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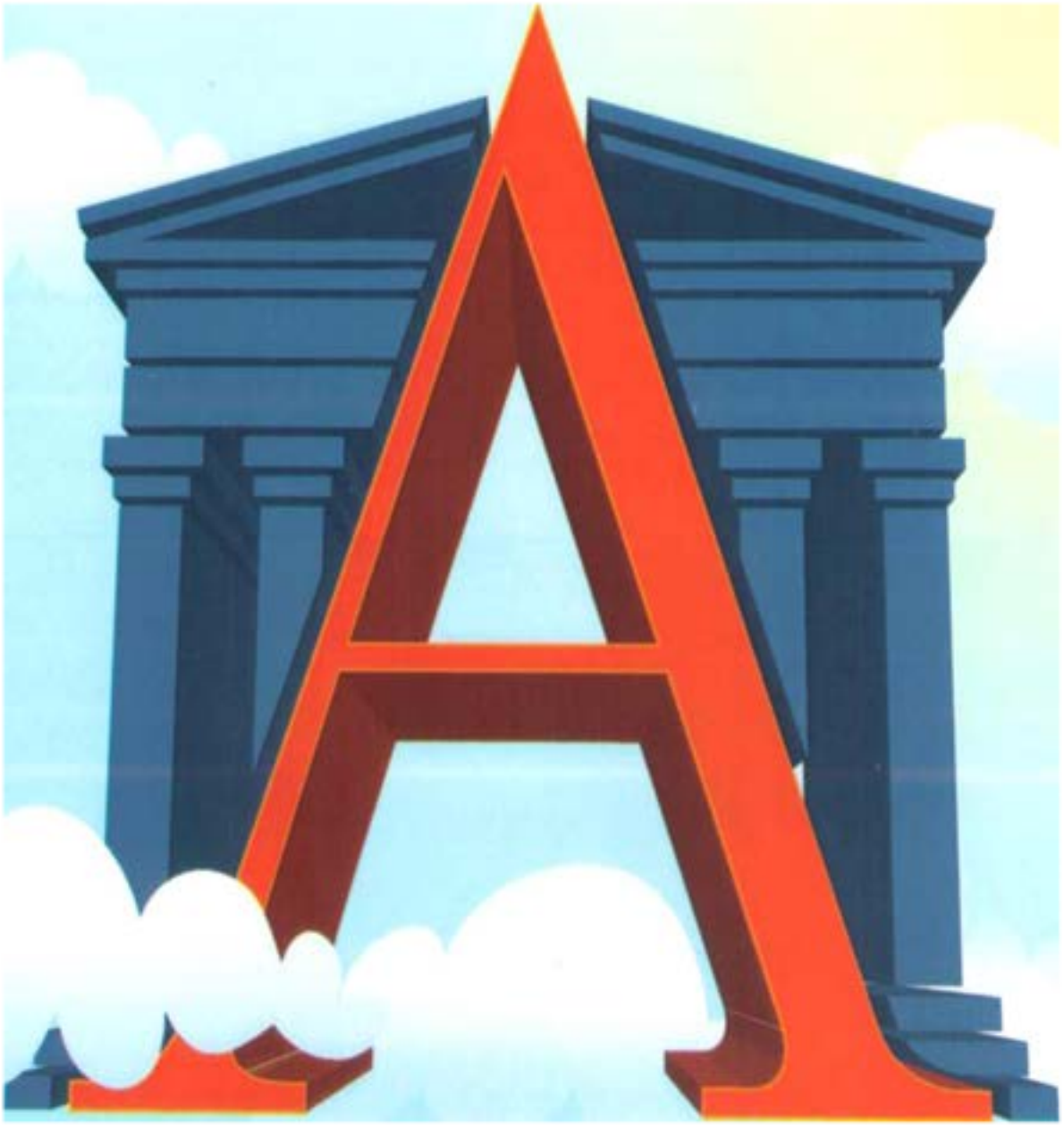

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**CEA DE-A VIII A CONFERINŢA ŞTIINŢIFICĂ INTERNAŢIONALĂ
PROVOCĂRI ALE ECONOMIEI MODERNE ÎN CONTEXTUL
GLOBALIZĂRII**

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**THE EIGHT SCIENTIFIC INTERNAŢIONAL CONFERENCE
CHALLENGES OF THE MODERN ECONOMY IN THE
GLOBALISATION CONTEXT**

IMPRIMAT ÎN ROMÂNIA

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C O N T E N T S

THE EIGHT SCIENTIFIC INTERNAŢIONAL CONFERENCE

CHALLENGES OF THE MODERN ECONOMY IN THE GLOBALISATION

1 This paper is part of the annual research theme called "Competitiveness, performance and sustainable development in a multi-dimensional approaching" of the Institute of Economic Forecasting and concomitantly dedicated to the 150th Anniversary of the Romanian Academy of Sciences.

THE ROLE OF INNOVATION FOR SUSTAINABLE DEVELOPMENT IN E.U MEMBER STATES[1]

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Abstract
Sustainable socio-economic development represents the central component of the European Union's 'Sustainable Development Strategy' document. The E.U's economic capacity for innovation, competitiveness and eco-efficiency is here analyzed through indicators like: R&D, labor productivity, eco-innovation and energy intensity The progress of these indicators, in its turn, is analyzed for individual EU Member States in the aim of a large picture drawn for how exactly the EU has performed in terms of objectives and targets written in the initial 'Strategy'. Ultimately, this below paper bases on the 'Eurostat' data on the 2000-2015 interval.

Keywords: Sustainable development, R&D expenditure, eco-innovation

JEL Classification: O11, O32

Introduction: about eco-innovation and appropriate concepts

Sustainable socio-economic development is a central component of the European Union's 'Sustainable Development Strategy'. This document is used for promoting innovative, competitive and eco-efficient economy. Such an economy is assumed to provide high living standards, full and high-quality employment throughout the European Union. The innovative, competitive and eco-efficient economy will harmonize the three main pillars of sustainable development: (a) economic development, (2) protection of the environment and (3) social justice.

[1] This paper is part of the annual research theme called "Competitiveness, performance and sustainable development in a multi-dimensional approaching" of the Institute of Economic Forecasting and concomitantly dedicated to the 150th Anniversary of the Romanian Academy of Sciences.

The economic capacity for innovation, in its turn, is likely to be assessed and analyzed by indicators like R&D, labour productivity, eco-innovation and energy intensity.

R&D expenditure is linked to education, innovation, employment, labor productivity and economic growth. R&D is important for the economic prosperity and competitiveness of EU member states. Also, eco-innovation allows economic prosperity to rise while preserving the environment and more efficiently using natural resources.

Then, formation of human capital (i.e. skills, knowledge and experience of individuals or of populations) through education and training deepens academic knowledge and innovative technologies, will also make a contribution to job creation, to pluses of labor productivity and resource efficiency in their use. Labor productivity, in context, is an important determinant of an economy's future competitiveness and long-term economic growth.

Sustained economic growth, however, when is not associated with some eco-efficiency improvements, might seriously damage the natural environment, and well-being once more in the long run. Sustainable development is the one that can increase economic prosperity minimizing pressures on natural environment or natural resources' availability.

The economy's energy intensity is another important indicator in such a respect, through highlighting progress when economic growth decoupling from environmental degradation.

Employment, in the same context, is basically essential for the economy's well-functioning and competitiveness. Rising employment can help society become more 'inclusive', reduce poverty and inequality inside and between regions and social groups. Apart from generating the income needed to achieve good living standards, paid work provides opportunities for a meaningful social engagement that promotes the sense of self-worth and some purpose for social inclusion. Just imagine that and how in contrast high and persistent unemployment would be able to lead to converse social exclusion, degradation of individual skills and to poverty that in turn certainly brakes all previously expected economic growth.

Young people are particularly vulnerable to weak and endangered economic circumstances. Improving their education and employment opportunities would be some key to social inclusion and to the sustainability of our economic system.

And now the concept of eco-innovation is a fairly recent one in the literature. It seems to have come up in a book published by Claude

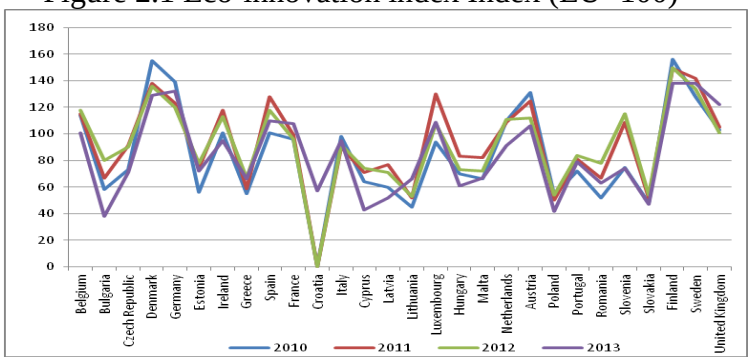
Fusser and Peter James2. Then, the same Peter James defines eco-innovation in another article as "new products and processes which provide customer and business value… while significantly decreasing environmental impacts". In facts, eco-innovation regards improvements of newly produced goods and services, lowering the use of natural resources and avoiding the use of harmful substances etc. On the same basis of 'good environmental impact without compromising social and economic objective', it is eco-innovation that is expected to create new jobs and even new market products.

2. Some innovation related data and specific measurements

2.1 Eco-Innovation Scoreboard (Eco-IS)

This is to be found as primary tool3 assessing and illustrating eco-innovation performance across the EU Member States. This Scoreboard aims to capture the different aspects of eco-innovation by applying 16 indicators grouped into five thematic areas that are: (1) eco-innovation inputs, (2) activities, (3) outputs, (4) resource efficiency and (5) socio-economic outcomes. A corresponding index shows how well individual EU Member States do perform in different dimensions of eco-innovation, as compared to a corresponding and concomitant EU average, and indicates also corresponding strengths and weaknesses. The Eco-IS (Figure 2.1) complements other measurement approaches of innovativeness in the EU member countries and aims to promote a holistic view on economic, environmental and social performance.

Figure 2.1 Eco-innovation index Index (EU=100)



The Eco-Innovation Scoreboard (Eco-IS)
Calculations based on Eurostat data

[2] "Driving eco-innovation; a breakthrough discipline for innovation and sustainability" , Claude Fssler , Peter James, 1996. Pitman Publishing, ISBN 0 273 62207 2

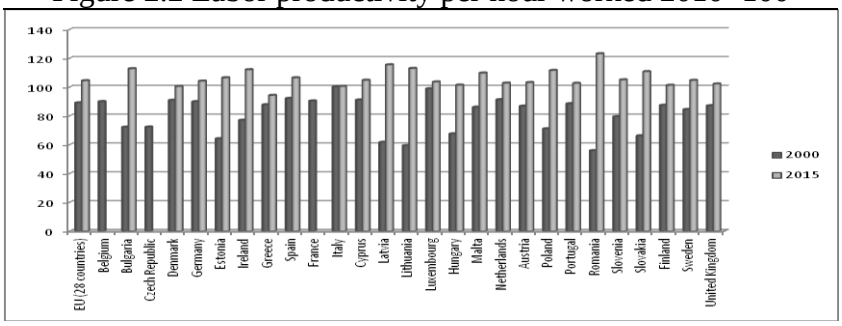
[3] According Eurostat

2.2 Labor productivity

This indicator is measured by output of workers per hour worked. First, since 2000 labor productivity continuously raised in the EU member countries up to 2007, then there came the 'Lehman episode' of the recent crisis, followed by a longer term significant deterioration of economic conditions. Labour productivity (Figure 2.2) in the EU goes down from EUR 31.3 per hour worked in 2007 to EUR 30.7 in 2009. During crises , the productivity rise slowdown and reflect immediate lowering investment when high economic uncertainty. In the same crisis context, low productivity might equally come from companies that prefer not to fire, but to keep labour during the downturn. This labour will so be underused and productive capacity spared. Then, in 2010, labour productivity rebounded in the EU area to its pre-crisis levels and continued to grow in the following years.. In 2013, output per worker was EUR 32.1 per hour worked as counterpart of a slow economic recovery. During the post-crisis economic rebound, first productivity rose as firms intensified work on existing employees; hiring new workers so was rather likely to be delayed. And it was then for newly raising productivity when finally more workers were hired. Shortly, labor productivity rose during the 2000-2013 intervals the way that nearly all the EU Member States look to have taken advantage of. Improvements in labor productivity were most highly resented by the Central and Eastern part of territory, in Latvia (+100 %), Lithuania (+89.3 %), Romania (+86.7 %), Estonia (+62.9 %) and Slovakia (+61 %).

According Eurostat data, in 2013 Luxembourg and Denmark had the most highly efficient workers producing outputs, over EUR 50 per hour worked. At the other end of the spectrum labor productivity equally lowers below EUR 20 per hour, plus large differences in productivity rates and their dynamics within the EU are being identified, together with equally significant structural weaknesses.

Figure 2.2 Labor productivity per hour worked 2010=100

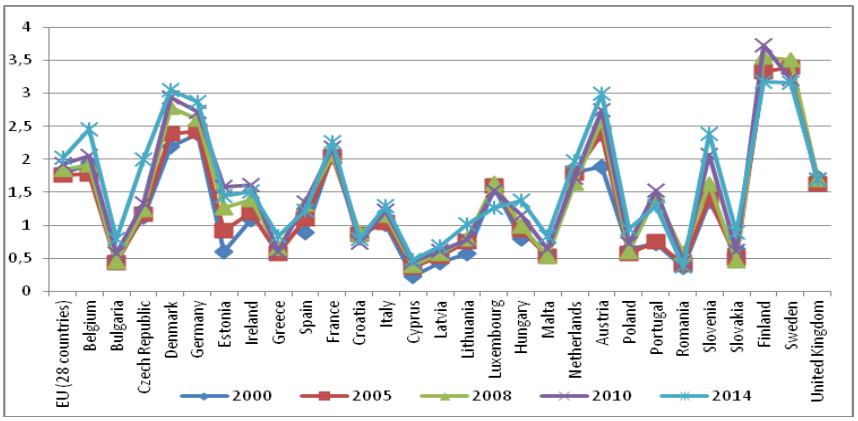


Calculations based on Eurostat data

2.3 R&D expenditure in GDP

The indicator of R&D expenditure (Figure 2.3) relates to GDP, is primarily expected to show this ratio at different points in time. R&D expenditure in GDP[4] slightly increased in the EU during the same above 2000-2014 over-decade period. In context, its 3 % threshold is targeted by the 'Europe 2020 Strategy'; while currently it is lying about 2%. It is also important to be revealed that public sector still plays by far the primary active role in such a strategy.

Figure 2.3 : Total R&D expenditure % of GDP



Calculations based on Eurostat data

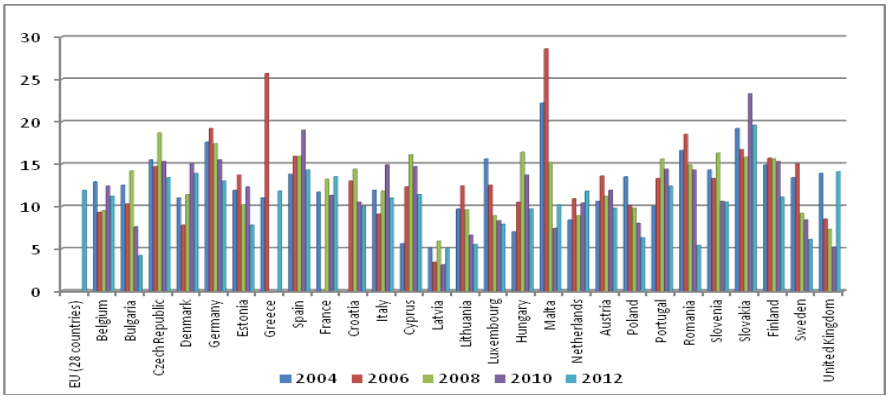
Besides, this indicator proves limited and could become controversial. When just expenditure is measured, all that might here result is a R&D intensity number, and not a result-based on R&D activity. Moreover, sources of R&D expenditure (e.g. public or others) stay hidden. Also, national accounting systems might fail to draw accurate situations about. Individual salaries dominating such expenditures bring another limit in through not here identifying a true stable value standard – researchers are supposed to be remunerated by amounts bearing enough ups and downs during not quite long periods according to general economic conditions in a country. Here there might be added limitations of innovation reflecting by R&D expenditure and so on.

[4] As in detail, the indicator provided is called GERD (Gross domestic expenditure on R&D) as a percentage of GDP. "Research and experimental development" (R&D) contains creative work undertaken on a systematic base in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications" (Frascati Manual, 2002 edition, § 63). *(Source Eurostat)*

2.4 Turnover from innovation

According Eurostat, this indicator (Figure 2.4) is defined as the ratio of new products turnover in the total enterprise's output turnover. It is based on the Community innovation Survey5 and covers at least all enterprises with 10 or more employees. An innovation is a new or significantly improved product (good or service) introduced to the market or the introduction within an enterprise of a new or significantly improved process.

Figure 2.4 Turnover from innovation % of total turnover



Calculations based on Eurostat data

2.5 Community Innovation Survey (CIS)

This is a survey of innovation activity in enterprises. This survey is made to provide information on the innovativeness of different industries by individual industrial enterprises and by types of these, by various types of innovation itself and by other aspects of innovation development6. Community Innovation Survey7 provides statistics broken down by countries, type of innovators, economic activities and several size classes. This survey is currently carried out every two years across the EU area. Enterprises are classified by country, economic activity (NACE), size class and type of innovation activity. The survey bases in practice on questions asked and focused

[5] See 2.5 below.

[6] Such as the objectives, the sources of information, the public funding or the expenditures.

[7] The Community Innovation Survey (CIS) is a part of the EU science and technology statistics

on organizational and marketing innovation and about product and process innovation (Figure 2.5).

The minimum requirement for an innovation is that the product, process, marketing method or organizational method must be new to the firm (or significantly improved). This includes products, processes and methods that firms are the first to develop and those that have been adopted from other firms or organizations. On its negative side, the one of limitations, the same above exclusively expenditure measuring problem remains reported on innovation.

Figure 2.5 More concepts related to CIS

Concept	Explaining
Product innovators	Those who introduced, during the period under review, new and significantly improved goods and/or services with respect to their fundamental characteristics, technical specifications, incorporated software or other immaterial components, intended uses, or user friendliness. Changes of a solely aesthetic nature and the simple resale of new goods and services purchased from other enterprises are not considered as innovation.
Process innovators	Implemented new and significantly improved production technologies or new and significantly improved methods of supplying services and delivering products during the period under review. The outcome of such innovations should be significant with respect to the level of output, quality of products (goods or services) or costs of production and distribution. Purely organizational or managerial changes are not included.
Organizational innovators	They have implemented a new organizational method in the enterprise's business practices, workplace organization or external relations.
Marketing innovators	They have implemented a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.
Enterprises with innovation	These had innovation activities during the period under review, including enterprises with on-going and abandoned activities. In other words, firms that had innovation activities during the period under review, regardless of whether the activity resulted in the implementation of an innovation, are innovation-active.

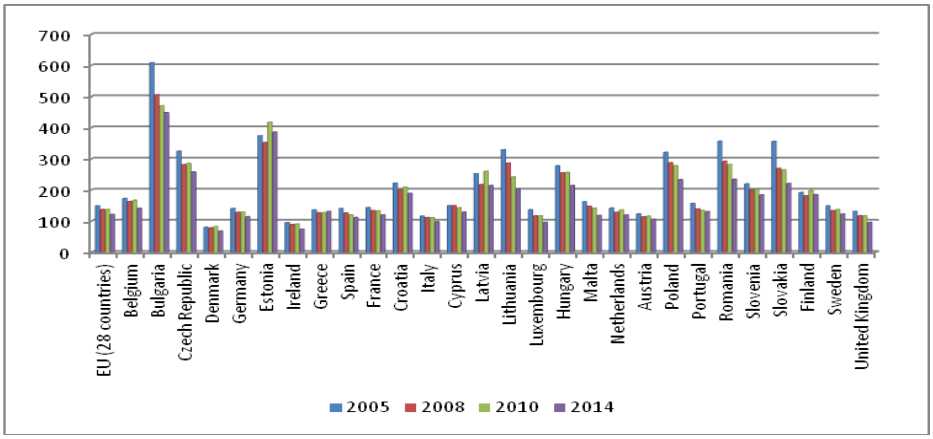
(Source: Eurostat)

2.6 Energy intensity

This indicator is the "ratio between the gross inland consumption of energy and the gross domestic product (GDP) for a calendar year"8. It measures the energy consumption of an economy and its overall energy efficiency and does express in kilograms of oil equivalent per 1 000 EUR. The gross inland consumption of energy results as the sum of the gross inland consumption of five energy types: (1) coal, (2) electricity, (3) oil, (4) natural gas and (5) renewable energy sources. The GDP figures are taken at chain linked numbers referred to the year 2010. The energy intensity ratio (Figure 2.6) is determined by dividing the gross inland consumption by the GDP. Since gross inland consumption is measured in kgoe (kilogram of oil equivalent) and GDP in 1 000 EUR, this ratio is measured in kg. per 1 000 EUR.

Energy intensity ratio improved in the EU, after declining by 15.9 % between 2002 and 2013 as a result of absolute decoupling of gross inland energy consumption from economic growth.

Figure 2.6 Energy intensity of the economy



Calculations based on Eurostat data

Energy intensity is a measure for the economy's energy efficiency, a key indicator for measuring progress under the Europe 2020 Strategy for smart, sustainable and inclusive growth. The ratio is expressed in kilograms of oil equivalent (kgoe) per EUR 1 000, and to facilitate analysis over time the calculations are based on GDP at constant prices (currently chain-linked 2005 prices). If an economy

[8] According Eurostat

becomes more efficient in its use of energy and its GDP remains constant, then the ratio for this indicator should fall.

Gross inland consumption of energy within the EU-28 in 2014 was 1 800 million tons of oil equivalent (toe). Staying unchanged during the period from 2003 to 2008, gross inland consumption of energy decreased by 5.7 % in 2009; much of this change can be attributed to a lower level of economic activity as a result of the financial and economic crisis.

In 2010 9 , was a 3.8 % rebound in the level of gross inland consumption of energy in the EU-28 although this was followed by a similarly large (3.6 %) fall in 2011. After these three years of relatively large changes, 2012 and 2013 saw more modest rates of change as consumption fell by 0.7 % and 1.2 %. In 2014, the least intensive economies in the EU were Ireland, Denmark, the United Kingdom and Italy, which used the least amount of energy relative to their overall economic size (based on gross domestic product (GDP)). The most energy-intensive EU Member States were Bulgaria and Estonia. It should be noted that the economic structure of an economy plays an important role in determining energy intensity, : service based economies will have relatively low energy intensities, while economies with heavy industries (such as iron and steel production) may have a considerable proportion of their economic activity within industrial sectors, thus leading to higher energy intensity.

Across the 2003-2014 interval substantial energy savings were made in Lithuania, Romania, Slovakia, Bulgaria, Poland, Cyprus and the Czech Republic, as the amount of energy required to produce a unit of economic output (as measured by GDP) was reduced by 25.0 %. None of the EU Member States reported a rise in their energy intensity between 2003 and 2014, with the smallest decreases in percentage terms recorded for the Netherlands, Greece, Estonia and Italy.

3. Conclusion

Sustainable development has been defined10 as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development needs a lot of effort to build an inclusive and sustainable future for people and planet. In this order, for a sustainable development in necessary to connect three elements: economic growth, social inclusion and environmental protection. These elements are all

[9] Source Eurostat

[10] http://www.un.org/sustainabledevelopment/development-agenda/

vital for the well-being of individuals and societies. Also, eradicating poverty in all its forms is an indispensable requirement for sustainable development.

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ESTIMATIONS ON THE IMPACT OF EMPLOYMENT IN THE ROMANIAN REGIONS ON ECONOMIC GROWTH DURING THE POST -ECONOMIC CRISIS PERIOD

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Abstract
The comparative analysis of Romania's Development Regions emphasizes the process of increasing disparities of economic and social development between regions during the post-crisis period.
Development differences between the most developed region (Bucharest - Ilfov) and the least developed (North-East Region) in terms of GDP per capita grew nearly three times.
Meanwhile, the disparities are increasing between regions situated in the western half of the country (North-West, Centre and West), all these regions recording positive economic developments as many economic and social development indicators' show consistent growth, and the ones situated in the eastern half of the country (North-East, South-East, South and South-West), which are less development.
The paper presents a concise analysis of the labour for each of Romania's development regions.

Key words: *employment, unemployment, economic growth, impact, regional development*

JEL Classification: J21, J64, O11, O18

Introduction

The effects of the financial crisis that started in the summer of 2007 continue to be felt by the global economy. Even though the lowest point of this crisis has long been overcome, it is very possible for the economic turnaround to take a long time, as it is characterized in general by slowed-down economic growth from the viewpoint of actual potential, and gradual decrease of the unemployment rate over several years.

On short and medium term, even under the conditions in which economic growth shall be positive, the decrease of the unemployment rate shall take a longer time.

The historical analysis of the implications of the financial crisis on economies shows that for stabilising the labour force market measures should be taken on a medium time-horizon.

1. Labour force market and social anti-crisis measures at European Union level. Brief Presentation

The European Commission Report of March 2009 indicates a series of so-called "good practice" measures that Member-States might take for sustaining economic activity

The analysis of measures adopted by various Member States for economic turnaround show that the majority had a strong emphasis on maintaining the number of employees by policies that pursued:

- sustaining viable economic activities, however these are faced with difficulties in accessing funds and facilitating access to capital;
- professional re-training, re-skilling, and training programmes;
- measures aimed to diminish companies' expenditures before effective layoff of employees;
- extending the period of unemployment pay and encouraging part-time jobs;
- social protection measures – supporting persons from the low income categories.

For instance, in *Austria*, the measure of effectively diminishing working time has been extended from 12 months to up to 24 months the option being available also for elderly persons. For young individuals in the age group 19 to 24 years, who lost their jobs, specialised training was organised in cooperation with SMEs for providing them with new career opportunities. Various employment schemes were realised for persons aged 50 years or over, and/or subventions granted to micro-enterprises, or solidarity bonuses, and social aid for old persons who no longer could work and had not reached pensioning age.

The impact of the measures package for stimulating employment was rendered concrete in a number of 97000 jobs and yet other 45000 such opportunities are expected to be created for those searching either a temporary or permanent job.

If, at the beginning, the enforced decision, in order to control the negative effects of the economic crisis, was laying off workers who delivered manual work in *Belgium*, thereafter this measure proved insufficient and inefficient and the decision was extended to white-collar workers. This measure aimed at companies facing either a

20% decrease in quarterly turnover, or in yearly output, or 20 percent diminishments of orders for their products.

As result of the deterioration of the economic situation and the increase in the unemployment rate, *Bulgaria*, opted for diminishing the working time of employees in the industrial and services' sector.

With the purpose of adjusting and keeping employees within companies affected by short-term diminishments of production due to the economic crisis, as well as for encouraging them to improve performances and skills, the *Czech Republic* launched a pilot project that benefited of support from the European Social Fund. The total budget of the project was of 3 billion Crowns (approximately 115 million Euros) and is used both as financial resource in ensuring training, and for compensating wage losses of employees as result of attending training courses.

The *Danish* Government allotted a budget of 1.4 billion DK (190 million Euros) to some initiatives aimed to prepare youths for the new developments on labour market. Among them, was the set up of job centres where unskilled youths up to the age of 30 years, or those in the age group 18 to 19 years, would benefit of training or receive job offers. At the same time, the programme aims to youngsters with school difficulties, to those newly released from the penitentiary system, and the ones requiring insertion assistance, as well as to those who are still in their period of studies, and wish to work in their spare time. Finally, the programme addresses also the fresh graduates of universities who need employment as soon as possible after concluding studies.

In *France*, certain trades and sectors were faced with decline because of the industrial restructuring and many of their specialised workers were left jobless. In this context, opportunities were provided to workers for taking up their activity again, even if it meant changing occupation, trade or sector, or even locality. This programme pursued to stimulate reemployment of active labour force and provide for possibilities of professional reorientation and reskilling.

Despite of a healthy economic situation, *Poland* decided on adopting measures aimed to temperate the aftermath of economic crisis. Hence, action was taken for providing enterprises affected by the unfavourable economic conjecture (entities with turnover decreases by 25%, or faced with restructuring, or on the brink of bankruptcy, and not benefitting of state subventions) with state aids, and ensuring provisions for diminishing working time. Other solutions provided for the the reimbursement of up to 80% of the company's personnel costs with retraining through specific courses. At the same

time, irrespective of the company's status, they benefit of extensions for part-time jobs from 4 months to 12 months, as well as of shifting working times.

For diminishing the effects of the financial crisis on labour and employment degree, the government of *Slovenia* adopted two key measures. The first provided for partial subventions for full-time jobs (the measure was adopted to help companies where orders decreased by approximately 20%); and the second for partial wage reimbursement for laid-off employees (in order to support companies where orders decreased up to 40%), next to active labour market policies.

Hungary adopted a series of measures with the purpose of maintaining jobs for employees, stabilising SMEs, and hindering the increase of the unemployment rate. These measures were implemented by providing subventions to some companies for maintaining jobs, shifting to shorter working time, and organising courses for employees; also, subventions for companies employing workers, and for personnel having to commute on significant distances from their residence to job.

2. The challenges of the current crisis on Romania's labour market

In the current macroeconomic context, the challenges for the Romanian labour market have a dual character, these aiming both at the private sector (which adjusted naturally as result of economic constriction), and the public one.

The agreement signed by Romania with IMF in the year 2009 presupposed the diminishment of expenditures with employees' wages from public administration by 20%. Layoffs initiated in the year 2010 have increased and added pressure on the labour force market. The solution adopted by the authorities to diminish public sector wages by 25% as of June 2010 may be regarded as an intermediary measure having as objective to reduce the number of employees with a comparable percentage on a short-time horizon, possibly as of 2010 and continuing in 2011.

If in 2007 the unemployment rate was 4.0%, a minimum of the last 17 years, in 2009 the unemployment rate was already 7.8% that is an abrupt increase in only a few months. Thereafter, since 2011, it has fallen, reaching 4.8% in 2015, a value above the one recorded before the crisis. However, the pressures on the labor market continued to be felt.

The yearly growth rate of unemployed within the economy is different to the one existing in the two somewhat similar periods, respectively 1997-1998, and 2001-2002. If then the unemployment increase was due predominantly to the effects of pre-election policies and/or of the domestic financial crisis, now the reason is preponderantly external, the effect of the world economic crisis diminishing strongly the external demand with repercussions on domestic output.

The effects of the economic crisis on the private and public sector are completely different. In the private sector, the consistent decrease of the number of employees began to show at the beginning of 2009. By the end of 2015, at the level of the whole economy, the public sector saw a reduction of 229262 persons, and in the private sector by 251522 people. Yet, the evolution in the numbers of unemployed from various economic sectors must be correlated with the share of these sectors in GDP, as well.

At the level of the national economy, in 2008, the number of employed within the public sector was of 1.4 million, representing 27.8% from the total number of employees in the economy and reached 1.17 million in 2015, representing 25.5% of the total number of employees in the economy.

The Romanian public sector continues to be one of the most oversized sectors as compared with the other EU member countries (for instance, in 2015 the number of employees within the public sector represented 19% in Italy, 21% in United Kingdom, and 26.5% in Poland, and in the other EU countries this percentage is still lower). The most important issues facing the public system are increasing efficiency along with diminishing costs.

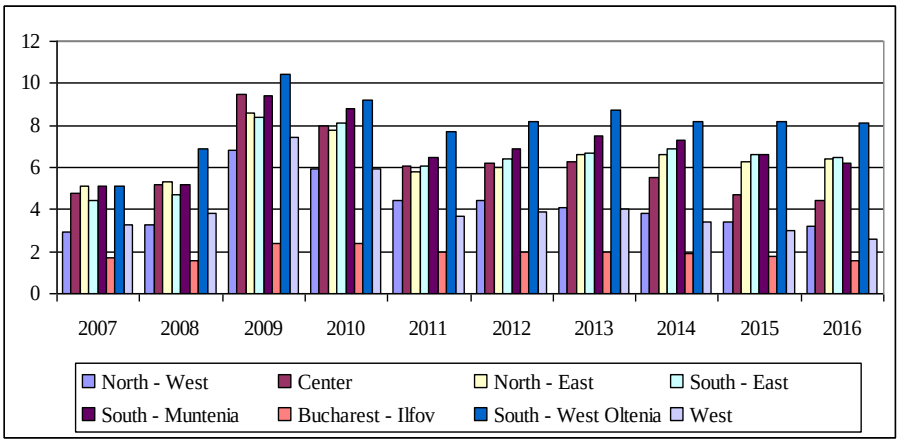
2.1. Unemployment variation at regional level

At regional level, major disparities are shown with respect to the number of unemployed. These variations are due to several factors, among which:

i) the structure of local economy – the economic sectors were affected differently by the crisis, fact which is noticeable also at the level of the local/regional economies;
ii) the influence of commuting workers: large towns such as Iasi, Cluj, Timisoara or Bucharest attracted workers from neighbouring counties, these being among the first laid-off persons at the beginning of the crisis.

Yet, the discrepancies at regional level were present also before the crisis and, for the last years, this trend became only more marked (Figure 1).

Figure 1 Evolution of the unemployment rate in Romanian development regions, (%)



Data source: TEMPO-Online time series, www.insse.ro

The layoffs during the crisis recorded high value variations from one county to another, depending on the specific context of each county. Thus, the most affected counties due to this phenomenon were: Bacau, Prahova, Buzau, Mures, Brasov, Hunedoara, Alba, Dolj, Bucharest, Cluj and Satu-Mare.

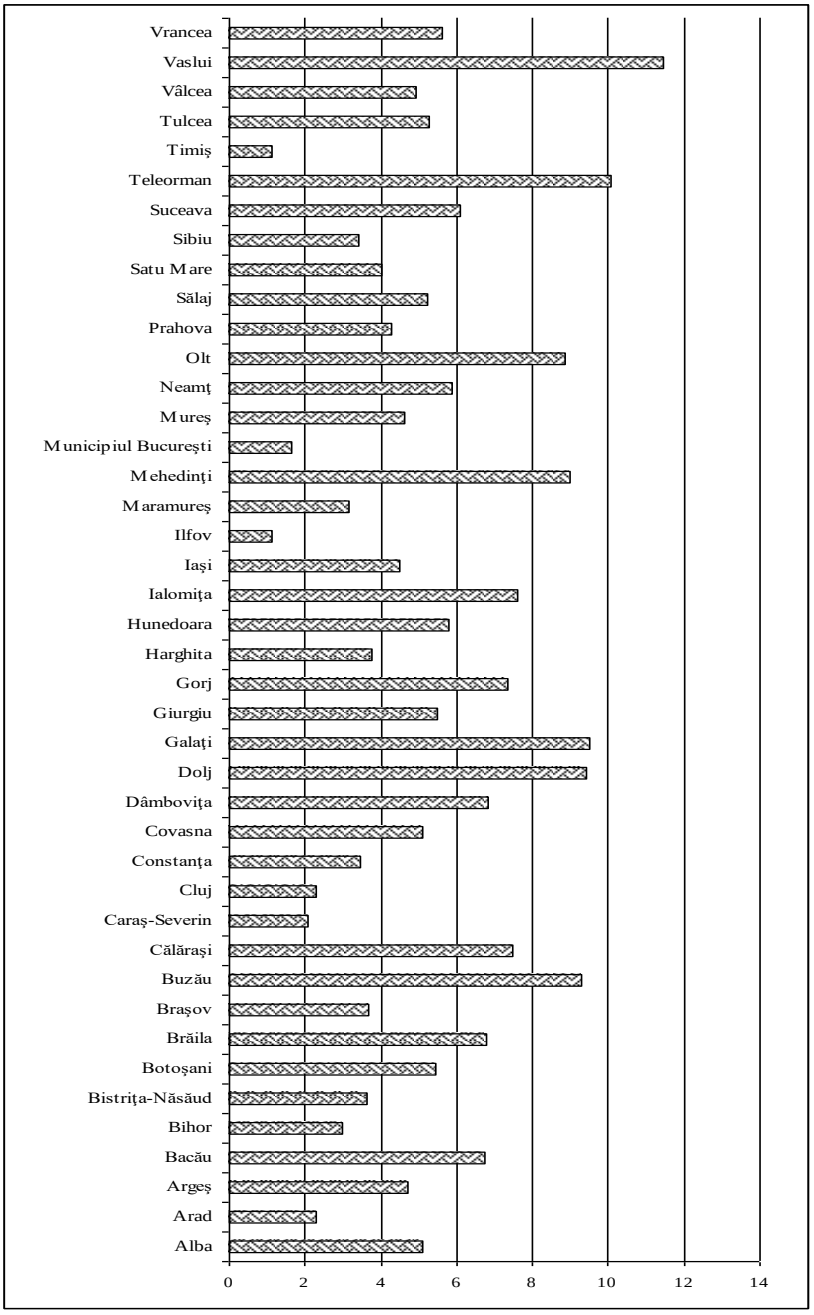
Considering the low values of the unemployment rate at national level it can be said that layoffs during the crisis did not generate imbalances in unemployment's evolution, and the counties facing this phenomenon have found solutions for economic turnaround, reflected also in smoothing issues from the viewpoint of labour force employment.

At territorial level two counties exceeded the average annual rate: Mehedinti and Vaslui, and at the opposite end are placed the following counties: Ilfov, Timis, and the Bucharest municipality.

The regions with the highest unemployment rates were the South-West, South and North-East region, where the rural activities are preponderant. These are also the regions with considerable disparities also within the same region, where predominantly agricultural counties coexist with the most developed ones. For instance, in the North-East region, discrepancies were recorded between the counties, with respect to the annual average of the recorded unemployment rate: the maximum level was reached in

county Vaslui (11.45%), and the minimum one in county Iaşi (4.51%) (Figure 2).

Figure 2 Evolution of the unemployment rate by counties, (%)



Data source: NALF Statistics, 2016, www.anofm.ro

The regions Bucharest and North-West attained the lowest levels of the registered unemployment rate, these areas being at an advantage due to their low dependency on the primary sector (Bucharest region), respectively due to their proximity to Western markets (North-West region), but also due to their high capacity in attracting foreign direct investments.

The labour market was not characterised by major imbalances because of the continuous character of economic growth.

Characteristic for 2016 is the fact that the number of paid unemployed is much lower than the number of unpaid unemployed (90111 persons, respectively 328126 persons).

From the viewpoint of the unemployed distribution, on educational levels, in the year 2016, from the total number of registered unemployed, 79.64% were persons with basic-secondary and vocational education, 16.23% with upper-secondary and post-upper-secondary education, and 4.13% were persons with higher education.

From the viewpoint of the age-group structure of registered unemployed, the age groups with most unemployed continue to be aged from 30 to 39 years of age and from 40 to 49 years of age, these groups being followed by the age group from 50 to 55 years of age.

The layoffs during the crisis and post-crisis generated imbalances in the development of unemployment, all counties facing this phenomenon, but also lesser options for economic turnaround, reflected also in the issues of labour force employment.

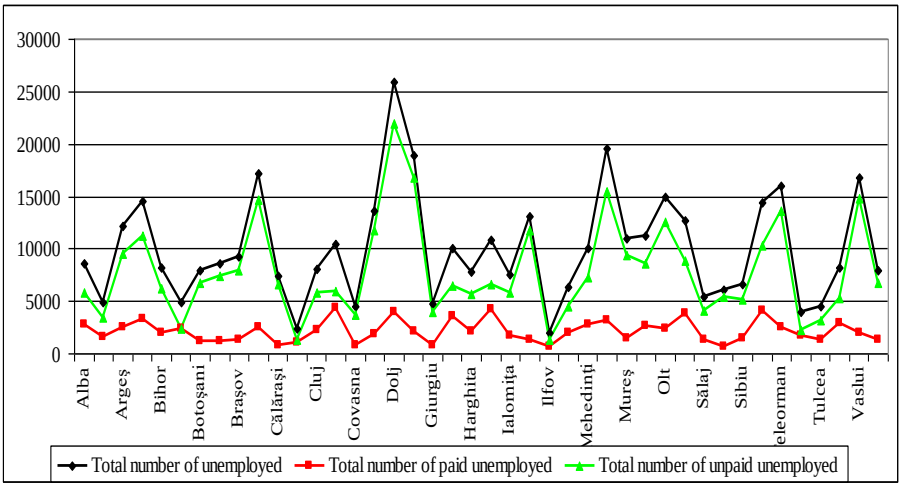
Even if in the last years, there has been economic growth at national level, however, in 2016, in 6 counties, the unemployment rate was higher than 9%: Vaslui (11.45%), Teleorman (10.05%), Galaţi (9.52%), Dolj (9.41%), Buzău (9.28%) and Mehedinţi (9%). The minimum end is represented by the county Ilfov (1.11%0, Timiş (1.14%) and the Bucharest municipality (1.66%). The highest unemployment rates were registered in South-West, South, and Center, regions in which rural activities are preponderant.

The global financial and economic crisis was strongly felt by the Romanian economy. The economic activity was in regression, a fact highlighted by the labour market, where the crisis was expressed by the high increase in the numbers of unemployed and by the unemployment rate.

At counties' level, the number of unemployed increased in 2016, in 22 counties: Cluj (by 642 persons), Ialomita (by 610 persons), Arad (497 persons), Botosani (404 persons) and Bacau (380 persons). Decreases in the number of unemployed are recorded in 19 counties and the Bucharest municipality, the most important ones

being registered in the following counties: Teleorman (1285 persons), Buzau (941 persons), Suceava (309 persons), Giurgiu (203 persons), Sibiu (805 persons), Constanţa (135 persons) and Gorj (106 persons). In the Bucharest municipality the number of unemployed decreased by 87 persons (Figure 3).

Figure 3 Total number of unemployed registered on counties, in 2016



Data source: NALF Statistics 2016, www.anofm.ro

The counties with the highest share of unpaid unemployed in total number unemployed are: Iasi (89.42%), Calarasi (88.42%), Satu Mare (88.25%), Vaslui (88.10%) and Mures (86.39%).

The unemployment rate increased in 22 counties, that is: Ialomi'a bz 0.62 pp, Bistrita Nasaud and Botosani by 0.28 pp, Arad by 0.23 pp, Alba by 0.20 and Tulcea by 0.19 pp.

Decreases of the unemployment rate are registered in 16 counties and in the Bucharest municipality and the most important decreases of the unemployment rate are recorded in the counties Teleorman by 0.41pp, Bihor by 0.24pp, Arges by 0.18pp and Maramures by 0.15pp. In the Bucharest municipality, the unemployment rate decreased by 0.02%.

The highest levels of the unemployment rate were reached in the counties: Vaslui (11,45%), Teleorman (10.05%), Galaţi (9,52%), Dolj (9.41%), Buzau (9.28%), Mehedinti (9.0%), followed by the counties: Olt (8.85%), Ialomita (7.62%), Calarasi (7.49%) and Gorj (7.34%).

In conclusion, the economic growth potential of Romania will ensure an increase in labour demand. From the macroeconomic

viewpoint, the measures suggested by the Government could improve part of the existing imbalances, but the enforcement manner may emphasise the social imbalances in a difficult moment for the economy.

The labour market within the European Union seems to be stabilised, the unemployment rate being of 8.7% in 2016.

In accordance with the Eurostat statistics, Romania is on the eighth place from the viewpoint of the unemployment rate, with a value of 6.1% by the end of 2016.

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LIGNOCELLULOSE BIO RESOURCES AND RENEWABLE ENERGY

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Abstract
This paper proposes a study on the availability of raw materials for biofuels. In general, the bio resources depend on the geographical location and varies from season to season. Given the availability and the reduced costs, currently, lignocellulose biomass is the most promising feedstock for the production of bioethanol fuel. But the commercial production of this biofuel is limited due to the conversion technologies, namely the bioethanol yield of the agricultural residues and other lignocelluloses. For the design of the bioethanol production process, the physical evaluation of raw material is necessary, but also by the proportion of sucrose, starch and lignocellulose. And this is necessary because it presents significant share in the costs of bioethanol. The bibliographic study and the interpretation of the statistical data concludes that there are many bio renewable resources, with repercussions in sustainability.

***Keywords**: bioethanol, lignocellulose bio resources, renewable resources, sustainability*

***Classification JEL:** O13, Q20, Q42*

Introduction

The upside incidence of extreme weather conditions with alternating periods of drought and intense rainfall events, accelerates the degradation of the lithosphere, particularly in areas where the soil is structurally vulnerable. Without commenting on the causes, as long as we know the importance of plant biodiversity, it is necessary to retain as much vegetation on the surface as possible. But the

agricultural production, for example, except the perennial and multi-species, is seasonal and in the temperate zone it is achieved maximum two cultures per year (double or successive crop culture). So the probability of permanent grassy ground is small. As a result, soil vulnerability to natural environmental factors is high. In these circumstances, only vegetable residues (roots, stems fragments) can strengthen and protect the soil functions. These include the protection against water and wind erosion, retaining water, increasing or maintaining the organic matter in the soil as natural nutrition, increasing the biological activity and improving soil structure, with impact on the improvement of the crop yields. The latter occupies arable land and are classified either as botanical family, either by type of production pursued. Arable land category is used for annual or perennial crop in the field, where the structure prevails the cereals. Those are either cultivated in the fall (autumn cereals) or in the spring, sometimes as a successive crop. The agricultural and economic importance of the grain was amplified by diversifying the product, due to the requirements of the market. Thus, the destination of bioethanol is generated from non-renewable energy resources exhaustion and by the greenhouse effect amplifying the global warming. For these reasons, but also because most of the times straws and stalks oversize the dumpsites or hinder the work of establishing a new rotation culture, the controlled biodegradation is beneficial in all aspects: socio-economic and environmental. In this context, it is evident that there is great potential for agricultural biomass (lignocelluloses waste). Their use for energy services (liquid biofuels for transport) could contribute significantly to achieving rural development and reduce dependence on external resources but also to diversify the energy sources. The diversification of energy supply and reducing the dependence on fossil fuels used in the transport sector are part of the Kyoto Protocol.

1. Plant biodiversity productivity support

Environmentalists believe that the value of biodiversity is very high. And reasonably speaking, the air is vital, the climate provides a comfortable ambience, the water and the soil are basic to produce food (Bran, 2012a). The soil exploited by plant biodiversity is defined as the lithosphere part for permissive cultivation and increased food supplies. At the same time, it fulfill multiple functions:

- Due to the ability of crops to fix atmospheric CO2 by photosynthesis, at the rhizosphere level, carbon is stored in soils;

- The soil is at the interference between the environment, water resources and geological systems, which, along with biodiversity (from macro to micro size) and time, has generated;
- It provides permanent and unconditional support for the development of human activities.

The interaction between soil, water and air defines the operation of a unique system that has as main objective the development of sustainable agriculture capable of reducing pollution and environmental degradation, to provide services and environmental goods, maintaining at the same time and not least, the capacity of production. As a result, the agriculture is responsible for the proper management of the soil resources.

In Romania, taking into account the contribution to GDP and active population, predominates the bio-producing economic sectors (agriculture, forestry and fisheries), followed by the manufacturing thereof (according to statistics NIS 2012).

The field vegetable group, with significant weight in Romanian agriculture - cereals - includes many species, officially represented by 61 varieties of common wheat, 7 varieties of wheat loud, 3 varieties of Sudan grass, 2 varieties of millet, 10 rice varieties, 40 varieties of barley,5 varieties of oats, 250 varieties of corn hybrids, a variety of rye, 10 sorghum varieties, 4 hybrids of sorghum x Sudan grass, 10 varieties of triticale (Bran, 2012b). As a result, this diversification justify extreme productions, which was amplified by the addressed technique and by the influence of natural factors. “The inadequate crop management leads to great difficulties regarding the yield level, with effects on economical results, which cannot ensure a satisfactory production process, as well as a decent life level” (Bran et al., 2008). Hence the oscillating production of biofuels from agro sources.

2. Crop production

The bio economy, due to its multidisciplinary, integrates the vegetable kingdom in the vegetable-based biotechnology industry, which converts biomass into products and energy, which is the sustainable economic foundation. So, in a biological knowledge-based economy, not only energy but also products derive from renewable resources. Among them, the prevailing globally cultivated are the cereals. Those have occupied several years in a row, about 700 million ha, with an average of 3.59 tones productive grains / ha (in 2016).

For Romania, the arable land in 2014 was 9,395,303 ha, of which cereals were cultivated on 5.46357 million ha, accounting for

more than half of arable fields (58.15%). The total production of grains was 19,286,236 tons (2015) with an average of 3.53 t grain / ha.

The comparative analysis of cereal grain production has shown that the global average production exceeds with only 1.67% the Romanian production, which is so insignificant.

If the FAO and the International Grains Council forecast for 2015/16 was conducted, it means that the world cereal production had the following destination: 44% food, 35% feed, 6% obtained biofuels and 14% others.

According to those described above and to the population situation at 1st of January 2016, each of the 7,295,963,230 people in the world would have 15.23 kg of grains annually. Also, 6% of the cereal production had to obtain 34,772,751,000 liters of bioethanol, - 21,020.850,000 liters from beans (starchy substances) and 13,751,901,000 liters from lignocelluloses waste (Table 1).

The calculations were carried out based on the average primary production, the harvesting of the raw material moisture content. But Shaw and Wright (1921) determined the dry weight of the plant at approximately half the weight at harvest (corn plant - ready to shock: 40.21% dry matter). The results were taken into account by the authors mentioned determined dry substance corn (whole plant).

Table 1. The centralization of the universally productive grain values (grain and vegetative mass; bioethanol)

Specification	UM	Remarks
Grain production	total, mil. t	2526
d.c.	44% for population consumption, mil. t	1111.44
	6% for ethanol, mil. t	151.56
cultivated area	total, mil. ha	704.2
Average production of grains	t/ha	3.58
Biotanol / t grain cereals	l	345 (345 l ethanol / ton grains - average maize, rice, barley and wheat; Balat et al., 2008)
Biotanol / t strains	l	225.7 (la 1000 kg resulting cobs; Balat et al., 2008)

Bean report: straw or stalks	1:1, mil.t	60.93:60.93 (40.21% dry matter; Shaw and Wright, 1921)	
Total bioethanol from cereal grains, l	60.93 X 345	21,020.85	∑ = 34,772,751,000
Total bioethanol from straw + stalks, l	60.93 X 225.7	13,751.901	
Population number	loc.	7,295,963,230	
Grain production per head	kg/man*year	15.23	
Bioethanol production per inhabitant and year	l/ man*year	4.77	
Total production of bioethanol per cereals cultivated hectare (theoretical)	l	49.38	

Source: personal calculations by global and local statistics and specific literature

Compared to the presented calculations, as theoretical yields, there are variations +/- depending on: the biomass raw material composition (the table), the bioethanol obtaining method, the type and the size of the refinery reactor.

Table 2. Compositions of corn grain, corn cob, corn stover and poplar

Component and specification	**The type of biomass**			
	Grain	**Cob**	**Stover**	**Poplar**
Starch, %	71.7	-	-	-
Cellulose, %	2.4	42.0	36.0	40.3
Hemicellulose, %	5.5	33.0	26.0	22.0
Protein, %	10.3	-	5.0	-
Oil, %	4,3	-	-	-
Lignin, %	0.2	18.0	19.0	23.7
Ash, %	1.4	1.5	12.0	0.6
Others, %	4.2	5.5	2.0	13.4
Total, %	100.0	100.0	100.0	100.0
Ethanol yield (gal / ton)	135	128	105	106
Biomass dry weight, %	52	10	48	52

Source: America's energy future panel on alternative liquid transportation fuels

3. The bioethanol yield of the plant biodiversity

Biofuels are produced from all that which means vegetation, so renewable organisms as an alternative to fossil fuels. From the main production, mainly grains from the commented example, rich in starch is obtained more ethanol than from the secondary production (dry vegetative mass) but the production of grain is directed to human consumption. Therefore, the waste must ensure the maintenance and rhythm of the bioethanol production.

The final bioethanol yield (table) is determined by the maximum yield of sugar, which may be obtained from a particular type of biomass, and the yield of sugars is determined by starch, cellulose, hemicellulose, and the combined content of the biomass. The yield of ethanol can vary between 105 gal / t and 135g / t (dry weight) in the case where all stages of the culturing process takes place at 100% efficiency, i.e., and all the structural components were used for the production of ethanol. But the efficiency for grain maize can decrease to 50%. The yields of ethanol can be improved (Wyman et al., 2005) with the combination of advanced pretreatment and enzymes to improve the efficiency of conversion of cellulose.

The conversion of biomass into cellulose ethanol benefits are:
- Obtain additional income for farmers;
- Energy security and trade deficit;
- Reducing emissions of greenhouse gases;
- Disposal of solid waste;
- Air and water remediation.

The ethanol production is an example of how science, technology, agriculture and industry must work in harmony to transform an agricultural product into a fuel (figure 1).

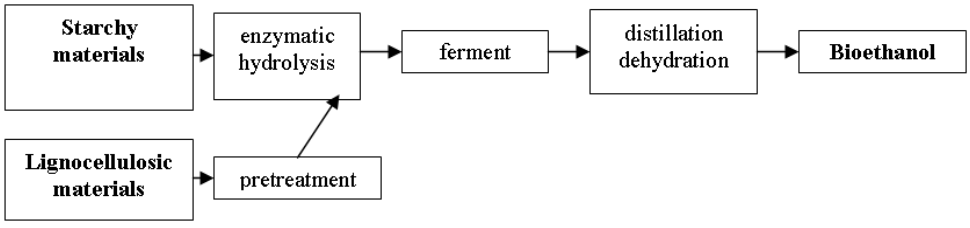

Figure 1. The technology of obtaining ethanol

Transforming biochemical cellulosic biomass into bioethanol (C_2H_5OH) involves several technological steps:
- Raw material preparation (washing, crushing)

- Weakening the structure of cellulose pretreatment and increasing porosity (e.g. hydrothermolysis or pretreatment with acids, alkalis, ammonia or other materials essential to improve ethanol yield and reduce production cost of ethanol);
- Saccharification: cellulose polymers are broken down by hydrolysis in sugars with five and six carbon (xylose and glucose) for fermentation into alcohol through enzymes;
- Fermentation: micro-organisms of yeast type (*Saccharomyces cerevisiae*) ferment glucose and xylose to ethanol. The reaction proceeds as follows: $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2 + Kcal$. The released CO_2 is captured and can be used to produce carbonated soft drinks, or in greenhouses to stimulate plant growth;
- The distillation: the ethanol solution of the fermentation step is distilled to produce 95% ethanol;
- Drying: additional step to produce the required purity;
- Solid waste burning: the residual solids are rich in lignin and can be burned to generate electricity and heat needed in bio refining.

Integrating these steps with the involvement of microorganisms and enzymes is essential as it done the catalytic converters in bio refining, with repercussions for developing cost-effective processes.

The production cost for ethanol, specified in the literature (Kwiatkowski et al., 2006), is $ 0.27 / l (for an installation of 40 million gal / year ethanol fuel). The production costs for bioethanol made from wheat, for example in the EU-25, were 0.60 € / liter (Excluding taxes). Therefore, costs are variable as mentioned before.

Ethanol is a high octane fuel and, in combustion, produces low CO_2 emissions.

Conclusions

The importance of food grain orients producing biofuels technologies to renewable non-food raw materials.

As a result, it has been found that at an average production of 3.58 t / ha cereal, plant waste (straw and maize stalks) can produce 60.93 liters of bioethanol.

Developing biofuels industry must move toward the conversion of lignocelluloses materials (second generation biofuels), unused residues (agricultural or forestry), but potentially renewable.

The ethanol biofuel "rediscovery" was due to the need of an alternative to fossil fuels. The bioethanol production ensures the sustainable development and guarantees the future availability of fuel with low CO_2 emissions.

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CONSIDERATION ON THE CONTRIBUTION OF THE AGGREGATE SUPPLY TO THE GDP IN THE ROMANIAN ECONOMY FOR THE PERIOD 2010-2015 POST CRISIS INFLUENCES

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Abstract
In a modern market economy, open to the exterior, the behavior of the economic entities materializes in the form of aggregate supply and demand. The objective of this paper is to analyze the contribution of the aggregate supply components to the GDP growth over the period of 2010-2015, which was strongly affected by the effects of the economic-financial crisis of the early years, as well as by the economic, social and political factors which influenced the years that followed. We considered this analysis as necessary since the GDP is the most relevant indicator used to assess the economic status of a nation at a given moment in time.

Key words: *aggregate supply, GDP, economy, progress, influences.*

JEL Classification: E 60, G 01, O 40.

1. Introduction

Our country has registered remarkable progress in the recent years towards the reduction of macroeconomic imbalances which, together with the monetary policy and structural reforms implemented or under implementation, have helped maintain macroeconomic and financial stability. Gross Domestic Product (GDP) represents the most synthetic results' indicator of any national economy development, which together with other indicators provides the necessary relevance related to the progress of a country's economic growth over a period studied. [Anghelache, 2016; Dumitrescu, Anghel and Anghelache, 2015]. Thus, in this paper I wish to highlight the way the aggregate supply contributes to the growth of the GDP in the Romanian

economy. Therefore, in order to address the issue under analysis, it is necessary to review some theoretical aspects regarding the aggregate supply and the GDP.

The supply of goods and services is the sum of quantities of final goods and services (in monetary expression) produced by all the entities in the economy. The supply is expressed as a relationship between the amount of goods and services offered and the price level, the other elements being considered as constants, the relationship between the two elements will depend on the manner in which time is considered [Măcriș, 2009, 2013].

The aggregate supply is, therefore, the total value of the newly created goods and services in an economy, at a given period, usually in a year. The aggregate supply is determined as the difference between the production value and the intermediate consumption (expenditure on raw materials, on the materials and services used in the production process), having the ability to adjust to the level of the aggregate demand limited to a short horizon of time [Man and Măcriș, 2013, 2014]. *In the long term*, the supply depends mainly on the dynamics of the fundamental factors, such as the production capacities, the work force and the degree of technological endowment and, consequently, it adjusts more slowly and in the longer run, and it cannot be influenced by the monetary policy [Dima and Man, 2013, 2015]. Under these circumstances, *in the short/medium term*, the monetary policy can only affect the gap between the actual level of the production and the sustainable one on the long term (the real GDP deviation from its potential level).

In order to achieve the analysis regarding the contribution of the aggregate supply to the growth of the GDP in the Romanian economy, we shall start from GDP, which represents the final result of the production activity of the resident producer units and expresses the size of the gross value added of the economic goods in their last stage of the economic circuit, calculated by **production method**, using the following: ***GDP = GVA + TP + RD – SP***, where GDP = gross domestic product (market prices); GVA = gross value added (basic prices); TP = taxes per product; RD = rate of duty (rights on imports); SP = subsidies on products.

At the same time, GDP can also be determined by the **income method**, in this case, the following is used: ***GDP = R + GOS + OTP – OSP + TP + RD – SP***, where GDP = gross domestic product (market prices); R = remuneration of employees; GOS = gross operating surplus; OTP = other taxes on production; OSP = other subsidies on

production; TP = taxes per product; RD = rate of duty; SP = subsidies on products.

In order to achieve this approach on the contribution of the aggregate supply to the growth of the GDP in the Romanian economy, we have considered the production method since, in my opinion, it is more relevant as compared to the income method. The data used for the analysis have been taken from both the Romanian Statistical Yearbook, and the website www. insse. ro/database.

2. Issues on the development of GDP on categories of resources in the period 2010 - 2015

Once the economic crisis has been exceeded, Romania had a modest economic revival, with yearly increases below 1%, and then the advance of the real GDP returned to an annual rate of 3.4% in the period 2013 – 2015. Unemployment continued to remain at a low level in the recent years, hovering below 7%, while investments resumed their growth, reaching an annual growth rate of 17.6% in the last semester of the year 2016. Nevertheless, Romania recorded one of the highest rates of poverty or social exclusion in the EU (40.2% as compared to 24.4% on the whole EU – 28 in 2014).

The evolution of the gross domestic product, by types of resources calculated by the method of production in the period 2010-2015, is given in table no. 1.

Table no. 1. ***The evolution of the gross domestic product by types of resources in the period 2010-2015***

- million lei current prices

No. crt.	Indicators	2010	2011	2012	2013	2014	2015
1	GDP	533,881.1	565,097.2	595,367.3	637,456.0	668,143,6	711,102.7
2	Gross value added	477,028.6	495,832.2	522,296.1	561,403.6	591,206.5	624,885.7
3	Taxes per product	59,638.9	67,682.6	72,691.1	75,750.2	77,006.9	86,048.0
4	Rate of duty (Rights on imports)	2,543.7	2,687.4	2,878.9	2,385.6	2,424.2	2,984.6
5	Subsidies per product	-2.786.4	- 1,096.0	- 2,499.3	- 2,083.4	- 2,494.0	- 2,015.6

Source: Adapted to: National Institute of Statistics, *Romanian Statistical YearBook*, 2016, Bucharest, p.395 - 397.

The gross value added measures what an entity, a branch or an institutional sector added over the value of goods consumed in the process of production. It is determined as the difference between the production value and the intermediate consumption (in the case of market production) and as the sum of components (income payment for the workforce employed, taxes related to production, fixed assets depreciation) in the case of the entities that do not produce for the market. In the case of the subjects that do not produce for the market, the income from the heritage and entrepreneurial activities is conventionally equaled to zero. [Măcriș and Măcriș, 2010]. The consumption of banking services is deleted globally from the added value at economy level as it represents intermediate consumption. Normally, the gross value added is calculated in current prices of the market. In constant prices, the gross value added is determined by the method of double deflation as the difference between the production value in constant prices and the intermediate consumption in constant prices. The intermediate consumption represents the value of goods and services, excluding the fixed assets used as inputs in the production process and which are transformed or totally consumed during the production process, thus it appears that the gross value added will represent, at national economy level, the measure of the aggregate supply [Anghelache, Manole and Anghel, 2015].

Considering the data presented in table no. 1, we can state that of the resources which contributed to the growth of the GDP in the period under review, the largest share is represented by the GVA, which varied between 89% in the years 2011, 2012, 2013, 2015 and over 92% in the year 2014, followed then by the taxes on product which contributed in proportion of 11-12%. When it comes to the customs duties and the subsidies per product, their contribution to the evolution of the GDP is insignificant.

3. The contribution of the aggregate supply components to the growth of the real GDP

In the year 2015, Romania registered an economic growth of 3.9%, making it the 5th consecutive year of growth (by 1.1% in 2011, by 0.6% in 2012, by 3.5% in 2013 and by 3.1% in 2014). The growth in 2015 was due to the positive contribution of the domestic demand. The main driver of this growth was represented by the final consumption as a result of an increase of the private consumption under the conditions of low inflation, of some interest rates which reached record minimum levels and of a significant increase of the real salary. From the point of view of the internal supply, we have

noticed an increase of the gross value added in Services and Industry, in Constructions, while the gross value added in Agriculture decreased as compared to 2014 and 2013.

The goods and services forming the aggregate supply are carried out by the economic entities of all national branches, therefore, at national level, the main components of the supply which contributes to the achievement of the GDP are considered to be the Industry, the Agriculture, the Forestry and Fishing, the Constructions and Services.

Thus, following the evolution of the GDP by branches of activity during 2010 - 2015 (table No. 2), we note that accelerating the pace of the GDP growth in this period was accompanied by some positive results in the adoption of the supply to the requirements of the demand. Thus, the dynamics of the gross added recorded an average annual growth rate of 1,9%. The most significant increases were recorded in 2013 (3.5% as compared to 2012), 2014 (+3.1% as compared to 2013) and 2015 (+3.9% as compared to 2014). One can also notice that in no year did the growth of the gross value added in Industry exceed the increase of the GDP, it's only the Services that increased with 4.2% in 2012, representing the only component of the supply at the growth of GDP which surpassed all other throughout the period under review.

The dynamics of the GVA in Agriculture was strongly influenced by the weather-climate conditions, especially in the years 2012, 2015 and 2016. Throughout the period analyzed, the average annual growth rate of the GVA in Agriculture was of 0.3%. The gross value added in Agriculture witnessed a sinuous evolution because of the climate conditions, especially for the plant production which, in 2013 – 2014, significantly increased as compared to 2011, an increase which only partially compensated for the negative pace of the livestock component, which distinguished through spectacular mutations in the livestock development. Services, both as dynamics and share, registered an ascending evolution, the average annual growth rate of this sector (of 1.8%) being the largest.

Table no. 2. ***Contribution of the main components of the supply to the growth of the real GDP in the period 2010 – 2015***

percentage modifications as compared to the previous year

Item No.	Indicators	2010	2011	2012	2013	2014	2015
1	Real GDP	-0.8	1.1	0.6	3.5	3.1	3.9
2	Industry	1.1	0.0	-2.1	1.0	0.9	1.4
3	Agriculture, Forestry and Fishing	0.5	0.8	-1.7	1.6	0.2	-0.6

4	Construction	-0.3	-1.7	-0.1	0.3	0.1	0.4
5	Total servicies	-2.4	1.3	4.2	0.7	1.7	1.9
6	Net taxes per product	0.3	0.7	0.3	-0.1	0.2	0.8

Source: Adapted to: National Institute of Statistics, *Romanian Statistical YearBook*, 2016, Bucharest, p.395 - 397

Table no.3. ***GDP structure by domains of activity during the period 2010 - 2015***

% of GDP

Item No.	**Indicators**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
1	Industry	**26.4**	**28.5**	**4.7**	**25.1**	**25.2**	**23.7**
2	Agriculture, Forestry and Fishing	6.0	6.4	24.7	5.3	4.7	4.1
3	Construction	7.3	7.9	8.5	7.01	6.2	5.7
4	Total servicies, of which:	**49.1**	**44.9**	**50.2**	**50.7**	**52.4**	**54.4**
	✓ Trade; Cars and household items repairing; Hotels and restaurants; Transport and Telecommunications;	20.9	21.2	21.0	19.6	19.8	21.9
	✓ Fiancial activities; Real estate; Renting and business services	16.2	14.1	14.0	18.3	18.1	19.2
	✓ Other service activities	12.0	12.8	13.8	12.8	14.5	13.3
5	**Total economy**	**88.8**	**87.7**	**87.8**	**88.1**	**88.5**	**87.9**
6	Net taxes per product	11.2	12.3	12.2	11.9	11.5	12.1
7	**GDP**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Own calculations after the official data from the National Institute of Statistics, *Romanian Statistical YearBook*, 2016, Bucharest.

The progress registered in all sectors of activity, after the attenuation of the effects of the economic crisis, has led to significant mutations in the structure of the GDP, especially in the years 2013 – 2014 – 2015 (table no. 3). Then, we witnessed a reduction of the share of Industry in the GDP from 26.4% in 2010 to around 4.7% in 2012, followed by an increasing starting with 2013 and reaching a percentage of 23.7% in 2015. Nevertheless, we cannot but notice the slow pace of improvement of the supply in Industry as a result of the delays in the process of rare constraints (with direct impact on the degree of technological endowment and on the level of professional qualification).

The major contribution of the sector was represented by some branches of the Processing Industry: tobacco products, means of road transport, wood and wood products, chemical pulp and paper, chemical products and substances, rubber products and plastics, manufacture of construction materials, machinery and electric appliances, textile items, equipments for radio, television and telecommunications, etc. Positive developments were also registered by firms manufacturing electrical products, IT items and motor vehicles, as well by the companies in Metallurgy, the latter taking advantage of the favorable juncture of the prices at international level – decrease in some inputs (mineral ores) concomitantly with an increase in some products (steel). Some branches of Industry speeded up their pace of economic growth especially due to export deliveries. Reductions were registered in some other branches, the most significant being with: machinery and electrical appliances, publishing houses, processing of earth oil, coal carbonization, treatment of nuclear fuels, leather goods, foot wear, etc.

At the same time, as a result of a breach of the correlation between the dynamics of labor productivity and labor costs, the market shares were affected in some branches, being determined both internally and externally by the domestic producers. The inadequate quality of the supply in some branches, as a result of de-capitalization of some companies, led to an increase of imported supplies (especially in Textile Industry, leather products, etc) which determined serious difficulties in the process of domestic products integration (mainly clothing and footwear).

There are also segments, in the Romanian Industry, characterized by a pronounced flexibility of the supply, such as, for example, the Automotive Industry, the Manufacturing Industry and Production of Electricity, Heating, Gas and Water, which have presented positive developments since 2013 till nowadays. With all the deficiencies presented, Industry as a whole, during 2010 – 2015, ranked 2nd place after the Services segment as a significant contribution to the growth of the real GDP (table no. 3).

Agriculture, Forestry and Fisheries had quite a small contribution to the growth of the GDP, thus, in 2010 and 2011, their contribution was of about 6%, increased to 24.7% in 2012 due to favorable climate conditions in that year and then decreased to 5.3% in 2013, respectively to 4.1% in 2015. Although their contribution to the growth of the GDP was not impressive during 2013 – 2015, there was a try to rehabilitate this segment by increasing the surface area, by

granting subsidies and achieving better crops than in the previous years.

With regards to Constructions, one can notice quite a small contribution to the growth of the GDP, from 7.3% in 2010 to 5.7% in 2015, this being the result of little investment in this field. In recent years, due to the need for sustainable growth of the GVA in Constructions, there has been a reorientation of the supply towards the realization of residential complexes (intended to meet the demand of the population with average income and over), but also towards shopping centers, storage facilities and office buildings. It should be mentioned that the recovery of the activity on the building sector has been basically countered by the decline of the budgetary financing of the infrastructure projects.

The most sustained growth was registered in the Services sector, which had the greatest contribution to the growth of the real GDP (1.3% in 2011, 4.2% in 2012, 0.7% in 2013, 1.7% in 2014 and 1.9% in 2015. Regarding the contribution of Services to the formation of the GDP, we have noticed their substantial share during the period under review, respectively 49.1% in 2010, 44.9% in 2011, 50.2% in 2012, 50.7% in 2013, 52.4% in 2014 and 54.4% in 2015. Mainly, the increase in the Services sector was achieved on account of the Retail Trade, Transportation, Telecommunications, Cars and household items repairing, Hotels and Restaurants, which contributed at a rate of about 20%; Real estate transactions and Services for the enterprises which registered annual rates of their turn-over volume superior to the average turn-over of the sector – around 16 to 19%, while the difference is covered by other service activities whose contribution is around 12 to 14%. We should mention that 2014 was an exceptional year marked both by the consolidation of the customers' preferences for more sophisticated services and by the amplification of the services provided from the exterior, as a result of the expansion of the multinational companies on the local plan, stimulated by the excess of competitiveness offered by this segment of the labor market. .

4. Conclusions

Our country's macroeconomic condition, as it is presented in this paper, is highlighted using the analysis of the gross domestic product in terms of the aggregate supply's influence on it. It should be noted that this is just one of the important aspects of the GDP analysis to which they add the influence of the aggregate demand acting upon the development of the GDP in a market economy. The analyzed

developments of this indicator reflect the socio-economic condition of the country during 2010 - 2015 which showed that the economy was strongly affected, especially during 2010 -2012, by the effects of the economic and financial crisis, multiplied by the lack of an appropriate anti-crisis governing plan or by the ineffectiveness of the one adopted, agreed upon when the effects of the crisis had been known, as well as by the inefficiency of the governmental activity.

After the economic crisis, Romania has gone over a modest upswing in almost all sectors of the national economy. Although all these developments were positive, with increases year by year, they were heavily affected by the concerns of the Government to fix a series of the austerity measures and by the lack of financial resources necessary to deal with them. Considering the situation resulted from the analysis of the resources categories which contribute to the formation and growth of the GDP, it is necessary to initiate a series of measures leading to the increase of the gross value added in Industry and Agriculture, seen as basic branches of the Romanian economy so that they should surpass the GVA from Services.

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NEW DEVELOPMENTS ON NATIONAL AND EUROPEAN LABOUR MARKETS – THE SOCIAL DIMENSION

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Abstract
The economic and financial crisis is long past, but it still throws a concerning shadow over the European Union and the world. At EU level, it is undermining its very essence of cohesion and convergence, as one member-state – the United Kingdom – is in full process of negotiating the exit, and other member-states search for solutions for what seems to be a full-fledged social and cultural crisis of Europe in the aftermath of the Great Recession. The answers for mitigating the threats to cohesion and convergence should be sought in the real economy and the social dimension of the European Union. These two dimensions covering both cohesion and convergence are of essence, and their core expression is the labour market and the developments regarding employment and unemployment.
The present paper presents a brief review of the current state-of-affairs with respect to the main economic and social issues from the viewpoint of labour market developments, by suggesting the importance and correlation between institutional factors/ arrangements and social innovation, as an answer to the current concerning issues and developments on national and European labour markets.

Key words: *economic growth, labour market, employment rate, structural change, institutions*

JEL Classification: *J21, J24, J30, J89, 015, O33*

Introduction

The economic and financial crisis is long past, and as of 2012 steady but slow economic growth is registered at EU-28(27) level.

Nevertheless, it seems that this crisis still throws a shadow over the developments in the economic and social field, while member-states have not managed yet to identify common answers to

old and emerging issues of concern: structural employment change, increasing inequality, and the higher waves of migration from conflict and poor regions of the Middle –East, and North Africa.

The particularly difficult economic and social situation triggered by the uncertainty of economic growth, higher migration waves for labour, and the increasing and alarming inequality, contributed to increasing pressure also for the next period.

The societies at the beginning of the 21st century are marked by political, economic and social developments under the sign of paradigmatic change: from post-industrial and post-capitalist economy and society, to the economy and society of knowledge which triggered also the 4th industrial revolution.

The 4th industrial revolution is characterised in developed and developing economies, and even in less developed economies by innovation, creativity and entrepreneurial spirit, all demanding increased competences and stimulating the competition in the educational and vocational and training field, as well. Currently, technological innovation is perceived, debated and discussed according to all its facets regarding its constructive and destructive capacities.

The society as a whole and the individual as representative of the society are at the core of the field of transformative forces generated by the increasingly swifter developments in the field of technologies that change the face of agriculture, industries, services, and culture.

In this context, increasingly higher emphasis is laid by experts on the relevance of institutional and societal innovation, in particular based on considerations about resilience, employment and quality of life. The context is particularly complex as well, as it is dominated by imperatives of ensuring quality jobs, and improved quality of life for the most important resource, the human capital.

Apparently, a fashionable word, innovation is one of the most important components in ensuring competitiveness and sustainability at global, national and regional level. The Schumpeterian theory of innovation (1912) based on the paradigm of technological innovation can no longer fully satisfy economic requirements and much less social ones. A new framework is necessary with respect to labour market institutions (Freeman, 20XX) for ensuring that current inequalities, disparities and risks regarding insertion are diminished or avoided completely.

Innovation is, currently, an inexhaustible source reflecting directly and without any mediation the creative human potential, and

its multiple forms – technological, organizational, social, and cultural (Pol and Ville 2008) is conditioned by optimum valorisation of the human resources. However, the human resource is exposed to increased pressures, in the context in which the traditional occupations are vanishing in the post-industrial and knowledge economy and society, and solutions are not to be found easily.

One possible approach would be to consider the current dimensions of the labour market, of employment and unemployment from the economic and social perspective by considering their common economic and social institutional framework. In our opinion, this type of approach has several advantages: (i) allows for identifying the structural changes of employment and labour markets, by highlighting the main changes of occupational structure, occupational profiles, working time a.s.o.; (ii) assists in tracking the possible social responses, and reactions to economic policy interventions, both from the employer and employees viewpoint. One such 'measurement' could be the response to educational and vocational reskilling vouchers, from both employers and employees; (iii) creates the necessary basis for social and institutional innovation by involving all interested stakeholders from an economy, or branch, sector, industry, and from the society, communities, and even from individuals, thereby highlighting the opportunity provided to all in contributing to change, increasing insertion and avoiding exclusion for some segments of population, or vulnerable groups.

Employment and occupational shifts at European Union Level

One of the most concerning outcomes of the Great Recession might be seen at the level of EU-28(27) policies, reports, analyses which are in agreement with the public perception about employment and unemployment.

Since 2013 employment has recorded an overall increase in all member-states, even if at slower paces than anticipated in the developed old member-states (OMS), in the former convergence and cohesion member-states (FCCMS), and in the new member-states (NMS). However, most papers and debates are approaching the unemployment issues associated frequently with the rate and intensity of technological change in industries and services.

Technological change is regarded as the most important factor for the developments with respect to employment and unemployment, including here wage developments increasing inequality (Goos et al, 2009).

Thus, whether the discussion approaches the 'skill-biased technological change' or the 'routine-based technological change',

technology is seen at the core of employment changes in developed and developing countries as well at global level, and at EU-level.

However, this might be countered by bringing in several other factors weighing on the altered occupational structures and employment. For instance, it is obvious that the 'skill-biased technological change' implies higher levels of education, better and improved skilling, and reskilling in high-tech industries, where automation, robots, and digitalisation are predominant. This triggers a change in the profile of the worker, who needs to have high-skills, apply cognitive and creative abilities, and more often than not prove innovative and self-managing abilities, and the capacity of independent decision-making. This 'push' upwards means at the same time better jobs and higher-wages. It also means increased quality of educational systems, and improved opportunities for lifelong learning, demanding thus higher competitiveness from this system as well. At the same time, the polarisation –'pull' – takes place for those workers who are involved in the more 'routine activities' threatened with disappearance, or that have already vanished, or will vanish due to the evolutions of the 'technology-biased change'.

The individual and the labour force as whole are caught between these two poles of pressure, as other factors contribute to changing the employment structure as well. Among these, the most significant of the last decades are: (i) the globalised international trade; (ii) China's increasing role of powerful competitor on the international markets especially due to its competitiveness based on low-cost manufacturing (Autor and col., 2016); (iii) the mix low-costs and technology that means less demand for medium-skilled labour force; the increasing relevance of the services' sector.

The evolution of the employment rate for the period as of 2007 and up to 2016 contains some important information about the changes occurring in the EU-28(27) labour market, but also with respect to the occupational shifts.

In 2007, the employment rate at EU-level was of 83.9 % in EU-27 and of 83.8% in EU-28 for the labour force with tertiary educational level 5-8. The decreases were rather slow as in 2010, those with tertiary level still recorded employment rates of 82.4% both for EU-28 and EU-27. The employment rate continued to decrease, up to 2012 when it was only of 81.9% for EU-28(27) The pre-crisis employment rate for EU-28(27) was reached only in 2016, when the recorded employment rate was of 83.4% (Eurostat, LFS).

Nevertheless, the situation is considerably different at the level of the member-states. If we consider only the countries regarded as the

'engines' of the EU economy during the period of the crisis, we notice that throughout the period Germany recorded increases of the employment rate for those with tertiary education, from 85.4% in 2007, to 86.8% in 2010, and 87.7% in 2012, while in 2016, this constant increase continued to 88%. France had a development comparable with the one in Germany, as from an employment rate for tertiary educated individuals of 80% in 2007, and with constant increases for the considered years – 80.9% in 2010, 81.4% in 2012, and 82.5% in 2016 it confirmed the overall trend at the level of the EU-28(27) developed countries both with respect to employment, but also to the relevance of technological change. Most of the EU developed countries (OMS) continued to increase the numbers of the highly-educated employees, as reflected in the employment rate.

At the same time, more concern-raising is the situation in the NMS, where in the same period decreases were recorded for this segment of the labour force. For instance, Romania had an employment rate of tertiary educated individuals of 85.8% in 2007, and this rate decreased to about 83.4% in 2010, and 82.5% in 2012. Nevertheless, Romania in 2016 confirmed as well the general trend of reaching the pre-crisis level of the employment rate for tertiary level educated individuals, of 85.3%. As exemplified by Romania, not only NMS had a difficult period regarding the numbers of employees with tertiary education in the crisis period, but also most of the FCCMS like Ireland, Greece, Spain, etc., including here also the particular case of Italy- an Old Member-States.

The evolution of the employment rate for the educational attainment levels upper-secondary and post-secondary (ISCED 3-4) was rather comparable with the one of tertiary education attainment level, but with indicative slight differences, that show the relevance of the 'technological-bias': from 71.4% in EU-28 and 71.5% in EU-27 the employment rate decreased to 69.9 in EU-28(27) in 2010, and continued at to decrease by 0.2 pp in 2012. In 2016, the employment rate for this segment is comparable as well, with the level before the crisis, respectively 71.8%.

Germany increased the employment rate for this segment even during the crisis, from 73.3% in 2007, to 74.9% in 2010 and 76.8% in 2012, and in 2016 the employment rate is of 79.3% for this category of employees. However, France had a different trajectory, as the employment rate for this group of workers decreased from 72.5% in 2007 to 71% in 2010 and 69.9% in 2012, and the rate presented slight variations around this percentage, including in 2016, when it was of 69.6%, a decrease by 0.3 pp compared with 2012. Again, the most

considerable decreases in the employment rate were registered in some of the former convergence and cohesion member-states and new member-states. Sharpest decreases were registered in Greece, from 62.8% in 2007 to 51.4 % in 2012, (60.6% in 2010), and just an increase by 1.1 pp in 2016, to 52.5%. Romania's employment rate for individuals with upper-secondary and post-secondary, non-tertiary education remained rather constant throughout the period, the percentage varying from 65.1% in 2007 to 66.2% in 2016, after a decrease to 64.8% in 2010 and an increase to 65.1% in 2012.

Most hit during the crisis, were those with low education attainment level in the entire EU. At EU-28 level, the employment rate for this group was of 56.9% (EU-28) and 57% (EU-27). The decrease was sharp, 2010, when the employment rate was of 53.4% in the EU-28(27). The employment behaviour for this category was atypical in Germany, where the employment rate continued to increase from 55% in 2007 to 56.1% in 2010, 57.8% in 2012, and finally to 59% in 2016. Again France can be counted in the 'mainstream' group, as the employment rate decreased for this educational level from 57.3% in 2007, to 55% (2010) and 54.9% in 2010. For 2016, the employment rate continued to decrease to 50.5% for this category of employees. Again, Greece had one of the sharpest decreases, from 60.2% in 2007 to 48.1% in 2016. Romania registered also a decrease of the employment rate for this group of employees, from 53.1% in 2007 to 52.3% in 2016, however with a remarkable increase in the employment rate of those with low-education attainment level to 55.3% in 2010.

These developments raise some questions, for which traditional neoclassic approaches are insufficient. New aspects need to be considered from the role played by the state as employer in sectors like health, education, and public administration, to those related to the institutional arrangements on the European labour markets.

The policy dimension of the employer role of the state is relevant, as the state accounts for 15% to 35% of total employment in all EU member-states.11

Other important dimensions requiring institutional approaches along with the ones of orthodox economics are the increased participation of women in the labour force, the overall improved educational level of the workforce, the aim for and already increased intra-mobility of EU workers, and migration.

11 Employment shifts in the EU, 2011-2016, Eurofound 2017.

In particular, the educational dimension on the supply-side of labour can trigger changes in the behaviour on the demand-side, as the employers' job-creation and generation decisions are influenced by this development.

At the same time, migration is responsible for new types of job demand in the countries of destination in a context in which the intra-EU mobility increased and about 12% are working and have residence in another member-state, than their own. Actually, the increase in their numbers was quite rapid, from 5.7 million in 2008 to 7.3 million in 2016, but still their numbers are below those of the workers from non-EU countries.

Nevertheless, the recovery of the labour market in all member-states of the EU continues to be perceived less so at all levels. The reasons are more of an institutional nature: firstly, labour market risks are higher nowadays as automation and innovation change jobs at rapid paces. Secondly, labour productivity continues to lag, while the link between productivity and wages continues to be less strong than would be desirable (Boeri 2009).

The changing face of jobs and occupational structure shows that despite the fact that 8 million additional jobs were created in the post-2013 period on quintiles and countries, as compared with the period 2011-2013, uncertainty still prevails, while in the well-paid, top quintiles were created 2.3 million jobs. For each of the other quintiles the number of jobs created varied between 830.000 thousands and 1.6 million (Eurofound 2017).

Another finding shows that the employment growth was supported by the parallel recovery in consumption and the increasing demand for lower-level, non-tradable services during the most recent years (European Commission 2016).

The reasons are manifold, from the state as employer in public administration, health, and education, to the increased needs of the public and private care services addressing the growing elderly population requiring home-care and other forms of medical and social assistance.

The demographic change is the driver for increased demand for lower-paid interpersonal services, which will impact also on the costs and volume of formal occupation in these type of services (Oesch 2015).

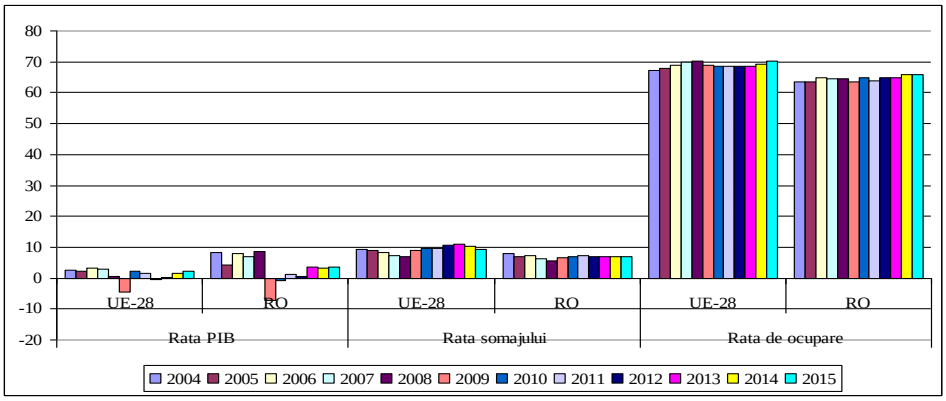
National State-of-Affairs Regarding Employment, Education and Innovation

The complex state-of-affairs at national level is rather complicated, as the employment rates remained rather high for a

transition country in the first post-accession period, and increasing demand for labour force, in particular at the level of the NUTS2 regions.

As all other countries in transition, Romania also registered the so-called 'transition unemployment' however, an analysis of the entire period of interest, from 2004 to 2015 shows that the employment rates remained rather high, and the unemployment rates rather low for the entire time, and comparable to the EU-28 employment rates (Fig. 1).

Fig. 1 Evolution of real GDP growth and of the employment and unemployment rates in Romania for the period 2004-2015



Data source: Eurostat statistics

Nevertheless, the disparities and asymmetries identified in the period mentioned-above continued also in the post-crisis period. The reasons vary from the structural change of the national economy, including here the weight of the industry sector, the increases of the services sector, and migration for labour abroad. Thus, when compared with the employment trends at European level, beyond the finding that the Romanian evolutions agree with these overall, reasons of concern and risk can be identified with the most concerning one in the health sector, where the deficit continues to be constant and slightly increasing, as employment in this sector is of only 4.65% from total employment.

Moreover, the post-crisis period highlighted vulnerabilities of the Romanian economy with impact on the labour market that were perpetuated from the pre-accession period to the present day: (i) an unsustainable growth model, dominated by consumption; (ii) considerable losses of working age population, as the country registers the second largest migration after Syria (!), by a yearly average increase rate of 7.3% after Syria (!) (average yearly increase by 13.1%

of the emigration rate in this conflict affected country) and before Poland (5.1%) (UN Migration Report, 2016).

If we compare the employment rates according to educational attainment levels, we notice that Romania lags behind with respect to tertiary educations (levels 5-8) where decreases were recorded in the period of the crisis with a low of 82.5% in 2012. This situation can be associated both with the constriction of the sectors requiring high-skills, and with the higher migration rate of people with tertiary education for better jobs and career advancement opportunities abroad. The upper-secondary and post-secondary trained personnel maintained a rather constant employment rate varying from 65.1 % (2007) to 66.2% in 2016.

These employment rates for tertiary and upper-secondary and post-secondary education attainment level are indicative for the 'technological-bias' employment in the country, but also for the still difficult situation of the education system that, after several reforms continues to lag much behind the skill- and competences demand of the market. Moreover, it contributes to the emergence of increasingly larger NEET generations in our country.

Same data reflects also the reasons for the falling unemployment, while Romania continues to lag far behind the target of 70% employment provided for by the Europe 2020 Strategy. The reasons are found in the demographic ageing of the population, and the continued high-rates of migration of skilled-workers.

The occupational shifts are captured in the way employment developed by sector up to the year 2016. The greatest increases of employment were in services, both tradable and non-tradable, while most losses were registered in low-skilled jobs in industry and agriculture.

At the same time, income inequality increases and is among the highest within the EU. This increase, recorded since the year 2012 to be even sharper, underpins that about 20% of the population has incomes eight times higher than the 20% poorest of the population.

This situation is compounded by Romania's regional disparities and the urban-rural divide increasing because of labour migration, internal mobility, but also because of demographic ageing.

This fact is reflected at the incomes' level as well, as the average rural income is about 67% of the income in urban areas, and against the EU average of 80%.(European Commission 2017).

The economic and social situation as briefly presented is the outcome of the delays in adjusting the institutional systems to the changed conditions on the labour market both at national level. The

most difficult issues to approach are measures for diminishing the inactivity rate at national level, the arrangements about working-time and labour contracts, so as to provide for more flexibility and provide options for both employers and employees. New institutional arrangements in this respect might be also an incentive for the increasing numbers of NEET youths, by encouraging and facilitating their insertion in the labour market.

Another negative influence in improving the outcomes of the labour market is the lack of correlation and difficult cooperation between the public and private system regarding common actions for setting-out directions and opportunities for increasing employment, with particular emphasis on vulnerable groups (women, youth, elderly, etc.).

These issues were identified also in the National Strategy for Labour Force Employment for the period 2014-2020. The Strategy addresses in particular the instiutional level by stipulating the need for improving the labour market operation by making required legislative alterations with respect to labour relations, collective bargaining, facilitating transitions from unemployment to employment, and activating new and better incentives based on active labour market policies and developing the institutional capacities of the National Employment Agency at regional and local level.

Another global objective provided for in the Strategy underpins the importance of finalising the reform of the educational system by including the option of pursuing dual educational paths, so as to encourage furthering education also after identifying a job.

The global objectives mentioned have immediate impact on the labour market on both medium- and long-term, and show that in particular institutional arrangements at country level need to be addres

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ADJUSTING VAT IN CASE OF INSOLVENCY PROCEDURES UNDER THE ROMANIAN FISCAL CODE AND ACCOUNTANCY LAW

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Abstract
The complexity of the Romanian fiscal legislation rises- up within our days even on the very difficult moments of any company. Fighting for living in case of insolvency has importance not only from creditors perspective but it puts into the light some accounting and fiscal interpretations or misunderstandings with a limited explanation by laws. Our article is trying to find out an accurate pattern for one of the most controversies of VAT area in case of the unpaid debts, when the insolvency procedures are beginning. We make a description of the importance provided by the special law of insolvency to financial documents proving the real value of creditors receivables and analyses how the fiscal law considers the economic diagnose for any suspended execution measures which should be supported by any in debt company. The idea developed throughout is a better understanding of the accounting and fiscal mixture with insolvency law as the financial indicators reflected in accountancy books are not anymore so important as creditors could decide about the value of some debts within the solvency procedure. Therefore, our article aims to present an appropriate opinion about how the fiscal interpretation could increase the company debts if VAT rules are not applied in a suitable way within the economic situation, walking in line with our life's reality.

Key words: *insolvency law, VAT adjustments, debts, creditors, financial indicators*

Classification JEL: M410

Introduction

Insolvency Law no. 85/2014 regulates the suspensive effect or the termination of the individual prosecution against the debtor throughout the insolvency proceedings, but the amount of the documented claim with the documents subsists to its full value, whether it is entered in the creditors' table or not. Therefore, the change in the value of a creditors' claim through an approved reorganization plan, according to the insolvency law procedure, does not totally or partially cancel the economic operation reflected in the documents proving it, but only suspends the collection of its value, depending of the success of the reorganization plan for the debtor company.

Thus, the monetary claims prior to the entry into the insolvency law procedure are subject to the suspension or, as the case may be, the cessation effect, an affirmation regulated by art. 75 (1) of the Insolvency Law no. 85/201412. The insolvency law individualizes the category of disadvantaged claims as follows: is considered to be that category of receivables for which the reorganization plan provides for at least one of the following changes for the receivables of the respective category:

1) a reduction in the amount of the claim and / or its accessories, to which the creditor is entitled under this law;

2) a reduction in guarantees or rescheduling of payments to the detriment of the creditor without his express consent.

Correlatively to the factual situations caused by the implementation of the Insolvency Law, we continue to analyze the special provisions contained in the Fiscal Code in order to correctly determine the limits of applicability to the economic operations, which we have described above.

[12] Art. 75. - (1) All judicial, extrajudicial or enforced enforcement actions for the realization of debts on the debtor's property shall be lawfully suspended as of the opening of the procedure. Recovery of their rights can only be made during insolvency proceedings, by filing claims for admission of claims. Their re-opening is possible only if the decision to open the procedure, the revocation of the opening of the procedure or the closure of the procedure under the conditions of art. 178. If the decision to open the proceedings is dissolved or, as the case may be revoked, judicial or extrajudicial actions for making debts on the debtor's assets may be re-routed and forced execution measures may be resumed. At the time of the final decision to open the proceedings, both judicial and extrajudicial, as well as suspended forced execution ceases.

The Fiscal code and the insolvency procedure

We consider that the provisions of the Romanian Fiscal Code distinguish between the rights and obligations of the suppliers (in this case the creditors) and those of the beneficiaries (in this case the debtors), both regarding the rules of application of the VAT mechanism and regarding the calculation of the corporation tax, if the value of the delivered goods or services cannot be cashed as a result of the bankruptcy of the beneficiary.

VAT adjustment obligation for the suppliers of goods and/or services

From VAT point of view, in the situations listed exhaustively, at art. 287 of the Fiscal Code, the suppliers of goods and / or service providers adjust their tax base after the delivery / delivery or after invoicing the delivery / delivery, even if the delivery has not been made, but the events stipulated in art. 287 of the Fiscal Code arise after invoicing and registration of the tax in the records of the taxable person.

To this end, suppliers / providers must issue invoices with the negative amounts, if the tax base is reduced or, as the case may be, without the minus sign, if the tax base is increased, which will also be passed on to the beneficiary. Considering that, according to art. 287 - Adjustment of the tax base, which provides at letter d) that: the tax base shall be reduced in the following situations: (...) d) If the value of the delivered goods or the services rendered cannot be cashed as a result of the bankruptcy of the beneficiary or following the implementation of a reorganization plan admitted and confirmed by A court judgment, whereby the creditor's claim is altered or removed. Adjustment is permitted starting with the date of the court decision confirming the reorganization plan, and in the case of the bankruptcy of the beneficiary, starting with the date of the court decision closing the procedure provided by the insolvency law, the decision remains final / final and irrevocable, as the case may be.

In a specific case, after the court decision is confirming the reorganization plan and this plan received sums related to debts modified or eliminated through the reorganization plan, the adjustment made shall be canceled corresponding to the respective amounts by the tax period in which they are collected. With the same perspective, the methodological norms for the application of this article provide that: "if the value of the delivered goods or the services rendered cannot be cashed as a result of the implementation of a reorganization plan admitted and confirmed by a court decision, the

creditor's claim is modified or removed, and the adjustment is permitted from the date of the court decision confirming the reorganization plan, if it occurred after January 1, 2016. (...) ".

As a consequence, our view is that VAT adjustment if, following the implementation of a reorganization plan admitted and confirmed by a court order, whereby the creditor's claim is changed, is an exclusive right of the creditor and Not an obligation of the beneficiary.

Thus, by an way of exception, from the general rule, the Creditor may exercise this right to adjust the VAT collected but limited (the adjustment is allowed from the date of the court decision confirming the reorganization plan, if it occurred after 1 January 2016) and on a temporary basis, respectively during the period of the reorganization plan (if after the court decision confirming the reorganization plan is received sums related to the debts altered or eliminated through the reorganization plan, the adjustment made corresponding to the respective amounts by the tax period in which they are cashed).

The general rule of art. 287, requires that for the adjustment operation, the suppliers are obliged to issue an invoice according to the provisions of art. 330 Correcting invoices. The obligation to issue an invoice results from the provisions of art. 330 Correcting Documents Paragraph (2) of the Fiscal Code specifying: (2) In the situations provided by art. 287 suppliers of goods and / or service providers shall issue invoices with minus values or, where appropriate, an indication that the values are negative when the taxable amount is reduced or, where appropriate, without the sign minus or without the indication that the respective values are negative, if the tax base is increased, which shall also be transmitted to the beneficiary, except for the situation provided in art. 287 lit. d). As it results from the text of the law, the invoice issued for a negative adjustment of the tax base is not transmitted to the beneficiary company-declared bankrupt (insolvency). We also specify that the adjustment of the value added tax base provided in art. 287 lit. d) of the Fiscal Code, is allowed for invoices issued within the prescription period stipulated in the Fiscal Procedure Code.

VAT adjustment obligation for the beneficiaries of goods or/and services

Considering that, from the VAT point of view, according to the provisions of art. 304 (1) lit. b) and art. 305(4) lit. e) of the Fiscal Code, the beneficiaries are obliged to adjust the right of deduction initially exercised only for the operations provided in art. 287 lit. a) - c)

and e) of the Fiscal Code. As a consequence, in our opinion, the above-mentioned legal provision stipulates that, only in the cases of art. 287 lit. a), b), c) and e), the beneficiaries have the obligation to adjust the VAT deducted initially, not in the case of 287 lit. d).

In order to understand the economic background of any factual situation, we consider that it is necessary to a priori conceptually make a delimitation, about the notion of the claim to which the Insolvency Law refers. The claimant, within the limits of the application of the Insolvency Law, is not defined or used in its broad meaning, the right of the creditor to require the debtor to give, to do or not to do anything, but in his narrow meaning, that of the claim of money. In this case, the starting point in our logical analysis is the assertion that only the amounts representing debts to the debtor before the opening of the procedure and the values of the guarantees for the cash receivables of those guarantees before the opening of the procedure, corresponding to the obligation to give, to do or not to do.

Thus, in a general sense, the holder of a claim, unpaid according to the documents resulting from it, if, for more or less objective reasons, does not subscribe to the borrower's creditor's mass, it is deprived of all the rights attaching to the creditor entitled to participate in the insolvency proceedings but not the right to collect his claim at full value. This procedural situation occurs when the non-payment of the claim puts the holder in the same position as the creditors with receivables written in the creditors' table, the passive subject of all the effects of the procedure, including, or especially, its sacrificial effects.

Research methodology

Our research intends to mirror how useful or not, are the accounting information provided by the debtors and creditors, for any interested persons to find a realistic way to survive in case of insolvency, in fact after the reorganization plan is approved for a company with Romanian residence. In this context our analysis aims to capture key aspects of the business in terms of economic and financial developments to interpret and recognize trends that can fit future evolution of company solvency on short time (less than 1 year). As a matter of fact will be analyzed the impact of an external event in the health company during for less than one month).

An empirical case studies

(i)We have a Romanian company under the insolvency proceedings, at the stage of implementing a judicial reorganization plan. The company has requested VAT reimbursement (including the

transactions generated by the business relationship with the creditors part of the approved list).

(ii) The creditors were registered at the creditor's table with some amounts corresponding to those in the company's accounts.

(iii) The General Meeting of Creditors approved for the judicial reorganization plan smaller amounts of about 25-30% of those registered at the credential table.

The debate of this article, in relation to this situation, is if the provisions of the Fiscal Code regarding the adjustment of the tax deducted from the invoices issued by the creditors for goods delivered and/or services rendered, but not paid at the moment of insolvency proceedings, are applicable for our studied company.

According to the current legislation, we consider that the judicial reorganization is the procedure that applies to the insolvency debtor, in order to increase his activity, for the benefit of the creditors, regardless of the enrollment at the creditor table. This assertion is supported by the special provisions of the Fiscal Code which do not require enrollment at the creditable mass as a condition for the exercise of the right to adjust the collected VAT, but only the existence of a final / definitive and irrevocable court decision, as the case may be.

As the reorganization procedure involves the drawing up, approval, confirmation, implementation and observance of a plan, called a reorganization plan, which may, without limitation, provide jointly or separately:

a) the operational and / or financial restructuring of the debtor;

b) corporate restructuring by modifying the share capital structure;

c) restriction of activity through the partial or total liquidation of the asset from the debtor's property,

And, according to art. 140 par. (1) of Law no. 85/2014: "When the sentence confirming a plan enters into force, the debtor's activity is properly reorganized; The claims and rights of creditors and other stakeholders are modified as planned. In case of bankruptcy, it will return to the situation established by the final table of all receivables against the debtor stipulated in art. 112 par. (1), decreasing the amounts paid during the reorganization plan ".

As a result, creditors retain their actions for the full amount of claims, against debtors' even if they voted for the reorganization plan.

This right to action for the full value of the claim also determines the permissive form of tax law which, at the discretion of

the creditor (to be understood here as the supplier of goods and / or services), by way of exception, for the exercise of the right to adjust the tax collected (even temporally limited - January 1, 2016).

From the point of view of the debtor-beneficiary, according to the provisions of art. 304 par. (1) lit. b) of the Fiscal Code, has the obligation to adjust the right of deduction initially exercised only for the operations stipulated in art. 287 lit. a) - c) and e) of the Fiscal Code, so in the case of 287 lit. d).

Conclusions

According to art. 287 of the Fiscal Code, the tax base shall be reduced if the value of the delivered goods or services cannot be cashed as a result of the bankruptcy of the beneficiary or following the implementation of a reorganization plan admitted and confirmed by a court decision, whereby the creditor's claim is changed or eliminated.

Adjustment is permitted starting with the date of the court decision confirming the reorganization plan, and in the case of the bankruptcy of the beneficiary, starting with the date of the court decision closing the procedure provided by the insolvency law, the decision remains final / final and irrevocable, as the case may be. If, after the court decision confirming the reorganization plan has been issued, sums are received for debts modified or eliminated through the reorganization plan, the adjustment made shall be canceled corresponding to the respective amounts by the VAT return at the level of the tax period in which they are collected.

Thus, limited to the provisions of the legislation in force in this case, in our opinion, during the judicial reorganization, respecting the certainty, liquidity and eligibility of the receivables evidenced by legal documents drawn up, for the unpaid amounts at the opening of the insolvency proceedings, any taxable person from VAT point of view, retains the right of deduction without incurring the obligation to adjust.

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LOCAL ECONOMIC DEVELOPMENT. SOME THEORETICAL PREMISES

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The role of regions in national economies has changed significantly over the last period as a result of globalization and structural adjustments, understanding this process being crucial to understanding regional economic analyzes and regional development planning.

The regional impact of recent economic and social changes has placed the development of national economies in a complex, uncertain and competitive world, which has led to fundamental changes in the structure of their economies, the development being profoundly differentiated, producing acute differences between winners and losers, rural areas suffer from a marked decline, with the specialization of the economy requiring protection to make products and services.

Regional analysis methods and tools are vital for both research and support for local policy makers in improving performance and to develop a strategic planning framework to position the region in a position to create and maintain competitive advantages.

The specificity of the subject of study of the regional economy differs significantly from the national economy, macroeconomic, differentiation which is found in highlighting the more interdependencies of the economic, social, ecological, cultural, i.e. elements, in regional spaces, than in the national or international spaces.

The degree of interdependence highlights two dimensions of research and configuration of regional relations, manly:

- ✓ interregional relations between distinct regions;
- ✓ intra-regional relations within the region.

The second category of relations highlights interdependencies between local areas and local economies, distinguishing between the

regional economy and the local economy (rural or urban), the latter addressing the specific problems of local development but also of the specific rural areas and specific urban areas.

The set of relationships, interdependencies and interactions that take place in the local, regional, urban and rural spaces between the participants in the production, commercial, consumer, financial, social, ecological, cultural, i.e. activities, forms the network within which the network is delineated economic, within this network, the dominant role of the communities in terms of network rationality.

In the demarcation of the strategies and policies of economic development, the region is a fundamental component, the spatial complements of the region being the area and the area, but between these terms there is a methodological delimitation.

The delimitation of the areas within the regions is done according to various criteria (economic, administrative, geographical, i.e.), there are no fully satisfactory methodologies, and compromise is necessary. One of the classic delimits highlights the following types of areas:

1. homogeneous areas, which are similar according to key criteria (income / inhabitant, degree of industrialization), in which case cohesion is assured by the similarities, the internal differentiations and the interregional interactions are not considered;
2. nodal (polarizing) zones, in which case the cohesion is ensured by the internal fluxes, the polarizing interdependencies around a dominant center of a node, forming a network of interdependencies;
3. institutionalized areas, in which case cohesion derives from an administrative framework and the implementation of specific local development policies and programs.

Taking into account the economic and social problems they face, three categories of problematic areas were delimited in Romania, manly:

- ✓ traditional underdeveloped areas (mainly geared to agriculture);
- ✓ areas in industrial decline (job cuts);
- ✓ fragile structural areas (one branch dependence).

Within the regions, the rural area, which, according to the definition of the European charter, is defined as the inner and coastal area, comprising the villages and small towns where most of the land is used for agriculture, forestry, mountain areas leisure, nature reserves, housing, crafts, services or industrial activities. The

definition highlights that rural space is more extensive than agricultural space, but their significance is different.

Sustainable local development implies the completion of a complex of legislative, organizational, economic, financial, social, cultural, i.e. activities. This will ensure the improvement of the material and spiritual situation of the population (now and in the future!) through the non-destructive capitalization of the resources of the spatial space.

Local development strategies, policies, programs and projects aim at objectives such as: reorganization of the territory; carrying out land improvement works, building and expanding the network of communication routes; conservation and regeneration of resources and preservation of ecological balance; landscaping and creating conditions for agro tourism; lifting the living and comfort of the population.

Theoretically, conceptually, local economic development has several characteristics, manly:

a) spatiality, that is, it is oriented "around man", encompassing it as an ever-expanding sphere, interwoven totally between man and nature, between man and his free spirit;

b) multidimensionality, that is, the variety of products, artifacts (goods, institutions, knowledge, i.e.) differentiated in a network, from interests and institutions to goods (economic) and behaviors;

c) temporality, the evolutionary evolution of local time development, both of the subject, of the attributes and of the phenomena and processes included;

d) the relativity, the existence of a diversity of relations between goods, between generators and consumers, suppliers or beneficiaries of these goods, relativity resulting in interdependencies of different natures, from causality to transitivity, often taking the form of univocal, biunivocal or multivocal flows; recite is the defining feature of a sustainable economy, the network of relationships having certain determinants that give it that status.

Operationally, pragmatic, the network is a composite assembly between different types of requirements, component objectives, network partners, compromises between different action logic within the network, often generating innovations.

The phenomenon of reintegration was determined by the amplification of the tertiary phenomena of the economy, especially at the local level, and by the emergence of information technology, in the new type of economy the added value having a predominantly intangible, non-material character, being created by economic actors

who have specialized expertise. The expression of these phenomena is the equalization of the influence potential of the involved subjects, which led to the democratization of the relations between them, triggering a rapprochement for the purpose of cooperation within symbiotic structures which, and favoring collaboration, do not exclude competition and conflicts.

There is a variety of links that go beyond mere vertical integration of technological systems, integration based especially on the existence of internal synergies, the new links relying mainly on external synergies resulting from the association of the competences and resources of economic and non-economic entities in order to Achieving objectives that cannot be achieved through the activity of individual economic subjects.

In the context of local economic development, the network is primarily a conceptual space and a configuration of connections of different natures, resulting from coagulation and interconnection of channels of communication and circulation of knowledge and information that generate well-profiled action structures.

The efficiency of the network, particularly decentralization, is strongly conditioned by the intrinsic capacity of network elements to behave and act autonomously through self-organization.

The degree of decentralization within the configuration networks depends on several conditions:

1. diminishing the need for unitary, hierarchical coordination through command decisions;
2. orientation of the planning of activities at the local level, by focusing on more specialized functions and activities,
3. adaptation of objectives and results to non-standardized, locally formulated norms;
4. developing skills and capabilities of self-organization, self-control and accountability.

Increasingly, networks become part of the strategic infrastructure, not only for business, but also for regions and communities, allowing them to operate successfully in the new economy.

The interaction of economic entities, organizations or firms with the environment is conditioned by the existence of differentiated proximity degrees that characterize relations between entities in a given space (area, locality, commune, city, county, and region). Proximity grades determine the benefits, whether higher or lower, resulting from the establishment of close links between the occupants of a particular space, the possible situations depending on the market

position of the tenants, their number, the share of each competitor, the existence of leading company's i.e.

There are different levels of proximity between economic actors, namely: local space proximity, social proximity, technological proximity, productive and commercial proximity, and national proximity.

Proximity relationships outline two ways of acting for entities, businesses the first is dominated by market and competition relations, having as main sanctions and rewards the choices of the clients;

▪ the second, dominated by partner relations, the ability to establish and develop relationships with the closest, closer partners, to manage externality, being an essential element of local and regional development strategies.

In this context, the phenomenon known as "agglomeration economies", also called external economies, which implies the competitive advantages of entities, resulting from the neighboring state and, implicitly, the interaction between them, is imposed.

In practice, foreign economies are materializing in a significant reduction in production costs, as they allow an efficient organization of the distribution of efforts between in-house and market-driven activities.

Elements that can influence the location of activities, various entrepreneurial entities are specific to the structure of the area: the proximity of urban agglomerations, the existence of vocational training structures, the development of services and infrastructure, i.e.

In the local space, partners can usually be defined in public, private and social, all of which contribute to the development of the area's competences heritage, but an essential link between them is the associative entities, being within the area, an associative network, an organizational - economic reality with a specific significance for the local development, with a specific significance for the dynamics of the area.

Established on a partnership basis, these associations aggregate organizations or firms of different or similar sizes, through association agreements, forming alliances in order to achieve common, complementary, according with the objectives for the development of development programs and projects.

Several different forms of networks support the economic development of the area, manly:

- ✓ the community, which creates the network for common, common, basic knowledge, and distributes information.

Common knowledge allows people to be better informed, better educated, and become more accountable in making decisions about private and public investment, production and trade;

- ✓ basic knowledge leads to the development of the second form of the network, which is important in economic development, the associative network involving learning and the ability to improve knowledge, production and development of industries.
- ✓ historically, the associative network linked to economic development has been formally structured where members have asked to participate in the network (professional organizations, chambers of commerce, service clubs, etc.), which play a significant role in supporting economic development, becoming Gradually more specialized, many of the associates being localized chainsaws or hierarchy.
- ✓ the globalization and revolution of information technology has fundamentally changed the meaning and role of associations, the networks of the new economy becoming more open, aspal and informal, information flows within networks becoming faster, circulating through complex radial structures. The new associative networks have both local and global features, and can be spatial and a-spatial.

Alliances are closely linked to networks, but constitute the tactical aspect of the network and involve relationships between two or more entities that have compatible business roles, the alliances becoming strategic when planning processes between the parties of the alliance are made to secure the most advantageous position.

Different types of alliance structures and networks play a key role in the local development process, delimiting strategic alliances that have also emerged in a zonal context, requiring a well-established network and enhanced organizational structures in the economy of the area, acting as a catalyst for growth, facilitating business development, an example of such alliances being twin cities, these alliances can help the economic development of the area.

A key element of the alliance is the catalyst, made up of people and organizations acting as information exchange agents, in the form of information packages, products, resources, etc. For alliances, these being the brains of the alliances, in the future, this role of catalyst within the areas will have the organizations centered on the economic development of the area.

Depending on the configuration of the alliance, strategic alliances are delineated into three types:

1. alliances based on complementarity between participants performing different activities, aiming at ensuring the complementarity of some operations in order to optimize them. These alliances are based on product sharing between partners, allowing partners to benefit from the potential complementarity.

2. integrative alliances when activities and assets are of the same nature, aiming to achieve economies of scale; the alliance usually consists of links upstream and downstream of the economic process, in particular, of production or investment. The engine of strategic integrative alliances is an activity, an objective that is the reason, object of the alliance, the partners remaining competitors upstream and downstream.

3. additive alliances, aiming at the joint realization of a final product, representing an alternative for merger, the consortium being substituted for the market partners. The Alliance carries out all the phases of the flow of activities and operations, being structured around a new society, in which some activities are jointly done, the other being distributed among partners.

In conclusion, there is a great interest in regional theories, which analyze and support the importance of institutions and different bodies in promoting territorial development. Together with the institutions, regional policies also have an important role, which, through the established objectives and the tools used, can affect both localization and regional development. In the study, predominantly are the theoretical and methodological aspects of local development, starting from some known economic and / or financial concepts.

The importance of such development models is both of a theoretical and practical nature, respectively an appropriate set of development models, which can be a basis for building a new development project, starting from the particularities of the environment in which it will be implemented.

The choice by local authorities of the models on which to base their medium and long-term development strategies must be a permanent concern in achieving performance.

A viable solution for generating community development and conducting a large-scale community-based process could be given by the implementation of several models within the same community; models that are being planned at the implementation stage become complementary and complement the process of community development at each community level.

Territorial development cannot be achieved without the direct contribution of SMEs. Small and medium-sized enterprises, by their nature, appear locally and carry out small-scale activities, being especially connected to local and regional markets. Only a small part of them are active at national level or manage to find a niche in the international market.

Between Romania's regions, there are persistent overall gaps in development that are reflected in business and entrepreneurship. The evaluation of indicators for SMEs reveals the existence of marked disparities between the eight development regions, the Bucharest-Ilfov region being detached with a superior level of performance.

As for the density of SMEs in Romania, compared to the average value in Romania (23 SMEs / 1000 inhabitants), there are large disparities in the eight development regions. The Bucharest-Ilfov region is at a long distance from the other regions with the highest density of SMEs, respectively 50.23 SMEs / 1000 inhabitants. Densities in the other regions are at half the value for Bucharest-Ilfov in the Northwest and Center regions or even one third for the North-East region (15.2 SMEs / 1000 inhabitants).

As for the regional specialization of SMEs, these (enterprises) are present in all sectors of the economy in most regions. However, some regions are distinguished by the preponderance of certain sectors, as in the case of the Bucharest-Ilfov region, which has a significant share of SMEs in services and of the North-West and Center regions with the best-defined industrial specialization profile.

In terms of regional labor force, the Bucharest-Ilfov region also has the largest share of SMEs (23%), which correlates with the number of firms or SME density.

In the other regions the number of employees in the SME ranges from a minimum of 7% for the South-West region to a maximum of 14% in the North-West region.

The territorial distribution of the new registrations made for the period January 1 - October 31, 2014, at the level of Romania, shows a significant posting of Bucharest to the rest of the counties, which registered a number of 15,629 registrations.

Small and Medium Enterprises in Romania face four major problems:

- ✓ a critical mass problem - is directly observable statistically, as the SME density per 1000 inhabitants in Romania is well below the European average. More specifically, if there are not enough companies, their contribution to the VAB / GDP cannot be significant either.

- ✓ problem of size - this emerges from the radiography of the sector, as there is a higher share than the regional level of small and very small firms, mostly in survival, with no major growth plans or managerial sophistication.
- ✓ problem of sectorial structure - comes from the small firms' appetite to trade and commercial intermediation. Romania, in addition to trade, needs well-established productive chains, with services to boost industrial potential.
- ✓ problem of resilience - it can be seen from the magnitude of the SME reaction to the crisis, as well as from the low survival rate of the newly created firms. Romanian companies appear rather opportunistically and by copying existing models rather than by robust planning that takes into account rigorous risk management and contingency plans.

By their characteristics, SMEs offer advantages in the economy that large firms do not offer (spin-off, start-up, share capital, lower entry and exit costs, lower risk of failure, i.e.), but employment or growth necessarily, but by the possibilities of enhancing the competitive advantages for a region or a country.

Future actions should therefore focus on a mix of complementary measures aimed at improving the business environment, financing needs and facilitating access to appropriate tools for SMEs, with a stronger emphasis on business innovation and the development of high qualifications and professional skills specialized.

Support for improving the business environment, by simplifying procedures and reducing administrative costs, must follow all the key moments of the entrepreneurial lifecycle (start-up, development, business transfer, bankruptcy or second chance) through legislative initiatives and tax, reducing the bureaucracy and the number of taxes and duties.

Education and training are key factors in acquiring the knowledge and attitudes necessary for business success, but we must not neglect the shortage of qualified human resources in the areas of specialized skills that companies in Romania are currently facing. Thus, the development of dual vocational education and the intensification of employee training programs in SMEs are mandatory requirements, given that only 24% of Romanian enterprises provide training for employees.

In our opinion, firms operating locally should be the engine of both balanced territorial development and sustainable development. In this respect, our researches focused on finding the mechanisms,

means, techniques and methods by which the asymmetry of the financial side of the economic development at the territorial level can be reduced, in accordance with the objectives of sustainable development at national.

Starting from a wealth of information from the literature, from the world experience in development at the territorial level and from the real economy of Romania, I came to the conclusion that at the local level, together with the public services, there are a series of activities that Are provided directly for the benefit of the community and are not in the charge of local public administration, such as local trade, transport of people, local tourism, etc. And which should be the core of activities to ensure the needs of communities at the local level. We have identified the economic areas in which businesses work for local communities and have analyzed their viability in terms of potential, results and performance over a 10-year period (2005-2014), in order to capture the main trends in their evolution and to respond To the question whether the services provided or the private assets offered are carried out in accordance with demand and performance conditions.

Paradoxically, it is precisely in our country that the administrative doctrine is the biggest obstacle to the territorial development of these types of firms. Although there is a favorable legislative framework that allows the provision of public services in private form, there are many cases when they are carried out by the local public administration but at a level predominantly determined by sources and financial resources below the appropriate level.

An alternative to the present state is the local economic development, a concept proposed by us and which attempts to solve the problems related to the interconnection of different localities (entities of size and with different economic and social structures) but which share a certain purpose. The public-private partnership thus acquires another dimension in the territorial context, the ultimate goal being to meet the needs of the population in that area. And, of course, within this partnership, it should be a central place for companies working in local communities to meet certain needs of the population (goods and services).

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COMPETITIVENESS DYNAMICS IN THE ROMANIAN REGIONS

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Abstract

Regional competitiveness is a topic of major interests among researchers and decision makers of the European Union and of the Member States, lately especially in connection with the economic and social cohesion and subsequent policies. Many attempts were done over years to define it, to identify its key factors and to assess it, with the overall aim of designing and implementing adequate policies to reduce the development gaps of the laggard and less prosperous regions of Europe.

Based on the reports on Regional Competitiveness Index, the paper presents the latest evolutions of the overall competitiveness of the Romanian regions and of its key factors. The findings are not hopeful: except for the Bucureşti-Ilfov Region, in the last two rankings of RCI (2013 and 2016), all the regions of Romania were ranked among the last in the European Union, and the Sud-Est Region was ranked penultimate among the EU regions for two periods in a row. Only the most developed regions of the country have slightly improved their ranking between 2013 and 2016: Centru, Bucureşti-Ilfov and Vest, while the others stagnated or worsened their rankings. In the case of competitiveness dimensions, most of the Romanian regions have improved their rankings regarding the efficiency dimension (except for Nord-Est and Sud Muntenia), while regarding the most dynamic component of RCI, namely the innovation dimension, most of the regions either stagnated, or worsened their rankings (Bucureşti-Ilfov substantially), except for two regions that have also improved their overall rankings (Centru and Vest). Such findings call not only for a re-examination of the way the regional policy is implemented in Romania, but also of its inter-connections with other policies enforced at national, regional/county and local levels, in order to create the

much necessary synergies for development where they are missing or to unlock the ones that are blocked.

Keywords: *regional competitiveness, regional* competitiveness index, competitiveness dimensions, Romanian regions

JEL Classification*: O18, R11, R19*

Introduction

Regional competitiveness is a topic of major interests among the decision makers of the European Union and of the Member States, lately especially in connection with the economic and social cohesion and subsequent policies. Increasing competitiveness of the laggard and less prosperous regions of Europe is key for achieving the goal of cohesion, especially in the context of the Monetary Union and of integration of the New Member States (Martin et al., 2004), which, in their turn, induced new theoretical approaches in economics that assign a fundamental place to the localization of economic activities and to the development of regional economies (Martin, 2005).

Moreover, the achievement of Europe 2020 goals regarding the smart, sustainable and inclusive growth has depended, depends and to a great extent will depend on the situation of the European regions, and according to the EU vision the competitive regions are those regions able to anticipate and successfully adapt to the domestic and foreign economic and social challenges (Lambregts et al., 2008).

1. Definition and Concept Issues

Nationally, competitiveness involves a ***territorial dimension***, the localization of competitive economic agents being usually concentrated within certain areas of the national territory. A study on the key factors of *regional competitiveness in Europe* (Martin *et al*., 2003) defines it as „the capability to produce goods and services that meet the market requirements, at the same time maintaining high and sustainable incomes" or, more generally, as "the capability of regions to generate relatively high incomes and employment when facing foreign competition". Two broad approaches of regional competitiveness were identified (Martin *et al*., 2003): i) as *aggregate of companies' competitiveness* – the basic assumption being that the interests of the companies and of the regions where they are located are always convergent, which is hard to support given the fact that the companies seek for productivity and profits, while regional competitiveness

requires also taking into account the employment, the institutional milieu and the market structure; ii) as *derived from the macroeconomic competitiveness* – the limits of such an approach concerning the fact that some laws that govern foreign trade do not apply at sub-national level (the exchange rate dynamics and the wage-price flexibility either do not work properly, or do not exist at regional level), while, conversely, the inter-regional migration of mobile production factors (capital and labor) may turn into a real threat for the regions (Chilian, 2013).

However, many other studies consider as unrealistic such an approach of regional competitiveness, since the regions are neither mere aggregations of companies, nor lower scale models of national competitiveness (Gardiner *et al*., 2004). In this respect, Camagni (2002) argues that regions compete one against each other on the basis of *absolute advantage* rather than on that of comparative advantage, and that a region has an absolute competitive advantage when it also has technological, social, institutional and infrastructure assets external to the companies, but of which they benefit from, and which confers high productivity to the respective region.

Another way to define regional competitiveness integrated different definitions of competitiveness with the concept of *sustainability*, within the polycentric vision provided by the Spatial Development European Program, elaborated in 1999 (Prezioso, 2008). Closely connected to this aspect is the definition of regional competitiveness proposed by the *EU Regional Competitiveness Index 2013*, which integrates the perspective of both the companies and the persons operating/living in a region, balancing the goals of business success with those of personal well-being: "*regional competitiveness is the ability of a region to offer an attractive and sustainable environment for firms and residents to live and work*", sustainability being the capability of a region to provide an attractive environment, both on long and on short term (Dijkstra *et al*., 2011; Annoni and Dijsktra, 2013). In this way, it responds to the discussion that gross domestic product (GDP) is insufficient by itself and should be complemented by a broader range of measures (Annoni *et al*., 2016).

2. Assessment of Regional Competitiveness. Rankings of the Romanian Regions among the European Union Regions

Because of its complexity and because of its peculiarities, regional competitiveness raises significant problems regarding assessment. Two of the main questions that must be answered when assessing territorial competitiveness are: 1) how can it be measured?

and 2) by what means it may be improved? The answers to such questions leads to building up different systems of indicators and models to assess the regional competitiveness itself, as well as the inter-connections among indicators and/or models.

In order to answer these questions, in the European Union it was elaborated ***Regional Competitiveness Index (RCI)*** for the NUTS-2 regions, based on the methodology used by the World Economic Forum, which publishes yearly the Global Competitiveness Report. This index has 11 pillars and 79 de indicators[13] organized by three dimensions (*basic competences*, *efficiency factors* and *innovation factors*), covering a broader range of factors than the purely economic aspects. The pillars of RCI are the following (European Union, 2010; Annoni and Dijsktra, 2013): *basic competences*: i1) quality of institutions, i2) macroeconomic stability, i3) infrastructure, i4) health, i5) quality of primary and secondary education; *efficiency factors*: ii1) higher education and lifelong learning, ii2) labor market efficiency, ii3) market size; *innovation factors*: iii1) technological readiness, iii2) business sophistication, and iii3) innovation.

The three RCI dimensions – Basic, Efficiency and Innovation – are linked. The i1)-i5) pillars are more important for the less developed regions, while the iii1)-iii3) pillars for the more advanced regions (especially for those with a very high development level), but also for the regions in transition from a lower to a higher development level. A region with a good performance in the Innovation group is expected to have a good performance in the Basic and Efficiency groups as they are instrumental in increasing levels of competitiveness. In this sense, Basic and Efficiency aspects can be seen as necessary conditions for good levels in Innovation aspects. Conversely, regions with poor or insufficient levels in the Basic group cannot be expected to perform well in the other two groups. It is assumed that as regions move along the development path, their socio-economic conditions change and different determinants become more and more important for competitiveness. As a result, improving the competitiveness of more developed regions will require other priorities than for a less-developed region (Annoni and Dijkstra, 2013; Annoni *et al*., 2016).

This is reflected by a weighting system that takes into account the stage of development. In the 2013 and 2016 editions of the RCI, the EU regions were divided into five development stages based on

[13] The 2016 edition; the 2013 edition has included 73 indicators, and the 2010 edition included 69 indicators.

their average GDP per head in purchasing power standard (PPS) expressed as an index (EU-28 = 100). In more than 70% of the cases, the development stage remained unchanged from one period to the other, while about 8% of the regions improved their development stage (from one class to the one immediately above it - regions from Austria, the Czech Republic, Germany, Poland, Romania and Slovakia – Annoni *et al*., 2016).

Comparing the RCI over time is complicated because each edition of the index incorporates improvements and slight modifications, which do not affect the overall structure of the index, but they limit the possibilities to measure change over time (new indicators became available at the regional level, other indicators are not updated or no longer fit the statistical framework of the index, methodological improvements, and changes in the NUTS regions). Nevertheless, the method has not changed substantially and there is a high degree of continuity in the indicator list. However, the changes in a region's ranking over time may not be always meaningful, because the rankings are based solely on the sequence of the scores (the ordinal properties) and do not take into account the actual differences between scores (Annoni *et al*., 2016). In most of the EU countries (Austria, Bulgaria, Czech Republic, Denmark, Spain, Finland, Hungary, Poland, Portugal, Romania, Sweden and Slovakia), the regional scores were quite stable from 2010 to 2016.

In the last two rankings of RCI (2013 and 2016), all the regions of Romania, except for the București-Ilfov Region, were ranked among the last in the European Union (ranks higher than 240, from among 262/263 rankings – Appendices 1 and 2), and the Sud-Est Region was ranked penultimate among the EU regions for two periods in a row. Considering the above-mentioned observation regarding the meaning of ranking evolution, we must however say that three regions of Romania have slightly improved their ranking between 2013 and 2016: Centru, București-Ilfov and Vest, which happen to be the most developed regions of the country. The others have stagnated on very low rankings, or even worsened their rankings a little bit (Sud-Est, Sud Muntenia and Sud-Vest Oltenia). As compared to the other New Member States (NMS) Romania fares slightly worse, while most of the other NMS saw improvements in their regional competitiveness.

In the case of *competitiveness dimensions*, most of the Romanian regions have improved their rankings regarding the *efficiency dimension* (except for Nord-Est and Sud Muntenia), while regarding the most dynamic component of RCI, namely the *innovation dimension*, most of the regions either stagnated, or worsened their

rankings (Bucureşti-Ilfov substantially), except for two regions that have also improved their overall rankings (Centru and Vest). As regards the main groups of indicators of the three dimensions, the evolutions were very different and divergent among indicators and regions. Thus, from among the *Basic Competences* indicators all the Romanian regions worsened their rankings regarding *infrastructure*, four regions regarding the *institutions* (Nord-Vest, Sud-Est, Sud-Vest Oltenia and Vest), and three regions regarding *health* (Nord-Est, Sud-Est and Sud-Vest Oltenia). From among the *Efficiency* indicators, all the Romanian regions improved their rankings regarding the *market size*, all but one (Centru) worsened their rankings regarding *labor market efficiency*, and five regions worsened their rankings regarding *higher education and lifelong learning* (Centru, Nord-Est, Sud-Est, Sud Muntenia and Bucureşti-Ilfov). Finally, from among the *Innovation* indicators, all regions but one (Sud Muntenia) improved their rankings regarding *technological readiness* (Bucureşti-Ilfov and Vest quite substantially), all the regions have worsened their rankings regarding *business sophistication* indicators (especially Bucureşti-Ilfov, but also Centru and Sud-Est), and only a single region (Vest) has really slightly improved its ranking regarding innovation indicators, while in the case of all the other regions the variations in rankings were minor.

The gap between the capital region and other regions is particularly wide in Romania (but similar to Greece, Slovakia, Bulgaria and France, countries which are also characterized by a high level of variability within the country, mostly due to the outperforming capital). A big gap between the capital region and the rest of the country is generally a reason for concern as it puts substantial pressure on the capital region while it may leave some of the resources in other regions underutilized (Annoni *et al*., 2016). At the same time, one may see that the Bucureşti-Ilfov Region (the most developed region of Romania) is surrounded by regions with much lower rankings (Sud Muntenia, Sud-Est and Sud-Vest Oltenia), revealing concentration of the competitiveness factors and limited "competitiveness spillover". This is due both to the condition of transport infrastructure, and (mostly) to the high differences in the sectoral structure and dynamics, in business evolution and in innovation propensity between the Bucureşti-Ilfov Region and its neighbors. Moreover, the Bucureşti-Ilfov Region is already included in the group of regions in the fifth stage of development (innovation-induced economy), unlike the rest of the Romanian regions, which are still included in the second group of development stage (transition

towards an efficiency-induced economy – the Vest Region) or even in the first stage of development (basic conditions-induced economy – the rest of the Romanian regions).

The above-presented findings are not hopeful for Romania on short and medium term. In our opinion, they call not only for a re-examination of the way the regional policy is implemented in Romania, but also of its inter-connections with other policies enforced at national, regional/county and local levels, in order to create the much necessary synergies for development where they are missing or to unlock the ones that are blocked. Not only the EU, but also Romania has different development and growth speeds, and specific policies should be designed and implemented to address such a condition. Insofar, the results of the attempts to harmonize the internal different growth speeds and paths of regions/counties and to reduce the development gaps between the more and the less advanced ones were modest.

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Country	Region Code	Region Name	Basic Competences Dimension	Efficiency Dimension	Innovation Dimension	RCI 2013	Basic Competences Dimension	Efficiency Dimension	Innovation Dimension	RCI 2016
Bulgaria	BG31	Severozapaden	254	259	255	262	258	248	259	**258**
Bulgaria	BG32	Severen tsentralen	252	237	252	246	242	235	255	**245**
Bulgaria	BG33	Severoiztochen	251	242	247	247	237	225	253	**238**
Bulgaria	BG34	Yugoiztochen	260	244	257	259	247	241	258	**253**
Bulgaria	BG41	Yugozapaden	237	189	158	208	241	166	179	**207**
Bulgaria	BG42	Yuzhen tsentralen	243	245	256	248	239	228	256	**243**

Appendix 1. The Regional Competitiveness Index (RCI) – Ranks, the EU-15 Countries, 2013 and 2016

Czech Republic	CZ00	Praha + Střední Čechy	147	91	74	96	146	93	62	102
Czech Republic	CZ03	Jihozápad	170	163	185	166	170	170	165	166
Czech Republic	CZ04	Severozápad	187	175	199	180	194	197	190	189
Czech Republic	CZ05	Severovýchod	161	157	182	164	147	162	161	**159**
Czech Republic	CZ06	Jihovýchod	154	178	163	168	156	153	144	**151**
Czech Republic	CZ07	Střední Morava	185	179	201	179	159	171	170	**164**
Czech Republic	CZ08	Moravskoslezsko	181	170	208	176	177	160	176	**167**
Estonia	EE00	Eesti	73	195	132	148	81	162	144	**141**
Cyprus	CY00	Κύπρος / Kıbrıs	176	162	160	163	232	162	166	184
Croatia	HR03	Jadranska Hrvatska	229	226	190	225	228	215	196	**222**
Croatia	HR04	Kontinentalna Hrvatska	227	214	184	213	228	213	193	220
Latvia	LV00	Latvija	230	223	198	226	217	193	174	**191**
Lithuania	LT00	Lietuva	235	205	195	224	227	167	198	**194**
Hungary	HU10	Közép-Magyarország	214	153	78	144	223	145	110	152
Hungary	HU21	Közép-Dunántúl	223	184	204	192	226	184	207	205
Hungary	HU22	Nyugat-Dunántúl	216	180	213	189	224	190	206	207
Hungary	HU23	Dél-Dunántúl	233	213	191	219	234	215	218	227
Hungary	HU31	Észak-Magyarország	231	208	212	218	236	223	225	231
Hungary	HU32	Észak-Alföld	234	217	227	231	233	224	237	232
Hungary	HU33	Dél-Alföld	232	207	218	220	235	202	223	224
Malta	MT00	Malta	153	231	117	193	201	213	141	**187**
Poland	PL11	Łódzkie	202	191	221	197	205	174	221	**181**
Poland	PL12	Mazowieckie	189	134	147	147	186	122	164	150
Poland	PL21	Małopolskie	183	186	203	184	170	155	211	**171**
Poland	PL22	Śląskie	188	164	215	175	185	149	219	**170**
Poland	PL31	Lubelskie	205	200	237	204	208	189	239	**197**
Poland	PL32	Podkarpackie	195	215	242	214	197	205	242	**204**
Poland	PL33	Świętokrzyskie	208	201	246	212	202	184	246	**194**
Poland	PL34	Podlaskie	207	202	243	211	196	215	241	211
Poland	PL41	Wielkopolskie	199	204	234	209	188	184	232	**190**
Poland	PL42	Zachodniopomorskie	201	206	220	207	198	195	228	**198**
Poland	PL43	Lubuskie	204	203	232	206	199	199	232	**202**
Poland	PL51	Dolnośląskie	206	185	209	190	205	171	200	**177**
Poland	PL52	Opolskie	186	197	231	196	187	209	232	205
Poland	PL61	Kujawsko-Pomorskie	210	211	233	215	200	205	244	**211**
Poland	PL62	Warmińsko-Mazurskie	211	233	236	230	202	212	243	**215**
Poland	PL63	Pomorskie	197	196	206	194	190	176	211	**179**
Romania	**RO11**	**Nord-Vest**	255	221	253	241	256	**220**	254	241
Romania	**RO12**	**Centru**	256	241	258	255	**250**	**231**	**256**	**246**

Romania	**RO21**	**Nord-Est**	259	229	262	251	261	229	262	251
Romania	**RO22**	**Sud-Est**	261	251	260	261	263	**250**	261	262
Romania	**RO31**	**Sud - Muntenia**	258	234	261	252	**252**	237	**260**	254
Romania	**RO32**	**Bucureşti - Ilfov**	250	113	143	165	**238**	**112**	159	**161**
Romania	**RO41**	**Sud-Vest Oltenia**	257	240	259	254	258	**233**	263	255
Romania	**RO42**	**Vest**	262	222	251	242	**257**	**221**	**247**	**240**
Slovenia	SI01	Vzhodna Slovenija	152	144	169	155	137	162	166	157
Slovenia	SI02	Zahodna Slovenija	143	104	96	112	136	113	80	113
Slovakia	SK01	Bratislavský kraj	167	69	32	78	210	53	58	96
Slovakia	SK02	Západné Slovensko	203	190	205	191	222	182	204	196
Slovakia	SK03	Stredné Slovensko	222	210	210	216	225	199	190	**211**
Slovakia	SK04	Východné Slovensko	228	230	216	229	228	219	205	**225**

Legend:

Rank 1-10

Rank 11-50

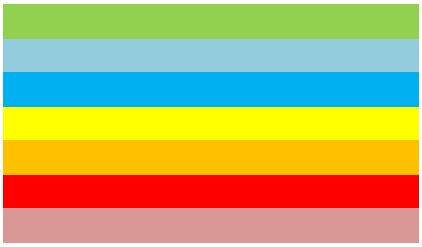
Rank 51-100

Rank 101-150

Rank 151-200

Rank 201-250

Rank above 250



Note: Data in bold show better ranking in 2016 as compared to 2013.
Source: Authors' computations based on data from *EU Regional Competitiveness Index 2013*, 2016, JRC Scientific and Policy Reports, European Commission, DG for Regional and Urban Policy, 2013 and 2016.

Appendix 2. Competitiveness Ranking of the Romanian Regions, RCI 2013 and 2016, Dimensions and Indicators

Region Code	**Region Name**	**Basic Competences Dimension**					
		Institutions	**Macroeconomic stability - country**	**Infrastructure**	**Health**	**Basic Education**	**Total Basic Competences**
RO11	**Nord-Vest**	245/**254**	15/15	233/**241**	251/248	26/26	255/**256**
RO12	**Centru**	250/237	15/15	223/**232**	247/247	26/26	256/250
RO21	**Nord-Est**	257/255	15/15	237/**242**	249/**255**	26/26	259/***261***
RO22	**Sud-Est**	256/**258**	15/15	238/**244**	256/**260**	26/26	*261*/***263***
RO31	**Sud - Muntenia**	253/252	15/15	187/**203**	254/252	26/26	258/252
RO32	**Bucureşti - Ilfov**	262/261	15/15	143/**175**	223/216	26/26	250/238
RO41	**Sud-Vest Oltenia**	251/**255**	15/15	246/**247**	245/**250**	26/26	257/**258**
RO42	**Vest**	258/**253**	15/15	221/**232**	255/252	26/26	*262*/257
Total positions 2013/2016		262/263	28/28	262/263	262/263	26/28	262/263
		Efficiency Dimension					
		Higher Education and Lifelong Learning	Labor Market Efficiency	Market Size	**Total Efficiency**		

RO11	**Nord-Vest**	246/245	136/**144**	250/241	221/220		
RO12	**Centru**	243/**252**	223/209	247/234	241/**231**		
RO21	**Nord-Est**	248/**255**	154/**173**	254/251	229/229		
RO22	**Sud-Est**	254/**257**	226/**234**	252/244	251/***262***		
RO31	**Sud - Muntenia**	249/**258**	212/**222**	218/207	234/**237**		
RO32	**Bucureşti - Ilfov**	121/**131**	87/**107**	115/73	113/112		
RO41	**Sud-Vest Oltenia**	252/248	201/**213**	248/247	240/233		
RO42	**Vest**	239/235	164/**181**	253/225	222/221		
Total positions 2013/2016		262/263	262/263	261/263	262/263		
		Innovation Dimension					
		Technological Readiness	Business Sophistication	Innovation	**Total Innovation**	**RCI 2013/2016**	**Development Stage**
		Total					
RO11	**Nord-Vest**	255/247	254/**259**	222/**251**	253/**254**	241/241	1/1
RO12	**Centru**	258/254	248/**257**	252/248	258/256	255/246	1/2
RO21	**Nord-Est**	262/258	255/**258**	259/***262***	*262*/*262*	251/251	1/1
RO22	**Sud-Est**	261/256	253/***261***	*262*/*262*	260/***261***	*261*/***262***	1/1
RO31	**Sud - Muntenia**	254/**257**	259/***262***	260/259	*261*/260	252/**254**	1/1
RO32	**Bucureşti - Ilfov**	231/201	77/**135**	45/**89**	143/**159**	165/161	4/5
RO41	**Sud-Vest Oltenia**	257/255	258/***263***	240/***261***	259/***263***	254/**255**	1/1
RO42	**Vest**	253/236	251/**256**	191/**207**	251/247	242/240	2/2
Total positions 2013/2016		262/263	261/263	262/263	262/263	262/263	

Note: Data in bold show lower 2016 ranking as compared to 2013 ranking; data in italics show the lowest three rankings among the EU regions.

Source: Information from *EU Regional Competitiveness Index 2013, 2016*, JRC Scientific and Policy Reports, European Commission, DG for Regional and Urban Policy, 2013 and 2016.

CONCEPTUAL DELIMITATIONS AND REGULATION ON THE PROFESSIONAL JUDGMENT IN ACCOUNTING

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Abstract:
The present article addresses the professional judgment both conceptually and in terms of regulations. Philosophical approach of reasoning has been justified since Antiquity and the literature reviews help conceptualizing professional judgment. The article highlights the situations in which the main national and international regulations in the field of accounting recommend the exercise of professional judgment. At the same time, they specify the frequency of both implicit and explicit references to the professional judgment concept in the regulations issued by the supervisory institutions of the accounting profession. In the last part of this paper we summarize some essential aspects regarding the judgment of the accounting expert and of the financial auditor, too.

Key words: *professional judgment, national regulations, international regulations, accounting profession.*

JEL Classification: *M41*

1. Judgment – the concept of the philosophical vision

In the quest for knowledge, a number of philosophers have been preoccupied with judgment, thus contributing to the development of the spectrum of judgment.

David Ross brings us to the forefront the Aristotelian vision on reasoning, which has been lifted to the absolute rank by the philosopher of Ancient Greece. Aristotle states that reason is represented as the most authoritative element within human beings, what they themselves truly are; what it is that gives satisfaction to humans. Aristotle also divides reason into two elements: passive and active reason. With regards to passive reason,

we find out that it represents the act of understanding, while active reasoning enables passive reasoning to move from the potential of knowledge to the present of knowledge [Ross, 1998]. Reason is the most systematic thing in the world, which amplifies and establishes the primordial place occupied by reason at the level of the entire existence [Descartes, 1990].

From a Kantian perspective, reason is the main source of formation of knowledge principles a priori [Kant, 2009], while in the Paschal philosophical vision [Lazăr, 1991], reason is not inscribed in the very being of the man: it is the ultimate determination of its value.

2. The Methodology of Research

The main objective of our material is to highlight the importance of the professional judgment in the accounting profession. In order to achieve the objective, we have tried to conceptualize the notions of ”judgment” and ”professional judgment” using as a research method the study of specialized literature and of the legislation in the field regarding the ”professional judgment” when it comes to the accounting profession. As a result of information centralization, we have applied as a research method the synthesis, thus we have pointed out some situations when the exercise of professional judgment is recommended.

3. Conceptual development of the expression “professional judgment”

The conceptualization of the term of professional judgment puts us in front of a collocation difficult to solve, which is addressed in the multi-professional environment.

In generic terms, reason is that logical chain of judgments which lead to a series of arguments and findings [www.dexonline.ro], and the notion of professional judgment implies applying the knowledge and the experience gained as a result of relevant training relevant [Ivan, 2016].

Professional judgment is that concept which is to be found, to a larger or smaller extent, in the application of accrual accountability as well as in the assessment of the continuity of the activity, thus the proper application of the accounting regulations for the purpose of exact representation of the economic situation falls under the responsibility of the account expert. The use of professional judgment in the accounting area, in a consistent manner, is considered to be primary, thus eliminating the possibilities to reach erroneous conclusions [Feleagă și Feleagă, 2007]. Professional judgment is considered a cornerstone of the accounting profession since the true image depends on the way it is utilized and the accuracy with which it is exercised [Cuzdriorean, 2013]. The application of a professional judgment based on well-defined principles provides the auditors the opportunity to thoroughly apply their experience, their acquired knowledge, while preventing work

running due to the existence of strict rules will only lead to the limitation of a diverse approach [Șpan, 2012].

4. Regulatory delimitations on the current state of knowledge and the use of professional judgment in the accounting field

Both at national and international levels, the field of accounting is regularized and within these regulations the exercise of professional reasoning is invoked, too. In the regulations issued by the Ministry of Public Finance [O.M.F.P. 1802/2014], **professional judgment** is approached about in:

- the determination of certain immobilizations which may contain both tangible and intangible immobilizations, using reasoning to decide which element is more significant;
- evaluating the degree of safety with regards to future economic benefits;
- recognizing a tangible immobilization;
- determining whether a real estate property is a real estate investment or not;
- exercising joint control.

International Financial Report Standards (IFRS) corroborated with International Accounting Standards (IAS) mention professional judgment both implicitly and explicitly in the regulations listed in table no. 4.1. [www.ifac.org].

Table. no. 4.1. Mentions of professional judgment in IFRS/IAS

IFRS/IAS	Mentions regarding professional judgment
IAS 1 *Presentation of financial statements*	mentions **professional judgment** ten times in determining the way of presenting the Annual Financial Statements, in the process of applying the accounting policies, in the assets recognition, in the choice for the depreciation method, in establishing the threshold of significance, in estimating the results and the financial statements.
IAS 16 *Tangible immobilizations*	mention **professional judgment** in determining the elements of tangible immobilizations;
IAS 29 *Financial reporting in hyperinflationary economies*	encourages **professional judgment** in order to reshape financial statements;
IAS36 *Assets depreciation*	encourages the application of **professional judgment** in the determination of cash-generating units;
IAS 40 *Real estate*	mention the **professional judgment** in order to

investments	determine whether a real estate property can be a real estate investment;
IFRS 7 *Financial instruments: disclosures*	mention **professional judgment** both in determining the fair value and the accounting value within the financial assets and financial liabilities, as well as in determining risk concentrations in financial instruments;
IFRS 9 *Financial instruments/ IAS 39 Financial instruments – recognition and measurement*	mention **professional judgment** in order to estimate the value of the depreciation loss and also to adjust the data so as a group of financial assets reflect current situations;
IFRS 11 *Joint ventures*	mention **professional judgment** in order to establish whether a joint commitment is a joint exploitation or a joint association;

5. Judgment in the accounting profession

The accounting profession is defined as the ensemble of activities which involve vast accounting knowledge, of the professionals who carry out these activities as well as of the professional bodies [Toma și Potdevin, 2008]

The necessity of the occurrence and the exercise of professional judgment in the accounting profession is due to the situations in which the regulations in the field or any other indications are not enough to solve the cases that any specialist has to face, thus appealing to professional judgment is encouraged.

Whereas the accounting profession is given the responsibility to protect the public interest, this has called for the necessity of some national and international professional bodies designed to regulate and supervise the professionals' activity. Thus, whether we talk about the institutions which regulate and supervise the activity of the accounting expert, such as the International Federation of Accounting or the Charted Accountants Board and of the Certified Accountants in Romania (CECCAR), whether we talk about the institution supervising the auditor's activity and this is the Chamber of Financial Auditors in Romania (CAFR) or we talk about the institution to regulate and oversee the activity of the tax consultant, that is the Chamber of Tax Consultants in Romania (CCFR), the concern for the exercise of professional judgment is unanimous.

When drawing table no. 5.1., we have used the implicit and explicit counting of the expression "professional judgment". Thus, after analyzing the data from the table, we have realized that the total number of the professional judgment term, both at national and international levels, is of at

least 272 times, which is a significant number, at the same time we have noticed that professional judgment has been mentioned the most in the International Audit Standards, and that is due to the diverse nature of the audit missions.

Table no. 5.1. Mentions of the professional judgment under the regulations of the accounting profession supervisory institutions

National and international regulations	Number of "professional judgment" entries
Board of Chartered Accountants and of CertifiedAccountants from Romania (CECCAR): -National Code of Ethics for Professional Accountants, CECCAR Publishing House, Bucharest, 2011.	13
International Ethics Standards Board for Accountants (IESBA): -Code of Ethics for Professional Accountants.	28
International Accounting Standards Board (IASB): International Financial Reporting Standards /International Accounting Standards.	28
Romanian Chamber of Financial Auditors (CAFR): -Act number 73/2006 from 20 /09/2006, published in the Official Gazette, Part I, No, 909 from 08/11/2006 on the approval procedures for the quality control of the financial auditor activity and related services; -The Norm from 19/01/2005 – updated version on 08/08/2007 regarding the period of practical professional training of the trainees in financial audits; -The Norm from 26/08/2011 published in the Official Gazette, Part I, No. 715 from 11/10/2011 regarding the tax expertise at the request of Courts, of criminal investigation bodies, of tax bodies or of other interested parties.	9
International Federation of Accountants (IFAC): International Standard on Auditing ISA.	186
Romanian Chamber of Tax Consultants (CCFR): -The Norm from 26/08/2011 published in the Official Gazette, Part I, No. 715 from 11/10/2011 regarding the tax expertise at the request of Courts, of criminal investigation bodies, of tax bodies or of other interested parties; - The Annex from 30/07/2007 published in the Official Gazette, Part I, No. 647 from 21/09/2007, encompassing the Code on ethical and professional conduct in the field of tax consulting.	8

Since the accounting profession collects more liberal professions, we shall approach several aspects regarding the judgment of the accounting expert and of the financial auditor. The accounting expert presents an important role in society and therefore it is necessary that he obeys the following basic principles [Toma și Potdevin, 2008]:

- integrity – to be honest and truthful in the activity carried out;

- objectiveness – to be impartial and to not allow the conflicts of interests or preconceptions to interfere with the professional activity;
- professional competence and prudence – to maintain the optimal level of knowledge and at the same time to act prudently;
- confidentiality – to respect confidentiality of the information acquired in the exercise of professional competence;
- professional behavior – to comply with the legislation and the relevant norms of the profession so as not to discredit the profession;
- respect towards technical and professional norms – to carry out the responsibilities and duties of the profession without ignoring the technical and professional standards;
- independence – implies the exercise of the profession in an objective and fair manner.

As you could notice, whether we talk about the application of national rules in maintaining and organizing accountancy or we talk about the compliance of the International Standards of Financial Reporting or of the International Standards on Accounting, it is desirable that the chartered accountant should exercise his professional reasoning.

For example, the exercise of professional judgment is required when purchasing a complex asset, where there are both buildings and land. Whereas the parts of an asset have a different life span, the chartered accountant will proceed to the separation of the two elements of the asset and implicitly to the depreciation of the buildings, the land not being depreciable as it is considered that its useful life is unlimited. At the same time, when recognizing immobilizations we can take as a good example of exercising the professional judgment the situation when the chartered accountant considers as adequate the aggregation of some elements which, if they were taken individually, they would be insignificant, such as the molds, the measuring and control tools or the like and which apply the criteria for recognizing their aggregate value.

It's also in immobilizations when, in order to establish whether a permanent capital**,** which incorporates both tangible and intangible assets, should be treated as tangible or intangible immobilizations, it is necessary to use judgment so as to assess which element is more significant than the other. To determine whether a real estate constitutes a real estate investment or not, we need professional judgment. Entities should develop criteria so as to exercise their professional judgment in a consistent manner, in accordance with the definition of the real estate investment.

The most important moment in using professional judgment may be the evaluation process. Evaluation involves judgments based on the latest credible information available. This has to be reviewed when the

circumstances change or as a result of new pieces of information or of a better experience.

Whether we refer to the financial or the internal auditor, the role of the professionals, controlled at national level by the Chamber of Auditors in Romania, is to verify and certify a real an complete reflection in accounting of the financial statements and of their true image; the ultimate goal is that to increase the degree of confidence of the users of the financial statements audited [Popa, Mihăilescu, Șpan și Stănescu, 2012]. The International Standards on Auditing [www.ifac.org], as main regulations in exercising the audit profession, mention the professional judgment both implicitly and explicitly in the regulations listed in table 5.2.

Table no. 5.2. Mentions of professional judgment in the International Standards on Auditing (ISA)

ISA	Mentions of professional judgment
ISA 200 The general objectives of the independent auditor and the development of an audit in accordance with the International Standards on Auditing	require the auditors to keep their **professional judgment** during the planning and deployment of an audit mission;
ISA 300 Planning of an audit on financial statements	invokes the use of **professional judgment** in establishing the threshold of significance and the test of the significance threshold as well as its interpretation.
ISA 315 Identification and assessment of the risks of distortion by understanding the entity and its environment	implies the exercise of **the professional judgment** in understanding the economic entity and its environment.
ISA 700 Forming an opinion and reporting on financial statements	invoke **professional judgment** in order to form an opinion on the audited financial reporting.

The repeated reference of the notion of professional judgment within the International Standards on Auditing reflects the importance granted to the exercise of reasoning in the audit missions and, at the same time, the particular situations that the financial auditor faces when exercising his/her profession.

6. Conclusions

Reason has been studied ever since before our Era, which can only confirm the importance of this notion, and the pedestal on which it has been situated by the great philosophers and thinkers of the world urges us to pay particular attention to judgment.

During the elaboration of this paper, we have ascertained the conceptualization of professional judgment in the specialized literature, which demonstrates us the increasingly stronger concerns with respect to this concept and, at the same time, shows us the importance of professional judgment, a "cornerstone" of the accounting profession.

The science of accountancy is no longer precise because the provision of information from the annual financial statements to help the decision-makers implies resorting to the professional judgment in accounting. The problem of professional judgment has an interdisciplinary character and it is met in various fields of activity, such as in Medicine, Law, Psychology, Accountancy etc. In the present study we have referred to the problem of professional judgment in the field of accounting. Professional judgment is a concept that the IFRS norms "deal with". Taking into account the harmonization of the Romanian accounting system with the international accounting standard, this concept has been taken over by the national regulations in the field.

It has been found that due to the important role that is played by the exercise of the accounting profession, namely that of protecting public interest, this has been regulated and supervised by institutions both at national and international levels. Thus, in the course of this paper, I have managed to ascertain the large number of implicit and explicit mentions of the concept of professional judgment that derive from ethical codes, from international standards and from the norms elaborated by the regulatory and supervisory institutions of the accounting profession. The fact that the expression of professional judgment has been approached in a significant number reveals the importance of the exercise of professional judgment, whether we refer to the accounting expert, to the tax analyst, to the auditor or to other accounting professions.

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RELATION BETWEEN HUMAN CAPITAL AND REGIONAL ECONOMIC DEVELOPMENT IN ROMANIA

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Abstract
This paper is focused on the relation between human capital and regional economic development in Romania, in order to highlight the effect of human capital on economic development at regional level. Using Eurostat data from 2000-2014, in a panel model, Pooled Last Squared with cross fixed effects and cross section fixed dummy variable, we show a positive and statistically significant correlation between GDP growth at macro regional level and human capital expressed as the R&D effort at national level, and the workforce employed in research activities as theoretically expected. From the positive values of the coefficients within the model we conclude that the developed macro regions enjoy a high level of returns, while investing in human capital.

Key words*: human capital, regional economic development, econometric methods*

JEL classification*: C23, O10, O40,*

Introduction

Human capital is defined as "the knowledge, skills, competence and other attributes embodied in individuals that are relevant to economic activity" (Hartog, 1999, p. 1). Human capital definition includes in opinion of Leeuwen (2007, p.40), "both the quantitative and the qualitative aspects of human capital, i.e. all 'educational' and 'experience' components". Dakhli and de Clercq, (2004) mention the three type of human capital: *firm specific human capital*, meaning the skill and knowledge valuable only for that specific firm; *industry specific human capital* meaning the knowledge derived from experience at specific industry level; *individual specific human capital* which include knowledge applicable at firm and industry level and include the academic level of education and vocational education, training at work, managerial and entrepreneurship experience.

There are many studies dealing with the relationship between economic development and human capital at national level and few regarding regional level. Some, show a significant impact on human capital or human capital accumulation (Temple, 1999) and income inequalities on economic growth (Persson and Tabellini, 1991, Galor and Moav., 2002, Ferh, 2015). Other recent studies of De La Fuente and Doménech (2000), Riley G. (2012) show the crucial impact of human capital on growth.

Diebolt and Hippe (2016, p.2) consider that the impact on human capital on regional level is also an important topic, although less analyzed than at the national level, and they aim to address the issue by linking it with the cross-country analyses and explanation of "why some regions are richer than others".

We focus our study at macro regional level, in order to highlight the regional differences that are very high in Romania.

The paper is divided into five parts: first, an introduction, second part deals with presenting literature review, the third focuses on the data and the model, and the fourth part presents the results of the model and finally the conclusions.

Literature review

Diebolt and Hippe (2016) highlight the development of economic literature regarding the relation between human capital and economic growth starting with the second part of 20th century, citing the work of Becker (1964), Arrow (1962) and Nelson and Phelps (1966) that underline the role human capital has in promoting technological change and increasing productivity of work. They also show the contribution of new theories, that include the human capital as factor into the production function in the tradition of the work of Mankiw el all (1992) with human capital augmented Solow model, endogenous model of Romer (1986) and Lucas (1988) and Unified growth models based on Galor and his collaborators. Using literacy and numeracy as proxy for human capital and GDP per capita as growth indicator, and NUTS region classifications of European Union, a scatter plot and regression models, they analyze the relationship of regional human capital, innovation and development and find that a rise in literacy by 1% in 1930, increased the regional development in 2008 by 0.85-1.05, depending on specification (Diebolt and Hippe , 2016, p.21). Also, they prove that historical human capital formation is important to explain the economic prosperities of European regions.

Dakhli, de Clercq (2004, p.123) based on a multi country study, show significant positive effects of human capital on the county level of output and economic growth. They consider that "the beneficial effect of human capital on economic development may be based partly on the extent to which resources, experience and educational background are embedded

in open interactions within a specific community or region" and that the "overall level of human capital across all individuals within a country positively impacts overall innovative activity".

Bas van Leeuwen (2007) present a short synthesis of the theoretical use of human capital in growth regressions, starting with the exogenous growth: the augmented Solow-Swan model in a Cobb-Douglas production function, and continuing with the new growth theory, from Romer (1986) model; Lucas 1988 sees the human capital as a factor of production in his model with two sectors and Romer 1990 model based on three sectors. Significant is the fact that the knowledge in the Romer 2000 definition "is not a part of the individual as is the case of Lucas' theory (1988); but the part of human capital that is not used directly in the sector producing final output is used to create new technologies. The level of human capital, H, thus has a positive effect on the growth of technology, A." (Bas van Leeuwen, 2007, p32-33). These highlight a different view of human capital in the two models. A typical Mincer macro growth regression in the panel the logarithm of GDP per capita depend on Education expressed as average years of education in country i, in year t. Significant is the fact that more modern studies reveal a higher effect of total factor productivity (TFP) on labor growth, compared with human capital which is in decline as effect on growth. He highlights some problems in the growth model with human capital. Firstly, is linked with the proxy used for measuring the human capital, taking into consideration the variety of indicators used as measure of human capital. Secondly, is how it includes human capital in the growth equation and, thirdly, the human capital accumulation depends on the country's education programs. Leeuwen revels that Petrakis and Stamatakis (2002, 518-519) prove that "each education level has a different effect on economic growth. In addition, they also find that the effect of each level of formal education on economic growth differs among countries of different 'economic maturity'. In short, the more developed a country is, the more important secondary and higher education become compared with primary education" (Bas van Leeuwen, 2007, p.43).

1. The data and the model

The diversity of indicators that could measure the human capital was a great challenge for our work. We tested a lot of indicators as proxy for human capital and decided to use in our model two indicators: the *total intramural R&D expenditure (GERD) as percent of GDP* which reveals the national effort to increase the stock of knowledge, new products and technologies and the *employees professional, scientific and technical activities; administrative and support service activities* (Izushi and Huggins, 2004, used in their study the number of R&D personnel from private sector).

Maskell and Malmberg (1999, p.110) argued that "a country's overall human capital is related to a proxy of the level of business expertise and skills relevant to innovation, i.e. the number of professionals active in R&D-related activities".

As growth indicator at regional level, we used the *gross domestic product* in million purchasing power standard.

Regions are coded according to the European Union's NUTS 2 classification. We decided to analyze all macro regions of Romania: *Macroregion one* (noted M1) that include the Nord Vest and Centru regions, *Macroregion two* (noted M2) that include the Nord Est and Sud Est regions; *Macroregion third* (noted M3) that include the Sud Muntenia and Bucharest and *Macroregion four* (noted M4) that include the Sud Est Oltenia and Vest.

The selected data indicators are as follows: the *Gross domestic product (GDP)* at current market prices by NUTS 2 regions in million purchasing power standard (PPS), noted as **GDP_PPS**; *the total intramural R&D expenditure (GERD) as percent of GDP* (noted as **RD_of_GDP**); *employed persons professional, scientific and technical activities; administrative and support service activities* in thousand persons, noted as **employed-R_D** and *disposable income of household net in euro per inhabitant* noted **Disp_inc_inhab**.

In our paper we used annual data during 2000-2014, from Eurostat: *GDP in PPS* (noted **GDP_PPS**) form table nama_10r_2gdp]; the *disposable income of household net in euro per inhabitant*, noted **Disp_inc_inhab**, from table [nama_10r_2hhinc], total intramural R&D expenditure (GERD) by sectors of performance and NUTS 2 regions , table [rd_e_gerdreg] for *total intramural R&D expenditure (GERD) as percent of GDP* noted as **RD_of _GDP**, and the Employment (thousand hours worked) by NUTS 2 regions, table [nama_10r_2emhrw] for the *employed persons professional, scientific and technical activities; administrative and support service activities*, noted as **employed _R_D.** All the data are stationary in first difference.

Table 1 shows results for statistical descriptions of the model variables: mean, median, the maximum and minimum value, standard deviation, skewness and kurtosis and J. Bera coefficient.

Table 1 Descriptive statistics of variable

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
GDP_PPS_M1	48466.6	53201.0	65101.0	29198.0	12668.4	-0.2	1.6	1.2
GDP_PPS_M2	46108.7	48236.0	62259.0	29281.0	11245.4	-0.1	1.7	1.0
GDP_PPS_M3	78752.2	82152.0	112590.0	41891.0	26225.6	-0.1	1.5	1.3

GDP_PPS_M4	37901.7	40595.0	50351.0	23027.0	10028.2	-0.3	1.5	1.3
NDISP_INC_ INHAB_M1	2638.5	3100.0	4500.0	1300.0	1009.6	0.0	2.0	0.6
NDISP_INC_ INHAB_M2	2153.8	2500.0	4000.0	1000.0	860.8	0.4	2.6	0.4
NDISP_INC_ NHAB_M3	3461.5	4200.0	5700.0	1400.0	1536.5	-0.2	1.5	1.2
NDISP_INC_ INHAB_M4	2669.2	3200.0	4700.0	1300.0	1049.1	0.1	2.1	0.5
R_D_OF_GDP _M1	0.2	0.2	0.3	0.1	0.1	0.0	2.0	0.5
R_D_OF_GDP _M2	0.2	0.2	0.3	0.1	0.0	0.3	2.1	0.6
R_D_OF_GDP _M3	0.8	0.8	1.0	0.7	0.1	0.5	3.6	0.8
R_D_OF_GDP _M4	0.2	0.2	0.3	0.2	0.0	0.7	1.9	1.5
EMPLOYED_R _D_M1	81892.9	77076.7	110951.1	57195.5	18946.4	0.2	1.6	1.2
EMPLOYED_R _D_M2	102380.3	104607.4	118243.5	82258.5	11465.6	-0.6	2.3	1.1
EMPLOYED_R _D_M3	252338.1	248955.8	330914.1	185687.9	46888.1	0.1	2.0	0.6
EMPLOYED_R _D_M4	87208.8	86538.6	105212.6	69400.1	11349.2	-0.2	2.0	0.6

Source: Author computation

The statistical analysis of the model reveals significant differences with a relative large standard deviation. Also, there is an asymmetry on the left side for the GDP_PPS series and NDISP_INC_INHAB_M3 and EMPLOYED_R_D_M2 and EMPLOYED_R_D_M3 data series, while Kurtosis increases from 1.5 (GDP_PPS M3 and EMPLOYED_R_D_M3) to a maximum of 3.6% (R_D_OF_GDP_M3).

We use a panel data technique that captures non-time varying unobservable and other unobservable factors. So, this might explain structural differences at the level of each individual macro region of Romania, regarding the level of human capital and economic growth. The period taking into consideration was from 2000 to 2014 and at the level of 4 macro regions; the fixed effects panel model has been selected for the scope of the research.

The results of the model

The model is Pooled Last Squared with cross fixed effects and cross section fixed dummy variable, where the independent variable was the GDP growth noted (**GDP_PPS**). The dependent variables, indicators measuring the *human capital*, were *total intramural R&D expenditure (GERD) as percent of GDP* noted as **RD_of _GDP**, and *employed persons professional, scientific and technical activities administrative and support service*

activities, noted as **employed _R_D.;** and other dependent variable was disposable income of household net in euro per inhabitant, noted **Disp_inc_inhab.** the results are presented in table 2

Table 2 The Pooled Last Squared model with cross fixed effects and cross section fixed dummy variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1585.092	722.1353	2.195007	0.0381
D(NDISP INC INHAB?(-3...	6.750605	2.561549	2.635361	0.0145
D(R D OF GDP?)	17061.10	7975.394	2.139217	0.0428
D(EMPLOYED_R_D?(-4))	0.112802	0.069782	1.616485	0.1191
Fixed Effects (Cross)				
M1--C	-651.2285			
M2--C	-224.1037			
M3--C	1855.505			
_M4--C	-980.1730			
Fixed Effects (Period)				
2005--C	-285.1317			
2006--C	4895.503			
2007--C	2587.814			
2008--C	-173.6503			
2009--C	-5907.657			
2010--C	-4220.008			
2011--C	-3016.659			
2012--C	5562.268			
2013--C	-2105.190			
2014--C	2662.710			

Source: Author computation

The tests for fixed effects indicate that the two statistics value (2.465047 and 10.743972) and the associated p-values do not reject the null hypothesis that the cross-section effects are redundant. The forms of statistics of the next two tests (for significance of the period dummies in the unrestricted model against restricted specification and for the joint significance of the all effects) strongly reject the null hypothesis of no period effects and the restricted model in which there is only a single intercept, as we can see in table 3.

Table 3 The redundant fixed effect test. Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.465047	(3,24)	0.0867
Cross-section Chi-square	10.743972	3	0.0132

Period F	4.671552	(9,24)	0.0012
Period Chi-square	40.490677	9	0.0000
Cross-Section/Period F	5.675284	(12,24)	0.0002
Cross-Section/Period Chi-square	53.794323	12	0.0000

Source: Author computation

As we expected, the model data shows a positive and statistically significant correlation between GDP growth at macro regional level and human capital expressed as the R&D effort at national level, and persons employed in research activities, as was expected from theories. In addition, based on established theories, we expected the positive correlation between GDP growth and disposable income of household. However, if we look at regional effects, there are significant differences between Romanian macro regions (with negative coefficients on transversal effects), except the macro region three that include Bucharest with a positive coefficient on transversal effects. A possible explanation is that Bucharest has a concentration of investment in high tech research area and a great human capital. Storper and Scott (2009) consider that the location of the firms, the movements of labor, and the skilled labor in cities could explain the difference in economic growth at regional level. Also, the model highlights time differences, one possible explanation being related with the 2007-2011 financial and economic crises, closely followed by sovereign-debt crisis, which had an impact on Romania economy.

Conclusions

Human capital is an important factor of economic growth at macro regions level in Romania. The disparities between the disposable incomes alter the positive effect of human capital in three of the macro regions, except the macro-region three which includes Bucharest.

From the positive values of the coefficients within the model we conclude that the developed macro regions record a high level of returns while investing in human capital. Also, the corresponding coefficients for other regions that are negative in value, shows a relative low level of return from investment in human capital, possibly linked with heavy losses in mature human capital, due to its migration to developed economies (Italy, France, Germany or Great Britain).

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THE ROLE OF HUMAN AND SOCIAL CAPITAL IN THE INSTITUTIONAL SUCCESS

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Abstract
In „Making Democraty Work: Civic Traditions in Modern Italy", Robert D. Putnam launched several questions: how do formal institutions influence politics and governance? Is there a possibility for these institutions to reform this practice so as to keep up with reform? REforming institutions requires for a functional requirement: the need for their performance. But what their performance depend on? Is it just their social, economic and cultural background? If we transfer democratic institutions is there a ossibility for them to develop in the new context just about the same way they did in the older one? What is citizen's role in this complex game? Could it be that the quality of democracy also depends on the citizens' quality? Would it be right to say that peoples have the governments they deserve?"[1]
At the beginning of 2017, the Edelman Trust Barometer highlighted a world wide deep decrease in four major institutions: government, business, mass media and NGOs. The trust discrepancies between well informed and leseer ifnormed audience get larger. The latter ones are more tempted to place a larger trust in Google browser than in the experts' analyses. In this context, looks like relevant totget back to theories questioning the role of human and social capital in the institutional success.

Key words: *civic commitment, human capital, social capital, trust, moral trust, social understanding, reciprocity norms, widened reciprocity norms, civic commitment networks, tolerance.*

JEL Classification*: Z1, Z13*

[1] Putnam, Robert D., 2001, *Making Democraty Work: Civic Traditions in Modern Italy*, Polirom publishing house, Iaşi, page 15

According to Alexis de Tocqueville, social context has ensured the fertile field for the development of American democracy, and has generated the typical American spirit, capable of building civic and political organizations with great ease: "Americans of all ages and statuses, with different personalities, unite incessantly. Not only inside commercial and industrial associations, to which all participate, but they also have other associations of the kind: religious, moral, serious, easy, very general and very particular, huge and small clusters… So the most democratic country in the world is the only country where the art of pursuing in common the object of common desires and the newest science has been applied to the largest number of things"[1]

Putnam's comments, according to which the individuals integrated in associations have more "subjective civic competence", are more cooperative and have greater responsibility and tolerance, is also clear from the series of surveys conducted in several European countries, but above all In Italy.

Putnam starts from a concrete reality. For 20 years (1950-1970), the Italian economy has seen an unprecedented development. This rhythm was not accompanied, however, in parallel by reforms within the governing policies, which remained blocked - according to him - in the old project of a subordination to centralizing concepts.

The subsequent institutional reform, closely supported by partisans of the regionalist current, based on greater decision-making flexibility and generous decentralizing ideas, has eventually amplified the discrepancy between the northern (rich) and southern (poor) of Italy.

Putnam attempts to explain in this way a political failure, launching himself into a huge effort to measure twelve institutional performance indicators. What were the results of this research?

First, as Tocqueville also pointed out, Putnam demonstrates that "a democratic government is strengthened, not weakened" by cohabitation with a "strong civil society." Where civic spirit is developed, governance is better. Where "rules" and "networks of civic engagement" are missing, the chances of developing collective action are minimal.

What is interesting, says Putnam, is not that a legal-type agreement supports the cooperation of individuals, but a moral one.

That is to say that without a voluntary association of individuals to the "rules of reciprocity", without a "civic commitment" there is a maximum potential to open the door to "clientelism", "contempt for law", "inefficient

1 Tocqueville, in Putnam, Robert D., 2001, Making Democraty Work: Civic Traditions in Modern Italy, Polirom publishing house, Iași, page 105

governance" and "economic stagnation. All these have been found as a result of the research conducted in most of the southern poor of Italy.

Secondly, the institutionalist assumption that "changing formal institutions can entail changing political practices" is being verified.

The reform has produced a change in the political life of all regions. A more moderate, tolerant and pragmatic political elite was observed throughout the peninsula, and in turn it was the generator of new legislative packages in favor of even more decentralization.[1]

Thirdly, perhaps the most important "lesson" learned from this research is that "institutional history is moving very slowly". The creation of a functioning institution "is measured in decades". And it is possible that the "rules of reciprocity", "networks of civic engagement" evolve certainly much slower.[2]

Putnam's research has, moreover, cut a response to a rather controversial question: institutional effectiveness is influenced by the social and historical context.

IT is not by chance that Putnam develops the concept of social capital in the research conducted to explain the North's performance. He argues that only the "rules of generalized reciprocity" and "civic engagement networks" are those that allow for "effective coordination." "Inoculated and sustained by modeling, socializing, but also by sanctions, social norms transfer the control of individual action to others by virtue of the fact that it has consequences for others".[3]

But what is very interesting, especially in the current global context, is that socially-based rules "proliferate" aș they "lower transaction costs" and foster "cooperation."

Putnam explains in a way that "reciprocity" is the fundamental element of social norms. This can be of two kinds: "balanced" (where the value of exchanges is equal) and generalized ("not paid" for the moment, the favor is to be returned in the future).[4]

As a "productive part of social capital", the rules of generalized reciprocity provide the link between individual interest and social solidarity. "Nothing erodes confidence faster than promises that are not being respected", Putnam says. And vice versa, nothing builds up and strengthens confidence better than respecting promises made. "

[1] Ibidem, page 207
[2] Ibidem
[3] Putnam, Robert D., 2001, *Making Democraty Work: Civic Traditions in Modern Italy*, Polirom publishing house, Iași, page 192
[4] Ibidem, page 193

It is assumed that an effective norm of generalized reciprocity can be "associated" with a "dense social exchange" network. These exchanges are more likely where "trust" is rewarded, and "their degree of repeatability over a longer period of time encourages the development of generalized reciprocity rules."1

The density of horizontal relationships in a community and the multitude of networks make it possible to increase cooperation in obtaining the common good.

The other dimension of social capital, "civic engagement networks", includes the "associative sphere", the interpersonal capacity to interact horizontally with relationships (various associations, sports clubs, etc.). The ability of individuals to cooperate in order to obtain the common good depends on the density of these "associative networks".

Both networks of civic engagement and the rules of generalized reciprocity are sources of a new dimension of social capital: trust, a "fundamental element of collective action coordination."2 In other words, there is a direct proportion between the level of trust and the likelihood of cooperation.

Complementary to generalized trust, considered at the opposite of "strategic trust," moral trust excludes rational computing by placing the individual in the space of optimistic visions "on the world and on good intentions."

Professor Dumitru Sandu "introduces a new form of interpersonal trust", namely "tolerance", a dimension that implies "a positive definition of the other". "Although I do not agree with you or I do not like what you are doing, I accept you. We could be colleagues or neighbors or even relatives ".[3] Or, as S. Covey pointed out, "to cherish the differences," in other words, the "intellectual, affective, and psychological differences that exist between people," the key to this capitalization is that "people see the world not as it is, but as they are".[4]

A "cohabitation agreement", involvement in various actions alongside individuals "very different from yourself" or even "understanding

[1] "Any society, whether modern or traditional, authoritarian or democratic, feudal or capitalist, is characterized by a series of interpersonal communication and interchange networks, both formal and informal, Putnam says. Some of these networks are essentially horizontal, including agents with equivalent status power. Others are essentially vertical, bringing together unequal agents in asymmetric hierarchy and dependency relationships. It is true in the real world, almost all networks represent a mixture of relationships and horizontal and vertical "

[2] Eisenstadt, S.N., Roniger, L., 1994, *Patrons, clients and friends – interpersonal relations and the structure of trust in society*, Cambridge University Press, pages 1-42

[3] Sandu, D., 2003, *Sociability in the space of development*, Polirom publishing house, Iaşi, page 21

[4] Covey, Stephen R., 2006, Efficiency in seven steps – *an ABC of wisdom*, Alfa publishing house, Bucureşti, page 262

for those who act otherwise than you", tolerance is part of the "culture of difference".[1]

The motivation behind accepting "negatively valued behaviors or individuals" is defined contextually, being different, on a case-by-case basis. It may be a consequence of judgments of "utility", "neutrality"[2] or "respect"[3]. "Considering tolerance as a particular form of trust is particularly valid for situations where respect is the criterion of tolerance," Professor Sandu Dumitru says. If trust is the "cement" that provides unity to "bricks under construction," tolerance is the "strength structure" of it. As a consequence, any kind of human community will be prone to rapid dissolution in the absence of "tissue of tolerance"[4].

Beyond "valorisation of diversity acceptance", tolerance also means the self-validation of equality, in the sense that "offered to some" must be "granted to all," and equality in freedom is practically the "institutional foundation of social tolerance". "Trust, ssociation and tolerance are the core of social capital values," and "implicit reciprocity" is "the fundamental latent dimension of all these values".[5]

Putnam also points out that "as the foundation of human interaction, trust often has a strong territorial identity. It is a kind of culture of openness that integrates more or less into regional or community cultures." Considered as "stock of values relevant to sociability" (a "productive" sociability generating "growth of human, material or even social capital stock"), social capital has the role of positively defining "patterns of interaction" and "reducing" transaction costs in "interaction processes.".[6]

He explains the dimensions of the motivation of individuals that make it possible to benefit from the existence of networks of civic engagement. On the one hand, it increases the potential costs of the one who deviates from the rules of reciprocity in any individual transaction. On the other hand, by supporting "robust rules of reciprocity", civic engagement networks "embody the success of past cooperation", a fundamental, culturally defined milestone, as a basis for future cooperation.[7]

It is virtually stressed that beyond its importance for those involved, a vertical network cannot be the basic pillar of sustaining social

[1] Ioan Mihăilescu, în Sandu, D., 2003, *Sociability in the space of development*, Polirom publishing house, Iaşi, page 21
[2] "It is useful to accept what I don't like". (Horton, 2000, page 748, în Sandu, 2003: 24)
[3] Ibidem
[4] Ibidem
[5] Ibidem, page 71
[6] Ibidem, page 84 (also see David Faulkner, Mark de Rond, 2001, *Cooperative strategy – economic, business, and organizational issues*, Oxford University Press, pages 283 - 377)
[7] Putnam, Robert D., 2001, *Making Democraty Work: Civic Traditions in Modern Italy*, Polirom publishing house, Iaşi, page195

trust and cooperation. Relationships dominated by dependence rather than reciprocity are very likely to dissolve as a result of the consequences of both parties' (patron-client) opportunism. Neither "strong interpersonal relationships" contribute to the cohesion of a community or public action more than "weak connections" (social contact or relationships between members of a secondary association).

This is perhaps the main reason for which civic engagement networks are a "an important community share of the stock of social capital".[1]

Putnam states that given the substantial contribution of the horizontal networks of civic engagement to resolving "collective action dilemmas," one can suppose that a organisation rather horizontally structured has more chances to know institutional success in wider communities. However, in a community characterized by "a dense network of civic engagement relationships," with individuals who largely "subscribe" to civic norms, it is much easier to identify the deviation, which - once sanctioned – becomes, in the future, a risky, "unattractive" action.

Robert Sugden (a game theory specialist) believes that both options - "always cheats" and "returns favor" - are "contingency conventions," "rules" that over the years have found fertile ground within communities. In both situations one can discuss social balance, social stability, given that both could have evolved with certainty, "in another direction", under entirely different circumstances. In other words, the cohesion of a community can be maintained both by the rules of reciprocity/ trust and dependence/ exploitation. Only the level of efficiency and institutional performance differs.

It is history that determines which of the two "stable outcomes" defines one society or another. It cannot, however, completely eliminate practices that slow down progress and "encourage collective irrationality." One should not look for the fault that leads to inertia in any individual irrationality (it is precisely the individuals who "react rationally" within the social context in which the history "thrown them" those who "fuel the social pathology").

This feature of social systems has been called by theoreticians (especially the history of the economy) "route dependence" ("where you go depends on where you come from and there are destinations you simply cannot reach").[2] This dependency influences the performance of different societies under similar conditions of "individual preferences", "resources", "formal institutions" and "relative prices".

[1] Ibidem, page 197
[2] Ibidem, pages 200-201

The implications can also be seen in the economic sphere, "the fact that vertical networks are less useful in solving collective action dilemmas could be one of the morals for which capitalism proved to be more effective than feudalism in the eighteenth century, and democracy proved more effective than autocracy in the 20th century, "says Putnam.[1]

Following the consequences of the post-colonial experience in North America and South America, Douglas North shows that the southern colonial heritage has left a tremendous impression on his historical destiny. If the North has received its rationale of civic tradition, the same cannot be said of the South, the heir of the "tradition of vertical dependence", the burden of "centralized authoritarianism", "nepotism" or "clientelism" - all of Spain's export matter of the end of the Middle Age. Summarized, they have made an essential contribution to building a socio-cultural cleavage that today separates, not only from a civic perspective, the two Americas. It cannot be the different "preferences" or "preferences" of the two societies, says North, but of a history that "gave them social contexts in which opportunities and motivations are different."

North also points out that in any society, the institutions – depository of the "rules of the game" - tend to perpetuate themselves "even when they are socially ineffective".[2] The dilemma of establishing with certainty which is the cause and which is the effect in the culture-structure binomial still raises a series of polemics in the world of social sciences.

Conclusion:

There is for sure a certainty: "the norms and networks of civic engagement" have a substantial contribution to economic development, which in turn constitutes an ideal context for their strengthening. It should also be noted that, as North pointed out, "route dependency matters". It will be practically very difficult to understand the present choices without understanding the evolution of the institutions. A "real clarification" implies a profound knowledge of "culturally determined behavioral norms" and, last but not least, "how they interact with formal rules."[3]

Most experts admit that both attitudes and practices "form a consolidated balance on both sides". There is mutual stimulation between "social trust", "reciprocity rules", "civic engagement networks" and

[1] Ibidem, page 196. See also S.N. Eisenstadt and L. Roniger, 1994, *Patrons, clients and friends – interpersonal relations and the structure of trust in society*, Cambridge University Press.
[2] Ibidem, page 201
[3] Ibidem, page 203

"successful cooperation". [1] "Values and social relations are mutually interdependent and stimulating", meaning that "institutions generate distinct sets of preferences" on the one hand, and "adherence to certain values legitimizes appropriate institutional arrangements" on the other.

We are warned that we have every chance of not going out of the labyrinth if we ask continuously "which of the two appears first or has causal priority".[2]

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[1] "Stocks of social capital, such as trust, norms and networks, tend to be self-regenerating and cumulative. Those "happy" circles we talked about earlier lead to social balances with high levels of cooperation, trust, reciprocity, civic engagement and collective welfare. These features define the civic community. The absence of these features in the non-communal communities is also self-regenerating. Deception, distrust, eschewing, exploitation, isolation, disorder and stagnation intensify each other in a suffocating atmosphere of vicious circles"(Putnam, 2001: 199).

[2] Thompson, Ellis, Wildavsky, 1990, page 21, in Putnam, Robert D., 2001, *How does democracy work*, Polirom publishing house, Iaşi, page 263

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THE MANAGEMENT OF SOFTWARE PRODUCTS THROUGH ECONOMIC INFORMATION SYSTEMS

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Abstract
The paper presents the activity of managing the software products through economic information systems that ensure the storage of data, manipulation of different facts and also the interrogation of large quantities of data that is used in various reports for the decisions of managers. The internal characteristics of the product, process or resource are those that are measured by examining the product, process or resource, separate from their behavior. Internal features include: maintainability, flexibility, portability, reusability, program readability, testability, understanding, ease of building. The external characteristics of the product, process or resource are those that are measured only with reference to how the product, process or resource reacts with the environment. External features of software quality directly affect the value of the product to the user. Achieving a product quality model involves identifying the tangible internal tangible properties of the product, measurable and / or evaluable, which have the greatest effect on external quality attributes. The benefits of choosing a good software product is reflected in a better productivity and a good management of business flows that ensure a stabile growth in relations between producers, supliers and customers that may collaborate with companies.

Keywords*: Software products, business environment, methods of evaluations, quality attributes, information systems.*

JEL Classification*: C23, C26, C38, C55, C81, C87*

1. Introduction

The quality of a product is sometimes defined as "the totality of its characteristics by which it meets a number of defined or imposed needs". The quality of a software product is due to its ability to be effectively and comfortably used by a set of users for a set of purposes under specified conditions. The quality characteristics of a software product are properties of the product to which users are sensitive. For example: ease of use, reliability, response time, etc. There are different models to classify the quality attributes (attributes) of a software product. Models often include measures to determine the degree to which the product meets each quality attribute. Each model may have a different attribute set at the highest level of the classification, too, the selection and attribute definitions may differ at all levels.

The quality required for a software product must be defined in the software requirements definition document (SRD). Also, the definitions of quality attributes, measurement methods, and attribute acceptance criteria must be specified [1], [4].

The quality of program products can be appreciated both by the quality characteristics specific to the current execution of the programs, as well as by those that ensure the maintenance of the execution programs as the initial conditions of the problems change. The quality of a software product is at the end of the development process only if the internal properties that determine the level of the quality characteristics are built during development. It is considered as the fundamental axiom of software quality that: the tangible internal or internal properties or characteristics of the product determine the quality of its external characteristics.

2. The characteristics of software products and the economic value of those

Standardization of software product terminology has led to ISO 9126 (InformationTechnology-Software Product Quality, Part 1: Quality Model, 1998). The standard contains definitions in particular for the final product. Six quality features are defined, divided into 21 sub-features.

a) Functionality: Achieving the basic purpose for which the product was made

- Opportunity: the presence of a set of appropriate functions for specified tasks
- Accuracy: Delivering correct or agreed results or effects
- Interoperability: the ability of the product to interact with specified systems
- Security: the ability to prevent unauthorized, accidental or deliberate access to programs or data

- Compliance: adherence to standards, conventions, laws and protocols

b) Reliability: the product's ability to maintain its performance level under defined conditions for a defined period of time.

- Maturity: attribute based on the frequency of failures due to software mistakes
- Fault tolerance: the ability to maintain a specified level of performance in cases of software failures or unexpected inputs
- Fallback recovery: the capacity and effort required to restore the performance level, recover affected data after possible falls
- Compliance

c) Usability: the effort required to use it by a defined set of users

- The ease of understanding: the effort required by a user to recognize the logical concept and its applicability
- Learning ease: the effort required by a user to learn the application, operation, inputs and outputs
- Operability: ease of operation and control by users
- Power of attraction: the ability of the product to be attractive to users
- Compliance

d) Efficiency: the relationship between the product's performance level and the amount of resources used under defined conditions

- Execution time: response speed, processing times, output rate at function execution
- Use of resources: the amount of resources used and the duration of use for performing its functions
- Compliance

e) Maintenance ease: the effort required to make the changes, including corrections, improvements or adaptations of the product to changes in the operating environment, requirements and functional changes

- The ease of analysis: the effort required to diagnose defects, causes of falls, to identify parts that need to be modified
- Change ease: the effort required to remove defects or change
- Stability: the risk of unexpected effects from changes
- Test ease: the effort required to validate the modified product
- Compliance

f) Portability: The ability of the product to be transferred from one organization or software platform to another

- Adaptability: ability to adapt to different specified environments
- Installation ease: the effort required to install the product in a specified environment

- Co-existence: the ability to coexist with other independent products in the same environment
- Opportunity and effort to use the product instead of another product in a particular environment
- Compliance

Special types of systems and quality requirements

There are many particular quality requirements that fall or fall within ISO 9126. Certain special classes of applications may have other quality attributes to consider.

Examples:

• Systems whose fall can have extremely severe consequences:

- The degree of trust of the system as a whole (hardware, software people) is the main purpose, in addition to the achievement of basic functions.

A high degree of trust includes attributes such as: fault tolerance, operational safety, security, usability.

• Smart and knowledge-based systems:

- Property "at any time" (guarantees the best answer that can be obtained in a given time if a response is requested within that time frame)
- Explaining ability (explains the thought process of providing an answer).

• Human Interface and Interaction Systems

- Easy to adapt to user features and interests, Smart help, etc.

• Information systems

- Easy to query
- Accuracy in providing answers (relevant information only)

Software quality features that affect the software engineering process

- Code style
- Reusability of the code
- Code modularity and module independence

Relationships between external and internal characteristics of quality

Because there is no precise relationship between the two groups of features, the quality models decompose into external, user-perceived quality and internal quality characteristics that depend on the developer.

The quality model of a software product is structured into three parts:

- definition and decomposition of external attributes of quality - consumer orientation;

- defining and classifying the internal quality characteristics - targeting the developer;
- making detailed links between external sub-attributes and internal sub-characteristics.

The internal characteristics of the product, process or resource are those that are measured by examining the product, process or resource, separate from their behavior. Internal features include: maintainability, flexibility, portability, reusability, program readability, testability, understanding, ease of building.

The external characteristics of the product, process or resource are those that are measured only with reference to how the product, process or resource reacts with the environment. External features of software quality directly affect the value of the product to the user. Achieving a product quality model involves identifying the tangible internal tangible properties of the product, measurable and / or evaluable, which have the greatest effect on external quality attributes [2], [6].

Correctness includes those properties on which the proper functioning of the product depends software. These properties are so important that they are classified separately. Correctness properties are internal, associated with individual components, or contextual, associated with how components are used in the context. Internal properties measure the extent to which a component has been developed in accordance with its intended use or how well it has been composed. Contextual properties are determined by how components are composed.

Quality models for software products

The complex character with multiple meanings of the quality concept necessarily implies a clear and operational definition of quality. This is done by defining a quality model, built by decomposing the concept of quality to the primary characteristics. As a result of the research in the field of software quality, several software quality models were proposed.

The Mc Call model groups the quality factors into three categories:

- exploitation / use with quality factors, fairness, integrity, usability, reliability;
- product revision with quality factors maintainability, flexibility, testability;
- transition produced with quality factors reusability, portability, interoperability.

The model has been developed to improve product quality and separates quality characteristics for the developer, user and reuser.

The Boehm model is one of the first software quality models where quality characteristics are determined by internal attributes, and metrics for quantification that are described.

The quality model according to ISO / IEC 9126 proposes the use of a set of six quality features: functionality, reliability, usability, performance, maintainability, portability. For each feature, a set of sub-features is detailed, and the last level represented by metrics is not standardized. In this standard, the task of defining appropriate metrics for each quality feature lies with the software developer.

The emergence of new concepts, techniques and methods of software development also determines the design of new quality models. The Dromey / Griffith quality concept involves separating software quality characteristics into behavioral features and usage features. The concept distinguishes between product components, quality attributes and quality carrier characteristics [3], [5].

From the comparative analysis of the aforementioned models we find that there are static models that do not describe how the metrics are projected from the current values to the next values of the important points of the development process. It is important for the model to link the software metrics to the expected quality at the time of delivery of the software. The models also give no guidance on how to use metrics and attributes to identify and classify risks. Although there are more visions of quality according to the participants' position in the software development and use process, the practice has demonstrated that the project manager has a very strong influence on the quality aspect in the development process.

The vision of quality project managers is pragmatic and relatively simple:

High quality software is the one that works pretty well to fulfill the function for which it was designed and is available when it is needed to perform this function. Thus, the project manager is interested in a pragmatic model of quality and in collecting a set of metrics to ensure the successful development of a specific operational system.

Based on these considerations, the Software Assurance Technology Center, SATC, has developed a project-oriented software model for the project manager.

The set of objectives selected for the SATC quality model includes both process-oriented and traditional product-oriented indicators. The SATC model also has objectives whose metrics are based on data collected from process and product rather than expert assessments.

A customer-oriented quality model focused on the degree the customer appreciates a product is the Kano Model. Using the definitions in ISO 9000, the Kano Model splits the quality factors into three categories:

- evidence - necessarily present to any product for sale, but without giving any credit to the product;
- asked - is what the consumer asks for. I am in favor of the manufacturer and the more there is, the better;
- surprise - the term is used in a positive sense;

These factors are not demanded and not expected by buyers, but their presence increases the competitiveness of the product. For the three types of quality factors there are specific discovery mechanisms and techniques:

Surprise factors that depend on market research;

Factors demanded by customers or the company's marketing department;

The underlying factors, referred to in the ISO 9000 standard. Traditional software enhancement methods do not ensure the presence of surprise factors. For this purpose, an appropriate method is needed for the software.

3. The advanced software evaluation methods

The software can be evaluated either directly or indirectly. By direct assessment of the software engineering process, it is understood that costs and associated efforts are determined. It involves calculating the number of written lines of code (LOCs), determining the execution speed, the size of the memory, and the number of defects reported over a certain time interval.

Indirect product evaluation is in fact an analysis of functionality, quality, complexity, efficiency, reliability, maintenance and many other features.

The cost and effort required to develop software, calculating the number of lines of code (LOC) and other direct estimates are relatively easy to estimate initially. However, quality and functionality or efficiency and maintenance are much more difficult to assess and can only be measured indirectly. Product evaluation methods can be described as follows:

- Productive evaluation focuses on the final results of the software engineering process;
- Qualitative assessment provides an indication of how close the software is to the customer's implicit and explicit requirements;
- The technical evaluation highlights the characteristics of the software (eg logical complexity, degree of modularisation) rather than the process by which it has been developed;

- Dimensional evaluation is used to "collect" direct assessments of the results and quality of the software engineering process;
- Functional evaluation provides an indirect evaluation;
- Human resource assessment provides information on how developers develop a software product as well as perceiving the effectiveness of development tools and models.

The evaluation methods most commonly used by software makers are:

Method of dimensional evaluation

The dimensional evaluation of the software is a direct estimation of the software as well as the process by which it is developed. If a project manager maintains simple records, a table with data ordered by the size criterion can be created. For each project, the usual dimensional data is:

- the effort estimates the need for human resources and is measured in programmers-per-month or programmers-per-year;
- Kilo Lines of Code (KLOC) - thousands of lines of code;
- value is the monetary expression of the effort;
- documentation pages;
- the number of errors reported by users over a period of time.
- the number of programmers who worked on software development.

From the primary data contained in such a table, a productivity and dimensional dimensional assessment for each project can be made:

Productivity = KLOC / Programmers per month
Quality = Number of Errors / KLOC

In addition, other interesting parameters can be calculated:

Cost = Value / KLOC
Documentation = Documentation pages / KLOC

The use of dimensional parameters (KLOC, effort, etc.) is controversial and they are not universally accepted as the best method of evaluating the software development process. The controversy revolves around the use of the LOC code lines as the main size. Supporters of the LOC variables state that this is an artifact of all software development projects and can be easily calculated that many estimation models use LOC or KLOC as the main input and that there is already a huge literature (plus associated data) dedicated to LOC. On the other hand, opponents claim that the LOC variable is program-dependent, that LOC can penalize well-designed but short programs, that it can not be easily associated with non-

procedural languages, and that its use in estimation requires a level of detail that can be difficult (Eg the project manager has to estimate the number of code lines that need to be produced long before the analysis and the project plan have been completed) [3], [6].

Functional assessment / evaluation of for software products

The parameters that functionally characterize the software represent an indirect evaluation of the software and of the process by which it is developed. By avoiding LOC calculation, functional parameters focus on the "functionality" or "utility" of the program. This type of assessment was proposed for a productivity measurement approach, called the functional score method. Functional Score (SF) is obtained using an empirical relationship based on calculable estimates of the product information domain as well as evaluations of the complexity of the application.

The values of the information domain are defined in the following way:

- Number of user entries: Each user input that provides the application with distinct data oriented to it is taken into account. Inputs will have to be distinguished by queries, which are calculated separately.
- Number of user outputs: Each output to the user, which provides application-oriented information, is taken into account. In this context, the term "output" refers to reports, screens, error messages, etc. Individual report data is not calculated separately.
- Number of user queries: A query is defined as an on-line entry that results in an immediate response of the application as an on-line output. Each distinct query is taken into account.
- Number of files: Each "master" logical file, such as a logical collection of data that can be part of a large database or individual file, is taken into account.

Number of external interfaces: All machine readable interfaces (data files on tape or hard disk) that are used to transmit information to another system are taken into account.

Once the above data has been collected, a complexity index is associated with each calculation. Organizations using the functional score method develop criteria to determine whether a particular entry is simple, medium or complex. Of course, determining complexity is a relatively subjective process. To calculate the functional score, the following relationship is used:

*SF = Total of calculation * 0.65 + 0.01 * SUM (Fi);*

Where the total-of-calculation is the sum of the partial results obtained by weighing the values of the information domain. The constant values in the above equation as well as the influence factors that are applied to the calculation of the information domain are determined empirically.

Complexity adjustment values - Fi, i = 1 ... 14 are determined by evaluating the influence of 14 factors:

- Does it require back-up and recovery?
- Are data communications facilities required?
- Are distributed processing functions required?
- Is the criterion of critical performance?
- Will the system run in an intensely operating environment?
- Does the data entry system require online?
- Does the data entry system need to be on-line, that the data input process takes place on screens or through multiple operations?
- Are the files updated online?
- Are the inputs, outputs and complex queries?
- Is the internal process complex?
- Is the code designed to be reused?
- Is the conversion and installation of the program included in the design?
- Is the system designed for multiple installations in different organizations?
- Is the application designed to facilitate the user's change and ease of use?
- Each factor is rated with a score of 0 to 5, meaning:

0 - Does not Influence;
1 - Incidentally;
2 - Moderate;
3 - Environment;
4 - Significant;
5 - Essential;

Once the functional score has been calculated, it is used in a LOC-like manner as a measure of productivity, quality, and other attributes that define the program:

Productivity = SF / Programmers per month
Quality = Defective Number / SF
Cost = Value / SF
Documentation = Documentation Pages / SF

Rating based on the functional score was originally designed to be used in business information systems. However, the later proposed extension, called the characteristic score - SC, may allow this method to be

applied to programs in the field of engineering systems. The characteristic score is appropriate for describing applications where the complexity of algorithms is high. Real-time, process-control and object-oriented applications tend to have a large algorithmic complexity and are therefore suited to evaluation by the characteristic score method [2], [5]. To calculate this score, the values of the information domain are again counted and weighted. Unlike the functional score calculation, the characteristic score takes into account yet another information area (algorithms), and the weighting values are fixed. The final characteristic score is obtained from the equation:

*SC = Total of calculation * 0.65 + 0.01 * SUM (Fi);*

The characteristic score considers a new dimension of the software, namely algorithms. Reversing a matrix, decoding a bit string, or treating an interrupt are all examples of algorithms. The characteristic and functional scores mean the same thing, namely the functionality or utility provided by the software. The evaluations result in the same value of the SF in the case of conventional engineering calculation or information management applications. For more real-time real-time systems, the score is 20-35% higher than the one calculated using the functional score exclusively. Using the functional score - or characteristic - is controversial.

The fact that SF - SC is independent of programming languages, making it ideal for applications written in conventional and non - procedural languages. They also claim that it is based on data that is supposed to be known much earlier in the project evolution, making SF - SC much more attractive as an estimate. Opponents of the idea say that the method requires little prestidigitation and that the calculation is made in part on rather subjective rather than objective data; So that information can be difficult to tighten after the events have occurred and that SF - SC does not have direct physical significance - it is just a simple number.

Techniques of Decomposition

There is a natural approach to solving problems: if the problem to be solved is too complicated, we tend to divide it into a series of sub-problems until we reach a level where sub-problems can be resolved. We then solve each of the sub-problems in the hope that solutions can be combined to form a global solution. Estimating the software project is a form of problem solving and in most cases the problem to be solved (eg developing an effort and cost estimate for a software project) is too complex to be considered as

a whole. Thus, we decompose the problem, redefine it as a collection of sub-problems with less complexity and therefore more resolvable.

The code lines and the functional score are initial data starting from which productivity can be calculated. LOC and SF data are used in two ways during the software project estimate:

- as an estimation variable that is used to dimension each element of the software;
- Basic measurements collected from old projects and used in conjunction with estimation variables to develop effort and cost estimates.

LOC and FP estimates are distinct estimation techniques. However, both have a number of common features.

The project manager begins by presenting a synthetic description of the final function of the software and, starting from this statement, tries to break down the project of the future IT product into small sub-functions that can be estimated individually. The estimation variable LOC or SC is then calculated for each sub-function. Basic productivity measures (e.g. LOC / programmers-per-month or SC / programmers-per-month) are then applied to the most appropriate estimation variable and the effort or cost of the sub-function is derived. Estimates of the sub-function are combined to provide a global estimate for the whole project. The estimation techniques LOC and SC differ to the level of detail required for decomposition.

When LOC is used as an estimation variable, functional decomposition is absolutely essential and is often driven to considerable levels of detail. Because of the data required to estimate the functional score or more macroscopic, the decomposition level when SC is used as an estimation variable is considerably less detailed. It should also be taken into account that LOC is estimated directly while SC is determined indirectly by estimating the number of inputs, outputs, data files, interrogations and external interfaces as well as the 14 complexity adjustment values described above [1], [3].

Independently of the estimation variable that is being used, the project manager typically provides a range of values for each function decomposed into the subfunctions. Using historical data, the project manager estimates a LOC or SC value for each function, in the most optimistic, most likely, and most pessimistic case. An implicit indication of the degree of uncertainty is provided when a range of values is specified.

An expected value for LOC and SC is then calculated. The expected value for the estimation variable E can be calculated by averaging the LOC or SF estimates in optimistic (a), possibly (m), and pessimistic (b) cases.

The estimate $E = (a + 4m + b) / 6$ gives the most credibility the most probable estimate (m) and follows a probability beta distribution.

Suppose there is a very low probability that current LOC or SF results are outside the range defined by the estimated values in the optimistic or pessimistic case.

Using standard statistical techniques, we can calculate estimates. It should be noted that a deviation based on uncertain (estimated) data has to be used judiciously. Once the expected E value for the estimation variable has been determined, LOC and SC are used.

4. Conclusions

The evaluation of software products remains an important activity for a company that wants to ensure a rapid growth and profit, because the benefits of good system information ensure a better record of data, the updates of different values and the interrogation through queries that are reflected in different reports. The software can be evaluated either directly or indirectly. By direct assessment of the software engineering process, it is understood that costs and associated efforts are determined. It involves calculating the number of written lines of code, determining the execution speed, the size of the memory, and the number of defects reported over a certain time interval. Indirect product evaluation is in fact an analysis of functionality, quality, complexity, efficiency, reliability, maintenance and many other features. The cost and effort required to develop software, calculating the number of lines of code and other direct estimates are relatively easy to estimate initially [2], [4]. However, quality and functionality or efficiency and maintenance are much more difficult to assess and can only be measured indirectly. A good evaluation refers to a wide range of aspects such as costs, benefits, complexity, reliability, portability and other economic aspects that may improved the quality of information systems that give a competitve advantage in the area of businesses.

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