	*2.62*	*0.439*
Denmark	19	1.129	1	42.164	0.368	10.512
		0.441	*0*	*7.28*	*2.798*	*0.173*
Estonia	19	0.922	1	5.907	0.236	9.089
		0.135	*0*	*1.907*	*1.704*	*0.391*
Finland	19	0.659	0.052	44.931	0.994	10.284
		0.38	*0.229*	*6.951*	*3.647*	*0.207*
France	19	0.404	2.105	68.242	-3.778	10.193
		0.96	*0.315*	*11.369*	*1.664*	*0.149*

Country	Number of observations	FRI	NOI	GCDGDP	PDGDP	GDPCAPL
Germany	19	0.682	4.21	65.542	-2.436	10.24
		0.673	*0.535*	*8.118*	*2.4*	*0.118*
Greece	19	-0.816	1.21	167.733	7.605	9.663
		0.594	*0.418*	*9.562*	*3.252*	*0.243*
Hungary	19	-0.34	1.315	67.194	-5.115	8.841
		0.661	*0.477*	*10.348*	*3.16*	*0.405*
Ireland	19	-0.694	0.157	57.363	-3.384	10.465
		0.842	*0.374*	*33.187*	*8.499*	*0.199*
Italy	19	-0.341	0.105	109.557	-3.568	10.065
		0.393	*0.315*	*8.447*	*1.635*	*0.163*
Latvia	19	0.14	0.052	20.015	-2.273	8.563
		0.558	*0.229*	*13.208*	*2.644*	*0.636*
Lithuania	19	0.135	1	26.5	-3.494	9.067
		0.448	*0*	*10.664*	*3.006*	*0.251*
Luxembourg	19	1.018	0.789	10.81	1.831	11.124
		0.842	*0.418*	*6.115*	*2.191*	*0.169*
Malta	19	-1.014	0.052	61.326	-5.021	9.412
		0	*0.229*	*10.784*	*2.291*	*0.259*
Netherlands	19	1.009	1	57.052	-2.031	10.353
		0.022	*0*	*9.28*	*2.702*	*0.199*
Poland	19	1.118	1	45.794	-4.594	8.702
		0.826	*0*	*5.959*	*1.504*	*0.407*
Portugal	19	-0.352	1.526	72.605	-4.947	9.528
		0.672	*0.696*	*25.084*	*2.054*	*0.205*
Romania	19	-0.621	0.21	21.036	-3.636	8.058
		0.069	*0.418*	*9.013*	*2.049*	*0.654*
Slovakia	19	0.004	0.105	38.868	-5.368	8.795
		1.052	*0.315*	*9.021*	*2.944*	*0.561*
Slovenia	19	0.06	1	30.584	-3.91	9.503
		0.58	*0*	*13.153*	*3.358*	*0.277*
Spain	19	1.016	2.052	57.163	-3.689	9.83
		1.176	*0.229*	*14.79*	*4.432*	*0.244*
Sweden	19	1.483	1.368	49.494	-0.036	10.415
		1.104	*0.495*	*12.213*	*2.549*	*0.193*
United Kingdom	19	1.331	1.21	52.342	-3.752	10.22
		1.053	*0.418*	*17.605*	*3.636*	*0.207*

First row is the mean. Second row is the standard deviation of the variable
Source: author calculations

As independent variables we used the Standardized Fiscal Rules Index (FRI) calculated by the European Commission for each country and the number of institutions (NOI) with direct implications over the fiscal and budgetary policies, database provided also by the European Commission – see Table 1. Given the fact that we want to analyze the impact of the two independent variables on the behavior of fiscal policies, we choose for our analysis as dependent variables the government's consolidated debt as percentage of GDP (GCDGDP) and the public deficits as percentage of GDP (PDGDP). In theory, fiscal rules and better regulations from institutions should conduct to lower debt levels and to smaller public deficits as percentage of GDP. More institutions should also lead to a better control over budgeting and over the fiscal policies. Also, we chose as control variables in order to define key aspects of states the GDP per capital logarithm (GDPCAPL), the growth rate of the GDP (GRGDP), growth rate of the general government expenditures as percentage of GDP (GREGDP), growth rate of the general government revenues as percentage of GDP (GRRGDP) and also the variations of the government consolidated debt as percentage of GDP (GRGCD). In order to capture the influence of the crisis we used the dummy variable (POC), which checks the value of one during 2008-2011 and zero otherwise. To enhance our analysis we also introduced the normative assessment of the draft government budget (NADGB), in order to capture if the prior review of each state draft budget influences the outcome reflected in our dependent variables.

3.2. Preliminary analysis

While the results depicted in Table 1 offer a small hint on what are the links between our chosen dependent and independent variables, a further deeper analysis is required.

Table no. 2 – The correlations between the Fiscal Rules Index, number of institutions, government consolidated debt and public deficits as percentage of GDP

		FRI	NOI	GCDGDP	PDGDP
FRI	Pearson Correlation	1			
	Sig. (2-tailed)				
NOI	Pearson Correlation	.297**	1		
	Sig. (2-tailed)	.000			
GCDGDP	Pearson Correlation	-.086	.343**	1	
	Sig. (2-tailed)	.056	.000		
PDGDP	Pearson Correlation	.294**	-.005	-.335**	1
	Sig. (2-tailed)	.000	.915	.000	

*** Correlation is significant at the 0.01 level (2-tailed).*
Source: Author calculations

Table 2 depicts our further investigation into the links between our independent and dependent variables. Our analyses indicates that there is a relatively strong connection between the number of institutions and the governments consolidated debt. The link between the Fiscal Rules Index and the governments consolidated debt and deficits is a weaker one. Also, our results indicate that there is a negative correlation between the governments consolidated debt and the public deficit levels. With our preliminary results in mind, we will next test our hypotheses.

4. METHODOLOGY

In order to establish the relationship between fiscal rules, supervising institutions and fiscal policies, we employ the next basic model (1):

$$Goverment\ debt\ indicators_{,c,t} = \alpha_i + \beta_1 Fiscal\ rules\ indicators + \beta_2 EU_{c,t} + \beta_3 UEM_{c,t} + \beta_4 POC_t + \beta_5 N_{c,t} + + \varepsilon_{i,t} \quad (1)$$

where:

$Goverment\ debt\ indicators_{i,c,t}$, is one of the two indicators for government debt used in analysis: government consolidated debt as % of GDP (*GCDGDP*) and public deficit as % of GDP (*PDGDP*);

$Fiscal\,rule\ indicators$: is one of the three fiscal rules indicator used in the analysis: Fiscal Rules Index (*FRI*), Number of institutions that influence the fiscal policies (*NOI*), and normative assessment of the draft government budget (*NADGB*);

EUc,- depicts the European Union Accession dummy by year;

$UEMc$,- is the European Monetary Union accession dummy by year;

POC_t- is a dummy variable, depicting the 2008-2011 global financial crisis;

$N_{c,t}$- represent country specific control variables for the government debt: Growth rate of GDP as % (*GRGDPL*), Growth rate of expenditures as % of GDP (*GREGDP*), Growth rate of revenues as % of GDP (*GRRGDP*), Growth rate of government Consolidated debt as % of GDP (*GRGCD*), Logarithm GDP per Capita (*GDPCAPL*);

$\varepsilon_{i,t}$- is the standard error

In order to capture de influence of fiscal rule indicators on government debt indicators we used and Ordinary Least Squares panel distribution with fixed effects to allow for country specific characteristics as government spending and revenues to be accounted. While the Fiscal Rules Index and the normative assessment of the draft budget were calculated by the European Commission according to a specific algorithm, the number of fiscal institutions that supervise and control budgeting was calculated by us by using the independent fiscal institutions database provided also by the European Commission. In all our models all specific control indicators are lagged +1 year because all the calculated growth rates exert a direct influence on the budgetary process for the next fiscal year. In order to circumvent the risk of serial correlated errors, we have done our analysis with all the standard errors clustered at a country level.

5. EMPIRICAL RESULTS

In order to test our hypotheses we used the previous mentioned basic model. In the second model we introduced into our analyses the dummy variable period of crisis in order to view if our results record significant changes. Finally, in Model 3 we introduced the last variable, the normative assessment of the draft government budget (NADGB) in order to see how this variable influences the governments consolidated debt and public deficits as percentage of GDP. Our results are presented in Table 3.

Table no. 3 – Government's consolidated debt and public deficits.

Panel A: Dependent variable GCDGDP				**Panel B: Dependent variable PDGDP**		
Variable	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
FRI	2.353*	2.332*	2.821*	-0.037	-0.033	-0.045
	(1.257)	(1.276)	(1.631)	(0.049)	(0.050)	(0.056)
NOI	15.541***	15.531***	11.136**	0.053	0.055	0.157
	(5.310)	(5.313)	(4.874)	(0.196)	(0.194)	(.252)
MEU	5.363	5.371	6.206*	0.137	0.135	0.116
	(3.208)	(3.214)	(3.442)	(0.135)	(0.132)	(0.116)

Panel A: Dependent variable GCDGDP				Panel B: Dependent variable PDGDP		
Variable	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
MEMU	0.099	0.151	0.559	-0.078	-0.088	-0.097
	(2.129)	(2.148)	(2.181)	(0.083)	(0.092)	(0.094)
GDPCAPL	-4.809	-4.459	-6.763	-0.003	-0.069	-0.016
	(5.517)	(5.442)	(6.210)	(0.135)	(0.150)	(0.139)
GRGDP	-0.152*	-0.148*	-0.092	0.004	0.003	0.002
	(0.084)	(0.080)	(0.088)	(0.003)	(0.003)	(0.003)
GREGDP	-0.550***	-0.543***	-0.484***	-0.003	-0.004	-0.005
	(0.108)	(0.097)	(0.103)	(0.007)	(0.007)	(0.007)
GRRGDP	0.248*	0.240*	0.243*	-0.008	-0.007	-0.007
	(0.128)	(0.131)	(0.122)	(0.014)	(0.013)	(0.013)
GRGCD	0.100**	0.102**	0.093**	0.000	0.000	0.000
	(0.040)	(0.040)	(0.045)	(0.001)	(0.001)	(.001)
TGRGDP	-0.293	-0.314	-0.343	0.994***	0.998***	0.999***
	(0.912)	(0.884)	(0.788)	(0.020)	(0.023)	(0.024)
TGEGDP	2.242***	2.264***	2.203***	-0.984***	0.988***	-0.986***
	(0.180)	(0.205)	(0.240)	(0.016)	(0.018)	(0.018)
POC		-0.608	-0.654		0.114	0.115
		(1.612)	(1.529)		(0.145)	(0.143)
NADGB			16.866			-0.392
			(11.600)			(0.327)
Number of observations	374	374	374	374	374	374
R squared	0.264	0.266	0.229	0.969	0.969	0.966
F-Stat	66.65	74.40	90.40	1860.08	1446.61	1880.05
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

*First row is beta coefficient. Second row is the standard errors clustered at country level. *** denotes significant at 1%, ** at 5%. And * at 10%.*
Source: Author calculations

For a better characterization of countries we also introduced into our analysis the total government revenues as % of GDP (*TGRGDP*) and the total government expenditures as % of GDP (*TGEGDP*). Our results indicate that our first hypothesis isn't confirmed by none of the models. An increase in the number and strength of the fiscal rules represented by the Fiscal Rules Index conducts to an increase in the governments consolidated debt levels. The strong connection between the number of institutions that supervise fiscal policies and governments consolidated debt is confirmed by all the three models. Unfortunately, neither our second hypothesis isn't confirmed, the results indicating a contrary evolution. An increase in the number of institutions leads to a strong increase in public debt levels as percentage of GDP. Model 3 indicates that there is a connection between the public debt and being or not a member of the European Union, becoming a member conducting to an increase in public debt levels. As expected, there is also a strong connection between government's expenditure and revenues levels and public deficits.

Our results also indicate that the public budgetary deficits aren't influenced by fiscal rules or by the number of institutions. We assume that main reason consists in the fact that the Fiscal Rules Index has turned positive for many countries over the crisis period, and also because the number of institutions has increased in same period of time by which deficits and especially debt levels were under a lot of stress.

6. CONCLUSIONS

Recent problems of EU members regarding the soundness of their public finances have caught the attention of all interested parties, starting from politicians and continuing with the press and the general public. In this regard, EU states still has to take actions in order to enhance the soundness of their public finances through reductions in public debt and deficits levels.

It was the aim of this paper to reveal and to offer our readers an insight into the influences that fiscal rules and institutions have on fiscal policies, especially regarding aspects as public debt and budget deficits. In this regard we analyzed macroeconomic variables such as GDP per capita, public revenues and expenditures levels, the growth rates of the mentioned two variables and others. The analyzed timeline covered 19 years, from 1995 to 2013, and the used data consisted mostly of macroeconomic variables for all 28 EU member states.

Our results confirm that the government's consolidated debt is influenced by fiscal rules and especially by the number of institutions. All three models indicate that fiscal rules have a negative impact on public debt, leading to higher levels. Introducing the crisis and the normative assessment of government draft budget didn't had an impact on our results in this regard. Also, an increased number of institutions leads to increased debt levels, fact that we may explain by assuming that a larger number of institutions aren't more efficient than one single independent and strong institution because of the dissemination of responsibilities and power over more institutions, more or less independent. Unfortunately, the public deficit isn't influenced neither by the fiscal rules or number of institutions, contrary to the general belief. We assume that the problem consists in the fact that although the Fiscal Rules Index registers positive values after the crisis began and the number of institutions increased, it was too late to make a difference, although we do not exclude that repeating the analysis in the future will not conduct to other new positive results.

The most important contribution of our paper to existing literature on subject consists in proving that imposing more rules and the establishment of new institutions does not necessary lead to positive results regarding fiscal policies.

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ECONOMIC INSECURITY AS SYSTEMIC RISK

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Abstract

Difficulties related to the problem of evaluating the economic security / insecurity, including the threshold of economic security / insecurity, namely the impossibility of giving an analytical description of a criterion entirely made up of a set of indicators describing the degree of economic security / insecurity, makes more and more researchers, including the authors, to seek indirect ways of finding solutions, for example considering systemic risk., as a measure of evaluation. Thus, starting from a new approach, and given the specific components of systemic risk to financial stability: the banking sector, corporate sector, public sector, volume of credits, economic activity index the threshold vector of economic security / insecurity can be developed. The study shows that systemic risk can be used to measure the threshold of economic security /insecurity.

Keywords: security, food security, inflation, inflation rates, financial stability, econometric models, stochastic models, optimization models

JEL classification: C02, C63, E27, E32

1. INTRODUCTION

An economy or a stable economic system can be considered stable if they are able to functionally dissipate shocks without affecting radically their characteristics. This situation implies the existence of a stable development period, with financial security, appropriate structural policies, ongoing government programs, lasting macroeconomic projections, etc., a period which is meant to prevent disturbances and malfunctions. It should be noted that, in the era of globalization of the economic environment, in addition to traditional, domestic factors, the development dynamics and fierce competitiveness of economic openness may cause additional instability of the system and make risks become systemic. At the same time the economic system is a living organism, so, the man along with his doubts is the main disturbance factor. The term „economic security" is not recent in the economic literature, from the very beginning having an interdisciplinary character (Gârlă, 2015, p. 123; Blanchard and Quah, 1989, p. 656). In terms of macroeconomics, economic security refers to ensuring market integrity, the state's capacity to generate economic growth and welfare.

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But permanent economic disturbances reshape the global content of security concept. For example, fundamental changes in the energy sector, characterized by technological progresses and scientific discoveries come up with new views regarding the ways how energy is consumed. This is when international markets become increasingly affected by structural changes in the global energy supply and demand. Regarding the set of statistical indicators used to measure the economic security, it should be noted that an indicator is a quantitative characterization of an object's properties and of a socio-economic process (omitted). Economic category, consisting of one or more indicators reflects one of the basic components of economic relations. Formalizing the notion is even more complicated with defining the structures connecting these economic categories and simple indicators, often together with other terms related to them, i.e. having defined the structures, hierarchies of structures, aggregation of structures, distance between structures, and measurement of the data distance structure of a pre-established standard. From another point of view, we have an economic system, with its own interactive descriptive elements – structure. Thus, the structure of an economic system confers its fundamental characteristics, and each element of this structure participates in evaluating the state of the socio-economic system, so, the structure is an invariant of the economic system and the characterized indicators constitute a subset of all possible indicators logically related among them in order to describe as accurately as possible the structural properties. On the other hand, it is desirable for indicators to be subject to mathematical operations without completing any aggregation stage. Or, it is known that any aggregation approximates the initial data and, never, even theoretically, can express the primary essence of their source. Direct evaluation of economic security / insecurity, including the threshold of economic security / insecurity also faces other difficulties, primarily the inability to give an analytical description of an integral criterion consisting of a set of indicators characterizing the measurement of economic security / insecurity. This impediment makes many researchers, including the authors, to look for indirect ways of solving the problem by considering, for example, systemic risk as an assessing measure.

2. DESCRIPTION OF EXISTING METHODS

Even though some indicators could be a subset quite suitable for measuring economic security of an entity, formally it is impossible to propose a characteristic set, therefore, we support more the indirect way (Gârlă, 2014, p. 142; Gârlă and Pârţachi, 2015, p. 60): here, a new approach based on systemic risk assessment. So, further we will consider that systemic risk can be used to measure the threshold of economic security / insecurity. If we do a review of research in the field, we should note that there is a unanimous or quasi-unanimously accepted theory, and the overwhelming majority of researchers refer to diversification and elucidation of the notions of economic security / insecurity, threshold, as well as of economic measures, anticipating possible imbalances. In terms of methodology, we should point out that the evaluation of economic security / insecurity can not be based on a single indicator because it covers a range of issues, including resources, risks, shocks; therefore it is needed, to build some integrated, synthetic indicators, composite from case to case, that could measure this extremely complicated phenomenon. Some studies referring to economic security (direct approach) are based on stochastic models, i.e. non-deterministic (Hough, 2008, p. 15; Păun and Topan, 2013, p. 6), with random parameters, models that respond to specific price shocks, exchange rates fluctuations, unemployment rates, level of salaries, production volume, etc., but, in reality, economic shocks are not of one type, but combined and, simultaneously, there arises the need to take into account as many factors as possible. The approach assumes that all the variables are endogenous, so they follow to be modelled together, systemically, using simultaneous equations. These models require dividing the variable in the deterministic and stochastic part, i.e. which can not be explained by the history of past values and is evaluated in equations as an error. Often in such models, the demand-offer relationship, price and wage development constitute the main variable, and with other sets of indicators and combined with various econometric techniques allow the assessment of the output. But, on the one hand, the real economy shocks are not as single type but in combination, on the other hand there exists the need in taking into account as many factors as possible, which strongly affect the model, which led to new approaches and new problems as well, namely methodological ones. Particularly, should be noted the concept of systemic risk which estimates the risk itself and indicates ways of avoiding it. Risk estimation involves simulating economic process as such and socio-economic situations of crisis anticipation. Here are used various direct methods; the optimization ones, for example, contribute adequately to describing the overall picture; analyse from many points of view the economic status; allow the synthesis of a specific evaluation criterion; suggest how security / insecurity numeric threshold can be determined, while the set of primary indicators, in most cases, include: domestic macro indicators, external macro indicators, indicators characterizing the interaction between entities and regional disparities, critical values of the indicators, monitoring indicators, etc. Multidimensional statistical analysis methods refer here to the transition from the initial economic indicators to other unrelated factors, whose number is much lower, but their variability exhausts all initial indicators. To be more exact, a set of indicators, quite close to the real situation in the economy of an entity could be: total GDP, GDP per capita, production volume, industrial production volume, agricultural production volume, investments volume, fixed assets, number of enterprises with innovations absorption, increasing reserves of natural resources, the structure of GDP, the share of SMEs, number of farming households, profitability, material intensity, energy intensity, total population, structure of citizens income, minimum consumer basket, average wage, number of pensioners, Consumer Price Index, labour, budget share to GDP, budget deficit, money in circulation, the structure of export / import, and each indicator in this group would be unambiguously determined others, given by numerical values. Thus, one of the basic components of economic security – energy security is characterized by energy intensiveness, given the energy intensity, the price of a litre of gasoline, the price of a litre of diesel, export / import of energy resources, quality of energy power, energy consumption per capita, and environmental pollution with fuels. In conclusion to this chapter we would like to emphasise that most direct methods require the existence of thresholds (limits of variation), but only for certain indicators, unlike the indirect ones, which assess the security / insecurity in general.

3. METHODOLOGY AND NUMERICAL METHOD

Summing up the above mentioned, economic security is defined simply as the totality of conditions and factors whose action has a negative and destabilizing effect on the functioning and effective development of the economic system, but the main problem of economic research is that until now there is no unique concept (ascertainment) that clearly assess the level of economic security, likewise, there is no effective quantifiable criterion, which generates permanent debate and various approaches, sometimes diametrically opposed. The economic security of a country means first of all competitiveness, sustainable economic development, guaranteed access to resources and markets, integration, risk minimization and depends on the supply of energy resources, mineral resources, food, etc., and permanent synthesization of data related to disturbances on the domestic market and identifying system states, setting the threshold of security / insecurity - the critical threshold can estimate the level of security / insecurity. Crossing the security threshold disturbs the entire economic system sooner or later, goods and services become uncompetitive, risks visibly increase, economic and financial stability is jeopardized, the complexity of the phenomenon is major, and the criterion of the security indicator is purely linear and may worsen exponentially. In the present study optimization will form the implementation basis in defining and calculating security / insecurity and the threshold of economic security / insecurity. The optimization problems unequivocally determine the values of variables and then options become available, choosing those values, which correspond to the optimum alternative. This is reflected in the form of objective functions, organic links, variation limits, which describe the economic efficiency. The objective function that determines the goal in mathematical terms is given by a Euclidean norm, and organic ties and variation limits are given in different functions and constitute the restrictions of optimization problem. For example, the optimality of inflation factors requires, first, developing a set of impact indicators: coinage, interest rate, securities, exchange rate / purchasing power parity, budgetary transfer, tax rates, social contributions rates, state policies, remittances. The most general form of limits for x_i parameters is

$$a_i \le x_i \le b_i, i = \overline{1,n} \tag{1}$$

organic links between indicators are nonlinear / linear functions, e.g.

$$C = exp(c_1x_1+c_2x_2+...+c_nx_n)$$

i.e. bonds set by an exponential function, c_i – coefficients, or combinations of such features and the linear case

$$C= c_1x_1+c_2x_2+...+c_nx_n \tag{2}$$

finally, the objective function of the optimization procedure can take the form

$$\min \text{ESI} = \sum_{i=1}^{n} (x_i - x_i^0)^2, \tag{3}$$

x_i^0 - is a given vector, called standard ESI - Economic Security Index.

4. MODEL RIGOR

The optimization problem is solved using the numerical calculation scheme of model PG [Gârlă, 2015, p. 144]. Namely, starting from the idea of comparing the standard, which here plays the role of the threshold of economic security by using the PG model (proposed by authors), the authors elaborated a calculation scheme which equals more with situations where the admissible limit values of security are obsolete, thus creating opportunities for appreciating the range of security and insecurity. Noteworthy is the fact, that related to the issue of security / insecurity, in essence, even if initially only one element of the economic process is changed, the feed-back analysis, i.e. of security / insecurity will record changes of all elements involved in this process. It should be also stated that unlike the problems of forecasting, where the trend is very important, in other words the existence of significant past information about variables and economic process, as such, for security problem long series are not relevant, important being the analysis of successive states so as to understand the deviations from the natural course of things in the economic process, where essential are the situational developments of matrices or, for example, of the size of 2 × 10:

$$\begin{bmatrix} h_{11}h_{12} \\ h_{21}h_{22} \end{bmatrix}, \begin{bmatrix} h_{12}h_{13} \\ h_{22}h_{23} \end{bmatrix}, \ldots, \begin{bmatrix} h_{19}h_{1,10} \\ h_{29}h_{2,20} \end{bmatrix}$$

Following to the above mentioned, we shall refer more widely to a concrete matrix ***A***, this time with the size 6 × 4, 6 indicators for 4 consecutive quarters with components that measure risks at the level of Moldova's economy – namely the annual rates of inflation (%), exchange rates of MDL against the USD, remittances (billions USD), currency in circulation (%), exports (%), imports (%) – the last indicators being reported to the respective period of the previous quarter. Let us take for ***A***:

1st row - *Inflation rate*: quart.III, 2014: 5.1; quart.IV, 2014: 6.3; quart.I, 2015: 8.9; quart.II, 2015: 10.6;

2nd row - *Exchange rate*: August 2014: 13.2; October 2014: 14.6; January 2015: 18.3; July 2015 19.3;

3rd row - *Transfers*: quart.III, 2014: 0.49; quart.IV, 2014: 0.36; quart.I, 2015: 0.24; quart.II, 2015: 0.30;

4th row - *Currency in circulation*: quart.III 2014 2; quart.IV 2014 1; quart.I, 2015 1; quart.II 2015 0;

5th row - *Export*: quart.III 2014 1; quart.IV 2014 -1.1; quart.I, 2015 -1.2; quart.II, 2015 -1.4;

6th row - *Import*: quart.III 2014 1; quart.IV 2014 1; quart.I, 2015 -2.1; quart.II, 2015 -2.0.

Thus, the following picture of successive states is outlined (vector of matrix ***A***, repeating the previous state).

$$\left\{\begin{bmatrix} 5,1\ldots..6,3 \\ 13,2\ldots14,6 \\ 0,49\ldots0,36 \\ 2,0\ldots.1,0 \\ 1,0\ldots.-1,1 \\ 1,0\ldots\ldots-1,0 \end{bmatrix}, \begin{bmatrix} 6,3\ldots..8,9 \\ 14,6\ldots18,3 \\ 0,36\ldots0,24 \\ 1,0\ldots\ldots1,0 \\ -1,1\ldots.-1,2 \\ -1,0\ldots.-2,1 \end{bmatrix}, \begin{bmatrix} 8,9\ldots..10,6 \\ 18,3\ldots19,3 \\ 0,24\ldots0,30 \\ 1,0\ldots..0,0 \\ -1,2\ldots-1,4 \\ -2,1\ldots-2,0 \end{bmatrix}\right\}$$

where we have columns with numerical values of the six indicators in quarters III-IV in 2014 (first matrix), quarters IV 2014-I, 2015 (second matrix) quarters I-II in 2015 (third matrix). It should be noted the immediate shock that occurs in the natural course of things in the economy in the first quarter of 2015: inflation reaches 8.9%, the currency depreciating sharply reaching an exchange rate of MDL / USD 18.3:1, the value of remittances and exports decreasing considerably. It is not difficult to assume that the fall is caused by external shock – significant worsening of Russia's economic situation, as well as by internal one – the liquidation process of three commercial banks in Moldova. Let us see what has been the impact of this shock that occurred in the national economy, for which we will transform the matrix below. It is known that the front calculation of the inverse matrix to ***A*** does not bring the expected results. Therefore we shall use the *PG* model, this time with 6 variables. But beforehand we shall transform matrix ***A***, into matrix $\boldsymbol{A}^*$ reporting all indicators in column 1, which represents the economic situation immediately preceding the shock – a natural thing, as in the situation during the third quarter can be considered here as a standard. Then $\boldsymbol{A}^*$ will be:

$$\boldsymbol{A}^* = \begin{Bmatrix} 1,0...1,2...1,7...2,1 \\ 1,0...1,1...1,4...1,5 \\ 1,0...0,7...0,5..0,6 \\ 1,0...0,5...0,5..0,0 \\ 1,0-1,1-1,2-1,4 \\ 1,0-1,0-2,1-2,0 \end{Bmatrix} \tag{4}$$

Then we transform the 6 indicators into variables analogue to (1), subjecting them to restrictions

$$a_i \le x_i \le b_i, i = \overline{1,6} \tag{5}$$

in order to avoid slipping too much towards definitions. According to the *PG* model, organic connections between indicators are established (in total 4) in the form of equation (2)

$$C = c_1x_1 + c_2x_2 + c_3x_3 + c_4x_4 + c_5x_5 + c_6x_6. \tag{6}$$

Here, 2 of the 4 organic links should be noted: the second (vector 2 from matrix (4)) and the third (vector 3 from matrix (4)), which correspond to the pre-shock and post-shock situation. Assuming that the 6 indicators impact equally the economic security of the state, i.e.

$$c_1 = c_2 = c_3 = c_4 = c_5 = c_6 = 1$$

with appropriate units of measurement we can write

$$abs(1,2)+abs(1,1)+abs(0,7)+abs(0,5)+abs(-1,1)+abs(-1,0)=5,6 \tag{6^1}$$

$$abs(1,7)+abs(1,4)+abs(0,5)+abs(0,5)+abs(-1,2)+abs(-2,1)=7,4 \tag{6^2}$$

Note the enormous difference in scores from 5.6 to 7.4 set in only 2 months, which, once again, confirms the disastrous impact of the shock in the winter of 2015. Let us now define the goal function. We shall do it in form (3), but more specific

$$ESI = \sum_{1}^{6} (x_i - x_i^0)^2, \tag{7}$$

stating that in the sum of squared differences of numerical values of the 6 indicators will be taken from case to case the distance from the standard, i.e. of parameters of the third quarter 2014 or the distance between two quarters, and *ESI* (Economic Security Index) will point this integrated indicator, measured in points. Note that criterion (7) in economy is based on a new formula proposed by Yager (1996, p. 50) based on the weighted average of economic indicators, which introduced many other concepts. Now when we know post-factum the shock nature – exclusively financial-monetary, using the *PG* model similar results are obtained by optimizing only the first 4 variables, the other two export / import having a greater lag. Indeed, the first 4 optimal variables from (6^2) will have values

2.263087	**1.463741**	**0.184035**	**0.189137**

whereof it can be concluded that a non-monetary inflation increase (component 1) compared to the original data, from 1.7 to 2.26 would have minimized the impact of the shock, because the distance from the standard values before the shock would have been minimal. The authors propose that the optimal value of the solution vector to be called the **threshold of economic insecurity** (Figure 1).

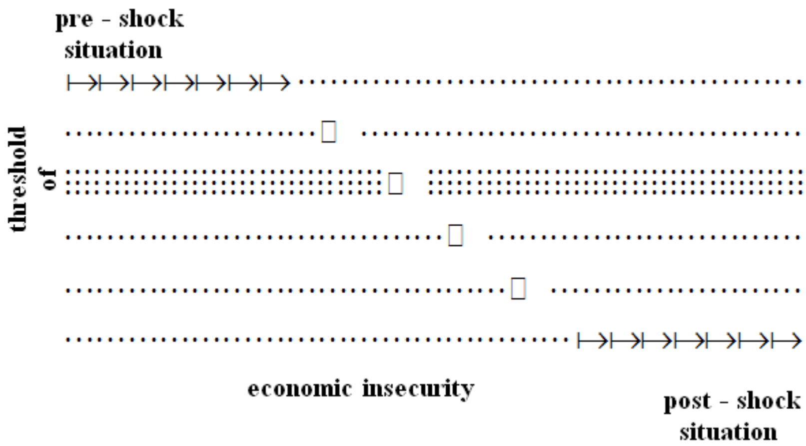

Figure no. 1 – The threshold of economic insecurity

5. CONCLUSIONS

The issue of assessing the economic security / insecurity, economic interpretation and measure of threshold is a particular problem, which is not completely solved. The authors consider that systemic risk can serve directly as a measure to assess the economic threshold of security / insecurity. Building the threshold vector of components such as: banking, sector, corporate sector, public sector, volume of credits and economic activity index sufficiently define the risks, and therefore the threshold of security / insecurity. Specifically, shocks, their magnitude within the mentioned sectors significantly diminish the entity's economy and overall economy – multiplies, causing the decline, which in its turn leads to higher risks, culminating with a massive economic insecurity.

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DISPARITIES IN REGIONAL ECONOMIC DEVELOPMENT IN ROMANIA

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Abstract

The issue of economic disparities within the European Union economies is not new, it is actually a topical issue. Unfortunately, the EU enlargement has determined an even stronger deepening of the regional disparities, because in the absence of adequate regional development policies, the financial instruments have proved to be ineffective. Recent studies show that the economic crisis has increased regional disparities in the European Union countries, influencing the most important regions, especially the economically less advanced ones, the significant regional differences being identified at the NUTS 3 level.
Based on these issues, the present paper tries to answer the following questions: 1. How extended are the regional disparities in Romania and how did they evolve over the period 1998-2012? 2. How did the economic crisis influence disparities? Which territorial units were more affected?
In order to measure regional inequalities the Hoover index was used as well as the coefficient of variation, and the indicator for assessing the level of development as well as for highlighting regional disparities was GDP per capita. The analysis and interpretation of the results provide an overview of the situation at the regional level in Romania

Keywords: regional disparities, regions of development, Romania, Hoover index, coefficient of variation

JEL classification: R11, R12

1. INTRODUCTION

In the field of regional policies, for any economy, the main challenge represents the mitigation of economic-social discrepancies between various territories (regions), however, the reality shows that this is neither a simple nor a short term issue.

For Romania, which has large shortcoming compared to the economically developed countries, the intense mobilization of internal and external factors of economic growth in order to reduce and remove the shortcomings compared to other countries, is an objective need, a governing law resulting from the regional and national interests, in the light of finality, welfare

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increasing. The inefficient industrial development of the country, which did not take into account the market requirements, led to the occurrence of some important and economic discrepancies between the various Romanian regions/areas. Within these regions, there are also significant differences between their counties, generated by the development of some economic activities that did not take into account their traditional human and natural potential.

The main objective of this paper is to make a contribution to the study of the theory of integration by analyzing regional disparities and the convergence process at regional level in Romania. To meet this objective our research focuses on achieving the following specific targets: to explain the theoretical aspects of the study of economic disparities and of the real convergence process; to identify factors influencing disparities and the unequal regional development; to analyze regional disparities and real convergence in Romania.

Considering various recent international economic studies, which indicate that the economic crisis has led towards the increase of the regional disparities in the case of member countries of the European Union, influencing the most important regions, especially the less advanced economically (significant regional differences being identified at the NUTS III level) our research attempts to answer the question: How has the economic crisis affected disparities and which territorial units in Romania were most affected (the most developed ones or the less developed ones)?

To measure inequalities and to highlight their distribution at territorial level the Hoover index was calculated in four variants: among developing regions (including and excluding the Bucharest Ilfov region), among counties; at intraregional level and within the macroregions (between the regions that make up each macroregion). The existence of inequalities at regional level can be reflected by testing the existence of a real convergence process. To identify the main trends of the convergence process in Romania the convergence hypothesis of sigma was tested (the coefficient of variation), to see if the regions have managed to reduce their differences over the review period.

Knowing the level and the dynamics of disparities is quite important in order to define the priorities from the regional development strategies as basis in outlining the policies in the field of economic, social and territorial cohesion and in order to find solutions for their decrease as an economy which must integrate itself in the productive system of the European Union.

2. LITERATURE REVIEW

Most of the times, when approaching issues of disparities, the economists have the tendency to refer to the existing differences at the income level, giving answers related to the tendencies and the process of economic growth at regional level.

In the specialty literature, besides the term of regional disparity, other terms are also used such as: regional discrepancy, difference, regional inequality. *Disparity* means the lack of equality, proportion, discrepancy, difference. In the same area of significances, is also the notion of *discrepancy* which means a distancing in time or space, disproportion, inadequacy, as well as the notion of *difference* meaning separation, lack of similarity, discrepancy. Polese defines *the disparities of regional development* as being differences between the regions regarding their ability to provide opportunities to gain income for their inhabitants (Polese, 1999, p. 300). Some authors consider that inequalities transform into disparities when these exceed the amplitude of 30% (Goschin *et al.*, 2007, p. 27).

The economic differences are defined as quantitative and qualitative discrepancies between the levels of economic development of the measured countries by comparing some macroeconomic indicators (Dobrotă, 1999, p. 163). It is worth to mention the fact that all terms are used to show the development differences between various regions. The term of inequality is generally defined in a negative way. *Inequality suggests a deviation from equality* (Cowell, 1995, p. 11).

The theoretical approaches on regional inequalities are dominated by the concurrence of the two schools of thought (Petrakos, 2009, p. 34): the school advocating convergence, previsions the convergence of regional disparities, a school that is based on the neoclassical economic theory and the school that previsions the regional divergence based on the Theory of cumulative causation.

According to the neoclassical theory of economic growth, the decisions of regional policy are directed to the stimulation of the mobility of labor force, liberalization of trade and technological transfer, the increase of the regional production being the result of increasing the mobility of the production factors and of technologies and the regional policy objective (of reducing the regional disparities) may be achieved on the long term following the process of regional convergence also as an effect of the GDP/inhabitant growth.

There are also national economic studies that are based on the traditional theories regarding disparities which explained that, at the base of inequalities between the regions, there are the following causes: the differentiated endowment of the regions with natural resources, production factors, infrastructure and technology (Goschin *et al.*, 2008, 2009; Constantinescu and Constantin, 2010; Boboc *et al.*, 2012; Goschin, 2014, 2015). Other empirical studies show that there are also relevant influence factors that are not present in the traditional analysis, factors which were pointed out by the recent theories regarding localization (Zaman *et al.*, 2013). Following Solow, the advocates of the neoclassical paradigm assert that the disparities tend to diminish together with economic growth although, as R. Solow (1994) and Fingleton (2003) admit, this is not always the case due to the decreasing performance of the capital. In a competitive environment, labor at regional level and the capital mobility as well as the regional trade also favor the convergence of the prices of factors, strengthening the negative relationship between economic growth and regional disparities.

As an answer to the above mentioned neoclassical empirical studies, an opposing literature was developed according to which growth is a cumulative spatial process, a process that can determine the increase of disparities. In this way, we mention the older development theories, urban theories of development, the school of the new economic geography, and theories of endogen growth, in which a common ground occurs: there is the tendency of associating economic growth to agglomeration (Petrakos, 2009)

The agglomeration of activities in a region is a factor of economic growth but does not determine the decrease of regional disparities. The agglomeration of economic activities in a central region is the expression of a balance between the centripetal forces determining the polarization of economic activities in the central region and the centrifugal ones influencing their dispersion towards peripheral regions (Marinaș and Socol, 2009, p. 67).

The current economic theories study the amplitude of discrepancies, of disparities in various historical moments, their dynamics on the long term and the mechanisms that generated and maintained them. These do not consider the differences of economic development between territorial units just as simple temporal discrepancies. In the analyses regarding the current economies, the economists consider the gross domestic product per inhabitant as being the most adequate synthetic indicator of estimating the development level in an economy. In the field of economic history, Paul Bairoch and Angus Maddison have influenced the most this field by research aimed to measure the economic discrepancies during some long time periods as well as the analysis of their historical evolution (Murgescu, 2010).

The extension of the European Union has determined a stronger deepening of regional disparities since due to the lack of some adequate policies of regional development, the financial instruments proved to be inefficient (Horváth, 2009).

The economic crisis determined the increase of regional disparities in the European Union member states, this influencing the most important regions mostly those with a less economic performance and in the Eastern European countries there is a high rate of unemployment, significant regional differences being identified at the level of NUTS 3 (Holúbek *et al.*, 2014; Rakauskienė and Kozlovskij, 2014).

The studies regarding convergence in the Central and Eastern Europe (ECE) show that this area of the European Union is relatively homogenous, the disparities being more reduced compared to the Western part (Goschin and Constantin, 2010;Szendi, 2013).
Regarding the adhesion of Romania to the European Union, some authors consider that this determined an increase of regional inequalities. Among the explanations given, we mention:

– Low absorption of structural and cohesion funds at regional level, the developed regions (which have an already high degree of expertise in accessing such funds) benefited by their use (Zaman and Georgescu, 2009; Goschin and Constantin, 2010);

– Focus of direct foreign investment in the developed regions (more that 55% in the Bucharest Ilfov region) (Zaman *et al.*, 2013);

– The economic crisis deepened the existing regional issues, its effects were unequally (distributed) felt at regional level depending on the specific social and economic structures, on the degree of regional specialization and on other local factors (Goschin and Constantin, 2010; Ailenei *et al.*, 2012).

3. METHODOLOGY OF ANALYSIS

For measuring the territorial inequalities, of underlining their distribution in a territorial profile, the Hoover index was calculated. This was determined according to the formula:

$$H = \frac{1}{2}\sum_{i=1}^{n}|X_i - F_i|$$

where: H = Hoover index; n= number of territorial units/regions; X_i – share of GDP of I county/region of the total GDP value (region, macroregion, country) and F_i – share of total population in the i county/region of the total population.

The Hoover index was calculated on an annual basis for the 1998-2012 period, in four alternatives: between the development regions (with and without the Bucharest Ilfov region); between counties; within the development regions (the disparities were calculated between the component counties of each region); within the development macroregions (the disparities were calculated between the regions comprising each macroregion).

The existence of inequalities at regional level can be reflected by testing the existence of a real convergence process. For identifying the main tendencies of the convergence process in Romania, the hypothesis of sigma convergence was tested. The test of sigma convergence is based on the calculation of discrepancies of indicators (GDP/inhabitant) and it is compared the variation coefficient during T period with T+1.

$$Cv_T = \frac{\sigma_T}{\overline{X_T}},$$

where: Cv_T = variation coefficient in the T period

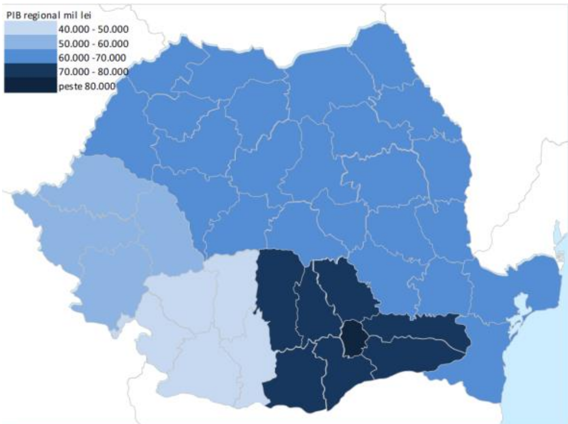
σ_T = quadric average deviation of the regional development level in the T period and it is calculated as follows: $\sigma_T = \sqrt{\frac{1}{n}\sum_{i=1}^{n}\left(X_{iT} - \overline{X_T}\right)^2}$

$\overline{X_T}$ = average level of development in the T period.

There is a sigma type convergence if $Cv_T > Cv_{T+1}$, thus when the phenomenon dispersion is decreasing in a certain time period. The data used in the analysis are taken from INS, Tempo online.

4. ANALYSIS OF DISPARITIES AT REGIONAL LEVEL

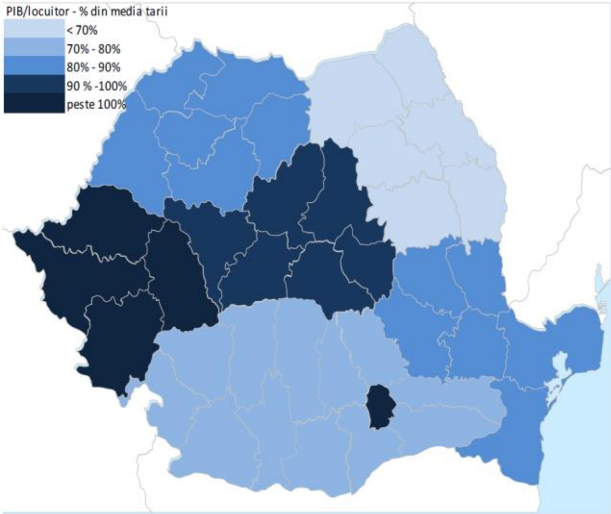
It is obvious that the disparities are present in the 8 existing development regions in Romania (Figure 1). The GDP level corresponding to the development regions ranges between the highest of 161.479,5 mil lei, value recorded in 2012 (Bucharest Ilfov region) and the lowest of 46.597,9 mil lei (the South West Oltenia region) followed by the West region with a GDP of 59143,7 mil lei. The South West Oltenia and West regions have the most reduced participation share in making up the national GDP, at opposite poles we have the South Muntenia and Bucharest Ilfov regions. The explanation of the reduced value of this indicator at the level of the West region consists in the reduced dimensions of the West region compared with the other regions of Romania.



Source: figure based on the data of INSSE (National Institute for Statistics), Tempo online

Figure no. 1 – Regional GDP, 2012

Regarding the GDP per inhabitant, the situation is different. Out of the 8 development regions, the West region is ranked 2nd being below only to the Bucharest Ilfov region. The GDP / inhabitant of the West region records values higher than the national average indicating a high level of economic development of the region (Figure 2), the Central regions ranking 3rd.



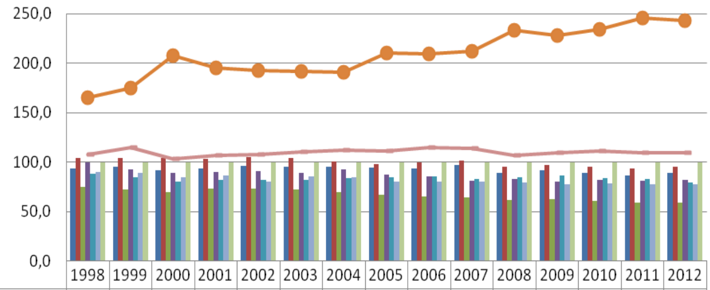
Source: figure based on the data of INSSE, Tempo Online

Figure no. 2 – GDP/inhabitant, 2012

The West region, a region ranked 7^{th} from the point of view of the contribution to GDP, is ranked 2^{nd} regarding GDP/inhabitant same as the central region, indicating a better labor productivity. The North East region has the lowest regional GDP per inhabitant, an aspect indicating the fact that the region has the highest level of poverty. The North East region is within the group of the poorest regions regarding regional development, among which we mention: South Muntenia, South West Oltenia, these two recording values below 80% from the average at national level regarding the presented indicator.

The dynamics of GDP/inhabitant shows that we have a continuation and even an increase of the economic discrepancy between the regions in the analyzed period (Figure 3).

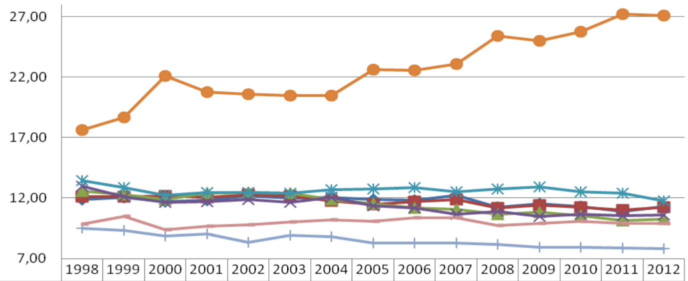
The ratio between the highest values (West region) and lowest values (North East region) of the gross domestic product per inhabitant is increasing (the Bucharest Ilfov region which has a very high GDP/inhabitant is excluded from the comparison). The West region is the only region that during the entire analysis period recorded a higher GDP/inhabitant than the national average with a slight tendency of increase, all other regions still recording a lower GDP/inhabitant than the total GDP of the country. The reduction of discrepancies between the developed areas and those behind is still an issue, a long-term phenomenon as well as the reduction of discrepancies between countries since the developed areas/countries advance in time even though at lower growth rates.



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Nord Vest	93,6	95,1	92,1	93,4	95,9	95,0	95,5	94,1	93,8	96,6	89,2	91,3	89,2	86,1	89,0
Centru	103,7	103,7	104,3	103,2	105,1	103,9	100,4	97,9	99,7	101,3	95,3	96,9	95,5	93,2	95,2
Nord Est	74,4	72,6	69,7	72,8	72,8	72,1	69,3	66,9	64,7	64,1	61,9	62,6	60,9	58,7	59,3
Sud Est	99,3	92,5	89,1	89,5	90,7	88,8	92,2	86,9	85,4	81,4	83,1	80,0	81,5	80,8	81,5
Sud Muntenia	87,9	84,3	80,2	81,7	82,0	81,8	84,0	84,4	85,2	83,1	84,7	86,1	83,7	83,1	79,2
Sud Vest Oltenia	90,1	89,0	84,7	86,5	79,8	85,4	84,4	79,8	80,2	80,4	79,4	77,5	78,1	77,9	77,4
Romania	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Bucuresti Ilfov	165,2	175,2	207,4	194,8	193,0	191,3	190,8	210,2	209,2	212,4	232,9	228,4	234,0	245,5	243,1
Vest	108,0	115,0	103,2	106,4	108,0	110,6	112,4	110,9	114,5	114,0	107,1	109,2	110,9	109,0	109,2

Source: own calculations based on the data of INSSE, Tempo Online

Figure no. 3 – The dynamics of GDP/inhabitant (national average =100)



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Nord Vest	11,89	12,07	11,68	11,84	12,14	12,02	12,08	11,89	11,85	12,20	11,27	11,55	11,29	10,92	11,30
Centru	12,12	12,12	12,18	12,07	12,29	12,16	11,77	11,48	11,70	11,89	11,20	11,40	11,24	10,98	11,23
Nord Est	12,57	12,30	11,86	12,43	12,46	12,38	11,91	11,52	11,16	11,07	10,68	10,81	10,52	10,14	10,25
Sud Est	12,97	12,10	11,66	11,72	11,87	11,62	12,07	11,38	11,18	10,65	10,86	10,46	10,64	10,54	10,62
Sud Muntenia	13,46	12,89	12,24	12,47	12,47	12,42	12,72	12,76	12,86	12,51	12,73	12,92	12,52	12,40	11,79
Bucuresti Ilfov	17,63	18,68	22,09	20,74	20,59	20,44	20,46	22,62	22,56	23,05	25,38	25,01	25,76	27,21	27,08
Sud Vest Oltenia	9,48	9,35	8,88	9,06	8,35	8,91	8,78	8,28	8,30	8,28	8,15	7,92	7,95	7,90	7,81
Vest	9,87	10,49	9,40	9,68	9,82	10,05	10,22	10,07	10,39	10,34	9,73	9,92	10,07	9,90	9,92

Source: own calculations based on the data of INSSE, Tempo Online

Figure no. 4 – Share of development regions in the national GDP

From the data analysis regarding the contribution of each region to the national GDP, a series of significant aspects are highlighted (Figure 4):

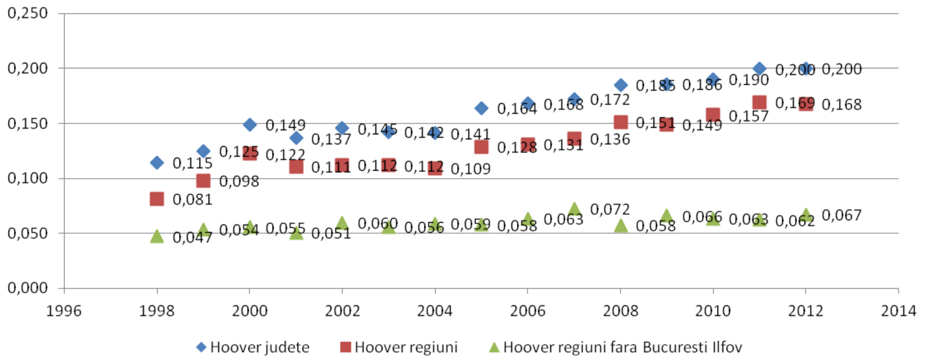
– The South West Oltenia and the West regions have the most reduced participation share to national GDP, at the opposite pole we have the South Muntenia and Bucharest Ilfov regions; the South West Oltenia regions record shares between 7.81% - 9.48% and the West region between 9.82% and 10.34%; in the other regions, the shares are close and range between 10 and 13%.

– The share of participation to the national GDP of the Bucharest Ilfov region is significant and is increasing from 17.63% to 27.08%.

– We may observe the fact that the economic crisis did not determine modifications regarding the ranking of the contributions of regions to the national GDP, the Bucharest Ilfov and West, North West and Central regions increased their contribution to the GDP and the less developed regions of the countries, the North East, South East and South West Oltenia regions recorded small decreases.

4.1. Measuring regional inequality – the Hoover index

The Hooever index was calculated for measuring the territorial inequalities as well as the concentration level of the GDP. The dynamics of the Hoover index of GDP/inhabitant at interregional and cross-county level are presented in Figure 5.



Source: own calculations based on the data of INSSE, Tempo Online

Figure no. 5 – Disparities regarding the GDP/inhabitant at interregional and cross-county level – the Hoover index

From Figure 5, we may observe the fact that in all three cases there is a tendency of increase of the Hoover index. At regional level, it records an increase from 0.081 in 1998 to 0.168 in 2012 (107.41%) and at county level it records an increase of 73.91% (from 0.115 in the first analyzed year to 0.200 in 2012). The concentration degree of the GDP per inhabitant between the counties is higher to the interregional one, and this indicates the fact that the cross-county inequalities are higher to the interregional ones thus adding the date on regions determines a compensation of the differences between them. Also, the recalculation of the index at regional level, excluding the Bucharest Ilfov region, determines a significant decrease of the obtained values.

Analyzing the obtained data of the Hoover index at intraregional level (Figure 6), the following can be highlighted:

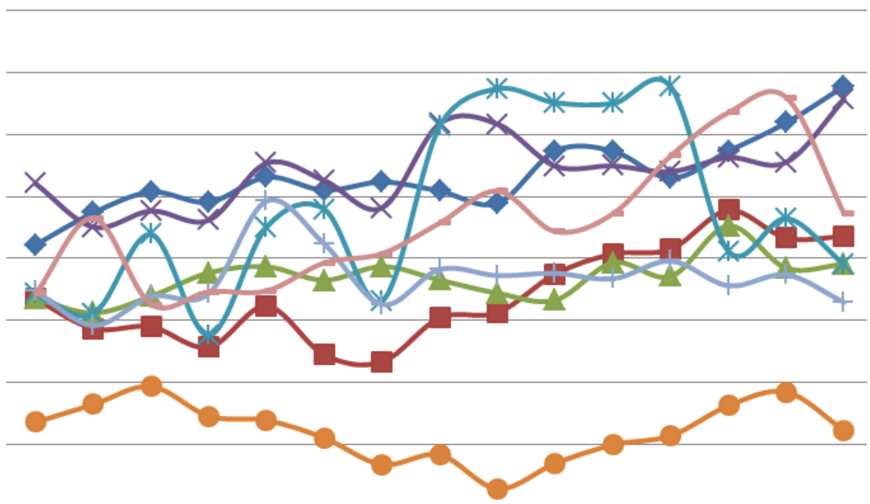
– There is a slight tendency of index increase in all regions, the highest fluctuations being recorded in the South Muntenia region, a region that during 2005-2009 recorded the highest values of the index;

– The index values are below 0.14 which means, however, a relatively reduced level of disparities at interregional level in our country;

– Expect the Bucharest Ilfov region, the most reduced values of the index are recorded in the North East and South East Oltenia regions (poorly developed regions with a GDP/inhabitant below 80% of the national average) and the highest values are in the relatively developed regions (North West, West and South East);

– The central region recorded one of the highest levels of the index until 2007; after this year the Hoover index recorded a continuous increase;

– The impact of the economic crisis determined an increase of disparities within the more developed regions (West, North West, South East, Central regions).

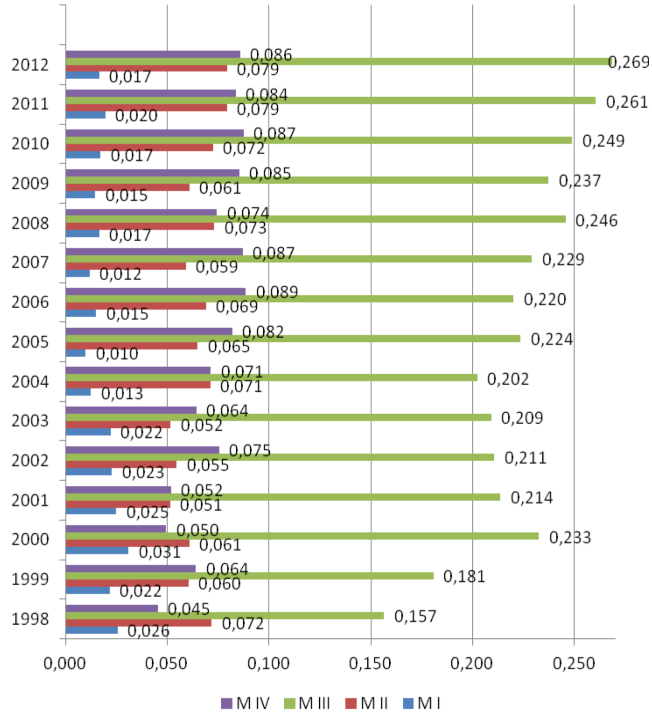


	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
NW	0,08440	0,09472	0,10143	0,09814	0,10625	0,10202	0,10468	0,10172	0,09781	0,11469	0,11467	0,10587	0,11469	0,12382	0,13558
C	0,06687	0,05739	0,05792	0,05130	0,06463	0,04885	0,04660	0,06086	0,06251	0,07498	0,08144	0,08299	0,09553	0,08658	0,08712
NE	0,06708	0,06238	0,06779	0,07538	0,07731	0,07297	0,07738	0,07302	0,06876	0,06653	0,07861	0,07422	0,09055	0,07687	0,07819
SE	0,10415	0,09014	0,09531	0,09238	0,11077	0,10516	0,09632	0,12355	0,12337	0,10980	0,10987	0,10804	0,11257	0,11107	0,13128
Sm	0,06874	0,06212	0,08774	0,05523	0,09013	0,09590	0,06630	0,12277	0,13481	0,13028	0,13004	0,13538	0,08230	0,09290	0,07803
Bi	0,02713	0,03284	0,03868	0,02909	0,02772	0,02204	0,01345	0,01659	0,00562	0,01385	0,01983	0,02277	0,03246	0,03687	0,02448
SWO	0,06936	0,05834	0,06767	0,06870	0,09854	0,08466	0,06513	0,07649	0,07447	0,07521	0,07343	0,07916	0,07118	0,07472	0,06583
W	0,06863	0,09305	0,06518	0,06925	0,06954	0,07858	0,08156	0,09145	0,10175	0,08867	0,09447	0,11314	0,12711	0,13195	0,09448

Source: own calculations based on the data of INSSE, Tempo Online

Figure no. 6 – Disparities regarding GDP/inhabitant at intraregional level – the Hoover index

At macroregional level the situation is as in Figure 7:



Source: own calculations based on the data of INSSE, Tempo Online

Figure no. 7 – Disparities regarding GDP/inhabitant at macroregional level – the Hoover index

The 3rd macroregion has a high level of the Hoover index compared to the other macroregions due to the fact that it comprises two regions with a very different level of development (the Bucharest Ilfov region, the most developed region of the country that recorded a GDP/inhabitant of over 140% of the national average and the South Muntenia region which belongs to the least developed regions of the country with a GDP/inhabitant below 80% of the national average). This high value of the index in the 3rd macroregion shows the fact that the inequalities within this macroregions are much higher than those of the other macroregions, within which we may estimate the fact that the disparities are increasing but, however, are significantly more reduced.

4.2. Measuring regional inequality – the coefficient of variation

In order to see if the regions of our country managed to reduce the differences between them during the analyzed period, the coefficient of variation was calculated (sigma convergence). This type of convergence is assimilated to the catching-up process and shows the distance, the dispersion between the levels of the analyzed economic indicators.

In the Table 1, there are shown the standard deviation, the average and the coefficient of variation of the GDP/inhabitant during 1998-2012 both at regional level as well as macroregional level in Romania.

Table no. 1 - Standard deviation, average and coefficient of variation of the GDP/inhabitant during 1998-2012

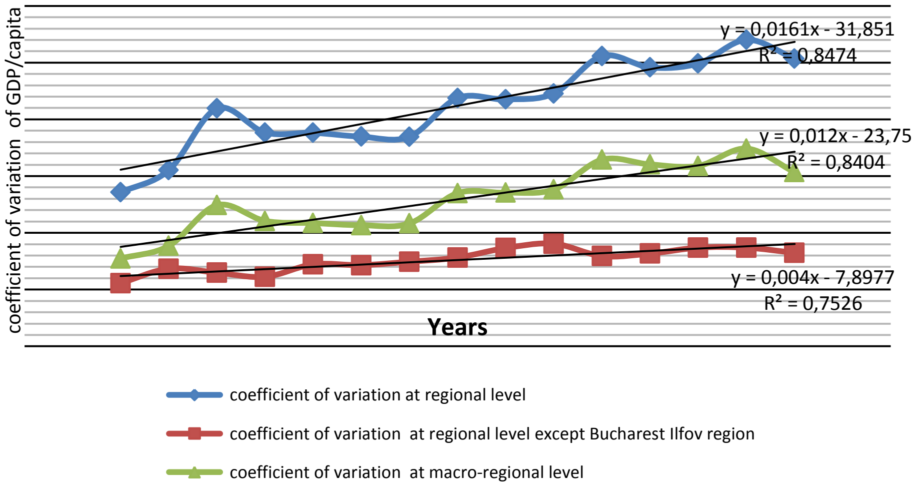
Years	At regional level			At macroregional level			At regional level without Bucharest Ilfov		
	σT	$\overline{X_T}$	Cv_T	σT	$\overline{X_T}$	Cv_T	σT	$\overline{X_T}$	Cv_T
1998	3010.52	12121.13	0.25	3436.26	24242.27	0.14	1225.47	11068.98	0.11
1999	3552.39	12415.90	0.29	4068.02	24831.80	0.16	1512.45	11184.30	0.14
2000	4912.81	12571.87	0.39	5834.14	25143.74	0.23	1383.50	10780.58	0.13
2001	4723.89	13597.15	0.35	5547.38	27194.29	0.20	1431.10	11884.87	0.12
2002	4944.18	14303.11	0.35	5749.84	28606.22	0.20	1692.04	12532.73	0.14
2003	5473.24	16177.87	0.34	6380.18	32355.74	0.20	1905.07	14221.90	0.13
2004	6140.51	18160.95	0.34	7272.45	36321.89	0.20	2230.79	15978.17	0.14
2005	7898.13	19543.71	0.40	9863.66	39087.42	0.25	2441.20	16685.99	0.15
2006	8853.00	21949.43	0.40	11161.53	43898.85	0.25	3065.81	18783.73	0.16
2007	10526.71	25317.70	0.42	13229.51	50635.40	0.26	3692.36	21559.24	0.17
2008	13992.03	29080.95	0.48	18194.59	58161.89	0.31	3615.16	23949.23	0.15
2009	12794.77	27299.12	0.47	16835.79	54598.24	0.31	3628.76	22636.44	0.16
2010	13169.55	26981.69	0.49	17006.30	53963.38	0.32	3712.61	22180.25	0.17
2011	14266.63	27067.05	0.53	18578.35	54134.11	0.34	3668.98	21833.13	0.17
2012	14410.13	27710.52	0.52	18135.24	55421.03	0.33	3851.32	22436.95	0.17

Source: own calculations based on the data of INSSE, Tempo Online

The results obtained in Table 1 show that during the analyzed period both at regional level as well as macroregional level, a sigma convergence does not exists, the coefficient of variation of the GDP per capita recorded significant increases (from 0.25 to 0.47 at regional level and from 0.14 to 0.31 at macroregional level). The results show the non-existence of the regional convergence process, the differences between the regional income tend to increase, which means that certain regions represent strong attraction poles attracting larger quantities of capital and highly qualified labor force against the less developed regions.

The calculations obtained show a much stronger divergence tendency at regional level compared to the macroregional level. Excluding the calculations carried out at regional level regarding the Bucharest Ilfov region, much lower values of the coefficient of variation of the GDP per capita were obtained, which means that the Bucharest Ilfov region has a strong impact on the regional differences, disparities of our country.

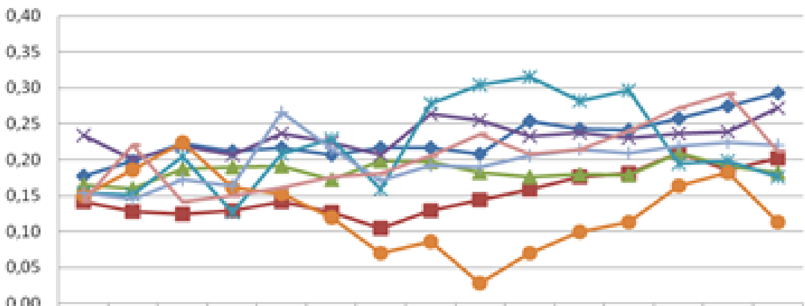
We may observe from Figure 8 the fact that during 1998-2012, the tendency line in all three cases has a positive incline, e.g. the function is increasing, the dispersion increases and a sigma divergence takes place with some period of sigma convergences (2001-2004, 2009, 2012). In these periods (first years of the pre-adhesion period of Romania to the European Union and the first year of the economic crisis) a slight decrease of disparities took place at regional and macroregional level, decreases in the GDP dispersion per capita but, generally, the differences record an ascending trend. A significant increase of the coefficient of variation of the GDP per capita took place in 2008, the first year after Romania's European Union accession (a case which can be explained by the increase of some costs following the attempt of accommodating our country to the EU requirements and rules).



Source: figure based on the data from Table 1

Figure no. 8 – Sigma convergence (coefficient of variation) at regional and macroregional level of GDP/capital

Also, we tested the hypothesis of sigma convergence at intraregional level for the period 1998-2012 in order to determine if the regions managed to reduce the differences within. The indicator used was GDP per capita expressed at comparable prices. The results regarding the coefficient of variation of the GDP per capita are presented in Figure 9.



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
NW	0,18	0,20	0,22	0,21	0,22	0,21	0,22	0,22	0,21	0,25	0,24	0,24	0,26	0,27	0,29
C	0,14	0,13	0,12	0,13	0,14	0,13	0,10	0,13	0,14	0,16	0,18	0,18	0,21	0,19	0,20
NE	0,16	0,16	0,19	0,19	0,19	0,17	0,20	0,20	0,18	0,18	0,18	0,18	0,21	0,19	0,18
SE	0,23	0,20	0,22	0,21	0,24	0,22	0,21	0,26	0,26	0,23	0,24	0,23	0,24	0,24	0,27
SM	0,15	0,15	0,20	0,13	0,21	0,23	0,16	0,28	0,30	0,31	0,28	0,30	0,19	0,20	0,18
BI	0,15	0,19	0,22	0,16	0,15	0,12	0,07	0,09	0,03	0,07	0,10	0,11	0,16	0,18	0,11
SWO	0,15	0,14	0,17	0,16	0,27	0,22	0,17	0,19	0,19	0,21	0,21	0,21	0,22	0,22	0,22
W	0,14	0,22	0,14	0,15	0,16	0,18	0,18	0,21	0,24	0,21	0,21	0,24	0,27	0,29	0,21

Source: own calculations based on the data of INSSE, Tempo Online

Figure no. 9 – The coefficient of variation of GDP per capita at intraregional level in Romania

Analyzing the obtained data, we may estimate the fact that the coefficient of variation of the GDP per capita at intraregional level records an increase in the analyzed period in all regions of our country which means a divergent increase of the economies of component counties. At intraregional level, the sigma convergence hypothesis is not verified, a fact supported by the existence of the increasing trend of the variation coefficient which means that the differences (disparities) tend to increase. The only region in which the coefficient records a decrease in the first part of the period analyzed is the Bucharest Ilfov region, but this aspect is less relevant since this region has only two territorial units. Also, the calculations obtained indicate a much more reduced divergence (low) than the interregional one, the values of the variation coefficient of the GDP per capita being lower.

5. CONCLUSIONS

Regarding the GDP per capita, we may find out an increase of disparities at all levels analyzed, an increase also highlighted by the evolution recorded by the Hoover index but reduced in size. Analyzing the territorial concentration of the GDP per capita, we may conclude the fact that the disparities between counties are higher than the interregional ones (a compensation takes places concerning the differences between the regions by adding up the data at regional level) and the exclusion from the analysis of the Bucharest Ilfov region determines a decrease of inequalities which shows the significant influence of Bucharest Municipality on the territorial differences. Also at intraregional level, the differences are increasing but they are more reduced than the interregional ones. In the case of the 3rd macroregion which comprises two regions with a very different development level, we may estimate the fact that the inequalities regarding the GDP per capita within this macroregion are higher than the others.

Although in general, the differences between the analyzed territorial units are increasing, in 2009, the first year in which the effects of the economic crisis were felt, a slight decrease is observed regarding interregional differences and an increase of disparities between the component counties of some of the more developed regions (West, North West, South East, Central regions).

The sectorial structure of the regions determined that the impact of the crisis is to be felt differently by these. The development regions in whose counties the primary sector dominates were less affected by the extreme shocks compared to the developed regions but the developed regions managed to adapt to the economic context (to the difficulties emerged on the labor market, increase of unemployment and decrease of demand) and to record increases which determined the deepening of the interregional disparities.

Testing the hypothesis of sigma convergence for the regions and macroregions of Romania was carried out in order to determine if these managed to reduce the differences between them and shows that this type of convergence does not exists, a fact revealed by the existence of an increasing trend of the coefficient of variation of the GDP/capita, the differences between their income are increasing, which means a tendency of divergent increase of the economies in the development regions and macroregions of Romania. This result is due to the very high discrepancies, the differences between the poorly developed regions and the developed ones regarding the presence and the capacity of economic growth factors (physical and human capital, technological progress) to generate higher rhythms of economic growth as well as the capacity of the developed regions to absorb direct foreign investments, to generate and assimilate new technologies. The divergence is much stronger at regional level compared to the macroregional level and by excluding the Bucharest Ilfov region from the calculations related to regional level, lower values of the coefficient of variation of the GDP per capita were obtained.

In our country, there is obvious the existence of a self-sustained center-periphery type structure of faster growth of regions around the capital due to the investments favoring the developed regions, the higher share of services in these regions, the migration of the labor force (especially the highly qualified one). The agglomeration of the "center" region determines a higher growth rate at national level which emphasizes the differences between the less developed regions (which record lower growth rates) compared to the agglomerations.

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SOCIAL NETWORKS SECURITY IN UNIVERSITIES: CHALLENGES AND SOLUTIONS

Daniela POPESCUL*, Mircea GEORGESCU**

Abstract

Nowadays, information flows are powerfully augmented by Social Media. This situation brings along the adjustment of the traditional information security threats to this new environment, as well as the emergence of new characteristic dangers. The purpose of this study is to learn about Generation Y students' attitude to risks and security measures when using Social Networks (SN). The correct identification of their behavior is, in our opinion, essential for the academic community. Firstly, we need to understand what their real knowledge in the field is. Then, a serious and consistent adaptation of our courses in Information Security and other subjects and a redefinition of universities' security policies and procedures is necessary. On this basis, in an empirical study, we try to determine how much our students know about security threats and subsequent protection measures in SN.

Keywords: Social Networks, Social Networks use in universities, Social Networks security, Web 2.0 security threats

JEL classification: L86, M15

1. INTRODUCTION

Web 2.0 represents an ensemble of technological platforms which allows the interaction of the users by spreading and consuming information and/or different online materials. The concept is based on a few key elements among which we mention creating and sharing user generated content, participation, communication and collaboration. According to (Airinei *et al.*, 2014, Horváth *et al.*, 2014, Radu, 2013, Ţugui and Şiclovan, 2013), the Web 2.0 technologies made possible the appearance of Social Media, such as Social Networks (SN), wikis, blogs, podcasting, RSS flows and so on. Social Media (SM) offers users a high degree of comfort, they are easy to use, and people can very easily join them. SM' openness deepens the more and more common perception of the Internet as utility, given by the low cost of connectivity, high speed for data and information transfers and ubiquity. The attraction proven by the SN on individuals is rooted in the similarity to

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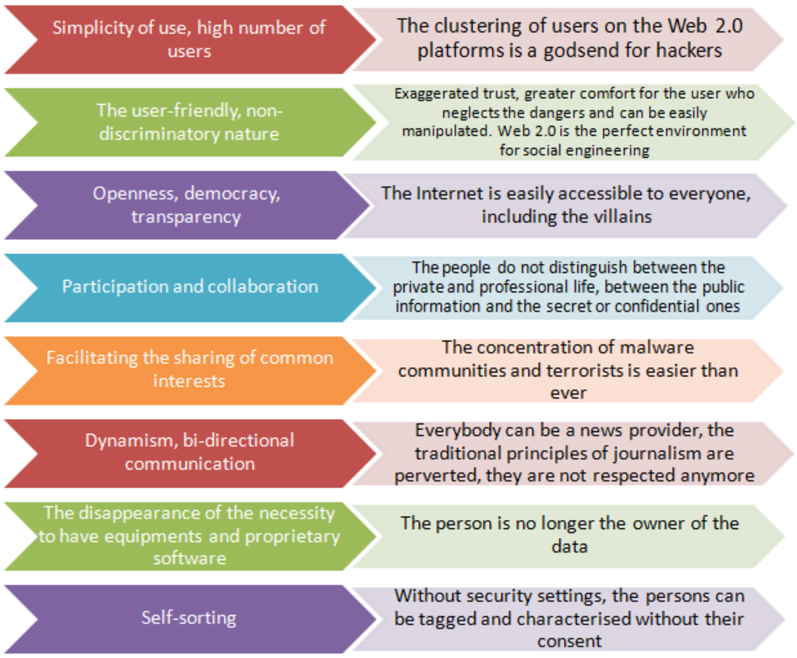
real life when it comes to storing and consuming information – under the form of familiar discussion threads and easy-to-access links, more than well-structured databases.

But, the undoubtedly positive characteristics which we previously mentioned also have an unfavorable aspect from the point of view of information security, as we would like to present in Figure 1. SM are easy to understand and learn, designed so that they could very quickly gather fragmented information and knowledge, and used for a wide range of experiences (most of the times entertaining). In these friendly environments, people nowadays can very easily unveil sensitive aspects from their lives but also from the companies they work for. Thus, information confidentiality is affected, as shown in (Grama and Păvăloaia, 2014, Măzăreanu, 2010, Munteanu *et al.*, 2008, Oprea, 2007).

At the same time, SM make the user neglect the dangers in virtual world and trust excessively the validity of the information available online. This situation of feeling relaxed and trustworthy described above, in a combination with the permanent availability of the mobile devices connected to Web 2.0, leads to a stage in which the individuals become their own enemies. They are no longer able to clearly distinguish between the private, the social life and that of the organization, between the public information and knowledge and the private ones.



Source: authors' own contribution

Figure no. 1 – Challenges from the perspective of information security in Social Media

The right of ownership over their own data also disappears, since security is managed by third parties who are not very motivated or informed about the importance of information for its users.

Even more, the over-usage of Web 2.0 has changed it into a global village with millions of inhabitants where crooks can disguise under false identities and get lost, sharing more and more advanced fraud techniques without being seen. The classical forms of attack such as Denial-of-Service (attempts to make Internet resources unavailable to their intended users), SQL attacks, spoofing etc. are brought to life once the social environments have evolved and the trust the users have in the above mentioned networks leaves place for manipulation by phishing, spam and other treacherous acts.

2. THEORETICAL FRAMEWORK - THE PERCEPTION OF STUDENTS AS REGARDS THE DANGERS AND RISKS ON THE SOCIAL NETWORKS

Nowadays, students form the category which is most exposed to SM. They are well-educated, internet savvy, and eager to learn (Vasilescu, 2011, Bolton *et al.*, 2013, Pînzaru and Mitan, 2013), but also more shallow, skeptical, blunt, critical, cynical, narcissistic, difficult to wow and impatient relative to their predecessors. They act as multitaskers, filter and consume relevant and interesting information with great speed, have high expectation and are headed to fast achievements (Vasilescu, 2011, Airinei *et al.*, 2014, Horváth *et al.*, 2014, Radu, 2013, Ţugui and Şiclovan, 2013). Social Media help digital natives to define and redefine themselves, to satisfy their requests for autonomy, recognition and achievement, as well as the need for affiliation and belonging.

The studies undertaken by (Ujhelyi and Szabó, 2014), (Tkalac Verčič and Verčič, 2013), (Whiting and Williams, 2013), (Pînzaru and Mitan, 2013), (Friedl and Tkalac Verčič, 2011), (Andrei *et al.*, 2010) show that students use SM for:

- Interaction with old or new friends;
- Keeping up-to-date;
- Searching for information about school, studies, shopping, events, entertainment, free time;
- Fighting boredom by listening to music, playing games, watching movies;
- Reading posts or comments;
- Self-promotion;
- Self-education.

Another category of use, more malicious, include surveillance or spying on friends and search for information about different people. These activities come at hand even more when people willingly unveil all sorts of personal information about them. (Benson *et al.*, 2015) shows that this phenomenon, boosted by the more and more common use of smartphones and localization services affect our civil rights ant intimacy. Finding a user profile on different data bases which has been willingly made available, is easier especially on SN, as they are different from e-commerce networks or other online environments. The service providers, third parties and especially users with a very relaxed attitude are equally involved in disclosing information. Apart from other negative effects on long term of using SN, (Santos and Čuta, 2015, Ernek Alan and Eyuboğlu, 2012, Bolton *et al.*, 2013) mention, as regards the students, the loss of intimacy and public safety, reduced civil involvement, increased cyber-crime and less involvement in online activities, addiction (the students seem to obsessively check the new posts and profile updates, stopping the activities they are usually involved in).

On the other hand, beyond the common supposition that the users neglect SM dangers and threats, trust excessively these environments and the credibility of the information accessed online, (Benson *et al.*, 2015 and Bolton *et al.*, 2013) have discovered in their studies that most users apply enough settings in order to ensure the information security, being very careful about what they post and their own actions, and avoiding exposure to hackers, viruses, spammers and other attacks.

Considering these observations extracted from the literature in the field, the research questions formulated by us were:

Q1. How do the students perceive the risks when using SN sites?

Q2. What security settings do they use in their favorite SN site, Facebook?

In order to find answers Q1 and Q2, we conducted an online survey, consisting of 10 questions. We recruited 628 participants from Faculty of Economy and Business Administration, "Alexandru Ioan Cuza" University in Iași, who received a link to our online survey. It took approximately 10-15 minutes to complete the questionnaire, which was open from 9th to 13th November 2015.

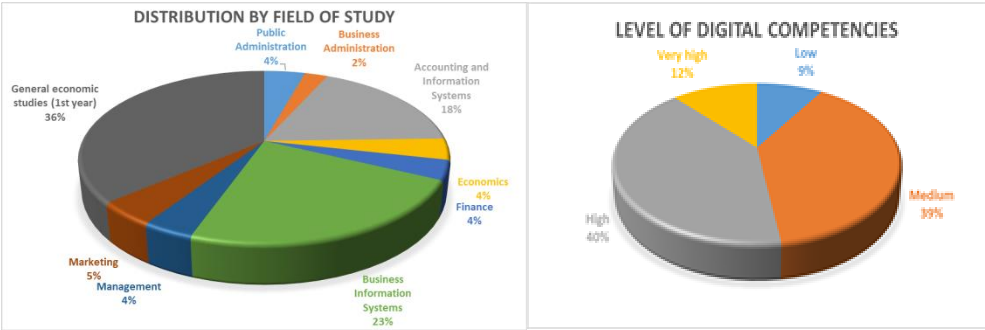
3. METHODOLOGY

The study aimed to analyze the degree in which the students from the Faculty of Economy and Business Administration are aware of the general dangers to which they expose themselves when using SN and to discover the security measures they use. A number of 628 students (10% of all the students in the faculty, 167 males, and 461 females) answered a questionnaire distributed by Google Forms; all the received answers were valid. Our questionnaire has two main sections. In the first section we asked participants about their age, gender, level of digital competence and possession of a smartphone. In the second section, participants were asked to rate items concerning privacy and responsibility issues, using 4-point Likert scales or True/False items.

Also, a number of 200 students specializing in Accounting and Information Systems, in the third year, bachelor degree, were asked to mention, which are, in their opinion, the three main benefits and risks of using the SN by professional accountants. The reason for choosing this group was their participation, the previous semester, in a course on the Security of Accounting Information Systems (28 hours of lecture, 28 hours of practical work). The security of SN was studied in detail during the above mentioned course. The students' knowledge was assessed during the whole semester – apart from improving the theoretical knowledge in the field, they also had to make an individual project to present the dangers and security measures discovered in the accounting information systems from different organizations. The average of the final exam grades for this group was 7.56/10, while the average of the grades given for the projects was 8.70/10. Hence we consider this group has a higher understanding of the security issues and we wanted to know their opinion about risk/dangers in SN, in connection with their future profession.

4. RESULTS AND FINDINGS

The charts below present the distribution of the 629 students by their field of study and their level of digital competence (self-evaluation). More than a half of the students are digitally literate and extremely proficient with technology, or at least that is their perception regarding themselves. 92% of them possess a smartphone and use it for visiting SN sites.

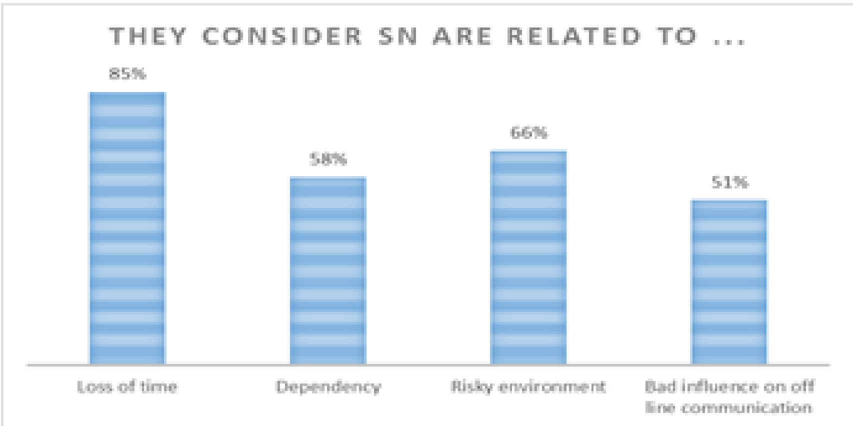


Source: questionnaire interpretation

Figure no. 2 – Respondents' structure by field of study

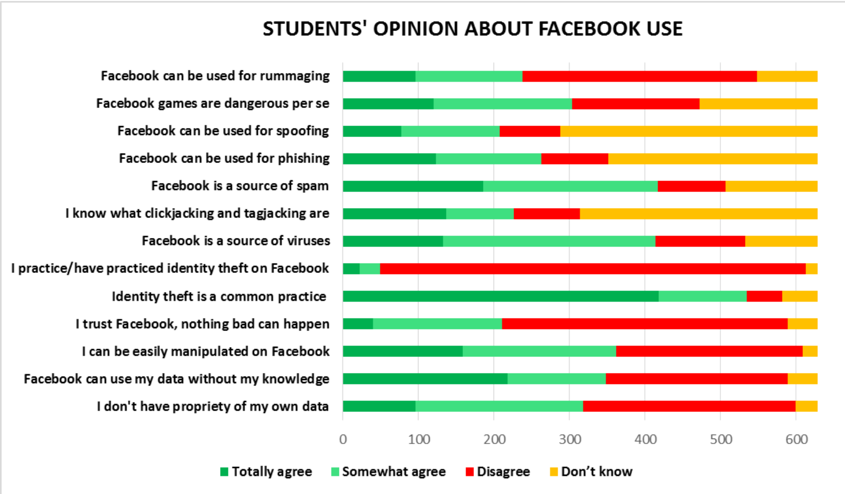
After these general observations, a set of 13 more specific questions showed that:

- Most of the students agree or strongly agree that Facebook is a source of viruses and spam, and that it can be used for rummaging;
- Most of the students aren't aware of more "technical" dangers, as spoofing, click-jacking, tag-jacking, phishing – they admit that they don't have knowledge about these types of attacks. On the other side, those who know the attacks agree that Facebook is a favorable medium for their appearances;
- Even if almost 95% of respondents consider the identity theft a common practice on Facebook, less than 10% admit they have practiced this form of attack;
- More than half of the students understand that Facebook can use their data without their knowledge, that they aren't the real owners of their data and that they can be easily manipulated on Facebook;
- Games that can be accesses through Facebook are considered dangerous.



Source: questionnaire interpretation

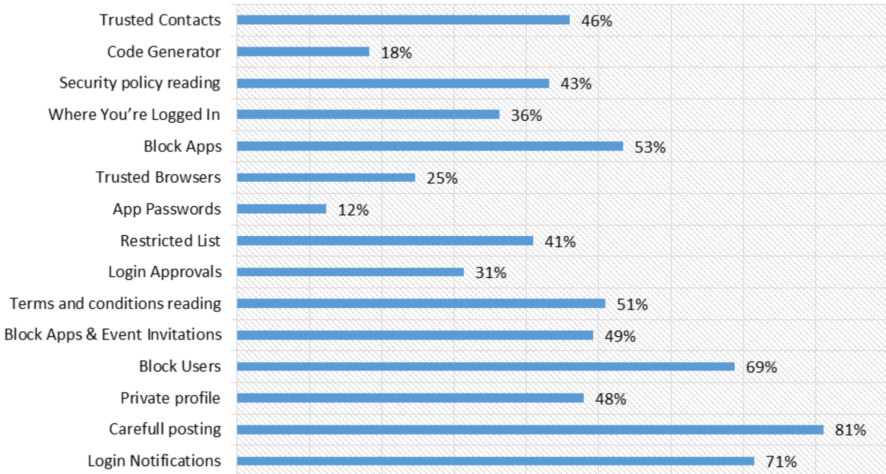
Figure no. 3 – General risks in Social Networks



Source: questionnaire interpretation

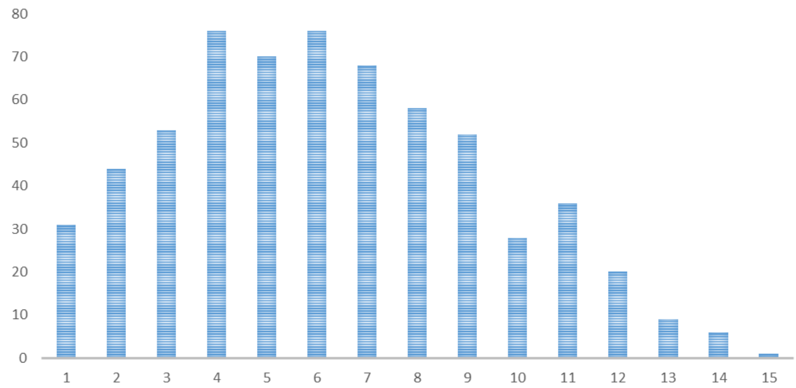
Figure no. 4 – Students' opinion on Facebook use

On the other side of the story, even if the common assumption is that in SN users neglect the potential security dangers and threats and are excessively confident in the trust and truthfulness of the online available information, we founded that an overwhelming majority of SN users define the privacy settings on who can access their profile information, and pay a lot of attention on their posts and actions, not exposing themselves to hackers, viruses, spam and other attacks, as can be seen in Figures 5 and 6.



Source: questionnaire interpretation

Figure no. 5 – Students' use of Facebook security settings

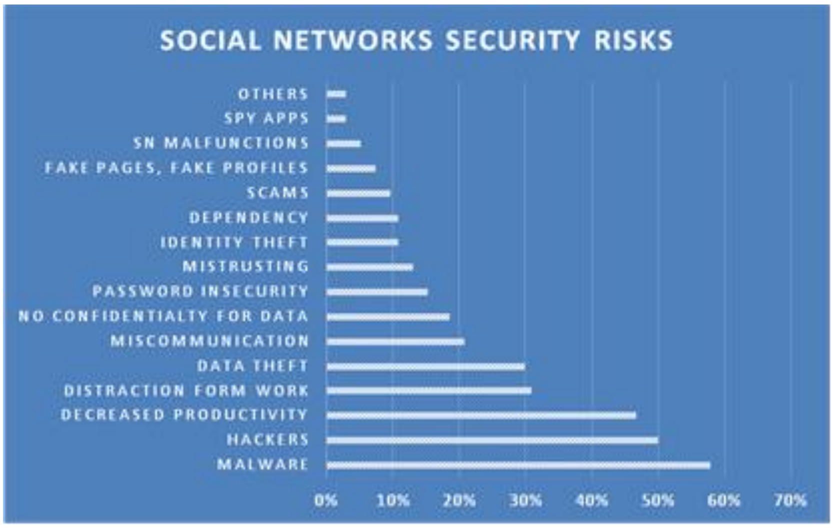


Source: authors' own contribution

Figure no. 6 – Number of security settings used by students

Focusing on the study applied on the 200 students specializing in Accounting and Information Systems, in the third year, bachelor degree, the hierarchy of risks/dangers identified is presented in Figure 7.

58% of the respondents consider that the SN are important gateways for malware. They mentioned viruses, worms, spyware, Trojans under the disguise of advertisements. Even though it is certain that the whole picture of IT threats shown by the led and combined action of the viruses, worms and Trojans is rather wide and presenting an infinite variety of details, there were not mentioned other ”modern” or more technical dangers in this category, such as scareware, ransomware or rootkits. The second place is held by a technical danger as well, hacker attacks. They were introduced as a term, but the real types were not mentioned. In our opinion, by hacking students mean everything that refers to the creation and distribution of malware, data stealing by breaking passwords, but not to DDoS (electronic attack involving multiple computers, which send repeated requests to a server to make it inaccessible for a period of time), phishing, backdoor, botnets. This option they have should be regarded as one at hand, easy to extract from theory and bring to discussion. The next two dangers frequently mentioned by the future accountants are not technical. 47% of the students mentioned the decrease of work productivity as an effect of employees wasting time on SN sites, chatting with friends, which leads to a delay in finishing and handing over the accountancy documents. 31% say that the SN disrupt the employees from working tasks – receiving messages or other notes or checking the SN in order to see new posts, they might make mistakes when they upload or process data. In percentages between 20% and 30%, there is mentioned data theft (photos, documents, personal or company information), including IT spying, destroying data, affecting confidentiality, breaking or finding the password from user access accounts.



Source: questionnaire interpretation

Figure no. 7 – Risks and dangers hierarchy in Social Networks

Less than 20% of the respondents wrote about the following:

– Communicate wrong or unsuitable data about the company (even accountancy data), by mistake or being angry, which could consequently compromise the company;

– Lack of credibility of the information received from partners / displayed in SN;

– Employee identity theft which might lead to compromising the image of the company;

– Addiction of the employees on SN;

– Information theft / associating information about the employees and the products of a company and using them maliciously by the competitors.

10% or less of the students mentioned the following:

– Cheating/harassment/abuse/denigration of the employees or the company which become possible because the employees upload too much information about themselves;

– The fact that the official page of the company might be mistaken for other fake pages, the users might create fake profiles, so that the employees don't know who they communicate with in reality;

– If the employees use SN to solve tasks from work, in case the network fails due to an electricity or connection failure, this might lead to delays in the accomplishment of the tasks;

– Gathering data about the users without them being aware of it (Social Ads);

– Loss of official papers or even the access of unauthorized people to them;

– The social networks might install applications on the computer without the user's knowledge which leads to overloading the memory or the system;

– The posted data are in Cloud, and they are not owned by the users;

– The data from the browsing history is often non-encrypted and they can be a valuable source of confidential information;

– Continuous exposal to the information flow offered by the SN leads to a degree of inertia in the employees, since they no longer search for the information on their own, they expect they should receive them.

Out of the 200 students who took part in the study, only 10 noticed the inadequate use of SN in accomplishing the tasks of a professional accountant.

The main benefit identified by the students, is, in our opinion, still a risk. 36% considered the SN as an appropriate environment for the sending files, ideas, plans, reports easily and in real time, to a large number of employees. There were often mentioned accountancy files, information required for the accountancy reports. We can notice from their answers that they already have this habit of sending files to their peers. In the same percentage, they consider that SN, especially the internal networks of the companies (e.g. Microsoft) help to a better collaboration of the employees, facilitate team work at distance, allowing video or text conferences with several participants at the same time. A third of the students, again, consider that the social networks make it possible to spread information about the company easily and free of charge, serving as publicity and enhancing the image of the company. The educational aspect of these networks was greatly appreciated. Different segments or social groups are directly interested in the accountancy news, spreading a lot of useful information. The future accountants keep up with the latest news on laws being annulled, changed or voted from pages such as *AvocatNet*, *contabilul.ro*, *codfiscalnet*, *Acounting all the time*, and they follow the official pages of state institutions. They exchange opinions about accountancy issues, ask for help in solving the accountancy problems in their (private) group and receive quickly the expected answer. Thus, they have the feeling of belonging to a community or even that they work in a team and consider Facebook a valuable environment to spread and acquire knowledge. Apart from the groups on Facebook, they state that the tutorials on YouTube can also be useful.

30% of the students consider that SN are useful when communicating to clients and suppliers. Other benefits they mention are the low cost, the fact that Facebook is a good source of information, including news about products, clients and suppliers. 10% of the answers mention the fact that keeping in touch with the family or friends, the employees share pleasant memories and become more relaxed. Then, there are mentioned widely the benefits of LinkedIn, from both the individual perspective (”It helps to find a job and to meet new, valuable people from your field”), as well as the perspective of the company (social networks might help the company to advertise new positions and find information about the psychological profile, marital status or previous experience of their future employees).

5. CONCLUSIONS

Few universities have adopted coherent strategies and policies for a secure Social Media integration in pedagogical teaching and learning activities. In our opinion, there is a real need for institutional involvement and individual actions at the academic level, regarding the SM in general and SN sites use in particular. Web 2.0 technologies and SN are here to stay, so blocking their use or simply letting them be are not viable solutions. Based on the already acquired student knowledge in the field and on their awareness regarding the SM risks and security problems, faculty management should establish a coherent security policy and a set of procedures that should be diffused so that all the students should become aware of it. The already-careful behavior of students should be trusted – in universities, the general trend is one of technological advance and today’s employees are the same people who previously embraced the e–mail communication, browsing and searching – and they serve as good examples and inspiring factors for their students. In the most cases, they know the rules and have the adequate behavior. The students' involvement in SM must be encouraged, existing teaching methods must be adapted to these new media and the students' real life and SM knowledge must be exploited. Feedback should be sought and given in a constant, coherent and consistent manner. The permanent availability of SM and its capacity to remember can be used to keep in touch with graduates, whose help can be required for providing support to their younger colleagues, in the form of information, advice, internships or job offers. The informal nature of SM can be the source for an increased communication between professors and students, with positive results on both categories' satisfaction level and on university' reputation.

We have to admit that the methodology applied in this two studies has some limitations. First, by some measures, the sample size might be considered relatively small (even if it is larger than the ones used in similar Romanian studies). Secondly, the first study assesses a specific group, primarily students attending university, who may differ from other Internet users in important ways, such as their easy access to Internet connections. The group questioned in the second study is even narrower and has previous knowledge on SM security. Thirdly, only one type of social networking site was mainly assessed here. It may be that other sites are used in different ways, particularly since Facebook originated as a student site and has attracted many student-age people.

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ENDORSEMENTS' EFFECTS OF ONE BRANDED SERVICE ON ATTITUDE, PURCHASE INTENTION AND INTENTION OF RECOMMENDATION TOWARDS THE SERVICE CATEGORY

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Abstract

The study focuses on the effectiveness of endorsement strategies in the beauty service industry. We refer an effective endorsement strategy as a strategy where the endorser is perceived as trustful and we assume that trustworthiness leads to an attitudinal or behavioural change.
This quantitative research aims to identify the changes in attitude, purchase intention and intention of recommendation based on the perceived credibility derived from three different sources of endorsement – celebrities, experts and typical satisfied consumers.
426 subjects participated on an online survey. Their attitudes and intentions related to the service category were measured before and after they were exposed to an ad layout for one branded service.
All the tracked changes were significant, leading endorsement to make positive changes in purchase and recommendation intentions, but negative changes in attitude. Differences between consumers and non-consumers and between males and females were analysed.

Keywords: endorsement sources, perceived credibility, beauty service, change in attitude, purchase intention

JEL classification: M31, M37

1. INTRODUCTION

There is a permanent challenge for both researchers and practitioners to find more efficient ways to advertise. There is a wide range of advertising methods used in the beauty services industry. Advertising efficiency in this field can be achieved through a careful selection of communication strategies and this study comes in aid for those who want to find how endorsement strategies affect attitude and behavioural changes in the beauty services area. A recent study (Nielsen, 2015) showed that the most credible advertising comes from those who are in our inner circle. From 19 advertising formats the most preferred was "Recommendations from people I know" (78% of European respondents). But trust is not confined only to the people we know, as 60% of European respondents ranked second the

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advertising format "Consumer opinions posted online". The more common formats ("Ads on TV", "Ads in newspapers", "Ads in magazines", "Ads on radio", "Billboards and other outdoor advertising" and "Brand sponsorships") scored between 40 and 45 percent. The same study concluded that humorous ads and ads depicting real-life situations resonate most powerfully, while celebrity endorsement and athlete endorsement resonate the least. Although the literature is vast in the endorsement area there are no studies that make comparisons between the effectiveness of different sources of endorsement in the beauty service area, therefore this study aims to investigate the particularities of three types of endorsement sources in terms of perceived credibility and attitudinal and behavioural changes.

1.1. Endorsement strategies

Literature identifies four types of endorsers – the celebrity endorser, the expert, the satisfied consumer and the presenter (Friedman and Friedman, 1979; Aaker, 1996). According to McCracken, the celebrity endorser is the person who has the recognition of the public and he uses his status in society to influence the opinions in the favour of a product-sponsor (McCracken, 1989). Celebrities are known to the public for their achievements in different areas, which can be associated or not with the endorsed product. They can be athletes, actors, musicians and so on (Till and Busler, 1998). The strategy of using a celebrity as the endorser of a product has the advantage of increased exposure of the brand, regardless of the type of the product (Erdogan and Baker, 1999). Most of the target audience instantly recognizes celebrities and identifies with them, therefore an effect of transfer is happening – the desirability and attractiveness of the endorser is associated with the product (Aaker, 1996; Shimp and Andrews, 2013).

The expert is an individual or a group of individuals that have superior knowledge related to the endorsed product (Friedman and Friedman, 1979). This type of endorser is best suited for a technical product. In this case, the experience and knowledge of the endorser can diminish the fears about the product; this strategy is particularly effective for high risk products (Shimp, 2000).

The typical consumer endorser is often more effective than those mentioned above, especially in the situation when the target audience is known in-depth. This endorser is an ordinary person, without technical knowledge about the product (Shimp and Andrews, 2013). The advantage of using the typical consumer is that potential consumers can easily relate with the endorser. Endorsers' attributes as honesty and trustworthiness are important when delivering the message. In order to stimulate the potential consumer's action a "life sequence" – a scenario very close to reality is created (Friedman and Friedman, 1979).

In the social media era, the typical satisfied consumer strategy becomes more authentic as the endorser usually makes a voluntary endorsement action, without any incentives offered by the brand. This phenomena is referred as the electronic word of mouth. The main advantage of the electronic word of mouth is that the message is less likely to be treated as a spam (Li *et al.*, 2012). Social networks users will advertise on their own page if they expect a positive experience with the brand, if the advertisement is personally relevant and if the message is trustworthy (Wang and Chang, 2013). Some factors that are positively associated with the electronic word of mouth behavior in social media networks are the tie strength between two individuals, the trust towards the brand, the normative influences (conformity with the expectations of others) and the informational influences (the information acceptance from sources that are considerate to be more knowledgeable). Homophily (the similarity between two individuals that interact with each other) is negatively associated with the word of mouth behavior (Chu and Kim, 2011).

1.2. Attitude and attitude change

Attitude and attitude change are results of the persuasion process. Theories like Elaboration Likelihood Model (Petty and Cacioppo, 1986) and Heuristic - Systematic Model (Chaiken *et al.*, 1989) are stating that persuasion happens either through an elaborate thinking or through a more heuristic processing, using cues as background music or expert source.

The origins of attitude reaction exploitation are based in the early `80. It was MacKenzie, Lutz and Belch who established the importance of affective response toward the ads (MacKenzie *et al.*, 1986). The theory of Dual Mediation Model includes five constructs that measure responses to a persuasive message – ad affective response, ad cognitions, attitude towards the ad and brand and the purchase intent.

2. METHOD

The aim of the study was to explore the relationship between credibility derived from different endorsement sources and changes in attitude, purchase intention and intention of recommendation for the service category. Persuasion is triggered through ad layouts that represent three different types of sources, for a good coverage of the endorsement strategies. The study focuses on Intraceuticals, a cosmetic treatment used for a wide range of skin problems, such as wrinkles, skin degradation, acne, dark circles and pigmentation spots, using hyperbaric oxygen. The technology is relatively new for Romanian market, thus potential consumers are not very familiar with it.

2.1. Participants

426 subjects participated in this study. Both men and women were targeted. Previous experience with the cosmetic treatments was not mandatory. The survey was conducted online and it covered a wide range of age and geographic distribution on the Romanian territory.

2.2. Materials

Three ad layouts were used, each one representing a different source of endorsement – celebrity, expert and typical satisfied consumer. The first source of endorsement was represented by four celebrities - Madonna, Justin Timberlake as international celebrities and Antonia and Andreea Marin as national celebrities. For the next source were used two dermatologists and two plastic surgeons. Two of them were Romanian doctors, and the other two were from Canada and USA. The last ad layout included four Romanian satisfied users of Intraceuticals. Each ad layout contained four different statements about the treatment and they can be found in Appendix.

All the statements were selected to minimalize the importance of the message in the persuasion process. Moreover, advantages and specific attributes of the branded service were eliminated from the statements.

The materials were integrated into one online survey which covered the initial attitudes, purchase and recommendation intentions, the exposure to materials, the perceived credibility of each endorsement source, the final attitudes, purchase and recommendation intentions and demographical items.

2.3. Measures

Attitude and intention were measured before and after exposure through the constructs of Dual Mediation Model. Measurement included attitude towards the brand (3 items on a 9 point semantic differential scale – Your opinion about cosmetic treatments? negative/positive, it does not worth the money/is worth the money, bad for skin/good for skin), purchase intention (2 items on a 9 point semantic differential scale – Would you have a cosmetic treatment in the next 4 months? unlikely/likely, definitely not/definitely) and recommendation intention (9 point semantic differential scale - Would you recommend to a friend a new cosmetic treatment, regardless if you use it or not? definitely/definitely not). This set of questions was resumed after exposure, to see if there was a shift in the initial attitude and intention. Items were averaged for attitude measurement and purchase intention. Attitude change was calculated by subtracting the initial attitude from the final one.

Credibility scale (4 items on a 9 point Likert scale) was adapted from Ohanian and included measurement of sincerity, credibility, honesty and trustworthiness (Ohanian, 1990). The average scores were computed for each subject. Demographical data included county, age and sex.

3. ANALYSIS AND RESULTS

The mean values were calculated for initial purchase intention, final purchase intention, initial and final attitude, celebrities' trustworthiness, experts' trustworthiness, consumers' trustworthiness and overall trustworthiness. Changes in attitude, in purchase and recommendation intention were computed by subtracting the initial score from the final one. Initial purchase intention variable was dichotomized by median for splitting the subjects into two groups – consumers (people who will use the referred service in the next four months) and non-consumers (people who will not use the referred service in the next four months).

Scales were found to be internally consistent, according to Cronbach's Alpha coefficient – $\alpha = 0.944$ for Initial purchase intention (2 items), $\alpha = 0.975$ for Final purchase intention (2 items), $\alpha = 0.928$ for Initial attitude (3 items), $\alpha = 0.956$ for Final Attitude (3 items), $\alpha = 0.950$ for Celebrities' trustworthiness (4 items), $\alpha = 0.956$ for Experts' trustworthiness (4 items), $\alpha = 0.961$ for Consumers' trustworthiness (4 items).

The Wilcoxon Test revealed that Initial purchase intention's mean was 3.760, while the final one was 3.917, resulting in an increase in Purchase intention of 0.157. Initial attitude mean was 5.246, while the final one was 5.164, resulting in a decrease of the attitude of 0.0822. The mean score of Initial recommendation intention was 3.7512, the final score was 4.2746, and there was a positive change of 0.5235 units.

Most of the subjects (225/426) did not change their intention of purchase for the service category, but negatively changed their attitude (170/426) and positively changed their recommendation intention (179/426).

Table no. 1 – Ranks for attitudes, purchase intentions and intentions of recommendation

		N	Mean Rank
Final purchase intention - Initial purchase intention	Negative Ranks	84	96.79
	Positive Ranks	117	104.03
	Ties	225	
	Total	426	
Final attitude - Initial attitude	Negative Ranks	170	146.59
	Positive Ranks	123	147.56
	Ties	133	
	Total	426	
Final intention of recommendation - Initial intention of recommendation	Negative Ranks	102	136.68
	Positive Ranks	179	143.46
	Ties	145	
	Total	426	

Through a Mann – Whitney Test, significant differences were observed only regarding the initial and final purchase intention (sig. < 0.05) between males and females respondents. While the mean rank for female respondents' initial purchase intention was 222.53, for male respondents' was 164.23. It was similar for final intention of purchase (222.95 and 161.95).

Both initial and final recommendation intentions ranks were higher for women (222.71 compared to 163.24 and 217.33 compared to 192.58), although the difference was significant only for the initial intent (sig. < 0.05). Men scored higher in change of recommendation intention (246.76 compared to 207.40) and the difference was significant (sig. = 0.015).

Females had higher scores regarding attitudes towards the service category after the exposure (217.97 compared to 189.11). The difference was significant (sig. = 0.035). There were no significant differences between genders regarding the initial attitude and the change of attitudes (sig. > 0.05). Nor were significant the differences between genders regarding the perceived credibility of each type of endorser (sig. > 0.05). The demographic variable Age did not significantly influenced any of the attitudes or intentions.

Using a Wilcoxon test, it was concluded that the changes in attitude, purchase intention and intention of recommendation were significant (sig. = 0.014 for change in purchase intention, sig. = 0.019 for change in attitude and sig. = 0.000 for change in intention of recommendation).

Through a Mann–Whitney U Test, there were identified some important differences between those who tend to use cosmetic services and those who do not. While the majority of the first group (69/152) negatively changed their intention of recommendation, the majority of the second group (142/274) positively changed their intention of recommendation. Also, there was a difference between these groups regarding attitude. While the majority of consumers did not change their attitude (57/152), the majority of non-consumers (119/274) did negatively change their attitude. The intention of purchase ratio was similar for both groups (ties).

For the purpose of finding the differences between the subjects who tend to use cosmetic treatments and those who don't, regarding the levels of perceived credibility of endorsers, several Mann-Whitney U tests were used. Consumers tend to have significantly higher perceived credibility of all endorsers compared to non-consumers ($p < 0.005$ for each group and for each endorser type).

Table no. 2 – Trustworthiness ranks for consumers and non-consumers

		Mean Rank
Celebrities' trustworthiness	Non-consumers	184.47
	Consumers	265.83
	Total	
Experts' trustworthiness	Non-consumers	181.18
	Consumers	271.76
	Total	
Consumers' trustworthiness	Non-consumers	183.38
	Consumers	267.80
	Total	

The highest mean of perceived credibility was 4.251 and represents the experts' trustworthiness. The lowest mean was celebrities' trustworthiness, valued 3.342, while consumers' trustworthiness was 4.032. With the purpose of testing if those means are significantly different, a Friedman test was performed. Friedman test results (χ^2 (2) = 167.343, $p < 0.05$) showed that differences between the three types of endorsers were overall significant. Pair wise analysis revealed that the differences were significant between all three pairs of endorsers (sig. < 0.05).

Table no. 3 – Means of perceived credibility

	Mean
Celebrities' trustworthiness	3.3427
Experts' trustworthiness	4.2512
Consumers' trustworthiness	4.0329

Change in attitude was associated more with the perceived credibility of celebrities (r_s = 0.280), closely followed by perceived credibility of experts (r_s = 0.276), and less with perceived credibility of typical satisfied consumers (r_s = 0.209). On the contrary, the change in recommendation intention was mostly associated with perceived credibility of typical satisfied consumers (r_s = 0.169), then with perceived credibility of experts (r_s = 0.148) and with perceived credibility of celebrities (r_s = 0.153). There were small differences of Change in purchase intention regarding the type of endorsement (r_s = 0.201, r_s = 0.202, r_s = 0.193).

Table no. 4 – Correlations between endorsement sources and changes

	Change in attitude	Change in purchase intention	Change in intention of recommendation
Celebrities	0.280	0.201	0.153
Experts	0.276	0.202	0.148
Consumers	0.209	0.193	0.169

4. CONCLUSION AND DISCUSSION

The changes in attitude, purchase intention and intention of recommendation were significant, thus, for our sample, endorsement had a noticeable impact for the beauty services area.

An interesting finding was that while purchase intention and intention of recommendation increased, the overall attitude for the service category slightly decreased. Possible explanations for this could be related to the negative effects generated by one or more of the endorsers or the particularities of the beauty industry.

In terms of perceived credibility there were no significant differences between genders, regardless of the type of endorser. However, there are significant differences between males and females respondents regarding purchase intention and attitude and these were expected having in mind the nature of the service. An interesting finding was that men scored higher in changing the intention of recommendation. Even though men probably would not become customers as easily as women, endorsement could transform men into a great ally in developing a word of mouth campaign for beauty services.

The majority of subjects who tend to use this kind of services did not change the attitudes towards the service category after the exposure to the layouts. A potential cause could be the fact that they already done some research and are familiar with brands and techniques, thus they do not particularly find the advertisements useful. Non-consumers however scored a negative change of attitude, in other words the endorsement for the branded service negatively affected the attitude for the entire service category. This is an unexpected psychological effect and it would be interesting to find if the endorsement strategy even annoys non-consumers. Besides researchers, advertisers should also be aware of this kind of repercussions for the service category.

The endorsers were perceived significantly different in terms of credibility. Most credible were the experts and most distrustful, at a considerable distance, were the celebrities. This is an interesting result considering the financial effort for each type of endorser. These are to some extent consistent with the results of Nielsen's recent study (Nielsen, 2015) which showed that celebrity endorsement is an increasingly ineffective strategy while the trust in other consumers' opinions is considerably more and more effective. Nevertheless there are studies (Elberse and Verleun, 2012) showing that celebrity endorsement is an effective advertising strategy. Endorsers are associated with increasing sales and they also have a positive impact on stock returns.

The links between perceived credibility of each type of endorser and changes in attitude, purchase intention and intention of recommendation revealed that typical satisfied consumer affects more the change in intention of recommendation than other changes, while celebrities affect more the change in attitude. Experts affect more the change in purchase intention, but in this case, the differences between the three types of endorser are considerably smaller.

Some managerial implications occurred from these results. If a company targets to change attitude towards its beauty services through endorsement, the most effective way is to use celebrity endorsement since celebrities have the highest association with the change of attitude. However, this decision could imply a considerable risk, because celebrity endorsement could also negatively affect the change in attitude, especially for non-consumers. If an advertiser tries to boost the purchasing intentions for a beauty service, he could use experts such as dermatologists or estheticians. However, if the goal is to increases the word of mouth trough intentions of recommendations, the company should use the typical satisfied consumer as endorser, more than experts or celebrities.

This study confirms for the first time that endorsement strategies for one particular beauty service have an impact on the service category in terms of attitude and behavioural changes. Another contribution of the present study is the investigation of the links between perceived credibility of each type of endorser and each type of attitude change.

5. LIMITATIONS

All the respondents were from Romania, thus a limitation was the relative homogeneity and small size of the sample compared to the studied population. Another limitation was related to the situation in which the subjects evaluated the ad layout (an online survey). Measurements of the effect of the endorsement were limited by the instrumentality of credibility.

6. FUTURE RESEARCH

A future research could aim to find the causes that are leading endorsement to make positive changes in purchase and recommendation intentions, but negative changes in attitude. We also encourage fellow researchers to investigate the relation between credibility and attitude change regarding endorsement strategies using other stimuli than ad layouts. A direction for future research could also aim to find out if endorsers are differently perceived in the beauty industry, possible reasons being the multitudinous ads in this field and the fact that over the time the claims presented in the ads for beauty products and services were exaggerated. Also, a more accurate picture of the effects of endorsement could be experimentally investigated through panel data.

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Appendix

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WORKPLACE HARASSMENT: A CONTEXT ANALYSIS FOR THE ROMANIAN MANAGERS

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Abstract

The present article describes the key elements of the workplace harassment issues in general and from the Romanian official documents and regulations perspective. The divergences between these regulations and the international approaches on workplace harassment are analysed, considering the practical implications for managers and human resources departments, in order to reveal the needs for adaptation of the Romanian official framework related to this issue. Findings show that treating the harassment as discrimination, and not as form of psychological violence, creates the biggest challenges for managers.

Keywords: harassment, workplace, bullying, mobbing, manager

JEL classification: J16, J71, M54

1. INTRODUCTION

Work-related violence is a negative social phenomenon occurring in organisations, referring to both physical and psychological violence. The main feature of this phenomenon is his subtle and gradual manifestation. Sometimes work related violence is a highly visible phenomenon, but mostly, is a hidden, covert, undergrounded phenomenon. Hence, a clear and structured approach is difficult and subject to many interpretations.

The focus of the current analysis is the workplace harassment, a particular form of psychological violence. The importance of this topic is given by the general increased social preoccupation concerning the toxic behaviours in organizations. The concern is justified by the fact that harassment usually has severe negative consequences for the affected individuals, but also has negative effects for their families, co-workers and the organisations. Another basis of the concern is the social context in which the harassment is occurring, with his organizational characteristics, the current regulations and the proven tools and procedures to prevent and manage these occupational risks.

The study of the literature and the regulatory documents from Romania gave us a series of arguments pointing towards the idea that the Romanian framework for dealing with

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workplace harassment is, in some major aspects, unsuitable for assuring correct diagnosis and reactions in order to stop the harassment and to eliminate its effects. Due to this, the managers, involved in diagnosis and corrective actions, can have difficulties in dealing with harassment situations in their area of responsibility. For the human resource management (HRM) practice, the workplace harassment is an issue of great importance, given the magnitude of the negative effects on the individuals, on the work climate within the organization and in the end on organisation's performance.

The highest conceptual reference framework is the workplace health and wellbeing. According to the European Agency for Safety and Health at Work (EU-OSHA), the workplace health and wellbeing is a state of being for each employee and employer which enables each individual to reach his/her full potential in the workplace by ensuring his/her work ability through the promotion of mental, physical, emotional and psychological health and wellbeing (EU-OSHA, 2013, p. 19) The organizations, through the managers and the human resources (HR) departments, are expected to create and maintain working conditions and a workplace social climate able to offer health and wellbeing to the individuals. Addressing the workplace harassment issues should be an important piece of this concern and that is why having a clear legal framework would be more useful for the organizations.

2. MAIN CONCEPTS

Typically, the harassment situation involves a victim and a harasser, but, in some cases, the aggressor or the victim could be a group of individuals. If it takes place in a work context provided by an organization, we are in the case of workplace harassment. The managers could be involved, being in one of the three hypostases: bully, leader of the mobbing group or as an official responsible to solve the problem.

The concept of harassment is present in both academic literature and regulatory documents, as well. The EU-OSHA refers to harassment as the phenomenon also called bullying or mobbing, describing repeated, unreasonable behaviour directed towards an employee, or group of employees by a colleague, supervisor or subordinate, aimed at victimising, humiliating, undermining or threatening them (EU-OSHA, 2011, p. 26).

The literature presents the use of several concepts related to workplace harassment, such as bullying, mobbing, harassment, psychological harassment, abusive behaviour, emotional abuse and workplace aggression. There is no surprise in the fact that these terms are sometimes used interchangeably and sometimes with different meanings, since it is easily observable that they are basically confined in the area of psychological work-related violence. The first noticeable observation is that the physical violence is left outside, being considered a distinct phenomenon, and, as a consequence, a distinct concept.

One of the most prominent definitions in the field of harassment is indirectly proposed by Leymann in 1990: ”Psychical terror or mobbing in working life means hostile and unethical communication which is directed in a systematic way by one or a number of persons mainly toward one individual” (Leymann, 1996, p. 168).

According to EU-OSHA, violence is a generic term that covers all kinds of abuse: behaviour that humiliates degrades or damages a person's well-being, value or dignity” (EU-OSHA, 2011, p. 16). Therefore, harassment is to be considered a form of violence. First of all, it excludes the physical violence, which means that his focus is the generation of negative psychological effects for the victim. Second, the harassment that takes place in a work-related context is referred to as “work-related violence” or “workplace violence” (EU-OSHA, 2011, p. 26).

Characteristic for the harassment is the fact that, by taking place in an organizational context, it involves a misuse or abuse of power by the perpetrators, causing difficulties for the targets in defending themselves. A specific case is that of managers abusing their subordinates.

An important distinction to be made is about the perpetrators. They can be members of the organization or individuals from outside the organisation, intervening in the work of the victim. Accordingly, we need to differentiate between internal harassment and external harassment. The *internal harassment* is realised by individuals from the organization: managers, colleagues or subordinates. The *external harassment* is realised by individuals from outside the organization: suppliers, clients, inspectors, auditors or controlled persons. The last case is possible only for victims having jobs which imply controlling activities from other organizations, or direct contact with organizational external environment.

The external harassment is the same as the 'third-party violence', used to refer to threats, physical violence, and psychological violence (e.g. verbal violence) by third parties such as customers, clients, or patients receiving goods or services (EU-OSHA, 2011, p. 26).

The terms 'mobbing' and 'bullying' are also used to differentiate between negative behaviour by groups and negative behaviour by a single person (EU-OSHA, 2011, p. 26).

2.1. Mobbing

The term „mob" comes from "to attack in a mob". In Australia and New Zealand, is used without disparagement for "a crowd." The meaning of "gang of criminals working together" is from 1839, originally meaning thieves or pick-pockets; American English sense of "organized crime in general" is from 1927 (Harper, n.d.). Synonyms for „mob" are crowd, band and gathering, and that is why „*workplace mobbing*" is harassment of a victim by a group of individuals within an organizational context.

The characteristics of the mobbing are, as we can see from the following definitions: existence of a systematically abuse, existence of several perpetrators, social exclusion and discrimination of the victim. „Mobbing is a conflict-laden communication in the workplace among colleagues or between supervisors and subordinates, by which the target is overwhelmed and abused by another person or by several other persons. The target is systematically and over a long period of time directly or indirectly abused with the goal and/or the effect that the abused person is forced out of the workplace and experiences this as discrimination." (Hecker, 2007, p. 440)

Mobbing is a phenomenon that occurs in the organizational context and consists in hostile actions, aggression (verbal, physical, sexual), professional discredit, contempt, isolation etc. All these behaviours are performed by a person/group of persons on a person/group of people, the ultimate goal being, most times, the exclusion of individuals/group of individuals from the organization (Gheondea *et al.*, 2010, p. 114). Mobbing is a type of conflict associated with the expressions of inadequate interaction in the workplace, of the violence that characterized to complex societies (Antequera Manotas, 2015, p. 1609).

Since negative opinions on a person are easily spread and believed, mobbing is sometimes thought of as a terrible and unrestrained virus that spreads throughout the organization (NoBullying, n.d.). A very big number of tactics, more than forty-five according with Hainz Leymann, are potentially applied regularly to the target person. The most important tactics includes: gossip, baseless accusations, humiliation, isolation, intimidation, condescending behaviour, public discrediting, creating a hostile environment, malicious, relentless emotional abuse. These are applied by gangs, headed by leaders who incite his followers to engage in actions adverse to the victim. In many cases, these followers are peoples characterised as: inexperienced, with emotional frustrations, with doubtful social values or people seeking managerial positions by any price, able to remove or psychically destroy competent people.

2.2. Bullying

The term “bully” meant, in the 1530s, “sweetheart”, applied to either sex, from Dutch boel “lover”. His meaning deteriorated in the XVII-nth century, from “fine fellow” and “blusterer” to “harasser of the weak” (1680s, from bully-ruffian, 1650s). Perhaps this was by influence of bull, but a connecting sense between “lover” and “ruffian” may be in “protector of a prostitute”, which was one sense of bully (though not specifically attested until 1706). The expression meaning “worthy, jolly, admirable” (especially in 1864, in U.S.) is first attested 1680s, and preserves an earlier, positive sense of the word. In present is very used in the schools environment, from where was extended to the working area (Harper, n.d.).

Workplace bullying is a term used more in the English speaking countries - United Kingdom, North Ireland, United States of America and Australia - and represents mistreatment of one or more persons (targets) by one or more perpetrators.

Bullying at work means harassing, offending, socially excluding someone or negatively affecting someone's work. In order for the label bullying to be applied to a particular activity, interaction, or process, the bullying behaviour has to occur repeatedly and regularly (e.g. weekly) and over a period of time (e.g., six months). Bullying is an escalating process in the course of which the person confronted ends up in an inferior position and becomes the target of systematic negative social acts (Einarsen *et al.*, 2011, p. 45)

Bullying is an abusive behaviour consisting in intimidation, insults, violence, belittling opinion, excessive monitoring of an employee's work, meaningless tasks, not providing credit when deserved, and rumour spreading, among others (Fox and Stallworth, 2005, p. 442), (Parzefall and Salin, 2010, p. 769). Bullying usually involves repeated incidents or a pattern of behaviour that is intended to intimidate, offend, degrade or humiliate a particular person or group of people. It has also been described as the assertion of power through aggression. Sometimes, bullying can involve negative physical contact as well (Canadian Centre for Occupational Health and Safety, 2014)

2.3. Bullying vs. Mobbing

A lot of researchers consider that bullying, used in English country, is synonymous with mobbing, used more in Scandinavian and German country, but an important difference is highlighted by Kenneth Westhues (Westhues, 2006**)**.

„No matter how often the words ‘‘mobbing’’ and ‘‘bullying’’ are said to be synonyms, they are not. They are alike in denoting aggression. ‘‘Mobbing’’ posits a collective, nonviolent source in a distinct episode. ‘‘Bullying’’ points to a single, physically threatening aggressor, sometimes aided by toadies, over an extended period of time. ‘‘Mobbing’’ implies a mob, a crowd of normal people who have temporarily lost their good sense. ‘‘Bullying’’ implies a bully, an abnormal person who is habitually cruel or overbearing toward weaker people. ‘‘Mobbing’’ highlights situation, the ganging up in a specific circumstance of ordinary people against someone. ‘‘Bullying’’ highlights character, the humiliation of someone by one or more psychologically disordered individuals” (Hecker, 2007, p. 441).

2.4. Harassment

Carol Brodsky, who wrote the first book, in 1976, on harassment at work topic, defined harassment as "repeated and persistent attempts by one person to torment, wear down, frustrate, or get a reaction from another. It is treatment that persistently provokes pressures, frightens, intimidates, or otherwise discomfits other people" (Brodsky, 1976)

Heinz Leymann, the pioneer of the workplace bullying research, defined psychological terror or mobbing in working life as 'hostile and unethical communication, which is directed in a systematic way by one or a few individuals mainly towards one individual who, due to mobbing, is pushed into a helpless and defenceless position, being held there by means of continuing mobbing activities.'

The harassment is triggered by a conflictual event in which the two roles get differentiated: the victim and the harasser. Leymann described a four-stage process (Leymann, 1990, p. 120). After the triggering event, the negative acts against the victim increases in frequency and the escalating nature of the harassment can be easily observed. The victim is stigmatized and endures aggression and psychological pressure on a daily basis. The third stage is the involvement of the management. Assuming the case when the ranking manager is not one of the perpetrators, either the victim or one of the perpetrators informs the managers about the conflict. Judging the situation is difficult for the managers, as most arguments are contingently against the victim. Usually, the reputation of the victim in the eyes of the others is already destroyed and his credibility is ruined. Even more, in cases of mobbing, the opinion of many is confronted with the opinion of one, and the tendency is to put the blame for the conflictual situation on the mobbed person. Getting rid of the problem easily becomes getting rid of the person. In cases of bullying, the fear from the bully might prevent the colleagues to speak out their true opinion about the facts. This attribution error leads to diagnosis of the situation based on the personal characteristics of the victim and not based on the environmental factors (Jones *et al*., 1984), such as problems in work design (role conflict), a socially exposed position of the victim, a negative or hostile social climate, or the incompetent management and leadership (EU-OSHA, 2011, p. 11). The management is responsible for the negative psychosocial work environment but may refuse to accept this responsibility. The victim is rarely able to present evidences of the acts of others, the confrontation remaining only on verbal declaration of the opponents.

Often the managers arrive at a wrong diagnosis, leading to wrong corrective actions. A study on bullying, conducted in 2014 in the USA, showed that only on 28% of the cases the official reactions where favourable to the victim (acknowledge the situation, eliminate the harassment or condemn the harassers). For 72% of the cases the decisions were against, having different explanations: the official reaction was to deny the situation (25%), to discount the situation (16%), to rationalize, as to consider this normality (15%), to defend the harassers (11%) or even to encourage the harassers (6%) (Workplace Bullying Institute, 2014, p. 12). As we can see, the worst for the victim is when, after wrongly diagnosing the situation, the manager become an active part of the mobbing group.

A particular situation is that in which the manager has the role of the bully or of the leader of the mobbing group. In this case, his assumed role will prevent him from understanding and recognising the harassment situation from an objective point of view. The victim cannot count on his support for stopping the harassment and should contact higher instances to call for help.

3. ROMANIAN REGULATION FRAMEWORK

When a restaurant manager asks a female candidate on a chef assistant position: “How do you think you’ll handle the fact that all chefs in my kitchen are men?” variate reactions could be encounter, considering the geographical area in which the question is used. We may assume that, in USA and West European countries, the reaction could be of accusing the restaurant manager of gender discrimination, while in Romania, it might only be seen as a harassment prevention action. Thus, this paper’s section aims at investigating the regulation context in which managers from Romania have to conduct their business.

As could easily be seen in the aforesaid sections, most of the studies were conducted in USA or West side of Europe and the few information we have on the harassment subject into Romanian context are provided by laws or institutions also international, like European Agency for Safety and Health at Work or European Institute for Gender Equality (with respect to little research conducted within the country).

Considering the workplace harassment issues addressed at macro level, by international institution, the subject was discussed from two points of view: the companies approach (e.g. Eurofound, 2015) and the State approach (e.g. Gamonal and Ugarte, 2012).

According to Eurofound (2015), Romania is considered similar to countries like Bulgaria, Croatia, Cyprus, Greece, Hungary, Italy, Malta, Poland, Portugal and Spain. In their report, they classify the European countries considering the prevalence of the violence and harassment at workplace, the policies and procedures in place from the organizations and also the level of awareness in the country. Romania is framed in the B Group, in which the violence and harassment at work are not seen as a major issue and the awareness is low or it is easily increasing (Eurofound, 2015, p. 15). The foundation explained that our country consider other issues, like economic crisis, as being more important at this moment and also that some sociocultural characteristics of workplaces (like higher power distance) may influence the state of play.

Regarding the State approach, only the matter of sexual harassment is discussed. Romania is described as being a country in which sexual harassment is treated in a preventive form in collective agreements and also is focused on repairing moral damages. (Gamonal and Ugarte, 2012, p. 7)

However, when joining the European Union, Romania signed the “Framework agreement on harassment and violence at work”. One of the reasons could be the fact that harassment issues are not distinctly addressed and the existent regulations do not approach the matter directly.

First of all, the main definition offered by law is presented by an Anti-discrimination Law (L324/2006), art. 2 (5): “Constitutes harassment and is sanctioned contraventionally any behaviour on criterion of race, nationality, ethnicity, language, religion, social category, beliefs, gender, sexual orientation, appurtenance to a disadvantaged category, age, disability, refugee or asylum status or any other criteria that could create an intimidating, hostile, degrading or offensive context” ("L324/2006 Anti-discrimination law," 2006**)**.

This law article is supported also by the principle of equality amongst citizens, of exclusion of privileges and discrimination mentioned in art 1. (2): (b) the right to security of the person and to obtain protection from the State against violence and mistreatments from any individual, group or institution ("L324/2006 Anti-discrimination law," 2006**)**. It can be seen that the State assumes the role of protector of the individual against violence, and guarantees the equal treatment of all citizens in providing protection. But harassment may occur without any reason or without having a discrimination criterion, but just because an employees' colleague or manager feels more powerful than the victim/s.

Another law that addresses the harassment issues is Law 202/2002, regarding equality of opportunity between women and men republished in 2013, which stipulates that "harassment is any behaviour in relation to gender about which the person who is responsible knows that is affecting the dignity of persons, if such a behaviour is rejected and represents a motivation for a decision affecting those persons"("L340/2006 for the amendment and approval of Law 202/2002 regarding equality of opportunity between women and men," 2006). Without any doubt, the text refers only to sexual harassment.

Another misleading reference is also encountered in the third example, the Criminal Code, chapter VI, Offenses against individual freedom. According to art. 208, harassment is:

(1) The act of an individual who repeatedly, with or without a right or legitimate interest, pursues an individual or supervises their domicile, working place or other places attended by the latter, thus causing to them a state of fear.

(2) Making of phone calls or communications through remote communication devices which, through their frequency or content, cause a state of fear to an individual ("L286/2009 Criminal Code with amendments from 2015," 2009)

This definition links the concept to general freedom of the person, with consequences in terms of fear for a victim and not as a form of discrimination. This kind of harassment can occur against a witness of a criminal act, if the accused one tries to discourage the witness to make complete statements about the events. Even if fear is an emotion produced in many cases of the workplace harassment, this is not the main intended consequence of the perpetrators.

As can be seen from the text of the three laws, the subject is either too generally described or to narrowly defined (sexual harassment), so the managers could have difficulties in defining the issue into an organizational context. Moreover, the two most often discussed forms of moral harassment – mobbing and bullying – are not mentioned anywhere in the law texts or any other regulation documents. They are only reminded by the Work Inspection into their promotional flyers, as being a psychosocial risk that might be encountered at the workplace.

Same general approach of the matter is also presented in the Romanian Labour Code and the Security and Health Law 319/2006. For example, in the Labour Code, there are three general elements that can be used by managers in order to develop a strategy for preventing, stopping and mitigating the harassment's effects:

a) art. 8, in which fundamental principles are presented, including the consensually and good-will principles within work relations;

b) art. 39, in which the employees' rights are presented: (e) the right for dignity at work and (f) the right for work security and health ("L53/2003 Romanian Labour Code with all the amendments published in 2011, 2013, 2015," 2003);

c) Title V, Work Health and Security, through which the employer is obligated to assure the employees' security and health in all work-related matters; even though the most health and security issues addressed are more suitable for accidents kind of risks, because there is no mention about which kind of risk they approaches, physical or psychological, we may suppose that both of them could be considered. The title, with additions brought by 319/2006 law, explicitly describes the procedures that should be followed in order to assure safety and health, including the necessity for creating a special committee to manage this type of issues for organizations with more than 50 employees. For organizations with less than 50 employees, the tasks are accomplished by an employee who is responsible for work protection in the organization ("L53/2003 Romanian Labour Code with all the amendments published in 2011, 2013, 2015," 2003). Furthermore, the Romanian Labour Code, art. 178. (2), force the employer to include, in his Internal regulations, rules regarding the safety, security and health of the employees, but no specific mention is offered for including or excluding the harassment issues.

Thus, even though it had been shown that all forms of harassment have many negative effects, the subject is still generally addressed, fact that produces difficulties in gathering data relevant for the topic. For example, there are no statistics on workplace harassment registered because companies report their incidents to Work Inspection on two large domains: work accidents and work conflicts (of all type). We can assume that workplace harassment issues might be considered, in Romanian regulations terms as a work conflict.

Moreover the National Institute for Research-Development in Work Protection “Alexandru Darabont”, recently subordinated to National Education Ministry, has no research active on this topic. The subject was although introduced in them research strategy recently and is incorporated in the category of psychosocial risks, along with work stress. Because of the lack of an explicit definition and a specific approach to the matter, even though the institute is now undergoing a research with international partners on psychosocial risks, the harassment issues are not addressed. We can imagine that managers and HR departments are confronted with the same difficulties in gathering information for monitoring potential harassment situations in their organizations, due to the improper references. The only specific legal leverage the managers have is offered by Labour Code which sustains the requirement of having Internal Regulations. Managers should explicitly include the workplace harassment issues within these documents in order to at least try preventing the manifestation of any form of harassment. Unfortunately, when the aggressor is in fact the manager, who did not properly defined the workplace harassment issues within its Organizational internal documents, the country regulations offers too little support for those who became victims.

4. CONCLUSIONS

The workplace harassment can be considered the most comprehensive concept, covering the significance spheres of bullying and mobbing together.

The Romanian regulation is patched, incomplete references for parts of the sphere of the workplace harassment being present in several official documents. No reference to the internationally used concepts of mobbing and bullying is made.

The most covering reference, from the point of view of the sphere of the concept, posits harassment as discrimination and not as form of psychological violence.

For the managers and HR departments, the lack of explicit details about the acts and the situations related to workplace harassment, in the regulation, makes it difficult to frame and to classify the situation for correct diagnosis and effective corrective measures.

Specific references about the harassment conducted by managers, misusing by their hierarchical power against the victim, are completely absent from the national regulation, creating a permissive context for this kind of abuse.

The organizations can complement the national regulation, by stating better, clearer procedures regarding the workplace harassment, in their internal regulation. However, the incoherent regulatory framework makes it impossible to correctly gather data, analyse and monitor the phenomenon, both in organizations and at national level.

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AN INSIGHT REGARDING ECONOMIC GROWTH AND MONETARY POLICY IN ROMANIA

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Abstract

This study introduces some aspects regarding the link between monetary policy and economic growth, through a rule well known in the literature which is named Taylor's rule and through the concept of sacrifice ratio which encompasses the impact of the cost of disinflation on the economic growth of a country. In this paper, we rely on estimates of the growth of potential GDP of the National Bank of Romania for the period 2003-2006 while for the period 2007-2012 we rely on the estimates reported by the International Monetary Fund. Thus, we carry a deterministic exercise for computing the interest rate on the period 2003-2012 as depicted from the Taylor's rule and we compare it with the effective monetary policy interest rate used by the National Bank of Romania. In the same time, we calculate the sacrifice ratio for the period 1997-2013 so as to be able to form an opinion regarding the cost of disinflation and its comparison with the typical estimates for larger time spans and for other countries.

Keywords: economic growth, monetary policy, inflation, sacrifice ratio, Taylor's Rule for monetary policy

JEL classification: E52

1. INTRODUCTION

Economic growth is the major objective of the macroeconomic policies, relating on the rising of the living standards and on social welfare. The goal of monetary policy is to provide a stable economic framework which would ensure the prerequisite for economic growth and consequently for economic development. Therefore, the connection between monetary policy and economic growth is obvious and this explains the focus in the literature over these aspects. However, it is well known that besides monetary policy, the process of economic growth is being influenced by a complex of factors which in fact explains the challenges which have to be faced by the central authorities in each country in finding the proper policy mix.

The main objective of this paper is to review the concepts of economic growth and monetary policy accordingly to the Taylor's rule (Taylor, 1993) which relies on the potential

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GDP growth rate while establishing the interest rate recommended as a monetary policy interest rate. There are some studies (Bunzel and Enders, 2010) which find that the initial model proposed by Taylor in 1993 is not strictly followed by the Federal Reserve, because it adjusts the policy decisions based on the economic conditions. The Federal Reserve actions are passive when the economic framework is stable, and become more aggressive when inflation is above the target or the output gap takes negative values. Estimates of the monetary policy of European Central Bank (Maza and Sanchez-Robles, 2013), suggested that during 1999-2002 and 2007-2009 the monetary policy can be characterized by a Taylor Rule, meaning that the policy was taking into account the deviations of inflation from its target and the output gap. Huston and Spencer (2005) modelled an aggregate interest rate and they reach the conclusion that Taylor Rule can be useful to guide the monetary policy and to characterize the global environment, given the interrelations between economies in a globalized world. In emerging European countries, the evidences (Nojković and Petrović 2015) showed the central banks take into consideration the economic variables introduced by Taylor, in estimating monetary policy, as evidenced by smooth changes in their policy rates.

The rest of the paper is organized as follows: section 2 reviews the concept of economic growth and the effects of monetary policy on economic growth (on short and long term), section 3 presents the Taylor's rule and the concept of the sacrifice ratio, section 4 includes own computations of the sacrifice ratio in Romania over the period 1997-2013 and calculations of the interest rate deduced from the Taylor's rule based on estimates of potential output growth rates (and thus of GDP gap) from NBR and IMF while section 5 debates and concludes.

2. ECONOMIC GROWTH AND MONETARY POLICY

The concept of economic growth is a debated subject, because it has a great impact on the development process and on global welfare. The assertion that is an up to date topic in economics is supported by multiple recent studies (Roy, 2012; Rangazas, 2013; Chu *et al.*, 2015) that debate on this subject.

The economic and financial conjuncture nowadays may be influenced by a large number of macroeconomic decisions, whose aim is to implement the proper macroeconomic policy mix, in order to make possible the development of the economy and of the society in general. Therefore, the process of economic growth can not be described without taking into consideration the role and influences of government policies, and in particular of the monetary policy. The tools used by decision makers in all countries have some common objectives such as: avoiding major imbalances in the economy and recessions, controlling the main macroeconomic variables, macroeconomic stability and boosting the economy in order to increase the degree of development.

Economic growth can be described in terms of quantitative evolution of macroeconomic indicators. The main macroeconomic indicator that has offered throughout time an overview on the welfare of the society is the gross domestic product (GDP), which includes: „all currently produced goods and services that are sold through the market but are not resold" (Gordon, 1993).

More broadly, the economic growth, is considered as a rational and efficient use of the available resources so as to ensure the increase of the economic potential and to provide higher development standards at micro or macroeconomic level. All sort of changes that take place within the economic framework, generate a more intense need to study this problem. Given the limited access that society has to increasingly rare resources, which oppose a wide range of humanity demands, it is required to find solutions to extend the coverage of needs with maximum efficiency. The research on economic growth becomes more and more intense and its aim is to formulate models or to implement policies that determine long-term positive effects inside the economy.

There are some major differences between the phenomena of economic growth and development, as referring to the field of action. Therefore, the economic growth is seen primarily as a purely quantitative phenomenon, as reflected by an increase in the value of quantitative indicators within a certain period of time. The economic growth underpins economic development, but it is not a sufficient condition for being able to talk about development, because this process also implies the existence of qualitative factors (Todaro and Smith, 2009, pp. 48-56) such as those related to education, health and standard of living.

The link between monetary policy and economic growth is reflected in the real process of economic development, because through its objectives to ensure stability, the monetary policy has a real impact on a large number of elements that underlies the development process. After being transmitted through various mechanisms, the effects of monetary policy become observable in the living standards.

The central authorities in each state are forced to take decisions regarding the macroeconomic policies that should be implemented, in order to achieve general economic goals. Given the large number of policies and instruments that can be used, in the implementation process may occur a lot of difficulties regarding the interactions between them or the necessity of being correlated to the political and legal framework of a certain country. For example, in Romania in the present the monetary policy is characterized by flexibility, meaning that the central bank can make adjustments to the instruments used, but not to the targets.

In order to conduct the economy on a growth path, the main objective of the economic policy is to provide a stable economic framework, by targeting variables such as: the unemployment rate, the inflation rate, the growth of natural real GDP, the balance of payments or the exchange rate (Gordon, 1993, pp. 471-476). Using the policy instruments available, the government decides which of the economic variable to target so as to achieve economic growth.

All the actions of the Central Banks are specifically aimed to avoid major macroeconomic fluctuations. The monetary policy is part of macroeconomic policies that target the aggregate demand, by controlling the money supply, the lending and the interest rates. The effects of all these variables are visible in the real economy, because of the transmission mechanisms.

In the short term, certain economic policy measures can lead to economic growth because they can stimulate aggregate demand, which leads to an increase of economic activity and output. Monetary policy cannot ensure a high rate of economic growth in the long term, because of the interaction of many other variables that can cause shocks. Because various empirical studies (Papademos, 2003), (Vinayagathasan, 2013), (Eggoh and Khan, 2014) have shown the indirect relationship between inflation rates and economic growth, the role of monetary policy in maintaining the price stability becomes important. Long term economic growth is therefore possible only if inflation is maintained low.

The long term influence of monetary policy on growth is reflected in the stable economic framework that it is providing, a framework that is mandatory for leading the economy on a growth path. Starting from this point, it is useful to establish the causality relations that exist between inflation and economic growth, in order to determine the optimal level of inflation that ensures economic growth.

3. THEORETICAL CONSIDERATIONS. TAYLOR'S RULE AND SACRIFICE RATIO

The main objective of the National Bank of Romania is to ensure price stability and, starting from 2005, it introduced the targeted inflation rate. The impact of inflation on output and economic growth is described in the literature by four hypotheses (Drukker *et al.*, 2005). The first one, which had been formulated by Sidrauski (1967) (Drukker *et al.*, 2005) states that there is no effect of inflation on economic growth, stressing the neutrality of money. According to Tobin (1965) (Drukker *et al.*, 2005), money represents a substitute for capital and therefore inflation has a long-term positive effect on economic growth, which encompasses the second hypothesis. In 1981, Stockman (Drukker *et al.*, 2005) introduces the third hypothesis which shows that money and capital are complementary, leading to negative effects on economic growth. The fourth hypothesis (Drukker *et al.*, 2005), currently accepted, establishes that inflation has a negative impact on economic growth in the long-run, but only if the critical value namely the threshold level is exceeded. In all these hypotheses incorporated in models, it is acknowledged that high rates of inflation produce frictions on financial markets and these frictions impede economic growth.

The challenge in the literature was to determine the threshold level above which inflation affects negatively the rate of economic growth. One study (Drukker *et al.*, 2005) estimated this level as 0.1916, which it is over-passed the rate of economic growth start to decrease. Another empirical study (Khan and Senhadji, 2001) based on data from 140 countries in 1960-1998 determined that the threshold level for the inflation rate may vary from country to country, depending on the stage of development. The results indicated that for industrialized countries, the threshold level is around 1-3 percent, while for the developing countries, this level is around 11-12 percent. It is widely accepted in the literature that inflation should have very low levels so as not to have a negative influence on economic growth and consequently, on the economic development of the country. Samuelson proposed a level of 5%, which later has been reduced to 3% and 2% (see Rădulescu, 1999, pp. 15-17). This was in fact in line with the view of monetarist school that a lower rate of inflation is preferred to a higher one.

Therefore, a low level of inflation is correlated with high economic growth, while high levels of inflation may cause a slowdown of economic activity or even negative economic growth. It is known hyperinflation may induce recession while moderate inflation may generate positive effects.

The conclusions from research that studied the influence of inflationary phenomenon on the real economy, when trying to stabilize inflation, shows that a low level of inflation is correlated with high economic growth, but high levels of it cause a slowdown of economic activity or even negative economic growth (Dornbusch, 1992, p. 405): "With inflation stubborn, or the inflation inertia-[…] reducing inflation involves inevitably a proactive recession."

Short-term effects that are visible with increasing inflation are apparently positive because they lead to an increase in demand, production and thus to a decrease in unemployment. But in this way, a number of firms which are not competitive are encouraged and in the long term may lead to halting the economic progress and the development of society (Ghatak and Sanchez-Fung, 2007, p. 175): "In the long run, growth band development may best be promoted by having a target rate of inflation of zero, while erring on the side of inflation rather than deflation."

Assuming that monetary policy actions have the purpose to lower the inflation rate, whose too high level is inconsistent with macroeconomic objectives, it is necessary to implement an action plan that should take into account the costs that need to be incurred. Costs involved in the transition periods towards lower values of inflation will be most of the time offset by the positive effects that low inflation generates in the future. The drop in inflation generates two major effects: rising unemployment and falling output (Mankiw, 2008, p. 366).

The link between inflation and real GDP, which measures economic growth, is analyzed through sacrifice ratio (Mankiw, 2008, p. 367), a numerical value showing what percentage of real GDP of a country should be given up in order to reduce inflation with one percentage point. Usually, the estimated sacrifice ratio in practice is around 5 so: for each percentage point by which it is desired to decrease inflation a country should drop to 5 percent of annual real gross domestic product. The sacrifice ratio is calculated as a ratio of lost GDP, or the number of percentage points of real GDP which has to be dropped so as to reduce inflation, and total disinflation, or the number of percentage points by which inflation was reduced in a certain period.

4. DATA ON THE REAL ECONOMY OF ROMANIA

4.1. Sacrifice ratio in Romania

Inflation phenomenon has a negative impact on economy in medium and long term, generating imbalances that influence the overall evolution of the economy. If we analyze this hypothesis on Romania's economy, we will be able to observe that it is fulfilled during the last two decades, based on data from National Institute of Statistics (2013), (2015a). For example, in the early '90s, when inflation was very high, the gross domestic product, considered as a measure for economic growth, registered a decrease for three consecutive years. In 1995-1996, based on the implementation of some policies whose aim was to increase the level of population savings, the inflation rate was reduced and it was correlated with 7.1% and, respectively, 3.2% GDP increase. The gross domestic product then followed a downward trend from year to year, correlated with inflation rates of 154% in 1997, which decrease in the next two years to 45.8% and 45.7%.

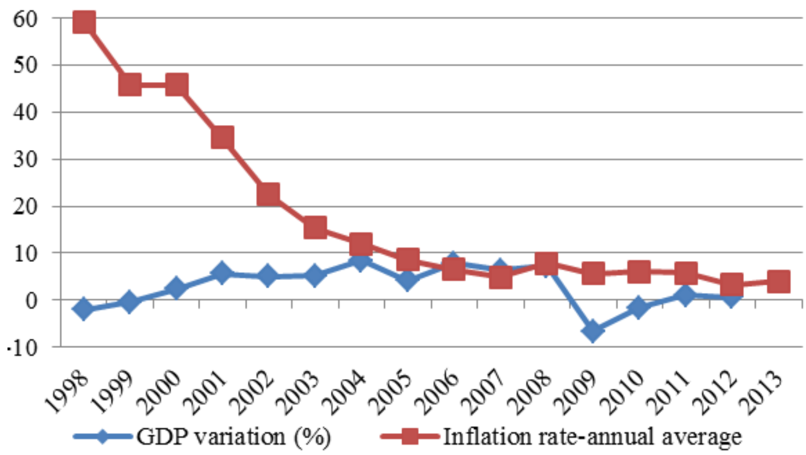
After 2000, there have been numerous attempts to stabilize the economy and to achieve a growth trend, by restructuring and implementation of new programs, more efficient, and able to conduct monetary policy so as to ensure price stability. In this context, it can be observed (See Table 1) the gradually reduction of inflation from values of over 40% to values of 5%-6%, while the rate of economic growth is positive.

Figure 1 depicts the comparative evolution of GDP and inflation over the period 1998-2013. Until 2004, as long as the inflation rate gradually reduced, the gross domestic product increased. In the coming years, due to the disinflation process that reduces its intensity, the gross domestic product keeps a relatively constant evolution until 2008. Although inflation rate did not fluctuate too much in 2009-2010, however, GDP slightly decreased due to the fact that the phenomenon of economic growth is influenced by many factors besides monetary policy and inflation.

Table no. 1 – The comparative evolution of inflation and GDP in Romania

Year	Inflation rate -annual average (%)	GDP variation (%)	Year	Inflation rate -annual average (%)	GDP variation (%)
1990	5.1	-5.6	2002	22.5	5.1
1991	170.2	-12.9	2003	15.3	5.2
1992	210.4	-8.8	2004	11.9	8.5
1993	256.1	1.5	2005	9	4.2
1994	136.7	3.9	2006	6.56	7.9
1995	32.3	7.1	2007	4.84	6.3
1996	38.8	3.2	2008	7.85	7.3
1997	154.8	-4.9	2009	5.59	-6.6
1998	59.1	-2.1	2010	6.09	-1.1
1999	45.8	-0.4	2011	5.79	2.3
2000	45.7	2.4	2012	3.33	0.6
2001	34.5	5.7	2013	3.98	-

Source: Growth rates computed based on data from
National Institute of Statistics datasets (2013, p. 351 and 2015a)



Source: Graphical representation based on data from
National Institute of Statistics datasets (2013, p. 351 and 2015a)

Figure no. 1 – GDP and inflation growth rates

The inflation rate reduction has certain costs which can be expressed in the loss of gross domestic product. In this regard, we computed the sacrifice ratio considering the period 1997-2013, when we can observe that inflation has a downward trend. Using the effective unemployment rate for Romania (National Institute of Statistics, 2015b) and considering that the natural rate of unemployment is 6,223% (Albu *et al.*, 2012), (Gălăţescu *et al.*, 2007), the total deviation of the unemployment rate from its natural value was around 17.309% in this period.

According to Okun's law, which states that for every 1% reduction in unemployment rate the output will drop by 2%, the value of 17.309% of cyclical unemployment will determine a 34.618% decrease in real GDP.

Total disinflation during the analyzed period is:

$$Total\ disinflation = \pi_{1997} - \pi_{2013} = 154.8\% - 3.98\% = 150.82\% \quad (1)$$

If we replace in the sacrifice ratio formula the values that we obtained for Romania during 1997-2013, we will obtain:

$$SR = Lost\ GDP/Total\ disinflation = \frac{34.618\%}{150.82\%} = 0.2295 = 22.95\% \quad (2)$$

Therefore, one can say that it has been lost 22.95 percent of the real gross domestic product for every 1% reduction in inflation.

According to other related studies that estimated the sacrifice ratio, if the disinflation process is speedy, the sacrifice ratio is lowered during those periods (Mazumder, 2014a). In estimating the sacrifice ratio, the same author finds that the speed of disinflation process is the main determinant of the sacrifice ratio on a sample of OECD countries (Mazumder, 2014b). According to these estimates, and taking into consideration that inflation in Romania during the period we analyzed was reduced from high values to single-digit values, in a long interval, we rebuild the calculations for sub-periods of that interval, taking also in consideration the year 2005, when Romania adopted the inflation targeting policy.

Considering shorter intervals of disinflation, we observed that starting from 2005 the unemployment rate was below its natural rate so there were no costs for disinflation. So the reduction in inflation was possible without an increase of unemployment, thus the output was not adversely affected. The value of 22.95 percent that we obtained for the sacrifice ratio can be explained also by the fact that, at the beginning of the disinflation episode, the inflation had high values and it was reduced in 2013 to 3.98.

A possible explanation for the reduced costs of disinflation starting from 2005 can be formulated using the role that rational expectations have in reducing inflation. Once NBR credibility and public confidence in monetary policy announcements increases (and this point concurs with the time when Romania adopted inflation targeting policy), the costs of disinflation are lower because economic agents, when fixing wages and prices, reduce their expectations about inflation.

4.2. Taylor Rule Interest Rate in Romania

Based on the formula proposed by the American economist Taylor in 1993, we will try to analyze if the National Bank of Romania followed that rule to implement monetary policy and to establish the interest rate. We used data taken from the databases of NBR and National Institute of Statistics (see Table 2), and we calculated for the period 2003-2012 which would be the interest rate proposed by Taylor's rule.

The calculation formula which is used for the data in the Table 2 is:

$$r_{dTR} = r_{dMP} + 0{,}5 \times (\pi_t - \pi_t^*) + 0{,}5 \times GAP_{GDP} \quad (3)$$

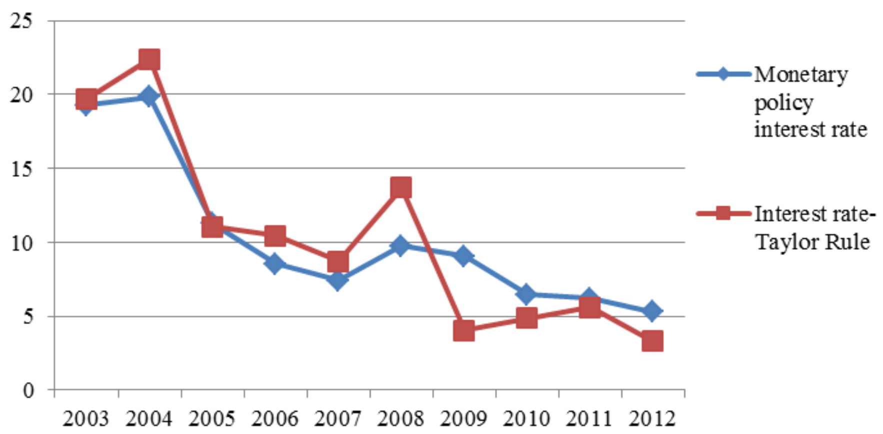
The potential GDP growth rate in Romania used in the calculations is taken from NBR estimates for 2003-2006, calculated as an annual average SVAR method (Gălăţescu *et al.*, 2007). For the period 2006-2015, the growth rate of potential GDP is around 5% per year average as reported by the International Monetary Fund in 2012 (IMF Country Report, Romania, 2012, p. 6).

Table no. 2 – Interest rate calculation based on Taylor Rule for Romania*

Year	Monetary policy interest rate (annual average)	Annual inflation rate	Target inflation rate	Effective GDP (annual variation)	Potential GDP	GDP gap	Interest rate-Taylor Rule
2003	19.27	15.30	14.00	5.45	5.86	-0.41	19.72
2004	19.83	11.90	9.00	8.08	5.86	2.22	22.39
2005	11.27	8.60	7.50	4.33	5.86	-1.54	11.05
2006	8.56	6.60	5.00	8.03	5.86	2.17	10.44
2007	7.42	4.80	4.00	6.83	5.00	1.83	8.73
2008	9.75	7.90	3.80	8.75	5.00	3.75	13.68
2009	9.06	5.60	3.50	-7.10	5.00	-12.10	4.06
2010	6.46	6.10	3.50	-0.85	5.00	-5.85	4.84
2011	6.21	5.80	3.00	1.00	5.00	-4.00	5.61
2012	5.31	3.33	3.00	0.65	5.00	-4.35	3.30

*Note: The values from the table are calculated and expressed in percents.
Source: Rates computed based on data from National Institute of Statistics (2013, 2015a, 2015b) and National Bank of Romania (n.d.-a), (n.d.-b)

In comparison with the rate of monetary policy used by the National Bank of Romania during this period, it can be seen from the following chart that the trend for the two types of rates is similar. However, the monetary policy interest rate applied by NBR is lower in the period 2003-2008 compared to the one calculated from the Taylor's rule, wherefrom we deduce that the NBR has kept interest rates too low, practicing an expansionary monetary demand, which fueled expansion before the crisis. In the next four years, there is a change in the monetary policy interest rate that rises above the level proposed by Taylor's rule, a sign that the central bank has implemented a contractionary monetary policy.



Source: Rates computed based on data from National Institute of Statistics (2013, 2015a, 2015b) and National Bank of Romania (n.d.-a), (n.d.-b)

Figure no. 2 – Monetary policy interest rate and Taylor's Rule interest rate in Romania

5. CONCLUSIONS

The paper investigates how monetary policy instruments that are available to the policy makers may have a decisive role in influencing economic growth and development phenomena. Having as a starting point the fact that the Romanian economy experienced during the transition to a market economy a number of imbalances, highlighted by very high rates of inflation at the beginning of the period, the central monetary authority was subject to real challenges in an attempt to stabilize the economic environment.

The attempt to stabilize the economy was based on reducing inflation rates. The comparative analysis of inflation and gross domestic product as a measure of economic growth in Romania showed that high rates of inflation were correlated with decreases of GDP. Over the past twenty years inflation was reduced to single digit values while the rate of GDP growth underwent a series of fluctuations, which were not entirely due to inflationary phenomenon.

The sacrifice ratio finds its applicability in influencing the decisions that a central banks takes in conducting the monetary policy. In order to reduce inflation or to keep it within certain limits, the monetary authority will study the sacrifice ratio to determine by how much the output will be reduced. If it decides to implement measures so as to reduce inflation this would mean a contraction of the aggregate demand. In the case of Romania the costs of disinflation during 1997-2013 were around 22.95 percent reduction in GDP for every one percentage point reduction in inflation.

The fact that the National Bank of Romania took into account in monetary policy implementation of the phenomenon of economic growth is reflected in Taylor's rule we applied on Romanian economy. The calculations are based on the interest rate proposed by Taylor's rule, on data from 2003-2012. By comparing the interest rate proposed by Taylor with the monetary policy rate practiced by the National Bank of Romania during this period we have observed that the trend for the two types of rates is similar. In the context of macroeconomic imbalances in recent years, monetary policy in Romania has made sustained efforts to create favorable economic conditions for the manifestation of economic growth.

The limits of the present study rely on the fact that we carried a deterministic computation of the sacrifice ratio. The episodes of disinflation were observed based on the evolution of the inflation rates in time. These limits may be removed by further research. This would consist of implementing various methods for estimating the sacrifice ratio and for determining episodes of disinflation as changes in trend inflation, as in Ball (1994). Quarterly data would be needed to better explain the changes.

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