Bucharest University of Economic Studies

The Faculty of Theoretical and Applied Economics

Economic Convergence in European Union

(ECEU)

16th edition

Bucharest
19-20 April 2019

Honorary Committee

Nicolae Istudor, professor PhD – Rector, The Bucharest University of Economic Studies, Romania
Roxana Sârbu, professor PhD – Vice-Rector of the Bucharest University of Economic Studies, Romania
Dorel Paraschiv, professor PhD – Vice-Rector of the Bucharest University of Economic Studies, Romania

Keynote Speakers

Mirela Ionela Aceleanu, professor PhD – The Bucharest University of Economic Studies, Romania
Alexandru Taşnadi, professor PhD – The Bucharest University of Economic Studies, Romania

Scientific Committee

Prof. univ. dr. Mirela Ionela Aceleanu
Prof. univ. dr. Daniela Anca Dachin
Prof. univ. dr. Marin Dinu
Prof. univ. dr. Claudiu Grigoraş Doltu
Prof. univ. dr. Horaţiu Dragomirescu
Prof. univ. dr. Monica Dudian
Prof. univ. dr. Basarab Gogoneaţă
Prof. univ. dr. Cătălin Emilian Huidumac Petrescu
Prof. univ. dr. Mariana Ioviţu
Prof. univ. dr. Marius Corneliu Marinaş
Prof. univ. dr. Cosmin Ştefan Marinescu
Prof. univ. dr. Mihaela Hrisanta Mosora (Dobre)
Prof. univ. dr. Aura Gabriela Socol
Prof. univ. dr. Cristian Socol
Prof. univ. dr. Marta Christina Suciu
Prof. univ. dr. Angela Rogojanu
Prof. univ. dr. Alexandru Taşnadi
Conf. univ. dr. Liana Badea
Conf. univ. dr. Alexandru Dumitru Bodislav
Conf. univ. dr. Liliana Crăciun
Conf. univ. dr. Alina Ştefania Creţu
Conf. univ. dr. Amalia Florina Cristescu
Conf. univ. dr. Mina Fanea Ivanovici
Conf. univ. dr. Alexandra Frățilă (Adam)
Conf. univ. dr. Gabriel Frâncu
Conf. univ. dr. Slivia Elena Iacob
Conf. univ. dr. Ioana Andrada Gavril (Moldovan)
Conf. univ. dr. Alina Creţu
Conf. univ. dr. Monica Dobrescu
Conf. univ. dr. Diana Hristache

Conf. univ. dr. Dragoş Huru
Conf. univ. dr. Anca Gabriela Molănescu
Conf. univ. dr. Nicolae Moroianu
Conf. univ. dr. Liviu Cosmin Mosora
Conf. univ. dr. Marius Cristian Pană
Conf. univ. dr. Chiva Marilena Papuc
Conf. univ. dr. Ioan Grigore Piroşcă
Conf. univ. dr. Gabriel Ilie Staicu
Conf. univ. dr. Mihaela Roberta Stanef-Puică
Conf. univ. dr. Andreea Claudia Şerban
Conf. univ. dr. Laurenţiu Şerban Oprescu
Conf. univ. dr. Daniela Livia Traşcă
Conf. univ. dr. Daniela Vîrjan
Conf. univ. dr. Cristina Voicu
Lect. univ. dr. Andrei Hrebenciuc
Lect. univ. dr. Alina Magdalena Manole
Lect. univ. dr. Roxana Mihai
Lect. univ. dr. Irina Florentina Moulin
Lect. univ. dr. Liviu Cătălin Moraru
Lect. univ. dr. Anca Maria Paraschiv (Gherman)
Lect. univ. dr. Raluca Andreea Popa
Asist. univ. dr. Georgiana Balaban
Asist. univ. dr. George Marian Ştefan

Organizing Committee

Ioan Grigore Piroşcă, PhD – The Bucharest University of Economic Studies, Romania
Dragoş Huru, PhD – The Bucharest University of Economic Studies, Romania
Liana Badea, PhD – The Bucharest University of Economic Studies, Romania
Marta Christina Suciu, PhD – The Bucharest University of Economic Studies, Romania
Mihaela Roberta Stanef-Puică, PhD – The Bucharest University of Economic Studies, Romania
Liviu Cătălin Moraru, PhD – The Bucharest University of Economic Studies, Romania
Alexandru Bodislav, PhD – The Bucharest University of Economic Studies, Romania

Theoretical and Applied Economics
Volume XXVI, Special Issue/2019, Summer

Contents

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 7-14

Income inequalities and economic convergence in CEE countries

Tamara NAE
Bucharest University of Economic Studies, Romania
nae.tamara@gmail.com

Abstract. *Convergence has always been considered the fundamental economic mechanism and precondition for achieving socio-economic cohesion in the European Union, so an important task for the Romanian Government is to reduce regional disparities in Romania. In this paper we will attempt to perform a descriptive analysis of inequality and convergence between and within CEE states using the most recent available data of relevant indicators for the analyzed topic.*

Keywords: regional disparities, economic convergence, inequalities, income inequality, Gini coefficient.

JEL Classification: D63; O11; R10.

Introduction

The study of inequalities has recently been a major concern for both researchers and policy makers, as there are worries that the persistence of high income inequality is fueling the populist trend. Inequality is now at the top of the 2030 Sustainable Development Agenda goals, one of its main objectives being to reduce inequalities in and between countries. A major top priority is the need for more inclusive growth and greater convergence to combat excessive inequalities. It is difficult to identify the level at which inequalities become excessive, therefore, those who have dealt with the study of inequalities are reserved to establish a threshold to which inequalities are tolerated.

In order to achieve a high level of convergence between the countries of the European Union, it is necessary to accelerate the living standards of the countries considered peripheral, especially the states in Eastern Europe, thus reducing the inequalities between states and within a state.

An important goal of the European Union is to reduce disparities between Member States. In this paper we will attempt to perform a descriptive analysis of inequality and convergence between and within CEE states using the most recent available data of relevant indicators for the analyzed topic.

The most studied types of inequality that economists tend to be interested in are income inequality and wealth inequality, and these types of inequality are more easily quantifiable. In the first section of the paper we will focus on the most widespread form of inequality, namely income inequality. In this context, "income" means the income according to the fiscal regulations set in place.

In the second section we will discuss the evolution of the regional disparities in the CEE countries at NUTS 2 level, calculating and representing graphically, for each country, the difference between the maximum the minimum value of GDP per capita in PPS before and after the accession to the European Union.

We further analyzed for the period 2000-2017 the dynamics of economic convergence in CEE countries through the difference between the interregional gap at the end of the analyzed period and the beginning of the period.

A review of the literature

According Goldin, for the achievement of the development of a state there is a need for a decrease in poverty, unemployment and inequality. (Goldin, 2017)

According to OECD there must be no compromise between growth and equality. On the contrary, opening up opportunities can lead to stronger economic performance and improved living standards around the world. (OECD, 2015)

Inequality affects economies and societies, with growing evidence that excessive inequality may be bad for growth. There are also concerns that inequality may dampen educational opportunities and social mobility. (Keeley, 2015)

There are many factors that influence the rise in income inequality, including technological change, shifts in who people marry, the reasing incomes of top earners.

Despite the positive effects that technological change has had on economic growth, they have also had effects on inequalities, increased demand for highly skilled labor, many jobs have been eliminated through automation, and the difference between highly qualified and low-skilled employees increased significantly. (IMF, 2015; Kelley, 2015; Deaton, 2013)

There are two sides in terms of inequality: those who want to reduce it and those who focus on stimulating motivations.

There are economists who have adopted a firm stance for inequality. Joseph Schumpeter did not agree with equality, but admired individuals who focused on gaining ever greater earnings, arguing that higher-level inequalities should be tolerated and that they are essential for development.

James K. Galbraith is one of the advocates of low inequality, arguing that the benefits associated with a civilized life are generated by the same degree of inequality as public pensions, health insurance, education, cultural facilities, and believes that economic development leads to smaller inequality over time. He argues that there are societies for which temperate inequality generates competitiveness, economic performance, innovation, while excessive inequality foresees future problems.

Galbraith acknowledges the advantages of a low degree of inequality and argues that when it is desired to reduce inequality, this action is intended to address the excessive inequalities to reach that tolerated limit of inequality. (Galbraith, 2016)

Joseph Stiglitz argues that there can be a more efficient and productive economy if there is more equality. He is not the advocate of full equality, but given that his research into inequalities has prevailed in the United States, where inequalities are excessive, he sought solutions to improve the situation of inequalities. (Stiglitz, 2015)

Joseph Stiglitz argues his position also in view of the conclusion that broadly uneven societies do not work efficiently and their economies are neither weak nor sustainable. When an interest group has too much power, it manages to impose public policies that give it the most advantages, rather than those that would benefit all of society as a whole. (Stiglitz, 2015)

Angus Deaton has a balanced position over inequality, claims inequality has both adverse effects: undermining growth or cancelling it, compromising the economy of a state, but also positively impacting: it can inspire fewer people to catch up with that wealth. (Deaton, 2013)

Methodology and data

Research methodology involves quantitative analysis methods supplemented by a descriptive approach that allows comparison of results between countries. Most research studies on inequalities were based on the Gini coefficient, which is an indicator of

inequality that shows the dispersion of the income of a country's population. In this article, we showed the current state of income inequalities in CEE countries based on the Gini coefficient on disposable income compared to Gini before social transfers (including pensions), but also compared to Gini before social transfers (excluding pensions).

To graphically represent the regional disparities in the analyzed countries, I used GDP per capita in PPP (purchasing power parity), calculating the difference between GDP per capita in PPP for the most developed region in that country and GDP per capita in PPP for the least developed region.

The analysis of the dynamics of economic convergence refers to the evolution of regional GDP in the CEE countries. The data reflects the evolution of regional GDP per capita in euro, expressed in PPP, the time horizon analyzed being 18 years (2000-2017). These are in line with the NUTS 2 classification of the European Commission, the source being Eurostat.

The indicator on the inter-regional gap in 2017 is highlighted by the ratio of the least developed region to the most developed. A higher ratio indicates a small gap between regions in a state, while a lower ratio indicates a larger gap.

The evolution of the inter-regional gap indicator over the last 18 years is highlighted by the gap between the interregional gap at the end of the period (2017) and the beginning of the period (2000). A positive result indicates a proximity between regions in a state (internal convergence), while a negative result indicates a deepening of the gap between regions in a state (internal divergence).

Income inequalities and regional disparities in CEE countries

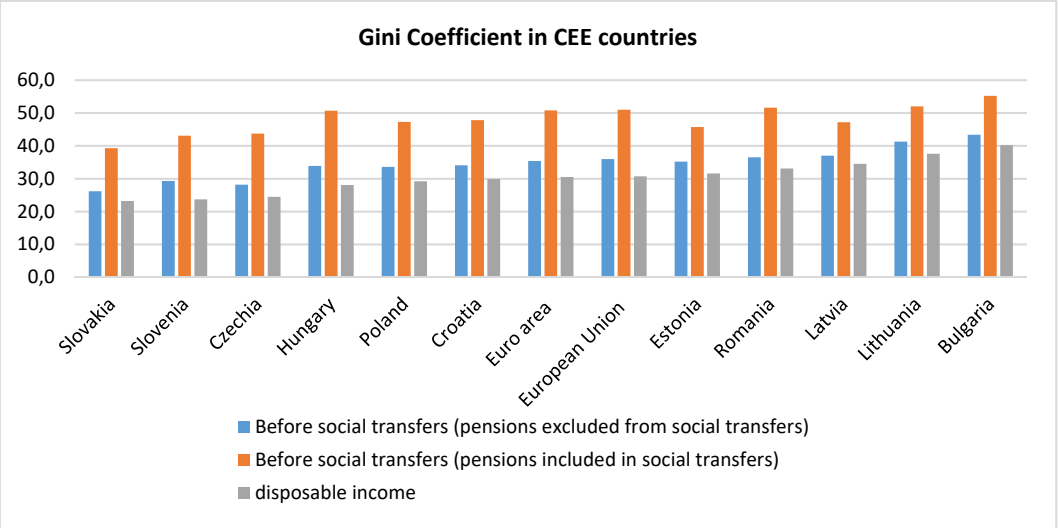
Convergence at the income level is the main aspect of economic convergence between countries and between regions. Income inequality is most often analyzed through the Gini coefficient. It measures the extent to which the distribution of income among individuals in an economy deviates from a perfectly equal distribution. It is expressed as a percentage value, taking values between 0 and 100, where 0 is the perfect equality, and 100 is the perfect inequality.

In 2017, Romania recorded a Gini coefficient of 33.1, being one of the CEE countries with the highest income inequalities. Social transfers (including pensions) played an important role in reducing income inequality in 2017.

For Romania, the impact of social transfers was 18.5 percentage points. Analyzing the most recent comparable data available, Figure 1 shows that Gini's revenue ratios for most CEE economies are higher both in comparison with the euro area average and the EU average, and those that do not exceed their level are very close as value.

The fact that inequality levels are so different among countries, even when countries have similar levels of development, highlights the importance of the role that policies and institutions play in shaping inequalities. (WIR, 2018)

Figure 1



Source: Eurostat.

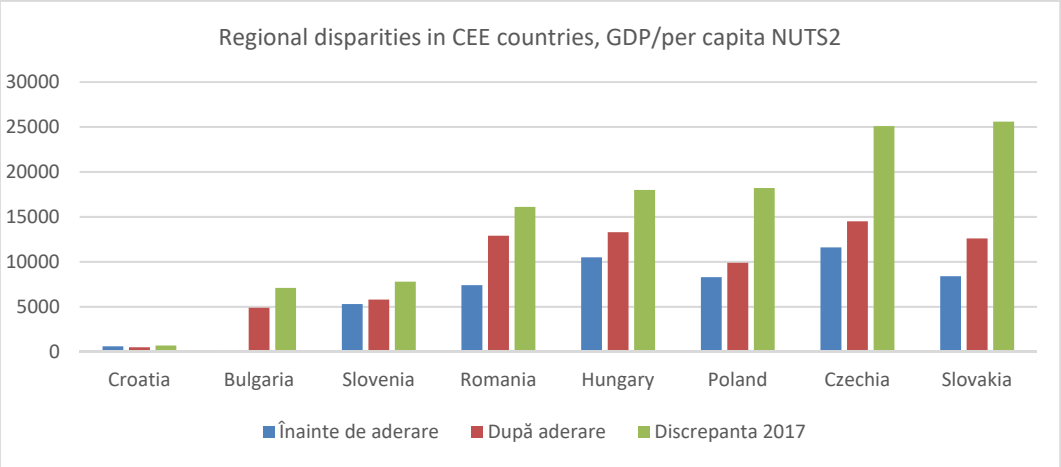
Social transfers can reduce inequities to a certain limit. As the effect is still expected, countries must have a certain degree of development that allows social transfers to have an inequality-reducing effect.

There is a significant difference in terms of levels of development both between and within CEE countries. With the accession of the countries to the European Union, the inequalities between the regions of the same country increased significantly because there were regions that were performing better, for example: (capital regions).In order to have an overview of these differences and to measure regional discrepancies, the most common method is to calculate GDP per capita at regional level. We calculated, by the difference between the highest and lowest regional GDP per capita in PPS, the regional discrepancies within each CEE country one year before joining the European Union one year after accession and the current situation (2017). For example, for Romania, 2006 was taken into account (before accession), 2008 (after accession).

Regional disparities in CEE countries, GDP/per capita NUTS2

Prior to joining the European Union, inter-regional discrepancies in the CEE countries were lower both in the post-accession period and in the current period. Small countries with a small number of regions, such as the Czech Republic and the Slovak Republic, may have large disparities at interregional level in terms of GDP per capita due to the strong concentration of economic activity in the capital. These regional discrepancies suggest that convergence was driven by an impact on more dynamic regions in terms of economic activity. A possible explanation for the regional divergence may be the specialization of the regions, for example: Specialized service regions have a better return than the regions specialized in agriculture. Another cause of accelerating development gaps between regions may be the concentration of investment in the already developed regions.

Figure 2. *Difference between maximum and minimum regional level*



Source: Eurostat.

Findings

To analyze the dynamics of economic convergence in the CEE countries during the period 2000-2017, we used the most recent data provided by Eurostat reflecting the GDP per capita evolution expressed in purchasing power parity, the period under review being 17 years (2000-2017) at NUTS2 level. The regional gap is highlighted by the ratio of the least developed region to the most developed.

Table 1. *The dynamics of economic convergence in CEE countries 2000-2017*

No.	Country	Interregional gap 2000 (%)	Interregional gap 2017 (%)	Gap evolution 2000-2017 (pp)
1	Bulgaria	56	39,24	-17
2	Czech Republic	39,07	33,81	-5
3	Croatia	96,94	94,18	-3
4	Hungary	32,06	30,79	-1
5	Poland	46,85	31,51	-15
6	Romania	31,86	26,85	-5
7	Slovenia	70,74	68,63	-2
8	Slovakia	34,72	30,3	-4

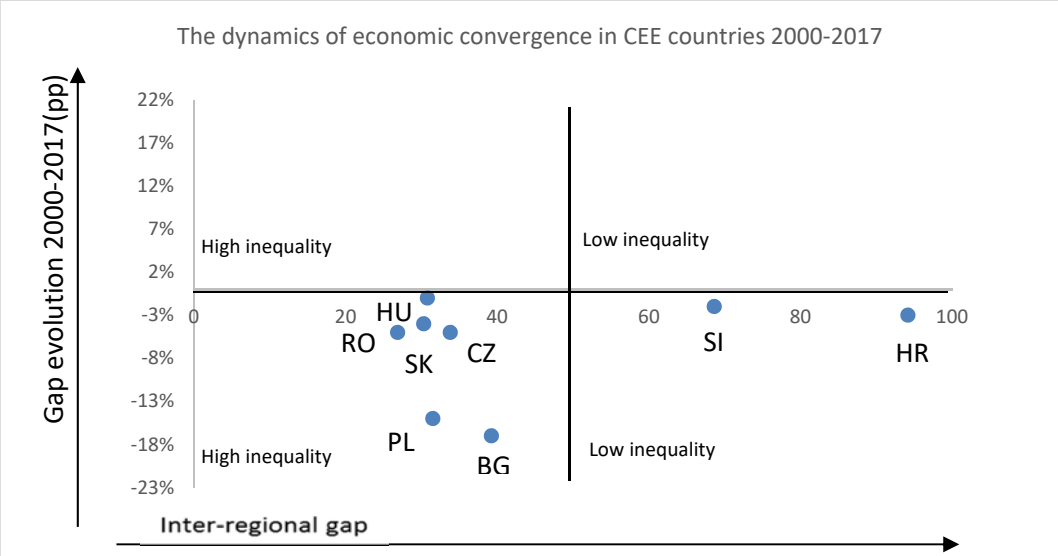
Note: Interregional gap has been calculated as the ratio of the least developed region value to the most developed region's value at GDP/capita in PPP. Gap Evolution was calculated as the difference between the interregional gap in 2017 and the interregional gap in 2000.
Source: Eurostat, author calculations.

For the year 2017, the lowest regional gap is found in Croatia (94.18%), followed by Slovenia (68.63%), it should be noted that these two countries are not very divided and the economic activity is distributed equitable between the regions of the countries. These two countries are found in the Low inequality, Convergence quadrant. Most CEE countries can be found in the High inequality, Divergence, where Romania is also found.

In Romania, the interregional gap for 2017 is the ratio of the most developed region (Bucharest-Ilfov: 43,200 euro/capita) and the least developed region (Northeast: 11,600 euro/capita) is 26.85%.

We note that the largest inter-regional gap between the analyzed countries is found in Romania, the data shows that its evolution from 2000 to 2017 worsened by 5 percentage points. It should be noted that 5 development regions in Romania are among the least developed regions of the European Union.

Figure 3. *The dynamics of economic convergence in CEE countries 2000-2017*



Source: Eurostat.

The dynamics of economic convergence in the CEE countries during the period 2000-2017 is highlighted by the difference between the interregional gap at the end of the analyzed period (2017) and the beginning of the analyzed period (2000).A positive result would indicate an approximation between regions in a state (internal convergence), while a negative result indicates a deepening of the gap between regions in a state (internal divergence).The biggest domestic divergence in a CEE country is found in Bulgaria where, from 2000 to 2017, the indicator of the inter-regional gap worsened by 17pp, from 56% in 2000 to 39.24% in 2017.On the opposite, the smallest internal divergence in an CEE country is found in Hungary where, in 18 years, the indicator of the inter-regional gap worsened by only 1 percentage point, from 32.06% in 2000, to 30.79% in 2017.In Romania, the gap between regions increased in the analyzed period from 31.86% in 2000, reaching 26.85% in 2017, which means the gap worsened by 5 pp. As far as Romania is concerned, it is positioned among the last CEE states as a level of economic development, but in the same country there are regions like Bucharest-Ilfov that have a GDP per capita that exceeds the value of the same indicator in major capital cities such as Budapest, Madrid. Due to a phenomenon of polarization and concentration of economic activity in big cities, regions are harder to converge, comparing Romania's regions with the European Union average, we will see that the Bucharest-Ilfov Region exceeds the European Union average and the other regions are well below this average.

Conclusions

Both in Romania and in the rest of the CEE countries there are significant regional discrepancies. All the analyzed countries registered a divergence between regions in the period 2000-2017.

In Romania, over the last 18 years, the divergence in terms of GDP has increased by 5 percentage points.

The regional discrepancies in Romania in terms of income distribution are caused by several factors such as the concentration of economic activity in the capital city, the location of natural resources, the ability of regions to attract structural and investment funds, population structure, etc.

To reduce this polarization effect, it is necessary to develop the other regions of Romania so that there is a balance that will allow Romania to develop homogeneously. A solution by which regions can develop is to attract structural and investment funds, but this topic will be analyzed in another paper.

References

Acemoglu, D., Robinson, J., 2015. *De ce eșuează națiunile: Originile puterii, ale prosperității și ale sărăciei*, Litera, Bucharest.

Agenda for Sustainable Development 2030, available at <https://sustainabledevelopment.un.org/post2015/transformingourworld>

Deaton, A., 2013. *Marea Evadare. Sănătatea, bogăția și originile inegalității*, Litera, Bucharest.

Dinu, M., Socol, C. and Marinaș, M., 2005. *Mecanisme de convergenţă şi coeziune*. Economica, Bucharest.

Eurostat, available at <https://ec.europa.eu/eurostat/data/database>

Galbraith, J., 2016. *Despre inegalitate. Teoria inegalității pe înțelesul tuturor*, Publica, Bucharest.

IMF, 2015. Causes and consequence of inequality: a Global Perspective.

Militaru, E., Inchauste, G., 2018. *The Distributional Impact of Taxes and Social Spending in Romania*, Gabriela Inchauste and Eva Militaru, available at <http://documents.worldbank.org/curated/en/915561535028397212/pdf/WPS8565.pdf>

OECD, 2016. *Income Inequality*, <https://www.oecd.org/social/OECD2016-Income-Inequality-Update.pdf>

OECD, 2011. *Divided We Stand: Why Inequality Keeps Rising*, OECD Publishing, Paris.

Piketty, T., 2015. *Capital in the Twenty-First Century*, Litera, Bucharest.

Prisecaru, P., 2017. Europa cu două viteze și poziția României. *Revista de Economie Mondială,* 9(2), pp. 49-66.

Stiglitz, J., 2012. *Prețul inegalității*, Publica, Bucharest.

Stiglitz, J., Sen, A., Fitoussi, J., 2010. „*Report by the Commission on the Measurement of Economic Performance and Social Progress*", The New York Press, New York.

World Inequality Report 2018, available at <https://wir2018.wid.world/>

Keeley, B., 2015. "*What's happening to income inequality*?", in Income Inequality: The Gap between Rich and Poor, OECD Publishing, Paris.

Keely, B., 2015. *Income inequality, The Gap between Rich and Poor,* OECD Publishing, Paris.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 15-24

Towards developing a friendlier regulatory framework for blockchain-based businesses

Christina Marta SUCIU
The Bucharest University of Economic Studies, Romania
christina.suciu@economie.ase.ro
Christian NASULEA
The Bucharest University of Economic Studies, Romania
Institut de Recherches Economiques et Fiscales, Paris, France
christian@nasulea.ro
Diana Florentina NASULEA
The Bucharest University of Economic Studies, Romania
Institut de Recherches Economiques et Fiscales, Paris, France
diana@nasulea.ro

Abstract. *The latest developments in the blockchain industry have generated innovations and new business models across dozens of economic sectors. In Europe, the value of token sales performed through ICOs in 2018 alone was about $4.1 billion. However, only few European countries have managed to be flexible enough to adapt their regulations to a completely new way of doing business and raising funds. Switzerland, the UK, Estonia, Gibraltar and Malta are leading the race due to a friendly, but secure regulation system. The aim of our paper is to explore the economic regulatory framework for blockchain-based industries is these countries.*

Keywords: ICOs; blockchain economy; blockchain regulations; digital economy; cryptocurrencies.

JEL Classification: K22; K23; O20; O10.

Introduction

Blockchain is one of the main breakthroughs in innovation from the past decade. The Blockchain technology allows an infinite number of people, organizations and businesses to record and store data in a transparent non-alterable manner, without the existence of a public authority (The EU Blockchain Observatory & Forum, 2018). It creates trust (Hawlitschek et al., 2018) and serves as a tool for creating a digital infrastructure that is fair and secure (The Economist, 2015), eliminating third parties and enabling peer-to-peer transactions. Decentralized automated platforms will create a lot of business opportunities in the digital market which is, at this very point, the main source of innovation and growth (Qin Chen, 2018).

Cryptocurrencies, one of the most spread Blockchain applications are considered a step forward in reducing poverty as they allow members of a society who are not able to open a bank account, due to not having a home address, to participate in internet transactions and earn a living (Dierksmeier and Seele, 2015).

Initial Coin Offerings (ICOs) are probably the most spread topics in the crypto and blockchain world. An increasing number of entrepreneurs are using ICOs to capitalize new blockchain-based venture, through the powers of crowdfunding. Europe was quite open to ICOs because public and private individuals saw the potential of the new technologies.

On April 10th 2018, 21 EU Member States, followed by other 6 during the course of the year have signed a Declaration creating the European Blockchain Partnership that will support "the delivery of cross-border digital public services" (European Commission, 2017). This was one of the major steps towards developing a comprehensive and integrated strategy with respect to the new business models developed through blockchain.

This paper will explore the European framework for blockchain and crypto-based businesses with a focus on the three pioneers of the digital era, the UK, Estonia and Switzerland. We will look at the legislative and regulatory ecosystem for blockchain companies in order to assess the attractiveness of crypto-entrepreneurs towards these three countries.

2. Literature review

In the last 5 years, Blockchain has become one of the most debated topics in both media and academic research. Scholars are introducing and explaining the main opportunities and implications brought by this new technology for governance (Beck et al., 2018; Atzori, 2015; Shermin, 2017), the banking sector (Peters and Panayi, 2016; Ye and Liang, 2016; Cocco et al., 2017), supply chain (Francisco and Swanson, 2018), art (De Filippi, 2015) and on the economy as a whole (Swan, 2015; 2017; De Fillipi, 2017).

Because it has the solution to a lot of inefficiencies and because it continuously creates new business models, it is only natural that challenges for the regulatory practices and strategies to be developed.

Yeoh, 2017, quoting (De Filippi, 2016) and (De Filippi and Loveluck, 2016) argues that: "The use of blockchain by virtual currencies like bitcoins erases the need for central authorities as well as the need to trust them."

In our opinion this is not merely true, as the last years have shown us that blockchain or crypto-based industries are looking for regulated, but friendly, environments to establish their companies in. A few papers have been focusing on developing models that will help create a safe and transparent ecosystem for blockchain businesses. Wright and De Filippi (2015) acknowledge the potential of blockchain for developing equal access to digital institutions, alternative currencies and other innovative solutions that will promote individual freedoms, but they also note the potential for illicit activities. They conclude that governments may need to change their approach when it comes to market regulation as decentralized organization will not easily allow government intervention. Dierksmeier and Seele (2015) also argue for regulating transactions in line with the national laws, noting however that this might have push backs from crypto-enthusiasts.

On the topic of creating and opening towards business opportunities in the Blockchain sphere, the EU Blockchain Observatory and Forum is solely focusing on understanding and overcoming the potential challenges for businesses and creating a bridge between the institutional infrastructure and the new digital innovations (The EU Blockchain Observatory & Forum, 2018; 2019). Their first conclusion is that Europe needs to clarify its regulatory and legal framework, especially the approach to tokens and transactions between crypto and fiat. They also urge Europe to continue to be the driver of Blockchain technology adoption ad to encourage investors and entrepreneurs to dive and innovate within this new universe.

2. Methodology

Due to limited statistics, our paper will mostly focus on the regulatory and institutional country-specific basis for ICOs, as they are the main method for launching a blockchain based product on the market. Firstly, we look at the crypto environment in Europe by analyzing data related to: a) the number of ICOs launched in the European countries and b) the total amount of raised investments. This will show which are the most attractive European (EU & SEE) countries for the launch of ICOs.

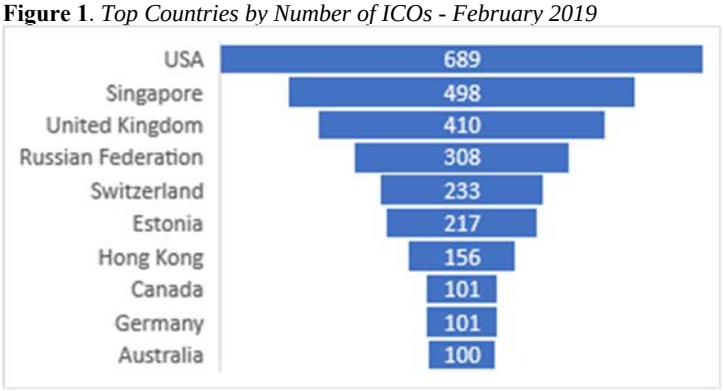
Afterwards we analyze the different regulations regarding blockchain/crypto projects in those countries. A comparison between the regulatory environment from the top 3 countries in terms of ICO attractiveness and Romania is performed. Regulations and legislation are analyzed based on the following criteria: a) cryptocurrency regulations; b) sales regulation; c) taxation; d) Money transmission laws and anti-money laundering requirements (AML) and d) Promotion and testing.

3. Findings and Discussion

Europe has become the biggest hub for blockchain and cryptocurrency projects. In 2018 alone, the cumulative funding of ICO projects was $4.1 billion, which is almost double the $2.3 billion raised on the Asian market (Drake, 2018). As shown in Figure 1, the four the

UK, Switzerland, Estonia and Germany amount for a total of 961 ICOs, meaning a 19% share of the top 10. This is the result of the existence of a very high number of people with IT skills, but more importantly, of the existence of a regulated and safe business environment.

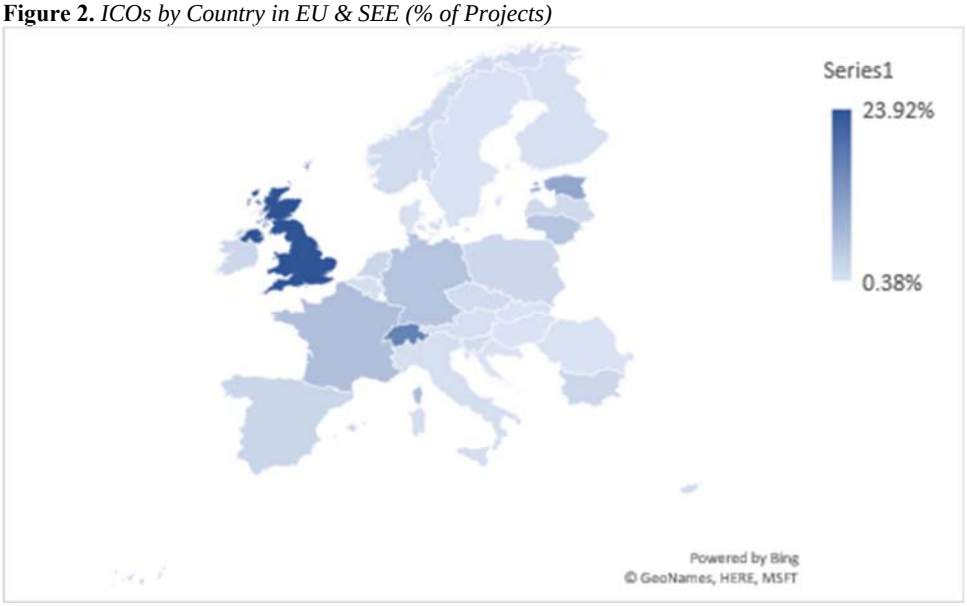
Figure 1. *Top Countries by Number of ICOs - February 2019*



Source: ICOBench (2019).

Moving to the European stage, we see that only a few European countries amount for a high percentage of the ICO market, namely the UK, Switzerland and Estonia. With respect to the funds raised, ICOs in the UK have raised $1.28 billion, Switzerland $1.83 billion and Estonia $0.82 billion (ICOBench, 2019).

Figure 2. *ICOs by Country in EU & SEE (% of Projects)*



Source: ICO Watch List (2019).

The attractiveness of these three countries is a direct result of the institutional efforts that allowed for legit blockchain businesses to be established and treated as normal companies. Furthermore, some countries saw the potential of this new industry and adapted the regulatory framework. We would like to note that these regulations are beneficial to players

in the blockchain industry because they increase investors' and consumers' confidence and protection.

If we look at the EU legislation regarding cryptocurrencies, regulating efforts commenced with the ECJ's 2015 decision (ECJ, 2015) of exempting virtual currencies from VAT. Furthermore, July 2016, the European Commission presented a proposal to amend the Anti-Money Laundering Directive (European Commission, 2016) which would put the crypto-currency exchange platforms under the obligation of fulfilling due diligence (KYC/AML) requirements and enforcing procedures meant to detect, prevent and report money laundering and terrorist activities. The law was adopted in April 2018.

In March 2018 the European Commission presented the FinTech Action Plan that would enable Member States to take advantage of the new opportunities provided by innovative technologies such as blockchain, AI and cloud services. This led to the creation of the EU Blockchain Observatory and Forum (European Commission, 2018) which analyses and reports on the challenges and opportunities of the blockchain industry in Europe, with the hope of creating a comprehensive strategy. Although a series of different warnings from the European Supervisory Authorities for Securities, Banking and Pensions (European Supervisory Authorities, 2018) or the European Central Bank (Draghi, 2018) were issued regarding the high volatility and speculative nature of cryptocurrencies, the EU is letting Member States to handle these issues as they deem necessary.

3.1. Estonia

Estonia is one of the most digitalized countries in the world with 99% of the public services available online 24/7. Since 2012, the Estonian Government uses KSI Blockchain (E-Estonia, n.d.) technology to protect all governmental data registries in the fields of government data, national health system, judicial systems and has further plans of expanding to other spheres. Almost all the country's citizens own a state-issued digital identity which is used to access all digital services, including the ability to vote or issue medical prescriptions. Being so digital-friendly and offering foreigners around the world the right to an e-Residency and automatically, the possibility to start a company, Estonia is a very obvious host for crypto-enthusiasts and major players in the blockchain and crypto industry.

Cryptocurrencies in Estonia do not have a legal status or a definition. However, there are laws regarding sales of tokens for two different categories: a) Security tokens – tokens which offer expectation for profit or governance rights and b) Payment, tokens and utility tokens. This is mainly because securities offer shareholders management rights whereas the second category of tokens functions more as payment. Utility tokens are the most used for ICOs and they are commodities that fall under the usual contractual and consumer protection obligations (Global Legal Insights, 2019).

Regarding taxation, there are no specific taxes on ICOs and cryptocurrencies. Estonia treats crypto business like any other business, thus corporate income tax is applicable. Until 2018 the tax was 20% on the distributed profits with the possibility of deferring profit distribution. Since 2018, however, the corporate income tax rate on dividends was reduced to 14% over a three-year cycle. The personal income tax is set at a flat rate of 20%.

On the topic of money transmission and anti-money laundering, Estonia requires companies who want to open online exchanges for crypto currencies to apply for an authorisation granted by the Financial Intelligence Unit. The fee is 345 euros and the application review is performed in a maximum of 30 working days.

There is no state-sponsored advertising for promoting the blockchain and crypto technologies. However, public authorities are aware of the opportunities of these technology, since the head of the e-Residency Estonian programme, Mr. Kaspar Korjus has suggested introducing a national crypto-currency called "Estcoins" (Korjus, 2017) for Estonian e-residents, an affirmation which was rejected by the European Central Bank's (ECB) president.

3.2. The United Kingdom

Cryptocurrencies are not considered money in the British financial system due to their limited adoption and high volatility (Bank of England, 2014). However, the Bank of England (BoE) has revised the initial opinion and is actively working on assessing the potential of cryptocurrencies to be regarded as money, but also the possibilities of blockchain for settlement and market infrastructure and the creation of a central-bank issued digital currency. A Cryptoassets Task Force which is comprised of representatives of the Bank of England and other financial institutions was created to build a strategy regarding crypto-assets legislation. Their final report published in 2018 highlights the opportunities and potential benefits of the crypto and blockchain asset for the British economy, with a focus on the financial services sector (HM Treasury; Financial Conduct Authority; Bank of England, 2018).

Cryptocurrencies are not specifically regulated in the UK either, but depending on the type of business, some of them might fall under specific legislation of Financial Conduct Authority (FCA). When it comes to sales, the Cryptoassets Taskforce's report accepts three types of tokens: a*) exchange tokens* (eg. bitcoin, litecoin); b) *security tokens* – they fall under the Financial Services and Markets Act (2000) and c) *utility tokens*. A policy paper released by Her Majesty's Revenue and Customs (HMRC, 2018) details the tax guidelines for individuals following the regular taxation scheme (see Table 1).

The UK's anti-money laundering legislation and the Proceeds of Crime Act (POCA) obliges in crypto business to engage in performing due diligence and enforcing KYC procedures. At the moment, the UK is working to implement the Fifth Anti-Money Laundering Directive (5AMLD) procedure as per EU law.

Promotion of cryptocurrencies by the official institutions is taking place through different programs. The FCA's (2019) Regulatory Sandbox offers to number of companies the possibility to test their product offerings in a safe environment. Furthermore, the creation of a Taskforce that deals with crypto-assets and their positive attitudes towards this industry has boosted trust from both entrepreneurs and investors.

3.3. Switzerland

The Swiss government has a very positive attitude towards cryptocurrencies and the blockchain technology. The Swiss Financial Market Supervisory Authority (FINMA)

recognizes the potential of the blockchain technology for the financial sector of the economy. The attraction of a very high number of ICOs has led to the development of the `*Crypto Valley*` in the Zug (including Liechtenstein) area, which is considered to be the biggest hub for cryptocurrencies and Fintech start-ups (The Law Library of Congress, Global Legal Research Center, 2018). As of November 2017, the registry of Commerce from the Canton of Zug is accepting administrative costs in Bitcoin (Kanton Zug, 2017) and other cryptocurrencies are also accepted as initial contributions for starting a company. Other cantons such as Chiasso are starting to do the same (The Law Library of Congress, Global Legal Research Center, 2018).

There are no specific regulations for ICOs in Switzerland, with the mention that all market participants are expected to comply with all existing laws, with a focus on banking, securities law, AML and other regulations (FINMA, 2017). Cryptocurrencies are thus treated like assets and not as money per se, although they are widely used.

Although it identifies three types of tokens, including security tokens, the ICO Guidelines indicated by FAIMA note that they do not intend to classify ICO tokens as such. However, if the tokens are indeed securities, a licence is needed.

Switzerland provides more specific regulations with respect to taxes. The main tax for private individuals is the *wealth tax* - cryptocurrencies are to be converted in Swiss francs and a year-end conversion rate for the most used currencies (Bitcoin, Ethereum, Ripple, Bitcoin Cash or Litecoin) is provided by the Federal Tax Administration. As they are treated like assets (like bank deposits) they are taxable at the end of the year. In general, gains of individuals in cryptocurrencies are exempt from income tax. For legal entities thee is an annual capital gains tax and a corporate income tax which varies from 12.32% in Lucerne to 24.16% in Geneva for 2018 (KPMG, 2018).

All crypto-businesses are subject to anti-money laundering requirements (AMLA) and all the due diligence is expected to be performed by the financial institutions and most ICOs are subject to AML/KYC procedures.

There are no specific government sponsored projects in the blockchain/cryptocurrency sector. However, since 2016 a few governmental efforts have led to the decision of allowing companies to accept deposits (up to 20 and no more than CHF 1 million in value) from the public without triggering bank licensing requirements. A Blockchain Task Force was created with the purpose of establishing specific "sandoboxes" for blockchain projects.

Table 1. *Summary of Regulations for Crypto-businesses in Estonia (EST), United Kingdom (UK) and Switzerland (CH)*

Country	Cryptocurrency regulation	Sales	Taxation		AML/CFT
			Corporate income tax	Personal Income Tax	
EST	No regulation	• Security tokens • Payment, charity and utility tokens	14%	20%	Yes – special license for exchanges MLD4
UK	No regulation	• Exchange tokens; • Utility tokens; • Security tokens	18%	Progressive 0-11 850 11 851–46 350 – 20%	5AMLD

Country	Cryptocurrency regulation	Sales	Taxation		AML/CFT
			Corporate income tax	Personal Income Tax	
				46 351-150 000 – 40% Over 150 000 – 45%	
CH	No regulation	• Native payment tokens; • Utility tokens; • Asset tokens.	12%-25%	Progressive (depends on canton) 7%-35%	AMLA AML/KYC

Source: Authors' own research.

3.4. Romania

Moving on to the case of Romania it is important to note that no institutional efforts in understanding the blockchain and crypto industry have been performed. In February 2018, the National Bank of Romania has announced that it discourages any involvement in the crypto sector (BNR, 2018). This has led to banks automatically closing accounts of several local exchanges which has generated reputational issues and problems for the clients of the affected exchanges. Starting with March of 2018, income from crypto-transactions are taxable, although the law doesn't provide any explanations about the procedure of exchanging cryptocurrencies in the national currency in order to be able to evaluate it. However, Romania is the 10th country in Europe according Bitcoin market penetration (Luno, 2018) and one in 10 Romanians is holding a cryptocurrency.

4. Conclusions

Having no regulations and legislation for blockchain and crypto projects doesn't make countries attractive for innovative entrepreneurs. A lack of political understanding of a global phenomenon is a bad sign for someone who wants to start a business in this sector and even more for potential investors. Even though Europe is leading the blockchain era, only few countries can be considered pioneers of a revolutionizing movement.

Switzerland, Estonia and the UK are by far the friendlier countries when it comes to digital businesses. Starting a crypto-business in one of these three countries is not easy because it takes time and more money since lawyers from those countries need to be employed. However, entrepreneurs from all over Europe would rather spend more and be sure their business is completely legit. Real companies think long term. Unstable legal systems are not attractive and don't allow for innovation in new sectors.

References

Atzori, M., 2015. Blockchain Technology and Decentralized Governance: Is the State Still Necessary?

Bank of England, 2014. The economics of digital currencies. *Quarterly Bulletin Q3*, pp. 276-286.

Beck, R., Muller-Bloch, C., Leslie King, J., 2018. Governance in the Blockchain Economy: A Framework and Research Agenda. *Journal of the Association for Information Systems*, 19(10).

BNR, 2018. Poziția Băncii Naționale a României în legătură cu monedele virtuale. 06 02.
Cocco, L., Pinna, A., Marchesi, M., 2017. Banking on Blockchain: Costs Savings Thanks to the Blockchain Technology. *Future Internet*, 9(3).
De Filippi, P., 2015. Blockchain-Based Crowdfunding: What Impact on Artistic Production and Art Consumption?. *Observatório Itaú Cultural*, Issue 19.
De Filippi, P., 2016. The interplay between decentralization and privacy: The case of blockchain technologies. *Journal of Peer Production*, Issue 9, pp. 18-19.
De Filippi, P., Loveluck, B., 2016. The invisible politics of bitcoin: Governance crisis of a decentralized infrastructure. *Internet Policy Review*, 5(4).
De Fillipi, P., 2017. What Blockchain Means for the Sharing Economy. *Harvard Business Review*, 15 03.
Dierksmeier, C., Seele, P., 2015. Cryptocurrencies and Business Ethics. *Journal of Business Ethics*.
Draghi, M., 2018. Introductory Statement and Closing Remarks at the European Parliament Plenary Debate on the ECB Annual Report for 2016.
Drake, D., 2018. Europe Leads US and Asia in ICO Investments, What is the Region Doing Right?. *The Soho Loft*, 08 12.
ECJ, 2015. *Case C-264/14, Skatterverket v. David Hedqvist*, s.l.: s.n.
E-Estonia, n.d. [Online] Available at: <https://e-estonia.com/solutions/security-and-safety/ksi-blockchain/> [Accessed 13 03 2019].
European Commission, 2016. Pro*posal for a Directive of the European Parliament and of the Council Amending Directive (EU) 2015/849 on the Prevention of the Use of the Financial System for the Purposes of Money Laundering or Terrorist Financing and Amending Directive 2009/101/EC*, s.l.: s.n.
European Commission, 2017. 2017, Brussels: s.n.
European Commission, 2018. European Commission Launches the EU Blockchain Observatory and Forum. 01 02.
European Supervisory Authorities, 2018. WARNING. ESMA, EBA and EIOPA Warn Consumers on the Risks of. 12 02.
FCA, 2019. *Regulatory Sandbox*. [Online] Available at: <https://www.fca.org.uk/firms/regulatory-sandbox> [Accessed 13 03 2019].
FINMA, 2017. Guidance 04/2017 Regulatory Treatment of Initial Coin Offerings. 27 09, p. 4.
Francisco, K., Swanson, D., 2018. The Supply Chain Has No Clothes: Technology Adoption of Blockchain for Supply Chain Transparency. *Logistics*, 2(1).
Global Legal Insights, 2019. *Blockchain & Cryptocurrency Regulation* 2019. [Online]
Available at: https://www.globallegalinsights.com/practice-areas/blockchain-laws-and-regulations/estonia#chaptercontent1 [Accessed 13 03 2019].
Hawlitschek, F., Notheisen, B., Teubner, T., 2018. The limits of trust-free systems: A literature review on blockchain technology and trust in the sharing economy. *Electronic Commerce Research and Applications*, Volume 29, pp. 50-63.
HM Treasury; Financial Conduct Authority; Bank of England, 2018. *Cryptoassets Taskforce: final report*, London: Crown.
HMRC, 2018. Cryptoassets for individuals. 19 12.
ICO Watch List, 2019. *ICO Statistics - By Country*, s.l.: ICO Watch List.
ICOBench, 2019. *ICO Market Monthly Analysis February 2019*, s.l.: ICOBench.
Kanton Zug, 2017. Commercial Register Office in Zug Accepts Cryptocurrencies as a Contribution in Kind. 02 11.
Korjus, K., 2017. We're planning to launch estcoin—and that's only the start. *Medium*, 19 12.
KPMG, 2018. *Clarity on Swiss Taxes*, s.l.: s.n.
Luno, 2018. Cryptocurrency in Europe: what does the future hold?. 19 07.

Peters, G. W., Panayi, E., 2016. Understanding Modern Banking Ledgers through Blockchain Technologies: Future of Transaction Processing and Smart Contracts on the Internet of Money. In: P. Tasca, T. Aste, L. Pelizzon, N. Prony, eds. *Banking Beyond Banks and Money. New Economic Windows*. Cham: Springer, pp. 239-278.

Qin Chen, 2018. *In the world of cryptocurrency buzz, blockchain is the real winner*, s.l.: CNBC.

Shermin, V., 2017. Disrupting governance with blockchains and smart contracts. *Strategic Change*, 26(5), pp. 499-509.

Swan, M., 2015. Blockchain. Blueprint for a New Economy. Sebastopol: O'Relly Media.

Swan, M., 2017. Anticipating the Economic Benefits of Blockchain. *Technology Innovation Management Review*, 7(10), pp. 6-13.

The Economist, 2015. *The trust machine*. [Online] Available at: <https://www.economist.com/leaders/2015/10/31/the-trust-machine> [Accessed 13 03 2019].

The EU Blockchain Observatory & Forum, 2018. *Blockchain Innovation in Europe*, s.l.: s.n.

The EU Blockchain Observatory & Forum, 2019. *Scalability, Interoperability and Sustainability of Blockchains*, s.l.: s.n.

The Law Library of Congress, Global Legal Research Center, 2018. *Regulation of Cryptocurrency Arounf the World*, s.l.: The Library of Congress.

Wright, A., De Filippi, P., 2015. Descentralized Blockchain Technology and the Rise of Lex Cryptographia. *SSRN Electronic Journal*.

Ye, G., Liang, C., 2016. Blockchain application and outlook in the banking industry. *Financial Innovation*, 2(24).

Yeoh, P., 2017. Regulatory issues in blockchain technology. *Journal of Financial Regulation and Compliance*, 25(2), pp. 196-208.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 25-47

Analysis of the economic competitiveness of the southeastern region of Mexico

Aída Beatriz ARMENTA RAMÍREZ
Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México
handel91@gmail.com
Germán MARTÍNEZ PRATS
Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México
germanmtzprats@hotmail.com
José Félix GARCÍA RODRÍGUEZ
Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México
jfgr55@hotmail.com

Abstract. *The world economy has undergone unprecedented changes in its organization, composition, integration and interdependence. Countries have to adjust to changes in the social and economic environment due to new developments in technology and improvements in telecommunications and transport, which have allowed the expansion of market frontiers and the reduction or elimination of Trade barriers. Regionalization, on the other hand, is recognized as the economically functional decentralized spatial development. It is recognized in the literature, the rise of the regional economies like blocks of construction for the international competitiveness. It is argued that competition and cooperation between dynamic regions will dictate the future more than the nation-state. In this sense, the analysis to detect new development opportunities in regional industries to increase competition between domestic and external producers is essential to detonate the growth and development of the Southeast region of Mexico and the results shows what factors should be considered and improved to achieve greater competitiveness of the region and therefore the economy of it.*

Keywords: regional economy; Southeast Mexico; competitiveness; economic growth.

JEL Classification: R10; O54; 19; R11.

Introduction

The world economy has undergone unprecedented changes in its organization, composition, integration and interdependence. New technological developments, as well as improved telecommunications and transport, have enabled countries and regions to adapt to changes in the social and economic environment. These changes have allowed the expansion of market frontiers by reducing or decreasing trade barriers, so that national and regional industries face new challenges and development opportunities, but under an overview of Greater competitiveness.

Regionalization, on the other hand, is recognized as the decentralized and economically functional spatial development of regions throughout the world. The rise of regional economies as building blocks for international competitiveness have been widely recognized by the academy. It is argued that competition and cooperation between dynamic regions will dictate the future more than the nation-state itself.

In order to take advantage of the competitive advantages of this new form of development of the regions, it is necessary that each region responds quickly in the process of the production chain, in all the interrelations and the ways in which they are carried out, from the Suppliers to customers. This means that the physical infrastructure, telecommunications and information infrastructure are the fundamental support for the production process to be efficient and the services to be high level. As a result, regional interdependence in terms of interregional trade supported by its basic infrastructure will be taken.

The main objective of local and regional policymakers is to improve the well-being of their population and to promote the opportunities for improvement made with equity among their inhabitants. However, it will only be achieved, if the competitive advantage of their respective regions is potentiates, for which reason, policymakers need to develop sound policies, monitor and evaluate the course and outcome thereof. The development of economic and social policies, local and regional, is a multi-faceted process, which involves the analysis of economic, social and political issues. In particular, in the formulation of economic development policies, the evaluation of the sectorial structure and the performance of a region is very important, i.e. the sectors that are growing or decreasing in terms of the volume of activity, the value Aggregate or participation of the defendant work

Hence, the underlying purpose of this analysis is to provide local policymakers with simple and easy-to-use tools that assist them in the description of the local economy, the changes they present in their economic activities in order to They can design policies and make solid, informed decisions about the information available.

Methods such as economic basis, shift-share, input-output and general equilibrium models are considered among the most relevant for regional analysis, are based on regional and sectorial decomposition. These methods of evaluating the impacts of industrial restructuring in regional and local economies provide guidance to guide the industry, and therefore provide a significant contribution to the understanding and selection of Key industries in the region, which can help train local industry associations.

This document carries out an economic analysis of the south-southeastern region of Mexico, faced with the challenge of taking advantage of the possible advantages that the economic and social policies of a new accumulation regime announced by the incoming government, and proposing on what Sectors the region could take advantage of its competitive advantages and increase the development that has been suspended since the last century.

Literature Review

Alburquerque (2004) states that economic development essentially depends on the ability to introduce innovations into the productive base and business fabric of a territory. Every time, the productive and business agents adapt and use the research and development findings for the innovation of the different production processes. But it will have to be based on the social and institutional transformations that consider the changes and innovations in them. That is, it requires actions not only in the macroeconomic level, but mainly improvements and changes in the microeconomic plane, as well as reforms and changes of contents at the meso-economic level, or intermediate, of the performance of the public administrations and the Strategic coordination with socioeconomic agents.

Development must then travel from the comparative advantages of a static nature, based on the endowment of factors, such as natural resources and low wages, towards dynamic competitive advantages, which are based on improvements in productivity, quality and Diversification of goods and services, that is, introduction of elements of strategic knowledge.

To make an analysis of the development of the southeast are considered the elements that Alburquerque (2004) indicates that they must be seen in the local development: the techno-economic paradigm, which considers essentially microeconomic aspects, like the technological base and Energy, the sectoral and territorial productive structure, the organization of work and its wage relationship, business management among others; The accumulation regime that analyses macroeconomic equilibriums in the cycle of the total economy, i.e. production, financing, distribution and consumption that guarantee the process of productive accumulation or reinvestment; Finally, the mode of regulation that is the meso-economic intermediate level that allows analyzing the set of procedures, social and institutional forms that guarantee the stability of the accumulation regime. It aims at the social, institutional and concerted framework between actors who seek to facilitate the operation of the development model from the sociopolitical field. Finally, the external insertion of the economy will be, to a large extent, a result of actions related to these three main levels of analysis.

1940-1970

Accumulation regime

This regime is characterized by an economic policy of Keynesian cutting oriented to the expansion of the aggregate demand compensated with a permanent expansion of the production, by means of a system of production based essentially on the large industrial

enterprise, It is characterized by internal economies of scale that also propitiated the vertical integration of the companies. By combining the principles of the "Scientific organization of work" developed by Taylor (1911) and with the promotion of mass consumption, this regime of massive accumulation, called Fordism, encourages the concentration of activities around large cities or Urban nuclei and mass production, following the icon of Ford Motor Company, in Detroit in 1913.

Regulation mode

An extensive primary export model was followed, dependent on a "key factor", based primarily on low value-added natural resources. An implicit social pact was established between governments, businessmen and workers to regulate wage increases commensurate with productivity growth, which allowed for considerable employment stability.

Technology and Energy Base

The availability of a "key factor" abundant, with low production costs such as oil, allowed the articulation of a group of sectors and motor branches with extensive use of this strategic input, in the case, such as the petrochemical industry, the Automotive sector, shipbuilding or construction of roads and others, which were the most dynamic. There was also a remarkable penetration of foreign transnational corporations.

1971-1980

Accumulation regime

The paces of economic growth in developing countries, on average, were higher than developed countries. Following the old, extensive primary export model, of low internal added value, called "Import substitution model of industrialization" with high tariff rates, payments and import duties, production was Oriented primarily towards the internal market segments with greater purchasing capacity. Expansion-oriented monetary and financial policies demand domestic economic, socialize deficits, and indebtedness in an inflationary environment. The process of financial easing begins and the developing countries with easy access to financing are driven to over-indebtedness.

Regulation mode

The State recognizes the legitimacy of responsible trade unionism, collective bargaining, the indexation of salaries to growth, agreements are made for approvals of wage levels. Indexing of pensions is financed by progressive taxation and leads to gradual consolidation of unemployment benefits and forms of social security.

Technology and Energy Base

Companies are governed by the principle of ownership and control of large corporations, through economic scale and market shares, mergers, acquisitions and internal expansion are made. In other words, the main source of economic dynamism is mass production based on the chain production of standardized goods, the increase in income is based on productivity, the increase in wages allows the expansion of demand. The development of

large polarized productive complexes in a territory is encouraged, without considering the diseconomies produced by increasing levels of pollution or depletion of natural resources, environmental sustainability is circumvents in the Large-scale processes.

1981-1990

Accumulation regime

There is a crisis of the Keynesian state-nation regime, since the late 70, with an increasing tendency of stagflation, as well as the fall in the physical rate and volume of the fordist benefit. With globalization. The exchange of cash and real flows accelerated, pressuring the openness to companies, markets and countries. Economic policy could not be more central nation, regional and local economies faced more often their own problems without being able to solve with targeted standardized policies. Growth, innovation or competitiveness no longer depended solely on national space, policies were required to insert local economic spaces into the world economy.

Regulation mode

The fall in the gross profits of the companies, coupled with the mobility of the capital diminished the contribution of the capital to the income of the state. Some companies and multi-and transnational banks moved or threatened to do so, to tax havens, thereby pressuring them to seek concessions with local, regional, or national governments. Likewise, the crisis, with its social repercussions of unemployment and recession, increased spending needs to protect household income such as unemployment benefits and early retirement, as well as other welfare policies such as Housing and health. In many countries, particularly Latin Americans, state spending was higher than tax revenues, and the deficit was financed with debt. The ensuing fiscal-general state crisis was associated with conflicts not only with regard to social expenditure, but also with the restructuring of tax and credit systems.

Technology Base

The money was related to two tendencies: to subordinate the dynamics of the industrial capital to the hyper mobile logic of the financial capital; or the tendency for capital-money yields to surpass those of productive capital. The wage was increasingly seen as a cost of international production and not as a source of domestic demand.

1991-2003

Accumulation mode

In the face of the crisis of the 1980s, called the “lost decade”, faced by Latin American countries, the “Washington consensus” defines the guidelines to be followed in order to have the financial support of international organizations. Based on the neoclassical economic model and the neoliberal ideological and political model and under the premise that the state is a factor hindering the growth generated by the private sector, in the proposed

economic model, the role of the sector was fundamental, Mainly because the resources to boost economic growth would come from both the international organizations and this sector (Martínez and Soto-Reyes, 2012).

Thus, the advancement of economic globalization and the challenges of a new technological and organizational revolution led to the emergence of forms of flexible accumulation leading to an economic and sectorial structural change, manifested by an offer Productive with greater capacity to adapt to differentiation and fragmentation. With the expansion of potential resources of an endogenous nature, it creates an institutional, political and cultural "environment" required to promote productive activities and employment generation in the various territorial areas. There is an advance of the political-territorial decentralization that turns out to be a powerful tool to identify with greater security the existing local resources that facilitate the strategic coordination between the different social actors in the Territory.

Regulation mode

Territorial economic promotion is decisive in the local Development initiative. Strategic coordination between local socio-economic actors is also essential: associations of entrepreneurs, financial institutions, consulting centers for companies, universities and research institutes, among others, in order to achieve incorporate technological and organizational innovations in the local business and productive fabric.

The series of interventions at meso-economic level, in the field of the public sector as of the private business agents must train them to open spaces of strategic consultation and to build political-administrative institutions that support the Development. Turok (2004) by linking the concept of competitiveness to the regions, refers to the economic, social, physical and institutional assets that are common to the regions and that influence the performance of the companies located there.

Technology Base

From these premises it can be observed that the macroeconomic equilibrium does not guarantee, by itself, economic development. It depends fundamentally on the continuous capacity to introduce technological, managerial and organizational innovations at the microeconomic level of productive activity and the territorial business fabric.

There is a greater commitment to the quality of the products, in the companies, the technical and managerial organization is much more efficient, being able to link computerized all the phases of the economic process in the same unit of real time. The strength of the company is not based on size, but on its ability to adapt to changing markets. Hence, it is more likely to increase its productive efficiency by subcontracting and operating on the basis of small and medium-sized enterprise networks, in a territorial environment in which cooperation and partnership between companies it allows them to access advanced production support services. It seeks a greater horizontal linkage between the functions of management, design, administration, production and marketing, which is facilitated by computer technology and, above all, by a different conception of business management, in which the Direction of this

one clearly moves towards the workshop, trying to take better advantage of the results of the collective work.

Materials and Method

The study is quantitative, incorporates elements that other studies have done to measure economic growth and regional competitiveness, uses longitudinal cut data from Gross Domestic Product (GDP) by federal entity at constant prices of 2013, which It reports the portal of the National Institute of Statistics and Geography (INEGI), in the series from 2003 to 2017. South-southeast regionalization followed that determined in the south-southeast Regional Development Program (SEDATU, 2013), in this program considers the federal entities of Campeche, Chiapas, Guerrero, Oaxaca, Puebla, Quintana-Roo, Tabasco, Veracruz and Yucatan.

Shift-Share Model

The model analyses the economic changes in the Gross Domestic Product as a proxy for growth, that is to say if there is a growth or contraction, in the locality, for which, it analyzes three components: i) component of the economy of reference; II) Industrial mixing component and regional differential component (Dunn,1960). This model considers a variable on which the changes to measure and interpret are analyzed, it is generally an economic aggregate that can be the income, the employment, the added value or another variable with greater or lesser level of aggregation. This method has been one of the most relevant techniques for regional analysis, based on regional and sectorial decomposition. The shift-share analysis is very practical in evaluating the impacts of industrial restructuring on regional and local economies, providing a guide for guiding development or investment and a particular industry. This provides a significant contribution to the detection and selection of key industries in the region, and the possible formation of local industry associations.

Components

According to the above, the shift-share analysis divides the change in the local economy into three components. The selected economic aggregate is the Gross Domestic Product (GDP), of the locality represented by the Federative entity, and area of reference will be the south-southeast region, the description of the variables is as follows:

gdp_i^t is the *gdp* of the i-th industry of the state integrated in the region at the initial time, t, the time interval considered is from *t* to t + 1 (2017).

GDP_i^t is the *GDP* of the i-th industry of the South-Southeast Region, it is the added GDP of all federated entities that make up the region, in the initial time, *t.*

$g_i = \frac{gdp_i^{t+1} - gdp_i^t}{gdp_i^t}$ is the *gdp* growth rate of *i-th* industry of the state, over the time interval $[t, t+1]$.

g is the total *gdp* growth rate of state.

$G_i = \frac{GDP_i^{t+1} - GDP_i^t}{GDP_i^t}$ is the GDP growth rate of *i-th* industry of the South-Southeast Region, over the time interval [*t*, *t+1*].

G is the total GDP growth rate of South-Southeast Region.

a. National component or reference area

This component measures the economic change in the federal entity that should have occurred, if it had grown at the same rate as the south-southeast region. It is expected that, if the south-southeast region grows as an aggregate, it would have a positive influence on each of the federative entities that make it to be part of the total change, is defined as:

$$\Delta N = \sum gdp_i^t G \qquad (1)$$

The interpretation of this component is simple, the component of the reference area of each industry, indicates the amount of value added in the industry that can be attributed to the growth of the economy in the south-southeast. That is, the GDP growth of the federal entity is calibrated due to the general trend and conditions of the south-southeast.

b. Industrial mixing component

This component measures the percentage of economic change in the federal entity attributed to the industrial mix of the south-southeast region. It reflects the degree to which the Federative entity specializes in industries that are growing fast or slow, in the south-southeast region. If a specific industry of the federative entity is large and linked to a fast-growing industry in the south-southeast region it will have a positive effect, otherwise it will have an inverse effect. Is defined as:

$$\Delta I = \sum gdp_i^t (G_i - G) \qquad (2)$$

When industries are growing faster than the average in the south-southeast, they could reflect greater dynamism, and that would imply a more promising future. But it should be considered that, given this dynamism, there will be greater demand for capital and labor factors, as well as greater demand for raw materials and intermediate inputs. This demand could exceed the supply of local factors and inputs so it should be anticipated with an advance plan or policy.

c. Regional differential component

This component measures the change of an industry in particular, in the federal entity. This is due to the difference between the growth rate of its own industries and the growth rate of the corresponding industries in the south-southeast. This component indicates a positive or negative change due to the competitive position of the federal entity

The regional differential component is defined as:

$$\Delta R = \sum gdp_i^t (g_i - G_i) \qquad (3)$$

If the total regional differential component is positive, it means that the aggregate value of the federal entity greater than the added value of the south-southeast region, which shows a clear competitive advantage over the reference region, if negative will be less Competitive than the national average. This is the component that is considered most important in the model, since it is unique that it considers the growth of an industry in particular of the federative entity, which would allow to define a local policy. However, this component does not provide additional information about the causes of the growth or contraction of the gross domestic product, rather, it allows comparing the situation of the industries between the federal entities belonging to the region South-southeast.

Total Shift

The total change (shift) is the sum of the three components, which is the actual growth, or contraction, of the added value.

$$\Delta T = \sum gdp_i^t G + \sum gdp_i^t (G_i - G) + \sum gdp_i^t (g_i - G_i) \qquad (4)$$

Simple Location Quotient

The Simple Location Quotient, also known as specialization, is one of the most widely used tools in economic geography and local regional economic analysis. The Location Quotient is a measure of the concentration of an industry in the federal entity with respect to the south-southeast region, it could also be compared with the nation. This coefficient compares the proportion of Gross Domestic Product by industrial activity in the Federative entity and its participation in the same variable corresponding to the industrial activity of the south-southeast region. It is considered a simple, quick and useful tool to determine the key industries of the region, and is formulated as:

$$SLQ = \frac{\frac{gdp_i}{gdp}}{\frac{GDP_i}{GDP}} \qquad (5)$$

Results

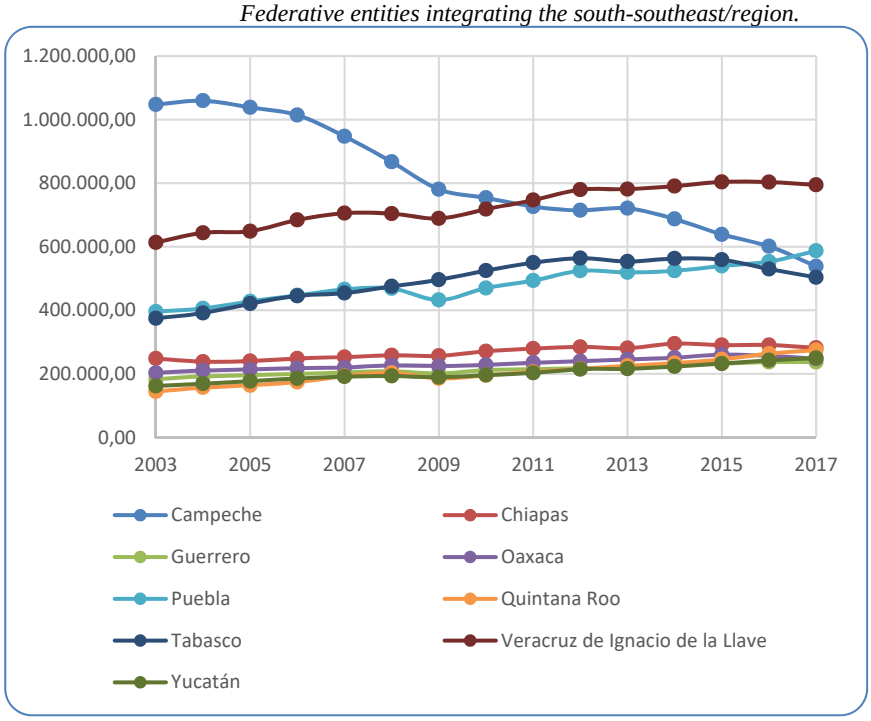
The South-southeast Region (RSS) of Mexico is comprised of the federal entities of Campeche, Chiapas, Guerrero, Oaxaca, Puebla, Quintana Roo, Tabasco, Veracruz and Yucatán (SEDATU, 2012). It is bounded to the north by the Gulf of Mexico, to the south by the Pacific Ocean, to the southeast by the border with Guatemala (956 km) and Belize (193 km), to the east by the Caribbean Sea and to the northwest by the federal entities of Michoacán, State of México, Morelos, Tlaxcala, Hidalgo, San Luis Potosí and Tamaulipas.

Gross domestic product (GDP) at constant prices 2013 per federal entity of the south-southeast region, is presented in Figure 2 (a). As noted, the largest contribution to the Regional GDP is provided by a first group of federal entities: Campeche, Puebla, Tabasco and Veracruz. At the beginning of the study period, their contribution to the Regional GDP was 32.5%, 19%, 12.3% and 11.6%, respectively. The GDP of Campeche had a fall of 51.3%, in the fifteen years of the period of study, thus, at the end of the period 2017, the contribution to the Regional GDP of these same federal entities was of 15.6%, 23.1%,

17.1% and 14.6%, respectively. The contribution to the GDP of the second group of federative entities: Chiapas, Oaxaca, Guerrero, Yucatan and Quintana Roo, is more moderate and is observed almost constant. Chiapas and Oaxaca although they grew in the period, at the end of the period a slight low is observed. Its contribution to GDP, at the beginning of the period, 2003, is 7.4% and 6% respectively, and 7.6% and 6.7% at the end of the period, 2017. Guerrero and Yucatán had a slight near-parallel growth, while Quintana Roo showed the group's highest growth, their contributions at the beginning of the period were 5.4%, 4.8% and 4.3% respectively, in 2003; At the end of the period their contribution to GDP was 6.4%, 6.7% and 7.4%, see Table 1.

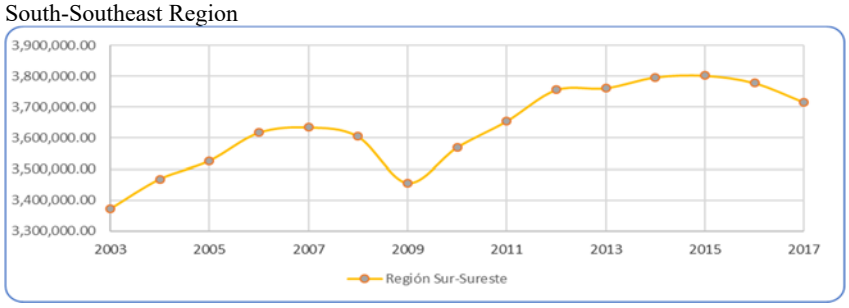
Figure 1. *Gross Domestic products federative entities integrating the south-southeast/region-National region.*

Federative entities integrating the south-southeast/region.



(a)

South-Southeast Region



(b)

Source: Own elaboration with data of the gross domestic product by federative entity published by INEGI: https://www.inegi.org.mx/sistemas/bie/. System of national accounts.

The contribution to the GDP of the south-southeast region to National GDP is 27% in the initial period 2003, which is reduced to 21% at the end of the period 2017. Figure 2 (b) shows the behavior of the GDP in the period analyzed.

Table 1. *Contribution to the south-southeast regional GDP of the federal entities considered in the region*

Federal Entity	2003	2004	2005	2006	2007	2008	2009	2010
Campeche	31.1%	30.6%	29.4%	28.0%	26.1%	24.1%	22.6%	21.1%
Chiapas	7.4%	6.9%	6.8%	6.9%	6.9%	7.2%	7.4%	7.6%
Guerrero	5.4%	5.6%	5.5%	5.5%	5.6%	5.8%	5.8%	5.9%
Oaxaca	6.0%	6.1%	6.1%	6.0%	6.0%	6.3%	6.5%	6.4%
Puebla	11.7%	11.7%	12.1%	12.4%	12.8%	13.0%	12.5%	13.2%
Quintana Roo	4.3%	4.5%	4.6%	4.8%	5.3%	5.6%	5.4%	5.5%
Tabasco	11.1%	11.3%	11.9%	12.3%	12.5%	13.2%	14.4%	14.7%
Veracruz de Ignacio de la Llave	18.2%	18.6%	18.4%	18.9%	19.4%	19.5%	19.9%	20.1%
Yucatán	4.8%	4.9%	5.0%	5.1%	5.3%	5.4%	5.5%	5.5%
Nivel/Entidad Federativa	2011	2012	2013	2014	2015	2016	2017	
Campeche	19.9%	19.0%	19.2%	18.1%	16.8%	15.9%	14.5%	
Chiapas	7.6%	7.6%	7.5%	7.8%	7.6%	7.7%	7.6%	
Guerrero	5.9%	5.8%	5.8%	6.0%	6.1%	6.3%	6.4%	
Oaxaca	6.4%	6.4%	6.5%	6.6%	6.9%	6.8%	6.7%	
Puebla	13.5%	14.0%	13.8%	13.8%	14.2%	14.6%	15.8%	
Quintana Roo	5.6%	5.7%	6.0%	6.2%	6.5%	7.0%	7.4%	
Tabasco	15.0%	15.0%	14.7%	14.8%	14.7%	14.0%	13.6%	
Veracruz de Ignacio de la Llave	20.4%	20.8%	20.8%	20.8%	21.1%	21.3%	21.4%	
Yucatán	5.6%	5.7%	5.7%	5.9%	6.1%	6.4%	6.7%	

Source: Own elaboration with data of the gross domestic product by federative entity published by INEGI: https://www.inegi.org.mx/sistemas/bie/. System of national accounts.

It analyzes the productive structure of nine federative entities that integrate the South-southeast region, whose denomination is the one that heads the columns in alphabetical order, the gross domestic product (GDP) of each federative entity to be disaggregated in 32 activities Productive (see Table 2). For each of these branches of activity, the Simple Location Quotient (SLQ) was estimated, specifically for the year 2003, 2013 and 2017 to observe the productive structure of each of the federative entities. The results are shown in Table 3, which, in order to highlight the results of SLQ ≥ 1, the colors yellow and orange have been used.

Note that the federal entity of Campeche, the first in the order, in the three years, only shows a productive industry with a SLQ ≥ 1:211 Oil and Gas extraction (see Table 3). Likewise, Tabasco, in 2003 shows a SLQ ≥ 1 in four activities: 211 Oil and Gas extraction; 324-326 Petroleum and Coal products manufacturing; Chemical Manufacturing; Plastics and Rubber products manufacturing; 54 Professional, Scientific, and Technical Services; and 62 Health Care and Social Assistance. In the next two years analyzed, the Health Care and Social Assistance sector stops displaying a SQL ≥ 1.

It analyzes the productive structure of nine federative entities that integrate the South-southeast region, whose denomination is the one that heads the columns in alphabetical order, the gross domestic product (GDP) of each federative entity to be disaggregated in 32 activities Productive (see Table 2). For each of these branches of activity, the Simple Location Quotient (SLQ) was estimated, specifically for the year 2003, 2013 and 2017 to observe the productive structure of each of the federative entities. The results are shown in

Table 3, which, in order to highlight the results of SLQ ≥ 1, the colors yellow and orange have been used.

Note that the federal entity of Campeche, the first in the order, in the three years, only shows a productive industry with a SLQ ≥ 1:211 Oil and Gas extraction (see Table 3). Likewise, Tabasco, in 2003 shows a SLQ ≥ 1 in four activities: 211 Oil and Gas extraction; 324-326 Petroleum and Coal products manufacturing; Chemical Manufacturing; Plastics and Rubber products manufacturing; 54 Professional, Scientific, and Technical Services; and 62 Health Care and Social Assistance. In the next two years analyzed, the Health Care and Social Assistance sector stops displaying a SQL ≥ 1.

Table 2. *Structure of the 32 productive activities analyzed*

act	pib_32	Description of Economic Activity	act	pib_32	Description of Economic Activity
01	11	Agriculture, Forestry, Fishing and Hunting.	17	339	Miscellaneous Manufacturing.
02	211	Oil and Gas Extraction.	18	43	Wholesale trade.
03	212	Mining of metallic and non-metallic minerals	19	46	Retail trade.
04	22	Utilities: Electric Power Generation, Transmission and Distribution; Natural Gas Distribution; Water, Sewage and Other Systems.	20	48-49	Transportation and Warehousing.
05	23	Construction.	21	51	Information.
06	311	Food Manufacturing.	22	52	Finance and Insurance.
07	312	Beverage and Tobacco Product Manufacturing.	23	53	Real Estate and Rental and Leasing.
08	313-314	Textile Mills; Textile Product Mills.	24	54	Professional, Scientific, and Technical Services.
09	315-316	Apparel Manufacturing; Leather and Allied Product Manufacturing.	25	55	Management of Companies and Enterprises.
10	321	Wood Product Manufacturing.	26	56	Administrative and Support and Waste Management and Remediation Services.
11	322-323	Paper Manufacturing; Printing and Related Support Activities.	27	61	Educational services.
12	324-326	Petroleum and Coal Products Manufacturing; Chemical Manufacturing; Plastics and Rubber Products Manufacturing.	28	62	Health Care and Social Assistance.
13	327	Nonmetallic Mineral Product Manufacturing.	29	71	Arts, Entertainment, and Recreation.
14	331-332	Primary Metal Manufacturing; Fabricated Metal Product Manufacturing.	30	72	Accommodation and Food Services.
15	333-336	Machinery Manufacturing; Computer and Electronic Product Manufacturing; Electrical Equipment, Appliance, and Component Manufacturing; Transportation Equipment Manufacturing.	31	81	Other Services (except Public Administration).
16	337	Furniture and Related Product Manufacturing.	32	93	Public Administration.

Source: Own elaboration with data of the gross domestic product by federative entity published by INEGI: https://www.inegi.org.mx/sistemas/bie/. System of national accounts.

Table 3. *Simple Location Quotient (SLQ) of the entities that integrate the south-southeast region for the years 2003, 2013 and 2017*

	2003		Simple Location Coefficient CLS = $(g_i/g_t)/(G_i/G_t)$								
act	pib_32	Economic Activity	Campeche	Chiapas	Guerrero	Oaxaca	Puebla	Quintana Roo	Tabasco	Veracruz	Yucatán
01	11	Agriculture, Forestry, Fishing and Hunting.	0.0810	2.4445	1.6617	1.5912	1.3095	0.2908	0.5738	1.7965	1.2306
02	211	Oil and Gas Extraction.	9.6158	0.2184	0.0000	0.0000	0.0061	0.0000	1.3218	0.3904	0.0000
03	212	Mining of metallic and non-metallic minerals	0.0209	1.3624	1.8706	0.3026	2.0405	4.2983	0.5787	0.4073	1.5153
04	22	Utilities: Electric Power Generation, Transmission and Distribution; Natural Gas Distribution; Water, Sewage and Other Systems.	0.0712	0.9882	2.7533	0.7866	0.9607	0.7432	0.4179	1.7828	2.5575
05	23	Construction.	0.5101	1.6274	1.1721	1.6332	0.7025	1.0981	0.9959	1.2261	1.4641
06	311	Food Manufacturing.	0.0256	1.1415	0.9068	0.9815	1.8810	0.4974	0.6354	1.4830	2.1453
07	312	Beverage and Tobacco Product Manufacturing.	0.0627	0.7290	0.4660	4.7431	1.0183	0.3954	0.6310	1.0056	1.2030
08	313-314	Textile Mills; Textile Product Mills.	0.0051	0.1567	0.1614	0.5507	6.8999	0.0895	0.0650	0.2014	1.5933
09	315-316	Apparel Manufacturing; Leather and Allied Product Manufacturing.	0.0907	0.3149	0.3361	0.6601	3.7337	0.1634	0.1580	0.6975	4.2236
10	321	Wood Product Manufacturing.	0.0164	0.7188	2.1591	5.7125	0.7685	1.9269	0.1774	0.9417	0.3944
11	322-323	Paper Manufacturing; Printing and Related Support Activities.	0.0062	0.1497	0.2640	0.9153	2.4940	0.6832	0.2709	0.6029	3.7066
12	324-326	Petroleum and Coal Products Manufacturing; Chemical Manufacturing; Plastics and Rubber Products Manufacturing.	0.0026	2.1317	0.0114	1.9382	0.3588	0.0064	2.7294	2.4870	0.0921
13	327	Nonmetallic Mineral Product Manufacturing.	0.0098	0.6693	0.3401	2.8245	2.1247	1.7956	0.1834	0.8395	3.0889
14	331-332	Primary Metal Manufacturing; Fabricated Metal Product Manufacturing.	0.0039	0.4164	0.1127	0.2202	2.4683	0.1969	0.1169	1.2312	0.4082
15	333-336	Machinery Manufacturing; Computer and Electronic Product Manufacturing; Electrical Equipment, Appliance, and Component Manufacturing; Transportation Equipment Manufacturing.	0.0002	0.0299	0.0731	0.0038	7.8900	0.0120	0.0204	0.0622	0.5546
16	337	Furniture and Related Product Manufacturing.	0.0125	0.8129	0.5932	1.3740	2.8280	0.6470	0.3897	0.6852	2.8321
17	339	Miscellaneous Manufacturing.	0.0025	0.4480	3.0763	1.0414	2.5991	0.2557	0.2120	0.1646	4.9204
18	43	Wholesale trade.	0.0538	1.1469	2.1412	1.7555	1.4341	1.3116	0.8025	0.9769	1.8192
19	46	Retail trade.	0.0754	1.4066	1.5478	1.3528	1.6338	1.8863	0.6525	1.0624	1.9508
20	48-49	Transportation and Warehousing.	0.1551	1.3057	2.2126	1.2195	1.6823	1.3258	0.5926	1.1024	1.1097
21	51	Information.	0.0499	1.0259	1.4939	0.8926	1.4342	3.1760	0.6811	0.2352	2.6104
22	52	Finance and Insurance.	0.0381	1.2782	1.5325	1.4138	1.9358	1.5366	0.6722	0.5020	2.0521
23	53	Real Estate and Rental and Leasing.	0.0763	1.2819	1.5022	1.7346	1.6408	1.4550	0.7726	1.2548	1.4417
24	54	Professional, Scientific, and Technical Services.	0.1292	0.7019	1.0363	0.7670	1.5011	2.2269	1.7177	0.4101	1.6934
25	55	Management of Companies and Enterprises.	0.0638	0.0000	0.0000	0.0000	1.5774	5.4917	0.1272	0.0816	1.0473
26	56	Administrative and Support and Waste Management and Remediation Services.	0.0734	0.8134	1.3564	0.7385	1.3853	5.2234	0.6622	0.3135	3.4280
27	61	Educational services.	0.1005	1.8901	2.1331	1.9206	1.4342	0.7860	0.7233	1.2865	1.4119
28	62	Health Care and Social Assistance.	0.0875	1.4709	2.1392	1.5220	1.2329	1.2641	1.0786	1.0180	1.7689
29	71	Arts, Entertainment, and Recreation.	0.0939	0.6522	1.0296	1.1177	1.2825	7.5899	0.3313	0.4807	1.4415
30	72	Accommodation and Food Services.	0.1323	0.8612	2.0177	1.1050	0.7167	7.9263	0.5384	1.1472	1.0903
31	81	Other Services (except Public Administration).	0.1196	1.5402	1.6994	1.7426	1.3421	1.1808	0.8029	0.9891	1.9320
32	93	Public Administration.	0.1101	1.7665	2.1652	2.1895	1.1319	1.3035	0.8670	0.9150	1.5398

	2013		Simple Location Coefficient CLS = $(g_i/g_t)/(G_i/G_t)$								
act	pib_32	Economic Activity	Campeche	Chiapas	Guerrero	Oaxaca	Puebla	Quintana Roo	Tabasco	Veracruz	Yucatán
01	11	Agriculture, Forestry, Fishing and Hunting.	0.1712	2.1162	1.4285	1.6910	1.2226	0.2516	0.3926	1.5968	1.1532
02	211	Oil and Gas Extraction.	12.9649	0.2486	0.0000	0.0000	0.0730	0.0000	2.0549	1.0546	0.0000
03	212	Mining of metallic and non-metallic minerals	0.0206	0.5533	5.6327	2.0745	1.0403	1.0018	0.3254	0.3092	0.9614
04	22	Utilities: Electric Power Generation, Transmission and Distribution; Natural Gas Distribution; Water, Sewage and Other Systems.	0.1020	1.6976	2.5642	0.9089	1.1121	0.6013	0.2062	1.6174	1.5878
05	23	Construction.	0.9420	0.9152	1.1572	1.5808	0.7165	0.9831	0.8926	1.2557	1.2653
06	311	Food Manufacturing.	0.0413	1.0481	0.6427	0.9004	1.5051	0.2958	0.3660	1.5066	2.2887
07	312	Beverage and Tobacco Product Manufacturing.	0.0578	0.7488	0.5620	4.6579	0.7953	0.3628	0.5888	0.7450	1.0766
08	313-314	Textile Mills; Textile Product Mills.	0.0086	0.1366	0.2393	0.3757	5.8191	0.0792	0.0681	0.3377	0.8215
09	315-316	Apparel Manufacturing; Leather and Allied Product Manufacturing.	0.2419	0.3679	0.3285	0.6734	3.0541	0.1361	0.1760	0.5477	3.0846
10	321	Wood Product Manufacturing.	0.0448	0.9020	2.1162	4.9720	0.9602	0.9115	0.1432	0.5659	0.9184
11	322-323	Paper Manufacturing; Printing and Related Support Activities.	0.0101	0.3948	0.2290	0.8060	2.6110	0.4000	0.2070	0.6312	0.9533
12	324-326	Petroleum and Coal Products Manufacturing; Chemical Manufacturing; Plastics and Rubber Products Manufacturing.	0.0045	1.7491	0.0087	1.6079	0.4064	0.0068	2.1285	2.3666	0.1050
13	327	Nonmetallic Mineral Product Manufacturing.	0.0250	0.4820	0.3697	2.2824	1.6808	0.6182	0.1641	0.9746	3.1463
14	331-332	Primary Metal Manufacturing; Fabricated Metal Product Manufacturing.	0.0064	0.3835	0.0896	0.1367	1.6887	0.0671	0.0858	1.7198	0.6170
15	333-336	Machinery Manufacturing; Computer and Electronic Product Manufacturing; Electrical Equipment, Appliance, and Component Manufacturing; Transportation Equipment Manufacturing.	0.0018	0.0526	0.0613	0.0042	6.7697	0.0071	0.0120	0.0475	0.4579
16	337	Furniture and Related Product Manufacturing.	0.0220	0.8285	0.6071	1.3569	2.1992	0.4852	0.3569	0.6101	2.2327
17	339	Miscellaneous Manufacturing.	0.0056	0.5639	1.2998	1.0591	2.8424	0.2449	0.1885	0.1874	2.9339
18	43	Wholesale trade.	0.1228	1.3426	1.4192	1.3838	1.2719	0.9781	0.6802	0.8784	1.7124
19	46	Retail trade.	0.1548	1.3464	1.4150	1.2265	1.2832	1.6780	0.6223	0.9475	1.7308
20	48-49	Transportation and Warehousing.	0.2733	0.9067	1.9549	1.0389	1.3967	1.2199	0.5066	1.1598	0.8353
21	51	Information.	0.0798	1.1077	1.3075	0.8429	1.7475	1.3338	0.4943	0.2981	2.8122
22	52	Finance and Insurance.	0.1013	1.4506	1.3634	1.1549	1.2937	1.6039	0.5891	0.5929	1.4970
23	53	Real Estate and Rental and Leasing.	0.1413	1.3189	1.3508	1.5741	1.3757	1.2627	0.5992	1.1911	1.2038
24	54	Professional, Scientific, and Technical Services.	0.2849	0.6594	0.7351	0.7482	1.0971	2.0800	1.2119	0.4525	1.4666
25	55	Management of Companies and Enterprises.	0.1276	0.0000	0.0000	0.0000	1.0685	4.3643	0.1044	0.0656	0.6818
26	56	Administrative and Support and Waste Management and Remediation Services.	0.1061	0.8067	0.7742	0.6894	1.2772	3.8100	0.4214	0.3409	3.1960
27	61	Educational services.	0.1817	1.9727	1.6894	1.5871	1.3261	0.6951	0.5641	1.2276	1.1513
28	62	Health Care and Social Assistance.	0.1381	1.4607	1.4947	1.1571	1.2136	1.0802	0.7635	1.1534	1.4382
29	71	Arts, Entertainment, and Recreation.	0.1754	0.6517	0.8614	0.9234	1.0416	6.1814	0.2399	0.4288	1.1730
30	72	Accommodation and Food Services.	0.2677	0.6369	1.7338	0.9795	0.5392	7.8407	0.3281	0.7389	0.7802
31	81	Other Services (except Public Administration).	0.2190	1.3832	1.4461	1.5147	1.2038	0.9979	0.6019	1.0041	1.6652
32	93	Public Administration.	0.1959	1.7002	2.1094	1.7429	0.9754	1.1970	0.6391	0.8752	1.2789

2017		Simple Location Coefficient CLS = $(g_i/g_t)/(G_i/G_t)$								
pib_32	Total de la Actividad Económica	Campeche	Chiapas	Guerrero	Oaxaca	Puebla	Quintana Roo	Tabasco	Veracruz	Yucatán
11	Agriculture, Forestry, Fishing and Hunting.	0.2981	1.8217	1.4770	1.6141	1.0973	0.2034	0.4384	1.6183	0.9854
211	Oil and Gas Extraction.	18.3148	0.1264	0.0000	0.0000	0.0395	0.0000	2.6265	1.0503	0.0000
212	Mining of metallic and non-metallic minerals	0.0150	0.4173	5.9093	2.9643	0.7744	1.0935	0.1712	0.2339	0.7685
22	Utilities: Electric Power Generation, Transmission and Distribution; Natural Gas Distribution; Water, Sewage and Other Systems.	0.1458	1.6099	2.6288	0.9573	1.0466	0.5601	0.2236	1.5202	1.3767
23	Construction.	0.6276	0.9880	1.1092	1.3632	0.8902	1.1344	0.6312	1.0748	1.5847
311	Food Manufacturing.	0.0572	0.8932	0.4697	0.9679	1.3634	0.2649	0.3451	1.5906	2.6665
312	Beverage and Tobacco Product Manufacturing.	0.0619	1.0681	0.3250	4.0679	0.4110	0.1853	0.4752	1.3104	0.6465
313-314	Textile Mills; Textile Product Mills.	0.0106	0.1623	0.1847	0.4940	4.6459	0.0637	0.0943	0.7085	0.6011
315-316	Apparel Manufacturing; Leather and Allied Product Manufacturing.	0.2505	0.4704	0.2453	0.5401	2.7682	0.1381	0.2838	0.6884	2.4654
321	Wood Product Manufacturing.	0.0598	0.8257	1.7204	5.0625	0.8795	0.7427	0.1843	0.7255	0.7150
322-323	Paper Manufacturing; Printing and Related Support Activities.	0.0129	0.2295	0.1556	0.7618	2.7954	0.3847	0.2005	0.5446	0.8254
324-326	Petroleum and Coal Products Manufacturing; Chemical Manufacturing; Plastics and Rubber Products Manufacturing.	0.0097	1.6869	0.0063	1.0056	0.5587	0.0074	2.3576	2.0796	0.1032
327	Nonmetallic Mineral Product Manufacturing.	0.0121	0.7037	0.2362	1.8957	1.6100	0.8118	0.1912	0.8992	2.9422
331-332	Primary Metal Manufacturing; Fabricated Metal Product Manufacturing.	0.0058	0.3369	0.0817	0.1064	1.6593	0.1074	0.0671	1.7011	0.5443
333-336	Machinery Manufacturing; Computer and Electronic Product Manufacturing; Electrical Equipment, Appliance, and Component Manufacturing; Transportation Equipment Manufacturing.	0.0014	0.0283	0.0410	0.0030	6.0843	0.0166	0.0065	0.0144	0.3465
337	Furniture and Related Product Manufacturing.	0.0259	1.0682	0.5047	1.2116	2.1380	0.3907	0.5344	0.5343	1.9143
339	Miscellaneous Manufacturing.	0.0077	0.7415	0.9852	0.9861	2.5291	0.1725	0.3750	0.2264	2.1645
43	Wholesale trade.	0.1773	1.4167	1.1976	1.1412	1.0203	0.8774	0.6265	1.1010	1.5300
46	Retail trade.	0.2050	1.3934	1.3289	1.2033	1.0983	1.4381	0.6264	1.0798	1.3094
48-49	Transportation and Warehousing.	0.2461	0.8319	1.6962	0.9587	1.2510	1.2560	0.5474	1.2115	0.7462
51	Information.	0.1001	1.0339	1.2329	0.7915	1.6685	1.0853	0.4945	0.2855	2.6953
52	Finance and Insurance.	0.1304	1.2056	1.2007	1.1936	1.2643	1.5873	0.5077	0.5616	1.3919
53	Real Estate and Rental and Leasing.	0.2082	1.2865	1.2028	1.5044	1.1936	1.1267	0.6493	1.2766	1.0467
54	Professional, Scientific, and Technical Services.	0.3814	0.6324	0.6739	0.6622	1.1326	1.7998	1.1875	0.4833	1.2890
55	Management of Companies and Enterprises.	0.1375	0.0000	0.0000	0.0000	1.0380	4.4730	0.1051	0.0663	0.6174
56	Administrative and Support and Waste Management and Remediation Services.	0.1030	0.7321	0.6930	0.6967	1.0802	3.7662	0.2875	0.3243	2.8864
61	Educational services.	0.2728	2.1020	1.6178	1.6819	1.0882	0.5754	0.5639	1.2590	1.0201
62	Health Care and Social Assistance.	0.2137	1.5638	1.4177	1.2279	1.0703	0.9170	0.7543	1.1641	1.2617
71	Arts, Entertainment, and Recreation.	0.2761	0.6790	0.7559	0.9282	0.8547	5.0575	0.2634	0.4620	0.9908
72	Accommodation and Food Services.	0.3201	0.6280	1.6643	0.9247	0.5246	6.7027	0.2907	0.6129	0.6987
81	Other Services (except Public Administration).	0.2915	1.3633	1.3905	1.5124	1.0645	0.9052	0.6613	1.0189	1.3964
93	Public Administration.	0.3057	1.5154	1.9731	1.8553	0.8064	0.9220	0.7069	0.9441	1.1347

Source: Own elaboration with data of the gross domestic product by federative entity published by INEGI: https://www.inegi.org.mx/sistemas/bie/. System of national accounts.

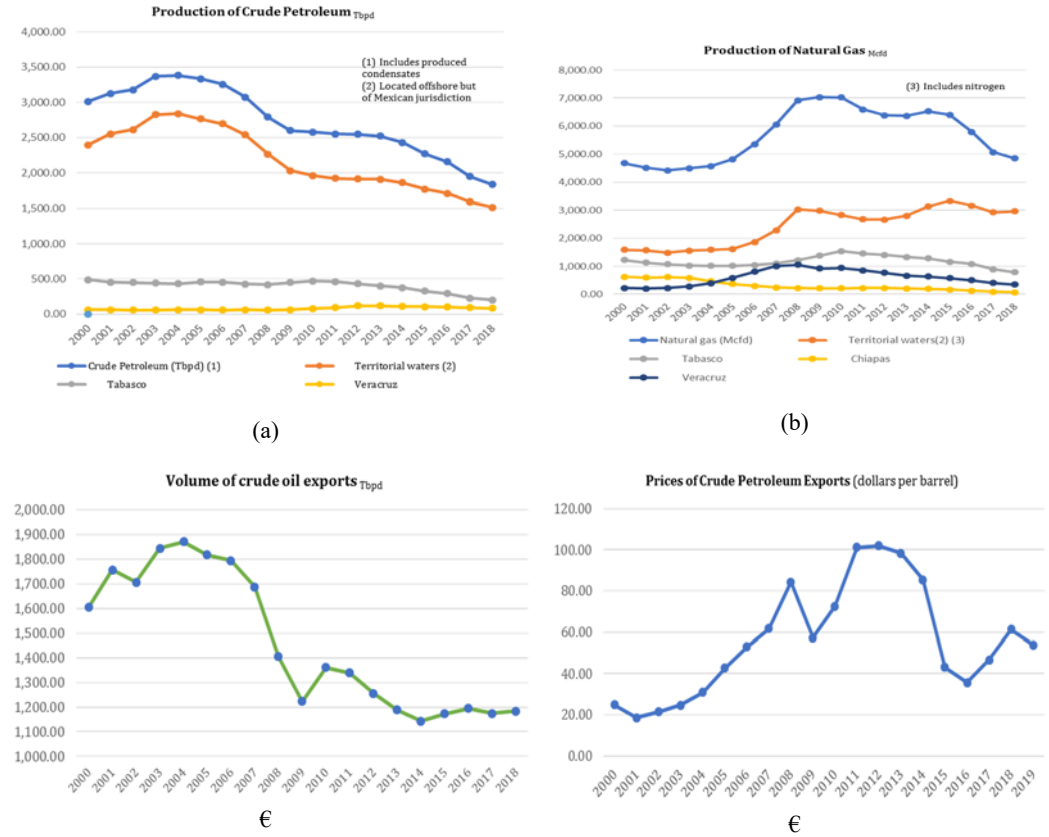
Analyzed the shares in the GDP of these industries, in 2003, it is observed that in Campeche 90.1% contributes the Oil and Gas extraction, while in Tabasco the contributions are 45.29%, the Oil and Gas extraction; 10.45%, Petroleum and Coal products, Chemical, plastics and Rubber products manufacturing; And 1.95%, the Health Care and Social Assistance. AT the end of the period, 2017, the shares are 45.29%, the Oil and Gas extraction; 10.45%, Petroleum and Coal products, Chemical, plastics and Rubber products manufacturing. That is to say, basically the economies of Campeche and Tabasco are anchored in the Oil and Gas extraction, this explains the strong fall of the gross domestic product of Campeche where the growth rate is negative during the whole period [see Figure 2 (a)]. If it is also taken into consideration that in this period there is a sustained fall in the production of oil, and consequently the volume of exports (Pemex, 2019), directly impacting the GDP of Campeche [see Figure 3 (a) and (b)].

In contrast, in Tabasco there is a sustained growth of GDP, from the beginning of the period to 2012 [see Figure 2 (a)], this is explained by two reasons, although the production of oil is decreasing, the price of crude remained growing, from the beginning of the Period, to its maximum point between 2011 and 2012 [See Figure 3 (a) (c)], then the following years the price of oil had a steady fall. Another of the hydrocarbon production in Tabasco is the extraction of gas, whose production performance was increased from 2003 to practically 2010. Note that the declination of the Tabasco GDP starts at 2012.

The federative entities of Puebla and Yucatán, lead in each group the highest proportion of productive activities that show a SLQ ≥ 1. In the year 2003, 26 (81%) and 27 (84%) Of the 32 activities showed a SLQ ≥ 1, respectively. Whereas, in 2017, they showed 23 (72%) and 18 (56%). This could indicate that more goods and services are being produced that exceed local consumption and therefore are exporting to the rest of the country and or the world.

In the second group of federative entities, Oaxaca and Guerrero show an almost parallel and constant growth, in this group who shows a greater growth is Quintana Roo.

Figure 2. *Performance of the oil and gas extraction industry*



Source: Own elaboration with data of the gross domestic product by federative entity published by INEGI: https://www.inegi.org.mx/sistemas/bie/. System of national accounts.

Growth of the region

To analyze the growth of the southeast region was estimated the shift-share of the region for 32 states, as has been raised, analyzed the growth of 2003 to 2017. This growth was divided into two sections from 2003 to 2013 and from 2013 to 2017, the reason for this cut is due to the approval of the structural reforms educational, fiscal and energetic and show that after these reforms there is a sharp fall in GDP in Campeche, followed by Tabasco, the two federal entities are anchored to oil, and do not offer much diversification in their economy. Moreover, Campeche's growth rate was always negative in the period 2003-2013.

As can be seen in Table 4, the big losers of the structural reforms were Campeche and Tabasco, with no diversification of its economy, absorbing all the risks of the fall of the international price of oil. Puebla is the winner of the third position in the period 2003-2013, passes to the first in the period 2013-2017 and the balance in fifteen years results in the first place. Table 5 shows the position taken by each of the federative entities in the periods indicated.

In analyzing the growth components of each of the federative entities it is observed that the growth of these due to the national thrust was negative in the period 2013-2017, just after the structural reforms. Campeche, Tabasco and Veracruz.

To look at the changes in the growth within the 32 activities of each of the federative entities, confirms the panorama that offers the estimation of the specialization coefficient of Table 3. In the first group, Campeche during the period of fifteen years 2003-2017 shows a negative growth rate, the activity 211, extraction of gas and oil is the one that leads to this rate of negative growth, the sector went in constant fall, with the declination of the Oilfield Cantarell started in 2004 (Romo, 2004), its main competitive advantage is in this sector and is negative, as its economy is anchored to this activity without diversification, leads in net terms to the fall of 65%.

Puebla, the second in alphabetical order of the group shows the greatest diversification according to the previous section. It has competitive advantages in various activities, listing in order of its contribution: 23 construction; 324-326 manufacture of petroleum-and coal-, chemical-, plastic-and rubber-derived products; 211 extraction of oil and gases, is the fourth oil producer in territorial waters, after Tabasco, Veracruz and Chiapas; 55 information in mass media; 22 generation, transmission and distribution of electric power, water supply and pipeline gas to the final consumer; 333-336 manufacture of machinery and equipment, computer equipment, communication, measurement and other equipment, electronic components and accessories, accessories of electrical appliances; and 11 primary sector; whose contribution and competitive advantage is in billions of pesos.

Table 4. *Shift-Share of the states of the south-southeast region*
Analyzed Variable: Gross domestic product at constant prices
Productive structure: 32 activities
Base years, 2013

Federal Entity	Shift Total	Regional Component DN	*Share* 2003-2013 Industrial Mix DI	Competitive Advantage DR
Campeche	-326,426.26	121,190.54	-256,062.92	-191,553.88
Chiapas	32,802.05	28,706.31	24,336.51	-20,240.78
Guerrero	36,097.40	21,138.87	31,343.73	-16,385.21
Oaxaca	42,552.04	23,481.66	27,251.62	-8,181.25
Puebla	123,349.28	45,804.01	63,951.54	13,593.73
Quintana Roo	81,039.65	16,686.86	25,652.34	38,700.44
Tabasco	178,736.80	43,372.60	-25,155.93	160,520.13
Veracruz	167,767.08	150,648.82	-7,627.45	24,745.70
Yucatán	54,151.74	18,700.34	29,485.66	5,965.74
Federal Entity	Shift Total	Regional Component DN	*Share* 2013-2017 Industrial Mix DI	Competitive Advantage DR
Campeche	-182,705.37	-8,880.89	-122,016.36	-51,808.12
Chiapas	907.37	-3,459.88	12,204.04	-7,836.80
Guerrero	18,203.88	-2,694.88	18,366.23	2,532.54
Oaxaca	1,975.67	-3,023.78	13,258.99	-8,259.54
Puebla	67,986.52	-6,395.17	61,091.42	13,290.26
Quintana Roo	49,810.93	-2,774.46	23,689.84	28,895.54
Tabasco	-49,936.13	-6,818.49	-57,064.73	13,947.09
Veracruz	13,603.41	85,966.87	-26,896.90	-45,466.57
Yucatán	33,825.34	-2,657.65	20,332.03	16,150.96

Source: Own elaboration with data of the gross domestic product by federative entity published by INEGI: https://www.inegi.org.mx/sistemas/bie/. System of national accounts.

Tabasco, like Campeche, Table 3 shows an undiversified economy and anchored in the 211extraction sector of oil and gas. Even in spite of the decline in production and oil prices, this branch remains its greatest comparative advantage, as it serves to counteract the fall caused by the national economy and the energy sector.

Table 5. *Classification of the south-southeast states ordered from higher growth to lower growth, periods 2003-2023, 2013-1017, 2003, 2017*

Federal Entity	Ranking		
	2003-2013	2013-2017	2003-2017
Campeche	9	9	9
Chiapas	8	7	8
Guerrero	7	4	6
Oaxaca	6	6	7
Puebla	3	1	1
Quintana Roo	4	2	3
Tabasco	1	8	4
Veracruz	2	5	2
Yucatán	5	3	5

Source: Own elaboration, ordering is according to the growth that is analyzed in Shift-Share estimated for the federal entities.

Veracruz de Ignacio de la Llave is the second federal entity that shows greater growth in the fifteen years analyzed. The first ten years 2003-2013 has its largest growing, in the period 2013-2017 its growth is slow, is considerably diminished by the negative effect of the sector 211 oil and gas extraction and its related activity 23 construction. It has a strong comparative advantage in wholesale and retail trade, 43 and 46, the services sector in general were those that contributed in greater proportion to the growth of this second period, but it is not a competitive advantage of the entity but rather the sector grew by the national thrust and in general the growth of the sectors, 312 the beverage and tobacco industry is manufacturing that shows greater competitive advantages.

In the second group of entities Federative show a slow growth but almost constant, highlights Quintana Roo that goes from a fourth place to a second in the period 2013-2017 and a third place in the fifteen years 2003-2017. It has specialized in the services sector and fourteen activities of services from trade 43-46 to other non-governmental services 81, have competitive advantage. The main competitive advantages of Chiapas are the construction, trade and educational services for Guerrero agriculture, for Oaxaca mining of metallic and non-metallic minerals, and educational services. While Yucatan building, food industry, and most of the services.

Discussion

According to the classical and later neoclassical approach, international trade provides benefits to all countries participating in it. There is no differentiation between the production i.e. they can be raw materials, transformed products or services, the benefits will be equally. Under the classical approach countries should specialize in those goods in which they had absolute advantages (Smith, 1776) or compared (Ricardo, 1817), with the use of their only production factor, work, as a result, there would be more production and consequently higher consumption. In the neoclassical rethinking there is a cost of opportunity and other factors of production, such as capital and land, in addition to work, the first fixed, the last flexible; and countries or regions in trade will have abundance in some of the factors. Likewise, the productive sectors will have variations in the intensity or use of the factors. Dividing the economy into two sectors, agriculture and manufacturing, both hiring the factor work, will make use of various fixed factors, land and capital respectively, i.e. the model of specific factors of Samuelson-Jones and the neo-classical approach of factorial proportions of Heckscher and Ohlin.

The industrialization of transformation in Mexico began to develop in the late 1940 under the regime of import substitution accumulation. With this regime, the use of local inputs was very expensive, with domestic prices well above the international ones, this forced the companies to concentrate on the domestic market. Thus, a large part of the companies were agglomerated in and around Mexico City, the richest and most populated region of the country, taking advantage of internal economies of scale, the economies of agglomeration and considerably reducing their transport costs, this dynamic That would lead to growing regional disparities (Molina et al., 2013).

In the 1980s, almost 52 percent of Mexico's manufacturing production was located in the East Center with the exception of mining, point and space resource, located in the south-southeast region of the country due to the endowment of its natural resources. The concentration of manufacturing activity led to increasing income disparities, owing to the increase in salaries that occurred with this activity. In this decade the average wages of the manufacturing industry in the south-southeast region was 43.5 percent of what was paid in the East Center.

Dávila, Kessel and Levy (2002) explain how the policies followed in Mexico have placed southeast at a comparative disadvantage. The concentration in the oil municipalities and the population dispersion in the rest of the towns stopped the exploitation of the economies of scale in the provision of public services, and involved higher costs for the companies to meet the increased demand. They emphasize that, the federal government in its exclusivity of the management of strategic resources, the price policy that were fixed for the hydrocarbons, was made with criteria outside the cost of production and distribution. So, by placing uniform sales prices across the country, it was caused that the region's abundance of energy resources should not be translated into lower prices or adequate supply, particularly electricity and natural gas. As the uniform pricing policies for the petrochemicals placed by Pemex remained up to 1983, the geographical dispersion of secondary petrochemicals produced by the private sector was promoted, the latter being placed in the final markets and not in the markets of intermediate production of hydrocarbons as in Tabasco.

In the 1980s, the crisis in the import substitution model forced Mexico to apply the measures of the Washington consensus and the signing of the North American Free Trade Agreement (NAFTA). A structural reform of market orientation is thus proposed to promote the external competitiveness of the economy by liberating foreign trade.

The companies moved to the northeast and central west of the country taking advantage of the export incentives and the increase in competition in the domestic market (Krugman and Livas, 1996). Likewise, the Mexican Government wishes PEMEX's national representativeness, so it carries out the necessary and possible transformations within the normative framework, to make it transit a public company protected, to a company in the rules of the competition World.

The United Nations Development Program [UNDP] (2016) defines the level of human development is defined as the opportunities of people to reach States or to carry out actions that they consider valuable. Mobility, for its part, refers to the change that individuals have in some socioeconomic condition, either with regard to their origin or throughout their life cycle. There are two types of mobility, absolute mobility and equalizing mobility of opportunities. The first one deals with the average progress of individuals with respect to their previous situation. The second refers to the change in the development of each person in relation to the others, and in particular if this advance or setback is similar or different between those involved.

In its analysis, UNDP (2016) reports that Mexico continually increased its level of human development and reduced regional and inter-group differences. However, there is still a

high level of inequality between people, which slows the present and future human development. In the federative entities, it detected the greater mobility equalizing opportunities in the education and health. Instead, the income dimension presented low equalizing mobility and, at times, became a motor of inequalities. The equalizing mobility of income, measured through GDP per capita, became unequal between 1990 and 2000, although this situation was reversed from 2000 to 2010. Roughly, between 1950 and 2000 Mexico City and the north of the country outperformed the entities of the south-southeast region.

The local economic dynamics shows that, in the period 2003-2017, as a group, the south-southeast states: Campeche, Chiapas, Guerrero, Oaxaca, Puebla, Quintana Roo, Tabasco, Veracruz and Yucatán, presented a growth rate of annual GDP, far below The rest of the country, as shown in Table 5. This factor also points out that the labour markets of Mexico City and the north of the country are more formal considering their access to social security institutions than the markets of the south-southeast entities.

It is necessary to balance the development of the federal entities of the country, the data UNDP (2016), show that the opportunities in federal entities such as Oaxaca, Chiapas and Guerrero have been lower than those of the rest of the country. It is also clear that the income dimension, measured through GDP per capita, has not experienced great equalizing mobility. The main challenge of public policy is to achieve true regional economic integration, which translates into a greater equality of income among the federal entities and that helps to recover the half-century of advantage that the achievements in mobility bring to them. Health and education equalizer.

In particular, public policy must strengthen physical and human capital to raise productivity and growth in the south-southeast region. The south-southeast Regional Development Program 2014-2018 and the south-southeast national Development strategy were focus in the productive infrastructure and tourism, which was reflected in Quintana Roo, but there was very little emphasis on the development of capital One of the factors that inhibits productivity.

As a strategy of integration of these federative entities, the criteria and regulations to promote human development should be seen in public expenditure. In this sense, in order to promote an equalizing mobility of opportunities, it is necessary to strengthen the criteria of distribution of federal expenditure, of decentralized expenditure and of municipal expenditure, through rules of allocation of expenditure according to the percentage reduction of The deficiencies in human development, so that the higher percentage reduction of the lags increase the allocated expenditure.

The labor market needs to be strengthened to drive equal opportunity mobility. Informality is a recurrent problem, and an incentive to reduce it proposed in the UNDP report (2016) is through a universal social protection system based on a package of services financed by taxes and not by contributions. This would result in a reduction in the costs of formal work and would drive demand for it. The lack of pensions for a large part of the population would also be remedied.

The south-southeast has had a competitive disadvantage, from the import substitution policy to the follow-up to the Washington consensus guidelines and its subsequent redefinition. Under a nation-state regime, as Rector of strategic resources, investment and development, the conditions for its detonation were not propitiated or given, the transformation industry remained at the center. With the change of regime of liberalization and subsequent local development, the disadvantage in infrastructure of networks of communication did not detonate also its development. Puebla followed a strategy of diversification and strengthening of its manufacturing and Quintana Roo seems to be consolidating its services.

Policies aimed at diversifying the region, stimulating local endogenous development, providing communications infrastructure to reduce transport costs and developing labour markets that can foster the Human development.

References

Alburquerque, F., 1997. Desarrollo Económico Local y Distribución del Progreso Térmico (Una respuesta a las exigencias del ajuste estructural). ILPES, Consejo Regional de Planificación, CEPAL.

Armenta R.A.B., 2010. Perspectiva intersectorial para el diseño de políticas en la planeación del desarrollo del Estado de Tabasco: Un análisis Estructural. Economía Local.

Dávila, E.G., Kessel, S. Levy, 2002. El sur también existe: un ensayo sobre el desarrollo regional de México. *Economía Mexicana. Nueva Época*. Vol XI, num. 2, Segundo semester de 2002.

Diario Oficial de la Federación, 2014. Programa Regional de Desarrollo del Sur-Sureste (PRDSS). 30/04/2014. <http://www.senado.gob.mx/comisiones/desarrollo_regional/docs/ProgRegDesarr_Sur-Sureste2014_2018.pdf>

Instituto Nacional de Estadística y Geografía [INEGI], 2019. <https://www.inegi.org.mx/sistemas/bie/>

Jessop, R., 1993. Towards a Schumpeterian Workfare State. Preliminary Remarks o Post-FordisT Political Economy. *Studies in Political Economy*, vol. 40, pp. 7-39.

Jessop, R., 2003a. The Political Economy of Scale. En Makus Perkman y Ngai-Ling Sum (Eds.). *Theories of New Regionalism: Globalization, Regionalization and Cross-Border Regions*, cap 2, pp. 25 -49. Palgrave Reader.

Jessop, R., 2003b. *The Future of the Capitalist State*. Polity Press LTD. Cambridge.

Martínez Rangel, Rubí, Ernesto Soto Reyes Garmendia, 2012. El Consenso de Washington: la instauración de las políticas neoliberales en América Latina. *Política y Cultura*. No. 37 ene 2012.

Molina, D.M., Mesquita, J. Blyde, 2013. The Role of Transport Costs in Mexico´s Regional Export Disparities. In M. Mesquita, J. Blyde, C. Volpe, D. Molina (Eds.) *TOO FAR TO EXPORT. Domestic Transport Costs and Regional Export Disparities in Latin America and the Caribbean* (pp.). Special Report on Integration and Trade. Inter-American Development Bank

Mustafa D., 2002. Regional Local Economic Analysis Tools. The World Bank. Washington, D.C. Document prepared for the Public Finance, Descentralization and Poverty Reduction Program.

Mustafa D.H., Kingsley E.T., Murat, 2003. Integrating models for regional development decisions: A policy perspective. *The annals of Regional Science*. Springer-Verlag. 37:31-53.

Ocampo, José A., 2002. La teoría del desarrollo en los albores del siglo XXI, Secretario Ejecutivo. Comisión Económica para América Latina y el Caribe, CEPAL. Documento presentado en el seminario, organizado por la CEPAL para conmemorar el centenario de nacimiento de Raúl

Prebisch. <www.eclac.cl/prensa/noticias/discursossecretaria/6/7996/.Prebisch-rev-JAO28-08.pdf.>

Petróleos Mexicanos [Pemex], 2019. Producción de petróleo crudo y gas natural por entidad federativa. Pemex-Exploración y Producción. Base de Datos Institucional. <http://ebdi.pemex.com/bdi/bdiController.do?action=temas>

PNUD, 2016. Informe sobre el Desarrollo Humano México 2016. Desigualdad y Movilidad. Informe técnico. Programa de Naciones Unidas para el Desarrollo. <http://www.mx.undo.org/>

Programa para Democratizar la Productividad, 2018. Reportes Subnacionales de Complejidad Económica. *Serie Estudios de Diagnóstico. Atlas de Complejidad Económica*. Gobierno de la Reublica.

Ramajo H.J. y M.A. Márquez P., 2008. Componentes espaciales en el modelo *Shift-Share*. Una aplicación al caso de las regiones peninsulares españolas. *Estadística Española*. Vol. 50, número 168, páginas 247-272.

Ramales O.M., 2008. Industrialización por sustitución de importaciones (1940-1982) y modelo "secundario-exportador" (1983-2006) en perspectiva comparada. Edición electrónica gratuita. Texto completo en <www.eumed.net/libros/2008c/434/>

Romo, Daniel, 2015. El campo petrolero Cantarell y la economía mexicana. *Problemas del desarrollo*. Vol. 46, No. 83.

Secretaria de Desarrollo Agrario, Territorial y Urbano [SEDATU], 2013. Programa Regional de Desarrollo del Sur-Sureste (PRDSS).

Trejo R.M., Andrade R.A., 2013. Evolución y desarrollo de las reformas estructurales en México (1982-2012). *El Cotidiano*. Universidad Autónoma Metropolitana. pp. 37-46.

Tudela, Fernando et al., 1989. La Modernización forzada del trópico. El caso Tabasco. El Colegio de México.

Uribe, Rodolfo, 2003. La transición entre el desarrollismo y la globalización: ensamblando Tabasco. UNAM. Centro Regional de Investigaciones Multidisciplinarias.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 48-57

Real and nominal convergence in the context of the Euro adoption

Sorin Cristian NIȚĂ
The Bucharest University of Economic Studies, Romania
nitasorincristian@gmail.com

Abstract. *According to the EU Treaty of Accession, a country which becomes a member of the European Union, must give up after a period of time on its national currency in order to adopt the common European currency. From the entry into the EU, countries must coordinate their economic policies with those of other members taking into account the general lines drawn by the EU council and also, countries must try and reach both nominal and real convergence. In this paper we will try to analyze nominal and real convergence in the context of the Euro adoption for Romania.*

Keywords: nominal convergence, real convergence, business cycles, fiscal policy, monetary policy.

JEL Classification: E31, E32, E60, E40.

Introduction

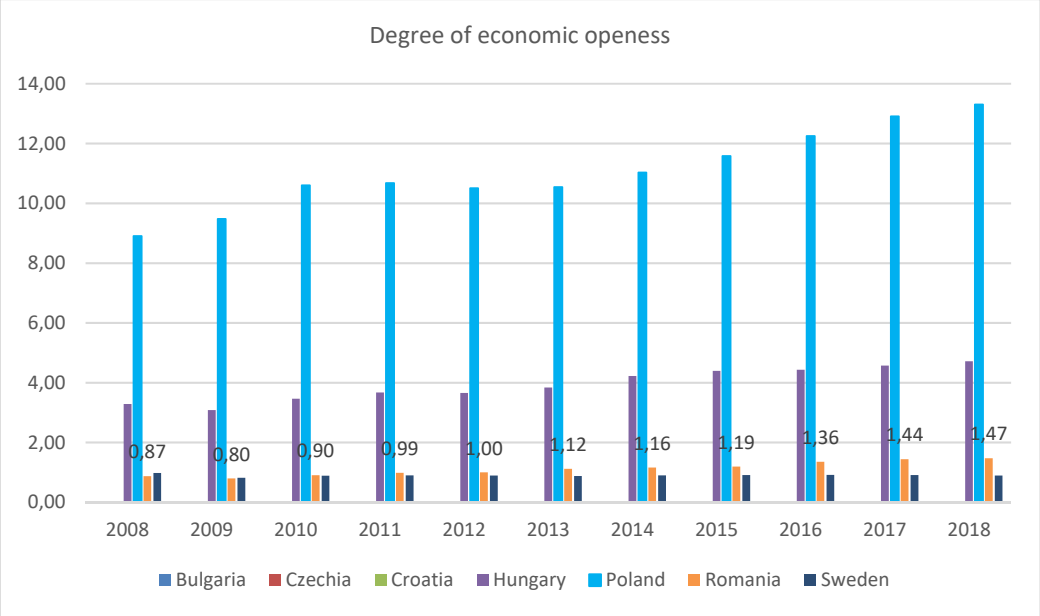
The Eurozone is a monetary union which consists of a number of the member states (19 countries have adopted the euro out of a total of 28) which have adopted the euro as their national currency. The other EU states with the exception of Denmark and the UK (which is in a full Brexit process) are under the obligation to eventually join the ERM II, once they meet the criteria to do so. Also, it`s worth mentioning that some states have formal agreements with the EU to use the Euro as their national currency ex: Monaco, Vatican, Andorra, San-Marino. A country that joins the EU, and is under the obligation to join the ERM II, is free to do so voluntarily, but one of the convergence criteria for joining the area euro is the country's participation in the mechanism for at least two years without registration tensions. For Romania, which has set a maximum target of 2024, means that by 2022 the country must join the mechanism. ERM II was created in January, 1999 with the purpose of ensuring that fluctuations in the exchange rate between the euro and other EU currencies do not affect economic stability in the common market and in order to help countries that are not part of the area euro to prepare for participation in the euro zone.

In order for the euro area to be efficient, it must thrive to be as close to an optimum currency area as possible, the idea of an optimum currency area being mentioned for the first time for the first time by Canadian economist Robert Mundell in an article published in 1961 "A theory of optimum currency areas". Mundell, was the first person to use the term "optimum currency area" for the first time, this being the reason for which he remained in economic history as the "father" of the theory of optimal monetary areas. A few characteristics of an optimum currency area were underlined.

- Production factor mobility: Market integration at a high level in a group of partner countries may reduce the need to change real factor prices and the nominal exchange rate between countries (Mundell, 1961)
- Price and wage flexibility: When nominal wages and prices are flexible between countries exercising a single currency, the transition to a shock adjustment is less likely to generate a persistent unemployment rate in one country and/or inflation in another
- Degree of economic openness: The higher the degree of openness, the more the price changes in the tradable goods sector will be felt in the living standard of the inhabitants
- Similarity of inflation rates: Significant differences in inflation rates can cause external imbalances. In 1971, Fleming showed that under conditions of similar (and low) inflation rates, trade stabilization is ensured, which supports the balance of the current account and reduces the role of the exchange rate.
- Tax integration. Countries sharing a supra-national fiscal transfer system that could allow the redistribution of funds to a member country affected by an asymmetric shock could also be helped by adjusting these shocks in the sense that the nominal exchange rate would need fewer adjustments (Kennen, 1969).
- Financial markets integration: If financial markets have a high degree of integration, removing restrictions on capital movements generates a disappearance of interest rate differentials or exchange rate fluctuations.(Ingram 1962)

Of course, an optimum currency area is extremely difficult to build, almost utopian as Mundel himself states in 1973, but it does provide a good guideline for the Euro Area to follow.

Figure 1



Source: Eurostat, Authors calculation.

In the case of Romania, a constant increase is visible, with the exception of 2009, when the financial crisis started to be felt. The graph shoes a very high degree of openness of Poland, doubling Hungary, while Romania is on par with Sweden.

Maastricht Treaty

The convergence criteria may be viewed as the economic test of assessing the state of preparation of a country's economy for integration into the Economic and Monetary Union, thus referring to both nominal and real convergence criteria. These criteria refer to the achievement of inflation, public finance, interest rates and exchange rate targets. Also, the progress made by Member States and candidate countries is assessed in the light of the same nominal convergence criteria. The objectives a candidate country has to meet in relation to the nominal convergence criteria are the following:

- Price stability - the inflation rate one year before the examination should not exceed by more than 1.5 percentage points the inflation rate in the top three countries with the lowest inflation rates; in addition, inflation rates in the candidate country must be sustainable.
- Public finances - the budgetary position of the candidate country must be sustainable, ie there is no excessive budget deficit. The state's consolidated budget deficit must not exceed the Treaty's 3% of GDP. If this value is exceeded, the budget deficit needs to be

substantially reduced and converging to a value close to the benchmark. In addition to the budget deficit, the candidate country should not have a gross public debt of more than 60% of GDP.

- The exchange rate - it must remain in the fluctuation margins agreed by the ERM II exchange rate mechanism for at least 2 years, without interfering (e.g., deliberate depreciation of the currency).

In the case of Romania, the inflation hit a value of 1.9 in 2018, according to the 2018 convergence report published in May 2018. The inflation rate automatically forced the NBR to push the Long term interest rate.

Figure 2

Year	Price Stability	Developments and budgetary projections of public administrations			Exchange rate		Long-term l rate
	HICP Inflation	Country in excessive deficit	General government deficit/surplus	General government debt	Currency participating in ERM II	Exchange rate vs. Euro	
2016	-1,1	No	-3,0	37,4	No	-1,0	3,3
2017	1,1	No	-2,9	35,0	No	-1,7	4,0
2018	1,9	No	-3,4	35,3	No	-1,9	4,1

Source: ECB Convergence Report, May 2018.

With regards to the recommendations in order to enhance economic growth, structural reforms are necessary. For example, the need to further increase competition, including by implementing product market reforms that would boost private investment. Another issue that could be addressed in order to make the transition as smooth as possible, is the absorption improvement of the EU funds.

Real convergence

Side from the nominal convergence criteria mentioned in the Maastricht treaty, a very important role plays the real convergence with the EU. Nominal convergence can be achieved at a much faster pace than real convergence. However, there is consensus in considering that a high degree of real convergence actually means the essence of an advantageous integration. There are two visions of the real convergence process. The first approach involves analyzing real convergence through revenue convergence; productivity convergence; convergence of relative prices; the convergence of the socio-occupational structure; convergence of educational standards. The second approach assumes the analogy between the criteria for adhering to an optimal monetary area and the real convergence criteria. Thus, a high degree of openness to the economy (analyzed above in Fig 1), high synchronization of business cycles with that of the EU, increased labor mobility, price and wage flexibility and high levels of financial development are believed to lead to a rapid catching- up from countries in the European model.

Progress on fulfilling the nominal convergence criteria has influenced the real economic variables, with the reciprocal relationship being also valid. In the first instance, nominal convergence can lead to a reduction in performance. Thus, imposing compliance with the Maastricht criteria (especially in terms of budget deficit and public debt) may affect the convergence of economies where investment levels are low. Nevertheless, fulfilling the

Maastricht criteria is able to ensure greater macroeconomic stability, which will create the premises for a higher economic growth rate. Reducing the rate of inflation and interest rates leads to an increase in investment and hence in GDP. In addition, lowering inflation rates accelerates the process of wage convergence. A stable exchange rate of the national currency leads to an increase in FDI and exports (openness) with favorable implications for the real convergence process. Proposals of Real Convergence Criteria.

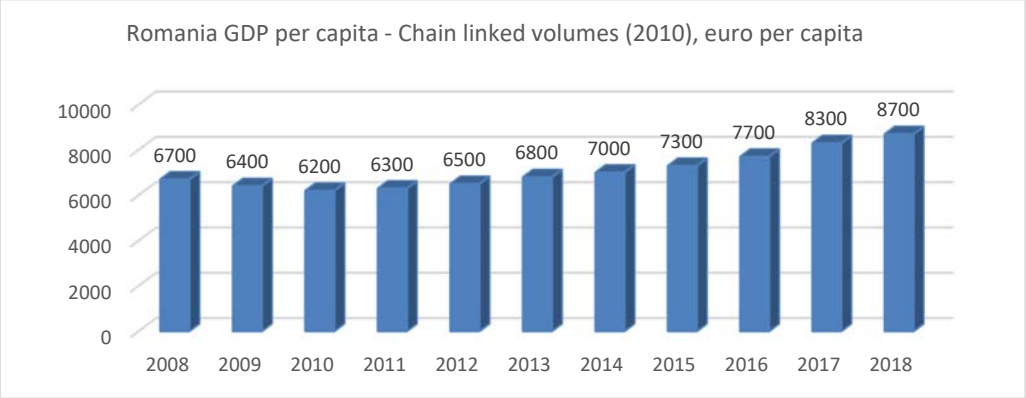
A series of criteria for measuring real convergence:
a) GDP growth (on a scale of ± 2% relative to the average of the three best-performing countries);
b) Unemployment level (on a 3% scale around the average of the three best performers);
c) Balance of current operations, expressed as a percentage of GDP (within ± 2% of GDP);
d) Competitiveness indicator against Germany (which does not differ by more than 10% from the estimated level of euro entry into the market) (Hen, Leonard, 2002).

Other authors (Isărescu, 2004) consider that the real convergence process can be quantified by the following criteria:
a) the degree of opening of the economy (calculated as a share of exports + imports in GDP);
b) the share of bilateral trade with EU Member States in total foreign trade;
c) GDP per capita (expressed either at nominal or purchasing power parity);
d) the structure of the economy (expressed by the share of the gross added value of the main sectors in GDP) (Socol and Dinu, 2006).

A series of criteria will be further presented and analyzed for Romania, the euro area and the main competitors of Romania.

One of the most important real convergence indicators, as mentioned above is the real GDP per capita evolution. If, prior to the crisis, the ECE member states of the EU recorded high economic growth rates, mainly due to the catching up process supported by large inflows of capital from the Euro Area, the financial crisis has slowed down capital inflows and the economic growth path, thus highlighting major structural flaws and the need for tough macroeconomic adjustments.

Figure 3



Source: Eurostat, Authors calculation.

This is visible in for Romania in the above graph, where in the years 2009 and 2010, being the years when the crisis started to make it`s toll on the economy, the GDP per capita has seen a high decrease. Romania is still in a position of a peripheral country in comparison with developed European countries. For example, in 2002, the GDP per capita for PCS in Romania was approximately 5 times lower than the euro area average, half that of Hungary and about 3 times lower than the Czech Republic. In 2018, Romania was at approximately 3 times lower than the euro area average, showing an improvement overall, yet the distance to the euro adoption still remains relatively high.

Figure 4. *GDP per capita Chain linked volumes (2010), euro per capita*

Year/ Country	Bulgaria	Czechia	Germany	Hungary	Poland	Romania	EU 28
2002	3,400	11,800	29,400	8,600	6,700	4,300	23,700
2003	3,600	12,200	29,200	9,000	6,900	4,400	23,900
2004	3,900	12,800	29,600	9,500	7,300	4,900	24,400
2005	4,200	13,600	29,800	9,900	7,500	5,100	24,800
2006	4,500	14,500	31,000	10,300	8,000	5,600	25,600
2007	4,800	15,200	32,100	10,400	8,500	6,100	26,200
2008	5,100	15,400	32,500	10,500	8,900	6,700	26,300
2009	5,000	14,600	30,800	9,800	9,100	6,400	25,000
2010	5,100	14,900	32,100	9,900	9,400	6,200	25,500
2011	5,300	15,200	33,300	10,100	9,900	6,300	25,900
2012	5,300	15,100	33,400	10,000	10,000	6,500	25,700
2013	5,400	15,000	33,500	10,200	10,200	6,800	25,700
2014	5,500	15,400	34,100	10,700	10,500	7,000	26,100
2015	5,700	16,200	34,400	11,100	10,900	7,300	26,700
2016	6,000	16,500	34,900	11,300	11,300	7,700	27,100
2017	6,300	17,200	35,500	11,800	11,800	8,300	27,700
2018	6,500	17,600	35,900	12,500	12,400	8,700	28,200

Source: Eurostat.

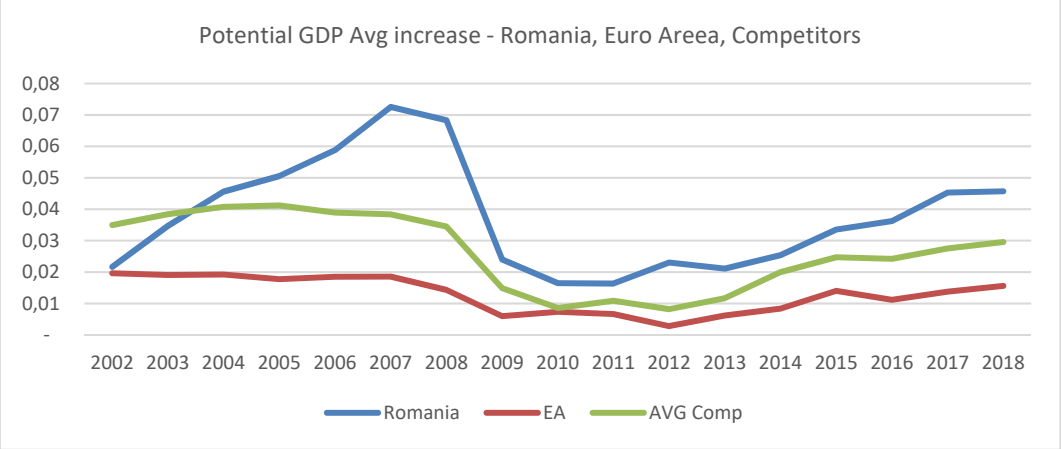
From the economic growth point of view, Romania is well positioned, compared to the average growth rate in the Euro Area and the other ECE states. Thus, during the period 2000-2018, the average economic growth rate in Romania was around 3.9% according to Eurostat data, while the average in Euro Area was around 1.3% in the same period. From this point of view, Romania exceeded Poland, which recorded an average growth rate of 3.7% over the same period, while the Czech Republic increased by 2.8% on average and Hungary by 2.2%.

The necessity of structural reforms in order to stimulate the potential GDP is very high. By stimulating the potential GDP, the number of years required for the convergence process to be effective will be reduced. In the absence of structural reforms, the growth potential of Romania's economy will deteriorate, postponing real convergence and implicitly the successful adherence by Romania to the euro area.

One of the major problems of the ECE countries with regards to joining the single currency area is the high economic development gap between the euro area members and the countries looking forward to join. The financial crisis has proven the fact that these differences count due to the negative effects that these underperforming economies may generate and due to the asymmetric shocks that may prove very difficult to absorb. In the absence of common instruments such as tax transfers, economic gaps within the euro area will generate imbalances as they did in the financial crisis, or will continue to have adverse

effects on the functioning of the monetary union. Thus, a country looking forward to enter the euro area must have adequate economic robustness so that in the event of an unwanted crisis it will not have to find itself in a situation to expect economic aid that may never come.

Figure 5



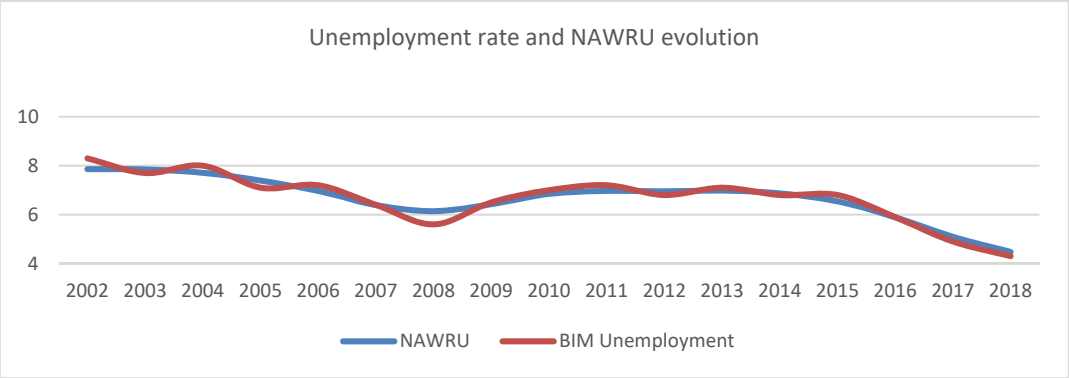
Source: Ameco database, author s calculation.

Note: Graph contains growth rates, year to year change Competitors visible in the graph are: Bulgaria, Czech Republic, Hungary, Poland, Croatia taken as average growth rate.

The potential economic growth is one of the most relevant indicators for analyzing the possibilities for narrowing the gaps between Romania and the EU. According to European Commission and national estimates, the potential GDP not being a statistically observable macroeconomic indicator, Romania has recovered its growth potential, strongly affected by the financial crisis, and in the medium term it is expected to have one of the highest potential increases among ECE states.

In Romania, the economic crisis has reduced the potential GDP growth rate from 5-6% to below 3% during the crisis. Through the massive reduction of investments and the decrease of labor force participation in economic activity, growth potential in Romania went to half of what it was before due to the financial crisis. Moreover, due to the fact that the main economic policies adopted were aimed more at targeting macroeconomic indicators rather than starting necessary structural reforms, the exit from the crisis was not accompanied by the resumption of potential growth rates in 2000-2008. Starting with 2017, the potential GDP growth rate has reached levels of above 4%. Nevertheless, there is a need for structural reforms in order to stimulate sustainable economic growth through investments in capital and technology, research and development and education in order to see results on the long run.

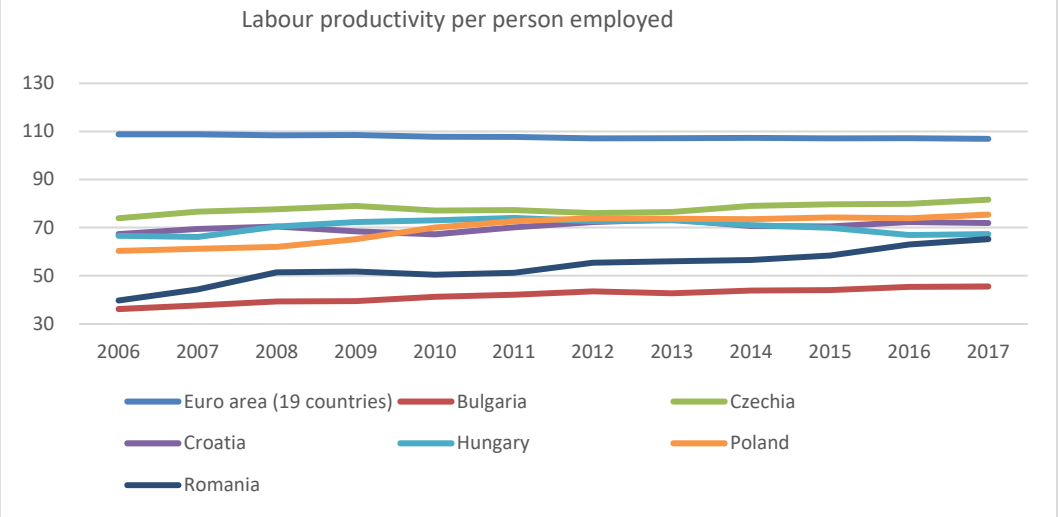
Figure 6



Source: Ameco database, author s calculation.

Another positive feature of the resumption of economic growth is observed in the labor market starting with 2015, when unemployment has seen a significant decline thus demonstrating the inclusive nature of economic growth. Thus, the BIM unemployment rate fell to 4.9% in 2017, from 7.1% in 2013. It is also significant that the BIM unemployment rate is close to the NAWRU (Non Accelerating Wages Rate of Unemployment) indicator which demonstrates the sustainability of the labor market.

Figure 7



Source: Eurostat.

Another indicator that can explain the convergence speed of Romania versus other European developed states is the labour productivity levels. A reason for which incomes in Romania are so low has a direct link with the level of labor productivity and the efficiency of resource use. According to the most recent Eurostat data available, the labor productivity per person employed is at 65% compared to the euro area, leveling at around 107%. Analyzing the dynamics of this indicator, we notice an improvement over the period under review (a steady and substantial increase from 40% in 2006 to 65% in 2017. Nevertheless,

the level remains lower than Poland (75%), the Czech Republic (82%), Croatia (72%). It is worth noting the significant reduction of the gap. Romania is only at 3 percentage points away from Hungary, and exceeded half the level of the euro area.

Conclusions

Successfully participating in ERM II for a minimum of two years is one of the convergence criteria in order to join the euro area together with a high degree of price stability, the soundness of public finances and the evolution of long-term interest rates. What must be noted, is the fact that once joining ERM II, the process is irreversible, thus a country must join only when it is truly ready to do so. For Romania, the adherence to ERM II would actually imply a change in the exchange rate regime. Specifically, entry into ERM II would mean moving from the depreciation trend of the Romanian LEU highlighted in recent years towards a linear float of the exchange rate around a fixed parity. By shifting the NBR focus towards controlling the exchange rate of the LEU, the task to control inflation together with the asymmetric shock absorbing would be a task for the fiscal policy and other mechanisms such as structural policies and the market. The Romanian economy must undergo major adjustments in order to be ready to join the euro zone, in areas such as macroeconomic stability, competitiveness, growth potential and adverse shocks resilience. The Romanian government has assumed a target for euro adherence in 2024, target which may be feasible under the right conditions.

References

Asociaţia Generală a Economiştilor din România; Dinu, Marin, red.; Socol, Cristian, red, 2006. *România în Uniunea Europeană. Potenţialul de convergenţă: Supliment al Revistei de Economie teoretică şi aplicată*, Available at: <http://store.ectap.ro/suplimente/supliment.pdf>

Banca Națională a României, 2015. *Raport asupra Stabilității Financiare 2015*. Bucureşti: Banca Naţională a României. Available at: <https://www.bnr.ro/DocumentInformation.aspx?idDocument=20872&directLink=1>

Comitetul Național pentru Supravegherea Macroprudențială, 2018. *Raport anual al Comitetului Național pentru Supravegherea Macroprudențială pentru anul 2017*, anul I, nr. 1. Available at: <http://www.cnsmro.ro/res/ups/Raport-anual-CNSM_2017.pdf>

Emerson, Michael; Gros, Daniel; Italianer, Alexander, 1992. *One market, One money: an evaluation of the potential benefits and costs of forming an economic and monetary union*, Oxford University Press.

European Central Bank, 2016. *Convergence Report.* June 2016. Available at: <https://www.ecb.europa.eu/pub/pdf/conrep/cr201606.en.pdf>

European Central Bank, 2017. *Convergence Report 2017.*

European Central Bank, 2018. *Convergence Report.* 23 may 2018. Available at: <https://www.ecb.europa.eu/pub/convergence/html/ecb.cr201805.en.html#toc1>

Grauwe, Paul De, 2003. *Economics of monetary union.* Oxford: Oxford University Press.

Grauwe, Paul De, 2007. *Economics of monetary union.* Oxford: Oxford University Press.

Grauwe, Paul De, 2015. *Economics of monetary union.* Oxford: Oxford University Press.

Hen, Christian; Jacques Léonard, 2002. *Uniunea Europeană*. Bucureşti: Coresi.

Isărescu, Mugur, 2007. *România: Drumul către Euro: Prezentare la Conferinţa organizată de Colegiul Academic al Universităţii „Babeş Bolyai”*, 2004 (versiune actualizată martie 2007).

Kenen, P. *The Theory of Optimum Currency Areas. An Eclectic View*. In: Mundell, R., Ed.; Swoboda, A. K., Ed. (1969). Monetary Problems of the International Economy. Chicago: University of Chicago Press, pp. 41-60.

Mundell, Robert A., 1968. *International Economic*. New York: Macmillan, pp. 177-186.

Socol, Aura Gabriela, 2011. *Costuri ale adoptării unei monede unice. Analiza prin prisma teoriei zonelor monetare optime*. În: Economie teoretică şi aplicată, Vol. XVIII (2011), No. 2 (555), pp. 89-100. Available at: <http://www.store.ectap.ro/articole/558_ro.pdf>

Socol, Aura; Dăianu, Daniel; Ghizdeanu, Ion, 2018. *Raportul de fundamentare a Planului național de adoptare a monedei euro*, Bucureşti, decembrie 2018. Available at: <http://www.cnp.ro/user/repository/Comisia_nationala_euro/Raportul_de_fundamentare_a_Planului_national_de_adoptare_a_monedei_euro.pdf>

<http://ec.europa.eu/>

<https://ec.europa.eu/eurostat?>

<https://www.bnro.ro/Home.aspx>

<https://www.ecb.europa.eu/>

<http://www.insse.ro/cms/>

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 58-68

Innovation in the fashion industry: Implications, consequences and the resistance of the consumers

Andreea-Ionela PUIU
The Bucharest University of Economic Studies, Romania
andreeaipuiu@gmail.com

Abstract. *The current society is characterised by rapid changes. Every moment new products and services are launched in the market with the purpose to achieve commercial success. However, most of them fail to accomplish this purpose. The fashion industry does not represent an exception in this regard and research intended to identify the most relevant factors that contribute to the expansion of this phenomenon, identifies consumer resistance as an essential factor in settling such a decision. The present paper comes with a brief review of the present innovations in the fashion industry, a short presentation of the consequences of innovation adoption and some reasons why do people manifest resistance to innovation.*

Keywords: innovation; innovation resistance; fashion industry; fashion tech; consumer.

JEL Classification: D01; D11; E71; O30.

1. Introduction

The current transition of society and economic system toward new societal paradigms, deeply informed by digital technologies, represents the main topic of current debates, impacting multiple societal dimensions, ranging from humanities to science and technology.

Due to digital evolution and due to the latest developments realised in the natural science domain, it is very plausible that the clothing industry will undergo profound transformations over the next generations. Nowadays, the smart way of producing clothes does not have as a goal only to provide fashion items, that fulfil the protective function and that realize the social class distinction, but to contribute to an experience formation and to build a psychological connection with the customer.

Therefore, the current paradigm, described as a model where new methods of production and consumption will transform all major industrial systems with the central purpose of ensuring a sustainable future for next generations, is recognised by the specific literature as the fourth industrial revolution. While general frameworks regarding the implementation of the fourth industrial revolution are accessible, implementation strategies and their challenges and implication on specific sectors are mostly unexplored. Taking into consideration this hypothesis the present article comes a brief review of the main features of this fourth industrial revolution and identifies their impact on the fashion industry.

Furthermore, the present article comprises a review of the principal causes that reduce the spread of innovation, with a focus on consumer innovation resistance behaviour. Consumer represents the central entity of economic transactions. His behaviour should be studied in various circumstances to come with solutions that establish a strong connection between the consumer satisfaction and the stability of producers on the market, respecting the constraints imposed by the existence of limited resources and the desire for a sustainable environment.

2. Innovation in the fashion industry

It's considered as being an innovation everything that is novel or renewal. According to Peter Drucker (1996) innovation represents any action that gives the resources and power of the new ability to create wealth. On the other hand, Avanti Fontana and Vincent Gasperz (2011) claim that innovation represents the success of social and economic environment because of the development of new methods or combinations of old ways in transforming inputs into outputs.

According to another study, innovation it's not limited to the goal of producing goods, it also includes attitudes, behaviours or movements towards the process of change in all forms of people's life (Pervaiz and Shepherd, 2010).

When it comes to the textile industry, unavoidable, the fashion sector along with technology and natural science will become one entity. Taking into consideration the fact that fashion consumption will never end, but will get bigger and faster, the omnipresence

of the technology industry along with the innovations made in physics and biology sciences would enable a more sustainable fashion consumption, protecting the environment and improving conditions for future generations, while securing clothing for a growing population.

A report realised by Accenture in 2018, in the context of the Global Change Award, revealed that there were identified nine circular fashion tech concepts that may conduct to a sustainable environment and that may aid in attaining the next level of circularity (Accenture, 2018). These nine concepts were devised into three main categories: digital, physical and biological. Digital section comprises features related to communication, electronics, computer science and artificial intelligence. The physical category refers to the material's characteristics, while the biological aspects focus on the function and structure of living organisms.

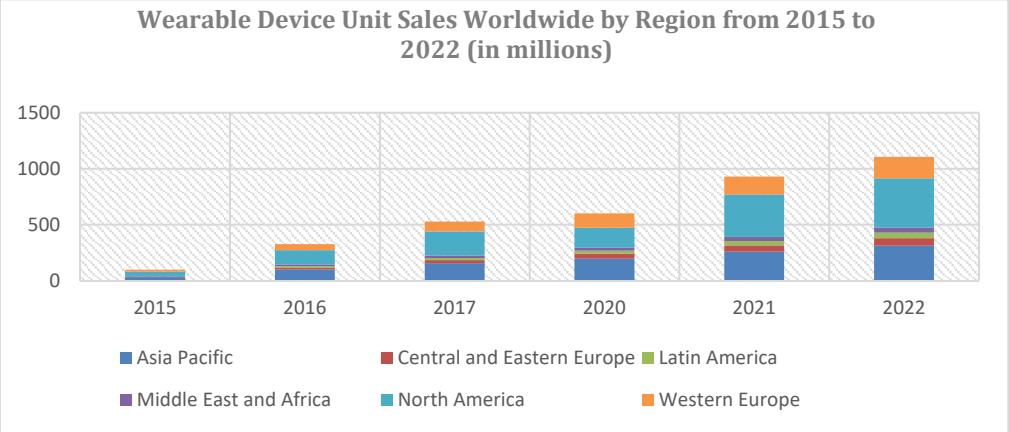
2.1. Digital component

The digital fashion tech concepts were devised into three groups: wearable technologies, circular consumption models and connected supply chain.

Wearable technologies, as the name suggests, are technologies that can be worn. Usually, these devices have smart sensors that are connected to the internet for data exchange (Statista, 2019). By integrating wearables in fashion, it is expected to encourage the users to engage and interact with, positively impacting our surroundings. Wearables could make people more environmentally aware, enabling integrated solutions to existing problems like local and ethical alternatives.

Cisco, in their report entitled "Visual Networking Index: Global Mobile Data Traffic Forecast", showed that the number of wearable devices worldwide by region increased from 2015 to 2017, maintaining the same growth projections from 2020 to 2022 (Cisco, 2019).

Figure 1. *Wearable devices unit sales worldwide*



Source: Author's representation based on the Cisco Visual Networking Index Report.

The second component of the digital category is composed of circular consumption models. The circular consumption model implies redesigning production and consumption patterns to ensure that the materials and product resources are used in a continuous way as much as possible (Boiten et al., 2018).

A growing interest about climate change and a desire for social integration by collective consumption (Albinsson and Perera, 2012; Belk, 2010; Botsman and Rogers, 2010) have made the circular consumption models an appealing alternative for consumers and producers. Collaborative consumption, defined as a social and economic system built on the concept of sharing physical and human resources, implies creation, production, distribution, trade, consumption of goods and services in common by individuals and organizations.

In other words, it's an alternative form of consumption, focused on sharing and access, rather than on traditional buying and owning. Researchers observed that passive consumers tend to become creators of their resources, while technology is enabling the trust between strangers to support this initiative.

Rachel Botsman said that collaborative consumption has at its origins four fundaments. The first fundament is a restored belief, in the value of the community, the second one is a torrent in the peer-to-peer social networks and real-time technologies, while the third force represents the pressure of unsolved environmental constraints. The last, and perhaps the dominant force, was the global recession, that has fundamentally shocked the consumer behaviour. These four catalyses merged and created a significant shift away, from the 20th century, described as a hyper-consumption society to the 21st century, defined as a collaborative consumption society (Botsman, 2010).

There are many forms of the collaborative consumption model, but according to Rachel Botsman, all of them share three components: a redistribution market, a lifestyle dimension and a product service system. The redistribution markets, also known as "the five cycle R" (recycle, reduce, reuse, repair, redistribute), are the places where used objects or items, with a low utility for a distinct user, are transferred to other users, who need those items, the process performed within a technological system. In the economy, this phenomenon is known as the coincidence of wants (or double coincidence of wants) and it manifests when the supplier of a good A, wants a good B and the supplier of the good B wants the good A.

The last component of the digital category; connected supply chain comprises advanced technologies like blockchain and internet of things that generate vast digital information's, where analytics can be used to enable more productive ways of working.

2.2. Physical component

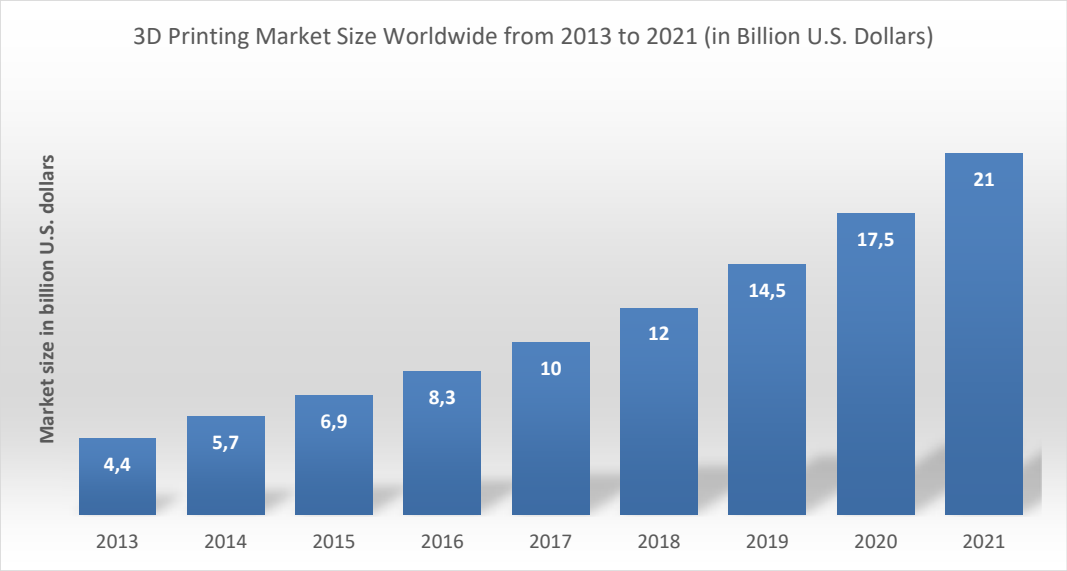
To facilitate sustainable fashion consumption, Physical Fashion Tech is required. Concepts from this category are based on technologies that use physics, like the nature of materials, energy or natural forces as well as interactions between these aspects.

The first component from the physical category is represented by the 3D integrated solutions, like printing and scanning. Those could provide new opportunities in sustainable sourcing and production. The 3D solutions allow better communication of the customer

needs to the producer, reducing the waste of the raw materials and increasing the utilization rate.

The global 3D printing market it's still at its beginning, but it's considered to offer the potential to transform global production and to become disruptive in several industries. The following figure (Figure 2) illustrates estimations realized in a research conducted by CBRE, UPS and Consumer Technology Association, which forecasts that the global 3D printing market is expected to increase rapidly from $4.4 billion, level reached in 2013, to almost $21 billion in 2021 (Citi GPS: Global Perspectives and Solutions, 2017).

Figure 2. *The 3D printing market size worldwide*



Source: Author's representation based on the Citi GPS data.

The second component of the physical category is represented by nanotechnology and nanomaterials used in the production of fashion items. Nanomaterials enable the fashion industry to shift from traditional materials to new fabrics that present novel capabilities such as increased durability, water repelling and stain-resistance.

The last element of the physical category is represented by robotics and artificial intelligence. These technologies can be combined to produce intelligent machines that comprehend, act and learn. Artificial intelligence and analytics enable precision in forecasts and production planning, in this way reducing waste due to high stocks, allowing a better allocation of the existing resources.

By using artificial intelligence, workers can spend more time on value creating tasks, rather than on standardized routine tasks.

2.3. Biological component

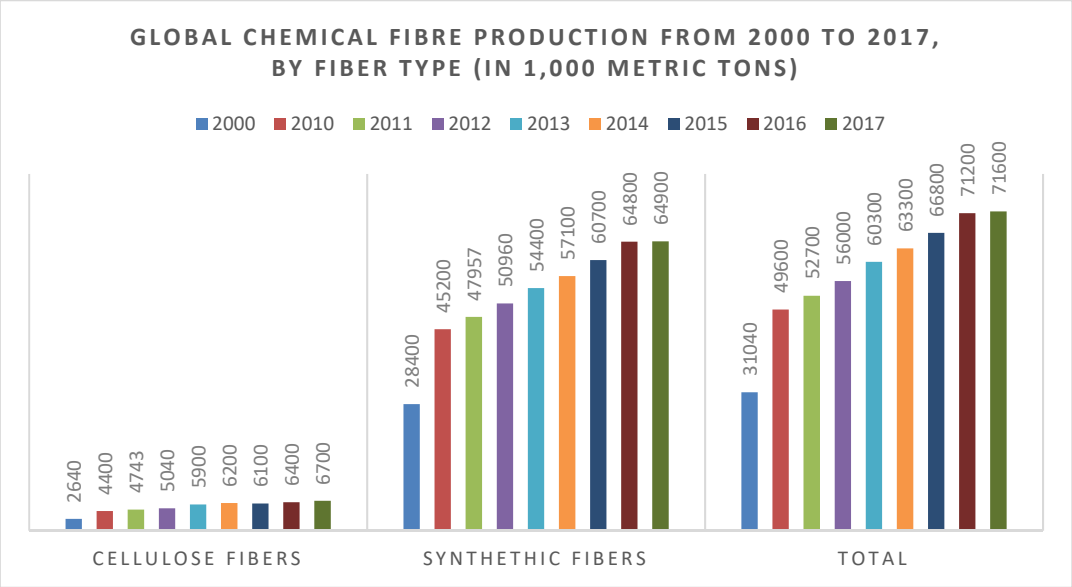
When it comes to the environmental protection problem, to promote a sustainable way of life we should rethink what a piece of fabric is and the process by which it is produced. In this sense, biological fashion tech phenomenon is characterised by using technologies with

roots in biology. This implies creating products and processes for a specified purpose, based on biological systems and living organisms. Three major fashion innovations in the biology domain were identified: bio-based materials, bioenergy and biomimicry.

The following figure (Figure 3) shows the global production output of the chemical fibre industry, analysis conducted between 2000 and 2017. As we can see, the global production of chemical fibre increased, millions of synthetic and cellulose fibres being produced.

One of the main fibre's manufacturers in Germany, Austria and Switzerland revealed that in 2017 the world production of synthetic fibres was 71.6 million tons from which 6.7 million tons celluloses fibres and 64.9 million tons other types of synthetic fibres (German Association of Chemical Fibre Manufacturers, 2017).

Figure 3. *Global chemical fibre production*



Source: Author's representation based on the German Association of Chemical Fibre Manufacturers data.

Today's technological advances simplify the process of making biodegradable materials from organic components. Bioplastic and cellulose fibres are examples of biomaterials that fashion tech uses to create biodegradable materials. By using this type of materials, instead of new ones, the usage of energy, materials and water can be reduced. Similarly, by using bioenergy throughout the fashion value chain, the negative environmental influence is drastically reduced.

The last concept of the biological component is biomimicry that refers to sustainable solutions to solve human challenges by imitating nature best design and processes. Some examples could be artificial leather made from wood or mushrooms and sustainable fabrics made from citrus fruits or algae.

Impact of the innovation implementation in the fashion industry

To make intelligent clothes attractive for a large segment of the population and to achieve commercial success producers should meet some requirements.

People buy clothes for their traditional protective function: to represent their personality to the world and to create, define and communicate their intended identity (Joo et al., 2006). Despite functionality and monetary aspects, the purchase decision is often based on psychological and emotional factors such as a strong positive emotion between customer, product and clothing brand (Hines and Margaret, 2007). Successful fashion-brands try to build up this emotional link by targeted marketing and branding, which is a critical factor for the buying decision of clothes in general.

Companies that have as the central goal to convince the customers mainly with technical innovations and that focus on functionality instead of design and vice versa risk to not gain the attention of customers and to remain just niche suppliers (Behr, 2018).

Despite the positive effects of the innovation implementation process, to establish a digital trust and information integrity, while efficiently processing increasing amounts of data it's a big challenge of the digital component.

Another challenge would be to establish the people mindsets, to educate the individuals in the sense that robotics and artificial intelligence will support and not replace the available workforce.

Consumer behaviour regarding innovation adoption process

Despite those challenges, there are any other reasons that prevent a novel product from turning into an innovation, like a higher price, an unattractive design or new features that customers are unwilling to pay for. Moreover, there is one central aspect, little debated by the innovation diffusion theory – consumer resistance to innovation (Kleijnen et al., 2009).

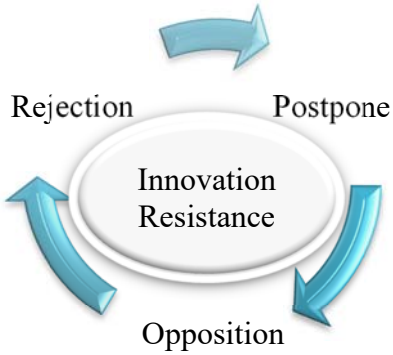
Consumer resistance is an essential component in the success of an innovation, being identified as one of the principal determinants of the innovation failure on the market (Ram and Sheth, 1989). Also, it serves as a relevant source of knowledge that can aid to reach a successful implementation and commercialization of innovations.

From the consumer perspective, innovation represents the change that he must deal with and if the product proves to be satisfactory, the consumer will accept the innovation, while if the product requires to change the status with which he is accustomed the consumer will exert resistance. In general, consumers experience resistance to change when the consumers perceive the potential risks as being greater than the potential benefits (Cornescu and Adam, 2013).

When it comes to the consumers' response regarding the innovations, the specific literature identifies two types of behaviour: adoption and resistance. Resistance can be decomposed in rejection, opposition and postponement components (Kleijnen et al., 2009).

Rejection is interconnected with an innate status-quo satisfaction. Opposition manifests when consumers are convinced that innovation is not appropriate and decide to reject it by negative feedback. Postpone behaviour manifests when customers consider innovation as being acceptable but decide to not adopt the innovation at least until circumstances become more appropriate (Kleijnen et al., 2009).

Figure 4. *Innovation resistance components*



Source: Author's representation.

Regarding the structure of the innovation-decision process, this follows the five stages introduced by Rogers (2003): knowledge, persuasion, decision, implementation and confirmation.

The innovation-decision process depends on three contextual factors such as innovation factors, adoptive factors, situational factors. Innovation factors describe the perception of decision-makers on the attributes of new products, including the relative advantage, compatibility or complexity. Adoptive factors refer to the circumstances of the decision such as monetary constraints, products already in the possession or the buying environment. Situational factors describe the individual characteristics of decision makers, such as cognitive rigidity or risk aversion.

Regarding the innovation resistance determinants, recent studies distinguished two main categories of factors that determine resistance to innovation, functional and psychological barriers (Kleijnen et al., 2009). In the functional category, we identify the consumer awareness of perceived risks associated with innovation, like economic, functional, social and physical constraints. The psychological barriers refer to conflicts of a psychological nature due to the change of existing beliefs.

1. Consumer resistance to innovation – A behavioural reasoning perspective

As previously discussed, understanding what are the main reasons that prevent customers from adopting innovation represents a critical dimension for companies that develop and market new products. Important studies showed that people's motives to adopt or resist innovations differ qualitatively, influencing their decisions in different ways (Kleijnene et al., 2009). In other words, reasons for resisting innovation are not necessarily the opposite of reasons for adopting the innovation.

Behavioural reasoning theory makes a difference between factors for and against adoption, evaluating the influence of these conceptually distinct antecedents in a single behavioural decision framework (Westaby, 2005). In this way, behavioural reasoning theory offers a complete understanding of the consumer decision process which serves as an essential linkage between values, attitudes and behavioural intentions (Westaby, 2005).

The central assumption of the behavioural reasoning theory is that reasoning serves an essential role in the mental processing of behaviour. This theory postulates that behaviour can be predicted by attitude, the last one being defined as global motives that influence behaviours across different domains (Westaby, 2005).

Unlike traditional models, behavioural reasoning theory hypothesize that reasons predict attitudes, encouraging people to support and defend their actions. As previously mentioned, the reason concept is composed of two distinct dimensions, reasons for and reasons against innovation adoption. In the decision-making process, people do not take into consideration only cost-benefit analyses but include factors like the existed abilities and constraints.

Moreover, reasons are conceptually different from beliefs. While beliefs may exist before an adoption decision, reasons are context-specific cognitions, directly connected to the explanation of the behaviour. This temporal distinction among beliefs and reasons also indicates that individuals may encounter a broad spectrum of feelings about the potential consequence of the innovation adoption, but the consumer's beliefs are not necessarily connected to the final adoption decision.

In the context of the fashion innovation adoption, beliefs would reflect the individual's opinion about the general characteristics of the fashion innovation, while reasons for or against innovation adoption would constitute specific factors that influence the purchase decision.

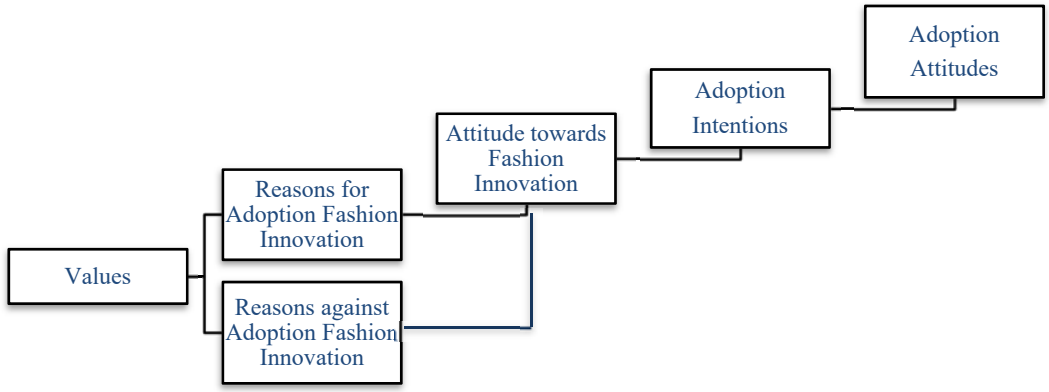
In the behavioural reasoning theory is expected that reasons will influence directly and indirectly the adoption intention of fashion innovations.

Also, Westaby (2005) argues that people reasoning influences their intentions in a direct way because to simplify the decision-making process people are accustomed to using heuristics or mental shortcuts (Tversky and Kahneman 1974). In the case of the fashion industry, the customer may identify the relative advantage of the innovation but decide to exert resistance to innovation because of financial aspects.

Also, reasoning is expected to be influenced by consumer deep-routed values. Values will provide underlining guidance in consumer selection and evaluation of existed alternatives.

Finally, values manifest a vital role in consumer attitudes. In some cases, people decide to purchase a fashion innovation without effectively evaluating the costs and benefits. In other words, individuals form attitudes without rationally justifying their global motives (Claudy et al., 2014).

Figure 5. *A theoretical model based on the behavioural reasoning theory*



Source: Author' representation based on Claudy et al., 2014.

Behavioural reasoning theory should serve as a valuable theoretical framework for a better understanding of the mental process of innovation resistance. A better understanding of the process that stays behind the resistance innovation behaviour could facilitate the innovation implementation on the market.

Conclusion

Through this article, it was intended to realize a short review of the existed innovations in the fashion industry and to explore potential causes that limit the innovation spread, particularly the resistance of the consumer to innovation.

There were briefly investigated the transformations that took place in the fashion industry. In this respect, were identified three major categories of innovations that undergo profound changes in the fashion sector over the next generations. Those are digital, physical and biological categories.

Despite the positive effects that derive from the innovation implementation, there are some aspects that should be taken into consideration by the producer to assure the security of the product on the market.

One of this aspect, unfortunately, little debated by the innovation diffusion theory, is the consumer resistance. In this respect, it was illustrated the importance of studying consumer resistance to innovation, one of the principal causes of the novel product failure on the market. It was defined and analysed the concept of innovation resistance and were showed some factors that may influence the resistance to innovation.

In the end, was introduced an analysis of the behavioural reasoning perspective of the consumer decision-making process about the innovation adoption.

Summing up, resistance to innovation is a complex trial that requires a long study process and high cost, but at the same time, understanding this process represents an essential mission for the fashion industry.

References

Accenture, 2018. *Circular x Fashion Tech. Trend Report 2018.* [pdf]. Available at: <https://accntu.re/2FiFyDc> [Accessed 07.03.2019].

Albinsson, P.A. and Perera, B.Y., 2012. *Alternative market places in the 21st century: Building community through sharing events*. Journal of Consumer Behaviour, 11(4), pp. 303-315.

Belk, R., 2010. *Sharing. Journal of Consumer Research*, 36(5), pp. 715-734.

Behr, O., 2018. *Fashion 4.0 - Digital Innovation in the Fashion Industry*. Journal of Technology and Innovation Management, 2(1), pp. 1-9.

Boiten, V.J., Li-Chou Han, S. and Tyler, D., 2018. *Circular economy stakeholder perspectives: Textile collection strategies to support material circularity*. [pdf]. Available at: <https://bit.ly/2XYvf1N> [Accessed 02.03.2019].

Botsman, R., 2010. *The case for collaborative consumption*. Available at TED Talks: <https://www.ted.com/talks/rachel_botsman_the_case_for_collaborative_consumption>

Botsman, R. and Rogers, R., 2010. *Beyond Zipcar: Collaborative Consumption*. Harvard Business Review, 88(10), p. 30.

Cisco, 2019. *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update*, 2017-2022. [pdf]. Available at: <https://bit.ly/2TYO1DG> [Accessed 08.03.2019].

Citi GPS: Global Perspectives and Solutions. 2017. *Technology at Work. Automating E-Commerce from Click to Pick to Door*. [pdf]. Available at: <https://bit.ly/2VL46xk> [Accessed 04.0.3.2019].

Claudy, M.C., Garcia, R. and O'Driscoll, A., 2015. *Consumer resistance to innovation – a behavioral reasoning perspective.* Journal of the Academy of Marketing Science, 43(4), pp. 528-544.

Cornescu, V. and Adam, R., 2013. *The Consumer Resistance Behavior towards Innovation*. Procedia Economics and Finance, (6), pp. 457-465.

Fontana, A. and Gasperz, V., 2011. *Integrated Management Problem Solving*. Vinchristo Publication: Bogor.

German Association of Chemical Fibre Manufacturers, 2017. *Global Chemical Fibre Production from 2000 to 2017, by fibre type*. Available at Statista: The Statistical Portal: <https://www.statista.com/statistics/271651/global-production-of-the-chemical-fiber-industry/>

Hines, T. and Margaret, B., 2007. *Fashion marketing* (2nd ed. Vol. 2). Butterworth-Heinemann: Elsevier.

Joo, P.E., Young, E. and Cardona, F.J., 2006. *A structural model of fashion-oriented impulse buying behaviour.* Journal of Fashion Marketing and Management: An International Journal, 10(4), pp. 433-446.

Kleijen, M., Lee, N.J. and Wetzels, M., 2009. *An exploration of consumer resistance to innovation and its antecedents.* Journal of Economic Psychology, 30(3), pp. 344-357.

Pervaiz, K.A. and Shepherd, C.D., 2010. *Innovation management: context, strategies, systems and processes.* New York, NY: Pearson Prentice Hall, cop.

Ram, S. and Sheth, N.J., 1989. *Consumer Resistance to Innovations: The Marketing Problem and its solutions.* Journal of Consumer Marketing, Vol. 6(2), pp. 5-14.

Rogers, E.M., 2003. *Diffusion of innovations*. New York: The Free Press.

Statista, 2018. *Wearable Technology - Statistics and Facts*. Available at: The Statistical Portal: <https://www.statista.com/topics/1556/wearable-technology/>

Tversky, A. and Kahneman, D., 1974. *Judgment under uncertainty: heuristics and biases.* Science, 185(4157), pp. 1124-31.

Westaby, J.D., 2005. *Behavioral reasoning theory: identifying new linkages underlying intentions and behaviour*. Organ Behav Hum Decis Process, 98, pp. 97-120.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 69-87

The circular economy: Importance and evolution in European Union

Ancuța LUCACI
"Ștefan cel Mare" University, Suceava, Romania
ancutalucaci28@yahoo.com
Carmen NĂSTASE
"Ștefan cel Mare" University, Suceava, Romania
carmenn@seap.usv.ro

Abstract. *The concept of Circular economy (CE) is currently very popular among European Union, governments and businesses world-wide. Notwithstanding, the scientific content of CE retains mostly unexplored. The paper provides a theoretical framework of CE concept, an analysis of the evolution of several particular circular economy indicators in EU and Romania for the period 2008-2016 and ceases with several discussions. The research methodology consists of statistical indicators and a qualitative analysis. The results emphasize that the evolution of circular economy among EU countries is constantly increasing and is considered to be pivotal for sustainable development.*

Keywords: circular economy, European Union, circular economy indicators, sustainable development.

JEL Classification: C41, O13, O52, Q01, Q56.

1. Introduction

The main purpose of this article is to emphasise the importance of circular economy in European Union. Various papers from literature, company reports and EU papers were examined in this research paper, providing ultimately a theoretical framework of the circular economy. The concept of circular economy represents an important task for European Union. Circular economy instigate sustainability and competitiveness in the long term and, besides these, it also helps to: preserve resources; save costs for European industries; unlock new business opportunities; build a new generation of innovative, resource-efficient European businesses; create local low and high-skilled jobs; create opportunities for social integration and cohesion (European Commission, 2019).

Furthermore, the present research submits the primary policies in European Union regarding adoption and implementation of circular economy. The European Union is a key actor in supporting the process of transition towards a circular economy, by ensuring a legislative framework in order to adopt, implement and develop the concept of circular economy among all stakeholders. From 2015 up to now, the European Union is attempting to create a competitive economy from the point of view of integrated circular economy.

Subsequently, this paper seeks to provide an evolution of several particular circular economy indicators in European Union and Romania, in order to visualize the level of significance which the Member States assigned to the adoption and implementation of circular economy. The European Commission asked the European standardisation organisations to develop generic standards on the durability, reusability and recyclability of products, with the use of appropriate metrics and standards (European Commission, 2019).

The European companies will have the opportunity to utilize, in the future, resources and materials without the carefulness of the limited resources of the Earth. Over and above, reuse, remanufacturing and refurbishment of products/components/materials will increase the establishment of new productive and innovative European businesses, which will make from UE a competitive economy (Korhonen et al., 2018). Also, the production processes could become even more efficient if companies will conceive the benefits of circular economy. Changes will occur in the labour market towards the establishment of new jobs or professions and social integration.

This research paper shall be structured as follows: Part 2 (Literature review) including a research of relevant academic and non-academic papers on circular economy topics; Part 3 (Circular Economy Policy in European Union) which highlights the most important policies adopted and implemented in the EU regarding circular economy; Part 4 (Methodology and Discussion of the results) that proposes the following: analysis of the evolution of gross investment in tangible goods related to circular economy sectors (4.1), analysis of the evolution of patents related to recycling and secondary raw materials (4.2), analysis of the evolution of jobs related to circular economy sectors (4.3) and analysis of the evolution of value added at factor cost related to circular economy sectors (4.4).

2. Literature review

Relevant information have been acquired from an appropriate scientific literature research in the area of circular economy, from several reports of companies and NGOs, from reports of the European Union and from policy documents. Is apparent that literature research was both academic and non-academic. The results underline that the content of the papers was focused in one of the following categories: theory/definitions, the implementation of CE in organisations/companies, business models for the circular economy, case studies, strategies regarding circular economy.

The scientific and research content of circular economy is depthless and unsystematic so that the framing of „circular economy" is a challenge nowadays for many researchers. Many authors attempted to define this concept so far, because there is no evidence of an official definition of circular economy.

In 2017, 73% of the definitions on circular economy were from the past five years (Kirchherr et al., 2017). Ellen MacArthur Foundation (2012) provided a definition of circular economy, considered to be very remarkable by literature. According to this definition, circular economy: (1) replaces the ‚end-of-life' concept with restoration, (2) shifts towards the use of renewable energy, (3) eliminates the use of toxic chemicals, and (4) aims for the elimination of waste through the superior design of materials, products, systems (Ellen MacArthur Foundation, 2012). Within the same research conducted by Ellen MacArthur and McKinsey (World Economic Forum), it is emphasized that the transition from a linear economy to a circular economy represents a $ 1 trillion opportunity for the world economy.

Korhonen et al. (2018) suggested a new scientific definition of circular economy, by taking into consideration sustainable development and arguing that circular economy contributes to all three dimensions of sustainable development: economic, environmental and social (Table 1). Geissdoerfer et al. (2018) also proposes in his research paper an analysis of the circular economy from the perspective of social, environmental and economic goals.

Table 1. *The economic, environmental and social objectives of Circular Economy*

Dimensions of sustainable development	OBJECTIVES
Economic	- to reduce the economic production-consumption system's raw material and energy costs, waste management and emissions control costs, risks from (environmental) legislation/taxation and public image; - to innovate new product designs and market opportunities for businesses.
Environmental	- to reduce the production-consumption system virgin material and energy inputs and waste and emissions outputs (physical throughput) by application of material cycles and renewables-based energy cascades.
Social	- the sharing economy, increased employment, participative democratic decision-making and more efficient use of the existing physical material capacity through a cooperative and community user (user groups using the value, service and function) as opposed to a consumer (individuals consuming physical products) culture.

Source: adapted from „Circular economy: The concept and its Limitations", by Korhonen et al., 2018, Ecological economics 143, 37-46.

Circular economy was well-defined as „a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops" and as means of obtaining those, are „long-lasting design,

maintenance, repair, reuse, remanufacturing, refurbishment, and recycling." (Geissdoerfer, 2017). Yuan et al. (2006) states the fact that circular economy strategies require reform of the whole system of human kind, which includes both production and consumption activities.

Circular economy is regarded as a way to allow developing countries to industrialize and the developed countries to increase wellbeing and reduce vulnerability to resource price shocks (Preston, 2012). By reusing products and materials in the circular economy, additional value is created (new markets development, cost savings), so that a high number of stakeholders are encouraged in the process of enhancing the role of the circular economy.

In the literature, the concept of circular economy is considered in conjunction with sustainability. Geissdoerfer (2017) defines sustainability as „the balanced integration of economic performance, social inclusiveness, and environmental resilience, to the benefit of current and future generations." Some authors claim that among circular economy and sustainability there is a negative connection, while others consider that circularity has positive influence on sustainability (Murray et al., 2015; Bocken et al., 2014; OECD, 2009). Aceleanu et al. (2015) underline that sustainable development constitutes a main objective of economic policies and strategies at the European and global level, and relies on climate and technological changes.

At the present time, a large number of multinational companies have taken into consideration the concept of circular economy, and have published on this topic. For example, Philips Company (2019) considers circular economy as a driver for innovation in the areas of material, component and product reuse. It also states that in a circular economy, the more effective use of materials enables to create more value, both by cost savings and by developing new markets or growing existing ones.

At this year's World Economic Forum Annual Meeting in Davos, Switzerland, Philips CEO Frans van Houten cemented the company's 2020 commitment to the Circular Economy by pledging to take back and repurpose all the large medical systems that its customers are prepared to return to it (www.philips.com, 2018). This was possible due to the United Nations Resource Panel predicts, "that globally the manufacturing sector will need to extract 180 billion tons of the Earth's natural resources every year by 2050, almost double what it does today, which is not sustainable". Other companies that which have embraced the concept of circular economy are as follows: Accenture, Deloitte, EY, McKinsey & Company, Timberland, Johnson Controls, VIGGA (Kirchherr et al., 2017).

The European Commission (2019) points out that more than 2.5 billion tons of waste is produced annually in the European Union, thereby arises the problem of waste management, that can be resolved by adopting policies in the area of circular economy. The companies use resources at a rate that exceeds the Earth's capacity to renew them in terms of climate and biodiversity, air, soil and water pollution (European Commission, 2015).

Circular economy is considered to be a sustainable model, impacting both consumers and companies (being both a production and consumption pattern). The idea behind circular economy is waste minimization, as well as increasing the life cycle of products to the

greatest extent possible, by sharing, remanufacturing, reusing, renovating, recycling and refurbishment. In China, circular economy has been used by environmental policy makers as a potential strategy to solve existing environmental issues (Yuan et al., 2006).

Consequently, is apparent the process of transition from the traditional linear model to the new model of circular economy. The linear model relies upon the phrase „buy-do-consume-throw". So far, companies and society have acted according to this model: resources have been used for the production of goods, people bought the products, consumed them, and at the end of their life cycle, they threw the products or the components. Such a situation would cause problems for the future, because the population of the world is growing at a faster rate and the Earth's resources will not be sufficient for the whole world, because of their scarcity. Our global natural ecosystem is shrinking in size and volume (Brown, 2006). Deserts are expanding, the population is growing, per capita consumption is increasing, the volume of livestock and cattle is growing and biodiversity is depleting at ever faster rates (Korhonen et al., 2018). In the future, the allocation of resources among population will be a serious issue and countries will have to track down new solutions to redress this situation by adopting the new circular economy.

In the report that European Commission published in 2017, it is stated that moving towards a circular economy would be a golden opportunity for Europe and its citizens. Amongst the proceeds specified in the report shall be as follows: (1) the reduction in carbon dioxide emissions, (2) the reduction of energy consumption, (3) companies will record very large economic gains and will become more competitive, (4) cost savings will be achieved, (5) the climate and the environment will be more shielded, (6) new jobs will be created and will contribute to social integration. After the adoption of this report, the Commission demanded the European standardisation organisations to develop generic standards on the durability, reusability and recyclability of several products. By the use of appropriate metrics and standards, many consumer and industrial products would be manufactured more durable, reusable and recyclable (European Commission, 2019).

Nowadays, researchers from different fields of activity seek to create new models for the implementation of circular economy among countries. In the literature, appeared the concept of circular business model, used to describe business models that are appropriate for circular economy. Geissdoerfer et al. (2018) highlighted a connection between circular business models and circular supply chain management (CSCM) „towards closed loops in different approaches as closing loops, slowing loops, intensifying loops, narrowing loops, and dematerialising loops, intensifying and dematerialising loops". In order to implement circular economy, Ghisellini et al. (2016) underline that circular economy „implies the adoption of cleaner production patterns at company level, an increase of producers and consumers responsibility and awareness, the use of renewable technologies and materials (wherever possible) as well as the adoption of suitable, clear and stable policies and tools.".

It is assessed that among the results of actions implemented in the European countries and companies, will be savings of roughly 600 billion euros (Kalmykova et al., 2018). Consumers will be better served by sustainable and innovative products which will improve the quality of their live and the process of economising.

3. Circular economy policy in European Union

Currently, the European Union is moving towards a transition from a linear economy, based on „buy, do and throw" principle, to a circular economy, which involves keeping the products and the materials in the production cycle for as long as possible. The European Union is a key actor in supporting this process of transition, by ensuring a legislative framework required to adopt, implement and develop the concept of circular economy among all stakeholders. In accordance with the first communication of the European Commission in 2015 on circular economy, „action at EU level will drive investments and create a level playing field, remove obstacles stemming from European legislation or inadequate enforcement, deepen the single market, and ensure favourable conditions for innovation and the involvement of all stakeholders".

In 2015, the European Commission adopted the first action towards circular economy. The Action Plan appeared with a specific purpose of accelerating the transition from a traditional linear economy to a circular economy. The plan envisaged that circular economy will determine the stimulation of global competitiveness, the promotion of sustainable economic growth and the creation of new jobs (European Commission, 2015). Likewise, the adoption of this plan considered the establishment of a close cooperation between several parties interested in the circular economy, namely: national, regional and local authorities; businesses; consumers; citizens; environmental NGOs, research/education institutions. Preston (2012) brought up international cooperation, claiming that „international cooperation is important for progress on CE because trade in waste and resources is rising and supply chains for many products today involve multiple countries".

In the Action Plan were included 54 measures which targeted mainly five sectors where the process of transition should be accelerated towards a circular economy: plastics, critical raw materials, food waste, construction and demolition, biomass and biomatter (European Commission, 2015). Concerning the disposition of the funds, the process of transition to a circular economy is supported by the European Union through European structural and investment funds, Horizon 2020, European Investment Fund (EIF) and LIFE, an environmental and climate funding instrument in EU (European Commission, 2015).

The European Commission published in 2017 a report approaching the results of the adoption and implementation of the Action Plan in 2015 (European Commission, 2015). In order to support the circular economy, the European Commission has taken a number of initiatives since 2015. According to information delivered in the „Report on the implementation of the Circular Economy Action Plan" (2017), the initiatives were the following:

- In December 2015, was taken the first action, named „Legislative proposal on online sales of goods", in order to strengthen guarantees for consumers to better protect them against defective products and contribute to the durability and reparability of products, contributing in this way to the circular economy.
- Another action – „Legislative proposal on fertilisers" – was taken in March 2016. The purpose of this action was to turn waste management problems into economic opportunities, by creating a genuine single market for fertilisers made from secondary

raw materials (recovered nutrients, particularly). It was forecasted the creation of 120.000 new jobs through recycling of bio-waste in organic-based fertilisers.

- In May 2016, was launched the call „Launch of the Innovation Deals", with the aim of bringing together innovators, national/regional/local authorities, and Commission services to clarify perceived regulatory barriers to innovation in EU regulation or Member State implementing measures. Topics that have been mentioned in the expressions of interest include e.g. perceived regulatory barriers to innovation in the water, waste and energy sectors.
- The action named „Ecodesign" was taken in November 2016, as an evidence of the importance of smart product design and decided to focus efforts on the product groups with the highest potential in terms of energy and resource savings and further reinforce the evidence base for regulatory action. It was considered that the initial design of the product will further increase the possibility to repair or recycle a product and reuse its components and materials.
- In 2016 was introduced „Food waste" action, regarded as a key area in the circular economy. In order to prevent food waste, the following measures were taken: creating a stakeholder's platform on food waste prevention, made progress in developing an EU methodology to measure food waste and prepared EU guidelines to facilitate food donations and the use former foodstuff as feed.
- „Waste-to-energy" action was taken in January 2017, with the specific purpose of ensuring that the recovery of energy from waste in the EU supports the objectives of the circular economy action plan.
- In January 2017, the European Commission has set a proposal to amend the Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment. The results of this directive will enable secondary market operations (e.g. reselling, second hand market) for certain electrical and electronic equipment and also will enable repair with spare parts of certain electrical and electronic equipment that were placed on the market before 22 July 2019.
- A platform to support the financing of circular economy was launched together with the report on circular economy, in 2017. The purpose of the platform is to increase awareness of the circular economy business logic and improve the uptake of circular economy projects by investors.

The above initiatives are considered key areas to mainstream the circular economy. Beside these, the Commission has taken other actions in order to accelerate the process of transition, as: green public procurement, good practices in waste collection systems, water reuse, biomass and bio-based products, support for circular economy through cohesion policy funds and smart specialisation strategies, research and innovation, technology services to accelerate the uptake of advanced manufacturing for clean production by manufacturing SMEs.

Furthermore, a revised legislative framework on waste has come into force in July 2018, and it sets clear targets for reduction of waste and establish an ambitious and credible long-term path for waste management and recycling (European Commission, 2019).

Despite the fact that European Union adopted and implemented various actions and measures to strengthen the concept of the circular economy, the results will depend on the Member States' strategies in order to adopt circular economy. Therefore, it appears the need for close cooperation between actors in the public and private environment.

4. Methodology and discussion of the results

Within this research paper have been used a number of four indicators which provide an overview of circular economy concept. Data have been taken over by Eurostat and as indicators of circular economy, have been selected in the field of „Competitiveness and Innovation", as follows: gross investment in tangible goods, the number of patents related to recycling and secondary raw materials, jobs related to circular economy sectors and value added at factor costs.

Data submitted from Eurostat were synthesised within this chapter in the format of tables. Also, has been carried out a segmentation of data on the regions of European Union: Northern Europe, Western Europe, Central Europe, Southern Europe, Southeast Europe. Eastern Europe was not carried out in the segmentation, as no EU country is an integrated part. Further, debates have been made based upon information in the tables.

4.1. Analysis of the evolution of Gross investment in tangible goods related to circular economy sectors

The European Commission describes *gross investment in tangible goods* as investment during the reference year in all tangible goods. Included are new and existing tangible capital goods, whether bought from third parties or produced for own use (i.e. capitalised production of tangible capital goods), having a useful life of more than one year including non-produced tangible goods such as land. Investments in intangible and financial assets are excluded. (Eurostat, 2018).

The following five tables (Table 2 - Table 6) shall contain information regarding Gross investment in tangible goods - percentage of gross domestic product (GDP), for the period 2008-2016. Additionally, data have been segmented by regions of European Union.

Table 2. *Gross investment in tangible goods in Northern Europe*

Northern Europe	Gross investment in tangible goods - percentage of gross domestic product (GDP)								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Denmark	0.14	0.09	0.08	0.08	0.1	0.07	0.08	0.09	0.09
Estonia	0.29	-	-	0.25	-	-	-	-	0.15
Finland	0.11	0.09	0.09	-	-	-	0.09	0.09	0.1
Latvia	0.55	0.49	0.27	0.29	0.26	0.22	0.2	0.27	0.27
Lithuania	0.24	0.1	0.1	0.16	0.17	0.18	0.12	0.14	0.14
Sweden	0.19	0.14	0.12	0.13	0.11	0.12	0.11	0.13	0.14

Source: processed from Eurostat.

Within Table 2, is presented gross investment in tangible goods - percentage of gross domestic product (GDP) for countries in Northern Europe. The evolution of gross investment in tangible goods for the period 2008-2016 underline the following:

- the highest percentage is in the following countries: Latvia, Estonia, Lithuania and Sweden;
- countries like Denmark and Finland invest the lowest percent in tangible goods;
- compared to 2008, percentages from 2016 are much smaller.

Table 3. *Gross investment in tangible goods in Western Europe*

Western Europe	Gross investment in tangible goods - percentage of gross domestic product (GDP)								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Belgium	-	0.26	0.15	-	0.18	0.16	0.16	0.15	0.15
France	-	0.1	0.11	0.15	-	0.11	0.08	0.11	-
Ireland	-	-	-	-	-	-	-	-	-
Luxembourg	-	-	-	-	-	-	-	-	-
Netherlands	-	0.15	0.14	0.19	0.12	0.11	0.09	0.12	0.12
United Kingdom	-	-	-	-	-	-	-	0.15	-

Source: processed from Eurostat.

Within Table 3, gross investment in tangible goods - percentage of gross domestic product (GDP) is submitted for countries in Western Europe. The evolution of gross investment in tangible goods for the period 2008-2016 underline the following:

- no evidence is for countries like Ireland, Luxembourg and United Kingdom; data are privileged or non-existent;
- Belgium invests the highest percentage in tangible goods while France and Netherlands have similar rates;
- over the years, the fluctuations of rates are not too stringent.

Table 4. *Gross investment in tangible goods in Central Europe*

Central Europe	Gross investment in tangible goods - percentage of gross domestic product (GDP)								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Austria	0.12	0.11	0.08	0.08	0.09	0.1	0.1	0.09	0.08
Czech Republic	-	-	-	-	-	-	-	-	-
Germany	0.08	0.08	0.08	0.1	0.09	0.09	0.08	0.09	0.09
Hungary	0.1	0.12	0.11	0.1	0.1	0.12	0.15	0.14	0.17
Poland	0.19	0.16	0.17	0.18	0.16	0.17	0.18	0.18	0.17
Romania	0.49	0.26	0.25	0.23	0.23	0.2	0.19	0.2	0.2
Slovakia	0.48	0.24	0.23	0.15	0.16	0.13	0.16	0.21	0.16
Slovenia	-	0.3	0.26	0.2	-	-	-	-	-

Source: processed from Eurostat.

Table 4 provides an evolution of gross investment in tangible goods - percentage of gross domestic product (GDP) for countries in Central Europe. The evolution of gross investment in tangible goods for the period 2008-2016 underline the following:

- no evidence or small ones are for countries like Czech Republic and Slovenia; data are privileged or non-existent;
- Romania, Slovakia, Slovenia and Poland invest the highest percentage in tangible goods while Austria, Germany, Hungary invest a small rate in tangible goods;
- countries more developed, like Austria and Germany, invest less than countries less-developed (Romania, Slovakia);
- in 2016, rates are much smaller compared to 2008.

Table 5. *Gross investment in tangible goods in Southern Europe*

Southern Europe	Gross investment in tangible goods - percentage of gross domestic product (GDP)								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Italy	0.18	0.21	0.2	0.14	0.12	0.08	0.1	0.1	0.13
Malta	-	-	-	-	-	-	-	-	-
Portugal	0.18	0.16	0.14	0.13	0.1	0.1	0.11	0.1	0.12
Spain	0.12	0.08	0.09	0.07	0.09	0.08	0.08	0.09	0.09

Source: processed from Eurostat.

Table 5 provides an evolution of gross investment in tangible goods - percentage of gross domestic product (GDP) for countries in Southern Europe. The evolution highlights the following:

- for Malta is no evidence of rates; data are privileged or non-existent;
- Italy invests the highest percentage in tangible goods while Portugal and Spain a small rate, but not much smaller;
- in 2016, rates went down, compared with the rates from the other years.

Table 6. *Gross investment in tangible goods in Southeast Europe*

Southeast Europe	Gross investment in tangible goods - percentage of gross domestic product (GDP)								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Bulgaria	-	-	0.29	-	-	-	0.25	0.18	0.18
Croatia	-	-	0.19	0.18	0.17	0.2	0.15	0.15	0.11
Cyprus	0.14	0.13	0.08	0.11	0.05	-	-	0.06	0.06
Greece	-	-	-	0.03	-	0.04	0.02	0.04	0.04

Source: processed from Eurostat.

Within Table 6, is presented gross investment in tangible goods - percentage of gross domestic product (GDP) for countries in Southeast Europe. The evolution underline the following:

- the highest rates are in the following countries: Bulgaria and Croatia;
- countries like Cyprus and Greece invest the lowest percentage in tangible goods;
- the fluctuations of rates over the years are not significant.

4.2. Analysis of the evolution of patents related to recycling and secondary raw materials

The indicator measures *the number of patents related to recycling and secondary raw materials*. The attribution to recycling and secondary raw materials was done using the relevant codes in the Cooperative Patent Classification (CPC). The term „patents" refers to patent families, which include all documents relevant to a distinct invention (e.g. applications to multiple authorities), thus preventing multiple counting. A fraction of the family is allocated to each applicant and relevant technology (Eurostat, 2018).

The following five tables shall (Table 7 - Table 11) contain information regarding patents related to recycling and secondary raw materials, for the period 2006-2014. Additionally, data have been segmented by regions of European Union.

Table 7. *Number of patents in Northern Europe*

Northern Europe	Patents related to recycling and secondary raw materials								
	2006	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Denmark	4.2	4.49	2.71	1.06	0.98	1.25	3.6	8.07	7.5
Estonia	1	0	0	1	0.29	0	0.38	0	4
Finland	10.18	10.49	6.33	5.89	12.65	7.37	9.4	12.99	13.03
Latvia	0	0	0	2	1.5	0	1.33	3	0
Lithuania	1.95	0	1	0	2	1.5	1.83	1	0
Sweden	0.96	0.31	3.45	1.49	1.37	6.6	4.45	6.95	2.83

Source: processed from Eurostat.

Within Table 7, patents related to recycling and secondary raw materials are summarised, for countries in Northern Europe. The evolution underline the following:

- the highest number of patents is in the following countries: Finland, Denmark and Lithuania;
- countries like Estonia and Latvia have the lowest number of patents;
- compared to 2006, the number of patents has increased in 2014.

Table 8. *Number of patents in Western Europe*

Western Europe	Patents related to recycling and secondary raw materials								
	2006	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Belgium	4.53	5.2	6.9	8.58	12.33	8.22	6.6	15.5	7.56
France	40.86	31.75	41.1	40.75	51.97	44.43	56.72	54.48	83.42
Ireland	1.81	1.29	3.92	3.54	1.88	3.71	1.44	2	2.8
Luxembourg	1.14	0.54	1.08	5.4	1.87	1.38	2.87	3.67	7
Netherlands	14.01	12.65	10.07	12.67	10.15	15.26	17.96	15.23	16.64
United Kingdom	19.55	12.92	16.18	21.99	21.73	25.04	26.33	22.49	21.61

Source: processed from Eurostat.

Table 8 provides an evolution of patents related to recycling and secondary raw materials for countries in Western Europe. The evolution highlights the following:

- France, United Kingdom, Netherlands and Belgium have the highest number of patents;
- the lowest number of patents is in Ireland and Luxembourg;
- in 2014, the number of patents has increased significantly, compared to 2006.

Table 9. *Number of patents in Central Europe*

Central Europe	Patents related to recycling and secondary raw materials								
	2006	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Austria	6.82	8.19	9.52	5.74	9.63	15.58	8.75	10.03	9.6
Czech Republic	2.19	7.42	1.78	7.45	8.33	6.29	8.5	7.33	8.5
Germany	83.34	82.48	98.27	98.5	79.43	92.78	83.08	90.36	75.49
Hungary	5.61	0.91	4.41	1.06	7.31	4.78	2.38	1.5	2.61
Poland	12.08	10.86	23.54	18.56	33	38.58	54.23	33.5	28.5
Romania	2	2	2.5	5.54	5.53	4	4.99	1.83	5
Slovakia	0.25	0	0.5	1	0	0	1.25	1	1
Slovenia	1	0	1	1	0	0.13	0	2	2.66

Source: processed from Eurostat.

Table 9 provides an evolution of patents related to recycling and secondary raw materials for countries in Central Europe. The evolution highlights the following:

- Germany, Poland, Austria and Hungary have the highest number of patents;
- compared to Germany, Austria has a much smaller number of patents, considering that both are very developed countries;
- the lowest number of patents is in Czech Republic, Romania, Slovakia and Slovenia;
- in 2014, the number of patents has increased significantly, compared to 2006.

Table 10. *Number of patents in Southern Europe*

Southern Europe	Patents related to recycling and secondary raw materials								
	2006	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Italy	17.11	16.23	25.64	37.52	28.57	32.18	31.46	36.41	15.15
Malta	0.39	0	0	0	0	0	0	0	0.75
Portugal	1.75	3.5	0.43	0	2.5	5.25	3	1	0
Spain	6.74	14.93	20.1	20.9	12.1	15.14	17	29.07	20.52

Source: processed from Eurostat.

Within Table 10, patents related to recycling and secondary raw materials are summarised, for countries in Southern Europe. The evolution underline the following:

- Italy and Spain have the highest number of patents;
- the other countries in the region (Portugal, Malta) have a small number of patents;
- overall, the number of patents has increased in 2014, compared to the other years.

Table 11. *Number of patents in Southeast Europe*

Southeast Europe	Patents related to recycling and secondary raw materials								
	2006	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Bulgaria	1	1	1	1	1.33	1	0.5	0	1.5
Croatia	0	0.71	0	0	1	0.5	0.22	0	0
Cyprus	0.5	0.2	0	0.06	0	1.75	0	0	0
Greece	0.5	0.6	0	0	1	0	0	1	0.5

Source: processed from Eurostat.

Within Table 11, patents related to recycling and secondary raw materials are summarised, for countries in Southeast Europe. The evolution underline the following:

- overall, all countries in this region have a small number of patents during this period;
- the number of patents does not vary greatly over the years.

4.3. Analysis of the evolution of jobs related to circular economy sectors

Jobs are expressed in number of persons employed and as a percentage of total employment. Number of persons employed is defined as the total number of persons who work in the observation unit, i.e. the firm (inclusive of working proprietors, partners working regularly in the unit and unpaid family workers), as well as persons who work outside the unit who belong to it and are paid by it - e.g. sales representatives, delivery personnel, repair and maintenance teams (Eurostat, 2018).

In the following five tables (Table 12 - Table 16) information regarding persons employed (percentage of total employment) are summarised, for the period 2008-2016. Additionally, data have been segmented by regions of European Union.

Table 12. *Persons employed in Northern Europe*

Northern Europe	Persons employed - percentage of total employment								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Denmark	1.52	1.24	1.24	1.3	1.32	1.29	1.37	1.38	1.36
Estonia	1.75	-	-	1.81	-	-	-	-	2.01
Finland	1.45	1.49	1.59	-	-	-	1.75	1.75	1.66
Latvia	2.33	2.38	2.48	2.48	2.66	2.71	2.84	2.86	2.89
Lithuania	2.46	2.24	2.34	2.55	2.61	2.77	2.79	2.73	2.71
Sweden	1.6	1.53	1.53	1.6	1.59	1.56	1.56	1.58	1.56

Source: processed from Eurostat.

Table 12 provides an evolution of persons employed (percentage of total employment) for countries in Northern Europe. The evolution highlights the following:

- the highest rates of persons employed are in the following countries: Lithuania, Latvia, Estonia;
- Denmark, Finland and Sweden have smaller rates of persons employed;
- overall, the percentage of persons employed has increased in 2016, compared to the other years.

Table 13. *Persons employed in Western Europe*

Western Europe	Persons employed - percentage of total employment								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Belgium	-	1.14	1.14	-	1.2	1.13	1.12	1.16	1.12
France	-	-	1.66	1.62	1.65	1.66	1.78	1.54	1.52
Ireland	-	-	-	-	-	-	-	-	-
Luxembourg	-	-	-	-	-	-	-	-	-
Netherlands	1.17	1.17	1.22	1.22	1.23	1.18	1.16	1.17	1.19
United Kingdom	1.45	1.51	-	1.62	1.56	1.61	1.47	1.59	-

Source: processed from Eurostat.

Table 13 provides an evolution of persons employed (percentage of total employment) for countries in Western Europe. The evolution highlights the following:

- the highest rates of persons employed are in France and United Kingdom;
- Belgium and Netherlands have smaller rates of persons employed;
- in Ireland and Luxembourg there is no evidence of the percentage of persons employed; data are privileged or non-existent;
- the percentage of persons employed does not vary greatly over the years.

Table 14. *Persons employed in Central Europe*

Central Europe	Persons employed - percentage of total employment								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Austria	1.47	1.47	1.46	1.46	1.48	1.52	1.51	1.5	1.49
Czech Republic	-	-	-	-	-	-	-	-	-
Germany	1.14	1.32	1.41	1.43	1.42	1.38	1.47	1.43	1.47
Hungary	1.66	1.84	1.88	1.89	1.88	1.79	1.74	1.82	1.93
Poland	2.17	2.01	2.07	2.1	2.11	2.2	2.13	2.21	2.21
Romania	1.49	1.41	1.35	1.44	1.55	1.59	1.52	1.54	1.58
Slovakia	1.16	1.07	2.13	2.08	1.83	1.81	1.74	1.78	1.76
Slovenia	1.83	1.78	1.88	2.01	2.17	2.17	-	2.17	2.09

Source: processed from Eurostat.

For the countries in Central Europe, the percentage of persons employed (percentage of total employment) is summarised in Table 14. The evolution underline the following facts:

- the highest rates of persons employed are in Poland, Slovenia, Hungary, Slovakia and Romania;
- Austria and Germany have smaller rates of persons employed, even though are countries well-developed;
- in Czech Republic there is no evidence of the percentage of persons employed; data are privileged or non-existent.

Table 15. *Persons employed in Southern Europe*

Southern Europe	Persons employed - percentage of total employment								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Italy	2.17	2.11	2.11	2.07	2.1	2.09	2.08	2.05	2.05
Malta	-	-	-	-	-	-	-	-	-
Portugal	1.73	1.76	1.75	1.76	1.76	1.78	1.79	1.81	1.82
Spain	1.59	1.6	1.66	1.66	1.74	1.9	1.93	1.99	2.02

Source: processed from Eurostat.

For the countries in Southern Europe, the percentage of persons employed (percentage of total employment) is summarised in Table 15. The evolution underline the following facts:

- Italy has the highest rate of persons employed;

- Portugal and Spain have smaller rates of persons employed, but do not differ significantly;
- in Malta there is no evidence of this indicator; data are privileged or non-existent.

Table 16. *Persons employed in Southeast Europe*

Southeast Europe	Persons employed - percentage of total employment								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Bulgaria	1.59	1.61	1.73	1.79	1.83	1.82	1.75	1.72	1.76
Croatia	-	-	2.1	2.09	2.12	2.15	2.27	2.21	2.19
Cyprus	1.56	1.5	1.5	1.49	1.56	-	-	1.92	1.99
Greece	-	-	-	1.47	-	1.33	1.4	1.43	1.65

Source: processed from Eurostat.

For the countries in Southeast Europe, the percentage of persons employed (percentage of total employment) is summarised in Table 16. The evolution of this indicator underline the following:

- Croatia has the highest rate of persons employed;
- Bulgaria, Cyprus and Greece have smaller but similar rates of persons employed;
- compared to 2008, in 2016 the rates have increased.

4.4. Analysis of the evolution of value added at factor cost related to circular economy sectors

Value added at factor costs is the gross income from operating activities after adjusting for operating subsidies and indirect taxes. It can be calculated as the sum of turnover, capitalized production, other operating income, increases minus decreases of stocks, and deducting the following items: purchases of goods and services, other taxes on products which are linked to turnover but not deductible, duties and taxes linked to production. Value adjustments (such as depreciation) are not subtracted (Eurostat, 2018).

In the following five tables (Table 17 - Table 21), information regarding value added at factor cost - percentage of gross domestic product (GDP) are summarised, for the period 2008-2016. Additionally, data have been segmented by regions of European Union.

Table 17. *Value added at factor cost in Northern Europe*

Northern Europe	Value added at factor cost - percentage of gross domestic product (GDP)								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Denmark	0.89	0.82	0.82	0.86	0.84	0.78	0.83	0.84	0.82
Estonia	1.14	-	-	1.05	-	-	-	-	1.11
Finland	0.85	0.85	0.95	-	-	-	0.95	0.97	0.94
Latvia	1.2	1.21	1.21	0.98	1.14	1.01	1.02	0.99	1
Lithuania	0.97	0.76	0.8	0.93	0.95	0.93	0.95	0.95	1.05
Sweden	1.02	0.95	0.94	0.97	0.96	1.13	0.94	0.91	0.89

Source: processed from Eurostat.

Within Table 17, is presented the evolution of value added at factor cost - percentage of gross domestic product (GDP) for EU countries in Northern Europe, and underline the following:

- the highest percentage is in the following countries: Latvia, Estonia, Lithuania;
- countries like Denmark, Sweden and Finland have a smaller percentage, even though are very developed.

Table 18. *Value added at factor cost in Western Europe*

Western Europe	Value added at factor cost - percentage of gross domestic product (GDP)								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Belgium	-	0.66	0.7	-	0.72	0.69	0.67	0.69	0.69
France	-	0.98	1.03	1.03	0.99	1	1	0.97	0.87
Ireland	-	-	-	-	-	-	-	-	-
Luxembourg	-	-	-	-	-	-	-	-	-
Netherlands	-	0.83	0.84	0.92	0.87	0.79	0.8	0.75	0.79
United Kingdom	1.07	1.03	1.04	1.13	1.14	1.15	1.19	1.19	1.21

Source: processed from Eurostat.

Within Table 18, is presented the evolution of value added at factor cost - percentage of gross domestic product (GDP) for EU countries in Western Europe, and underline the following:

- Ireland and Luxembourg have no data for this period; data are privileged or non-existent;
- the highest percentage is in the following countries: United Kingdom and France;
- countries like Belgium, and Netherlands have a smaller percentage, but it is not a very significantly difference.

Table 19. *Value added at factor cost in Central Europe*

Central Europe	Value added at factor cost - percentage of gross domestic product (GDP)								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Austria	0.93	0.93	0.96	0.94	0.94	0.98	1.04	1.03	1.04
Czech Republic	-	-	-	-	-	-	-	-	-
Germany	-	-	-	1.01	0.97	0.93	0.97	0.94	0.99
Hungary	0.74	0.79	0.84	0.84	0.79	0.75	0.83	0.77	0.91
Poland	1.3	1.1	1.12	1.13	1.09	1.07	1.13	1.1	1.13
Romania	0.97	0.81	0.81	0.81	0.74	0.68	0.68	0.71	0.75
Slovakia	0.72	0.56	1.03	1.12	1.15	0.79	0.66	0.74	0.77
Slovenia	1.09	0.99	1.23	1.24	1.32	1.27	1.31	1.3	1.31

Source: processed from Eurostat.

For the countries in Central Europe, the evolution of value added at factor cost - percentage of gross domestic product (GDP) for the period 2008-2016 is summarised in Table 19. The evolution underline the following facts:

- the highest percentage is in the following countries: Slovenia, Poland, Austria, Germany and Hungary;
- countries like Romania and Slovakia have a smaller percentage;
- in Czech Republic there is no evidence of this indicator; data are privileged or non-existent.

Table 20. *Value added at factor cost in Southern Europe*

Southern Europe	Value added at factor cost - percentage of gross domestic product (GDP)								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Italy	1.07	0.92	1.06	1.06	1.08	1.06	1.08	1.07	1.07
Malta	-	-	-	-	-	-	-	-	-
Portugal	0.77	0.78	0.77	0.73	0.71	0.7	0.73	0.75	0.76
Spain	0.97	0.88	0.95	0.9	0.9	1.05	1.03	1.02	1.02

Source: processed from Eurostat.

For the countries in Southern Europe, the evolution of value added at factor cost - percentage of gross domestic product (GDP), for the period 2008-2016, is summarised in Table 20. The evolution underline the following facts:

- Italy and Spain have the highest percentage of value added at factor cost;
- Portugal is the country with the lowest percentage of value added at factor cost;
- in Malta there is no evidence of this indicator; data are privileged or non-existent.

Table 21. *Value added at factor cost in Southeast Europe*

Southeast Europe	Value added at factor cost - percentage of gross domestic product (GDP)								
	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Bulgaria	1.35	0.94	1.15	1.1	1.09	1.05	1.14	1.15	1.12
Croatia	-	-	1.33	1.18	1.14	1.18	1.21	1.24	1.22
Cyprus	0.77	0.8	0.8	0.74	0.73	-	-	0.81	0.88
Greece	-	-	-	0.47	-	0.39	0.4	0.36	0.35

Source: processed from Eurostat.

For the countries in Southeast Europe, the evolution of value added at factor cost - percentage of gross domestic product (GDP), for the period 2008-2016, is summarised in Table 21. The evolution underline the following facts:

- Bulgaria, Cyprus and Croatia have the highest percentage of value added at factor cost;
- Greece is the country with the lowest percentage of value added at factor cost.

Discussion of the results

Discussions are to be conducted in the following paragraphs, based upon general results provided by sub-chapters 4.1, 4.2, 4.3 and 4.4, with regard to the segmentation by region and country.

(1) With regard to *Gross investment in tangible goods related to circular economy sectors*, we can underline the subsequent debates:

- EU countries from Northern Europe and Central Europe have the highest investments in tangible goods, for the period 2008-2016;
- the following countries invest mostly in tangible goods, for the period 2008-2016: Belgium, Estonia, Hungary, Italy, Latvia, Lithuania, Poland, Romania and Sweden.

(2) With regard to *Patents related to recycling and secondary raw materials*, we highlight the subsequent debates:

- EU countries from Western Europe, Central Europe and Southern Europe have the highest number of patents, for the period 2006-2014;
- The following countries from European Union have the highest number of patents, for the period 2006-2014: Austria, Finland, France, Germany, Italy, Netherlands, Spain and United Kingdom;
- If we were to make a ranking, Germany, France, United Kingdom and Poland have the vast majority of patents.

(3) In terms of *Persons employed - percentage of total employment*, we underline the following debates:

- In almost all regions of European Union, the percentages of persons employed (% of total employment) have been great for the period 2008-2016;
- Croatia, Italy, Poland, Slovenia, Latvia and Lithuania have the highest rates of persons employed (% of total employment), the rates exceeding 2%;

- Finland, Sweden, France, United Kingdom, Hungary, Romania, Portugal and Spain have also high rates of persons employed (% of total employment), with rates between 1.5-2%.

(4) In terms of *Value added at factor cost - percentage of gross domestic product (GDP)*, we underline the following debates:

- In almost all regions of European Union, the percentages of *Value added at factor cost* (% of GDP) have been high for the period 2008-2016.
- In United Kingdom, Poland, Slovenia, Italy, Bulgaria and Croatia, value added at factor cost has the highest proportion (>1%) of gross domestic product.
- In Denmark, Finland, Lithuania, France, Netherlands, Austria, Slovakia and Spain, value added at factor cost has also a high proportion (0.8-1%) of gross domestic product.

Summarising the above discussions, it can be underlined the fact that circular economy, represented here by the four indicators (gross investment in tangible goods, the number of patents related to recycling and secondary raw materials, jobs related to circular economy sectors and value added at factor costs), is recording an upward direction within European Union and Member States.

Notwithstanding that in certain UE regions/countries the results indicate a higher integration of circular economy, in the future, through EU policies and member states strategies, it is projected that all countries and regions will record a more effective integration of circular economy.

5. Conclusions and recommendations

Results of this paper underline that circular economy is well established among EU regions and Member States, and is projected a positive rate in the future, as new business models will appear and entrepreneurs and policymakers will cooperate in embracing the circular economy. It was framed in the article the importance of circular economy for the European Union, as it provides economic, environmental and social value.

European Union is currently moving towards a circular economy, leaving behind the old linear model (take resources, make products, dispose of the products). In a circular economy, products and materials are kept in use for as long as possible, because resources are limited. The circular economic system avoids waste and tries to preserve the inherent value of products as long as possible (European Commission, 2019). In the world, approximately 75% of the energy production is based on non-renewable sources extracted from the lithosphere that are combusted. The combustion releases emissions to biosphere in forms and concentrations that nature cannot tolerate or assimilate (Korhonen et al., 2018).

From 2015 until now, the European Union began to pay a relevant attention to the concept of circular economy, by adopting and implementing various policies and strategies. We recommend that, beside the European Union's policies and strategies, Member States should also adopt and implement various actions and measures to strengthen the concept of the circular economy.

Within „EU Circular Economy Package" (2016), a number of recommendations are provided in the area of waste legislation proposals: measure real recycling rates, promote high quality treatment of European metals, make sure exported waste is recycled under equivalent conditions, establish ambitious and effective recycling targets.

Montevecchi et al. (2015) suggested a number of ten recommendations for the new Circular Economy Package in Europe, as follows: data, definitions and methods should be harmonised; feasible targets and appropriate indicators should be identified for resource efficiency; waste prevention should be promoted; supporting a new paradigm: shift from „waste" to „resource"; the share of good practices regarding circular economy; enhance responsible consumption through transparent labeling, product information and traceability; ensure consistency between funding and environmental policy priorities; shift taxes from labour to material use and phase out environmentally harmful subsidies (EHS); support business resource efficiency through exchange of know-how and best practices; promote Extended Producer Responsibility.

In conclusion, circular economy constitutes a huge opportunity for countries, businesses and consumers, as Flemming Besenbacher stated: „The time is now for action and a rethink of our business models and welfare society based on the following formula: Reduce. Reuse. Recycle. Rethink."

References

Aceleanu, M.I. et al., 2015. Employment Policies for a Green Economy at the European Union Level, *Sustainability*, 7, pp. 9231-9250.

Bocken, N.M.P., 2014. A literature and practice review to develop sustainable business model archetypes, *Journal of Clean Production*, 65, pp. 42-56.

Brown, L., 2006. Eco-economy update, 2006-11 from earth policy institute, [Online], available at: www.earthpolicy.org/Books/PB2/Contents.html.

Ellen MacArthur Foundation, 2012. Towards the Circular Economy: Economic and Business Rationale for an Accelerated Transition, [Online], available at: <https://www.ellenmacarthur foundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf>

European Association of Metals, 2016. EU Circular Economy Package - Overall Recommendations, [Online], available at: <https://eurometaux.eu/media/1459/circular-economy-package-overall-recommendations-from-the-eu-metals-industry.pdf>

European Commission, 2015. Closing the loop - An EU action plan for the Circular Economy, Brussels, [Online], available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri= CELEX:52015 DC0614>

European Commission, 2017. Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the implementation of the Circular Economy Action Plan, Brussels, [Online], available at: <http://ec.europa.eu/environment/circular-economy/ implementation_report.pdf>

European Commission, 2019. Sustainability and circular economy: Circular economy, [Online], available at: <https://ec.europa.eu/growth/industry/sustainability/circular-economy_en>

Eurostat, 2018. Circular Economy Indicators, [Online], available at: <https://ec.europa.eu/eurostat/web/circular-economy/indicators/monitoring-framework>

Geissdoerfer, M. et al., 2017. The circular economy - a new sustainability paradigm, *Journal of Cleaner Production*, 143, pp. 757-768.

Geissdoerfer, M. et al., 2018. Business models and supply chains for the circular economy, *Journal of Cleaner Production*, 190, pp. 712-721.

Genovese, A. et al., 2017. Sustainable supply chain management and the transition towards a circular economy: Evidence and some applications, *Omega*, 66, pp. 344-357.

Ghisellini, P. et al., 2016. A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems, *Journal of Cleaner Production*, 114, pp. 11-32.

Kalmykova, Y. et al., 2018. Circular economy - From review of theories and practices to development of implementation tools, *Resources, Conservation & Recycling*, 135, pp. 190-201.

Kirchherr, J. et al., 2017. Conceptualizing the circular economy: An analysis of 114 definitions, *Resources, Conservation & Recycling*, 127, pp. 221-232.

Korhonen, J. et al., 2018. Circular economy as an essentially contested concept, *Journal of Cleaner Production*, 175, pp. 544-552.

Montevecchi et al., 2015. 10 Recommendations to inform the review of the Circular Economy Package, *European Commission*, [Online], available at: <https://dynamix-project.eu/sites/default/files/4th%20DYNAMIX_POLFREE_PP_recommendations_final.pdf>

Murray, A. et al., 2015. The circular economy: an interdisciplinary exploration of the concept and application in a global context, *Journal of Business Ethics*, pp. 1-12.

Nastase, C., 2007. Sustainable development and sustainable tourism, *Revista de Turism*, pp. 54-57.

OECD, 2009. Sustainable Manufacturing and Eco-innovation: Framework, Practices and Measurement, Organisation for Economic Cooperation and Development, Paris.

Pauliuk, S., 2018. Critical appraisal of the circular economy standard BS 8001:2017 and a dashboard of quantitative system indicators for its implementation in organisations, Resources, *Conservation & Recycling*, 129, pp. 81-92.

Philips, 2018. Philips spearheads the Circular Economy with firm 2020 pledge, [Online], available at: <https://www.philips.com/a-w/about/news/archive/standard/news/articles/2018/20180124-philips-spearheads-the-circular-economy-with-firm-2020-pledge.html>

Philips, 2019. Innovation and you: Circular economy is the future of businesses, [Online], available at: <https://www.philips.ro/a-w/innovationandyou/article/extended-story/economie-circulara.html>

Preston, F., 2012. A Global Redesign? Shaping the Circular Economy, [Online], available at: <https://www.researchgate.net/publication/312457779_A_global_redesign_shaping_the_circular_economy>

Shut, E. et al., 2015. Circular Economy in the Dutch Construction Sector: A Perspective for the Market and Government.

Tukker, A., 2015. Product services for a resource-efficient and circular economy - a review, *Journal of Cleaner Production*, 97, pp. 76-91.

Yuan, Z. et al., 2006. The Circular Economy. A New Development Strategy in China, *Journal of Industrial Ecology*, Vol. 10, pp. 1-2.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 88-97

Brexit implications for London insurance market

Aurora Elena DINA (MANOLACHE)
Bucharest University of Economic Studies, Romania
aurora_dina86@yahoo.com

Abstract. *The article has been focused on the London Market insurance business analysis seeking to quantify the potential impact of Brexit and a theoretical assessment of the key options with regard to the new trading relationship with the European Union and the rest of the world. The analysis results shown that approximatively 28% of the total premium written in 2017 on the London company market is estimated to be directly affected by a change in rules governing UK participation in the EU single market and its financial services passport regime.*

Keywords: Brexit, insurance industry, London market, Free Trade Agreements, Solvency II.

JEL Classification: G18, G22, G28.

Introduction

Brexit - the decision to leave the European Union on 23 June 2016 has marked a defining moment in the history of the United Kingdom. It also has marked a key milestone in the development of the European Project, representing at least a temporary reversal of the trend established with the Treaty of Rome in 1957, which committed member states towards deeper political, economic and monetary integration. The first significant milestone in the Brexit process came on 29 March 2017 when the UK Government took the historic step to trigger Article 50. This gave formal legal notice of the UK's intention to leave the EU, thus beginning the two-year process of negotiating the UK's withdrawal from the EU. That process would be phased in two stages: the first phase in which are defined the UK's terms of exit and the second phase 2 in which are defined the future UK-EU bilateral trade relationship.

Brexit presents an enormous structural challenge to many companies within the London Market and has caused many to consider afresh its place within the European and international business environment. London is recognized as a major hub for international insurance. Many European companies have underwritten insurance to domestic retail and commercial customers using a United Kingdom branch. The biggest European insurers such as AXA (France), Allianz (Germany), Generali (Italy), Aegon (Netherlands), Zurich (Switzerland), Munich Re (Germany) and Ageas (Belgium) have serviced global clients via London market. Its unique qualities of concentrated capital, expertise and ability to provide global coverage has come under scrutiny in recent months as the UK prepares to leave the EU.

The main objectives of the research were focused on: London Market insurance business analysis seeking to quantify the potential impact of Brexit and a theoretical assessment of the key options with regard to the new trading relationship with the European Union and the rest of the world.

This paper has the following structure: a brief overview of the literature review is provided in the second section of the paper, the research methodology is presented in the third section of the article, the fourth section presents the results of the London insurance market analysis and the main options for market access post-Brexit and the fifth section outlined the conclusions.

Literature review

In the academic literature, the subject of the Britain exit from the European Union and Brexit impact on insurance industry has been intensely analyzed by researchers considering that the insurance sector makes a substantial contribution to the overall UK economy. For example:

Rae et al. (2018) reveal that the Brexit could not be ignored. Passporting and equivalence through mutual recognition of the UK's and EU's regulatory system is a highly desirable goal, especially for international nature of business carried out in the London Market. Schoenmaker (2016) has examined the impact of possible changes in passporting arrangements after Brexit for banking and insurance sectors and concluded that the insurance sector makes very limited use of the passport in comparison to the banking industry, therefore the insurance industry will be far less affected compared with banking.

Armour (2017) affirmed that the insurance industry would have less to lose from hard Brexit due to the most of insurers operating across borders in the EU do so via subsidiaries rather than branches (reliant on the passport). Evans (2016) estimated that in 2015 year, 11% of the Lloyd's of London (the equivalent of 2.9 billion GBP) is at risk.

Ringe (2018) had a different position on the significance of Brexit for the European financial market. He has argued that, in reality, the impact of Brexit for financial services will be minuscule. Given the joint economic interests, a likely outcome of the Brexit negotiations will be a solution that formally satisfies the 2016 referendum result, but in substance keeps Britain closely involved in the EU financial market. He pointed out that alternatively, there is expected an agreement on the basis of regulatory equivalence.

Methodology

The numerical evaluation was performed with the goal to identify the amount of premium written via London Market potentially affected by Brexit. The research was carried out based on the annual statistics reports published by the International Underwriting Association in the last two years.

The geographical breakdown for both premium written in London and that written elsewhere, but controlled or overseen by London offices was based on territory allocations made by each individual company according to their own usual procedures (for example, according to the location of a risk or address of the insured).

The definitions for London market, subsidiary and branch are the following:

1. London Insurance Market is a distinct arrangement, largely separated from the wider United Kingdom insurance industry and with few, if any, directly comparable international rivals. Outside Lloyd's of London there are well over 50 individual companies independently writing commercial and wholesale insurance contracts and delegated authority business. These are London offices of multinational firms headquartered in Sydney, Tokyo, Dubai, Bermuda, New York and many other locations. They report to different international regulators and often have no statutory requirement to identify London business as distinct from other global premium
2. A subsidiary operating as an independent entity, controlling its own affairs, with its own board will be regulated by the country in which it is based.
3. A branch, meanwhile, being more an extension of the parent company, does not prepare its own accounts and is regulated by the supervisor overseeing its head office

Results and discussions

1. Brexit and London insurance market

The overall intellectual and economic income generated by the London company market's from the gross written premiums in 2017 was over 26.3 billion GBP, of which the London company market's gross premium income was about 18.3 billion GBP plus an additional amount by approximatively 7.9 billion GBP represents the premiums written elsewhere,

but managed and overseen by operations in the London. European business (excluding UK and Ireland) for both premium written in London and controlled business represents 7.4 billion GBP or 28% of the total. The return for premiums written by delegated authorities from both London and controlled business was 3.1 billion GBP. Compared with the previous year, in 2017 the overall gross premium income has recorded an increase by 15.8%. This increase is driven by a growth in business premium underwritten in the City by 14.3% and the business controlled by London but written elsewhere has gone up by 19.3%. The return for business written by delegated authorities has seen a rise by 7.7% (from 2.9 billion GBP in 2016). Table 1 presents the evolution of premium incomes generated by London insurance market over the last two years.

Table 1. *Incomes generated by gross premium written (Billion GBP) on London market in 2017 and 2016*

	2017	2016
Business written in London	18,331	16,034
Business controlled by London	7,984	6,691
Total	26,314	22,725

Source: adapted from International Underwriting Association of London, 2018: p. 7.

The geographical breakdown presented in the Table 2 indicated that of the total 18.3 billion GBP gross premium written in London, 16% or 2.9 billion GBP is accounted for Continental European business. This makes it the second most important area for London business, behind the United Kingdom and Ireland which dominates with a 57% (10.4 billion GBP) share. Nord America accounted for 14% (2.5 billion) of premium written in London in 2017. The data for business written in London is quite stable. Compared to last year, the overall picture of the business written in the City is little changed. The domestic premiums have remained the dominant source of income with a slight share increase by 3% while the next most important market, the continental Europe market have recorded a lower share decrease by 2% and Nord America has kept its proportion of 14% of total business. The proportion of continental European business has consequently fallen slightly to 16% from 18% last year but the absolute amount of premium increased by 6% in line with the premium overall growing. There are some individual cases where a transfer of business from London to continental parent companies has already begun.

Table 2. *London premium income by geographical territory (billion GBP) in 2017 and 2016*

	2017	2016
UK & Ireland	10.433	8.700
Continental Europe	2.964	2.775
Nord America	2.555	2.284
Asia	1.254	1.167
South America	0,613	0,613
Africa	0,269	0,291
Others	1.124	1.104
Total	18.331	16.031

Source: adapted from International Underwriting Association of London, 2018: p. 16.
Note: Nord America (*USA & Canada), Continental Europe (Europe without UK & Ireland).*

In addition to business actually written in London, companies also identify 7.9 billion GBP of premium written in other locations, but overseen or controlled by the City operation. Of this controlled business the largest proportion comes from continental Europe accounted for 56% of the total. United Kington and Ireland has still a significant share of premium written in regional offices across the British Isles, accounted for 20% of all controlled

business and Nord America accounted for only 9%. In the past two years the Continental Europe has been the single most significant region for such premium, overtaking the United Kington and Ireland and the proportion of premium becoming more important (have increased from 34% in 2016 to 56% in 2017). In 2017, continental Europe accounts for around six times the income sourced from operations managed in the Nord America. The jump of 94% of the absolute amount of controlled premium is far in excess of any general rise in income observed across the London Market as a whole. The British Isles have remained an important location but the premium decreased in significance for controlled business. Table 3 illustrates the development of premium controlled by geographical territory in the last two year.

Table 3. *Premium controlled by London by geographical territory (Billion GBP) in 2017 and 2016*

	2017	2016
Continental Europe	4.480	2.306
UK & Ireland	1.616	2.013
Nord America	0,739	0,697
Asia	0,582	0,566
South America	0,400	0,490
Africa	0,039	0,05
Others	1.886	2.370
Total	7.984	6.691

Source: adapted from International Underwriting Association of London, 2018: p. 17.

One of the most important London company market concern about post – Brexit is the status of operations that currently have managed business in the City under branch status. Branch operations represent a popular business model. Many branches are operating as a branch of a parent company in the EU27/EEA member states or a branch of a subsidiary based in the EU27/EEA/Switzerland and a parent company in a third country. A total premium volume of 7.758 billion GBP was underwritten in 2017 by branches, a growing by 5% (0.374 billion GBP) compared with the amount recorded previous year (7.383 billion GBP). The UK government has recognized the importance of these companies to UK economy and established a Temporary Permissions Regime which allowed to continue uninterrupted business after Brexit takes place. Post Brexit, in the absence of any transitional arrangement and/or new trading arrangement or beyond the timeframe covered by the Temporary Permissions Regime, in order for these companies to continue operating in London must change their regulatory status in subsidiary or third country branch. Table 4 presents the premium volume written in 2016 by branch operations in City split by two different groups of companies branching into London from Europe.

Table 4. *Premium written in London by branch operations in 2016*

	UK & Ireland	Continental Europe	Others	Total
London branches of parent companies in EEA/remaining 27 EU states	1.328	0.409	1.180	2.917
London branches of subsidiary in EEA/EU27/ Switzerland and parent in third country outside Europe	2.541	0.812	1.114	4.466
Total	3.868	1.221	2.294	7.383

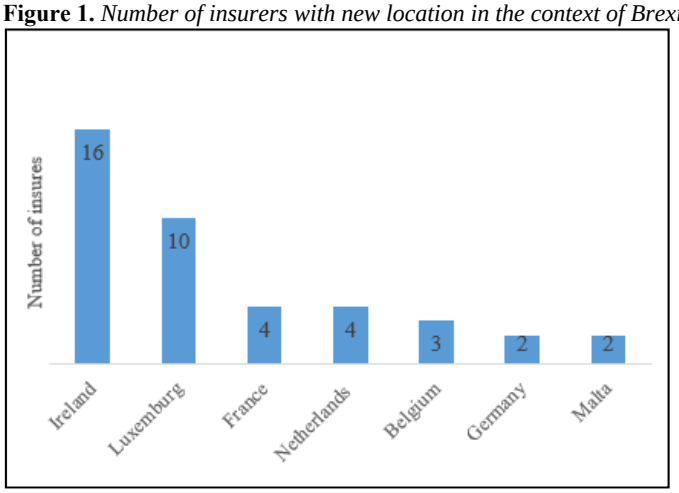
Source: adapted from International Underwriting Association of London, 2017: p. 19.

Table 4 shown that a premium volume of 1.2 billion GBP is written by London from European (without United Kingdom and Ireland) branches. These companies are either United Kingdom headquartered or subsidiaries of parent companies in a third country

outside Europe and are using the status of their London office to benefit from the EU's financial services passport regime to underwrite business. After the UK's exit from the EU this arrangement may no longer be possible. London Market companies will not be able to utilize passporting rights unless a new trade agreement and/ or transitional arrangements. After June 23, 2016, new underwriting hubs in a variety of locations have be prepared to provide alternative mechanisms, for continuing to serve European clients.

Insurers have selected a variety of different options for new European offices and no single continental post-Brexit insurance hub appears to be emerging. Dublin, Paris, Munich, Luxembourg and Brussels have all been chosen as cities for either new or enhanced continental European operations. Decisions have generally been influenced largely by the location of any existing operations within the group, relationships with national regulators and proximity to customer bases. Ireland is the most favored location especially due to the similarities and between the British and Irish legal system, compatible regulatory and taxation frameworks, which led to an easier transition to manage than other competing locations. Luxemburg represents the second option in terms of relocating business operations. Figure 1 presents the popularity of different options taken by insurance companies.

Figure 1. *Number of insurers with new location in the context of Brexit*



Source: adapted from International Underwriting Association of London, 2018: p. 23.

2. Brexit and Free Trade Agreements (FTAs) in insurance industry

To remain competitive, the UK insurance industry need to maintain access to the global insurance market both inside the European Union and beyond it. Following Brexit, Britain must negotiate favorable terms of market access with the European Union and the rest of the world. The existing free trade agreements has been focused more on trade in tangible goods. The trade in intangible services like banking and insurance is enshrined by the General Agreement on Trade in Services (GATS) adopted by the World Trade Organisation (WTO) in 1995, while the future Trade in Services Agreement (TiSA) agreement for services liberalization is currently on hold.

Brexit has induced a number a changes across the UK economy with respect on the trade agreement. There are currently FTA models for market access implemented by Switzerland, Norway and Canada which make cross-border trade with Europe a possibility. Table 5 presents an overview of the main options post-Brexit related to the relationship between UK and EU.

Table 5. *Free Trade Agreement models between the EU and non-EU members*

	Access to the Single Market in goods and services			Obligations		Influence
	Tariff-free trade	Customs union & external trade	Level playing field / nontariff barriers	Other policy & regulations	Financial contribution	Votes on EU rules
UK (EU member)	Full	Full. No customs. Access to EU FTAs	Full	UK is not a member of the Eurozone	Pays in annually around £12bn. UK receives rebate	Full
Norway (EEA member)	Some tariffs remain	None. Custom costs apply. No access to EU FTAs	Key areas not covered by EEA agreement	Accepts most EU rules including free movement of people	Pays for EEA grants, Norway Grants, admin & programme costs	None
Switzerland (Bilateral agreement / EFTA member)	Some tariffs remain	None. Custom costs apply. No access to EU FTAs	Limited coverage for services. No financial services passport	Accepts EU rules in sectors covered. Participates in free movement of people	Gives grants to new EU member states. Pays admin & programme costs	None
Canada (CETA)	Some tariffs remain	None. Custom costs apply. No access to EU FTAs	Partial liberalization of services. No financial services passport	Firms trading into EU confirm to EU standards	None	None
WTO (Bilateral agreement)	EU external tariffs apply	None. Custom costs apply. No access to EU FTAs	International agreements apply. No financial services passport	Firms trading into EU confirm to EU standards	None	None

Source: adapted from Kennedys Law LLP, 2016: p. 21.
Note: EU – European Union; EEA - European Economic Area; EFTA - European Free Trade Association; CETA – Comprehensive Economic & Trade Agreement; WTO – World Trade Organization; FTA – Free Trade Agreement.

The most attractive model is the Norwegian model due to: zero duties paid, free access to the EU single market and remain part of the EEA without being part of the EU. However, Norway must accept EU legislation covering the four freedoms of goods, services, capital and free movement of people. Norway contributes annually to the European Union budget. Despite the fact that must comply with EU law, Norway has no right in EU decision-making and it is not entitled to representation in the European Commission, to have ministers on the European Council or MEPs in the European Parliament. The second model which can be followed by Britain is that of Switzerland, an EFTA country. The EU and Switzerland have negotiated over 130 individual bi-lateral sector-by-sector agreements over a period of 30 years. Despite the large number of bi-lateral agreements, the two sides have failed to reach a settlement which allows the Swiss financial services sector to access the Single Market, apart from a non-life insurance agreement signed in 1999. This agreement only covers direct insurance for damage and enables Swiss insurers to set up and acquire

agencies and branches freely in the EU. Switzerland is required to maintain the free movement of persons and to ensure that all Swiss law be developed with EU legislation in mind in order to ensure reciprocal access to the EU's Single Market. Of all of these models the Canadian agreement is the most limited.

The main options for UK market access are:

1. Remain in the Single Market and the Customs Union – the Norwegian mode. Under the Norway, UK leaves the EU but remains within the European Economic Area (EEA), would maintain access to the Single Market, but would also involve sacrificing the UK's 'red lines' - free movement of people (would not be consistent with the view expressed by the British people on 23 June 2016). In this situation, UK, join the European Free Trade Area (EFTA), become the 31st member of the European Economic Area (EEA) and will benefit of continued membership of the European Single Market, maintaining close alignment on financial and insurance services.
2. Mutual recognition – a bespoke UK-EU model. An alternative option would mean agreeing mutual recognition of regulations as well as regulatory supervision. A bespoke mutual access model covering retail and wholesale financial services, set out in a bespoke UK-EU Free Trade Agreement (FTA), was seen by market practitioners as the best model for achieving that goal. There are international agreements which seek to reduce non-tariff barriers to insurance and reinsurance services. In November 2017, the US and EU authorities concluded a Covered Agreement to removing trade barriers. This agreement removes statutory collateral and local presence requirements for EU and US reinsurers operating in each other's markets. It also provides recognition of home group supervision and enhances regulatory cooperation. Similarly, the bilateral agreement between the EU and Switzerland covering non-life insurance, which has been in effect since 1993: reduces capital requirements to the possession of a minimum guarantee fund or a minimum solvency margin; provides for home state supervision on capital between the EU and Switzerland and provides a joint committee of Swiss and EU representatives to administer the agreement which includes an arbitration process in the case of any dispute. In practical terms, the UK and the EU would have matching regulatory and supervisory frameworks on day one after the UK exits the EU. This uniquely high degree of regulatory alignment would form the basis for any model based on mutual recognition.
3. Equivalence for third country regimes. Equivalence has been discussed extensively throughout the Brexit process. The EU already has a third country equivalence regime (TCR) in place in various pieces of Single Market legislation. There are two concerns on this approach: firstly, only a small proportion of the regulations which currently benefit from the passporting regime are actually covered by any equivalence standards and there is only very limited coverage within the insurance directives and secondly, is that equivalence is discretionary. Under the current rules, the European Commission reserves the right to withdraw equivalence at 30 days' notice. It has been argued that the system of equivalence could be modified to ensure more stable terms of market access, replacing the Commission's discretion with an UK - EU agreement based on a comprehensive scope of regulations and an independent arbitration mechanism. The UK has discussed the potential for creating what it calls the 'best third country' status, in

which the UK has clear separation from the EU Single Market but is able to agree more favorable terms of market entry compared to other third countries like Switzerland.

4. No deal scenario – fall back on WTO rules. The final outcome would see the UK fail to reach any exit agreement or future trade agreement with the EU. In this instance, future trade would be dictated by existing World Trade Organization (WTO) rules. The UK is currently covered by WTO rules, only because of its membership to the EU. The UK would have to reapply to join the WTO upon leaving the EU.

In July 2018, the UK Government published its White Paper in which was setting out a future trading relationship with the EU, laying the foundation for the future. From the four options highlighted previously, the UK Government has set out a vision for enhanced equivalence, which grants UK and EU companies' equal market. The White Paper proposals were: to maintain a "common rulebook" for all goods traded with the EU, including agricultural products; a treaty to be signed committing the UK to "continued harmonization" with EU rules avoiding friction at the UK-EU border, including Northern Ireland and the borders between the UK and EU will be treated as a "combined customs territory". The Government position seems to be "a soft Brexit on goods and agriculture, and a hard Brexit on services and the City of London". Insurance business is subject to the rules of the Solvency II Directive4, which enables primary insurance and reinsurance companies to sell their products and services EU-wide. In addition, this legislation offers them the possibility of home-country authorization and control. With Brexit, branches of EU insurers lose this privilege and become subject to UK supervision. Solvency II also provides for an equivalence regime but only for reinsurance business. Passporting may not be achieved under a hard Brexit. Equivalence avoids duplication and promotes open international markets, whilst ensuring that policyholders are protected globally. EU insurers with business in a country with equivalence may use local rules to report on operations there, while an insurer from outside the EU may operate in the EU without fully complying with Solvency II. The loss of equivalence would be an issue for European groups writing business in the United Kingdom as well as UK groups reinsuring European companies. There is a risk that if the UK regulation were to move too far away from Solvency II, it could be deemed as not equivalent. The European Commission may decide that the solvency regime in non-EU countries is equivalent to that in the EU. Certainly, there are many in the City of London who would be very worried about any future EU trading relationship which does not fully consider the market access requirements for international insurance businesses based in the UK.

Conclusions

It is almost three years since the UK took the historic decision to leave the European Union. The analysis of the development of premium income by geographical territory over the last two years shown two graphs trends: UK and Ireland premium becoming more dominant for business written in London and continental European premium increasing in significance for controlled business. Premium of 7.337 billion GBP was written in 2017 on the London company market and will potentially be directly affected by a change in rules governing UK participation in the EU single market and its financial services passport

regime. Based on the geographical breakdown it is difficult to estimate how much of the identified European business would continue to be placed with London Market operations after Brexit and how much might migrate to continental re/insurers. Such decisions will depend on many factors, including the nature of existing business relationships, the availability of alternative markets and the shape of the UK's revised trading relationship with the remaining EU member states. Leaving the EU will involve diminished market access for the UK, whatever model is applied, with negative impacts on the overall insurance sector.

References

Armour, J., 2017. Brexit and Financial Services. *Oxford Review of Economic Policy,* 33 (1), pp. 54-69.

Evans, H., 2016. Evidence on 'Brexit and Financial Services' to House of Lords Select Committee on the European Union Financial Affairs Sub-Committee, 12 October .

Rae, R.A., Barrett, A., Brooks, D., Chotai, M.A., Pelkiewicz, A.J., Wang, C., 2018. A review of Solvency II: Has it met its objectives? *British Actuarial Journal,* 23 (4), pp. 1-72.

Ringe, W-G., 2018. The Irrelevance of Brexit for the European Financial Market. European Business Organization Law Review, Forthcoming, available at: <http://dx.doi.org/10.2139/ssrn.2902715>

Schoenmaker, D., 2017. The UK Financial Sector and EU Integration after Brexit: The Issue of Passporting', in N. Campos and F. Coricelli (eds.) *The Economics of the UK-EU Relationship: From the Treaty of Rome to the Brexit Vote,* Palgrave McMillan, London, forthcoming

International Underwriting Association of London, 2017. London company market Statistics Report October 2017, available at: <https://www.iua.co.uk/IUA_Member/Publications/London_Company_Market_Statistics_Report.aspx>

International Underwriting Association of London, 2018. London company market Statistics Report October 2018, available at: <https://www.iua.co.uk/IUA_Member/Publications/London_Company_Market_Statistics_Report.aspx>

Kennedys Law LLP, 2017. Brexit and the insurance sector towards 2020 and beyond, available at: <https://kennedyslaw.com/media/3287/brexit-and-the-insurance-sector-towards-2020-and-beyond.pdf >

Kennedys Law LLP, 2016. Brexit: the insurers speak, available at: < ttps://www.kennedyslaw.com/media/2354/kennedys_brexit_the_insurers_speak.pdf >

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 98-108

Discontinued business for a Romanian non-life insurance company in the context of Solvency II regulatory regime

Aurora Elena DINA (MANOLACHE)
Bucharest University of Economic Studies, Romania
aurora_dina86@yahoo.com

Abstract. *The main purpose of the article is to assess the importance of discontinued business in the context of the Solvency II regime for a Romanian non-life insurance company. The research paper provides a theoretical overview of discontinued businesses concept and a numerical analysis to quantify the impact of the discontinued business on the solvency capital requirements following the Solvency II standard formula methodology. The results of the numerical evaluation suggest that the actively management of the discontinued business can lead to a substantial improvement of the company solvency position: increasing of the SCR and MCR ratio by 23%, respectively 26%.*

Keywords: Discontinued business, run-off, Solvency II, non-life insurance, solvency capital requirements.

JEL Classification: G22, G28.

Introduction

Over the last years, the economic, political and legislative changes of the European insurance industry such as: the implementation of Solvency II regulatory regime starting with January 1st,2016 by all the European (re)insurers and the uncertainty around the Brexit in the Great Britain, have influenced the susceptibility of the discontinued business portfolios. In the present, the discontinued business represents a big concern that cannot be longer ignored by insurance companies.

In the insurance sector, the „discontinued business" is also known as „run-off", "legacy business" or "inactive business" and represents a business portfolio for which an insurance company has still obligations from previous year, but not writing new business and therefore not generating premiums income.

In the recent years the European run-off transaction market recorded an upward trend that has been driven by Solvency II implementation which is focused on capital efficiency. Current market studies (PwC survey, 2018) have estimated the value of run-off liabilities at the end a 2017 year, for the European industry of approximately 275 billion USD, from which Germany and Switzerland account for 125 billion USD, Great Britain and Ireland 55 billion USD, France and Benelux countries 45 billion USD, Other Western Europe 30 billion USD, Nordic region 10 billion USD and Eastern Europe 10 billion USD. The material proportion of the German and Swiss run - off is generated by a small number of major global reinsurers that have incorporated the run-off liabilities especially by the reinsurance exposure from the United States of America and Great Britain. There are significant differences with regard to the size of run-off liabilities by lines of business across the European countries depending on the maturity of the insurance market: Continental European run-off is driven in principal by motor and health insurance, Western Europe run-off is generated by accident insurance, including losses arising from industrial injury and occupational diseases, and the Great Britain run-off is associated with financial business.

The research has two main objectives: the first aim of this paper is to provide a theoretical overview in the concept of discontinued businesses and the second goal is to assess the impact of the discontinued business in the overall solvency capital requirements for a Romanian non-life insurance company in the context of Solvency II regulatory regime. Considering that the issue of discontinued business is absent in the Romanian academic literature and in the reports and surveys analyzes there is no data available about the size of the Romanian run-off market, the article can stimulate further academic researches and market studies about run-off business topic in the Romanian insurance industry. Given that the implementation by the European insurance market has brought major changes in insurance sector such as the solvency capital requirements calculation and risks' quantification by insurance companies, as well as supervisors' risk assessment, the results of the research are relevant for insurance practitioners willing to better understand the impact of run-off on their insurance business in the context of the Solvency II.

The article is set out as follows: a brief overview of the literature review is provided in the second section of the paper, the research methodology is presented in the third section of

the article, the fourth section contains a theoretical overview in the concept of discontinued business and the results of the quantitative assessment of the discontinued business on the solvency capital requirements, the fifth section outlined the main conclusions with respect to the importance of actively management of the discontinued business under Solvency II regime and in the sixth section it is summarized the bibliography.

Literature review

In the last years, the subject of discontinued business has been discussed by practitioners and academic researchers.

A number of consulting firms have published periodically studies in which it was analysed the global run-off market (for example PWC, Global Insurance Run-off Survey 2018 and previous editions). The recent editions of the survey of global discontinued insurance business carried out by PWC [1] have illustrated that there is a significant interest in run-off acquisition, especially in Continental Europe and United States of America and a lower interest for Asian run-off, where the run-off market activity is less developed.

In the academic literature there are some papers that have analyzed the impact of Solvency II on the discontinued business. Eling and Pankoke (2014) test the non-life run-off market development in the German speaking countries (Germany, Switzerland, Austria, and Luxembourg) based on linear multivariate regression models and concluded that the insurance companies from Switzerland have more experience in the active management of run-off business than insurance companies from other German speaking countries. The numerical evaluation of their study shown that 23% of solvency capital requirements for non-life premiums and reserve risk submodule represent the proportion of the discontinued business. Khomenko (2016) noted that in the context of Solvency II, the passive management of discontinued business does not represent a feasible option for long time, because a run-off portfolio under Solvency II creates additional pressure on company's capital and human resources, therefore the insurers will be constrained to re-evaluate their inactive portfolios and find solutions to actively management them.

Methodology

This paper provides a numerical evaluation in which is investigated the impact of the discontinued business on the solvency capital requirements for premium and reserve risk submodule, operational risk, total solvency capital requirement (SCR), own founds and minimum capital requirement (MCR).

Implementation of the new regulatory solvability framework, Solvency II, starting with January 2016, by the European insurance industry has brought major changes such as the solvency capital requirements calculation and risks' quantification by insurance companies, as well as supervisors' risk assessment, resulting in a substantial improvement in the profitability and solvency position of the European insurance sector. Solvency II regulatory regime is structured into three pillars which cover: quantitative requirements in Pilar I,

qualitative requirements in Pilar II and reporting and disclosure requirements to the supervisor and public in Pillar III.

The article was focused on the discontinued business impact on Solvency II quantitative requirements covered by Pilar I: Solvency Capital Requirement (SCR), Minimum Capital Requirement (MCR) and own founds.

The research was performed according to the Solvency II Standard Formula based on the guidelines provided by regulatory authority: European Insurance and Occupational Pensions Authority (EIOPA). Detailed methodology for solvency capital requirements calculation is defined in the guidelines provided by EIOPA (principles of Directive 2009/138/EC of the European Parliament and of the Council of 25 November 2009, Commission Delegated Regulation (EU) 2015/35).

The Solvency II Standard Formula applied a modular structure to calculate the Solvency Capital Requirements (SCR). The overall risk exposure of the insurer is split up into five risk modules (market, default, underwriting, operational and intangible asset risk), which are divided into sub risks and sub-sub risks. For each risk/sub risk module: market, counterparty default, underwriting, SCRs are being calculated. Afterwards, these SCRs are aggregated into an overall SCR using a correlation matrices to consider the diversification discount effect, resulting the Basic Solvency Capital Requirement (BSCR). The overall SCR is the sum between the Basic Solvency Capital Requirement and SCR for operational risk.

Non-Life underwriting risk module is divided into three submodules risks: premium and reserve, lapse and catastrophe. The research of the article is focused only on the premium and reserve risk submodule. The solvency capital requirements for premium and reserve risk for non-life insurers are calculated by applying a factor – based formula, determined through the multiplication of the premiums and outstanding claim volume with specific risk factors.

$$SCR_{\text{NL Prem Res}} = 3 \cdot \sigma_{\text{NL Prem Res}} \cdot V_{\text{NL Prem Res}} \qquad (1)$$

Where:

$\sigma_{\text{NL Prem Res}}$ – aggregated standard deviation for non-life premium and reserve risk;
$V_{\text{NL Prem Res}}$ – volume risk measure for non-life premium and reserve risk.

SCRs for premium and reserve risks is calculated for each line of business (LoB). The risk factors are equal to the triple standard deviation for premium (reserve) risk determined in conformity with art. 117 of the Commission Delegated Regulation (EU) 2015/35. The risk volume for premium and reserve risk of each line of business – volume measure is determined in conformity with art. 116 of the Commission Delegated Regulation (EU) 2015/35. The SCRs for each line of business are aggregated to the SCR for premium and reserve risk.

Minimum Capital Requirement represents the minimum level below which the financial resources of an insurance company should not fall. The MCR is calculated independently of the SCR using a linear formula based on the factors (which varies by lines of business) applied to the volume of the best estimate of technical provisions and written premiums.

The MCR has a floor, equivalent to 25% of the SCR, and a cap, equivalent to 45% of the SCR. Also, there is an absolute floor of 3.7 million EUR.

Own funds represent the equity capital. The proportion of the available own funds which are able to cover the SCR and MCR are designated as eligible own funds. The ratios of eligible own funds to cover the SCR and MCR are known as SCR ratio, respectively MCR ratio and should be at least 100%. The own funds available are classified into so-called tiers according to their quality: Tier 1 - highest quality class are available at all times and without restriction to cover the SCR / MCR and Tier 2 and Tier 3 that are capped to different limits. The eligible own funds to meet SCR can be maxim 50% Tier 2 and Tier 3 and in addition maxim 15% Tier 3. The eligible own funds to meet MCR can be maxim 20% Tier 2 and Tier 3 is not creditable.

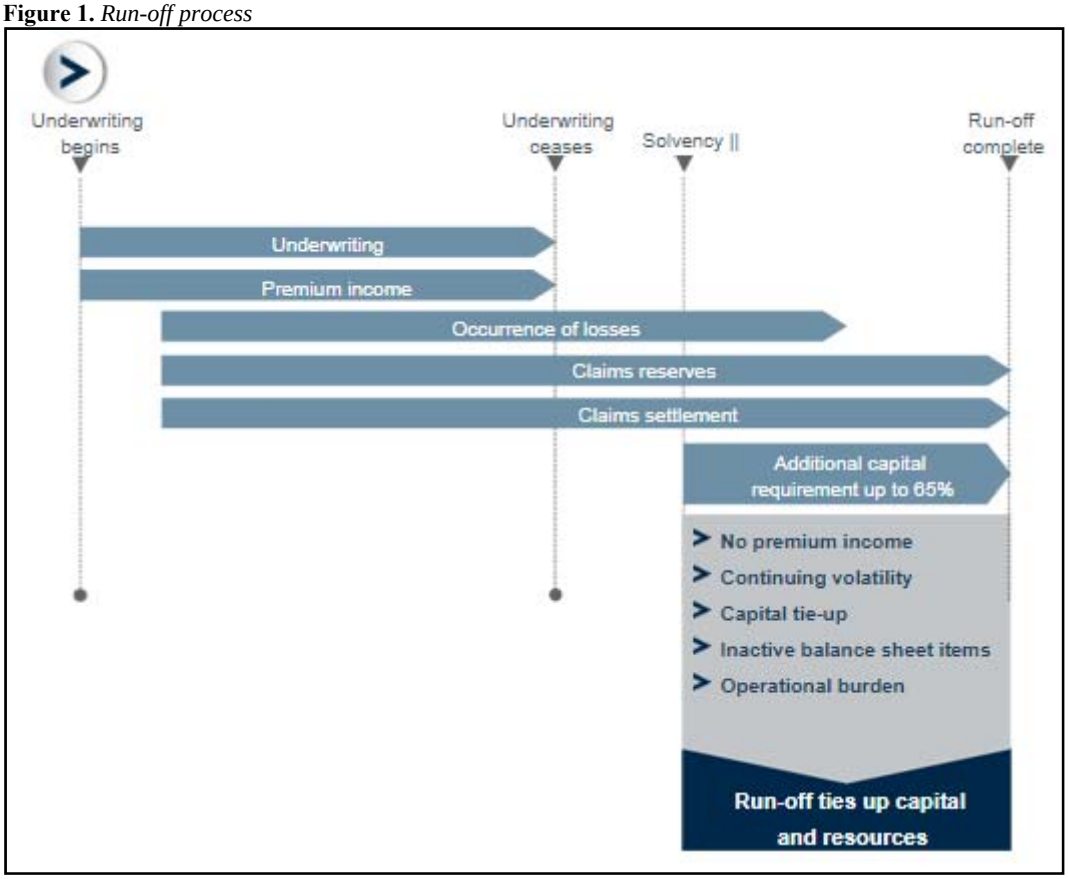
Results and discussions

Qualitative Assessment

The “discontinued business” is characterized by a variety of terms and definitions. The “discontinued business”, “run-off" or "inactive business” represents the business underwritten in the past for which technical provisions still exist, but no new business is underwritten and no premium income is generated.

According to DARAG (2014), the inactive business accounts approximatively 20-30% of the total technical provisions of the non-life insurance companies. Thus, virtually every insurance undertaking has run-off portfolios for which premium income is not earned. There are situations when an insurance company has to stop underwriting for all or particular class of business for various economic or strategic reasons such as: the shift to other lines of business, exit from the business segments with low profitability or complete exit from the insurance market. Even though the insurance company does not receive premium income, the insurer must keep sufficient amount of technical provisions in their balance sheet to cover the claims (claims reported but not settled - RBNS or claims incurred but not reported - IBNR). These provisions need to be regularly reviewed until the run-off is complete. Run-off is considered completed when all the existing claims have been settled and no further claims are expected. Lines of business with long tail (for example liabilities), with a high proportion of late claims – claims may still occur years after have to stop underwriting business, can have unfavourably consequences for the company financial results. In conformity with the Solvency II, technical provisions should be calculated as accurately as possible and these reserves for the discontinued business generate additional capital requirements for insurance companies. Figure 1 presents the run-off process in the context of the Solvency II regulatory regime.

Figure 1. *Run-off process*



Source: DARAG (2014).

Discontinued business can be managed either actively or passively. By passive management, the company deals with claims as they arise and does not have any proactive attempts to reduce the size of the run-off portfolio. The active management involves proactive actions to decrease the size of the inactive business portfolio by internal and external solutions. By internal solutions, the discontinued business is reduced without involving a third party, exclusively managed in-house (for example commutation or portfolio transfer within the group). On the other hand, external solutions involved third party in the active decrease of the discontinued business (for example share deal, portfolio transfer or retrospective reinsurance). Table 1 presents a comparison of the main options that can be used in discontinued business management based on the relevant criteria: finality (from economic, juridical and complete perspective), effects (on capital, risk and costs), default risk and regulatory approval.

Table 1. *Discontinued business management*

Discontinued business management	Economic finality	Juridical finality	Complete finality	Capital release	Applicability	Administrative expense	Default risk	Regulatory approval
In house management	No	No	No	0	Direct and reinsurance	High	Non-existent	No
Commutation	Yes	Yes	Yes	Succes-sively	Reinsurance only	High	Non-existent	No
Portfolio transfer	Yes	Yes	Yes	Promptly	Direct and reinsurance	Low	Non-existent	Yes
Share deal	Yes	Yes	Yes	Promptly	Direct and reinsurance	None	Non-existent	Yes
Retrospective reinsurance	Yes	Yes	No	Direct	Direct and reinsurance	High	To be noted	No

Source: adapted from Eling et al., 2016: p. 40 and DARAG (2014).

In the past, the discontinued business was almost exclusively managed in-house, but in the last years the transfers to third parties or commutations between insurers grew in importance. The main reason for handling run-off portfolio in-house is the reputational risk. Under the commutation method, insurer and policyholder(s) agree to cancel insurance coverage for a single payment. Under the portfolio transfer method, the discontinued business is transferred to another company by an internal or an external solution. Under the share deal method, the whole insurer with inactive business is sold. Under the retrospective reinsurance method, for the run-off portfolio it is set up a retrospective reinsurance contract which covers all underwriting liabilities, but the transferring company continues to be liable, therefore the transfer is not final. In practice, the reinsurance solution frequently is realized by the combination of a loss portfolio transfer and an adverse development cover.

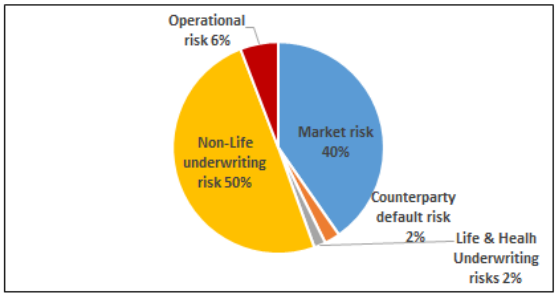
Numerical evaluation

To illustrate the importance of the discontinued business under Solvency II regime, the paper provides a quantitative assessment in which it is revealed the impact on the solvency capital requirements for premium and reserve risk submodule, operational risk, total solvency capital requirement (SCR), own founds and minimum capital requirement (MCR). In the article, the impact of the discontinued business in the credit (counterparty) risk module was not considered due to the small share in the overall SCR (2%).

The insurance company analyzed is engaged both in non- life and life insurance risks (non-life insurance accounts for 89% of the total gross written premiums during the year 2017, while life insurance accounts for 11%). The particularly of the portfolio structure is represented by the highest share of the motor third party liability (MTPL) that accounts for 67% of overall non-life underwriting business. Figure 2 shows an overview of the solvency capital requirements by risk modules at the end of 2017 year. The values are given in thousand EUR.

Figure 2. *SCR risk modules*

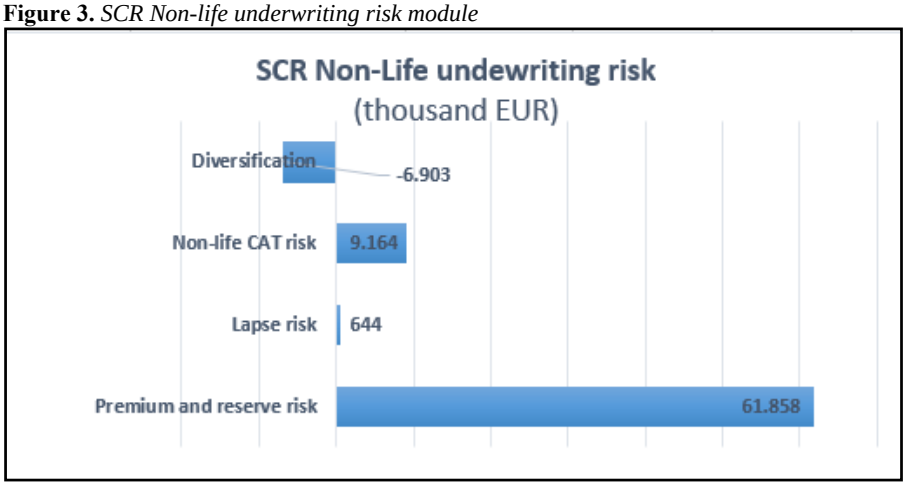
SCR components	EUR thousand
Market risk	52.536
Counterparty default risk	3.112
Life Underwriting risks	1.610
Health underwriting risk	730
Non-Life underwriting risk	64.763
Intangible assets	0
Diversification	-27.791
Basic Solvency Capital Requirement	**94.959**
Operational risk	7.624
Solvency Capital Requirement	**102.583**



Source: Authors' own research.

The values presented in the figure above, show that the solvency capital requirements of the insurance company analyzed is heavily weighted by the non-life underwriting risk module, which accounts for approximatively a half of the insurance market solvency capital requirements. The structure of the insurer's portfolio with a significant exposure to the motor third party liability insurance segment led to a high solvency capital requirements for the premium and reserve risk sub-module (accounting for 86% of the overall solvency capital requirements for non-life underwriting risk module). Figure 3 presents an overview of the Non- Life underwriting risk module SCRs split by risk sub-modules.

Figure 3. *SCR Non-life underwriting risk module*



Source: Authors' own research.

The insurer has generated at the end of 2017 year, a net premium volume of 177.5 million EUR and has recorded net claims reserves of 152 million EUR in non-life business. The discontinued business is represented by "Motor, other classes" line of business, the claims reserves for this line of business accounting for 20% of the total non-life claims provisions. The company operates exclusively on the Romanian insurance market and therefore the discount for the geographical diversification is not applicable. Table 2 shows the input, for the calculation of the solvency capital requirements for premium and reserve risk submodule.

Table 2. *SCR Premium and reserve risk submodule input*

LoB	V_{prem}	V_{res}	σ_{prem}	σ_{adj}	$\sigma_{prem\ adj}$	σ_{res}	Corr	DIV_{LoB}	V_{LoB}	σ_{LoB}	$(V \times \sigma)_{LoB}$
Motor vehicle liability	125.736	100.280	10%	80%	8,00%	9%	50%	100%	226.015	7,32%	16.535
Motor, other classes	0	29.934	8%	100%	8,00%	8%	50%	100%	29.934	8,00%	2.395
Marine, aviation, transport	1.746	237	15%	100%	15,00%	11%	50%	100%	1.984	13,91%	276
Fire and other property damage	24.886	8.076	8%	80%	6,40%	10%	50%	100%	32.962	6,42%	2.115
Third-party liability	12.685	8.246	14%	80%	11,20%	11%	50%	100%	20.931	9,71%	2.032
Credit and suretyship	256	519	12%	100%	12,00%	19%	50%	100%	774	15,10%	117
Legal expenses	0	0	7%	100%	7,00%	12%	50%	100%	0	0,00%	0
Assistance	9.815	4.032	9%	100%	9,00%	20%	50%	100%	13.847	10,57%	1.464
Miscellaneous	2.367	615	13%	100%	13,00%	20%	50%	100%	2.982	12,89%	384

Source: Authors' own research.

Note: V_{prem} - volume measure for non-life premium risk; V_{res} - volume measure for non-life reserve risk; σ_{prem} - standard deviation for premium risk; σ_{adj} - adjustment factor for standard deviation for premium risk; $\sigma_{prem\ adj}$ - standard deviation for premium risk adjusted; σ_{res} - standard deviation for reserve risk; Corr - correlation factors; DIV_{LoB} - geographical diversification factor per LoB; V_{LOB} - combined volume measure per LoB; σ_{LoB} - combined standard deviation per LoB.

Table 3. *SCR Premium and reserve risk submodule output*

Output (EUR thousand)	With discontinued business	Without discontinued business	Differences
SCR non-life premium and reserve risk	61.858	57.703	-4.155
Combined standard deviation	6,26%	6,42%	0,16%
Total Volume measure	329.429	299.495	-29.934

Source: Authors' own research.

The calculation of the solvency capital requirements for operational risk module is factor-based formula in which gross best estimate of technical provisions are used as a volume exposure. Without discontinued business the SCR for operational risk have decreased by 0.9 million EUR.

The Minimum Capital Requirement (MCR) is calculated independently of the SCR using a linear factor-based formula applied to the net volume of the best estimate of technical provisions and written premiums and therefore the impact of elimination of discontinued business is represented by a decrease of MCR by 2.25 million EUR.

The impact of discontinued business in own founds is significant, due to the large weight of the technical provisions in insurer's balance sheet, after eliminating of discontinued business resulting an increase of own funds by 29,9 million EUR.

In the table 4 are summarized the results of eliminating of the run-off for "Motor, other classes" line of business and the discontinued business impact on the solvency capital requirements for premium and reserve risk submodule, operational risk, total solvency capital requirement (SCR), own founds, minimum capital requirement (MCR), SCR ratio and MCR ratio.

Table 4. *Discontinued business impact on the company solvency position*

SCR components (EUR thousand)	With discontinued business	Without discontinued business	Impact
Premium and reserve risk	61.858	57.703	-4.155
Lapse risk	644	644	
Non-life CAT risk	9.164	9.164	
Diversification Non-Life underwriting risk	-6.903	-6.861	42
Non-Life underwriting risk	64.763	60.650	-4.113
Market risk	52.536	52.536	
Counterparty default risk	3.112	3.112	
Life Underwriting risk	1.610	1.610	
Health underwriting risk	730	730	
Intangible assets	0	0	
Diversification Basic Solvency Capital Requirement	-27.791	-27.092	699
Basic Solvency Capital Requirement	94.959	91.545	-3.413
Operational risk	7.624	6.726	-898
Solvency Capital Requirement	**102.583**	**98.271**	-4.312
Minimum Solvency Capital Requirement	**34.893**	**32.648**	-2.245
Available own funds to meet the SCR	**171.385**	**201.320**	29.934
Available own funds to meet the MCR	**170.662**	**200.596**	29.934
SCR ratio	**167%**	**205%**	**38%**
MCR ratio	**489%**	**614%**	**125%**

Source: Authors' own research.

The results of the numerical evaluation shown that the most influenced SCR risk modules by the passively management of the run-off are the components calculated by applying a factor based formula in which best estimate technical provisions for claims are used as a volume exposure. After eliminating the reserves for discontinued business the SCR for Non-Life underwriting risk can be reduced by 6%, the SCR for operational risk can be decreased by 12% and the overall SCR after the aggregating of the all SCRs modules and considering the diversification discount can be lowered by 4%. The impact in the MCR is similar as in the SCR, without run-off business the minimum capital requirement can be decreased by 6%. Considering that, the insurance liabilities represent the core part of an insurer's balance sheet, the discontinued business has a substantial impact in the own founds of the insurance company: without run-off, available own funds to meet the SCR, respectively MCR increased by 17%, respectively 18%. As a result of the decreasing in solvency capital requirements and increasing in the own funds, the SCR and MCR ratio growth by 23%, respectively 26%.

Conclusions

In the next years, the amount of reserves classified as run-off is expected to grow due to the entry and exit of the numerous lines of business as a result of the many external influences. New technology such as self-driving cars, increasing automation of technology in other industries and the growth in cyber risk will substantially change the underwriting policy and therefore will generate run-off in the future. The continued growth of the run-off is going to draw increasing interest from owners interest in transactions, capital efficiency and potential finality solutions for run-off management. Understanding the importance of the discontinued business impact in the solvency capital requirements may

increase the interest for a run-off proactive management. The main reasons for a proactive management to reduce the size of the run-off portfolio are: reducing risk, improving solvency, freeing up resources, saving administrative costs and decreasing complexity of the business structure.

The results of the numerical evaluation suggest that the actively manage of discontinued business can lead to a substantial improvement of the company solvency position: increasing of the SCR and MCR ratio by 23%, respectively 26%. The future research on the subject concerning the discontinued business could be focused on the advantages and disadvantages of each mechanisms applied to reduce the size of the run-off business.

References

Darag, 2014. Where does Run-off occur?, available at: <http://5.159.56.130/index.php?link=65&name=Run-off&lang=1>, [accessed 1 April, 2019].

Eling, M., Pankoke, D., 2014. Discontinued business in non-life insurance: an empirical test of the market development in the German-speaking countries. *European Actuarial Journal,* 4(1), pp. 31-48. doi:10.1007/s13385-013-0084- 6

Khomenko, O., 2016. Solvency II and its impact on discontinued business in non-life insurance. European Insurance Low Review, 2, available at: <www.aida.org.uk/docs/Article. Khomenko.docx>

Official Journal of the European Union, 2009. Directive 2009/138/EC of the European Parliament and of the Council of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II), available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0138&from=EN>

Official Journal of the European Union, 2015. COMMISSION DELEGATED REGULATION (EU) 2015/35 of 10 October 2014 supplementing Directive 2009/138/EC of the European Parliament and of the Council on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II), available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2015:012:FULL&from=EN>

PwC, 2018. Global Insurance Run-off Survey 2018, available at: <https://www.pwc.com/gx/en/insurance/assets/pdf/global-insurance-run-off-survey-2018.pdf>

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 109-127

A study of the level of tax convergence for Romania using beta and sigma approach

Victor OGNERU
Bucharest University of Economic Studies, Romania
victorogneru@yahoo.co.uk
Iulian PANAIT
Hyperion University of Bucharest, Romania
iulian.panait@gmail.com

Abstract. *Real convergence is essential for Romania in its attempt to better integrate into the EU economy and to gain access to the euro area. In this paper we investigate the level of tax convergence for Romania, taking into account several relevant indicators and using as benchmarks proposed forms of aggregation and averaging of values for the EU member states in order to compensate for the scarcity of generally accepted indicators at European level for this domain.*

Keywords: fiscal convergence, taxation, beta-convergence, sigma-convergence, fiscal policies.

JEL Classification: E62, F02, F45.

Introduction

The issue of fiscal convergence is a milestone between the scenario of a heterogeneous European Union of nation-states preserving its own status in a conglomerate and the scenario of a consolidated European Union, relatively homogeneous from an economic point of view, able to set up a single European economy in the real terms. Tax convergence is important in many ways. First, it can be a facilitator for economic integration. On the other hand, tax competition may deepen, under certain conditions, existing economic gaps. Secondly, fiscal policy is, along with monetary policy, an instrument of intervention in the nominal economy, the former being able to mitigate the effects of the euro area's monetary policy.

There are numerous studies that test fiscal convergence at EU or global level on historical data, and either by considering tax revenues as a whole or by looking at convergence on the level of a specific tax. However, few studies are evaluating fiscal convergence at the level of the enlarged European Union. In addition, no study goes beyond measuring convergence, namely evaluating the context in which a convergence or non-convergence process is judged.

This article assesses fiscal convergence in the case of Romania by reference to the convergence processes present at the level of each Member State, which is carried out on several dimensions. The starting point of the analysis was the convergence testing using the tax burden indicator, expressed as a share of total tax revenue (including social contributions) in GDP. Then, convergence was tested using the annual growth rate of tax revenue, and the pattern of variation identified was compared to the pattern of variation identified in the process of measuring economic convergence. The latter was also tested on two dimensions. On the one hand, using per capita GDP as a synthetic measure of economic development, and on the other hand using the share of gross value added (GVA) in GDP, the GVA being considered a variable proxy for the tax bases. Through GVA is assessed the link between economic and fiscal convergence. Finally, fiscal convergence has been checked at the level of each major category of taxes and contributions, namely: indirect taxes, direct taxes, mandatory social contributions. This approach has allowed the identification of sources of tax convergence or tax non-convergence. In the analysis were used quarterly data starting with 2007, the year in which Romania and Bulgaria joined EU.

Literature review

Among the first extensive studies (and also one of the most cited) related to fiscal convergence in the context of the European integration process is these carried out by Esteve et al. (2000), which assessed fiscal convergence based on the fiscal pressure indicator (determined as the share of total tax revenues in GDP) using both sigma and beta convergence methods on annual data series from 1967 to 1994. Sosvilla-Rivero et al. (2001) goes on to formulate as a working hypothesis that an increased process of economic integration (in institutional terms – in particular through labor and capital liberalization – a.n.) will lead to the economic convergence of the Member States. In this context, tax convergence would be necessary, according to the authors, to overcome market pressures.

The study was conducted on annual data from 1967 to 1995, applying both beta and gamma convergence methods. The authors found that over a period of 10 years (1974-1984) the convergence process was interrupted to resume in the 1990s. Konceda et al. (2008) focuses on the 10 states that joined the Union in 2004 and found, using the beta-convergence method, that monetary union does not imply fiscal convergence.

Zodrow (2003) and later Tanzi (2011) analyze the link between tax competition and coordination, and fiscal convergence, the latter being seen as an anchor against tax competition which has perverse effects on economic convergence. Delgado (2013), on the contrary, considers that economic developments (in this case the 2008-2009 crisis) are the determining factor of fiscal convergence. The author identifies the existence of a convergence process, but also that this process is not a linear one. At the same time, taxation of goods and services (indirect taxes) is identified as the source of convergence. The explanation lies in the fact that indirect taxes are subject to Community tax harmonization and coordination.

Vintilă et al. (2014) broadly assess Romania's fiscal convergence in the context of the enlarged Union (exceeding the remaining EU-15 analytical framework) but keeping tradition in assessing this type of convergence through fiscal pressure (the revenue ratio in GDP). However, new research directions are also open. A first assessment of convergence is achieved through the fiscal burden applying the sigma-convergence method. In the second part of the study, fiscal convergence is studied for each major category of taxes and contributions, namely indirect taxes, direct taxes and mandatory social contributions, but applying cluster analysis. The authors find that there was a fiscal convergence process prior to 2008 (the year of the economic crisis, but we also talk about the time Romania was out of the EU) and that the economic crisis has generated contradictory processes at the Union level. Simionescu (2014) shows, applying the sigma-convergence method, that Romania is on a divergent economic trend in relation to the rest of the Union.

Delgado and Presno (2017) analyzes fiscal convergence in 15 states of the Union on the 1975-2011 annual series of data using the club convergence approach on two dimensions: fiscal pressure (level indicator) and fiscal mix (structure indicator). The authors conclude that the Union is fiscally heterogeneous, with both convergence processes and divergent processes.

More recently, Pečarić and Tolj (2018) analyzed how the convergence of fiscal policies impacts the synchronization of business cycles between Croatia and euro area countries. The fiscal policy convergence is considered to be an independent variable in a panel model. According to the two authors, fiscal policy convergence favors the synchronization of business cycles. Arčabić (2018) studies the link between fiscal convergence and sustainability using the convergence log *t* test to analyze convergence clubs. The author identifies a situation of absolute divergence in fiscal policies, understood mainly on their public expenditure side, situation occurred after the economic crisis of 2008-2009. According to Arčabić, EU fiscal policies are not sustainable and are even counter-cyclical.

Data and methodology

Data description

We have collected quarterly data for the period 2007-2018 for a selection of seven fiscal and macroeconomic indicators for the 28 member states and for the European Union from Eurostat. As a result we have obtained a data base of seven panels each with 29 data series, each series including 45 observations.

Method

For each selected indicator we computed sigma and beta convergence for each of the 28 member states (including Romania) relative to the values registered by the EU-28.

We computed sigma convergence using the standard deviation of the values of the indicator for each country in relation with the values for EU-28 of the same indicator and for each of the 7 fiscal and macroeconomic indicators that we have selected.

$$\sigma_t = \sqrt{\frac{1}{2}\sum_{i=1}^{2}\left[I_{i,t} - \overline{I_t}\right]^2}$$

where $I_{i,t}$ is the value of the indicator at moment *t* for the country *i* (ex. Romania), and $\overline{I_t}$ is the value of the indicator for EU 28 at moment *t*. The resulting σ_t represents a measure of dispersion of the values of the indicator for the country *i* in relation with the average of the value for this country and the value for EU28 at time t.

For computing beta convergence, we first stationarized all the time series in each panel using either the first or the second difference, according with the statistical particularities of the series in the panel.

We measured beta convergence by estimating the coefficients of the following regression:

$$\Delta I_{i,t} = \alpha_i + \beta I_{i,t-1} + \sum_{l=1}^{L}\gamma_l \Delta I_{i,t-l} + \epsilon_{i,t}$$

where $I_{i,t}$ is the difference between the value of the indicator at moment *t* for the country *i* (ex. Romania) and the value of the same indicator for EU28 also at time *t*; Δ represents the time difference operator and *L* is the number of lags, which in our case was 4 (equivalent of one year).

We ran this regression for each country (28, including Romania) using the values for each of the selected fiscal and macroeconomic indicators. The values of the β coefficient in the regression are interpreted as the measure of convergence of the country *i* in relation with the reference used (in our case the values for EU28). Negative values of the indicator confirm an existing convergence process. We interpret values close to -1 as a strong convergence while values getting close to 0 or to -2 show a weaker convergence.

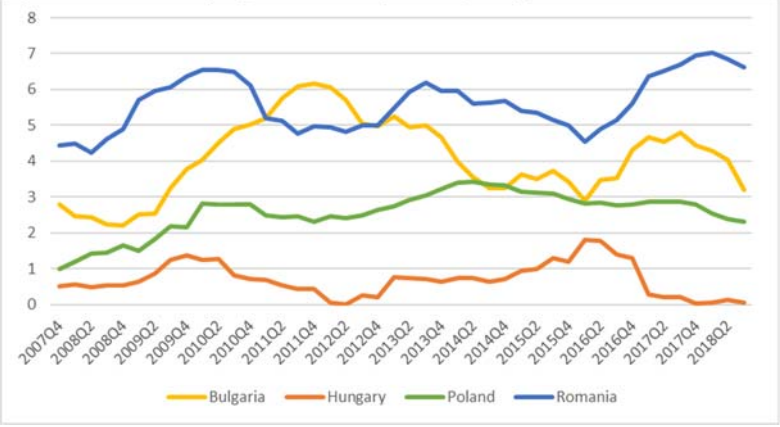
Results and discussions

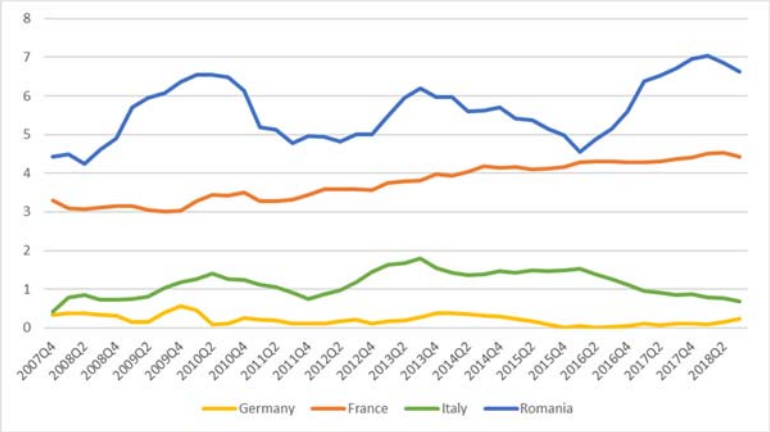
The fiscal convergence was assessed, on the one hand, by measuring the convergence trend through the two classic methods, beta and sigma, and, on the other hand, by comparing the values and evolutions recorded in Romania with the values and evolutions recorded at the level of the others as well as by reporting the values measured in the case of Romania to the values measured in the case of some standard states: France, Germany, Italy (the Union's hard core) and three Central European countries (the two Member States neighboring Romania - Bulgaria and Hungary, the first joined the Union with Romania - and an Eastern European country comparable to Romania in terms of area and population - Poland). At the same time, fiscal convergence has been assessed on several dimensions in order to better identify the trend and the context.

Tax convergence becomes a critical point from at least two perspectives. Firstly, Member States' fiscal and budgetary policies tend to mitigate some of the impact of monetary policies in the euro area. Secondly, existing tax competition between Member States may, under certain conditions, hamper the process of economic convergence.

The starting point was the measurement of convergence using, as a synthetic indicator, the fiscal burden or tax pressure, determined as a ratio between tax revenues (including compulsory social contributions here) and GDP. The sigma-convergence method reveals that, from a strictly fiscal point of view, Romania does not converge to the Community space. The dispersion pattern of the indicator values considered in relation to the average of the reference area is, in the case of Romania, clearly diverging from the dispersion patterns existing in the other Member States, with the exception of Ireland, which appears to have entered into a trend opposite to the convergence (Figure 2). Compared with the Central European countries, Romania is in a non-convergence position, similarly being located Bulgaria, but with lower dispersion values. The tendency for convergence is clear for Hungary and seems to be manifested also in the case of Poland (Figure 1).

Figure 1. *Evolution of sigma measure of convergence for tax burden in the benchmark states*

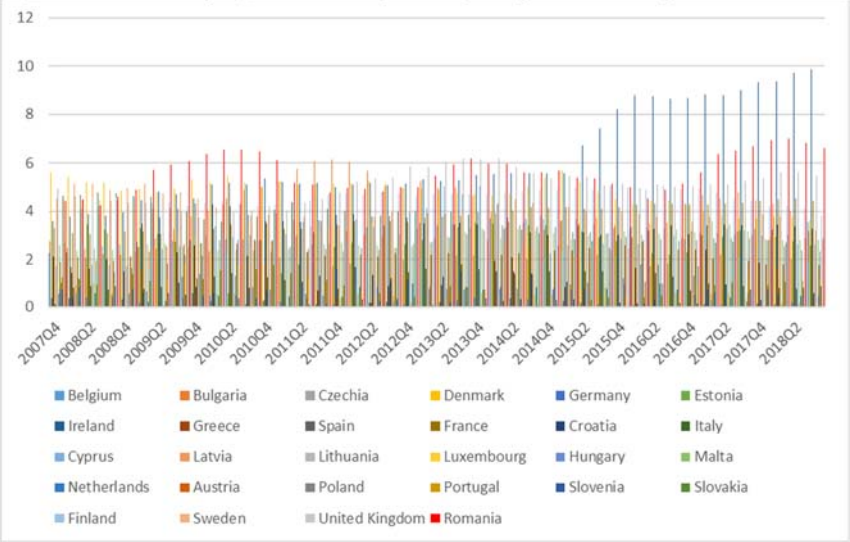




Source: own computations based on Eurostat data.

The trend of non-convergence in the case of Romania is much more visible by comparing the measured values with those recorded for the standard states in the Union core (Figure 1).

Figure 2. *Evolution of sigma measure of convergence for tax burden for all Member States*



Source: own computations based on Eurostat data.

However, the beta-convergence method reveals a trend of fiscal convergence in Romania. Taking together the two results, it can be said that, from the point of view of taxation, Romania is far away from the community space, but is in a process of rapid convergence. The results obtained by the application of the beta method also show that the Community space tends to be a heterogeneous one in the fiscal field, with two opposing processes taking place simultaneously.

Table 1. *Values of beta convergence for tax burden for all Member States*

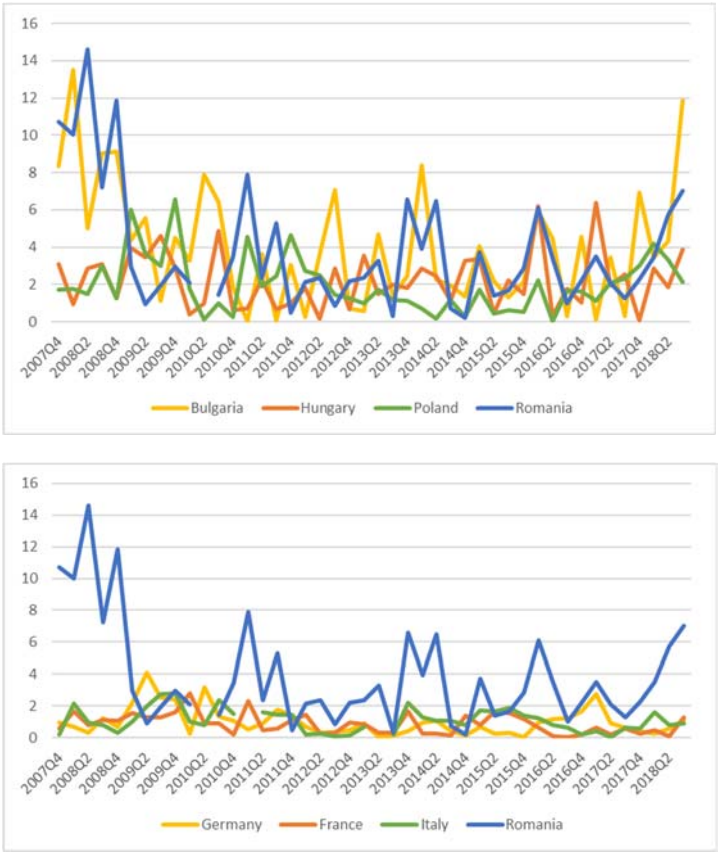
	Beta	Limita inf. interval 95%	Limita sup. interval 95%
Belgium	-1.3094	-1.6485	-0.9703
Bulgaria	-0.9326	-1.2622	-0.6030
Czechia	-1.0955	-1.4346	-0.7564
Denmark	-0.7687	-1.0573	-0.4800
Germany	-0.6841	-0.9939	-0.3742
Estonia	-0.7584	-1.1011	-0.4157
Ireland	-1.0129	-1.3611	-0.6647
Greece	-0.9727	-1.3221	-0.6234
Spain	-0.7240	-1.0122	-0.4357
France	-0.9443	-1.2519	-0.6368
Croatia	-1.0743	-1.4056	-0.7430
Italy	-0.9967	-1.3488	-0.6445
Cyprus	-1.1400	-1.4866	-0.7934
Latvia	-1.7041	-2.0722	-1.3360
Lithuania	-1.3129	-1.6209	-1.0050
Luxembourg	-1.0312	-1.3357	-0.7267
Hungary	-1.2496	-1.5895	-0.9097
Malta	-1.3489	-1.6795	-1.0183
Netherlands	-1.0789	-1.4253	-0.7324
Austria	-1.1576	-1.4811	-0.8342
Poland	-1.1517	-1.4712	-0.8321
Portugal	-1.4096	-1.7773	-1.0419
Slovenia	-0.9933	-1.3251	-0.6615
Slovakia	-0.7311	-1.0615	-0.4006
Finland	-1.2189	-1.5474	-0.8904
Sweden	-1.0729	-1.4206	-0.7252
United Kingdom	-0.6204	-0.9426	-0.2983
Romania	-1.0633	-1.3953	-0.7314

Source: own computations based on Eurostat data.

The seemingly contradictory results of the two methods require assessment of tax convergence through other dimensions or other indicators. A new tax convergence test was conducted on the basis of the annual variation in tax revenue (including social contributions).

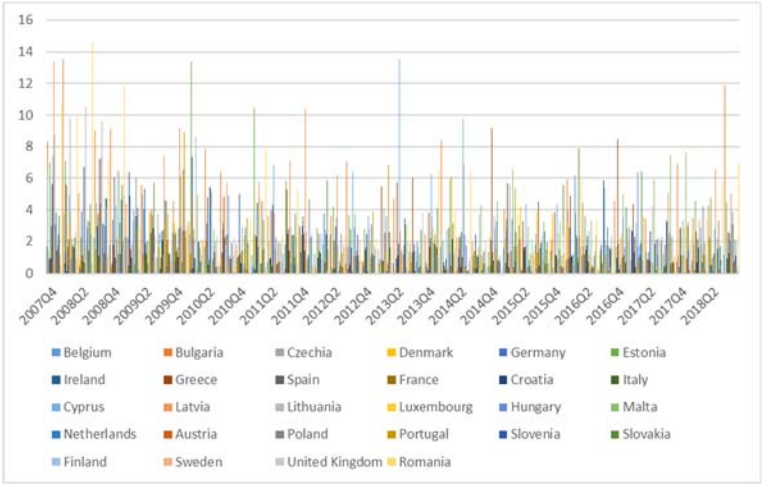
From this perspective, the sigma-convergence method indicates a process contrary to the convergence, in the case of Romania (Figure 4), but also in the situation of other standard states in Central Europe, except for Poland (Figure 4). The non-convergence process is clearly confirmed by the comparison with the core-Union standard states (Figure 4). The Union as a whole is heterogeneous from the point of view of taxation, including tax capacity, tax revenue variations having atypical trajectories compared to the European average in most cases (Figure 5).

Figure 3. *Evolution of sigma measure of convergence for annual growth rates of revenue in the benchmark states*



Source: own computations based on Eurostat data.

Figure 4. *Evolution of sigma measure of convergence for annual growth rates of revenue for all Member States*



Source: own computations based on Eurostat data.

The beta method applied to the annual growth rate of tax revenues confirms the relatively heterogeneous nature of the Union, but for the case of Romania the rapid convergence process is again revealed, despite a pattern of variation which is clearly distanced from the other patterns of variation observed in the other states (Figure 6).

Table 2. *Values of beta convergence for annual growth rates of revenue for all Member States*

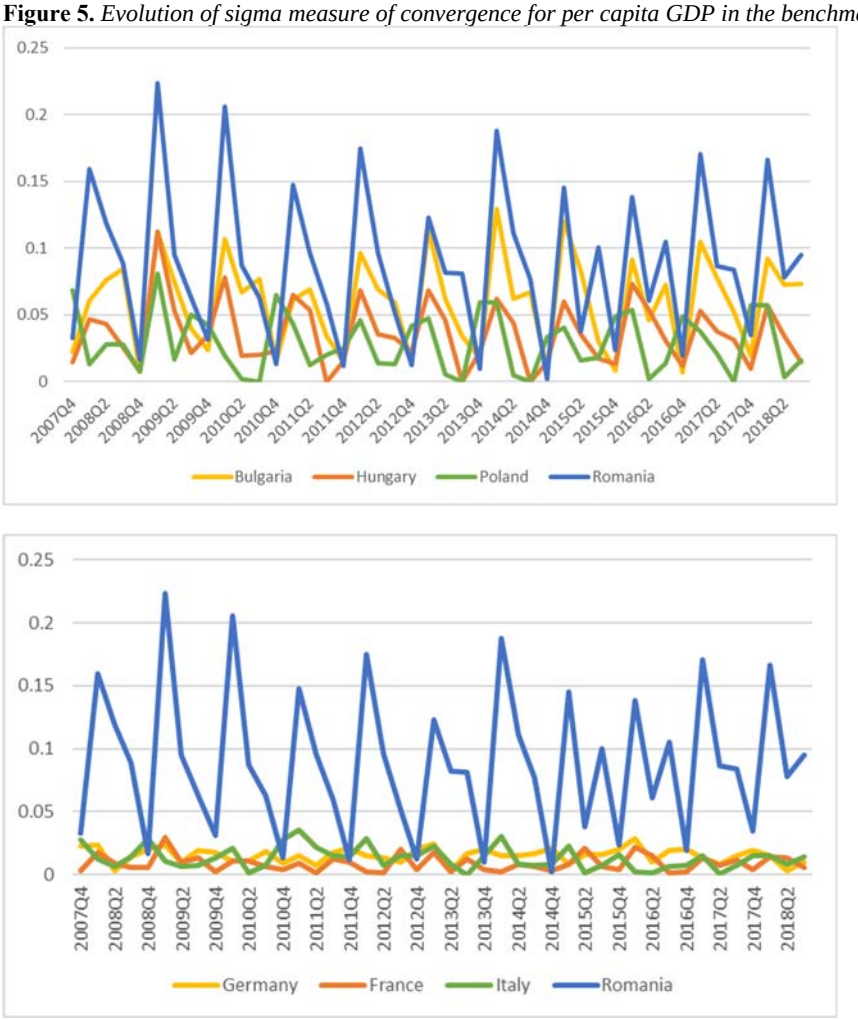
	Beta	Limita inf. interval 95%	Limita sup. interval 95%
Belgium	-1.1254	-1.4675	-0.7833
Bulgaria	-1.0887	-1.4284	-0.7490
Czechia	-1.1042	-1.4498	-0.7586
Denmark	-0.8803	-1.2018	-0.5588
Germany	-0.6072	-0.9396	-0.2747
Estonia	-0.9248	-1.2567	-0.5928
Ireland	-1.1233	-1.4992	-0.7474
Greece	-1.1255	-1.4731	-0.7780
Spain	-0.6900	-1.0227	-0.3572
France	-0.8729	-1.2059	-0.5399
Croatia	-1.0788	-1.4469	-0.7106
Italy	-1.0287	-1.4643	-0.5930
Cyprus	-1.1149	-1.4493	-0.7804
Latvia	-1.3411	-1.6862	-0.9960
Lithuania	-1.0363	-1.3730	-0.6996
Luxembourg	-1.0083	-1.2978	-0.7188
Hungary	-1.2921	-1.6182	-0.9660
Malta	-1.2954	-1.6024	-0.9883
Netherlands	-1.0815	-1.4702	-0.6928
Austria	-1.2516	-1.5913	-0.9119
Poland	-1.0287	-1.3435	-0.7139
Portugal	-1.3004	-1.6514	-0.9494
Slovenia	-0.9153	-1.2482	-0.5825
Slovakia	-0.8252	-1.1518	-0.4987
Finland	-1.0034	-1.3180	-0.6888
Sweden	-1.1423	-1.4904	-0.7941
United Kingdom	-0.6290	-0.9316	-0.3263
Romania	-1.0520	-1.4024	-0.7015

Source: own computations based on Eurostat data.

The question that arises naturally from the above picture is to what extent does the fiscal convergence or fiscal non-convergence trend respond or follow the process of economic convergence/non-convergence?

In order to assess economic convergence, sigma and beta methods were applied using the per capita GDP indicator, a proxy for the level of economic development of a country.

Figure 5. *Evolution of sigma measure of convergence for per capita GDP in the benchmark states*



Source: own computations based on Eurostat data.

Figure 6. *Evolution of sigma measure of convergence for per capita GDP for all Member States*

The sigma method reveals that Romania is still far from a real process of economic convergence, a phenomenon visible both by comparing the standard states (Figure 7) and across the Union (Figure 8). On the other hand, the beta method indicates a rapid convergence trend (Figure 9). Therefore, the pattern of variation and structure of tax revenues is consistent with the variation and structure of the economy as a whole.

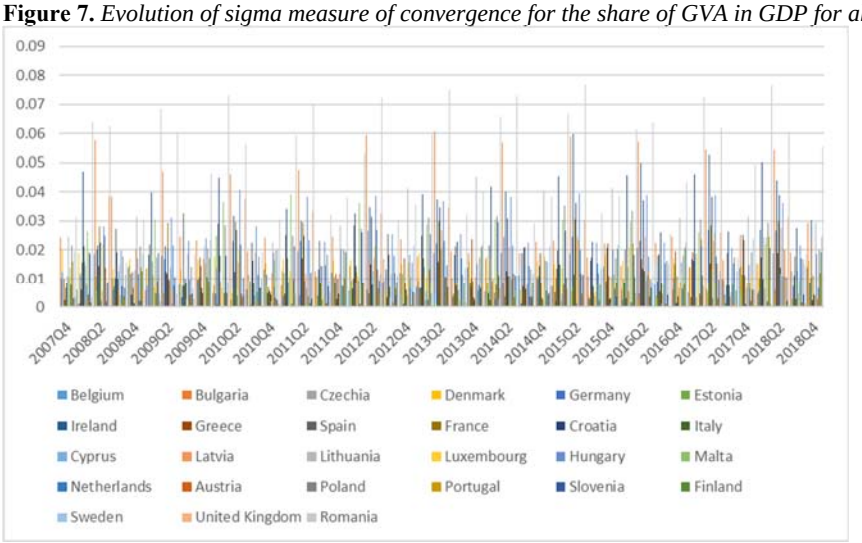
Table 3. *Values of beta convergence for per capita GDP for all Member States*

	Beta	Limita inf. interval 95%	Limita sup. interval 95%
Belgium	-1.2508	-1.5944	-0.9073
Bulgaria	-1.0084	-1.3631	-0.6538
Czechia	-0.9114	-1.2232	-0.5996
Denmark	-0.8806	-1.2067	-0.5545
Germany	-0.7811	-1.1345	-0.4277
Estonia	-1.1809	-1.5079	-0.8538
Ireland	-1.2249	-1.5706	-0.8792
Greece	-0.9189	-1.2691	-0.5686
Spain	-1.0976	-1.4353	-0.7600
France	-1.1127	-1.4548	-0.7706
Croatia	-1.3209	-1.6496	-0.9922
Italy	-1.1756	-1.5219	-0.8292
Cyprus	-1.2503	-1.5749	-0.9257
Latvia	-0.9666	-1.3135	-0.6198
Lithuania	-1.0032	-1.3513	-0.6551
Luxembourg	-1.2223	-1.5509	-0.8936
Hungary	-0.7917	-1.1407	-0.4426
Malta	-1.3296	-1.6625	-0.9968
Netherlands	-1.3954	-1.7242	-1.0666
Austria	-1.2466	-1.5743	-0.9190
Poland	-1.2381	-1.5545	-0.9217
Portugal	-1.1255	-1.4761	-0.7748
Slovenia	-0.9265	-1.2718	-0.5812
Slovakia	-1.2753	-1.6074	-0.9433
Finland	-0.9575	-1.2912	-0.6238
Sweden	-0.7661	-1.0582	-0.4741
United Kingdom	-0.6285	-0.9671	-0.2899
Romania	-1.0377	-1.3731	-0.7023

Source: own computations based on Eurostat data.

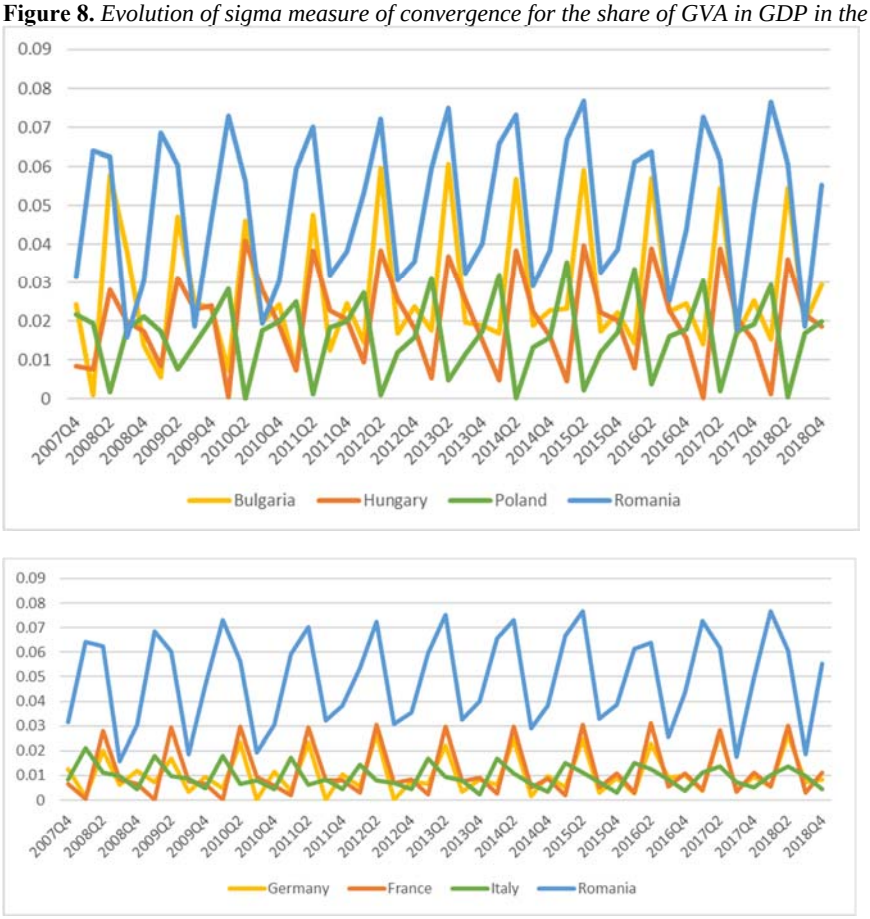
Both economic convergence and the link between fiscal and economic convergence have also been tested through gross value added in the economy (GVA) as a share of GDP. GVA is considered a proxy variable for tax bases. Again, the Union's heterogeneity (Figure 10) is confirmed, as well as the distancing of Romania from the other Member States (Fig. 11).

Figure 7. *Evolution of sigma measure of convergence for the share of GVA in GDP for all Member States*



Source: own computations based on Eurostat data.

Figure 8. *Evolution of sigma measure of convergence for the share of GVA in GDP in the benchmark states*



Source: own computations based on Eurostat data.

This time, the beta method rather indicates a non-convergence process for Romania, the Union's heterogeneity being more pronounced from the GVA perspective. A first conclusion, given the results presented, is that the process of tax convergence is linked to the economic convergence process, through the tax bases, the structural variables, implicitly the fiscal policy, being less important in this perspective. It is sufficient to note that the countries in the hard core have relatively similar phenomena, despite some structural differences in terms of taxes.

Table 4. *Values of beta convergence for the share of GVA in GDP for all Member States*

	Beta	Limita inf. interval 95%	Limita sup. interval 95%
Belgium	-1.6398	-1.9018	-1.3779
Bulgaria	-1.4247	-1.7342	-1.1151
Czechia	-1.2772	-1.5965	-0.9578
Denmark	-1.3932	-1.7076	-1.0788
Germany	-1.5193	-1.8050	-1.2337
Estonia	-1.3657	-1.6713	-1.0601
Ireland	-1.6961	-1.9662	-1.4261
Greece	-1.3376	-1.6665	-1.0087
Spain	-0.8489	-1.1899	-0.5079
France	-1.3730	-1.6989	-1.0472
Croatia	-1.2299	-1.5372	-0.9226
Italy	-1.3779	-1.6585	-1.0972
Cyprus	-1.6323	-1.9168	-1.3479
Latvia	-1.3434	-1.6633	-1.0236
Lithuania	-1.4758	-1.7406	-1.2110
Luxembourg	-1.0152	-1.3573	-0.6732
Hungary	-1.4683	-1.7553	-1.1813
Malta	-1.3335	-1.6630	-1.0041
Netherlands	-1.3995	-1.6922	-1.1069
Austria	-1.4421	-1.7501	-1.1342
Poland	-1.4971	-1.7974	-1.1967
Portugal	-1.5741	-1.8550	-1.2933
Slovenia	-1.4780	-1.7627	-1.1932
Finland	-1.5034	-1.7898	-1.2170
Sweden	-1.2737	-1.5927	-0.9547
United Kingdom	-1.2570	-1.5868	-0.9272
Romania	-1.4735	-1.7753	-1.1716

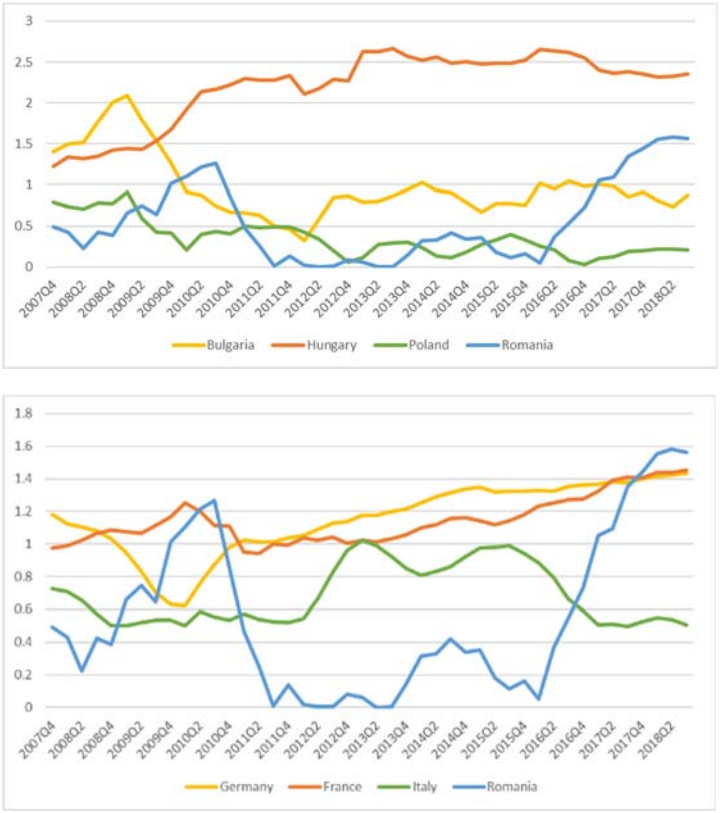
Source: own computations based on Eurostat data.

The last step in testing the tax convergence was to identify trends in the main categories of taxes and social contributions: indirect taxes (consumption taxes - VAT, excise duties), direct taxes (income and wealth taxes) and mandatory social contributions. This approach also allowed identification of sources of non-fiscal convergence.

Indirect taxes

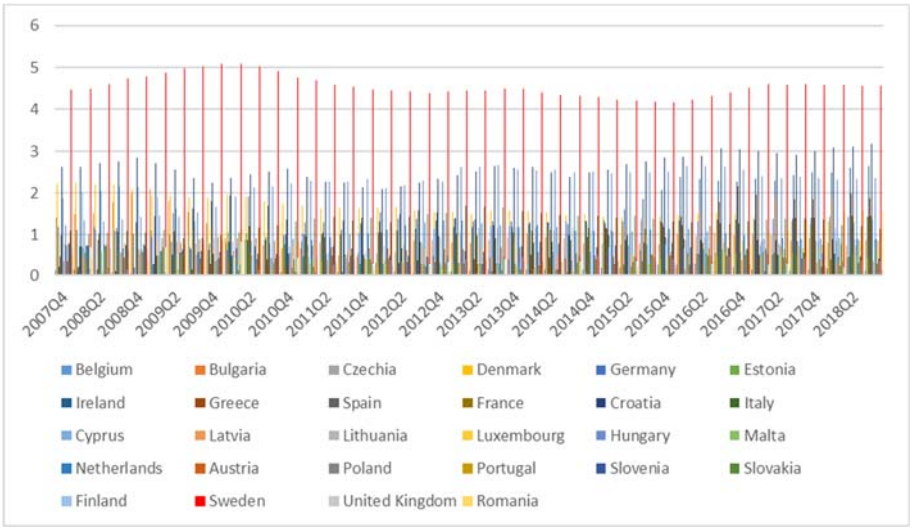
In terms of indirect taxes, Romania is on an accelerated convergence course, a phenomenon revealed by the comparison of the developments identified in Romania with the developments present at the level of the other member states, both by comparison with the standard states and with the other states as a whole Union. In this chapter, a pattern of atypical variation manifests Sweden and Hungary, and non-covergence tendencies are encountered in the cases of Germany, Estonia, Italy, Cyprus and the United Kingdom. The fact that the Union is not homogeneous in the field of indirect taxation, which is subject to Community regulations and harmonization, reflects significant differences either in terms of tax compliance or in terms of the structure of the tax system (the extent of the exemption regime, reverse charge, reduced rates, etc.).

Figure 9. *Evolution of sigma measure of convergence for the share of indirect taxes in GDP in the benchmark states*



Source: own computations based on Eurostat data.

Figure 10. *Evolution of sigma measure of convergence for the share of indirect taxes in GDP for all Member States*



Source: own computations based on Eurostat data.

Table 5. *Values of beta convergence for the share of indirect taxes in GDP for all Member States*

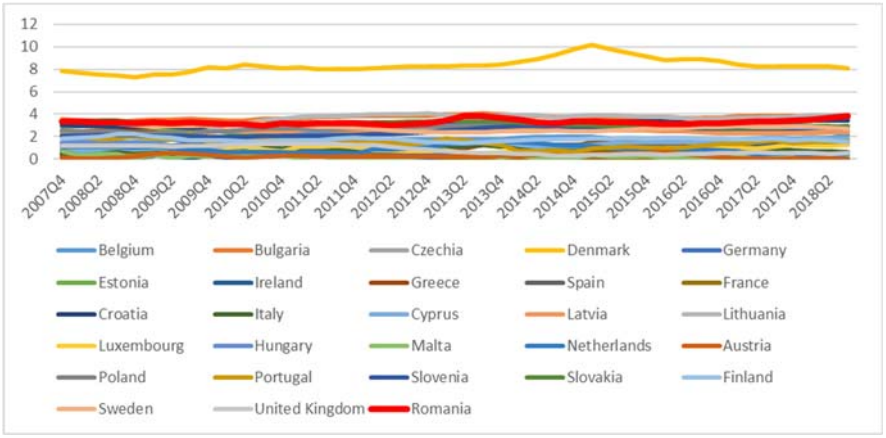
	Beta	Limita inf. interval 95%	Limita sup. interval 95%
Belgium	-1.1690	-1.4670	-0.8709
Bulgaria	-1.1075	-1.4109	-0.8042
Czechia	-0.7915	-1.1156	-0.4674
Denmark	-0.8589	-1.1832	-0.5347
Germany	-0.5472	-0.8675	-0.2269
Estonia	-0.6323	-0.9212	-0.3435
Ireland	-1.1330	-1.4814	-0.7847
Greece	-1.2162	-1.5446	-0.8879
Spain	-0.7234	-1.0605	-0.3863
France	-1.0988	-1.4430	-0.7546
Croatia	-0.7490	-1.0756	-0.4223
Italy	-0.6720	-1.0157	-0.3283
Cyprus	-1.4854	-1.8417	-1.1292
Latvia	-0.7427	-1.0276	-0.4577
Lithuania	-1.2537	-1.5771	-0.9303
Luxembourg	-0.8517	-1.1887	-0.5146
Hungary	-1.1646	-1.5034	-0.8259
Malta	-1.2980	-1.6303	-0.9657
Netherlands	-1.0293	-1.3739	-0.6848
Austria	-0.9873	-1.3330	-0.6415
Poland	-0.9701	-1.2174	-0.7228
Portugal	-1.1182	-1.4468	-0.7896
Slovenia	-0.9033	-1.1837	-0.6230
Slovakia	-1.2100	-1.5403	-0.8796
Finland	-0.9962	-1.3277	-0.6646
Sweden	-0.9474	-1.3021	-0.5927
United Kingdom	-0.6023	-0.9053	-0.2992
Romania	-1.0327	-1.3539	-0.7115

Source: own computations based on Eurostat data.

Direct taxes

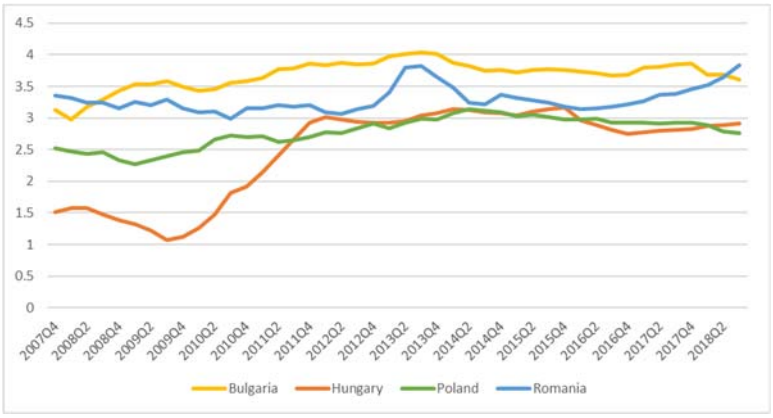
From the perspective of direct taxes (seen as a weight in GDP), Romania is in a process of convergence, an atypical pattern of variation being recorded in the case of Denmark, and non-convergence tendencies are present in the cases of the Netherlands and Malta. It can be noticed that in the field of direct taxation, the Union tends to become homogeneous, although indirect taxation (especially VAT and excise duties) is the subject of Community regulations in the tax sphere.

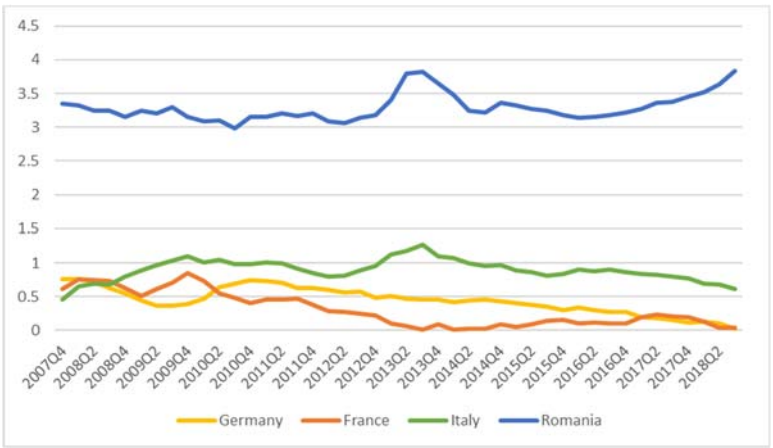
Figure 11. *Evolution of sigma measure of convergence for the share of direct taxes in GDP for all Member States*



Source: own computations based on Eurostat data.

Figure 12. *Evolution of sigma measure of convergence for the share of direct taxes in GDP in the benchmark states*





Source: own computations based on Eurostat data.

Table 6. *Values of beta convergence for the share of direct taxes in GDP for all Member States*

	Beta	Limita inf. interval 95%	Limita sup. interval 95%
Belgium	-1.2259	-1.5766	-0.8752
Bulgaria	-1.1262	-1.4775	-0.7750
Czechia	-1.2750	-1.5750	-0.9751
Denmark	-0.7934	-1.1106	-0.4761
Germany	-1.1292	-1.4934	-0.7651
Estonia	-1.0912	-1.3829	-0.7995
Ireland	-0.9995	-1.3251	-0.6739
Greece	-0.8633	-1.1864	-0.5401
Spain	-1.0090	-1.2380	-0.7800
France	-0.8948	-1.1802	-0.6094
Croatia	-0.9115	-1.2522	-0.5708
Italy	-1.0805	-1.4193	-0.7417
Cyprus	-1.2403	-1.5929	-0.8877
Latvia	-0.8238	-1.1514	-0.4963
Lithuania	-0.9713	-1.3096	-0.6329
Luxembourg	-0.9068	-1.1913	-0.6223
Hungary	-0.8245	-1.1632	-0.4857
Malta	-1.5717	-1.9148	-1.2286
Netherlands	-1.5281	-1.8563	-1.1999
Austria	-0.7883	-1.0928	-0.4838
Poland	-1.2244	-1.5535	-0.8952
Portugal	-1.4401	-1.7982	-1.0821
Slovenia	-1.1883	-1.5172	-0.8595
Slovakia	-0.7214	-0.9599	-0.4829
Finland	-1.0987	-1.4248	-0.7726
Sweden	-0.9789	-1.3018	-0.6561
United Kingdom	-1.1441	-1.4814	-0.8069
Romania	-0.8930	-1.2361	-0.5498

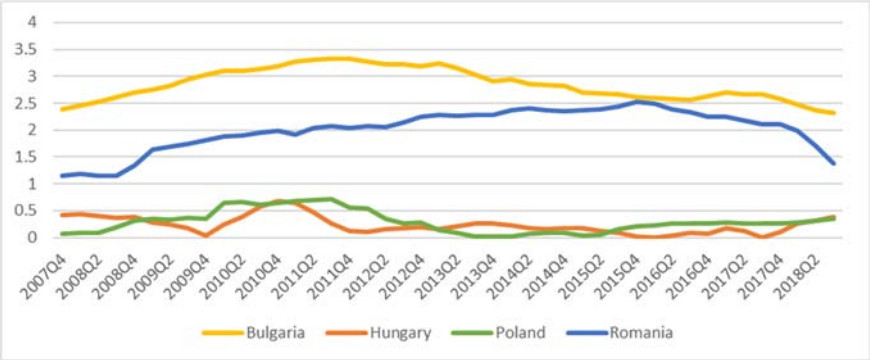
Source: own computations based on Eurostat data.

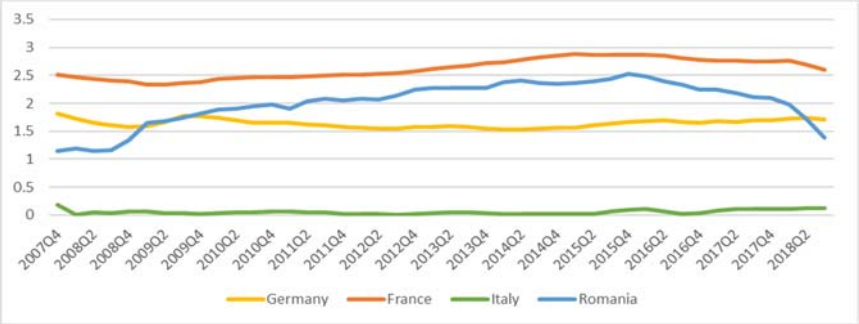
Social contributions

In terms of social contributions, the Union's heterogeneity is evident, regardless of the applied method (beta or sigma). In the case of Romania, there is a process of convergence, which leads to the idea that the source of non-convergence of tax is the other tax revenue, other than those analyzed here (i.e. capital tax, income tax of micro-enterprises, tax paid by non-resident companies, gambling authorization fees, mining fees

etc.), accounting for about 12% of total tax revenues. To this it is added that at the level of Romania there is encountered a pattern of atypical variation of the tax bases.

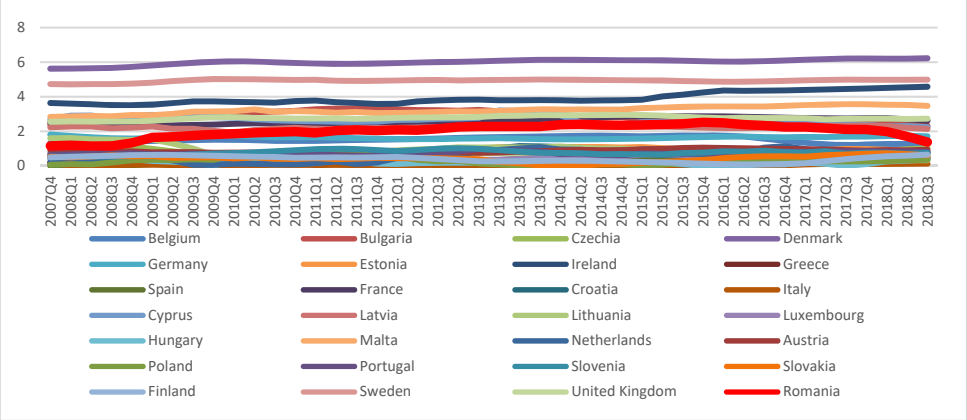
Figure 13. *Evolution of sigma measure of convergence for the share of social contributions in GDP in the benchmark states*





Source: own computations based on Eurostat data.

Figure 14. *Evolution of sigma measure of convergence for the share of social contributions in GDP in the benchmark states*



Source: own computations based on Eurostat data.

Table 7. *Values of beta convergence for the share of social contributions in GDP for all Member States*

	Beta	Limita inf. interval 95%	Limita sup. interval 95%
Belgium	-0.5373	-0.8827	-0.1920
Bulgaria	-0.9985	-1.3459	-0.6511
Czechia	-0.8875	-1.2344	-0.5406
Denmark	-0.3141	-0.6456	0.0175
Germany	-0.6368	-0.9238	-0.3499
Estonia	-0.7445	-1.0640	-0.4250
Ireland	-0.6766	-0.9837	-0.3695
Greece	-0.8245	-1.1545	-0.4945
Spain	-0.9043	-1.2279	-0.5808
France	-0.6457	-0.9471	-0.3443
Croatia	-0.7276	-1.0740	-0.3811
Italy	-0.6315	-0.9819	-0.2811
Cyprus	-0.9611	-1.2629	-0.6594
Latvia	-0.7957	-1.0760	-0.5155

	Beta	Limita inf. interval 95%	Limita sup. interval 95%
Lithuania	-0.8178	-1.1152	-0.5203
Luxembourg	-0.6166	-0.9331	-0.3002
Hungary	-0.5487	-0.8566	-0.2409
Malta	-1.4881	-1.8754	-1.1007
Netherlands	-1.0439	-1.3820	-0.7058
Austria	-1.3016	-1.6587	-0.9445
Poland	-1.2066	-1.5299	-0.8834
Portugal	-1.1777	-1.5273	-0.8281
Slovenia	-1.1990	-1.5394	-0.8585
Slovakia	-1.2099	-1.5545	-0.8653
Finland	-0.5280	-0.8605	-0.1954
Sweden	-0.8603	-1.1929	-0.5278
United Kingdom	-0.9414	-1.2477	-0.6351
Romania	-0.9196	-1.2119	-0.6273

Source: own computations based on Eurostat data.

Conclusions

Tax convergence should not be judged unilaterally, but in a context. Thus, it should be noted that the convergence trend present for certain categories of taxes is manifested in a heterogeneous space, where multiple trends of non-convergence are observed. Broadly speaking, Romania converges from the fiscal side to the community space at the level of the main taxes, but presents an atypical pattern of variation in tax revenues as a whole. The sources of centrifugal force (non-convergence) are tax revenues of a different nature than those from direct taxes. The sources of centripetal force (convergence) are direct taxes and, under certain conditions, indirect taxes. Indirect taxes can fuel the convergence trend if the administration capacity to collect is improved.

References

Arčabić, V., 2018. Fiscal Convergence and sustainability in the European Union, *Public Sector Economics*, 42(4), pp. 353-380.

Delgado F.J. and Presno, M.J., 2017. Tax Evolution in the EU: A Convergence Club Approach, *Panoeconomicus*, Vol. 64, Issue 5, pp. 623-643.

Delgado F.J., 2013. Are Taxes Converging in Europe? Trends and Some Insights into the Effect of Economic Crisis, *J Glob Econ* 1:102. doi:10.4172/2375-4389.1000102.

Esteve, V., Sosvilla-Rivero, S. and Tamarit, C., 2000. Convergence in Fiscal Pressure across EU Countries, *Applied Economics Letters*, Vol. 7, No. 2, pp. 117-123.

Konceda, E., Kutan, A.M. and Yigit, T.M., 2008. Fiscal Convergence in the European Union, *The North American Journal of Economics and Finance*, Vol. 19, No. 3, pp. 319-330.

Pečarić, M. and Tolj, A., 2018. The impact of fiscal policy convergence on Business Cycle Syncronization between Croatia and Eurozone Countries – Panel Analysis, *Croatian Operational Research Review*, CRORR 9 (2018), pp. 281-291.

Simionescu, M., 2014. Testing Sigma Convergence across EU-28, *Economics & Sociology*, Vol. 7, No. 1, pp. 48-60. doi: 10.14254/2071-789X.2014/7- 1/5.

Sosvilla-Rivero, S., Galindo, M.A. and Alonso Meseguer, J., 2001. Tax Burden Convergence in Europe, *Estudios de Economia Aplicada*, vol. 17, pp. 183-191.

Tanzi, V., 2011. Tax Systems in the OECD: Recent Evolution, Competition and Convergence, in Albi, E. and Martinez-Vazquez, J. (eds.), *The Elgar Guide to Tax Systems*, Cheltenham, UK: Edward Elgar Publishing, pp. 11-36.

Vintilă, G., Onofrei, M., and Ţibulcă, I-L., 2014. Fiscal Convergence in an Enlarged European Union, *Transylvanian Review of Administrative Sciences,* No. 41 E/2014, pp. 213-223.

Zodrow, G., 2003. Tax Competition and Tax Coordination in the European Union, *International Tax and Public Finance*, Vol. 10, No. 6, pp. 651-671.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 128-132

Can the increase in the phenomenon of migration be explained by mistrust in the public authorities and the low weight of salaries in Romania?

Mihaela Roberta STANEF-PUICA
University of Economic Studies, Bucharest, Romania
robertastanef@yahoo.com

Abstract. *In order to adopt the euro currency, increasing mobility and flexibility of the workforce plays an important role in mitigating the negative effects that will occur, starting with the beginning of 2024, when our country will adopt the ERM II mechanism.*
With the adoption of the euro currency, in addition to benefits, there will also be costs that will affect all sectors of the national economy.
The purpose of this paper is to check whether there is a correlation between perceived levels of corruption or trust in public authorities, namely the low level of wage levels and increasing international labor mobility.

Keywords: adoption of the euro, Romania, European Union, salary level, corruption level.

JEL Classification: J01, J08, J11, J15, J18.

1. Introduction

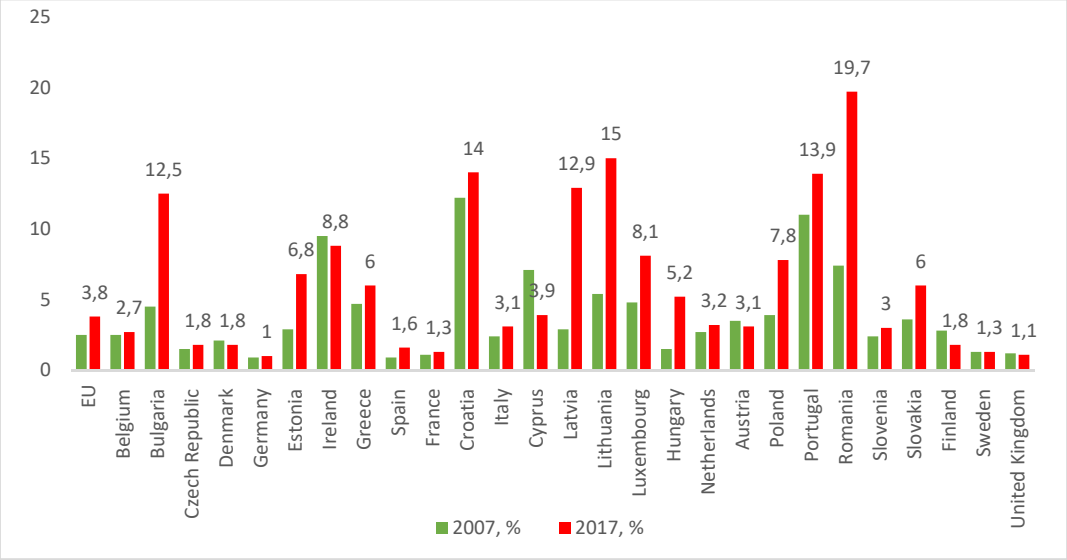
The European Union can be described by a center-periphery model in which capital flows from the center to the periphery, to areas with higher growth potential and therefore which can generate higher yields for the holders of capital invested in while the labor force migrates from the periphery to the center, where higher wages, living standards, quality of institutions or infrastructure are higher (centripetal forces) and attract individuals.

Therefore, the migration of the working population in the EU in general and, in Romania, in particular, may be linked to wage and economic conditions (recession gap, high unemployment, income inequality or poverty rate) and the quality of the institutional and governance environment in the countries of origin, which can be approximated by the perception of corruption index or trust in public authorities (Government, Parliament, Church).

2. The correlation between migration and the perception of corruption

Currently, Romania has the highest international mobility rate. Even if immediately after the economic-financial crisis, which started in 2007, migration has lost its intensity, migration in Romania is 11 times higher than that in the Czech Republic. Graph 1 shows that from 2007 to 2017 international migration has risen by 12.3 percentage points, the highest increase across the European Union.

Chart 1. *Population resident in another EU country, 20-64 years old, as a percentage of the country's native population, for the same age range*



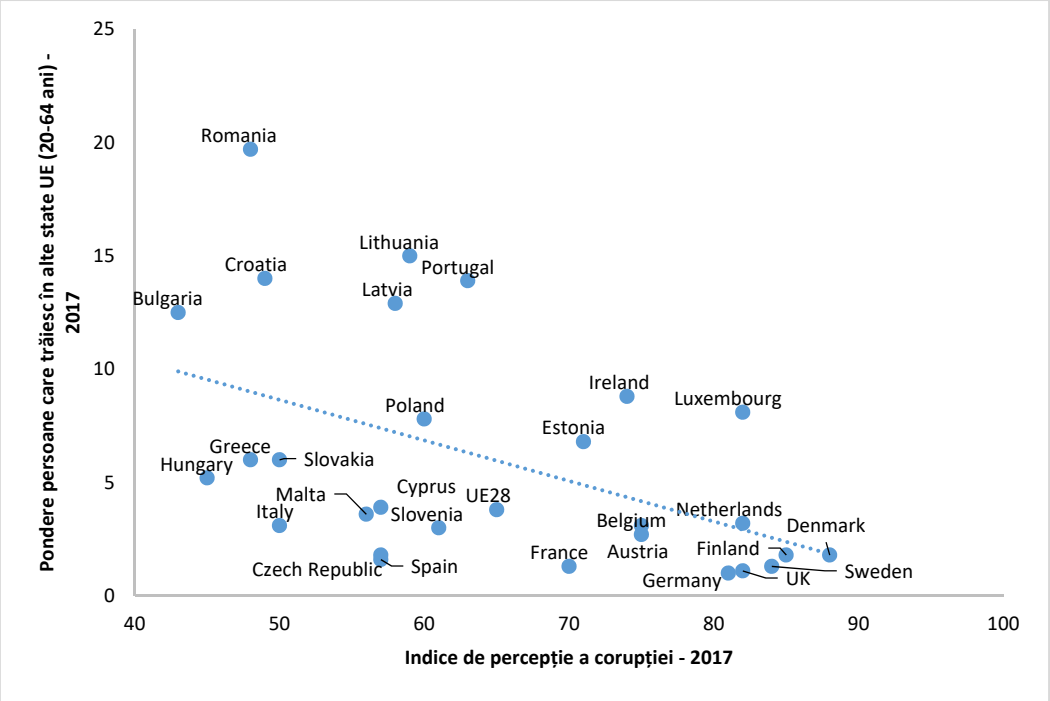
Source: own calculations based on Eurostat data.

The figure below shows that there is a negative correlation between the level of migration (as a share of the total population aged 20-64) and the corruption perception index, which is calculated by Transparency International. The higher the index, the more individuals

perceive institutions with more confidence, and the level of corruption is minimal. The lower the index, the more institutions and society are perceived to be dominated by corruption.

Romania has an index of corruption significantly below the European Union average, at levels close to those of Slovakia, Croatia or Italy, equal to Greece and higher than that of Bulgaria or Hungary, but the migration rate is well above the rates in these states.

Graph 2. *The relationship between the perception of corruption index and the migration of the active population*



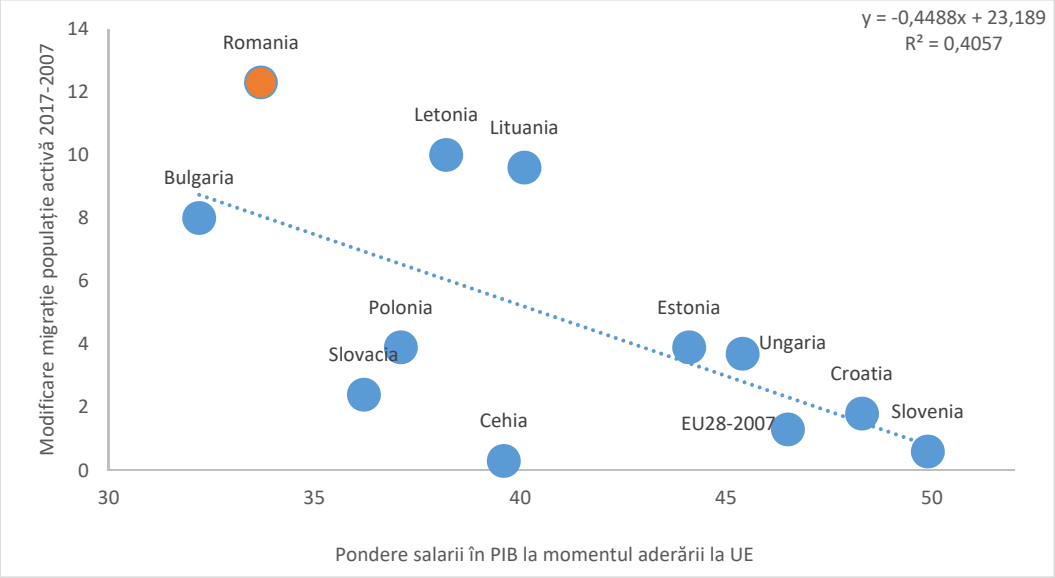
Source: Eurostat and Transparency International.

3. The correlation between migration and the share of wages in GDP

In the latter case, the correlation between migration and the share of wages in GDP seems relevant to some Central and Eastern European countries. According to Eurostat data, according to calculations, Romania had at the end of 2017 the lowest share of wages in GDP (36%) at a level close to Bulgaria, Poland, Italy, Slovakia or Greece. Romania recorded the largest increase in the share of the working population that immigrated to other EU countries after accession.

Thus, if in 2007 only 7.4% of the active Romanians lived in other EU member states, by the end of 2017 this share had reached almost 20%, increasing by 12.3 percentage points. The following countries with a very mobile workforce at European level were Latvia (10 pp increase) and Lithuania (9.5 pp).

Graph 3. *The relationship between the share of wages in GDP at the time of accession and the migration of the active population*



Source: own calculations based on Eurostat data.

At national level, territorial distribution shows that over 35% of Romanian emigrants come from only two regions, namely from the North-East and Bucharest-Ilfov regions, the following 5 regions have a share of approximate migration of between 10 and 13% accounting for almost 60% of all migrants in Romania, the Centru, West, East-East, North-West and South-Muntenia regions. The Southwest Region is the region with the smallest labor mobility, below 6% of all migrants.

4. Conclusions

Part of these shocks will be absorbed by the economy, without having a negative effect on the levels of the population. Increasing labor mobility will absorb some of these shocks. But, for our country, which is facing a labor shortage, this trend of increasing international labor mobility will have a negative effect on the Romanian economy in the coming years.

The correlation between migration and corruption on the one hand and migration and wage levels on the other hand shows that in Romania international migration can be explained both by the perception of the quality of the institutional environment and of the higher living standards in the countries of destination from the EU compared to the average of Romania.

Thus, the Romanian labor force is attracted by the major economic and financial centers in the European states, and if confidence in national institutions could be increased, some of the international migration would be transformed into national migration.

References

Raportul de fundamentare a Planului național de adoptare a monedei euro Bucureşti, Decembrie 2018, <https://e-juridic.manager.ro/download/Raportul_de_fundamentare_a_Planului_national_de_adoptare_a_monedei_euro.pdf>

Stanef-Puica Mihaela-Roberta, Aspects of poverty in Romania compared to the member states of the European Union, a post crisis analysis, *Calitatea "Acces la succes",* Vol. 17, No. S1, 2016, pp. 8-85, <http://calitatea.srac.ro/>

Stanef-Puica Mihaela-Roberta, Cretu Alina Stefania, Europe in the context of the global economic crisis, *Theoretical and Applied Economics.* Supplement, Vol. XXII, Post-crisis developments in Economics, 2015, pp. 57-62, <http://www.ectap.ro/>

Stanef-Puica Mihaela-Roberta, Macroeconomic Perspectives for Romania in the Period 2015-2018, *International Journal of Economic Practices and Theories,* Vol. 5, No. 3, 2015, pp. 291-295, (online), <http://www.ijept.org/index.php/ijept/ article/view/Macroeconomic_Perspectives_for _Romania_in_the_Period_2015-2018>

<http://gov.ro/fisiere/programe_fisiere/Pachet_integrat_pentru_combaterea_saraciei.pdf>

<http://www.fonduri-ue.ro/images/files/programe/CU/POCU2014/2017/15.06.2017/Sinteza_POCU.pdf>

<http://gov.ro/ro/obiective/strategii-politici-programe/pachetul-de-masuri-pentru-dezvoltarea-clasei-de-mijloc-la-sate&page=1>

<http://www.mmuncii.ro/j33/index.php/ro/>

<https://www.anofm.ro/>

www.eurostat.com

www.insse.ro

www.bnr.ro

www.cnp.ro

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 133-147

Detection of key, strategic sectors and structural analysis of the regional economy of Tabasco, Mexico

Aída Beatriz ARMENTA RAMÍREZ
Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México
handel91@gmail.com
Germán MARTÍNEZ PRATS
Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México
germanmtzprats@hotmail.com
Clara Luz LAMOYI BOCANEGRA
Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México
cluzlamoyi@hotmail.com

Abstract. *There is now a growing interest in developing frameworks with regional perspectives that are linked to national economic models. In this sense, the national models establish the structural forecasts that are subsequently incorporated into the regional models, to observe the changes at the local level. In order to carry out an economic analysis of the Tabasco economy, an initial work was carried out for the integration of the social accounting matrix for the regional economy of Tabasco, the research question is to know how the evolution of the Tabasco economy has been in 10 years. The type of research developed was of quantitative type and for the updating the information used in the method of the Multiplier analysis in Social Accounting Matrix, longitudinal cut data or time series of the gross domestic product by federative entity has been used in a range of 2003-2017. The results show that the regional economy of Tabasco has worsened due to being anchored in the mining sector, mainly to the oil and gas sector, these simulations can provide different perspectives for capacity development and innovations in the process of economic growth.*

Keywords: regional economy; social accounting matrix; economic growth; multiplier analysis.

JEL Classification: R10; R15; R11; R15.

Introduction

When an analysis is made of any economy, including the regional one, the investigator faces a series of causal relations that could be explained by a number of variables. If the analyst wanted to study regional growth, it might require complete information on the inventory of regional resources, it would also be important to have information about the nature of the workforce, the capital disposition, Investment within the region and among the neighbouring regions, the trade flows between them, the prevailing management capacities, the human capital and their qualifications to improve the productivity of the companies. Once the current situation was analyzed, it would be in time to link the determinants of regional change by using methods that capture the interdependent effects.

To answer these questions, empirical analysis has appealed to: i) regional econometric stochastic models; and the II) non-stochastic models, built on a framework of intersectoral relations such as the economic Base (BE); Regional input-Output models (MIPR), and IV) models based on social accounting matrices (MCS) such as multipliers (MM-MCS) or regional applied general equilibrium models (Megar).

There is now a growing interest in developing frameworks with regional perspectives that are linked to national economic models. In this sense, the national models establish the structural forecasts that are subsequently incorporated into the regional models, to observe the changes at the local level. In other words, regional models have been built as satellites of national models (Adams et al., 1975).

In a strict sense, to have a regional model of any kind not only considers the estimation of the regional income, it requires in its turn the estimation the flows of interregional goods, the analysis of the localization and the choice of specialization/ Diversification of companies in the region. However, empirical literature shows that it is virtually impossible to capture all the concepts mentioned above, in a unique modular framework, without sacrificing the accuracy and basic objectives in the exercise (Ahmed, 2006). Therefore, most studies are largely concentrated in modelling regions with specific structural variables and parameter calibration.

With the objective of carrying out an economic analysis of the Tabasco economy, in 2003, an initial work was carried out for the integration of the input-product matrix for the economy of Tabasco, for that base year (MIP-TAB03). Also, the collection allowed to have the acquis of databases like the survey income-expenditure for Tabasco 2005, the Economic censuses 2003, the financial databases of the Government of the state of Tabasco, as well as databases of governmental portals. To integrate the MIP-TAB03, the guidelines defined by the United Nations through the system of National accounts, published in the Manual of the same subject in 1993 (SCN, 1993), were followed.

The continuation of this exercise and allow a comparison in the time of the economy Tabasco has been updated the matrix to Years 2013. The research question is to know how the evolution of the Tabasco economy has been in 10 years. The hypothesis argues that the Tabasco economy has worsened due to being anchored in the mining sector.

Materials and method

The research approach is quantitative because the data collection and analysis was carried out in accordance with certain logical rules that are established through the models that analyze the behavior and composition of the regional economic structure and its impact on the development of the region.

The deductive method was used, which consists in establishing particular propositions from general propositions since it began with the study of the regional analysis techniques to later make a regional analysis with the techniques applicable to the state of Tabasco. The scope of the investigation is descriptive and according to Hernández, Fernandez, and Baptista (2014), the descriptive scope seeks to specify the properties and characteristics of the phenomenon from which it is analyzed, by measuring or compiling the information independently or jointly on the variables to which it refers.

For the updating of the matrix, longitudinal cut data or time series of the gross domestic product by federative entity has been used in a range of 2003-2017.

Total Economy Modeling

Modeling the total economy of a region/nation, with all its interrelationships, agents and sectors, has been a complex task, so many studies have opted to study socio-economic policies in isolation, in a context of partial equilibrium. However, experience indicates that if a measure affects production, it is very likely that it will also influence economic growth, poverty, employment or income distribution and it is necessary to understand the direct and indirect interrelationships between economic, social and environmental variables, with the support of models that include market mechanisms and the optimizing behaviour of economic agents, in order to establish policy priorities based on growth and economic stability objectives.

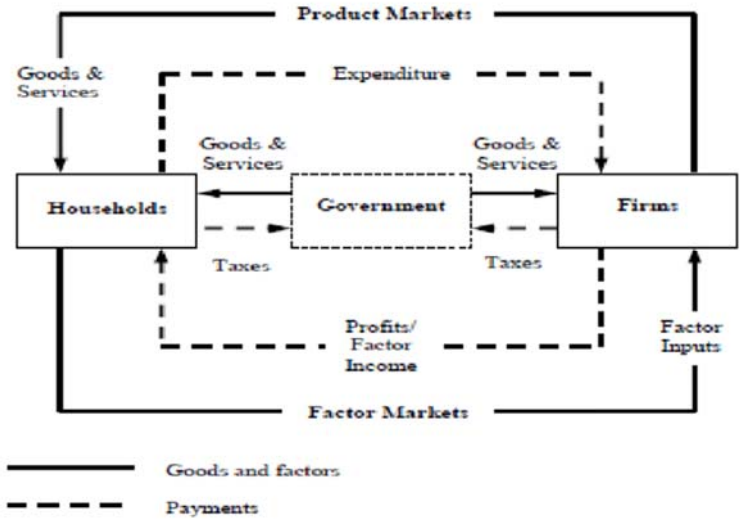
1.1. Circular flow of the economy

One way to represent the total economy is through a circular flow as shown in Figure 1, where transfers and transactions between sectors and institutions are captured, which can be interpreted as the flows to be explained by the relations structural or behavioural.

The productive activities buy work inputs, capital and land from the market of factors and intermediate inputs of the goods market, and use them to produce goods and services, which is called internal production. The total supply of goods is supplemented by imports (M) and sold through the goods market to households (C), the Government (G), the demand for investment goods (I) and the rest of the world (X). In the graph of the circular flow, the direction of the arrows is important, when an arrow goes out, it indicates the expense that each institution carries out and when an arrow enters, it indicates the income that the institution receives.

For example, purchases of goods by households, government, the rest of the world, as well as the purchase of investment goods, provide the necessary income for producers to continue in the production process. Additional inter-agency transfers, such as taxes, savings and transfers, denoted by dotted arrows, ensure that the circular flow of income is closed.

Figure 1. *Circular flow of the economy*



Source: Breisinger et al., 2009.

The reading of the circular flow can initiate with the households, which are the owners of the factorial inputs and provide to the companies of their endowments, thus, together with the intermediate products of the market of goods, the firms can produce goods and services. This utilization is part of the cost of production of the companies due to the payment that they make of the profits/income to the factorial services, as well as the payment to the companies supplying of intermediate goods.

The government receives income through direct and indirect taxes paid by households and businesses, as well as from transfers and subsidies from the rest of the world. In the opposite direction, the government distributes to the companies and households, subsidies and transfers subject to the rules of the budget balance that the analysts specify. Finally, the payment received by households for the rent of their factorial services, and the income received by the Government that has not been allocated to transfers, can be saved or spent on final consumer goods or capital goods, which together with the demand for Goods and services of the rest of the world, are part of the final consumption, this is known as balance of income or nominal where the value of the expenditure of any actor of the economy must be compensated by the income value (Sue, 2004). This implies that the total sum of the income from the production of goods and services must be distributed either to households for the income of their primary factors, or to other industries such as payment of their intermediate products, or to the government as taxes or rights.

The balance in the economic flows also maintains the production balance, that is, the full employment of the factorial services and the total absorption of the supply of goods as intermediate consumption or as final demand, that ensures the emptying of the markets of goods and factors.

1.2. The Social Accounting matrix (MCS)

A Social accounting matrix (MCS) is also a representation of the real economy under analysis. More specifically, it is an accounting framework of the economy of a nation or region that allocates numbers to revenues and expenditures in the economy's circular diagram. A MCS is a double-entry box where each line and corresponding column is "an account". Table 1 shows the MCS corresponding to the circular flow in Figure 1. Each box in the figure is an account in the MCS. Each cell in the array represents, by convention, a flow of funds from a column account to a line account. So the income of an account appears along its line and expenses along its column. As a result, only the cells where there is a flow of funds that correspond to an arrow in Figure 1 will be filled.

The underlying principle of preserving the product and/or value of a double-entry account requires that, for each MCS account, income is equal to expenditure. This means that the total of each account in one line must correspond to the total of the same account in a column.

1.3. Activities, goods and factors

The matrix of table 1 is called "Standard", "aggregate" or "macro" (Lofgran, Harris, Robinson, 2002; Robinson, 2006; Breisinger, 2009) as it only includes macro aggregates. It can be observed that the matrix makes distinction between "activities" and "goods"; in the understanding that the "activities" are carried out by the entities producing goods and services, and the "goods" make up the market for goods and services with the domestic production and its complement of imported products, which integrate the total offer whose destination it will be the export or consumption in the domestic market.

Table 1. *Macro Social Accounting matrix*

	Outcome								
Income		Activities A	Commodities P	Factors F	Household H	Government G	Capital Account A-I	Rest of the World RDM	Total
	Activities A		Domestic supply (D)						Activity income
	Commodities P	Intermediate consumption (CI)	Margins		Consumption spending (C)	Recurrent spending (G)	Investment Demand (I)	Export earnings (X)	Total demand
	Factors F	Value added (SyS-EBO)							Total Factor income
	Household H			Factor payments to households	Transfers between households	Social transfers		Foreign remittances	Total Household income
	Government G	Taxes	Taxes and tariffs		Direct Taxes			Foreign grants and loans	Government income
	Capital Account A-I				Private savings	Fiscal surplus		Current account balance	Total savings
	Rest of the World RDM		Import payments (M)						Foreign Exchange outflow
	Total	Gross Output	Total Supply	Total Factors spending	Total Household spending	Government expenditure	Total Investment spending	Foreign Exchange inflow	

Source: Own elaboration with information of Breisinger et al. (2006) y Lofgren et al. (2002).

This representation also allows the possibility of an activity producing more than one kind of merchandise, or a commodity can be produced by multiple activities.

The activity account has three items: the activities pay to the goods market [P-A] for the use of intermediate products that it or other activities produce. They pay the factors [F-A] for the factorial services in the form of salaries and salaries by the endowment of work or in benefits for the income of capital or land. They also pay the (net) taxes on the production and compensation of employees who join the government's income integrative account [G-A]. The total of the activity account consists of the gross product.

The goods market pays the [a-p] activities to provide internally, and also pays the government income Integrator account [G-p], for indirect sales taxes and import duties; and the rest of the world [RDM-P], for the value of imports (M) (Lofgren, Harris and Robinson, 2002). The total of the merchandise account is the total supply that includes the marketing and transport margins, so it is at market prices.

The purchase of goods is carried out by several economic entities: the activities buy goods to be used as intermediate inputs for the production [P-A]. The final demand for goods consists of spending on household consumption [P-C], government consumption or recurrent expenditure [P-G], gross capital formation or investment [P-I], and demand for exports (X) [P-RDM]. The sum of all consumption expenditures results in the balance of the line that is the Total demand. In the system of National Accounts 1993 (SCN 1993) is known as the table of supply and Utilization (COU).

1.4. Internal institutions

Internal institutions are home-and government-conformed (Robinson, 2006; Thorbecke, 2000). As described above, households are the owners of production factors, so they receive factorial income (wages and other labour income, interest income and benefits) during the production process [H-F]. They also receive payments for government transfers [H-G] and remittances from the rest of the world [H-RDM]. Households then pay taxes directly to the government [G-h], buy goods from the region, [P-h] or either save (or dissave) with residual savings transferred to the savings-Investment Account [(A-I)-h].

The income of the government is the collection of taxes that pay the activities [G-A], the sale of goods [G-P] and the direct taxes to households [G-H], and also payments of transfers from the rest of the world [G-RDM] which could be subsidies and aid for development. The total income is distributed in paying the spending on recurrent consumption [P-g], transfers to households [H-g], and transfers to the rest of the world [RDM-G]. The difference between total income and expenditure is fiscal surplus (or deficit, if expenditure exceeds income) [(A-I)-G]. The government account is different from the public administrative activities included in the account of productive activities, public services such as education, buy intermediate inputs, pay salaries and deliver public services and Administrations offered in the account of productive activities.

1.5. Savings-Investment and external accounts

The savings-Investment Account (A-I) is a kind of "lendable funds" Market (Robinson, 2006). The account collects the savings of the different government accounts [(A-I)-G], of

households [(A-I)-H], as outlined in the previous section, and the external savings [(A-I)-RDM], and spends the accumulated savings on capital goods [P-(A-i)].

MCS does not provide information on owners of capital goods or in which sectors are installed, i.e. the demand for investment in MCS is by sector of origin, not by sector of destination, so it cannot provide information about changes and n the sectoral capital acquis or its valuation. While some aspects of macro theory are linked to asset market operations, MCS-based models use this account to incorporate the implications for flows through the goods market and the factor market (Robinson, 2006; Drud and Kendrick, 1986).

The rest of the world is included as a separate actor, which offers imports [RDM-p], buys exports [P-RDM] and finances through external savings [(A-I)-RDM]. The external savings is a residual account between foreign exchange income (exports and transfers received) and the expenses (imports and transfers of the government abroad), this account is called balance of current account.

It is possible to disaggregate the MCS and to include several sectors or productive activities [P-A], i.e. the MCS includes the input-product box or transaction matrix. It is also possible to expand internal institutions, for example the government could be disaggregated to include the three levels of government, and in the case of households with sufficient disaggregation, income distribution and spending patterns would be appreciated among the socioeconomic groups in which households are classified.

MCS is also used as an accounting framework for the modelling of the general equilibrium, since it constitutes a base of the total economy from which the structural and behavioural relations of the agents represented in the matrix are defined. It also allows to define the microeconomic balances of the market of factors and goods and the macroeconomic balances of government deficit, trade balance and the savings and investment account.

2. The model of multipliers of the Social accounting matrix (MM-MCS)

The model of multipliers of the Social accounting matrix (MM-MCS) has as a data frame MCs.

The MM-MCS implies excess capacity and unemployment or underemployment of the factors, and in the framework of MCS one can estimate the effects of exogenous changes or injections in exogenous accounts, such as an increase in the demand for a particular activity, government spending or exports, on endogenous accounts. As long as the excess capacity and unemployment of the factors prevail, any exogenous change in demand can be satisfied through the corresponding increase in production, without having any effect on prices. Given any injection in any part of MCS, the influence is transmitted through the MCS interdependent system. The total of direct and indirect effects of an exogenous injection on the endogenous accounts, in the total production of the different activities and the income of the different socio-economic factors and groups, is estimated through the multiplier process.

The MM-MCS has the MCS as a data frame. In this model it is necessary to determine which accounts should be considered exogenous and which endogenous, although in the literature it has been tradition to choose the accounts of the government, the rest of the world and of saving-investment as exogenous, while the accounts of the products, factors, households, and productive activities remain as endogenous (Robinson 2006; Thorbecke, 2000).

Since factors and households are considered endogenous, it is logical to derive the distribution of final income and the pattern of expenditures of socioeconomic groups, which follow a change in the structure of production resulting from government actions or change In exports, differentiating between the determination of the primary and secondary distribution of income (Thorbecke, 2000; Polo, 2005). The primary distribution of income is determined by the triangular interrelation between production activities, factors and households.

The primary distribution of income is by far the most important component of income received by the different socioeconomic groups, and the secondary distribution of income through the family, the locality or the state, either in the form of Transfers, taxes and/or subsidies, constitutes the other component of the receipts received (Thorbecke, 2000).

2.1. Simplification of endogenous and exogenous accounts

The effects of exogenous changes and injections on exogenous accounts, such as an increase in demand for a particular activity, government spending or exports, can be estimated within the framework of the MM-MCS. As long as the excess capacity and unemployment of the factors prevail, any exogenous change in demand can be satisfied through the corresponding increase in production, without having any effect on prices. Given any injection in any part of MCS, the influence is transmitted through the MCS interdependent system. The total of direct and indirect effects of an injection in the endogenous accounts, that is to say, the total production of the different production activities and the income of the different socio-economic factors and groups, is estimated through the process Multiplier.

In order to be able to develop ilustrativamente the underlying logic of the methodology, in principle it will be supposed that the only accounts that are determined in an endogenous way are the production activities, the factors, the households and the products, while the other Accounts are exogenous (government, savings and investment and the rest of the world). The resulting simplified MCS is presented in Table 2.

This MCS consolidates all exogenous transactions and their corresponding leaks, and focuses exclusively on endogenous transactions and their transformations. Table 2 shows five endogenous transformations that are the combination of the three exogenous accounts, while the sum of the exogenous injections of government expenditure, investment and exports, respectively, have been consolidated into three vectors: Y1, Y2 and Y3.

The first vector y1 represents the total exogenous demand by factors; The vector y2 represents the total exogenous income obtained by the different groups of households, either from government subsidies or remittances from the rest of the world; And Y3

represents the total exogenous demand for productive activities (or goods) resulting from the consumption of government, investment, and demand for exports. Also, Li ' represents the corresponding leakages, of the savings, the imports and the taxes.

Table 2. *Simplified Social accounting matrix*

				Expenditures				
				Endogenous			Exogenous	
				Factors	Households	Productive Activities	Other accounts total	Totals
				1	2	3	4	5
Incomes	Endogenous	Factors	1	0	0	T_{13}	y_1	x_1
		Households	2	T_{21}	T_{22}	0	y_2	x_2
		Productive Activities	3	0	T_{32}	T_{33}	y_3	x_3
	Exogenous	Other accounts total	4	l_1'	l_2'	l_3'	l	x
		Totals	5	x_1'	x_2'	x_3'	x'	

Source: Own elaboration with information of Thorbecke (2000), Pyatt (1985).

The underlying logic in the schema in table 2 is that exogenous changes in the Yi determine, through their interaction within MCS, the incomes of the endogenous accounts, i.e.: i) the income of the factors in the vector x1; Income of households in Vector x2 and III) income from production activities in Vector x3.

2.2. Matrix of average expenditure propensities or fixed coefficients

For analytical purposes, the endogenous part of the transaction matrix becomes the matrix of average spending propensities or fixed coefficients, dividing each element of the MCS between the total of its respective column. The coefficients corresponding to the endogenous accounts can be partitioned to obtain *An* as shown in (1).

$$\boldsymbol{A}_n = \begin{bmatrix} 0 & 0 & \boldsymbol{A}_{13} \\ \boldsymbol{A}_{21} & \boldsymbol{A}_{22} & 0 \\ 0 & \boldsymbol{A}_{32} & \boldsymbol{A}_{33} \end{bmatrix} \qquad (1)$$

The A33 subset is the set of input-output coefficients that reflect the percentage value of input per unit of product of the production activity in monetary terms. The subassembly A13 is the set of percentage values of value added per unit of product of each productive activity. The coefficients of the A32 subset show, on average, the percentage value of each commodity (or productive activity) that each household group (or socioeconomic group) buys for each unit of total expenditure. The coefficients of the A22 subset show, on the average, the percentage value of each transfer of income to each household group per income unit. Finally, A21 shows the percentage value of each unit won by each type of resource or factor that is assigned to each group of households.

2.3 . Multipliers

a. Matrix of accounting multipliers

From the definition of *An* it follows that in the transaction matrix, each endogenous total income xn is given by:

$$x_n = A_n x_n + y \qquad (2)$$

That implies that the sum of the lines of the endogenous accounts can be obtained by multiplying the average expenditure propensity of each line by the corresponding sum of column adding the exogenous income Y.

Equation (2) can be expressed as:

$$x_n = (I - A_n)^{-1} y = M_a y \qquad (3)$$

Thus, in (3), the endogenous income xn can be obtained by multiplying the matrix of Ma multipliers by injection Y. This matrix is known as the matrix of accounting multipliers because it explains the results obtained from a MCS and not the process by which they are generated. The latter requires the specification of a dynamic model that includes different MCS accounts and variables.

b. Matrix of Fixed price multipliers

A limitation of the matrix of accounting multipliers Ma, derived from equation (3), is that it implies unit spending elasticities, i.e., it is assumed that the average spending propensions prevailing in An are those that apply to any injection Incremental. Although these assumptions can be sustained for almost all of the elements of *An*, they are certainly not realistic for the pattern of expenditure of the groups of A32 households. A realistic alternative is to specify a matrix of marginal spending propensions *Cn* according to the income observed and the spending elasticities of the different agents, assuming that the prices remain fixed. In this case Cn, formally differs from *An* as follows:

$C_{13} = A_{13}$, $C_{33} = A_{33}$, $C_{22} = A_{22}$, pero $C_{32} \neq A_{32}$.

Expressing the changes in the income (Δx_n), resulting from the changes in the injections (Δy), you get:

$$\Delta x_n = C_n \Delta x_n + \Delta y = (I - C_n)^{-1} \Delta y = M_C \Delta y \qquad (4)$$

MC is known as a matrix of fixed price multipliers, and its advantage is that it allows to introduce non-negative income and spending elasticities.

At this stage, it is important to explicitly specify the multiplier mechanism that results from equation (3). To understand this mechanism, it is necessary that the accounting multipliers (or fixed prices) are decomposed. Pyatt and Round (1979) made a fundamental contribution to this decomposition, as it is then exposed. Equation (2) can be explicitly written as:

$$
\begin{aligned}
x_1 &= & & & A_{13}x_3 + & y_1 & \\
x_2 &= A_{21}x_1 + & A_{22}x_2 + & & + & y_2 & (5a)\\
x_3 &= & A_{32}x_2 + & A_{33}x_3 + & & y_3 &
\end{aligned}
$$

which produces

$$
\begin{aligned}
x_1 &= & & A_{13}x_3+ & y_1 & \\
x_2 &= (I - A_{22})^{-1}A_{21}x_1 & & + & (I - A_{22})^{-1}y_2 & (5b)\\
x_3 &= & (I - A_{33})^{-1}A_{32}x_2 & + & (I - A_{33})^{-1}y_3 &
\end{aligned}
$$

The set of equations (5b) explicitly and clearly shows the mechanisms by which the multiplier process operates. This can be seen in graph 2, if we start with an exogenous increase (injection of exports, government expenditure or investment demand) y3, an increase in the production of the corresponding productive activity is generated, equivalent to (I-A33)-1y3. In turn, additional production factors, which have been used to create additional production, generate a A13x3 value-added chain that constitutes the factorial income, in addition to any exogenous factorial income received from other regions or from the Outside or government, named Y1.

In the next chain, households receive income from the endowment of their resources (A21) and transfer System (A22), as well as exogenous government subsidies, transfers and remittances from other regions and externals, for example (I – A22)-1y2. Finally, the household spending patterns that are translated into new production, and the corresponding additional flows of income that accumulate for productive activities, equivalent to

$x_3 = (I - A_{33})^{-1}(A_{32}x_2 + y_3)$.

his formulation generalizes the Leontief model by including, as one of the elements of the final demand, the effects of the income distribution (y2) on the consumption of the different socioeconomic groups (through A32), which reflect the patterns of consumption of Each group of households.

In contrast to the open model of Leontief, with households in the final demand vector, can be expressed using the same notation

$x_3 = (I - A_{33})^{-1}y_3$ (6)

2.4. Sectoral economic indicators

Using the criterion of Chenery and Watanabe (1958) to calculate the linkages, in order to quantify the direct impact of a branch on the rest of the economy, selecting those activities whose effects are higher than the average combining two Schuschny Criteria (2005):

(i) backward linkages calculated as the proportion of intermediate purchases of a sector in relation to their production, so as to measure their ability to direct drag to other sectors through their demand for interim consumption:

$$DBL_j = \sum_{i=1}^{17} \frac{T_{ij}}{x_j} = \sum_{i=1}^{17} a_{ij} \qquad (7)$$

(ii) forward linkages that measures the fraction of its sales for intermediate consumption, on its total sales, and measures the capacity of one sector to stimulate others, by virtue of presenting its supply capacity:

$$DFL_i = \sum_{j=1}^{17} \frac{T_{ij}}{x_i} = \sum_{j=1}^{17} d_{ij} \qquad (8)$$

Since these linkages are of production, it was taken as base the submatrix of production or intermediate consumption T33 and obtained A33 and D33 of Gosh of the MCS-TAB03 (Schuschny, 2005).

Depending on the values of DBL and DFL, they are classified into four groups:

I. Non-manufacturing/intermediate destination: They are sectors that sell to other substantial quantities of their production with high chaining forwards and lows backwards (intermediate primary production sectors).
II. Manufacturing/Intermediate Destination: They are sectors that buy substantive quantities of inputs, and sell their production to other sectors. They have high chains back and forth. They are the most interesting sectors, because they are responsible to propagate any increase in the final demand.
III. Manufacturing/FINAL Destination: These are sectors that buy from others, substantive amounts of inputs, but most of their production is directed at the final demand. They have high chaining back and low forward.
IV. Non-manufacturing/final destination are sectors of low direct linkages both backwards and forwards.

Results

It can be corroborated that the agricultural and mining industry has high linkages forward as suppliers of inputs with few chaining back or low demand for inputs. While other manufacturing industries that add to the industry of chemicals, petroleum derivatives, rubber and plastics products, as well as non-metallic mineral products, excluding oil and gas are among the Industries with high direct linkages back and forth that are highly linked to the mining sector.

Both backward and forward linkages are an important tool for decision making because it allows to find sectors that most impact the economy. It also becomes important to know how the impact of a given sector is distributed or dispersed through that economy. It is possible that a high impact sector is very concentrated while one of low impact is very dispersed.

In general, the processes of structural change can be stimulated, initially, by a relatively small number of sectors, through transmission mechanisms, in the complex network of

exchanges that characterizes the productive sectors of the Economy. Thus the search for "key sectors" based on the assumption that certain economic activities have the potential to "leverage" the rest, through the chain (backward and forward) they have with the rest of the economy, as they collect much of the Intersectoral flows.

Rasmussen (1963) proposes this typology using the concept of dispersion power of Sector J, which defines as the measure of the average stimulus of a sector j towards the rest of the sectors, as a result of a unitary increase of the final demand of sector J, on the average measure of the stimulus on the whole economy, resulting from a unitary increase in the final demand of all sectors, this is a standardized chaining.

$$\pi_j = \frac{n\sum_{i=1}^{n} b_{ij}}{\sum_{i=1}^{n}\sum_{j=1}^{n} b_{ij}} \qquad (9)$$

considering the backward linkages, and it measures, in relative terms, the potential stimulus on the whole economy, of a unitary increase in the net final demand of imports from Sector J. If $\pi_j > 1$ the stimulus is higher than the average. This allows us to compare with the same base to all sectors.

But this indicator does not provide information on how these impacts are dispersed on the economy so it makes use of the coefficients of variation

$$\psi_j = \frac{n}{BDL_j}\sqrt{\frac{1}{n-1}\sum_{i=1}^{n}\left(b_{ij} - \frac{BDL_j}{n}\right)^2} \qquad (10)$$

This new indicator shows how the impact of a unitary increase, in the net final demand of imports from the J sector, is dispersed through the economy. The lower its value, the better the chain is distributed over the economy and the greater the impact of the variation on the production, since it is dispersed among many sectors. A large value of ψ_j indicates that sector J buys inputs from a few sectors of the economy.

If the forward linkage indicator is considered analogously, the Rasmussen Dispersion sensitivity (1963) can be defined, which measures, in relative terms, the potential stimulus of a unitary growth of the whole economy, on the final demand Sector I import Net:

$$\tau_i = \frac{n\sum_{j=1}^{n} b_{ij}}{\sum_{i=1}^{n}\sum_{j=1}^{n} b_{ij}} \qquad (11)$$

Because a relatively large value of the dispersion power π_j, indicates that this sector weighs on the remainder to a considerable degree, it will also depend, to a large extent from the rest of the sectors. This is at least true, when the ψ_j variation coefficient is relatively small and will be considered "key sector". That is, in the case of an increase in the final demand of its products, it will lead to a relatively large increase in the final demand of the other sectors.

The sectors called strategic, have low demand for inputs, but supply substantively inputs to other sectors. The denomination of strategic, points to the fact that they are sectors that

can constitute possible productive bottlenecks, in front of shocks of demand, in this classification highlight the sectors "agriculture, forestry and fishing" and mining, since they are low Input claimants but supply inputs to other key sectors, as they are also classified as scattered. The driving or heavy-hauling sectors, with low chaining forwards and backwards. They are driving sectors of the economy, because they tend to have high intermediate consumption and a supply of products that, mainly, supply the final demand. Therefore, they belong to the last phase of the production process. The sectors considered as independent, consume a little significant amount of intermediate inputs and dedicate production to satisfy, mainly, the final demand. These are isolated sectors, which do not cause significant drag effects on the economic system, nor do they react in a relevant way to the drag effect, caused by the variations in the intermediate demand of other sectors.

Conclusions

There is evidence that the oil and gas industry is fundamental in the state's productive mesh, however it implies the depletion of the natural resource, and there is no diversified development of the industry

The importance of improvements and modifications made at the micro-economic level, i.e. the impact on productive activity, labour and business management, must achieve competitive advantages, through the creation and diversification of A productive base that is capable of integrating the whole territory and not on the low costs of labour or the abundance of natural resources. The clear understanding of Tabasco's productive mesh, the simulation of policies and the impact they have on the sectors is of great importance. These simulations can provide different perspectives for capacity development and innovations in the process of growth.

References

Adams, G., Brooking, C., Glickman, N., 1975. On the specification and simulation of a regional econometric model: a model of Mississippi. *The Review of Economics and Statics*, 57(3).

Ahmed, V., 2006. Regional economic modelling: evaluating existing methods and models for constructing an Irish prototype. *MPRA Paper 7650.*

Armenta, A. et al., 2007. Modelo Insumo-Producto. Integración de la Matriz Insumo-Producto. Colección José María Pino Suárez. Estudios Regionales y Desarrollo. Centro de Investigación y Posgrado. Universidad Juárez Autónoma de Tabasco.

Arrieta, F.P., 1991. Control del Agua y Desarrollo Regional en la Chontalpa, 1951-1965. *La Palabra y El Hombre*, 79(1), pp. 244-251.

Beltrán, J.E., 1985. Petróleo y desarrollo. La política petrolera en Tabasco. Centro de Estudios e Investigación del Sureste. México.

Dávila, E.G., Kessel, S. Levy, 2002. El sur también existe: Un ensayo sobre el desarrollo regional en México. *Economía Mexicana*, 7(2).

Haro, G.R., 2008. Metodologías para la estimación matemática de la matriz insumo-producto simétrica. Centro de Estudios Monetarios Latinoamericanos (CEMLA). Instituto Nacional de Estadística, Geografía e Informática (INEGI). [Online]. Available at: <http://www.cemla.org/PDF/estudios/pub-est-haro.pdf>

Hernández, R., Fernandez, C., Baptista, M.P., 2014. Metodología de la Investigación. Mexico: Mc-Graw Hill.

De Melo, J., Tarr, D., 1992. *A general Equilibrium Analysis of Foreign Trade Policy,* London: The MIT Press.

Moreno-Brid, J., Ros, J., 2004. México: las reformas del mercado desde una perspectiva histórica. *Revista de la CEPAL,* 84(1).

Ramales, O.M., 2008. Industrialización por sustitución de importaciones (1940-1982) y modelo "secundario-exportador" (1983-2006) en perspectiva comparada [Online]. Available at: <www.eumed.net/libros/2008c/434/>

Sobarzo, F.H.E., 2008. Factores clave para el fortalecimiento del federalismo en México: una visión desde las entidades federativas. México: CONAGO.

Torvik, R., 2001. Learning by Doing and the Dutch Disease, *European Economic Review*, 45(1), pp. 285-306.

Tudela, F. et al., 1989. La Modernización forzada del trópico. El caso Tabasco. El Colegio de México. México: Instituto Politécnico Nacional.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 148-157

Romania as a European Integration model state: opportunities, responsibilities, challenges

Silvia-Elena IACOB
Academy of Economic Studies, Bucharest, Romania
popescusilviaelena@yahoo.com
Andreea Teodora IACOB
Academy of Economic Studies, Bucharest, Romania
tia.iacob@gmail.com

We cannot solve our problems with the same thinking we used when we created them.
Albert Einstein

Abstract. *At the moment, the European space has to deal with its serious injuries caused by it's unorganized way of completing the integration. In this paper, I have focused my research in proving, more as an ideology, the fact that, in my opinion, the Union doesn't need, at the moment, more integration. Even more, i will try to prove the fact that the Union needs, at the moment, to regain its strength, its hegemony, its real convergence, through soft power. Soft power could act like a booster for real convergence and could really help Europe, seen as an integration model, and the countries composing it, as an integration model, regain its/their personality and its/their strength.*

Keywords: European integration model, strength, weaknesses, responsibilities, real convergence.

JEL Classification: E6, F02, F6.

Introduction

The European integration model, as has been thought from the beginning and now, is at the crossroads. Either because of the failure to fully respect the founding theories, at this very moment, either because of its formation that a practical and unfocused learning and real convergence, either because of what some might call "national ambitions" the cause of the threats from the outside of construction, it is certain that a change is absolutely necessary.

But should this change promote greater control of measures, greater clarity in the definition of common objectives, more impartial integration of supranational control, or, on the contrary, promote national benefits, in the face of common benefits and national needs, in the face of common needs, and, moreover, allow supranational intervention only at the level of those national "needs" that can only be met by integration or even better matched by integration?

On this "decision" I will stand in the following, bringing, as a case study, a succinct comparison of the Bresso-Brok Report and the Verhofstadt Report, reports describing precisely the European trends regarding the next step in the context of recent developments.

1. The European integration model beyond the economic correlations

At present, the European space, on the road to full integration, is at the stage of EMU formation and, implicitly, of full monetary integration.

Unfortunately, however, the current context of the construction of European integration shows a break between what the theory of integration recommends and learning from practice. The European integration model has proven to be a succession of practical learning approaches, thus making it more difficult to achieve long-term goals.

An "by the book" way would have allowed the European construction to cope more easily with both - internal and external - economic, political, social challenges, in its approach to economic integration.

Instead, recent developments show strong vulnerabilities of the European integration model, starting with the evidence of the financial crisis, the sovereign debt crisis, the refugee crisis and migration issues, to problems that undermine the fundamentals of the model, which concern common foreign policy and common internal policy.

These recent developments seem to break the national interests of states and the European Union or the EMU or even between the civilian interests of the union and the European Union or the EMU and can only draw attention to insecurity regarding the longevity of the European Union and implicitly completeness and effectiveness of the European integration model.

In response to these developments, European decision-makers have reacted by proposing sets of measures to resume the path of the European integration model and to scatter the risk of European fragmentation.

In the following, I want to go through the guidelines of two such reports, the Bresso-Brok Report and the Verhofstadt Report.

The two reports go largely from easy-to-use motivations, motivations related to recent developments in the European integration model. The problems reflected by the financial crisis and the sovereign debt crisis, issues related to the consolidation of the fundamental human values but also of the Union and their promotion, the longevity of the European Union, in the current context, the perspectives and the threats at the level of the European Union, but all these are the sources that motivated the proposals of the Reports.

Following these Reports, I will be able to conclude with my personal views on the applicability and the need for the proposed measures.

2. Comparison analysis: Bresso-Brok Report and Verhofstadt Report

I will now advocate a successive debate on the main ways of action by the two reports, both by the Bresso-Brok Report and by the Verhofstadt Report.

The following comparative analysis aims to highlight the similarities and differences between the perspectives of the two reports, in terms of general and general directions proposed. Beyond these, however, the Reports are valuable contributions to operational, organizational, logistical, legislative, institutional measures to facilitate the integration of the proposed action lines.

2.1. Democracy and Responsibility at European Union level

The need to set up pillars that support a Community method, the fructification and protection of democracy, and the responsibility (seen as double meaning) at EU level draw attention in both reports. These needs are debated in the two reports either in the context of "Institutional Configuration, Democracy and Responsibility", or in the context of "More Democracy, Transparency and Responsibility".

In the Bresso-Brok report, these proposals undermine the European Parliament (granting greater control to the European Parliament and measures supporting the European Parliament's dialogue with citizens, the European Parliament's dialogue with national Parliaments, dialogue between national parliaments), the European Council makes an important contribution to the invitation to the European Council to authorize the Council to move unanimously to the VCM), Council (the need to improve the exchange of documents and information between Parliament and the Council, for greater efficiency and effectiveness in the debate on legislative texts, passing the full Council to qualified majority voting wherever possible under the Treaties), The Commission (strengthening Parliament's role in electing the President of the Commission, a more thorough analysis of the Commission's proposals and their evaluation, the commissioning of the Commission President), the Court of Auditors, the Committee of the Regions and the European Economic and Social Committee, and Union Agencies.

The same directions of necessity are high, strident or not, also in the Verhofstadt report, with bigger or smaller differences. Concerning Parliament, attention is also drawn here to

the need to establish a single seat of the European Parliament, which is assigned and to decide on its seat and internal organization. Also, with an impact on Parliament, the report proposes to replace the co-decision consultation procedure between Parliament and the Council. It also recognizes the importance of the European Parliament's dialogue with citizens, national parliaments and the need and importance of dialogue between national parliaments.

Like the Bresso-Brok Report, the Verhofstadt Report draws attention to measures that give greater control and more supervisory, monitoring and monitoring powers to the European Parliament. In this regard, the Report insists on the need for the right of inquiry Parliament's Parliament specific real powers clearly delimited; highlights that for effective monitoring of the way in which the bodies in charge of implementing the EU budget require effective cooperation in good faith with Parliament, a transparent overall use of funds, such as an annual monitoring document from each institution on the recommendations made by Parliament; considers that the TFEU must ensure Parliament the right to control the entire EU budget.

Concerning the European Council and the Council, the Verhofstadt Report, under the same umbrella of the need to capitalize on responsiveness and democracy at EU level, proposes that all configurations of the Council, including the European Council, be transformed into a Council of States within the which the main responsibility of the European Council would be to give guidance and coherence to the other parties. Such a measure would support greater control of the adjacent institutions and subject to the Council of States and, implicitly, better precision of their measures, in a better harmony with responsibility and democracy.

Also under the same umbrella of valorization of democracy and accountability at the Union level, both the Bresso-Brok Report and the Verhofstadt Report draw attention to measures that can improve compliance with the principles of subsidiarity and proportionality, highlighting this. In this respect, it is recommended that treaties be better exploited to provide better support.

In addition, the Bresso-Brok Report points to the need to encourage the EMU's enlargement and deepening processes to be achieved in greater consensus with the European Union's responsibility and democracy.

In the same note, the Bresso-Brok Report draws attention to the need for measures to simplify the European Semester so that it behaves more harmoniously in relation to the interests of increasing responsibility and democracy at European Union level (introducing mechanisms economic dialogue, highlighting the importance of demographic trends, the need for fewer specific country-specific (CSR) but better targeted recommendations, the integration of relevant provisions of the Fiscal Pact, a general assessment of budgetary situations and perspectives in the EU and in the EES, etc.)

The Verhofstadt report also raises the need for improvements to be made at the European semester, placing them under new economic governance for growth, cohesion and stability.

In order to promote the valorization of the responsibility of the Union at the level of the Union, the Bresso-Brok report draws attention to the need to end the Eurozone budget, with revenues coming from the Member States of which it is the euro, which, in turn, with the euro.

2.2. The role of the EU budgets

Both the Bresso-Brok Report and the Verhofstadt Report draw attention to the role that EU budgets play in the EU and EMU, both in the current context and implicitly on the methods of capitalizing on them.

With regard to the Bresso-Brok Report, there is a need to "change the current based Contributions model with a real-life system for the EU budget"(1). Collection would be based on several proposed criteria such as: "a reformed Value Added Tax (VAT) system, a Financial Transaction Tax (TF), a carbon tax, a share of the Common Consolidated Tax Base companies, a European wealth tax, and income from other sources, such as the Emissions Trading Scheme or the ECB's profits."(2)

Likewise, the Verhofstadt Report also draws attention to measures on the European common budget. The Verhofstadt report: "is convinced that the EU budget must be endowed with a genuine own resource system based on guiding principles such as simplicity, fairness and transparency; considers that the work of the High Level Group on Own Resources is of paramount importance and expects that to submit timely effective and ambitious proposals; considers that such a system should reduce the share of based contributions to the EU budget model for Member States to abandon the "fair return" approach; in this context, on the gradual elimination of all forms of rebate "under the same umbrella of responsibility and democracy.

Also, with regard to EU budgets, the Bresso-Brok report draws attention to the need to make more prolific use of existing structural funds, "in order to boost EU competitiveness and cohesion and increase EU investment capacities. In the same note, the Bresso-Brok Report agrees on the need to form fiscal capacity within the euro area, using part of the EU budget." (3)

Likewise, the Verhofstadt Report also draws attention to structural funds and their use. However, it draws attention not necessarily to the stimulation of use but to a better analysis of the use of structural funds. The report stresses that the EU's commitments to structural funds should be fully respected, but rarely exceptional and unforeseen.

Under the same umbrella of the role of the EU budget in the EMU, the Bresso-Brok report harms the single market and financial integration as fundamental elements for prosperity, growth and employment in the Union. In this respect, the report draws attention to capabilities with a huge potential for Union development on single market performance and financial integration, especially in the digital single market, financial services, energy, banking union and capital markets union. Union funds should be used as prolific as possible in the proposed areas.

The Bresso-Brok Report also draws attention to the need to use the Union's budgets to capitalize on and support the achievement of the internal market as the main driver of

economic growth. Thus, the report agrees on the need for the EMU's deepening to take place in parallel with the completion of the internal market, by removing all remaining internal barriers, especially in terms of the real development potential mentioned above: energy, the digital single market and the services market, especially by capitalizing on the use of the common funds of the Union. The internal market as a driver of economic growth would allow a better development of the free market in the Union.

Also under the need to capitalize on the role of the budget at EU level, the Bresso-Brok Report brings the social dimension to discussion. Measures on the social dimension should therefore promote workers' rights, especially when exercising their right to mobility. Their social rights should be guaranteed. When the social framework will benefit from the support of the European Union, the report proposes, and then the workers will fully support the integration project.

The Verhofstadt Report does not address the single market by expressly addressing it, but, as I have pointed out, along with the Bresso-Brok Report, supports the EU budget, especially with regard to its collection from the Union Member States.

2.3. External action

Both the Bresso-Brok Report and the Verhofstadt Report draw up measures on the direction of the European Union's foreign policy. These needs are debated in the two reports, under the different shadows: "External Action" / "Strengthening our Foreign Policy".

In the context of the challenges posed by the external actions of the European Union, the Bresso-Brok Report draws attention to enhancing the effectiveness, coherence and accountability of the Common Foreign and Security Policy (CFSP) on the one hand and, on the other hand, a common defense policy.

The report proposes measures for strengthening, expanding, but also progressing on the CFSP. In this respect, the report proposes that the main direction of action is to integrate a more comprehensive approach of the European Union towards external conflicts and crimes, allowing for a closer association of the different actors and different instruments in all phases of the conflict. In these guidelines, the Report refers, among other things, to Parliament's implications, calling for a strengthening of its control over the EU's external action.

On the other hand, the report attributes a special importance to the need for a common defense policy, both to support conflict resolution and to prevent them, actively involving civil society, but also more resources, including financial resources, from the Union European. The report also proposes operational and organizational measures on the training and deployment of this power.

On the other hand, but in the same nuances, the Verhofstadt Report attributes to the European Union the need to make progress in capitalizing on Common Foreign and Security Policy (CFSP). The report stresses the need for an adequate budget that should be sufficient to defend and capitalize on the CFSP. Also, with regard to the Union's foreign policy, the report draws attention to the need to create a European defense unity in a strategic partnership with NATO.

2.4. Justice and home affairs

The Bresso-Brok report draws attention to the Justice and Home Affairs chapter and, while upholding fundamental rights and freedoms, insists on the need to strengthen the counter-terrorism policy by proposing, inter alia, measures to streamline the flow of information across the Union, Europol and Frontex. All on terrorism, the report insists on the need for cooperation between states to investigate and supervise cooperative terrorism issues.

In these notes, it calls on the Council and the Commission to make a comprehensive reassessment of counter-terrorism measures.

The report also touches on the same issue in the same chapter as the proposed measures and the problem of refugees, considering that temporary protection has not actively responded, although it has been grounded in response to this problem. It also proposes in the same context the establishment of a common policy fair and efficient asylum and immigration, based on human rights and foundations, together with other proposed measures, on the same directive to strengthen the Union's consistent attitude towards immigration flows and asylum applications.

All proposals, whether they focus on the issue of terrorism or focus on the problem of immigrants, should be coordinated with cooperation with third countries.

On the other hand, the Verhofstadt Report discusses the issue of terrorism in the sense of the direction of action that proposes the consolidation and progress of the CFSP. The Verhofstadt report does not raise specifically the issue of immigrants and temporary asylum applications.

2.5. The BREXIT problem

Unlike the Bresso-Brok Report, the Verhofstadt Report draws particular attention to the United Kingdom's withdrawal and its implications.

The Bresso-Brok report points out that "the withdrawal of the United Kingdom, one of the largest Member States and the largest non-euro area Member State, affects the institutional soundness and institutional balance of the Union."[(4)] It also draws attention to the interplay of the single market in this context and on the fact that it cannot be separated from the four fundamental freedoms of the Union and that this strong dependence cannot be canceled during the negotiations on the United Kingdom's exit from the Union.

2.6. A Europe "by the book"

Unlike the Bresso Brok Report, the Verhofstadt Report draws attention to the vulnerabilities that the European Union can face, in the context of continuing to support derogations and to allow interventions through intergovernmental methods in the Union's efforts. In this context, the Report states that the "Union method" is the only method of democratic legalization that ensures that all the interests involved are taken into account.

The above analysis aims to highlight the similarities and differences between the perspectives of the two reports, in terms of general and general directions proposed. Beyond these, the Reports are valuable contributions to operational, organizational,

logistical, legislative, institutional measures that facilitate the proper integration of the proposed action modalities.

The two reports go largely from motivations that make it easy to compare. The problems reflected by the financial crisis and the sovereign debt crisis, issues related to the consolidation of the fundamental values of the human, but also of the Union and their promotion, the longevity of the European Union, in the current context, the perspectives, but also the threats at the level of the European Union, regarding both the common foreign policy and the common internal policy, all these are the sources that motivated the proposals of the two reports.

3. Personal reasoning. Conclusion

Recent developments on European construction, whether we are talking about the European Union, whether we are talking about the Economic and Monetary Union, or the Euro Area, attribute to the European integration model the risk of having been conceived from sequential steps of learning from practice.

Theories have been countless over time; whether or not they have been taken into account, one thing is certain: at the present time, the European construction, in the sense of full integration, risks to be scattered. The "common" ideal of full integration, as seen in the previous period, must change. The member countries begin, precisely because of this learning practice, to feel trapped in a cage and hair to have to resort to personalized approaches, to derogations, to what Rapot Verhofstadt called Europe a la carte. Ultimately, the common purpose of European construction must be supported by the national goals of each state. The national benefit must be at least equal to the common benefit, because the European partnership is profitable. That is why, I believe, we cannot ask Member States to abandon "a la carte" / customized needs. These countries' needs are precisely due to the fact that partnership, in its forms so far, serves more a common benefit than national benefits. It is beyond these problems to quantify and name this common interest that can best utilize national interests.

Or, moreover, if states would accept this greater control (institutional, legislative, social, organizational, logistic, etc.) would indeed be in a well-chosen common goal? How can nations quantify something, they have different personalities and needs?

In my opinion, I think the European integration model should accept the personalized needs of each country, accept, above all, the national benefits of priority to the common benefits. Collaboration of the European Partnership should only the states alone do not meet all their needs precisely to meet those need (Security / Protection of Human Rights, etc.).

Otherwise, I think, the European construction tends to move away from the principles of liberalism, the very pillar of democracy that it promotes so stridently and not to fight for the national benefits of the partners but for a common goal that no longer serves partners but a state super-national who gains power.

But what could be the direction in the context of giving arguments against a greater "formalization" of the European structure. Every nation, in the "game" to global hegemony, must be treated mainly by its own "qualities" and "defects". We cannot ask China for the soft power of America or Europe, just as we cannot ask America for Russia's resources. Every nation is what it is, beyond the ambitions of the rulers. Of all the power sources, soft power is a defining competitive advantage of Europe. Europe has grown over time, exploiting soft power, without much difficulty, unlike other powers (China, for example) that are making great efforts to gain ground from the perspective of soft power.

The chance of the euro-zone and, in general, the chance of the European integration model, I think, is to recapture in soft power, as the main engine of advancement in the integration process - with all the valences and all directions of integration - moving towards increasing real, from the inside to the outside, more than "formalizing" from the outside to the inside.

Hence, the chance of Romania, in the attempt to continue the process of integration in the European structure, is to address a system to which it accedes, precisely through the tools of its future trend: tools for increasing the power of the software.

The Romanian potential regarding the use of soft power as the main instrument for increasing the real convergence with the other European states - beyond the argument that at this moment, in the context of current European needs and prospects, this would be the healthiest strategy for the continuation of the European integration process Romania - is enormous.

On the one hand, we have the strength of the IT industry, both from the educational point of view and from the labor market point of view.

On the other hand, the level of Romanian education is still at a precarious level, both from the perspective of the imputation in this sector and, implicitly, from the perspective of its results.

At the level of innovation, Romania, as we have shown from the World Economic Forum's data on Global Competitiveness, has relatively weak results. Only in the field of IT and Smart Intelligence innovation seems to be in line with the European/global flow.

In the above described, I made a quick radiograph of what I think to be, in the first line, of tools for increasing the soft power, in the context in which I argued, above all, why Romania should target this character, on the way to further European integration. Undoubtedly, there are many other tools, much finer and more impressive.

Potentially there is but, unfortunately, institutional rigidity seems to be an impediment.

Unfortunately, the use of soft power will be a comparative advantage of Romania in trying to reach the European integration standards only to the extent that it will be a step ahead of all, proactive. If we only react responsibly to the possible future trends of the euro-zone, the differences in terms of relativity will diminish.

Romania is just one case, there are 27 other states, besides Romania, whose capacity to adapt to possible new trends centered on soft power as a growth engine in all directions of integration must be analyzed and calibrated. It is certain that the future of the euro area is

in the face of a change. In what sense will this change, from the many possible directions, remains a fertile subject of analysis.

Notes

(1) Mercedes Bresso, Elmar Brok; European Parliament resolution on improving the functioning of the European Union by harnessing the potential of the Treaty of Lisbon, online at: http://www.europarl.europa.eu/sides/getDoc.do?pubRef=%2f%2fEP%2f%2fNONSGML%2bREPORT%2bA8-2016-0386%2b0%2bDOC%2bWORD%2bV0%2f%2fRO

(2) Guy Verhofstadt Report on possible developments and adjustments to the current institutional structure of the European Union; online at: http://www.europarl.europa.eu/sides/getDoc.do?type=REPORT&reference=A8-2016-0390&language=RO

(3) Mercedes Bresso, Elmar Brok; European Parliament resolution on improving the functioning of the European Union by harnessing the potential of the Treaty of Lisbon, online at: http://www.europarl.europa.eu/sides/getDoc.do?pubRef=%2f%2fEP%2f%2fNONSGML%2bREPORT%2bA8-2016-0386%2b0%2bDOC%2bWORD%2bV0%2f%2fRO

(4) Mercedes Bresso, Elmar Brok; European Parliament resolution on improving the functioning of the European Union by harnessing the potential of the Treaty of Lisbon, online at:http://www.europarl.europa.eu/sides/getDoc.do?pubRef=%2f%2fEP%2f%2fNONSGML%2bREPORT%2bA8-2016-0386%2b0%2bDOC%2bWORD%2bV0%2f%2fRO

References

Guy Verhofstadt Report on possible developments and adjustments to the current institutional structure of the European Union; online at: <http://www.europarl.europa.eu/sides/getDoc.do?type=REPORT&reference=A8-2016-0390&language=RO>

Mercedes Bresso, Elmar Brok; European Parliament resolution on improving the functioning of the European Union by harnessing the potential of the Treaty of Lisbon, online at: <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fNONSGML%2bREPORT%2bA8-2016-0386%2b0%2bDOC%2bWORD%2bV0%2f%2fRO>

Nye, J.S. Jr., 2004. Soft Power. The Means to Success in World Politics, Public Affairs, New York.

Pelkmans, J., 2003. *European integration. Methods and Economic Analysis,* European Institute of Romania, 2nd edition, Bucharest.

Socol, A., 2009. *Macroeconomics of European Monetary Integration. The case of Romania.* Economic Publishing House, Bucharest.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 158-173

The strategic use of social media by public administrations Case study: #statistics' popularity on social platforms

Iulia Alexandra NICOLESCU
The Bucharest University of Economic Studies, Romania
nicolescu.iulia@gmail.com

Abstract. *This paper provides an exploratory approach on #statistics keyword by using data from the most popular social platforms. Facebook and Twitter data collection and analysis tools were used: Socioviz, Likealyzer, Facebook and Twitter Analytics. In order to gain representative insights about content, discussion themes and influencers, the data was collected in several waves and qualitatively assessed with the help of multiple tools, at a global scale but also locally, for Romania. The paper reveals what are the most common associations with #statistics and also that conversation on the topic is insufficient and mostly irrelevant to the industry.*

Keywords: communication strategy, statistics, social media analytics, strategy.

JEL Classification: Z – Other Special Topics.

Introduction

Since the era of Web 3.0 there are no longer barriers met between what is digital and physical. As Brown (2008, p. 397) emphasizes, information and communication technologies (ICT) transcend nowadays the boundaries from our workplace into our homes and the society. As consequence, world organizations monitor and recommend national stakeholders to adapt to the latest ICT trends. The European Communication Monitor identifies a hypermodern culture of overdrive and paradox, which triggers the need to forming new communication strategies from organizations all over the world, including Romania.

Spaces generally associated with media or marketers, social platforms like Twitter and Facebook have developed into environments for community building, opinion influence and social movements, which is why academic literature registered rising interest in research on these platforms. Probably the most interesting feature of social platforms is 'hashtagging'- the use of keywords to describe a topic, an issue or a theme. Adi (2015) relies her study on the hashtag #publicrelations, which suggests that keyword-focused knowledge is powerful in today's economy and business intelligence. Saffer et al. (2013) admit that interactivity on social media influences the quality of organization-to-public relationships, thus, with questions about the perception of statistics and quality of discussions related to this topic, among youngsters, this study is meant to look into the types of information shared by public on social platforms, both globally and locally.

Since the barriers of physical and digital presence have disappeared, communication with the help of modern social tools has also torn down the boundaries between authorship and readership in the process of sharing information. These facts call for action in new ways of looking at communication strategies for governments and stakeholders and also, metadata analytics for business-owners. The question this study aims to answer is *"What do users say when they talk about statistics? How often is #statistics mentioned and related to what topics?",* all in the context where EU members of European countries aim to align to the modern regulation of digitalization and transparency in user-centered strategies.

It is safe to claim that social media has already perched a spectrum of applications with large impact. Subsequently, given the continued interest and the growing meta-information generated through these platforms, it is expected to continue enabling new, performant applications and revolutionizing many existing ones. There is a need therefore to focus more on the impact of messages transmitted through social platforms in order to gain knowledge of trends and expectations.

This paper gives valuable insights about the presence of official statistics producers in the social media environment (microblogging and networking platforms like Twitter and Facebook) and the strategic (or lack of) use of these communication channels, by extracting relevant data with specific semantic analytics widgets (Socioviz, Likealyzer). Such user-generated platforms are key-channels for organizations to send messages across the audience, to stimulate communities for constant feedback as well as to educate users, but prove to be insufficiently exploited by the official statistics producers and by the statistics domain in general.

The results of this paper derive from usage and associations of "statistics" keyword on platforms like Twitter and Facebook. Issues of semantic inconsistency of messages, inaccuracies of meaning, and misusage of semantic in transmitting messages across the audience, are revealed further into the present study. Most associations with #statistics correlate to #marketing or #marketresearch according to Hashtagify, but when looking into the data collected by Socioviz, top 3 related hashtags show a large amount of inconsistency related with the subject. Although these analytics tools are amazing for collection and visualization of global data, in order to gain further insight on what the data looks like locally, in Romania, the collected information was submitted to additional scraping through additional analytics tools for nominated official accounts, tools like Foller.me, Twitter & Facebook Analytics, Mentionmapp.

Literature review

Research on social media has greatly intensified in the past years given the significant interest from the business intelligence point of view but also from the application's perspective as more and more unique technical widgets emerged. From an information technology standpoint, social media research has focused on social media analytics to prove usability for social science challenges and new insights opportunities. Social media analytics is a new-age science concerned with developing and evaluating informatics tools and frameworks to collect, monitor, analyze and visualize social media data (Chen et al., 2010) for research purposes like extracting patterns and intelligence about contributors and dialogues.

In a broad sense, social media refers to a conversational, distributed mode of content generation, dissemination and communication among users, fundamentally different from the broadcast-based traditional media. Today's networking platforms have basically torn down the boundaries between authorship and readership (Zeng and Chen, 2010) while process of information consumption is becoming intertwined with the process of generating information.

In a word, social media is revolutionizing the way we live, learn, work, and play. Elements of the private sector have begun to thrive on opportunities to forge, build, and deepen relationships. Some are transforming their organizational structures and opening their corporate ecosystems in consequence. The public sector is a relative newcomer. It too can drive stakeholder involvement and satisfaction. As Raskin foresaw in his study about interactive systems (2000) as far as the customer is concerned, the interface is the product. This only means that today, people expect online environment to be user-centric. If back in 1995, Web 1.0 was about getting people connected, even though its applications were largely proprietary and only displayed information their owners wished to publish. Later, Web 2.0 enabled many-to-many interactions (Porter, 2008) in numerous domains of interest and practice, powered by the increasing use of blogs, image and video sharing, mashups, podcasts, ratings, tweets and networking without boundaries. Since 2010, acknowledgment of Web 3.0 became more obvious with the ICT upgrading with an immense capacity of analyzing large sets of data, collected from the online environment.

Since barriers between what is physical and what is digital have completely disappeared, it would seem only natural to develop special analytic tools to reinterpret behaviors more and more present, and with big impact on the world, from the online.

Communicating through social media requires specific strategies and appropriate tools. Constant analysis on the environment is critical before sending a message but also after the message has reached the public. Live feedback is one of the most precious gift online gives to users, as long as they listen. Specific analytic tools help stakeholders actively decide based on dynamic, live evaluations.

When we think about public administrations and organizations administered by government we see offices driven by internally focused objectives rather than a service-delivery mentality, bureaucratic in decision-making, traditionally slow to change, having top-down hierarchical structures. The public sector is a relative newcomer to social media even though, in the past years, European authorities empowered the whole community members to take a big step towards digitalization in all public sectors, in the attempt to fight an increasing public distrust which manifested on a general level. Public administrations have to, ultimately, meet the citizens where they are, thus, nowadays, mostly online.

Strategic communication involves a range of media platforms, visualization tools and networking environments, that has frequently been at the center of message transfers in these years. The relevance for strategic communication was pointed out only recently (Goransson and Fagerholm, 2016) but empirical insights on this topic are still scarce.

Much of public administrations and organizations activity is now focused on social media, with social media becoming a central component of e-government in a very short period of time (Bertot et al., 2012). One of the best examples in strategic use of social media is the strategy of communication with the public, implemented by president Obama. President Obama became a strong advocate for the use of social media when he was presidential candidate Obama. Democratic participation and engagement is one of the major key opportunities emphasized by the American administration under Obama, because using social media technologies engages the public in government fostering participatory dialogue, by providing a voice in discussions of policy development and implementation. US federal agencies have been using blogs, microblogs, wikis, and social networking sites among other social media, to create records, disseminate information, communicate with the public and between agencies for several years.

Public administrations in Romania also began to use specific social media sites in order to interact with their public, the most popular being Facebook and Twitter. These platforms have become important for information exchange and discussion topics. In Romania, social platforms like are slightly slower to emerge, compared to other countries. Saffer et al. (2013) suggest that interactivity on social media influence the quality of organization-to-public relationship, hence the need to further research on the impact of such communication also in our country. Verhoeven et al. (2012) argue that digital communication and social media are perceived to have grown in importance in the media mix, especially in the view of European organizations.

User-generated content and consumer-generated media are the two major components viewed as the defining characteristics of Web 2.0. From a tool perspective, an array of web-based applications define the way social media environment functions, such as microblogs (Twitter), social networking (Facebook), or wikis. Probably the most appreciated characteristic of these platforms is the "hashtag" (#). A hashtag is a type of metadata tag used on social media, allowing users to apply dynamic, user-generated tagging which makes it possible for others to easily find messages with a specific theme or content; it allows easy, informal markup of folk taxonomy without need of any formal taxonomy or markup language. Users create and use hashtags by placing the hash character in front of a string of alphanumeric characters, usually a word or phrase, without spaces. The hashtag may contain letters, digits, and underscores. Searching for that hashtag will yield each message that has been tagged with it. A hashtag archive is consequently collected into a single stream under the same hashtag. For example, on the photo-sharing service Instagram, the hashtag #bluesky allows users to find all the posts that have been tagged using that hashtag. Because of its widespread use, hashtag was added to the Oxford English Dictionary, in June 2014.

Twitter is a microblogging platform often associated with breaking news, which has also become a space for community building and legitimization for companies or even social movements. According to statista.com, at the end of 2017, Twitter registered over 330 million of active users per month, worldwide, with users from all age segments. According to Duggan et al (2014) Twitter appeals to a number of demographic groups, like, young professionals but at the same time, also to those aged 65 or more. Twitter is an appealing channel for communicating yet, differences between its perceived importance, its adoption and its effective use are still being noted. However, it is also a space for debate and discussion, with both opposing and supporting voices converging on the platform. Jürgens' (2012) work, focused on social media communities and their integration of digital methods, shows that users leave digital traces which enable other users and researchers alike to detect community dynamics. This suggests that the content users post can record the rise and fall of topics of interest, the tags used enabling the access to these records. Twitter hashtags enable users to link as well as tap into broader theme or topic focused conversations. By joining either live conversations, such as Twitter chats, or contributing to issue focused hashtags, the practice enables the emergence and formation of issue publics (Highfield, 2012). Research has explored issues emerged around specific events and their discourses. Nevertheless, the little amount of research carried around Twitter hashtag/issue chats, focused either on the mechanics of the information transmission process or on the factors influencing diffusion of information or group cohesion.

Facebook is currently the most popular social network site in the world (Statista.com, 2018) with more than 2.2 billion active users. From public figures to non-profit organizations, clothing stores and government administrations, TV channels and private businesses, all users' categories can find representatives on this networking platform. Probably, it is safe to assume that Facebook provides the most complex user-generated content environment on the planet. For public sector organizations, in particular, Facebook represents an official public channel for freely transmitted messages, directly from the source, with maximum of transparency. As the founder stated in 2004, 'Facebook's mission is to give people the

power to build community and bring the world closer together. People use Facebook to stay connected with friends and family, to discover what's going on in the world, and to share and express what matters to them. Although much of this has remained valid, a lot has evolved around this platform since 2004. Facebook has actually become a trusted communication channel, if we consider events like the use of Facebook to coordinate the uprisings of what is now called the Arab Spring in 2011, and the call by the Federal Emergency Management Agency (FEMA) to use social media instead of phone lines to check in with friends and family during earthquakes and hurricanes in late 2011 (Mergel, 2012), but also a stage for public movement.

Romanian public institutions are relatively new on social media. Public institutions' reluctance in using social media is motivated by researchers in this field, mainly due to lack of professional training in this area, but also, due to lack of resources and the restrictive legislative framework, considering data protection as main reasons for not using social media in public administration (Nicolescu and Mirica, 2015). Different projects were initiated in our country, in order to enhance digital activity on social media of public administrations, such as e-Administration System(1) or Digital Diplomacy(2).

Methodology and data collection

The present paper uses an exploratory approach to answer to the question: *What do users say when they talk about statistics?* The study combines automated online data collection with qualitative observation for gaining knowledge about the themes and issues that emerge on the statistics subject. This study uses two online widgets (Socioviz and Likealyzer) to collect data and obtain valuable insights into their meaning through visualizations and automated analysis. In addition to these tools, other helpful information for this study were gained through Web analytics platforms like Foller.me, Twitter & Facebook Analytics, Mentionmapp, that are also free for researchers.

Socioviz is a free online platform for Tweeter, which enables data collection about tweets and automatic reporting on: top ten most frequent hashtags, top ten most active accounts and top ten most influential accounts. Visualization abilities of the platform also help researchers gain insights on accounts network dynamics and hashtags network dynamics, and also, on user-profiles influence and interactions. Socioviz has been used for scientific research, prior to this study, by Adi (2015) to analyze the usage of "public relations" on Twitter, after the user-benefits of this platform were discussed and endorsed by Anoop, Asharaf and Alessandro (2015) in a computing journal. Automated data-analysis is used to gain insight over the global discussion topics regarding #statistics, mainly through 100 tweets and messages collected in multiple periods (January-April 2018) and waves (from 1-2 days to 1-4 weeks); the collected data is then clustered around the main emerging themes and assessed after associated keywords or influential hashtags.

Likealyzer is a tool mainly used in this study as social widget for Facebook, which analyzes rich sets of data, treating systematically data and text-mining literature. The analysis includes tags, communication patterns, specific annotations and keywords, in order to categorize user-expressed subjective opinions, insights or perspectives about a certain

subject assessing information like the number of followers, the page's activity and performance compared to other similar pages. With the help of this free platforms we can see top performing pages in public administration, from Romania. The analyzed pages were "Institutul National de Statistica" (National Institute of Statistics) in Romania and other top ranked administrations' official fan pages.

Discussions

Jurgen's findings (2012) suggest that hashtag record and trace the rise and fall of current issue interest within a network. According to this affirmation, the present paper first looked at the hashtags used the most in conjunction with #statistics, broadly on the social media. Hashtagify.com analysis suggested top three associated hashtags, by popularity being #BigData #Marketing and #DataScience, as by correlation point of view being #MarketResearch #mrx and #marketing. From a first look, international interests regarding our focus keyword are associated with trends in data science, marketing insights but also medical statistics.

Socioviz reveals that the hashtags used mostly in association with #statistics are #datascience, #machinelarning, #london and #sadiqkhan. Also, conjunction emerging themes around #statistics are about Data - #bigdata, #ai #datamanagement, #computing; Mining - #lithium, #bitcoin; Employment - #jobvacancy. Emerging topic also derive from prior events such as international conflict - #saudi #yemen, the launch of trailer of Game of Thrones 7 (GOT) #got7 or current holidays - #easter. When #statistics and #datascience are used in tandem the tweets are generally consistent to the theme and may include tips or best practice articles. Additionally, the balanced mixture between tweets and re-tweets (re-posts) suggest that the messages are considered both valuable to share and interesting. On another note, there is still a lot of association between #statistics and other hashtags that are forced, spamming and attention-hunting. Hashtags that include #london #newyork #marketing #apps #sports #imaging #lightning, may include potentially misleading associations but it also shows just how vast the domain really is and that data can be connected to topics like: sports rankings, whether previsions. Intentionally misleading associations come from the global trend of being an influencer[3] in a community. Sensationalism is a factor that impacts on the audience, no matter the channel. Data regarding top influencers in #statistics tweets suggest a big rate of misleading associations with people that are not professionals of the statistics domain, either organizations non-related to data dissemination nor production.

@babbyvietcong – influencer – over 6k followers and 15 k tweets, mostly reposts emotional content for nurturing its followers.

@easyfreshglobal – Logistics Company, software solutions for fresh products' handling…#statistics about transportation, commerce or production.

@fourtnitegame – BattleRoyal Gaming company… #statistics about game performance.

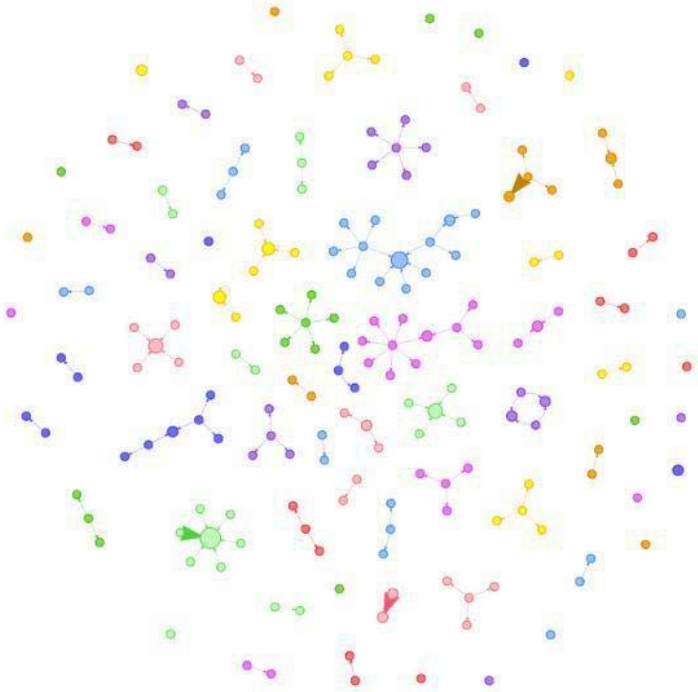
Based on the collected data, #statistics is a mostly English and North-American topic hashtag, although, this might be related to the number of active users in the different regions.

Figure 1. *Top 10 users and their topics associated with #statistics, during January 1- April 4*

N ⇕	Id ⇕	User ⇕	Data ⇕	Text ⇕	Mention ⇕	HashTag ⇕
1	980891883093274624	@GoDataAnalytic	Mon Apr 02 14:37:03 CDT 2018	RT @KirkDBorne: Top posts this past week in #BigData #DataScience #MachineLearning at @DataScienceCtrl https://t.co/EwMgEr1Gaz #abdsc #AI #?	@KirkDBorne @DataScienceCtrl	#BigData #DataScience #MachineLearning #abdsc #AI
2	980891870065840131	@CrannTim	Mon Apr 02 14:37:00 CDT 2018	RT @PeterSweden7: Swedish bureau for crime statistics say that they are not going to gather data on criminal suspects ethnic or migrant bac?	@PeterSweden7	
3	980891826520449024	@NiNiasel	Mon Apr 02 14:36:50 CDT 2018	repeat sex offenders statistics gallery leabo teen https://t.co/DaKZIVGWjR		
4	980891801908326401	@amicsta	Mon Apr 02 14:36:44 CDT 2018	To be clear, it's not that those things can't be important. I just think they are covered by the other statistics.? https://t.co/rlGO5d0B0n		
5	980891727883104257	@mrcrosaco	Mon Apr 02 14:36:26 CDT 2018	I?m pretty excited that my first class of students ever will be graduating in a couple of months, but words can?t s? https://t.co/zazoPBqg0x		
6	980891643086246896	@InteractiveSol1	Mon Apr 02 14:36:06 CDT 2018	April is Mathematics and Statistics Awareness Month https://t.co/4xlVBDrG1P https://t.co/7i1VBq9DUo		
7	980891619019907073	@blinkjackie	Mon Apr 02 14:36:00 CDT 2018	@choiseunghuyns Idnt even kno his name anyways its the 1 who talks like jacob statistics	@choiseunghuyns	
8	980891604385914580	@patrickfdelaney	Mon Apr 02 14:35:57 CDT 2018	For everyone out there using April 2nd to celebrate the anniversary of the Foraker Act, which of course gave Puerto? https://t.co/KAovsVmwoL		
9	980891597440192513	@nedzy83	Mon Apr 02 14:35:55 CDT 2018	Incredible YouTube Statistics 2018 | 50 YouTube Facts: https://t.co/wNalLTpp1C via @YouTube	@YouTube	
10	980891564720443394	@nedzy83	Mon Apr 02 14:35:47 CDT 2018	I added a video to a @YouTube playlist https://t.co/wNalLTpp1C Incredible YouTube Statistics 2018 | 50 YouTube Facts	@YouTube	

Source: Socioviz.

Figure 2. *Cluster of emerging themes associated with #statistics, during January 1- April 4*



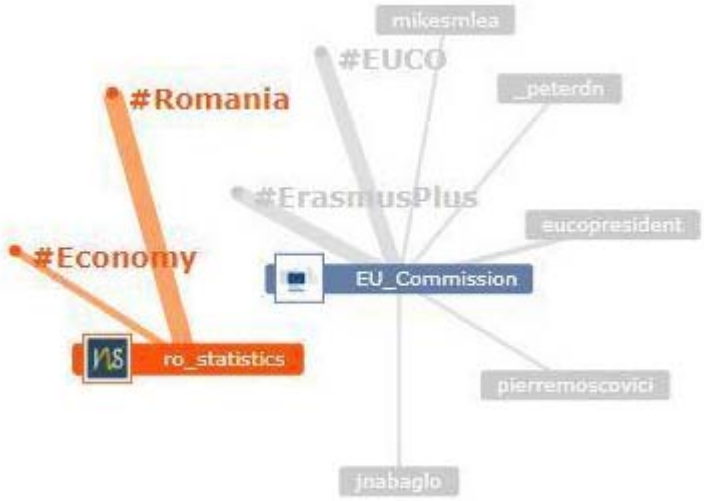
Source: Socioviz.

In order to properly asses the usage of #statistics within relevant content for Romania, another analytics tool was used to scrape through data in refined searches, locally. Foller.me Foller.me provides an activity summary of any public Twitter account based on its most recent 100 tweets. The Foller.me analysis includes the accounts mentioned most often, the most used hashtags, the links and domains shared the most together with information on the joining data, time zone, number of followers and following, followers' ratio for the account. Observation of Romanian accounts' communication, interaction and sharing patterns suggests that @ro_statistics, the official Twitter page of the Romanian official data provider is not sufficiently popular nor does it use #statistics as a primary communication strategy on this channel.

Compared to the potential of over 300 thousand unique active users on Twitter in Romania (manafu.ro, 2015), @ro_statistics currently registers just 536 followers. The account, although active for 3 years, has a number of 53 tweets, very low compared to an average page's expectations. In essence, there is still a long way to reaching the true potential of this communication channel for the Romanian official data producer.

Mentionmapp analytics tool, which allows researchers to see how certain hashtags and accounts converge in conversations across the network. Dynamics retrieved, also show a low level of mentions when associating #statistics with #Romania hashtags.

Figure 3. *Cluster of associated hashtags and users in Romania, collected via Mentionmapp during this study*



Data assessment from Facebook networking platform is achieved through the platform's Analytics tool. Collected information reveal top pages that use #statistics in their message strategy, at global level.

1. **European Statistics** – European Government organization. The official page of the European Statistical System (ESS)
2. **Statistics by Wiley** – USA Publisher. Educational products about mathematics and statistics

3. **Statistics –** Romanian Education organization. Platform dedicated to all statistics professionals or enthusiastic.
4. **Statistics Without Borders –** USA Non-profit organization. Apolitical outreach group.
5. **Office for National Statistics –** UK government organization. Official statistics producer.

Considering that top five most popular pages are dedicated to statistics domain, we may assert a good consistency of image related to this hashtag. It is satisfactory to see one Romanian page in the most popular top. However, one might expect that official data producers would disseminate the most and the best on Facebook, information regarding statistics. Discussion are, on the other hand subjective, because without more segmented information regarding each pages' engagement and reach one cannot properly asses this ranking objectively.

Data analysis also focuses on top performant posts that use #statistics, worldwide.

1. **Statistics from A to Z**, (September 14, 2017). *#statistics Tip of the week: Test Statistics: Which to use When? (article link)*
2. **This is Statistics**, (September 20, 2017). *Want to help create safer communities? Join the first ever Police Data Challenge! #statistics (questionnaire link)*
3. **Statistics from A to Z,** (February 1, 2018). *#statistics Tip of the week: F is a Test Statistics which is the ratio of two variances. (image)*
4. **Rebel Circus,** (July 9, 2017). *What do you think of these #statistics? (magazine article link– This is how long drugs stay in your urine)*

Based on the insights, most of the topics relate to the statistic domain and gain popularity depending on the inspiration (i.e. strategy) used to engage public in further reading, sharing and discussing on the matter.

Valuable insights were given also by the Likealyzer online platform, in order to complete the image created by Facebook Analytics over the global usage of #statistics. On the platform we check-out how public administrations from Romania are ranked globally, in order properly asses the local capacity and interest of social media communication. Pages are analyzed with the help of specific page-performance evaluations. A complete reports ranks (LikeRank) a page after evaluating 5 performance variables: Frontpage, About, Activity, Response, and Engagement.

The present paper mainly aims to assess the official statistics producer in Romania, considering its primary role in communicating about data and #statistics. The official page of the National Institute of Statistics (@INSTATISTICA) is ranked 72, with a score considered "good". Report suggest there is still room to improve the image and communication dissemination strategy of the page, by slightly growing its activity (by posts) and engaging more to its followers. The platform also reports the top ranked similar pages, categorized as Public & government service, from Romania, respectively The Romanian Government (Guvernul Romaniei), The National Cultural Institute (Institutul Cultural Roman) and The County Council of Suceava (Consiliul Judetean Suceava).

Figure 4. *Likealyzer - top LikeRanked Romanian 'Public and Government service' pages*

Rankings suggest a good performance of the fan page, however strategy of communication and interactivity has still ways of improvement by engaging its audience in discussions over the topics of interest and unexploited community building around the institution.

As the a of data analyzed is small compared to the entire amount of data available, this paper is exploratory in nature, focused as well as on testing the methodology of data collection and analysis, and also on the identification of emerging topics of conversation, of discourse, and of performance and strategy of both statistics producers and users, concerning statistic domain. This paper acknowledge the sad truth of lack of conversations on social media. Public administrations, hence the official statistics producer in Romania, should be focused on raising interesting discussion topics, planning and continuing specific communication and dissemination strategies for social platforms. This, on one hand, would enhance organizational trust and transparency but also, would provide a new lead in promoting statistical culture among public in a pleasant, relaxed environment.

This paper has aimed to answer specific questions about topics and popularity of #statistics among social media users by. IN doing so, it has used extensive collecting periods of time with the help of several analytics tools, in an innovative exploratory manner. Combining social media data scraping and analysis free tools with qualitative assessment of discourse, performance and observation of behavior patterns displayed social media users, on Facebook and Twitter channels. The research has shown limited conversation and that the hashtag is only partially used correctly by the official data producers in Romania, for content relevant to practice. Much wider questions about how to properly analyze data with performant social media analytics and intelligence, leave room for further, more extensive studies regarding the immense capacity of information the online can provide. "Tweet others the way you want to be tweeted" (Kent, 2015) may seem superficial but it actually reveals the way barriers and rules in the physical are valid online.

Needless to say, there is need for further research to continue to explore public discourses on social media and extend the analysis from users and behaviors to issue topics related to #statistics. Moreover, there is a need to continue to use innovative methods of data collection and accurate analytic tools, adapted to fast-track times like today, enabling researchers to understand and react to social media phenomena.

Notes

(1) Digital Diplomacy focuses on offering employees in public administration professional training in using social media as well as other specific instruments for a digitalized governance.

(2) E-Administration focuses on offering employees in public administration professional training in using social media as well as other specific instruments for a digitalized governance.

(3) An influencer is an individual who has the power to affect purchase decisions of others because of his/her authority, knowledge, position or relationship with his/her audience.

References

Adi, A., 2015. #publicrelations on Twitter: Pushers, Talkers, Influencers on Spamming PR and Job Hunting. *Romanian Journal of Communication and Public Relations.* 17 (3), pp. 41-57.

Bertot, J.C., Jaeger, P.T., Hansen, D., 2012. The impact of polices on government social media usage: Issues, challenges, and recommendations. Government Information Quarterly 29, pp. 30-40.

Brown, S.A., 2008. Household technology adoption, use, and impacts: Past, present, and future. Information Systems Frontiers, 10(4), p. 397.

Duggan, M., Ellison, N.B., Lampe, C., Lenhart, A. and Madden, M., 2014. Demographics of Key Social Networking Platforms. Pew Internet.

EACD & EUPRERA, 2017. European Communication Monitor Chart Report, Quadriga, Berlin

Goransson, K., Fagerholm. A.S., 2016. Visual Strategic Communication – an Interdisciplinary New Perspective, Amsterdam. Retrieved from <https://doi.org/10.1108/JCOM-12-2016-0098>

Highfield, T., 2012. Talking of many things: using topical networks to study discussions in social media. *Journal of Technology in Human Services*, 30(3-4), pp. 204-218.

Jürgens, P., 2012. Communities of communication: making sense of the "social" in social media. Journal of Technology in Human Services, 30(3-4), pp. 186-203.

Mergel, I., 2012. *The Public Manager 2.0: Preparing the Social Media Generation for a Networked Workplace*. Journal of Public Affairs Education, pp. 467-492.

Nicolescu, I.A, Mirica, A., 2015. Social media in Romanian public administration – case study: National Institute of Statistics. Revista Romana de Statistica – Supliment nr 9/2015.

Porter, J., 2008. Designing for the Social Web. Thousand Oaks, CA: New Riders Press.

Raskin, J., 2000. The humane interface. Addison-Wesley, Berkley.

Saffer, A.J, Sommerfeldt, E.J, Taylor, M., 2013. The effects of organizational Twitter

interactivity on organization–public relationships. Retrieved from <https://doi.org/10.1016/ j.pubrev.2013.02.005>

Verhoeven, P., Vercic, D., 2017. Organising and communicating in hypermodern times, Communication Director, Quadriga, p 38-42.

Website: www.statista.com/statistics

Website: www.hashtagify.me/hashtag

Appendix

Figure 1. *April 2018 -Top hashtags associated with #statistics, collected via Socioviz*

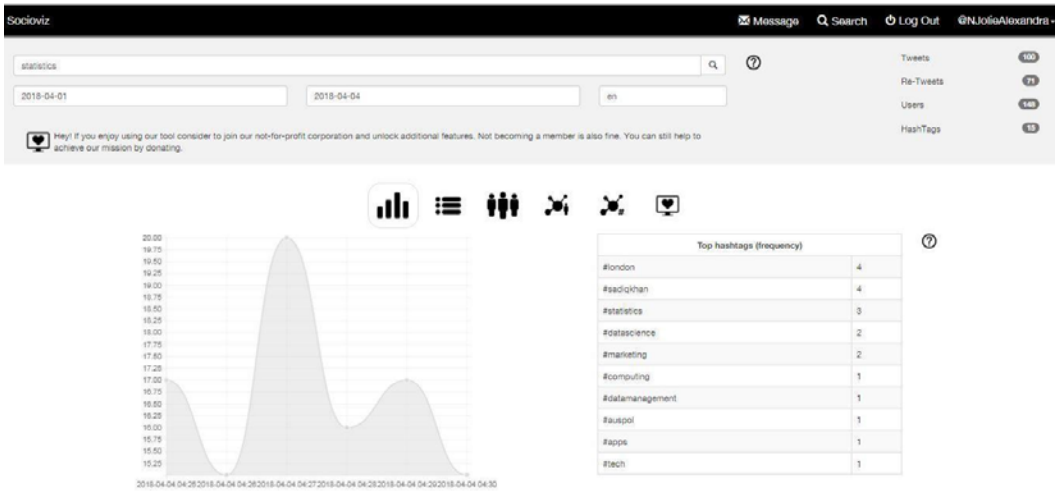
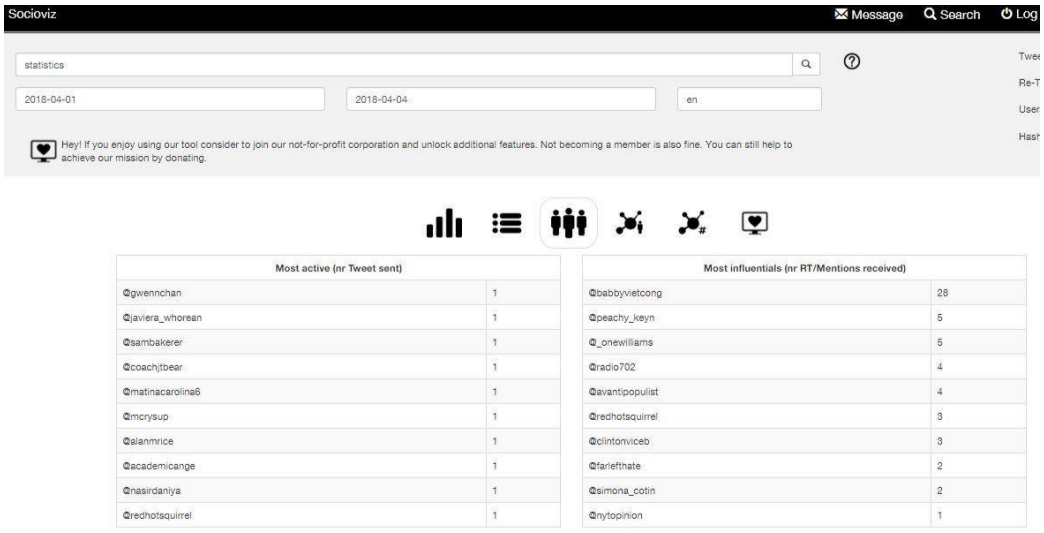


Figure 2. *April 2018 - Most active and most influential users, collected via Socioviz*



Most active (nr Tweet sent)	
@gwennchan	1
@javiera_whorean	1
@sambakerer	1
@coachjtbear	1
@matinacarolina6	1
@mcrysup	1
@alanmrice	1
@academicange	1
@nasirdaniya	1
@redhotsquirrel	1

Most influentials (nr RT/Mentions received)	
@babbyvietcong	28
@peachy_keyn	5
@_onewilliams	5
@radio702	4
@avantipopulist	4
@redhotsquirrel	3
@clintonviceb	3
@farlefthate	2
@simona_cotin	2
@nytopinion	1

Figure 3. *January 1- April 4 2018 - Top hashtags associated with #statistics, collected via Socioviz*

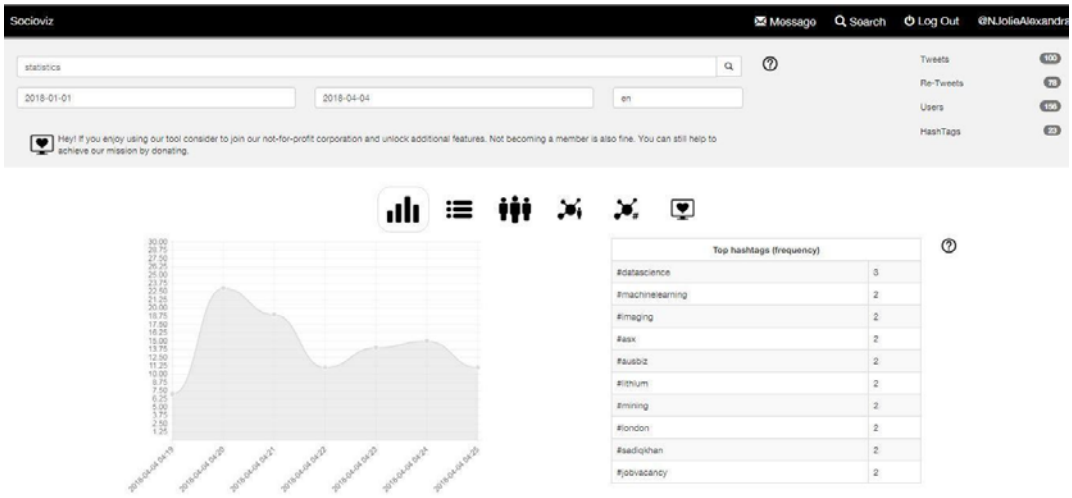


Figure 4. *January 1- April 4 2018 - Most active and most influential users, collected via Socioviz*

Most active (nr Tweet sent)	
@premuimpapers	2
@statshelpers	2
@hellsyswinged	2
@nedzy83	2
@alexnmoldovan	1
@patrickfdelaney	1
@lil_alan420	1
@anujbanaita	1
@propergarbage	1
@sonickydon	1

Most influentials (nr RT/Mentions received)	
@fortnitegame	6
@kylekashuv	5
@simona_cotin	4
@independent	4
@petersweden7	3
@intellfusion	2
@muslimiq	2
@mehdirhasan	2
@foxnews	2
@cnn	2

Image 1 and 2. *Hashtagify.me analysis of #statistics popularity and correlation, worldwide*

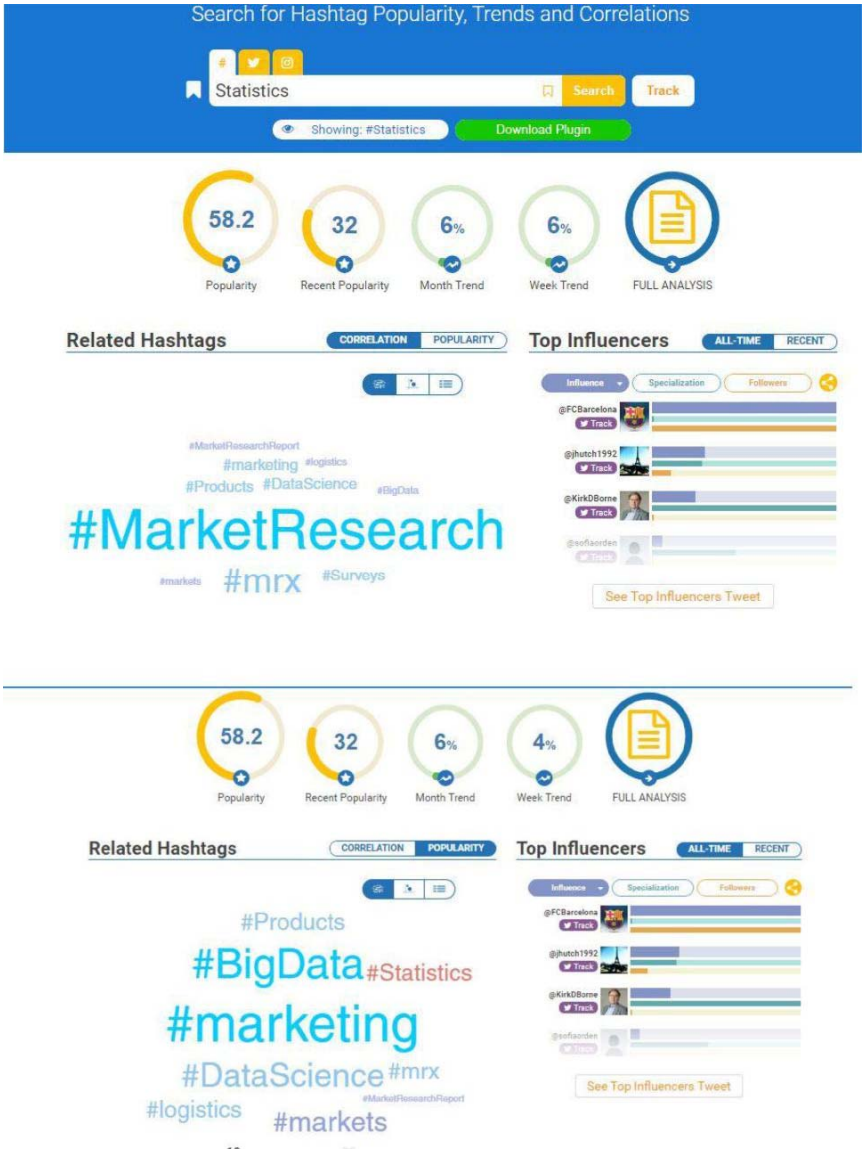


Image 3. *Likealyzer Report on @INStatistica Page*

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 174-179

The role of the communicative process in a public institution

Constantin Ciprian IACOB
University Valahia of Targoviste, Romania
av_iacobconstantinciprian@yahoo.com
Mihaela Loredana BĂDINA (RĂDULESCU)
University Valahia of Targoviste, Romania
mihaelaradulescutgv@yahoo.com

Abstract. *The communication process is represented by the strategies of the employees of the company and their involvement in the process. The successful communication factor is based on teamwork. Over time, there has been no communication management that can be compared to what has been developed in the past. The same can be said about other branches such as marketing, human resources or finance. Communication, as a phenomenon of modernity, creates a mobilizing effect. This phenomenon builds a new image and a new vision of the corporation, supporting its efforts to fulfill the responsibilities assumed at the level of a community. Considered as a new approach through the whole of development and management techniques and technologies, this is not a project with full autonomy. Instead, it integrates into the social sphere and intervenes at a certain level, that of relations, depending on their structure and functioning.*

Keywords: communication, organization, stimulant, production.

JEL Classification: D83.

On the background of permanent changing of the current environment, the complex communication process becomes more and more difficult. Decision-makers are constrained by the environment in which they act and depend on communication and on information received.

Although the communication process is a dynamic and constantly evolving process, it is strongly influenced by a series of internal and external factors of legal institutions, with a strong impact on their performance.

Without communication, human interactions would be impossible, as long as the human relations can be defined as communication interactions. ”Everything around us is communication. Nothing should be considered isolated, everything and every being exists and is found in a set of elements that interact.”

The Modern age represented a huge development of communication in all its aspects, technical-scientific progress favored the emergence of the Internet, telephone, fax, enhancing communication between individuals and especially between communities and institutions.

Communications is an essential factor in the life of each individual and each organization, being useful in listening, informing, creating an image and an organizational culture. The communication also determines the employee behavior, their attitude regarding the institution, as well as the feeling of trust and pride.

The bind of everything that is going on in a modern, successful organization/institution is communicating. Without communication, the activity and life as a whole in an organization/institution but not only have become almost inconceivable. The communication made through modern technologies (NTIC) has become a necessity and has as result the increasing of management’s performance of legal institutions.

In time, specialists from various domains developed a series of models that define the communication process. Harold D. Lasswell proposed, in 1948, the following logical approach that should take place in a communication process (Lasswell and Bryson, 1948: p. 117): a) who communicates?; b) what communicates?; c) through which ways?; d) to whom communicates?; which are the effects?

Lasswell's theory is considered to be a classic one, specific to all communication categories; mass communication; sociology; psychology and political science. In the model proposed by Lasswell, the answer to these questions involves identifying the components of a communication process: communicator - message – channel – receiver – effect. This model has been improved by American engineer Claude E. Shannon (Shannon, 1948: pp. 379-423, 623-656), becoming a landmark for many specialists. It includes five elements described in a linear way: information source – sender – channel – receiver – addressee.

Also, the model proposed by Claude E. Shannon was later modified, in addition to the above mentioned elements, the notions of "noise" (later connected with the concept of entropy and vice versa of entropy negative) and redundancy (repetition). Entropy (noise) in communication theory corresponds to those external factors that distort a message, interferes with it, and leads to its reception in a form other than that in which it was

transmitted. Negative entropy is encountered in cases where an incomplete or distorted message reaches the receiver, which leads to the difficulty in discerning the message.

The static nature of C.E. Shannon's model was offset by the concept of feedback through which the interaction of the targeted audience is introduced into the model during communication so that the model becomes more dynamic (Shannon and Weaver, 1949: pp. 122-124).

Later, C. Shannon's ideas were interpreted by R. Jakobson, and the new model included the following elements: the transmitter/sender, the message and the receiver (Jakobson, 1960: pp. 350-377). They are connected with the message content, the transmitted information, where the contact element is connected to the encoder.

Tom Duncan and Sandra E. Moriarty (Duncan and Moriarty, 1998: pp. 1-13) have developed a communication model on three key points, as follows: message – stakeholders – interactivity. The model is built on relationship-building through marketing communication and captures the interactivity of the messaging sources in an organization and its various stakeholders.

Modern optics says that "the communication process is a dialogue between the company and its customers, which takes place during the pre-sale, consumption and post-consumption stages" (Kotler, 2003: p. 806). The communication model proposed by Philip Kotler highlights the factors that contribute to the effectiveness of a communication process. First of all, broadcasters have to codify their messages according to the target audience they are intended for and how they should be decoded. Secondly, the broadcasters have to select those effective ways of communication, whereby the message is sent to the receiver, so that the organization receives a response from him, in the sense of a favorable change in the purchasing and consumption behavior (Kotler, 2003: p. 806).

The communication model proposed by Camelia Mihart (Mihart (Kailani), 2012: p. 124) involves the relationship between the following components: integrated marketing communication – consumer behavior – purchasing decision making process. Integrated marketing communication allows creating and maintaining customer relationships, ensuring the control and strategic influence of transmitted messages, and, ultimately, encourages dialogue. A product or a brand exists in the mind of the consumer not only because of experience with it, but also because of the medium and long-term effects that a message, built as a result of the consumer preference assessment, is transmitted simultaneously through as many channels of communication. Consumer behavior is made up of five dimensions through which the specialists define this process: perception, information/learning, attitude, motivation and effective behavior. The purchasing decision making process involves several steps whereby consumers decide to purchase products and/or services, such as: need for recognition, search for information and alternatives, evaluation results and post-purchase feedback. Clearly, the stages of a buying process are influenced by product specificity, the target audience, and the peculiarities of the five elementary processes, already mentioned, that drive consumer behavior.

Since the traditional communication models fail to capture the attention of the targeted audience, the conceptual communication model proposed by the author of the present

research project changes the order of the stages of a communication process in a different sense. It starts from the premise that any communication approach should start from the consumer (*outside-in*) – in order to identify the stimulus and factors that play an important role in choosing and buying a product – and continue inside the company – in order to communicate, through the communication mix tools, those messages corresponding to a well-defined targeted audience, by which it is informed, convinced and determined in a favorable way action for the company.

Nowadays, the preoccupation for the analysis of communication highlights its complexity. If for a regular person the communication means, mainly, information exchange, for a specialist in communication sciences, that concept has different and varied signification. Regardless of the significance of the term, this revolves around the concept of information and management of interest. These terms define the communication content. Its reasons, aims, sense are often different, according to the implied actors.

We will highlight a single quote:

”Broadly, the communication represents the process of sending a message in an encoded way through a communication channel to a receiver in order to be perceived” (Burcin, 2009: p. 8).

This definition was chosen starting from a common elements series that is found in each definition given, such as: communication is the process of sending information, ideas, opinions, or from one individual to another, either from one group to another; communication is an attribute of the human beings; there is no activity that can be made without communication, neither the common ones, nor the complex ones.

That term called *communication* is an essential element of life. In order to achieve our goals, we need to understand the basics of the communication as accurately as possible. By doing a parallel with other sciences, the way to communicate can be compared to the exchange of particles from one side of the space elsewhere, taking different forms like object, message or idea.

If we should fit communication into an exact science, its formula would consist of several factors: cause + distance + effect + intention + attention + reproduction + understanding.

Through this "magic formula" we can understand the functions of all the factors and by combining it we can better understand the whole. In order to understand the importance of communication, the knowledge approach needs to be deepened.

The fundamental factors from which the defining ideas begin are framed in several models, such as the "elementary model of communication", "extended communication model" or "complex communication model" explained by schemes or figures. Other examples of communication between the transmitter/sender and receiver are found in the examples given by Gongrand, imposing himself by two types of models: the simple and the extended ones.

Communication is based on: structures and steps consisting of: need for compatibility, elimination of errors, selection of a symbol, decoding process; features and particularities such as adaptability, character, continuity.

Conclusions

The functions of communication have a great significance in knowing the communication domain, which in fact highlights its close relation with the environment and the types of communication, which by its numerous classifications bring into account its vital importance.

The scope of communication can also define the management:

”Communication management is a holistic approach of meeting a company's communication needs to communicate with internal and external intermediaries and target groups. Target groups and intermediaries are intradependent on themselves and interdependent to each other."

If we are talking about managerial communication, we can bring into discussion several issues related to the communication activity within the firm, which is a very important factor from the point of view of stimulation in productive activity.

There are kinds of communication with connotation and scientific importance such as advertising communication, financial communication and corporate communication.

From the point of view of significance as a model of work organization or strategy, communication is a basis for solving the proposed targets.

The most important factor, with the greatest influence on management, is communication. Without this element, management cannot operate in any field.

Due to the development of management, communication has acquired new forms, appropriate to management, forming the concept of managerial communication. Also, any experienced manager needs to approach a certain type of effective communication in the management process. A good example of a relationship between management and communication would be the interaction of an organization's manager, both with the internal and external environment. When we say the external environment we mean collaborators, clients or possible negotiations that they can have with them.

So, at both managerial and internal levels, communication has a positive and effective influence on how the organization operates, managerial communication being used frequently by individuals working in the management department.

References

Claude E. Shannon, 1948. A Mathematical Theory of Communication, *Bell System Technical Journal,* Vol. 27, pp. 379-423, 623-656.

Iacob Silvia Elena, Hristache Diana Andreia, Paicu Claudia Elena, 2011. „The implications of institutional communication on a regional level", The 8th international conference „European Economic Recovery and Regional Structural Transformations", The Romanian Regional Science Association Babeş-Bolyai University of Cluj-Napoca Regional Development Agency North-West, CD*, Ed. Risoprint*, Cluj-Npoca, disponibil la: <http://www.econ.ubbcluj.ro, www.rrsa.ro>

Iacob Silvia Elena, Iacob Gheorghe Sebastian, 2015. Communication, source of management improvement through human capital interaction, in the fifth International Conference Globalization: Business, Finance and Education, JFAMM-3-2015, Editura Perun Sprint, Sofia, Bulgaria, pp. 67-71, <http://www.psp-ltd.com/JFAMM_24_3_2015.pdf>

Lasswell, Harold, Bryson, L., The Structure and Function of Communication in Society. The Communication of Ideas, *Institute for Religious and Social Studies*, 1948, New York, p. 117.

Milo, Katie; Yader, Shanon; Gross, Peter; Niculescu-Maier, Ştefan, 1998. *Introducere în relaţii publice,* Ed. Nim, Bucureşti.

Mucchielli, Alex, 2008. *Comunicarea în instituţii şi organizaţii,* Ed. Polirom, Iaşi.

Newsom, Doug; Turk, J. van Slyke; Kruckeberg, Dean, 2003. *Totul despre relaţii publice,* Ed. Polirom, Iaşi,.

Pailliart, Issabelle, 2002. *Spaţiul public si comunicarea,* Ed. Polirom, Iaşi.

Pânişoara, Ion Ovidiu, 2008. *Comunicarea eficientă,* Ed. Polirom, Iaşi.

Sullivan, P.J. and Feltz, D.L., 2001. The relationship between intrateam conflict and cohesion within hockey teams, *Small Group Research*, Vol. 32, pp. 342-355.

Sutton, W.A., 1987. Developing an initial marketing plan for intercollegiate athletic programs, *Journal of Sport Management* 1, pp. 146-158.

Sutton, W.A., Irwin, R.L. and Gladden, J.M., 1998. Tools of the trade: Practical research methods for events, teams and venues, *Sport Marketing Quarterly*, Vol. 7(2), pp. 45-49.

Zacharatos, A., Barling, J. and Kelloway, E.K., 2000. Development and effects of transformational leadership in adolescents, *Leadership Quarterly*, Vol. 11, pp. 211-226.

Zamfir, Cătălin, 2005. *Inceritudinea: o perspectivă psihosociologică,* Ed. Economică, Bucureşti.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 180-186

Brexit effects on migrant labor force within Great Britain and European Union cooperation

Grigore Ioan PIROȘCĂ
The Bucharest University of Economic Studies, Romania
grigore.pirosca@economie.ase.ro
Cătălin Corneliu GHINĂRARU
The National Institute of Research on Labour and Social Protection, Romania
ghinararu@incsmps.ro
Liana BADEA
The Bucharest University of Economic Studies, Romania
liana.nutu.badea@gmail.com
Daniela VÎRJAN
The Bucharest University of Economic Studies, Romania
daniela_virjan@yahoo.com
Irina PETRESCU
The Bucharest University of Economic Studies, Romania
irinapetrescu84@yahoo.com
George Laurențiu ȘERBAN-OPRESCU
The Bucharest University of Economic Studies, Romania
george.laur.serban@gmail.com
Alin STANCU
The Bucharest University of Economic Studies, Romania
alinstancu@gmail.com
Manuela Liliana MUREȘAN
The Bucharest University of Economic Studies, Romania
manumuresan@gmail.com

Abstract. *The rationale of this paper research concerns on economic and social consequences over the future of migrant work force within the United Kingdom, or the foreign labor force due to arrive after the Brexit. As an economic policy gap is shaping the future relationship between United Kingdom and European Union, the future economic outcomes would find a hard time in matching the markets demands on both sides of English Chanel, with consequences of European and Briton work force, along with the migrant work force which complete them. There is still huge interest to understand and foreseen the economic afterwards of such and unexpected and important event as the Brexit, with no precedent in the modern economic history. Considering the evidence on this paper, the approach puts forward new perspectives on the integration of migrant labor within an important economy leaving an agreement.*

Keywords: Brexit, migrant work force, economic agreement, European Union, economic policies.

JEL Classification: A12, A13, B13, B41, E17.

1. Social and economic outlook in United Kingdom regarding the migration process

Although Romania became a state member of European Union in 2007, Romanians have not been granted to full labor rights before 2014. Migration impact on a labor market could be analyzed through three paths: first, professional background of the immigrants could be useful and demanded more or less in the destination country. This leads to the availability of immigrants to accept jobs unrelated with their qualifications, namely to under evaluate themselves by taking open position within jobs which are below their education, lowering the payment in these fields, accordingly with negative consequences to native workers. Second, immigrants have to face barriers as entering in a foreign labor market, whereas this was not an issue in their homeland labor market. Discrimination from employers and legal barriers are the most common within the immigrant cohorts looking for jobs. At last, the migration process is a selection process by itself, because immigrants keep chances to find a job, whereas the workers who prefer to avoid migration, will not stand any chances. Currently, British electorate is devised, and there is no a clear path to follow for United Kingdom after leaving the European Union. As an example, 82% of the British people who voted to stay, are pessimistic, even 24% of the brexiteers think that things will not be good as they hoped when have chosen to leave the union. Only half of the brexiteers are content on the statue of the negotiations with the European Union over the Brexit (Campbell, 2015).

In June 2016 the net immigration level in United Kingdom was about 335000 persons, while Prime Minister James Cameron had promised a net level not bigger than 100000 persons a year. After his resignation, the electorate has been expecting an enlargement of this target, but in January 2017, the new Prime Minister, Theresa May, has been very circumspect on these numbers. The worse discontents of the brexiteers were related on legally system and the control of the borders.

YouGov, in a survey from 2015, discovered that 10% of British would have been uncomfortable with an immigrant neighbour, and 16% of British would avoid a marriage between their sons and immigrants. However, paradoxically, British are not hostile to immigration. British Future, a think-tank, revealed that 84% of British, respectively 77% of brexiteers, agree the presence of immigrants after the Brexit. Another interesting statistics revealed the fact that British think that up to 31% from total population from United Kingdom is born outside the country, whereas the real level is only of 13%.(1)

A strange phenomenon is the lump of labour fallacy (Kremmerling, 2015). According to this, people tend to think that in an economy the labour demand is frozen, therefore there is a zero sum game in finding a job. Thus, every new entry on the labour market put pressure on the existing workers and eventually would take somebody else job. This is the worst nightmare of the citizens of a country which is destination of immigrants searching better life. The fear of immigration, according to Migration Advisory Committee (MAC), can be summarize as follows:

- Pressure on labour market and high competition in finding jobs.
- Over population.
- Pressure on the state budget.
- Pressure on social security.
- Equilibrium lost on real estate market.

A second set of fears has social and cultural backgrounds:
- Crime.
- Lost of national identity.
- Difficulty of integration of the newcomers.
- Unequal wealth.

From 1983 to 2017, in United Kingdom employment rate increased from 63.9% to 74.8%, whereas the unemployment rate lowered from 11% to 4.3%. In the context of immigration uprising, there is no doubt that economic indicators improved to unprecedented levels (Rienzo, 2017).

Related on Brexit and labor market, one of the most important issue regards the flexibility. Great economist Robert Solow[(2)], in an article within Keynes Lectures in Economics seminar, from Massachusetts Institute of Technology, linked this concept to the efficiency on the market. In addition, efficiency on the labor market is matching as good as possible the open positions with the job seekers. The inverse relation between unemployment and open positions is known as Beveridge curve (Hobijin and Șahin, 2012), with high unemployment and little labor demand during economic recessions, and low unemployment with high demand for labor during economic booms. At the current, in United Kingdom, due to favorable world economic outlook, Romanians enjoy the second case of Beveridge curve, therefore in this particular case it can be forecasted that Romanians with high skills and education will be easily integrated in British labor market (Solow, 1998). Nevertheless, labor market flexibility is affected by heterogeneity (Pizzinelli and Speigner, 2017).

Regarding employers preferences, 20% of recruitment agencies admitted that they rather prefer to collaborate with immigrant workers, and 4% revealed the fact that they do this often. However, 54% admitted that in the area of constructions (where Romanians have a significant presence) they prefer British workers, and 20% stated that they always prefer the British workers (Rienzo, 2017). Nevertheless, there is a lack of skilled personnel within social and medical assistance fields. There, too, Romanians can fill the lines of qualified personnel. Recruitment agencies call low skilled workers especially for logistics and packing services, usually in East Midlands and Wales.

2. Brexit impact on migration

British post-Brexit immigration system is aiming the improvement of the presence on labor market of resident population. Industrial strategy of the government represents one of the most important policies on immigration. This strategy can be summarize as follows:
- Ideas (the most innovative economy in the world).
- People (good jobs and better revenues for everybody).
- Infrastructure, business (best place for a start-up).
- Places (wealthy communities in United Kingdom).

In spite of the growing immigration within Euro area in the last 15 years, economic impact was relatively low, and the impact was mainly the growth of population. Immigration in

United Kingdom did not injure the statue of the natives, nor significantly improved their lives. It is important to underline that the high skilled immigration has a better impact than the low skilled immigration. Razin and Wahba (2015) stated that free mobility is usually linked from low skilled immigration.

There are three categories of migrant workers for the British policy makers:
- imigration for work.
- imigration for education.
- imigration towards family.

The tax on immigration abilities is not commonly accepted within employers, especially because is seen as deceptive, because there is no clear path how the revenues are guided towards learning, therefore the tax on immigration abilities is merely a tax on immigration. The screening of labor market for residents claim to the employers to prove that no resident was able to fill an open position for a job, to assure the voters that the residents keep the first chance in the search for a job.

The temporary labor market for agriculture is completely separated from resident labor market. According to ONS, 99% of temporary agricultural workers are coming from European Union, therefore is so hard to imagine the future of British agriculture without them. There is no other field of British economy with so many immigrant workers. There is a huge dependency on immigrants workers, and the perspective of contingency upon their numbers will probably bring hazardous outcomes for the British agriculture.

3. Romanian in the light of economic policies on British labor

Given the large number of immigrants, British labor market is perceived by the Government by categories of country origin of immigrants. In 2017, Romanian were the immigrants with the highest level of employability, 92% for men, 72% for women. This is a performance, whereas the average employability of men originating from A-8 countries(3) was 91%, whereas the average of EU-14 countries(4) was 83% and the average rate of employability for British natives was 79%. The synthesis can be presented as follows:

Table 1. *Employability in United Kingdom after the origin of labor force*

Zone	Average hourly wage (*pounds*)- men	Average hourly wage (*pounds*)- women
A2	92,36	76,47
Oceania	91,22	78,41
A8	90,52	75,07
EU	87,63	72,33
India	86,15	59,34
EU14	82,62	68,99
North America	82,07	64,92
Africa	80,35	64,57
Pakistan	12,50	28,64
UK-natives	78,87	72,06

Source: https://migrationobservatory.ox.ac.uk/resources/briefings/characteristics-and-outcomes-of-migrants-in-the-uk-labour-market/

There are no substantial proves that Romanian immigrants would put pressure and menace the chances for jobs for British natives. Generally, their entry on British labor market will not create waves whatsoever and no harm effects will be registered. Nevertheless, this is true mostly for British workers with high skills. Not only they won't be harmed, they even will take advantage over the situation. Conversely, professional distress could arise for low skilled jobs, due to availability of Romanian low skilled workers to accept lower revenues for the same tasks. Salaries for British low skilled workers could be lowered too, and this could also be a problem, but is not specific to British economy, it is an economical standard fact. Salaries in United Kingdom still have a 6% below level comparative to the levels before economic crises from 2008. At MAC's request on the influence of immigration on average wages, The Confederation of British Industry (CBI) responded that the impact of immigration on salaries is insignificant, and they are forced to have a rigid evolution, rather than policies that control the National Minimum Wage and the national wage (National Living Wage) (Rienzo, 2017).

Immigrants from Romania are not considered a vulnerable group in terms of employability. The sensitive sector is considered to be that of immigrants from non-EU countries, with a special category being Bangladesh and Pakistan women whose employment rate in comparison to UK-born women is about one-third. Among men, employability trends remain similar to Romanians and British, but it is noted that some Romanians are willing to work in areas under their training and qualification, with immigrants from non-EU countries doing so even more. The consequence of this gap between the qualification and the actual occupation of the immigrant is that 30% of non-EU immigrants work in two of the less paid occupations: housekeeping and processing, while the British of the same category only do so 20%. Proportionally, these 10% extras from low-paid immigrants create pressure on the poorest native British. The average hourly wage according to the origin of the workers is as follows:

Table 2. *Average hourly wage in United Kingdom after the origin of labor force*

Zone	Average hourly wage (*pounds*)- men	Average hourly wage (*pounds*)- women
A2	9,22	8,33
Oceania	18,31	13,74
A8	9,43	8,22
India	14,58	12,50
EU14	14,43	11,53
Asia	11,45	9,63
Africa	11,55	10,17
Pakistan	9,50	10
UK-natives	12,50	10,23

Source: https://migrationobservatory.ox.ac.uk/resources/briefings/characteristics-and-outcomes-of-migrants-in-the-uk-labour-market/

Conclusions

As early as August 2015, Equality and Human Rights Commission analyzed relationships between employers and the workforce, more precisely the likelihood of differentiated treatments depending on the source of supply on the labor market. The report concluded that employers are subject to the rules of market freedom, being more preoccupied with

efficiency and economic indicators than with the origin of their employees. Discriminatory cases have been identified by recruitment agencies or by some employers, but these were only isolated and rare cases. It can not be a trend. More importantly, it was the discovery that in the UK labor market neither employers nor employees know the legislation well. And from this reality there can be problems that lead to discrimination. However, the UK Government's Industrial Strategy relies on highly trained and skilled people, and in this context their origin is less important. The Confederation of British Industry responded to the Migration Advisory Committee's request: "Highly qualified immigrants make an irreplaceable contribution to Great Britain, and should be well received, not rejected. We face a critical shortage of qualified staff in many sectors and professions because of which the economy is blocked. Immigration plays a vital role by supplementing qualifications and covering these gaps, which is vital for industrial strategy. Euros emigrants have a key role to play in completing these positions that support the entire economic supply chain" (Rienzo, 2017).

All academic studies concluded that immigrants do not affect the stability of the labor market. Also, Romanians who will study in the UK will enjoy equal rights in the labor market. The UK unemployment rate is at a minimum for the past 40 years, and the British government, regardless of the Brexit negotiations, will not take action that could harm this economic performance. The most important arguments in favor of maintaining the UK's opening for education are:

- The emigrants pay higher taxes than the state benefits they receive through public services.
- Without migrants, the addiction rate would increase over the next 20 years from 285 to 444. The rate would reach 404 and would impose a maximum net migration of 250,000 per year.

Different emigrants have different impacts. Those with competencies bring a plus, and this is also true for the Romanians, without discrimination. As before, Romanians will be selected by skill and skills. But the unskilled Romanians will have difficulties accessing the market because their work can be done by poor native British or by relatives of migrants already established in the UK whose access could only be allowed for the social consequences of integration families.(5)

Acknowledgements

This paper is written on behalf of the research project – Possible approaches of the EU and national policies in the context of the Romanian Presidency of the European Union Council – developed by National Institute for Scientific Research in the Field of Labor and Social Protection in Romania within the Romanian Ministry of Labor and Social Justice and Bucharest University of Economic Studies.

Notes

(1) YouGov - https://yougov.co.uk/topics/politics/articles-reports/2018/11/16/7-more-things-weve-learned-about-public-opinion-br
(2) Nobel Prize winner in Economics in 1987.
(3) A-8 countries: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia.
(4) EU-15 countries: Austria, Belgium, Denmark, Finland, France, Greece, Germany, Ireland, Italy, Luxembourg, Holland, Portugal, Spain, Sweden.
(5) This is particularly about immigrant families from India, Pakistan and the Muslim countries.

References

Aldin, V., James, D., Wadsworth, J., 2010. The Changing Shares of Migrants' Labour in Different Sectors and Occupations in the UK Economy: An Overview. In Who Needs Migrant Workers? Labour Shortage, Immigration and Public Policy, edited by Martin Ruhs and Bridget Anderson. Oxford: Oxford University Press.

Campbell S., 2015. Immigrants in the labour market and beyond, Ph. D Economics of Education Thesis, Department of Quantitative Social Science, UCL Institute of Education, University College London.

Dustmann C., Frattini, T., Preston, I., 2013. The Effect of Immigration along the Wage Distribution, *Review of Economic Studies* 80, No. 1, pp. 145-173.

Hobijn, B., Șahin A., 2012. Beveridge Curve Shifts across Countries since the Great Recession, 13th Jacques Polak Annual Research Conference, 8-9th of November– source: <https://www.imf.org/external/np/res/seminars/2012/arc/pdf/HS.pdf>

Kremmerling, A., 2015. Why the Lump of Labour Fallacy Helps Explain Some Countries Being More Anti-Austerity than others, source: <http://eprints.lse.ac.uk/71495/1/blogs.lse.ac.uk-Why%20the%20lump%20of%20labour%20fallacy%20helps%20explain%20some%20countries%20being%20more%20anti-austerity%20than%20others.pdf>

Pizzinelli, C., Speigner, B., 2017. Matching Efficiency and Labour Market Heterogeneity in the United Kingdom, *Bank of England, Staff Working Paper no. 667, August* – source: <https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2017/matching-efficiency-and-labour-market-heterogeneity-in-the-uk>

Rienzo, C., 2017. The Migration Observatory – Characteristics and Outcomes of Migrants in the UK Labour Market, University of Oxford, Oxford University Press

Solow, R., 1998. What is Labour-Market Flexibility? What is Good for?, MIT, *Keynes Lecture in Economics* - source: <https://www.thebritishacademy.ac.uk/sites/default/files/97p189.pdf>

Wadsworth, J., 2010. The UK Labour Market and Immigration, *National Institute Economic Review No. 213*, pp. 35-42.

Wahba, J., Razin, A., 2015. Welfare Magnet Hypothesys, Fiscal Burden, and Immigration Skill Selectivity, *The Scandinavian Journal of Economics,* Volume 117, No. 2, April – source: <https://onlinelibrary.wiley.com/doi/abs/10.1111/sjoe.12092>

Guvernul Marii Britanii – source: <https://migrationobservatory.ox.ac.uk/resources/briefings/characteristics-and-outcomes-of-migrants-in-the-uk-labour-market/>

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/datasets/ipsmainreasonformigrationbycitizenship>

YouGov – source: <https://yougov.co.uk/topics/politics/articles-reports/2018/11/16/7-more-things-weve-learned-about-public-opinion-br>

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 187-198

Economic growth and social cohesion

Daniela VÎRJAN
Academy of Economic Studies, Bucharest, Romania
daniela_virjan@yahoo.com
Diana HRISTACHE
Academy of Economic Studies, Bucharest, Romania
dianahristache@yahoo.com
Silvia Elena IACOB
Academy of Economic Studies, Bucharest, Romania
popescusilviaelena@yahoo.com

Abstract. *Economic growth is a quantitative increase in macroeconomic indicators and should be reflected in the standard of living and well-being of a society. At first glance, there seems to be a direct and positive relationship between economic growth and social cohesion, but in reality, things are not exactly that. Why? If economic growth can be calculated, social cohesion is very difficult to co-ordinate. Social cohesion is based on social capital, which is created by individuals and refers to the quality of life in all its aspects: relationships and connections between individuals, social belonging and solidarity, common values and norms, common feelings of involvement and trust, reducing inequalities and social exclusion, equal access to culture, education, civic life, etc. There is a question: does economic growth imply social cohesion or social cohesion implies economic growth?.*

Keywords: economic growth, social cohesion, social capital, human development, social inequalities.

JEL Classification: O1, O4, I4.

Perspective on the Romanian economy, 2007-2018

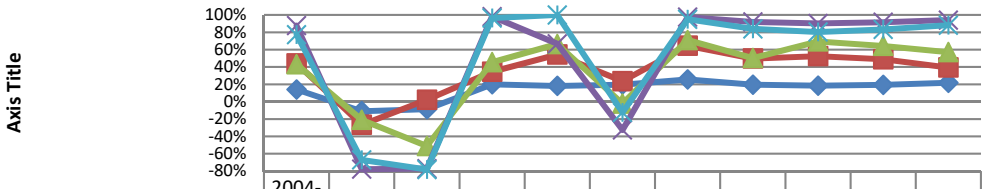
Today's economy or economic activity is particularly complex and dynamic, providing as many resources as possible to meet the needs that are becoming even more diversified and elevated. Attenuation of the tension between needs and resources is achieved mainly through economic growth and performance, and this situation only exists in symbiosis with man. Man is involved as a conscious factor in the economy and not only there, but also as a final beneficiary, so the economy can not bypass this axiomatic relationship, because any activity is initiated by people for people.

The increase or decrease of macroeconomic indicators provides us with information on the basis of which we have a quantitative, qualitative and structural, significant changes, provide crisis situations before it reaches a critical phase, and provides us with optimal solutions to overcome certain difficult situations.

In the period 2000-2008, Romania has achieved sustainable economic growth, the vast majority of macroeconomic indicators have gained value, increased real GDP, decreased inflation, increased employment, decreased poverty rate, and of social exclusion, the value of securities has increased, so we can say that Romania has embarked on a path of growth and economic development.

In 2008, when the global financial crisis triggered, through the phenomenon of financial propagation, the confidence of Romanian investors and entrepreneurs declined greatly, thus, if, in the period 2004-2008, the real GDP had a rhythm of growth 7.4% in 2009 and 2010, it recorded negative values (-5.9% and -2.9% respectively), there was practically a sharp decrease in the macroeconomic indicators, which means that a negative event propagate at a much higher rate than a positive one, if in eight years (2000-2008) the macroeconomic indicators have registered slight increases, after the crisis, they have fallen sharply, reaching even negative values. Since 2011, GDP has been on a steep upward trend, with slight upsurge, as investors have kept the crisis in their memory and have taken shy steps in relaunching and reviving the economy, thus in 2017, Real GDP reached a 4.4% growth rate but was well below 2007 (the moment the crisis started).

Chart 1. *Evolution of real GDP and it's components, 2008-2018*

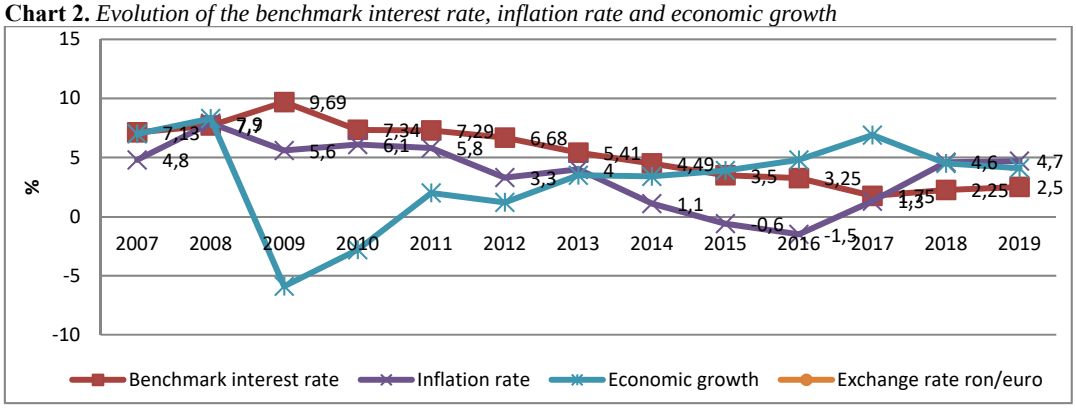


	2004-2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Net export	-5,3	6,9	-0,1	-0,1	1,1	3,6	-0,3	-1,6	-2,6	-1,9	-1
Gross investments	22,8	-36,6	-2,4	2,9	0,01	-5,4	3,2	8,3	5,5	6,2	6,3
Public consumption	-0,5	3,7	-4,9	0,6	0,4	-4,6	0,8	0,1	4,5	3,5	3
Private consumption	15,4	-10,1	1	0,8	1,2	0,7	4,7	6	9	6,7	3
Real GDP	7,2	-7,1	-0,8	1,1	0,6	3,5	3,1	3,9	4,9	4,4	3,7

Source: European Commission, BCE.

GDP by the expenditure method takes into account the following: private and public consumption of goods and services, gross fixed capital formation (gross investment) and net exports. From Chart 1, we can see that, during the crisis period, GDP components fell, gross investment had the largest decline, then final consumption of goods and services, and the trade balance was deficient. Since 2013, private consumption of goods and gross investment has increased, and public consumption of goods and services has only begun to increase in 2016, but the trade balance has increased its deficit. Analyzing the evolution of GDP in the macroeconomic context, taking into account other important indicators, such as the inflation rate, the reference interest rate and the exchange rate, we can make a much clearer analysis of the Romanian economy during the analyzed period (see Chart 2).

Chart 2. *Evolution of the benchmark interest rate, inflation rate and economic growth*



Source: INSS, 2007-2019.

The inflation rate immediately after the crisis recorded the highest value of 7.9% (2008), after which it registered a downward trend, reaching even negative values (2015 and 2016), then started to grow, reaching 2018, to 4.6%. An increase in the inflation rate depreciates the national currency, causing changes both in the national and international currency markets. If inflation exceeds 2.5-3%, it will lead to currency depreciation, as it signals an economy with too much money in circulation without coverage in goods and services, so the exchange rate has risen from 3.34 ron/euro in 2007 to 4.8 ron/euro in early 2019. The depreciation of the national currency against other currencies and, in particular, the euro, led to an increase in inflation, generating a fall in purchasing power, rising prices and a decline in growth from 6.9% in 2017 to 4.5 in 2018. The benchmark interest rate is the rate at which the BNR credits commercial banks, so when it comes to increasing money supply, the interest rate will fall, which will lead to the currency depreciation, and vice versa, when it comes to withdrawing money from the circulation, the interest rate will increase. Decisions are made according to the economic cycle, during a crisis, a lower rate is recommended to encourage credit, investment and money growth, and when the economic situation improves, the central bank will decide to raise the interest rate to discourage loans, investments and the decline in money supply.

Another important factor in the appreciation of the national currency is the trade balance (see Chart 1), thus, during the analyzed period, the trade balance was deficient, which means that Romania imported more than exported, contributing, in this regard, to the

devaluation of the national currency. If the sum of the export goods prices exceeds the sum of the prices of the import goods, the balance of payments is active and vice versa, the balance is passive. The balance of passive payments depreciated the national currency by about 1.46 lei/ euro during the analyzed period. The depreciation of the national currency has repercussions on the other markets, the money market, the rise in prices and the decline in purchasing power, the capital market, the decline in securities prices, the market for goods and services, the decline in aggregate demand, and not the last on international trade.

Social cohesion

The term "social cohesion" first appeared in the Treaty of Rome (Article 130a), which states that "the Community will develop and accentuate actions that will lead to greater economic and social cohesion". The realization of the common desire to achieve social cohesion and harmony among the citizens of the European Union began to manifest in the mid-1980s, and the maximum point was reached after the launch of the Single Market Creation Program by realizing that integration can generate economic and social negative effects. It was clear that certain social groups would be disadvantaged and the ravine between the poor and the rich would grow. The disadvantaged categories will be the long-term unemployed and, in particular, those who come out of the social protection umbrella, the young graduates who complete a certain form of vocational training and want to enter the labour market, the workers with a low professional qualification, workers with a fixed-term contract and those who accept to work illegally, women over 45 and those temporarily out of the labor market for childcare, etc.

Through social cohesion, it is intended that citizens of all participating countries perceive relatively the same benefits of the EU integration process. In this respect, the Maastricht Treaty reiterated the importance of introducing measures to enable all EU citizens to perceive that they are the direct beneficiaries of integration. The treaty states that "the Union will and will propose future objectives to promote economic and social progress that is fair and sustained... by strengthening economic and social cohesion" (Article 13 TEU) and "The Union will have its own desires... a high level of employment and social protection, the raising of living standards and quality of life, economic and social cohesion between Member States" (Article 2 TEU).

The EU Book of Fundamental Rights, which guarantees a series of rights relating to housing, health, education, employment, social protection and non-discrimination. These can be classified into two categories: working conditions and social cohesion. As regards social cohesion, it guarantees: the right to health protection, the right to social security and the right to social and medical assistance, the right to benefit from social services; the right of children and adolescents to protection against physical and moral hazards; the right of families and individuals to legal, social and economic protection; the right of migrant workers and their families to protection and assistance; the right of the elderly to social protection.

In promoting social cohesion are important the following: the extent of income inequality, medical care and living conditions that affect different categories of the population such as

the elderly, children, women, the long-term unemployed, the handicapped, immigrants; the effectiveness with which the institutional system of social protection, education, health care can reduce these inequalities; the evolution of citizens' participation in social life, more precisely the way in which they directly contribute to the construction and consolidation of social cohesion, always taking part in political and social life; the effects on the current mechanisms of inequalities caused by new macroeconomic developments such as the introduction of new technologies, globalization; rising individualization leads to social fragmentation or creates the possibility and desire for individuals to engage in activities that strengthen social cohesion.

The European Union proposes the new cohesion policy for 2021-2027, namely five priorities: a Smarter Europe (through innovation, digitization, economic transformation and support for small and medium-sized enterprises); a Greener Europe; a more social Europe (to achieve the European pillar of social rights and to support the quality of jobs, education, skills, social inclusion and equal access to the health system); a Europe closer to its citizens *(New Cohesion Policy - Regional Policy - European Commission).*

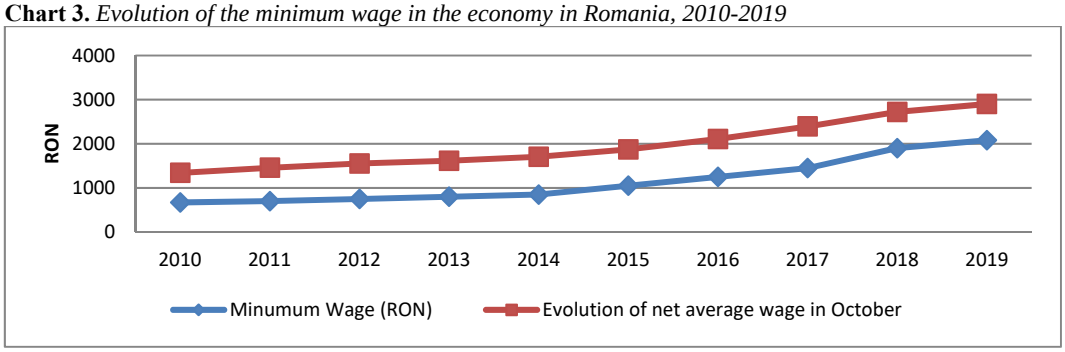
As regards social cohesion, the European Social Fund (ESF) is the main instrument by which the EU supports measures to prevent and combat unemployment and to develop human resources for integration into the labor market. The ESF funds projects aimed at raising the level of vocational training, gender equality, sustainable development and economic and social cohesion *(Economic, social and territorial cohesion).* Cohesion policy is the guarantee of increasing the quality of life for all EU citizens, and in this respect, economic growth will have positive effects in terms of economic and human development, raising living standards by increasing income, growth and job security, access to better quality medical services and treatments, more effective social protection system, etc.

One aspect that raises concerns about the prospect of sustainability of economic growth and social cohesion is increasing the degree of economic and social inequality. Inequalities can be analyzed according to several dimensions, and here we can refer to inequality of outcomes and inequalities of opportunity, between them there is a correlation, inequality of chances can contribute to income inequality and vice versa, thus too unequal distribution of resources economic, can jeopardize social cohesion and a common sense of belonging, leading to an increase in the number of people living in poverty, lack of housing and an increase in social exclusion.

Income inequality can be measured by the S80/S20 ratio and the Gini coefficient. The EU-28, S80/20 was around 5.1 (2015), which means that the richest 20% of households Gini coefficient at EU-28 was 31% at the level of 2015 *(Combating inequalities, the European Semester-Thematic Fact Sheet),* which shows that all households' incomes accounted for 31% of households. In Romania, the Gini Coefficient has risen from 34.9% in 2009 to a peak reached 37.4% in 2015, then decreasing in 2017 to 33.1% in value obtained before in 2010 (Dimensions of Social Inclusion in Romania, 2017), which leads to the conclusion that income dispersion is not very high if compared to the EU-28, and if we compare with the former members of the Soviet bloc, we are ranked 7th (Slovakia, Slovenia, the Czech Republic, Hungary, Croatia, Poland) among the 11 states in the south-east of the EU. Income inequality is influenced by a number of factors: the level of education and

professional experience, the differentiation of workplaces and areas of activity, wage and labor conditions, depending on the sector of activity (public or private), fiscal and budgetary policies, the dynamics of national economic activity, etc.

Chart 3. *Evolution of the minimum wage in the economy in Romania, 2010-2019*



Source: INSS, 2010-2019.

The minimum wage increased year by year, reaching the beginning of the year 2019 to the value of 2080 lei and although is the smallest compared to other EU Member States, has the highest percentage increase over the past 10 years, of 195%. Its growth has caused a number of consequences, some of which are proactive, others are negative. Increasing the minimum wage will put pressure on the business environment and especially at the level of SMEs, it will encourage illegal work because some employees will produce well below the minimum level of the economy, increase labor costs and then the economic agents will be forced to lay off some of their employees, especially in the context of falling labor supply, all of which have implications for declining competitiveness.

The increase in the minimum wage has also positive effects: on disposable income and in this sense it has reduced income inequality, long-term growth potential, stimulating consumption and aggregate demand and implicitly economic growth; a positive impact on the employment of young people on the labor market. In the same trend, the net average wage (see Chart 3) increased with a growing percentage from one year to the next.

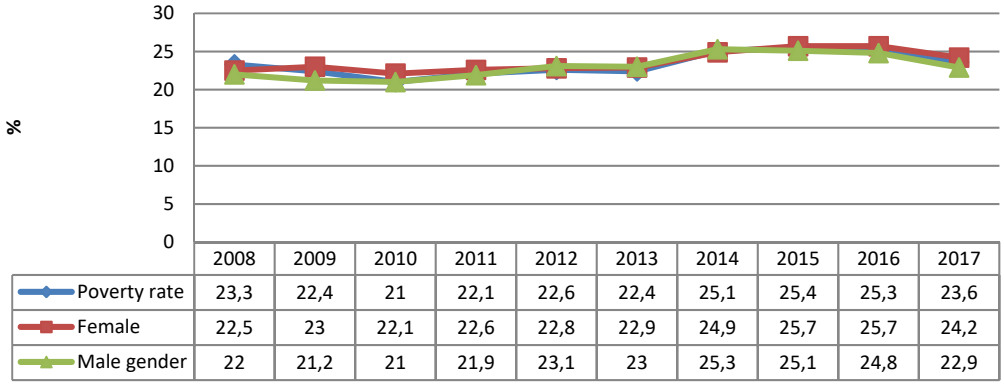
Over the past 10 years, Romania has relied on the ”low-cost” workforce, and if it continues in this race it will surely lose, because at any time it can relocate production to those countries where labor is much cheaper, the system of taxes and duties is relaxed by encouraging foreign investment, and where there is more macroeconomic stability.

The lack of income to cover human needs, starting from the basic needs (food, clothing, housing) to the elevated social ones, leads to the phenomenon of poverty. Poverty is defined as "the state of lack of material, sometimes cultural, resources" (Oxford Dictionary of Sociology). Poverty means much more than lack of income, means poor consumption, low employment, insufficient or poor food, poor health, limited access to education and culture, lack of housing, the failure to participate in economic, social, political, and limited participation in decision-making, and limited possibilities to influence their own living standards.

The poor are individuals and families whose income or other resources, especially those in the form of school and professional training, living conditions and material patrimony, are below the average level of the society they live in (Zamfir, 1998: p. 121). There is poverty in a particular society if one or more people do not achieve that level of economic well-being that is considered to be a reasonable minimum in relation to the society's standards. According to the European Council Decision of 19 December 1984, "*the poor are those persons, families or groups whose resources (material, cultural and social) are so low that they exclude them from a minimum acceptable living standard in the countries in which they live." John Galbraith believes that no country can be fully satisfied with its wealth as long as there are others "disgustingly poor" and notes that "a nation's poverty is a source of conflict*" (Galbraith, 1997: 86).

The relative poverty rate, according to the statistical data provided by INS (see Chart 4), showed very small differences between female and male, with a higher share in 2014-2017, during which inequality increased and surprisingly, at a time when Romania achieved relatively good macroeconomic results at national and European level. This phenomenon is to point out that not all economic growth leads to economic and social development, in fact the quantitative increase of some macroeconomic indicators does not automatically generate a qualitative and structural increase reflected in the increase of the living standard and the economic- social well being.

Chart 4. *The evolution of the relative poverty rate by gender (female and male gender)*

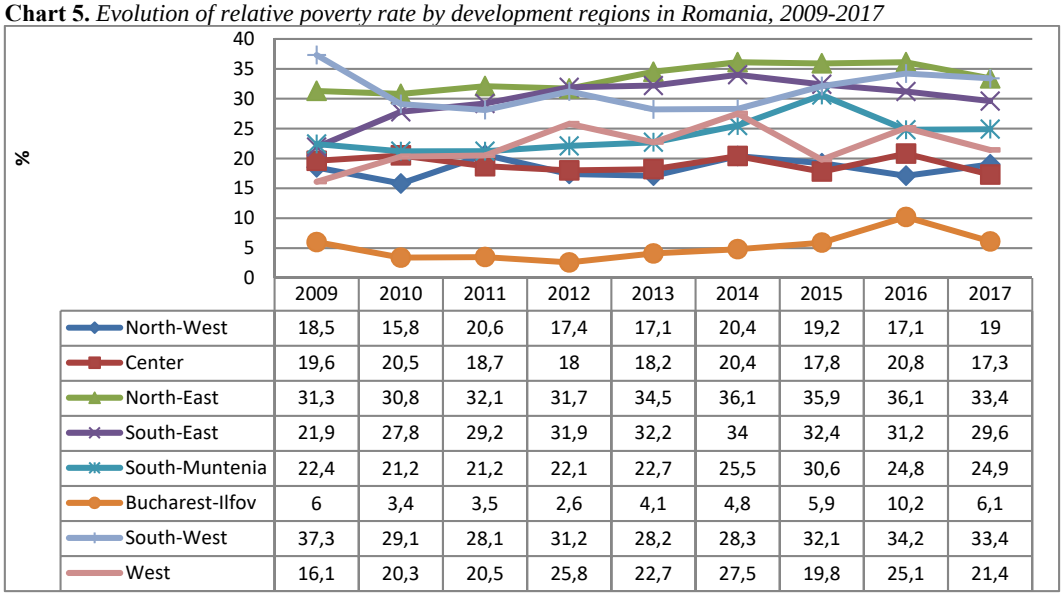


	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Poverty rate	23,3	22,4	21	22,1	22,6	22,4	25,1	25,4	25,3	23,6
Female	22,5	23	22,1	22,6	22,8	22,9	24,9	25,7	25,7	24,2
Male gender	22	21,2	21	21,9	23,1	23	25,3	25,1	24,8	22,9

Source: INSS, http://statistici.insse.ro/shop/2008-2017

In Chart 4, it can be noticed that the relative poverty rate by regions of development and macroregions in Romania (see Chart 5) recorded the highest values in the North-East and South-West regions, and the lowest registered in the Bucharest-Ilfov region. The most affected areas have a poorly developed local economy structure, lack of infrastructure has discouraged investment, wage levels and income levels are lower compared to other areas, given the low labor productivity at regional level, the employment rate is reduced, the medical system is rudimentary, the access to education is low, there are areas where there are no schools, teachers, books and didactic materials, etc.

Chart 5. *Evolution of relative poverty rate by development regions in Romania, 2009-2017*



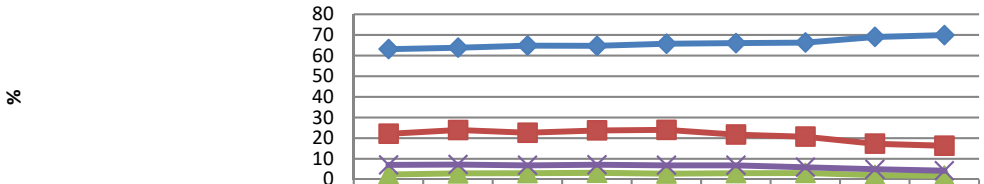
	2009	2010	2011	2012	2013	2014	2015	2016	2017
North-West	18,5	15,8	20,6	17,4	17,1	20,4	19,2	17,1	19
Center	19,6	20,5	18,7	18	18,2	20,4	17,8	20,8	17,3
North-East	31,3	30,8	32,1	31,7	34,5	36,1	35,9	36,1	33,4
South-East	21,9	27,8	29,2	31,9	32,2	34	32,4	31,2	29,6
South-Muntenia	22,4	21,2	21,2	22,1	22,7	25,5	30,6	24,8	24,9
Bucharest-Ilfov	6	3,4	3,5	2,6	4,1	4,8	5,9	10,2	6,1
South-West	37,3	29,1	28,1	31,2	28,2	28,3	32,1	34,2	33,4
West	16,1	20,3	20,5	25,8	22,7	27,5	19,8	25,1	21,4

Source: INSS, http://statistici.insse.ro/shop/2008-2017

Bucharest is the city that offers the best quality of citizens' lives, because it offers opportunities for employment and promotion for all age groups and especially for young people, access to education and performing technologies is easier, being considered the largest university center in Romania, the level of wages is significantly higher than in other regions, the development of trade, distribution and redistribution has created many jobs generating a very low unemployment rate, the infrastructure is more developed, the living standard as a whole is higher, offering opportunities for relaxation and leisure.

A significant hindrance to economic growth is the demographic factor. In the last 10 years, the available active population has declined steadily, amid a negative natural growth, population aging, low internal labor mobility, continuing emigration of the highly skilled labor force, so the labor participation rates were well below the EU average, and undeclared work, discretionary minimum wage increases, lack of qualified staff, non-involvement of public authorities in supporting active employment measures, have negative effects on economic and social convergence, both at national and European level.

Chart 6. *Evolution of Employment Rate and Unemployment Rate in Romania, 2010-2018*



	2010	2011	2012	2013	2014	2015	2016	2017	2018
Employment rate (15-65 years)	63,1	63,8	64,8	64,7	65,7	66	66,3	69	69,9
Youth unemployment rate (15-24 years)	22,1	23,9	22,6	23,7	24	21,7	20,7	17,3	16,3
The long-term unemployment rate	2,4	2,9	3	3,2	2,8	3	3,1	2,1	1,8
Unemployment rate	7	7,2	6,8	7,1	6,8	6,8	5,9	4,9	4,2

Source: https://ec.europa.eu/info/sites/info/files/2018-european-semester-country-report-romania-ro.pdf

The employment rate continued to increase, reaching 69.9% in 2018, a difference of 0.1 percentage points from the 70% target set in the context of the Europe 2020 Strategy. The unemployment rate has reached the lowest level in the last 10 years, 4.2% at the end of 2018, and the same trend was recorded in the youth unemployment rate and the long-term unemployment rate. If we look at the figures in the Chart 6, statistically, Romania is very good in terms of employment and vacancy, but the economic and social reality is slightly different. In fact, the unemployment rate is higher, because long-term unemployed are out of social protection and are no longer under analysis, a large number of employees, even if they lose their jobs, do not turn to the labor offices, those working in the underground economy, those who are on the retirement threshold and who are no longer looking for a job because their job opportunities are very low, domestic women over 45 and wanting to return to the market work etc.

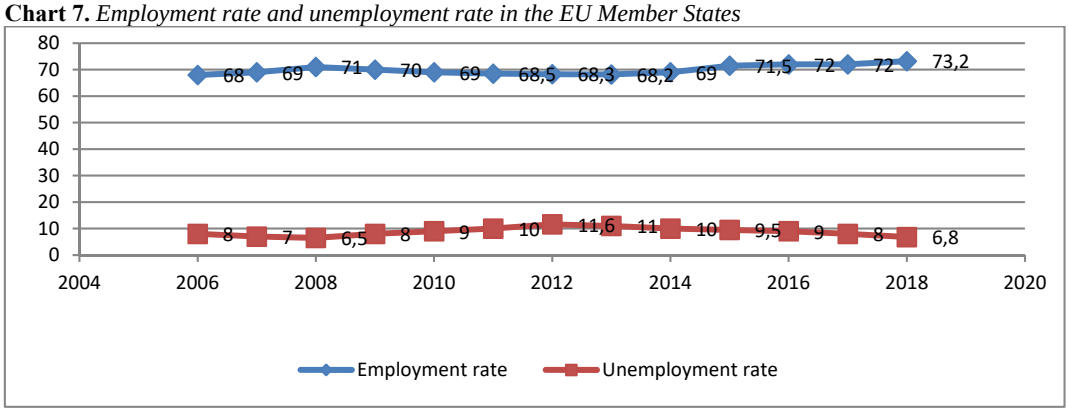
Economic growth and social cohesion at EU level

At the level of all EU Member States, three pillars of economic and social policy were pursued: coordinated investment stimulation, support for structural reforms and the implementation of responsible fiscal and budgetary policies that contributed to the restoration of stability and economic growth benefiting the European economy. Europe's economy has managed to overcome the economic and financial crisis of 2008, so over the last six years, all macroeconomic results have improved, labor productivity increased, digital connectivity between Member States increased by more than 40%, manufacturing sector increased, despite falling demand in emerging markets and economies, and channeled to feasible (public or private) projects, ensured long-term growth. Thus, investments increased by 6%, representing more than 500 billion euros.

A revival of all Member States' economies has stimulated the labor market, so the unemployment rate has fallen from 10% to 6.8%, basically going back to the pre-crisis level of 2008. Employment has risen to a record high 239 million people, making it possible to reduce the poverty rate and social exclusion for more than 10 million people.

The EU-wide employment rate has increased to 73.2% (20-64 age bracket, Tr. II 2018), being very close to the 2020 target of 75% foreseen by the Europe 2020 Strategy.

Chart 7. *Employment rate and unemployment rate in the EU Member States*



Source: Eurostat, LFS, 2006-2018.

With the integration of the European pillar of social rights, structural reforms and fiscal and budgetary policies (reducing administrative burdens and better financing conditions for businesses) in areas such as services, infrastructure, energy, transport, circular economy, labor market reforms, health care, education, research, training and innovation have created new opportunities for job creation and growth.

Conclusions

The relaunching of the Romanian economy, after the crisis period, was made with shy steps, so, the real GDP increased, reaching the highest value after the crisis in 2017 (GDP at the market price in 2010 was 125,408.4 million euro and 187,939.9 million euro in 2017), growth due to structural reforms and fiscal consolidation. The actual recovery of the economy, was due to private consumption of goods and services, driven by wages and pensions in the public sector and indirect taxes, investment was modest, even if the share of exports increased, the current account deficit has increased (higher imports rather than exports), and the elimination of taxes has increased the public deficit.

The employment rate of the labor force has registered a continuous increase and the unemployment rate has reached the lowest value in the last ten years, despite the rigid conditions of the Romanian labor market: general decrease of the labor force, lack of qualified staff, aging population, maintaining a negative natural growth, etc. Wages have risen (a 16% increase in the minimum wage), but we are still below the EU average and this will exert pressure on inflation if it is not accompanied by an increase in labor productivity and competitiveness.

The education system has undergone innumerable reforms and changes, inconsistent with the real labor market needs and which have limited the development prospects, research and innovation in the educational field, a situation reflected in low performance in national

tests, increasing school dropout, early school leaving and especially in rural areas, school programs loaded and inappropriate new educational, economic, social, cultural changes etc.

Economic growth has led to improved employment, increased population incomes, but widespread poverty and income inequality remained high, implying that those on the poverty line failed to get out of that state, due to the fact that not all citizens have access to social protection measures; in this respect, the law on minimum income was postponed until the end of 2019, and the burden of social protection funding rests exclusively on employees.

Health has improved, but we are well below EU standards, poor medical infrastructure, shortage of doctors and nurses, insanitary hospitalization conditions endanger patients' lives, access to quality medical services is limited by very high prices (access to services private medical system), the national system of medical medicines and medical services is limited in relation to medical needs, insufficient performance diagnostic tools that increase the investigation and diagnosis period, etc.

Public spending has increased but has not been reflected in Romania's infrastructure. The infrastructure of an economy is very important in order to ensure a good performance of the business and of the overall economic circuit, so many foreign investors emphasize the lack of infrastructure as a motivation of the money capital injection.

The economic growth reflected in the quantitative increase of the economic indicators led, on the one hand, to the improvement of some social indicators and, on the other hand, to the imbalance. With economic growth, employment has increased, unemployment has fallen, household income has risen, consumer goods and services have increased, and on the other hand we can see that the poverty rate has widened, one in three Romanians is exposed the risk of poverty and social exclusion, income inequality remained high, the education index registered a declining trend, increased school drop-out rates and literacy rates, access to health services was limited and discriminatory, social polarization has increased, increasing the gap between the rich and the poor, has increased the inequality of chances between men and women and those from rural areas towards those in the urban environment from all points of view: education, health, culture, employment, promotion, etc., all on the background of economic growth. The question is: economic growth for whose benefit? In this regard, economic growth must be sustainable and sustainable, aim at increasing the standard of living and well-being of the entire community, leading to economic and human development, so that economic cohesion influences social cohesion and vice versa, for human and social progress.

References

Dinu Marin, Socol Cristian, Niculescu Aura, 2005. *Romanian Economy. Oversight of the postcommunist posture,* Economics Publishing.

J.K. Galbraith, 1997. *The perfect society*, Humanitas Publishing House.

New Cohesion Policy - Regional Policy - European Commission, article available online at: <https://ec.europa.eu/regional_policy/ro/2021_2027/#1>, [access 1.04.2019]

Economic, social and territorial cohesion, article available online at: <http://www.europarl.europa.eu/factsheets/ro/sheet/93/coeziunea-economica-sociala-si-teritoriala>, [access 3.03.2019]

Combating inequalities, the European Semester-Thematic Fact Sheet, article available online at: <https://ec.europa.eu/info/sites/info/files/file_import/european-emester_thematic-factsheet_addressing-inequalities_ro.pdf>, [access 10.04.2019]

The European Pillar of Social Rights in 20 Principles, article available online at: <https://ec.europa.eu/commission/priorities/deeper-and-fairer-economic-and-monetary-union/european-pillar-social-rights/european-pillar-social-rights-20-principles_ro>, [access 8.04.2019]

Dimensions of Social Inclusion in Romania, 2017, article available online at: <http://www.insse.ro/cms/sites/default/files/field/publicatii/dimensiuni_ale_incluziunii_sociale_in_romania_2017.pdf>, [access 12.04.2019]

Cătălin Zamfir, Lazăr Vlăsceanu, 1998. *Dictionary sociology,* Babel Publishing House, Bucharest Oxford Dictionary of Sociology.

European Commission, article available online at <https://eur-lex.europa.eu/legal/content/EN/TXT/?qid=1547650919951&uri=CELEX%3A52018DC0770>, [accessed 25.03.2019]

<https://ec.europa.eu/info/sites/info/files/2017-european-semester-country-report-romania-ro.pdf>

<http://www.europarl.europa.eu/factsheets/ro/sheet/146/carta-drepturilor-fundamentale>

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 199-206

Strategy and supply chain management – evolution to industry 4.0

Florina Simona BURTA
West University of Timişoara, Romania
simona.burta@gmail.com

Abstract. *The present paper analyses supply chain management from an evolutionary perspective, in order to clarify how the concept of Industry 4.0 has materialized into the new strategic direction of modern supply chains. The goal is to exemplify the areas of progress through several case studies of companies that are notoriously acclaimed for transforming their supply chain management and achieving financial performance. Industry 4.0 has reformed how companies design and invest in their supply chain capabilities, turning information integration into the core of logistics strategy.*

Keywords: supply chain management, industry 4.0, logistics, information integration, strategy.

JEL Classification: G32, D02.

1. Introduction

In literature, the paradigm of Industry 4.0 is most often defined as the Fourth Industrial Revolution as a result of its undeniable impact on industrial activity. Since the term was coined in 2011, the revolution has gained momentum and more and more adopters globally. As a result, theoretical works have emerged and the Supply Chain Management (SCM) literature is rich in inquiries for all Industry 4.0 tools, such as: Cyber-Physical Systems (CPS), Internet of Things (IoT), Internet of Services (IoS), Big Data, Enterprise Resource Planning (ERP) systems, Warehouse Management Systems (WMS), Transport Management Systems (TMS) or Intelligent Transport Systems (ITS).

The evolution of industrial revolutions' focus depicts clearly that the technology advances of previous times are being updated and highly disrupted by new technology. The First Industrial Revolution (1765) has brought forward the steam engine and heavy mechanical manufacturing equipment that has been dramatically changed by the introduction of electricity's benefits, such as the conveyor belt and the assembly line, through the Second Industrial Revolution (1870). The Third Industrial Revolution (1969) has revolutionized industry through automation of production processes. The current Fourth Industrial Revolution (2011) is altering industries by creating intelligent networks that rely on cyber technology and have the potential to achieve the highest level of transparency, productivity and output of all time.

In 2011's Hanover Trade Fair, the concept of Industry 4.0 was first presented by the German government as a means for incorporating newly available and developing technology in the manufacturing industries. Ever since, governments around the world have adopted similar initiatives, the Industry 4.0 remaining the standard name under which the paradigm of the Fourth Industrial Revolution is recognized. As presented by Rojko (2017), North America has made its first notable attempt through General Electrics in 2012, the French government has launched in 2015 a nation-wide initiative to support digitization in industry and China, leads the way with the most ambitious targets by far, set in 2015 through the "Made in China 2025" program.

However, in the era of globalization, Industry 4.0 is hardly confined to a nation-wide effort – global supply chains taking such initiatives of across borders. The author attempts in this paper to bring forward examples of areas of progress in global SCs, that have been the result of adopting Industry 4.0 tools. We approach the most emblematic companies in order to illustrate how logistics tools and strategies have been updated, changed or redefined to fit new market expectations.

The paper is structured into the following sections: a literature review covering the integral aspects of the Industry 4.0 concept, followed by a case study in which the author exemplifies based on the Reference Architecture Model for Industry 4.0 the multiple layers of the paradigm and concludes with remarks concerning the key aspect of our case study, limitations of present paper and opportunities for future research.

2. Literature review

Qin et al. (2016) approach in their research four aspects of Industry 4.0 in which development is establishing new industrial trends: factory, business, products and customers. From the 'smart factory' which employs a highly integrated network of hardware, software and data, the business model and market landscape is altered to meet demand in a cost-efficient, sustainable and efficient manner. As a result, 'smart products' incorporate throughout their life-cycle the characteristics of the original production and customers can benefit from increasingly available information, while the society draws benefits such as sustainability, efficiency or improved working environments.

Rojko (2017) outlines in his paper that 'Industry 4.0 assumes broad support of an entire life-cycle of systems, products and series' as well as the fact that applications of the paradigm's tools extend from the product design phase to the product being delivered to the final customer. Therefore, a closed-loop approach is valid from two perspectives. On one hand, when discussing Industry 4.0 products we imply that the output, 'smart products', are not exiting the industrial cycle upon reaching the customer – but rather continue to collect data and update during their lifetime. On the other hand, in the Industry 4.0 paradigm, the SC has potential for end-on-end updates and an integral approach ensures that the output is a 'smart product'.

Tjahjono et al. (2017) have approached the 'paradigm' of Industry 4.0 in an attempt to summarize its emergence and impact by reviewing the relationship of manufacturers, suppliers and customers. To limit their research area, the authors have focused on four SC functions: procurement, transport, warehousing and order fulfilment. While transport and order fulfilment have proven to be the most impacted by emerging Industry 4.0, we consider that this approach is rather limited as it does not provide the full SC picture. On one hand, it does not consider the effects on all SC stakeholders, namely manufacturer, supplier and customer meaning that readers, whether practitioners or theoreticians, cannot draw applicable conclusions. On the other hand, the collaborative aspects in the SC are neither included nor exemplified in this assessment, thus lacking the view of integration, with or without the benefits of Industry 4.0 components such as IoT or IoS.

Industry 4.0 implications on logistics have been analysed by Barreto et al. (2017) which resulted into the 'paradigm' of Logistics 4.0. According to the authors, 'the main goal is to foster the intelligent networking of products and processes along the value chain', therefore Industry 4.0 tools such as CPS, WMS, TMS and ITS have transposed first and foremost into production and logistics, to steer processes from product design to its delivery to customer.

Hofmann and Rüsch (2017) have approached the implications of Industry 4.0 by relying on an extensive theoretical literature in order to outline a summarized definition of the concept, as well as benefits of and barriers for its implementation. In order to fill in the gap of a clear definition, the authors approach four key components of Industry 4.0, namely: CPS, IoT, IoS and Smart Factory. The resulting definition implies that Industry 4.0 represents an environment where products and services are highly connected by benefits of the internet applications, thus positively impacting all steps in the SC and bringing value

added through availability, 'digital integration' and 'digital servitization'. The limits to their research consist of the fact that it excludes risks, costs and barriers associated to implementing Industry 4.0 components, nevertheless directing future research to an analytical framework for implementing and assessing Industry 4.0 implementation, as well as measuring its implications in terms of costs and revenue.

CPS set of networked agents, such as exemplified by Barreto et al. (2017) with 'sensors, actuators, control processing units and communication devices', represent a first frontier in implementing and Industry 4.0 approach. Most literature, as confirmed by Rojko (2017) considers CPS to be the initial step in Industry 4.0 due to the fact that the benefits of the paradigm rely first and foremost on the availability of data collected through CPS agents that make the network of the SC a digitized one. CPS benefits control, surveillance, efficiency and transparency in the SC according to Hofmann and Rüsch (2017) and Barreto et al. (2017).

A second step in the Industry 4.0 approach, as explained by Barreto et al. (2017) is the IoT implementation, which is 'interacting, monitoring, controlling and managing' CPS in order to create the appropriate digitized processes for the SC. IoT is brought forward as an 'initiator of Industry 4.0' in the view of Hofmann and Rüsch (2017), followed by the emerging IoS which proves that Industry 4.0 is now spread in the SC and a closed-loop approach is essential. Witkowksi (2017) has compiled a list of innovative solutions for SCM in the context of IoT, big data and Industry 4.0 and has drawn attention towards increasing competition between SCs and how innovative technology and organizational approaches can give companies a competitive edge. The solutions outlined represent scarce guidelines for practitioners that summarize literature on the three concepts but do not provide support in the approach, risk, cost or method for implementation.

The concept of Smart Factory, in the view of Hofmann and Rüsch (2017) is the result of a strong connection between CPS, IoT and IoS. The authors acknowledge that the emergence of Smart Factory concept has been met with skepticism due to the wide-spread fear of job destruction, despite the fact that there is no definitive evidence that links the two directly. The authors approach the topic by underlining the changes through which the workforce has to go, namely increased qualification, increased knowledge transfer and update and, most importantly, the initiative to be decision makers.

In addition to the components of Industry 4.0, another topic that has drawn the attention of both theoreticians and practitioners is the relationship with sustainability. Research of Stock and Seliger (2016) point out that 'industrial value creation must be geared towards sustainability', a view which is generally shared as most companies are using the transparency and efficiency benefits of Industry 4.0 components in order to underline their sustainability efforts. The authors explain thoroughly how Industry 4.0 uncovers currently unchartered potential for sustainability through data processing capabilities that are increasingly capable to point out towards accessible areas for improvement.

Kayikci (2018) has performed a study in Turkish companies on sustainability benefits derived from the digitization of logistics processes. The areas displaying most potential for digitization benefits are logistics cost, delivery time, inventory and flexibilities – all of them

being benefits that encompass the interest of all stakeholders. While the study is rather limited in the data assessed, as well as the number of digitization consequences outlined, the goal of displaying the win-win situation in sustainability derived from Industry 4.0 components has been achieved.

3. Case study

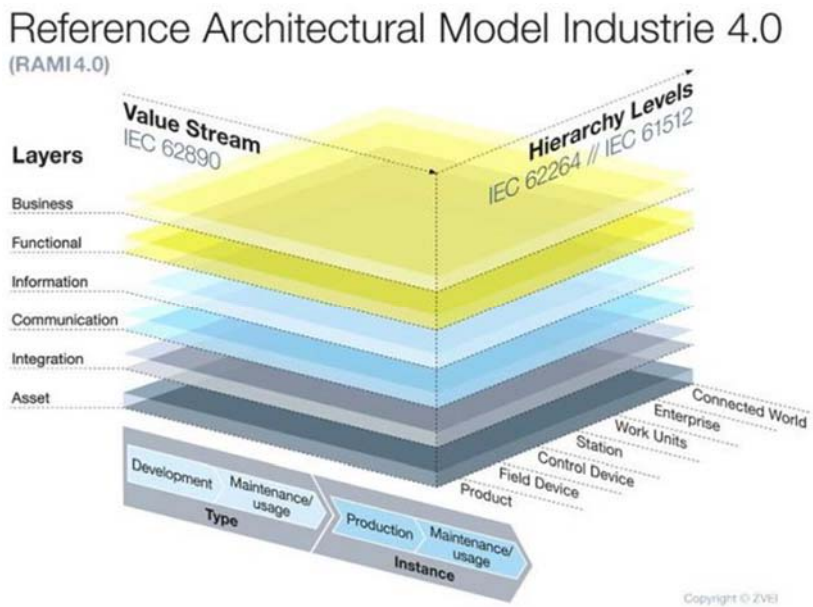
In our case study we attempt to incorporate examples of companies that are adopting one or more Industry 4.0 tools. In order to have a clear structure of what we aim to illustrate, we have decided to consider the analysed companies and their tools through the lens of the Reference Architecture Model, issued by the German government in 2011. In our opinion, it is the most appropriate manner in which the complexity of Industry 4.0 has ever been managed through the segmented approach.

RAMI4.0 is the Reference Architecture Model issued by Germany as a proposed international standard for the implementation of Industry 4.0. A summary of the layers of the model, developed on top of the internationally acknowledged Smart Grids model (2014) as described by Rojko (2017) is as follows:

- **Assets layer** referring to hardware (e.g. robots, conveyor belts etc.) and software (e.g. TMS, WMS etc.) components that are to be further transposed into the digital map of the enterprise.
- **Integration layer** referring to the information digitally transmitted to the components (e.g. sensors, scanners etc.).
- **Communication layer** referring to the standardized methods of communication that foster integration.
- **Information layer** referring to the transformation of data into information that is usable (e.g. usage of big data).
- **Functional layer** referring to 'formal descriptions of functions' (e.g. ERP).
- **Business layer** referring to the business model format and the synergies between the processes.

Figure 1 displays the original three-dimensional RAMI4.0 format in which we have the layers, value stream and hierarchy levels displayed. The ultimate goal of the German government was to issue an approach that would unify the perspective, knowledge and efforts in the company.

Figure 1. *Reference Architectural Model Industry 4.0*



Source: www.researchgate.net

Therefore, on the bottom horizontal line it is displayed the 'smart' product's lifecycle – showing that once the product leaves the assembly line it does not end its connection to the SC. In terms of maintenance and usage we consider the major implications are data collection, which can yield benefits for both the producer and the end user, and the opportunity for continuous update and maintenance. The latter benefits the overall society through outputs such as knowledge expansion or environmental protection and sustainability awareness.

The right-hand vertical line displays the third dimension, involving the seven pillars: product, field device, control device, station, work units, enterprise and connected world. The most important aspect, as displayed also in the presentation of 'Platform Industrie 4.0' (2018) is that these seven are not in a linear relationship but are interconnected and create synergies in multiple patterns. The left-hand vertical line displays the six layers that are mapping the processes from the physical assets' existence, that are to be translated into the digital framework of the company, to the business processes implying not only the internal stakeholders but most importantly the external ones.

The asset layer is the foundation for adhering to Industry 4.0 for manufacturers acquiring an increasing number of robotic machinery and industrial equipment that supports the integration of processes, communication among participants, information collection and transmission, functional set-ups and the company's business plan and strategy. An example of a company avid to invest in technology for its smart SC is Magna Steyr, the Austrian automotive giant which has embedded throughout its smart factories' technology ranging from employees' wearables to robotic heavy machinery in its assembly lines or warehouses.

In complex industrial set ups such as automotive or aircraft manufacturing for example, the three-dimensional layers of the model become even more diversely nuanced as each of them is a multi-step process. An example of a smart factories are Audi, Airbus and Boeing factories, which are pioneers in many ways for the implementation of IoT and Big Data analytics in their smart factories (Buntz, 2017). In this regard, we consider these three manufacturers to exemplify best the layer of integration considering how reliant on IoT tools are their end-to-end SC members.

Among the adopters of Industry 4.0 tools in agriculture we have identified the prevalence of multiple communication methods that foster integration of various components and participants from the SC. The company John Deere has been among the pioneers who have revolutionized the manner in which IoT technology implemented in its vehicles is able to collect, process and employ collected data.

The increasing potential for data collection, processing and analysis has impacted to several degrees all manufacturing industries. As identified also in the theoretical literature, data collection in the smart factory means that throughout the product life-cycle the manufacturer can remain connected. The information layer relies thus on global players such as General Electrics, through its software company Predix, or Cisco to enable diverse streams of information from the design stage in manufacturing to product usage by the end customer.

The functionality resulting from the possibility to access a wide range of data and collect feedback from the manufacturing process has led to major improvements in productivity, efficiency, flexibility and sustainability of manufacturing SCs. The information enablers are contributing to the SC capabilities of global SCs through improved capabilities such as automatized production lines, autonomous systems for production, demand forecasting or inventory management.

The last and by far the most challenging layer of the RAMI4.0 is the business one, which implies the choice of business model and its design and implementation in a manner appealing to both internal and external stakeholders. We assess retail companies, both traditional and online ones, to have succeeded best in this category as the landscape for customers has changed drastically over the past decade. In our view, online retailers Amazon and Alibaba, and the retailer Walmart are success stories in the business layer.

4. Conclusion

To conclude, the author has attempted to illustrate the implications of Industry 4.0 in several global companies by relying on the Reference Architecture Model (RAMI 4.0). As a result, we consider having achieved a better understanding of the concepts by directing both theoreticians and practitioners towards verified best practices.

The limitations of our paper consist of the theoretical approach, that lacks in empirical data to better illustrate the tools' impact on companies' results and the narrow guidelines for further applicability of the concepts. Scarce literature is oriented towards the readiness of

companies to embrace the paradigm of the Fourth Industrial Revolution from all points of view: cost, knowledge, skills etc.

Therefore, we recommend for future research to investigate costs and risks associated with Industry 4.0 implementation and the subsequent revenue opportunities. Through empirical research we can discuss the impact of Industry 4.0 on the companies and markets and whether it will narrow the gaps between competitors or widen the disparities among top players and market entrants.

References

Barreto, L., Amaral, A., Pereira, T., 2017. Industry 4.0 Implications in Logistics: An Overview. *Procedia Manufacturing,* 13, pp. 1245-1252.

Buntz, B., 2017. The Top 20 Industrial IoT Applications. IoT World Today, available at: <https://www.iotworldtoday.com/2017/09/20/top-20-industrial-iot-applications/>, [accessed 31 Mar, 2019].

Geissbauer, R., Vedsø, J., Schrauf, S., 2016. A Strategist's Guide to Industry 4.0. Strategy + Business, Issue 83, available from: <https://www.strategy-business.com/article/A-Strategists-Guide-to-Industry-4.0?gko=7c4cf>, [accessed 31 Mar, 2019].

Hofmann, E., Rüsch, M., 2017. Industry 4.0 and the Current Status as well as Future Prospects on Logistics. *Computers in Industry,* 89, pp. 23-34.

Kayikci, Y., 2018. Sustainability Impact of Digitization in Logistics. *Procedia Manufacturing,* 21, pp. 782-789.

Platform Industrie 4.0, 2018. RAMI 4.0 – A Reference Framework for Digitalisation. Available from: <https://www.plattform-i40.de/PI40/Redaktion/EN/Downloads/Publikation/rami40-an-introduction.pdf?__blob=publicationFile&v=3>

Qin, J., Liu, Y., Grosvenor, R., 2016. A Categorical Framework of Manufacturing for Industry 4.0 and Beyond. Procedia CIRP, 52, pp. 173-178.

Rojko, A., 2017. Industry 4.0 Concept: Background and Overview. International Journal of Interactive Mobile Technologies, 11 (5), pp. 77-90.

Stock, T., Seliger, G., 2016. Opportunities of Sustainable Manufacturing in Industry 4.0. Procedia CIRP, 40, pp. 536-541.

Tjahjono, B., Esplugues, C., Ares, E., Pelaez, G., 2017. What does Industry 4.0 mean to Supply Chain?. *Procedia Manufacturing,* 13, pp. 1175-1182.

How to learn from Smart Grid Interoperability, ResearchGate, available from: <https://www.researchgate.net/figure/Original-RAMI-40-model-for-reference-designation_fig4_282292571> [accessed 31 Mar, 2019].

Witkowksi, K., 2017. Internet of Things, Big Data, Industry 4.0 – Innovative Solutions in Logistics and Supply Chains Management. *Procedia Engineering,* 182, pp. 763-769.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 207-219

The new macroeconomics and its impact on economic policy

Monica DOBRESCU
Bucharest Academy of Economics Studies, Romania
monicam_dobrescu@yahoo.com

Abstract. *The consensus prevalent in economics after World War II broke down in the early '70s, primarily due to the collapse of the Phillips curve and to the gap between macroeconomic and microeconomic analysis. In the early '80s, economic science was divided between the New Classical School and New Keynesian Economics, and a crisis developed primarily at the theoretical level regarding pure economic analysis, as well as methodological issues. At the practical level, this crisis translated into inconsistency, confusion and uncertainty. These evolutions triggered new theoretical efforts, marked by extensive research and in-depth analyses. So that, twenty years later, we find a surprising convergence in the evolution of the two schools, both in theory and in economic policy.*

Keywords: new classical school, new Keynesian economics, economic policy, rational expectations, monetary neutrality.

JEL Classification: E30, E31, E32.

Introduction

For over two hundred years, the history of economic thought has been oscillating between two opposite visions on the economy. At one end we have the classical approach, which supports the invisible hand mechanism and the perfect functioning of markets and of the economy as a whole. At the other extreme, we have the Keynesian approach which analyses the economy in terms of disequilibrium, triggered by various market failures. The Great Depression in the US economy decisively shifted the focus to the left-hand side and Keynes himself felt entitled to coin classical economics as deceitful and disastrous. In the early '70s, however, The New Classical Economics shifted the focus to the right again, while Robert E. Lucas, Jr. proclaimed the death of Keynesian economics. But this new liberal reign in economic science was however, very short-lived: a mere decade later, the failure of the Monetarist and New Classical theoretical predictions led – at least to a certain extent – to the ascent of the New Keynesian Economics, so that today, we can rightfully speak of a reincarnation of Keynesian economics.

Thus, in the early '80s, economic science appeared to be divided between the two dominant schools of thought: the New Classical School and the New Keynesian School, and the disputes had reached such proportions that we can rightfully label the late 9th decade as a period of crisis in economic science. This crisis developed particularly at the theoretical level through fiery debates and controversies, in what regards both pure economic analysis and methodological issues. This theoretical crisis in economics also distressed practitioners and policy-makers, proving once again, the complexity of the theory-policy relationship. In other words, this relation is marked by numerous inter-dependencies in both directions; moreover, both economic theories and policies are each influenced by a multitude of factors – either objective or subjective in nature – so that trying to define a direct relationship between the two or to predict a possible evolution of such a relationship is practically impossible. In the '70s, the sound theoretical foundation was confronted with the actual economic evolutions and with the impossibility to control and overcome these evolutions through economic policy actions. At the practical level, the theoretical crisis translated into shifts towards liberal policies, but, more importantly, into inconsistency and a general state of confusion and uncertainty. All these evolutions triggered new theoretical efforts, marked by extensive research, by in-depth analyses and studies. So that, twenty years later, we find a surprising convergence in the evolution of the two schools. The methodological contributions of the New Classical School have proved important and have been widely adopted – particularly the dynamic equilibrium models – whereas other theoretical implications have been decisively invalidated by empirical evidence.

In view of these evolutions, our analysis starts out with a presentation of the main advances in economics since World War II, which highlights several stages of development, as well as the most important moments that marked the evolution of economic science. In investigating the typology of economic theories throughout this period, we can readily notice a scientific community divided into two main directions of research: one which subscribes to the virtues of capitalism and continues the tradition of classical liberalism, and the other which investigates the impact of economic and social factors on the functioning of the system, in the Keynesian tradition. Moreover, an in-depth analysis points

out that this division should not be taken literally, since at present, the two apparently opposed trends have common features, such as the microeconomic foundation of macroeconomics and the rational expectations hypothesis; in addition, within each direction we find so many approaches, that this distinction becomes rather generic and merely indicative of the general features of these research directions.

At the theoretical level, the reunification of the two fields could be done either by adapting macroeconomics to microeconomics, or the other way round, by adapting microeconomics to macroeconomics; in this context, two main directions of research emerged: the New Classical School, which subscribes to the former approach and the New Keynesian School, which follows the latter. The New Classical School attempts to depict the dynamic aggregate evolution of macroeconomic variables, starting from the rational behaviour of economic agents trying to maximize outcomes. Furthermore, since the presence of high unemployment and business cycles was incompatible with the standard principles in microeconomics, the New Keynesians set forth to construct a theory to explain such phenomena.

Considerable progress has been made at the theoretical level within these two research paradigms and both of them comprise abundant directions of research. But generally speaking, the common denominator of these directions is that the New Classical School establishes a framework governed by Walrasian equilibrium, using *market-clearing* models; conversely, the New Keynesian Economics examines the economy in terms of disequilibrium and regards business fluctuations as market failures of various kinds.

The New Classical School

The New Classical School, also known as the *"rational expectations school"* or the *"market-clearing approach",* emerged in the '70s, following Friedman and Phelps' predictions about the long-run Phillips curve. As the alternative name suggests, the most important feature of this school is the ***rational expectations*** hypothesis, introduced by John Muth (1961). In essence, this assumption asserts that individuals behave rationally when they make predictions about the future. This implies that individuals behave rationally in the environment in which they operate: they make the best use of the information they possess or are willing to attain, by using it efficiently. Much of the research in macroeconomics since the `70s has explored this assumption and one of its earliest and most controversial applications was made in 1975 by Thomas Sargent and Neil Wallace; the two economists took Friedman and Phelps' conclusion about the Phillips curve(1) at a different stage, positing that, even over the short run, the trade-off between inflation and unemployment could work, only if the enhanced inflation rate could not be anticipated by economic agents(2). Conversely, unexpected inflation, decreases unemployment below its natural rate temporarily. Additionally, the two authors claimed that systematic monetary policy has no relevance whatsoever for the evolution of employment and output; the assumption of rational expectations implies that people cannot be surprised by events that occur systematically or by policies applied in a uniform and consistent fashion. And since systematic monetary policy can only generate expected inflation, it cannot affect output

and thus, unemployment. In addition, the New Classicals adopt an **approach based on equilibrium**, their models attempt to explain macroeconomic phenomena starting from the premise of perfect price flexibility; according to these models, prices constantly adjust to equilibrate demand and supply – or to clear markets – hence the name "*market-clearing"* models. An essential premise of the New Classical School is that a more realistic macroeconomic theory will emerge when it is founded on the **underlying microeconomic principles** – meaning that the theory avoids internal inconsistencies and we obtain a better understanding of the real world. The New Classical School continues Milton Friedman's monetarist tradition regarding the quantity theory of money, but they distance themselves from Friedman's approach in several respects, namely the short-run Phillips curve. Moreover, they are even more drastic about the inefficiency of monetary policy and they reject state intervention. Despite their equilibrium approach, the New Classicals' macro analysis is directed primarily towards business fluctuations but, unlike Keynesian economists, they rely on the premise that economic fluctuations cannot be attributed to market failures. As a result, economic fluctuations are bound to depict some **monetary or real disturbances**, whose aggregate effects vary depending on the cost of gathering information, on costs of adjustments etc.

The New Classicals' criticism of Keynesian economics was very harsh, ranging from "econometric failure on a grand scale"[(3)] to Lucas' more recent assertion that it seems to provide the wrong answers to the simplest questions in macroeconomic policy.[(4)] In particular, the decisions regarding most macroeconomic variables – such as consumption and investment – depend essentially on future expectations about the economy. Lucas pointed out that monetary interventions alter the way individuals form their expectations about the future and criticised the large macroeconomic models precisely for ignoring this change in expectations.

Even though the New Classical School focuses on the approach of the economy in terms of equilibrium – by constructing well articulated equilibrium theories – their macroeconomic analysis has been directed primarily towards business fluctuations. By contrast to the New Keynesian economists though, the fundamental premises in explaining business fluctuations is that the latter cannot be attributed to market failures that can be corrected by state intervention. As a consequence, business fluctuations are the result of monetary or real perturbations, whose economic effects depend on the cost of acquiring information, the cost of adjustment etc.

According to Benjamin Friedman (1983), The New Classical School probably represents the most interesting recent evolution in the macroeconomic field and, certainly the most exciting from a theoretical point of view[(5)]. This direction of research, as the name itself suggests, uses a mixture of theoretical concepts and specific hypotheses, often accompanied by modern mathematical and econometric tools, in order to promote the inefficiency of monetary policy in a more convincing manner than previous analyses.

A series of distinctive and innovative features of this stream have considerably increased its attractiveness: the rigour of the explicit optimizing framework that it promotes, for instance, creates endless opportunities for theoretical research, including the attempt to integrate micro and macroeconomics. In addition, the New Classical contributions pose a

challenge and lead the way to further research in the field of statistical inference. And, as a corollary, we acknowledge the formulation of a complex agenda in the field of empirical research.

But beyond all these important aspects, the main reason behind the popularity of the New Classical School is that it directly addresses several issues and problems that have been subject to strong controversies at least since the late '60s: Does monetary policy affect real economic activity? Can we identify any possible trade-offs(6) in the field of economic policy, and, if so, what are these exploitable trade-offs? How important is the conceptual framework for the formulation of policy decisions and measures? How costly is disinflation? and the list may go on.

The most important members of New Classical Economics – Thomas Sargent and Robert E. Lucas, Jr. – talk about the emergence of this direction of research as being a scientific phenomenon: Lucas places the construction of the New Classical theories in the larger context of general equilibrium theory development; Sargent, on the other hand, emphasizes the role of previous progress in statistical methodology. Both of them, however, point out to the axiomatic dimension of the cumulative process specific to scientific investigation.

Since macroeconomic approaches are rarely formulated outside the course of economic events, the New Classical School developed in the context of certain pressing uncertainties in economic policy – as "substitute" of a paradigm whose implications had been decisively falsified by experience. And the central event that triggered this development was the accelerating inflation associated with rising unemployment. This event was in conflict with traditional Keynesian policy, which claimed that an ascending trend of employment could be maintained indefinitely, by accepting a higher – yet stable – dose of inflation. In this context, the greatest challenge for the New Classical Economics was to explain why money is not neutral in the economy and, particularly, why monetary disturbances play a major role within the business cycle mechanism. This challenge was based on two major, opposite motivations: firstly, empirical evidence seems to confirm – at least to some extent – monetary non-neutrality in modern economies; and secondly, from the equilibrium models incorporating flexible prices – that the New Classicals constructed – we necessarily deduce the implication that money is neutral. At first, this approach seemed to achieve notable success. At the theoretical level, the real short-term effects of monetary disturbances appeared to be determined by the existence of imperfect information regarding the money supply and the price level. Monetary shocks, which affected the general price level, could be temporarily perceived incorrectly as shifts in the relative prices, and could thus determine adjustments of the real variables – particularly output and employment. These effects gradually disappeared over the long term, but they could persist for a while due to information lags and to the adjustment costs of inputs. On the other hand, anticipated shifts in the money supply – including systematic monetary policies – have no effects on real variables, because they do not lead to confusions regarding information(7). This approach also seemed plausible at the empirical level: monetary disturbances appeared to be important causes of economic fluctuations, and several statistical data pointed out that particularly unanticipated shifts – namely "monetary surprises" – did have an influence on real economic activity(8). At the same time, the theory was consistent with the absence of a

long-run substantial relationship between real economic activity and the growth rates of money supply and of prices, in other words it was inconsistent with the long-run Phillips curve. More detailed subsequent analyses raised a series of doubts on these theoretical achievements. First of all, the information lag observed in the evolution of the money supply and of the general price level did not seem to be so important, as the New Classical theory claimed. To the extent that imperfect information about these two variables do exist and they represent determining factors within the model, then all economic agents need to do is get informed adequately, which can be done quite easily. Secondly, the New Classical theory did not produce very fortunate predictions of the monetary effects on interest rates, real wages and consumption. Moreover, the potential relationship – of the Phillips curve type – between monetary surprises and real economic activity disappeared completely during the 8th decade. Finally, the positive correlation between monetary shocks and output appears more obvious in the case of larger monetary aggregates and is weaker in the case of narrower monetary aggregates.

The direct consequence of these aspects is that the New Classicals' line of reasoning is deficient in what regards the importance and role of money within the business cycle. This flaw is not altogether justified however, since the empirical arguments showing a correlation between money and real variables also seem a bit exaggerated. In other words, explaining the situations of short-term non-neutrality was a badly chosen priority for the New Classical economists. This is due to the fact that, according to empirical data, most observed correlations between the money supply and real variables in the economy can be attributed to endogenous shifts in the money supply – which are determined, in part, by public authorities' behaviour and, in part, by the functioning of the financial system itself. This shortcoming however, dose not question the notable theoretical achievements of the New Classical economists. In what regards methodology, for instance, the New Classicals achieved the most important contributions in the application – within the general equilibrium framework – of modelling to macroeconomic analysis, the use of rational expectations as part of the modelling process, as well as the fundamental change of vision in what regards the evaluation of economic policies. One area where the equilibrium approach turned out to be very successful is the analysis of public authorities' fiscal policies(9). Part of this research is carried out within the framework of Ricardo's equivalence theorem, which formulates the terms in which the substitution of budgetary deficits by additional taxes has no effect whatsoever. Moreover, subsequent research revealed the real effects of public acquisitions and public services, or of other taxes with distorting effects.

Another significant contribution is the application of game theory to the interaction between public authorities and the private sector. The most important achievements refer to the distinction of rules versus discretion in the formulation of monetary policy, as well as the role of commitments, of the credibility and reputation of public authorities. Some of the initial analyses in this field focused on monetary models. Later on, however, their application to policies in the field of public expenses or foreign debt – to name just two examples – started to ignore the role of money within the business cycle.

New Keynesian Economics

Keynesian economists, on the other hand, have also made considerable theoretical contributions since the early 9th decade, under the generic name New Keynesian Economics: recent research has generated models where economic agents – driven by optimizing behaviour – "choose" to create nominal rigidities. These theoretical evolutions resulted primarily from the remark that the small barriers to the price adjustment process can have important macroeconomic consequences and can trigger significant non-neutralities. Still, the "label" *Keynesian* is so vast today and there exist several theoretical approaches of the New Keynesian economics, but the one particular that unifies this diversity of models is the assumption that economic fluctuations result from a market failure at a grand scale. On the whole, the New Keynesian approach asserts that some outcomes are not efficient, particularly some mutually beneficial exchanges do not occur. As a result of this market failure, chronic unemployment and under-production will emerge, which, most often, have led economists to advocate "corrective" actions by the government.

New Keynesian models can be viewed as attempting to put textbook Keynesian analysis on a firmer microeconomic foundation since Keynes' doctrine was originally centred upon macroeconomics and ignored microeconomic principles almost completely. In this respect, we must note that many New Keynesians have acknowledged the role of rational expectations, and have undertaken to include them into their research. At the same time, this direction of research is the most compatible with the textbook model that combines the IS-LM model with the modern version of the Phillips curve.

The market imperfection that recurs most frequently in Keynesian theories is the failure of nominal variables, such as prices and/or wages to adjust promptly to equilibrate market demand and supply. This is actually the main difference between the New Keynesians and the New Classicals – who claim that prices and wages have perfect flexibility and they adjust constantly in order to clear markets and reach equilibrium.

Of the numerous directions of research within the new Keynesian approach, the best-known is the "*menu cost"* approach. The dissatisfaction with models focusing on *rigid*[10] *nominal wages* shifted attention from the labour market to the goods market. In this respect, much effort has been devoted to examining the behaviour of monopolistically competitive firms which are confronted with certain "menu costs" when they change prices. Taken literally, these menu costs are the expenses incurred by a change in prices. More realistically, these expenses include the time and effort taken to inform the customers and the customer annoyance caused by price changes, as well as the efforts required to imagine and organize such a change. This menu cost theory explains from a different and innovative perspective, the rigidity of nominal prices; one drawback of this approach, however, is the difficulty in measuring menu costs.

The theoretical demonstration that Keynesian economics can be reconciled with microeconomic principles cannot, by itself, stand proof that Keynesian theories are correct. Actually, one of the important deficiencies of recent models of nominal rigidities – identified by the New Keynesian economists themselves – is that the models in question

do not seem to bring forward new empirical implications: Although we often hear terms such as *menu costs*, too few empirical studies, if any, have managed to demonstrate a possible connection between the dimension of such phenomena and the business cycle mechanism. (11) Moreover, it is difficult to identify any incongruity that Keynesian research has solved or any ambiguous phenomenon that it has clarified.

In order to capture the essence of New Keynesian economics and to better understand Keynesian theories – given their number and diversity – it might be useful to try and organize them into sub-categories of research. A very interesting classification is that proposed by professor Mankiw(12), who identifies 3 recent directions of research within New Keynesian economics, each focusing – in a specific manner – on the failure of prices and/or wages to equilibrate the market.

1. Fixed prices and general disequilibrium theories

Starting with Barro and Grossman (1971), during the seventies, many researchers used the tools of general equilibrium(13) to study the way markets interact, when prices are fixed at a level which differs from its equilibrium level. This research program, popular especially among European economists, demonstrated most rigorously the way that quantity adjustment occurs when price adjustment is not possible, and the way economic policy influences output and employment under a fixed-price regime. One significant implication of this research endeavour is that the functioning of the economy depends crucially on the markets experiencing excess demand and those experiencing excess supply. In economic theory, unemployment – or the excess of labour supply – may occur under two different regimes: in the former – classical unemployment – firms can sell everything they produce on the goods market, and unemployment appears because the high real wage renders the efficient employment of the entire labour virtually impossible; in the latter regime – Keynesian unemployment – firms cannot sell everything they produce, therefore unemployment appears precisely as a result of this constraint on the goods market. The difference between the two regimes brings forward several important issues of Keynesian theories, such as: Where is the key-factor(14) located, on the goods market or the labour market? or, If there are imperfections on both markets, how do these interact?

By focusing on the implications of fixed prices, this research program tries to explain *why prices do not adjust to equilibrate supply and demand.* On the other hand, in the context of the New Classical revolution – which had a stronger impact in the USA – American Keynesians proved less interested in the issue of quantity adjustments under fixed prices. By contrast, they concentrated their efforts towards *modelling the price adjustment process.* Once the attention is drawn to the issue of price adjustment, an inconsistency of these general disequilibrium models turns up readily: they entail fixed prices within Walrasian-type economies; and in order to analyze the way prices adjust, it is necessary to abandon the assumption of *price-taking* agents specific to general equilibrium models and accept the premise that some agents are *price setters* and have control over prices. But the hypothesis of price-setting agents does not provide the adequate framework for solving the problems that Barro and Grossman's models address, namely the quantitative adjustment under fixed prices; they merely provide a theoretical distinction between the issues of price versus quantity adjustment.

2. Labour contracts and wage rigidities

Most attempts to explain why economies actually depart from the Walrasian ideal have focused on the labour market, starting from Keynes himself, who emphasized wages' lack of flexibility. Therefore, skeptical towards the New Classicals' conclusions, Keynes' supporters turned their attention to the labour market. The original terms used in the economic literature are *sluggish wages* or *sticky wages*; today economists avoid the term *"rigid",* maybe because it was the term used in traditional Keynesian models, just as the New Classicals avoid the term *"equilibrium"* and prefer the term *market-clearing*.

One of the most important sub-directions of research in this category postulates that attaining a state of equilibrium on this market fails because of labour contracts, which specify workers' wages in advance. The attractiveness of this hypothesis of wage rigidities resulting from labour contracts resides precisely in its realism: it is well known that in real life situations, most workers either conclude formal contracts with the employers, or close informal agreements with them in what regards the wage level. Incorporated into a macroeconomic model, this observation has extremely relevant implications for the formulation and implementation of monetary policies, and the most important of these implications is that the Sargent-Wallace hypothesis is false; thus, if the nominal wage is incapable of responding to economic disturbances, then monetary policy – which responds systematically to these disturbances – is a valid instrument to stabilize the economy, even if we admit the validity of the RATEX assumption. In essence, a fixed nominal wage gives monetary authorities control over the real wage and consequently, over employment.

However, these models have been criticized first of all, for the fact that the existence of such contracts has never been explained based on microeconomic principles. First of all, if these contracts are indeed responsible for large fluctuations in output and employment, then why do firms and workers conclude them after all? The numerous theoretical studies on the optimal risk-sharing agreements between employers and employees have pointed out that these agreements will never produce the nominal rigidities that Keynesian models are founded upon. Secondly, the existence of labour contracts with predetermined nominal wages does not necessarily imply that these wages play an important role in determining the level of employment, as the Keynesian models assume. The counter-argument here is that many workers spend their entire career in a single workplace, and in the context of a long-term work relationship, the wage paid at one point need not necessarily equal the marginal product of labour. On the contrary, in these circumstances, the nominal wage may appear as an "instalment payment" for labour. Moreover, the observation that some wages are rigid does not necessarily imply that the allocation of labour is in itself, inefficient. Last, but not least, a very important observation is that the cyclical evolution of the real wage is not consistent with the models incorporating pre-determined nominal wages and a standard, decreasing labour demand curve. In most of these models, a negative shock on aggregate demand leads to a decrease in prices and to an increase in real wages (because the nominal wage is fixed) and consequently, to a reduction in labour demand. To the extent that fluctuations are determined by the evolution of aggregate demand, real wages should theoretically have a counter-cyclical evolution; however, statistical data show that their evolution is not really in line with economic fluctuations, or that it is rather pro-cyclical. In

the light of the numerous criticisms regarding these models, it is difficult to assess either their theoretical validity or their practical utility, while their supporters have adopted a defensive position in academic debates.

3. Monopolistic competition and price rigidities

Once models based on nominal rigidities failed during the '80s, the attention of Keynesian economists turned to the goods market. These economists started to investigate firms' behaviour regarding the costs incurred when they decide to change prices on markets with monopolistic competition. Economic literature usually refers to these costs as *menu costs;* in essence, they are related to informing the clients about the new prices, to the time spent in this process, to the annoyance induced by price changes, or even to firms' efforts to consider and assess the opportunity of changing prices.

This is a relatively new direction of research, so that it is difficult to assess its impact or to specify the issues that must be analyzed at the theoretical level. But one thing is certain about these models: shifting the focus from the labour market to the goods market can avoid many of the problems surrounding the Keynesian model based on rigid wages. First of all, these models can explain rigorously, in microeconomic terms, the failure of price setters to reach equilibrium again(15). Due to the costs incurred by the change in prices, firms acting on monopolistic markets are not motivated to reduce these prices when the demand for their products falls; this happens because, despite considerable potential advantages for society on the whole, firms' advantages are lower. Under these circumstances, firms will maintain existing prices, even if the adjustment costs are low, at the expense of important potential social losses. Secondly, unlike nominal wages, rigid prices have a very important function in the allocation of resources; finally, from a theoretical point of view, these models do not imply the counter-cyclical evolution of the real wage. Because of these reasons, the nominal rigidities hypothesis shifted from the labour market to the goods market, but this is not to say that the New Keynesians embrace the idea of a labour market in equilibrium. They actually explain unemployment through the existence of certain rigidities in real variables, which prevent the real wage from falling to equilibrate the labour market. The focus shifted to the goods market only in what regards the explanation of nominal rigidities and monetary non-neutrality.(16)

Of the numerous types of *real rigidities* analyzed by the New Keynesian economists, the most frequent are, perhaps, the *efficiency wage* models; the common feature of these models is the assumption that firms do not reduce wages even when unemployment is high and persistent, because such a measure would lead to a decrease in productivity. Several possible explanations have been brought forward to support this assertion: first of all, a sociological motivation would be that when wages are reduced, employees' loyalty is lost; secondly, lower wages have the tendency to reduce the quality of labour; but the most popular explanation refers to firms' impossibility to evaluate employees' efforts accurately, namely to employees passing on responsibility, even at the risk of being fired; in such a situation, a lower wage implies a lower risk of being fired and consequently, a higher chance of eluding responsibility. In all these situations, the impact of wages on productivity prevents firms from reducing them in response to excess labour. If this effect on

productivity is strong enough, then the normal competitive forces that equilibrate labour demand and supply fail to operate any longer.

Conclusion

In conclusion, the vast majority of macroeconomic research of the past four decades has been trying to solve the issues that triggered this state of turmoil in economics. Economists have focused upon grounding their macroeconomic analyses on sound microeconomic principles. Unfortunately, the relevance of these theoretical endeavours for the current economic problems is often neglected and there seems to be a large crack between theoretical progress and economic practices, as economists have failed to adjust their policies to the new theoretical contributions.

Notes

(1) That, even if agents can be deceived in the short run by the larger amount of money they possess (due to the increased inflation), the negative relation between inflation and unemployment does not hold in the long run.

(2) If inflation is anticipated, they realise that the larger amount of money will subsequently lead to a decrease in their purchasing power, and therefore, have no reason to increase output and thus reduce unemployment.

(3) Robert E. Lucas, Thomas J. Sargent – After Keynesian Macroeconomics, in After the Phillips Curve: Persistence of High Inflation and High Unemployment, Federal Reserve Bank of Boston, Boston 1978.

(4) Robert E. Lucas Jr. – Tobin and Monetarism: A Review Article, *Journal of Economic Literature*, no. 9, June 1981, pp. 558-567.

(5) Benjamin M. Friedman – Recent Perspectives in and on Macroeconomics, NBER Working Paper no.1208, Sept.1983.

(6) Such as the inflation – unemployment trade-off.

(7) T.J. Sargent, N. Wallace – Rational Expectations, the Optimal Monetary Instrument and the Optimal Money Supply Rule, *Journal of Political Economy*, 83, April 1975, 241-254.

(8) Robert Barro – *Unanticipated Money Growth and Economic Activity in the United States*, *Money, Expectations and Business Cycles*, Academic Press, New York, 1981.

(9) One of the economists that investigated this matter thoroughly is Robert Barro himself in "*The Neoclassical Approach to Fiscal Policy"*, 1989, in Barro, Robert J. (ed.) *Modern Business Cycle Theory,* Harvard University Press, 1989.

(10) The economic literature usually denominates prices and wages as *sticky.*

(11) Lawrence H. Summers – *Should Keynesian Economics Dispense with the Phillips Curve?,* in Rod Cross – *Unemployment, Hysteresis and the Natural Rate Hypothesis,* Basil Blackwell, 1988, p. 12.

(12) N. Gregory Mankiw – Recent Developments in Macroeconomics: A Very Quick Refresher Course, *Journal of Money, Credit and Banking,* Aug 1988, Part. 2.

(13) Robert Barro, Herschel Grossman – A General Disequilibrium Model of Income and Employment, *American Economic Review,* Mar. 1971, pp. 82-93.

(14) Namely, that market imperfection causing high unemployment during recessions.

(15) N. Gregory Mankiw – *Recent Developments in Macroeconomics: A Very Quick Refresher Course*, Journal of Money, Credit and Banking, Aug 1988, Part. 2, p. 1657.
(16) Ibidem, p. 1658.

References

Ball, Laurence; Romer, David, 1987. Are Prices Too Sticky?, *Working Paper 2171*, NBER, February.
Ball, Laurence, Mankiw N. Gregory, Romer, D., 1988. The New Keynesian Economics and the Output-Inflation Trade-off, *Brookings Papers on Economic Activity,* No. I: pp. 16-17.
Ball, Laurence and Romer, David, (1990), Real Rigidities and the Non-Neutrality of Money, *Review of Economic Studies*, April 1990, No. 57: pp. 183-203.
Barro, Robert J., 1976. Rational Expectations and the Role of Monetary Policy, *Journal of Monetary Economics,* Vol. 2, 1976.
Barro, Robert J., 1984. Rational Expectations and Macroeconomics in 1984, *AEA Papers and Proceedings*, Vol. 74, No. 2, May 1984
Barro, Robert J., 1987. *Macroeconomics,* John Wesley & Sons, New York, 1987
Beaud, Michel and Dostaler, Gilles, 2000. *Gândirea economică de după Keynes*, Ed. Eurosong & Book, Bucuresti.
Blanchard, Olivier J., 2000.What Do We Know About Macroeconomics that Fisher and Wicksell Did Not?, *NBER Working Paper* No. 7550, February 2000.
Carlton, Dennis W., 1986. The Rigidity of Prices, *American Economic Review*, Sept. 1986, No.76.
Dobrescu, Monica, 2012. The New Keynesian Approach to Business Cycle Theory: Nominal and Real Rigidities, *International Journal of Economic Practices and Theories*, Vol. 2, No. 1.
Friedman, Benjamin M., 1983. Recent Perspectives in and on Macroeconomics, *NBER Working Paper* No.1208, Sept.1983.
Friedman, Milton, 1968. The Role of Monetary Policy, *American Economic Review*, No. 58.
Friedman, Benjamin M., 1983. Recent Perspectives in and on Macroeconomics, *NBER Working Paper* No.1208, Sept.1983.
Friedman, Milton, 1968. The Role of Monetary Policy, *American Economic Review*, No. 58.
Hall, Robert E., 1989. A Framework for Studying Monetary Non-Neutrality*, NBER Working Paper No. 3145*, Oct.
Kydland, Finn; Prescott, Edward, 1977. Rules Rather than Discretion: The Inconsistency of Optimal Plans, *Journal of Political Economy,* June 1977, 85, pp. 777-93.
Lucas, Robert E., Jr., 1972. Expectations and the Neutrality of Money, *Journal of Economic Theory*, No. 4, April 1972.
Lucas, Robert E., Jr., 1973. Some International Evidence on the Output-Inflation Trade-off*, American Economic Review,* 63(3): pp. 326-334.
Lucas, Robert E., Jr., 1976. Econometric Policy Evaluation: A Critique, *J. Money. Econ.,* Suppl. Series, I, pp. 19-46, 62.
Lucas, Robert E., Jr.; Sargent, Thomas J., 1978. After Keynesian Macroeconomics, in *After the Phillips Curve: Persistence of High Inflation and High Unemployment*, Federal Reserve Bank of Boston, Boston.
Lucas, Robert E., Jr., 1980. Rules, Discretion, and the Role of the Economic Advisor, in S. Fischer, *Rational Expectations and Economic Policy*, Chicago, NBER, 1980, pp. 199-210.

Lucas, Robert E., Jr., 1980. The Death of Keynesian Economics, *Issues and Ideas* (winter 1980), University of Chicago Press.

Mankiw, N. Gregory, 1985. Small Menu Costs and Large Business Cycles: A Macroeconomic Model of Monopoly", *Quarterly Journal of Economics*, May, No.100: pp. 529-37.

Mankiw, N. Gregory, 1988. Recent Developments in Macroeconomics: A Very Quick Refresher Course, *Journal of Money, Credit and Banking,* Aug 1988, Part. 2

Mankiw, N. Gregory, 1989. Real Business Cycles: A New Keynesian Perspective*, Journal of Economic Perspectives*, Vol. 3, No. 3.

Mankiw, N. Gregory, 1990. A Quick Refresher Course in Macroeconomics, *Journal of Economic Literature,* Vol. 28, December.

Mankiw, N. Gregory, 1991. The Reincarnation of Keynesian Economics, *NBER Working Paper* No. 3885, October.

McCallum, Bennett, 1986. On "Real" and "Sticky-Price" Theories of the Business Cycle, *Journal of Money, Credit and Banking,* Nov., 18: 397-414.

Neary, J.P., Stiglitz, J.E., 1983. Towards a Reconstruction of Keynesian Economics: Expectations and Constrained Equilibria*, Quarterly Journal of Economics*, suppl. 97, pp. 199-228.

Phelps, Edmund S., 1970. The New Microeconomics in Employment and Inflation Theory*,* New York, Norton.

Phelps, Edmund S., 1988. Comment on *Recent Developments in Macroeconomics: A Very Quick Refresher Course*", *Journal of Money, Credit and Banking*, Vol. 20, No. 3, August, pp. 456-58.

Phillips, A.W., 1958. The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom 1861-1957, *Econometrica,* 1958.

Romer, David, 1993. The New Keynesian Synthesis, *Journal of Economic Perspectives*, Vol. 7, Winter 1993, pp. 5-22

Sargent, Thomas J.; Wallace, Neil, 1975. Rational Expectations, the Optimal Monetary Instrument and the Optimal Money Supply Rule, *Journal of Political Economy*, 83, April, pp. 241-254.

Stiglitz, Joseph E., 1997. Reflections on the Natural Rate Hypothesis, *Journal of Economic Perspectives*, Vol. 11, No. 1, winter 1997.

Summers, Lawrence H., 1988. Should Keynesian Economics Dispense with the Phillips Curve?, in Rod Cross – *Unemployment, Hysteresis and the Natural Rate Hypothesis,* Basil Blackwell.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 220-232

Homo Economicus in the 21st century. The loss of moral identity

Alexandra-Veronica CLIM
University "Stefan cel Mare" Suceava, Romania
alexandra.ungureanu2016@gmail.com

Abstract. *The 21st century is marked by an economic-behavioral revolution, in the center of which is homo economicus. Most economic models leans on the assumption that people are rational and selfish beings. Today the idea of homo economicus is called the rational choice theory, that requires people to make economic and social decisions based on costs and benefits. The following article is devoted to the analysis of the rationality and limitations of this concept, often taken into consideration in sociology and economics, and whose moral consequences are more present today than ever.*

Keywords: globalisation, knowledge based economy, desire of wealth, utility, rationality.

JEL Classification: A12, A13, B12, B13, B21, B41, B50.

1. Conceptual delimitation of Homo Economicus

The basis of today's economy is build on the choices that man has made over time until today. Every day we have to make choices about how to allocate our limited resources to best satisfy our unlimited needs. Economists are trying to shape human behavior so we can predict what choices we make under what conditions and circumstances.

Currently, the most widespread model in the economy, which aims to describe how a human person makes choices, is the Homo Economicus model, the economic man. According to this model, all people are reduced to an unique, representative human being, which has only two features: he is rational and seeks profit.

The notion of Homo Economicus has been debated for decades by economists. It is considered to be a theoretical construction that presents its own interest as the main human reason in all the transactions it undertakes. This concept also includes research from several areas of social science such as psychology, sociology, anthropology, history and political science. This is not surprising, because the neoclassical economy is structured around the notion of Homo Economicus. The theory of consumer choice (maximizing utility), business theory (profit maximization), industrial organization, welfare theorems, which together comprise virtually the entire neoclassical paradigm in the economy, require, directly or indirectly, the assumption that agents act in accordance with the Homo Economicus anthropological scheme.

The concept of Homo Economicus lies with John Stuart Mill (1806-1873)[(1)], although the term himself was introduced by his critics. According to Mill, the economic person does not treat his whole nature as it has been modified by the social state, or by the whole of its conduct in society. He is concerned only with a being who wants to possess wealth and who is able to judge the comparative effectiveness of the means to achieve this goal. The idea of Homo Economicus adopted and intensively studied in the neoclassical economy is much more specific than in Mill's writings. Once the neoclassical notion of Homo Economicus was defined, a critical analysis from several approaches could be made in order to provide a holistic view of the concept. Among these approaches are:

- Behavioral economy - based on cognitive psychology.
- Institutional Economics - based on a study of how institutions influence behavior.
- Political economy - studying the capitalist mode of production and its influence.
- Economic anthropology - a way of wider understanding of factors of historical and cultural influence.
- Ecological economy - which considers that the fundamental role of human existence is belonging to an ecosystem.

According to the neoclassical vision in which the concept is framed, there are five known dimensions of Homo Economicus, or characteristic features which define it:

Individualism - Individuals think, decide and act only according to their interests. This Homo Economicus scheme, which is based on the self-interest criterion, claims that people are economic agents not interested in the welfare of others. But this is partly true because individuals can worry about the well-being of others insofar as they do not affect their well-being. In other words, the neoclassical perspective argues that there is an individualistic

motivation behind the actions normally considered altruistic, any action not necessarily in itself. Therefore, any moral considerations will not be mandatory, but may be subordinated to the terms of maximizing individual utility.

Behavior Optimization - Human beings will constantly scan situations that can produce pleasure, pain, costs or benefits, and try to get the best results from the perspective of the means they have. Thus, the consumer choice theory demonstrates that a consumer seeks to maximize utility under budget constraints and the entrepreneur attempts to maximize profits in terms of production opportunities and costs involved in production processes.

Full rationality - Individuals have the full capacity to properly process the amount of information available, being fully objective about the variety of choices from which they can make a decision without falling into any cognitive bias.

Universality - The universal validity of Homo Economicus's postulate as a model of behavior is maintained. Thus, this status applies to all types of events at any time and does not distinguish between major and minor decisions or between emotional and rational decisions. In analyzing this concept, the economic approach provides a framework applicable to all human behavior in all social categories and all types of decisions.

Exogenous preferences - The neoclassical economy considers human preferences to be exogenously developed. Thus, individuals engage in economic interactions with defined preferences whose process of training is beyond the sphere of the economy. In the neoclassical economy there is also a conception of the human act that is independent of interaction. Against this background, agents are assumed to be consistent when sorting preferences that have to fulfill certain mathematical properties: they must be complete, transient, and monotone.

2. Critical analysis of Homo Economicus

Homo Economicus is a theoretical basis for the moral and ideological legitimacy of the entire economic system. According to this theory, when individuals behave in a rational and self-interested manner, there is an "invisible hand" that procures the common good.

From this point of view, if individuals are rational, we can assume that the whole system is rational. If a general competitive balance is reached in free markets, neo-classical economists claim that society's resources are used in the most efficient way possible. These issues eliminate any possibility of hesitation or morality in terms of self-interest behaviors.

In addition, the neoclassical economy has helped to establish an omnipresent identity between human welfare and happiness by measuring the latter by the non-discriminatory multiplication of goods in a capitalist society. This paradigm has capitalized on the desire for an undefined growth in commodity production. Gross domestic product (GDP) is an indicator of monetization of this idea of progress, where pecuniary values dominate society at the expense of other more valuable values.

A contradiction appears in a market society between the real results of the hedonistic principles of the neoclassical economy. This contradiction is not only reflected in the food

crisis of the poorer countries, but is also evidenced by the loss of quality of life in material and psychological terms, seen in the industrial metropolis. For example, if we focus on the United States, the enormous increase in post-World War II commodity production has been accompanied by a significant increase in pollution and the degradation of raw materials and energy resources. Moreover, it did not lead to a significant improvement in basic needs, such as diet, clothing or housing. With regard to food, the system of maximizing profits in a commercial company is put to the consumer's health, the farmer's livelihood, the working conditions of workers and the natural environment. When examining the first problem, there is a clear decrease in the quality of the foods consumed by the average American. Although many food processing processes are beneficial to human health, the way foods are processed, as well as the degree of processing or the reasons why they have been revolutionized, are an essential part of industrialization.

Transnational food and beverage production and distribution companies as well as allied companies, whose profits derive from homogeneous products ready for consumption, have become titanic corporations worldwide. These changes have been accompanied by significant increases in obesity and chronic noninfectious diseases, particularly in high and middle income countries.

As far as clothing is concerned, the garment industry is another example of contradictions associated with the bad news of the market society. Not long ago, there were only two major clothing seasons a year. Currently, every 15 days, traders change their collection. Rapid fashion is a concept originally developed in France to serve the markets of teenagers and young adults who want modern, short and cheap clothes. This quick-based philosophy is used by large retailers to allow ordinary consumers to buy current clothing styles at a lower price. It has become the global model to reduce time between design and production, while reducing costs.

However, the ability to change and update clothes and trends every 15 days has a negative aspect that is important to discuss. Psychology, psychiatry and even marketing have been studying an increase in the number of disruptive behavioral disorders in recent decades. For example, compulsive shopping occurs when a consumer faces intense and unrealistic impulses to buy. Compulsive consumers are often assisted in compulsive buying practices as compensation for low self-esteem or unfortunate events. The consumer's mind and mood may be temporarily lifted by the purchase act.

Fast-paced retailers may have an interest in consumers if they already have compulsive shopping habits because the compulsive consumer can rely on knowing that new and up-to-date clothing products will always be available.

Finally, when analyzing the need for housing, we can also report significant complications derived directly from the development of a market society. The problem arises when the desire to maximize profit becomes the guiding principle that orders the territory and builds the city. Two phenomena are noteworthy: the pressure imposed by the market society that wants to grow without limits and the connection between growth and urban development models.

First, growth obsessions force cities to expand at much higher rates than population growth and disposable income. Although cities need to grow spatially to adapt to an expanding population, there may be too much space to grow. It is not uncommon to observe vacant homes in the inner areas and to promote new homes in other parts of the city, which implies the expansion of cities under the productive logic prevailing in a market society.

Secondly, these growth processes are implicitly adjusted to two models that cause increased social fragmentation and greater dependence on market commodities:

1. The urban expansion model characterizes modern cities that segregate and extend the different parts of the city in a very inefficient way over a territory, requiring expensive transport infrastructure to connect them. Thus, excessive urban expansion means too much commuting, which generates traffic congestion, while contributing to air pollution. In addition, by spreading people, low-density suburban development can reduce social interaction, weakening the links that underlie a healthy society.
2. A model of architectural uniformity is also imposed in the modern city. Prior to the emergence of capitalism, vernacular architecture was the norm, but market society shifted vernacular architecture with industrialized architectural uniformity. These architectural styles, which are relatively cheap due to mass production, have made urban dwellers more dependent on the use of heating or air conditioning appliances that fit perfectly into the logic of capitalist accumulation.

Thus, we can observe that the notion of Homo Economicus and the market society that surrounds it created contradictions in three basic subsistence areas: food, clothing and housing. In each case, the extent of the consumption of goods has increased, which the neoclassical economy regards as the only measure of success. But the triumph of quantity meant a decrease in the quality of life in many respects. For this reason, we need better economic models to better recognize these contradictions and try to overcome them by transforming Homo Economicus with moral identity.

The following critical views aim to highlight the fact that the Homo Economicus scheme is obviously inadequate and insufficient. Nevertheless, despite its inadequacies, it remains one of the fundamental pillars of the neoclassical paradigm in the economy.

2.1. Behavioral Economy Perspective

Behavioral economy can be defined as the approach to introducing a plausible set of psychological principles into economic analysis. In this way, new theoretical perspectives, better forecasts of field phenomena and the development of better policies are being sought.

Herbert A. Simon[(2)], was one of the pioneers who questioned the supposed full rationality of Homo Economicus. Simon has argued this through a study of the process of choosing the right decisions, taking into account the cognitive and non-cognitive limitations of individuals, such as the ability of the human mind to store, process, and retrieve information. In addition, individuals do not always develop in-depth analysis skills when making decisions, which casts doubt on their rationality. Non-cognitive factors, such as culture, emotions, or imitations, are defining the rationality of the individual. That is why Simon introduced the limited rationality hypothesis in economic modeling, which treats

satisfaction rather than optimization as the center of motivation in the study of rational choice.

Simon is not the only researcher who has questioned the hypothesis of optimization and full rationality in the neoclassical vision of Homo Economicus. For example, Leibenstein channeled his studies into the development of a work that deals with the psychological premise of rational selectivity. According to him, individuals are not trying to attain a degree of well-being by choosing between possible choices, but by the intensity with which they react to opportunities and constraints in accordance with their personalities and on the basis of external pressures.

In the second phase of the development of behavioral economics, the research program developed by Daniel Kahneman and Amos N. Tversky in the field of behavioral research has attracted the attention of economists. These authors, thanks to advances in cognitive psychology, questioned the supposed total rationality of individuals through their thesis on heuristics and prejudices. They discovered that individuals, when make decisions, systematically resort to heuristic thinking, which allows partial data based evaluations. These quick cognitive controls are used even when they have additional data that would allow a more accurate assessment. Two of the most studied heuristic concepts by these authors are representativeness and availability.

On the one hand, representativeness heuristics is a cognitive bias in which people make decisions or judgments opposed to applying the basic rules of probability. At the same time, according to heuristic availability, individuals tend to change their judgments based on recently acquired information or momentum.

In addition, compared to the expected utility theory that shapes a completely rational behavior in uncertainty and risk situations, Kahneman and Tversky have developed an alternative critical model, which was called perspective theory. Through a series of experiments, these authors have demonstrated that individuals are making decisions according to the different alternatives they have and choose according to how they are presented. For example, individuals are willing to take risks in order to avoid a loss rather than gaining a profit, thus giving rise to the notion of aversion to loss. For these reasons, the ability of individuals to consistently order their preferences is seriously questioned. This attitude is defining for the Homo Economicus model.

At the same time, those studying the behavioral economy were particularly critical of the notion of Homo Economicus. For example, Nobel laureate Richard Thaler describes a total of 10 types of issues that consumers are prone to deviate, thus violating the predictions of Homo Economicus's normative model. Thaler argues that the neoclassical model of consumer behavior is particularly sterile in terms of estimating the average consumer's optimized behavior. This is not because some consumers are ignorant and do not spend enough time analyzing situations to make the most beneficial decisions. Other behavioral economists have focused more on criticism of individualism, finding evidence that individuals do not behave in a way that is purely interested in their own person. From the experimental use of the methods applied in the economy (public goods experiments, prisoner dilemma, dictator's play, ultimatum), researchers have shown that individuals tend

to cooperate voluntarily with players who treat them correctly but punish those who do not cooperate, demonstrating the effects of strong reciprocity.

2.2. The vision of the institutional economy

If in the neoclassical economy the institutional framework is considered exogenous, in the institutional economy institutions are considered not only endogenous, but also constitutive aspects of the economic system. In this context, the first critique of Homo Economicus as a participant of the institutional economy, focuses on an epistemological issue, namely methodological individualism.

In the institutional economy, individual subjectivity can not be consistently understood as something that exists before the social world but is built from a set of institutional and social influences. According to institutional economists, the economic process does not happen through the individual, but through the habits of thought, conventions and institutions. Beyond the previous methodological issue, the institutional economy criticizes the idea of individualism in terms of human motivation.

Human beings are not simply individuals doing transactions in an isolated manner because they are always part of a society. This is taken into account when formulating the concept of Homo Politicus, which is distinguished from simple Homo Economicus, assuming that human beings are not only interested in their private interests in their own individual preferences, but also in receiving approval from fellow citizens for what they say and for what they do. But this does not contradict in any way the Homo Economicus postulate, since the individual manifests prosocial behavior only to the extent that it will gain recognition from the community, which may be an individualistic motivation.

Interactions are possible through institutional and corporate governance supervision; so society is more than a mere aggregation of individual actions. The homo corporative concept differs from Homo Economicus not only because it is a social being oriented towards community membership, but also because it is driven by a notion of social interest offered both by corporations and by the state.

Consequently, the inherent social nature of human beings, manifested and conditioned by the different institutional settings, makes Homo Economicus a construction that is largely unviable in understanding social action or even a single economic action that is always and necessarily an action social.

2.3. The vision of the political economy

The political economy can be defined as the science of laws governing the production and exchange of material means of subsistence in human society. Thus, in classical analysis, the fundamental concepts involved studying the economic characteristics of the social classes, especially the workers and capitalists, and the social relations established between them both in the production phase and in the stage of the economic process.

There is a clear difference between the classical political economy, which focused on class analysis and the neoclassical economy, centered on the analysis of the isolated individual or methodological individualism. One of the most influential authors of the classical

political economy was Adam Smith. A passage from his most famous work, The Nation's Voice, is often used to justify the type of individualistic and self-interested behavior underlying the notion of Homo Economicus: "We do not expect to receive dinner for dinner by the butcher's favor, brewer or baker, but because they pursue their own interests. We are not addressing humanity but self-love, and we never talk about our needs, but about their advantages." (Book 1, Chapter 2)

Adam Smith stressed the importance of the context in individual behavior. For example, the rules applied in market-oriented relationships between individuals whose values are unknown, are different from rules used in other institutions, such as family. Thus, according to Smith, the predominant feature of the market environment is the interaction between individuals determined by their own interest; however, this does not mean that it is the only behavior that guides human behavior. The market is part of a wider system of shared social rules where compliance or noncompliance involves approval or disapproval.

Another influential author was Karl Marx, who contributed to the critique of classical political economy. According to Marx, the notion of economic man corresponds to the proper description of the behavior that arose because of capitalism. Thus, the economic man is a social construction of capitalist production, and this kind of anthropology and behavior is not universal; on the contrary, under other forms of socio-economic organization, human behavior would be different.

More recently, the radical political economy is a critical approach to the neoclassical economy and capitalism that seeks to recover the tradition started by classical economists and Marx. One of his main criticisms focuses on Homo Economicus' individualistic and optimized behavior, a conceptually unimaginable one-dimensional vision, given the complexity of issues such as the economic crisis. Lately, many economists agree with the need to restore moral motivation, values and social engagement in economic analysis.

2.4. The vision of economic anthropology

Economic anthropology is an approach that studies the regular interaction of individuals with both social groups and the environment in order to provide the goods and services necessary for social reproduction. It focuses primarily on primitive study and non-capitalist economies.

The formalist-substantivist debate about the universal applicability of behavior in a capitalist system to other forms of economy is the key aspect of the notion of Homo Economicus. Formalists have argued that individual optimization behavior is universally applicable at any time and place. Nounists have argued that the neoclassical model of rational choice would be valid only in the context of the Western market societies.

Exchange relations in most societies and individuals have historically not followed a capitalist pattern. Therefore, in order to implement such a model of social and economic organization in the Western countries, a transformation was needed across many dimensions. Because of their very unnatural character, capitalist models have been met with great resistance and opposition by groups more attached to traditional social norms, concluding that Homo Economicus does not produce capitalism, but capitalism produces

Homo Economicus. The differences between the primitive economy and the industrial economy were substantial, and the theoretical schemes derived from them could not be applied directly to the primitive economy study.

The primitive economy is different from the industrialization of the market, not in degrees, but in nature. The absence of machine technology, general market organization and universal money, plus the fact that economic transactions can not be understood outside the social obligation, create a non-Euclidean universe where Western economic theory can not be applied.

Thus, the utility maximization agent scheme can not be applied to all times and places. For example, the theory of rational choice does not provide a fully adequate explanation for social norms and their evolution because rational individualistic behavior refers to results and social norms are unconditional, not result-oriented.

Hence, human beings are not just individualistic creatures; they are also cooperative and solid at a fundamental level. Thus, individuals not only show sympathy, but also show their commitment to others, no matter how the welfare of others affects theirs. It is obvious that commitment is not compatible with the Homo Economicus approach.

The mathematical scheme of rationality understood only as an individual optimization can not consistently capture the reality of choice processes that are polyvalent. Elections are conditioned by rationality models derived from other dimensions, such as ethics and culture, which can not be reduced to individual optimization. The problem is not only to incorporate moral considerations into utility function; ethics has its own nature and specifics, and people are generally both morally motivated and self-interested.

Another relevant topic that has been highlighted by economic anthropologists is the difference between the market society and the gift society. In this regard, Marcel Mauss (1923)[(3)], analyzed special exchange ceremonies such as potlatch[(4)] practiced by North American natives. He found that the value of the gift was based on the relationship between people and objects, while in the market society there was a remarkable dissociation between people and objects.

This problem was deepened by Marshall Sahlins (1930)[(5)] which related the mutual transactions with the social distance between the persons involved. Later, he described how objects can create, sustain and regenerate social relationships beyond the mere dedication of the movement associated with reciprocity. These types of interactions go beyond Homo Economicus and show why they can not be universal. In fact, dissociation between people and objects - as a specific feature of market economies - partly explains that capitalist societies are significantly more unequal than other societies.

In addition, economic anthropology questions the neoclassical methodological assumption of exogenous preferences. Individual decisions can not be consistently understood by their abstraction from their cultural, sociological and historical context. It is therefore necessary to take into account endogenous factors such as socialization, enlightenment and habits.

Knowing the wider context in which cultures or societies carry out economic interactions is essential to the success or failure of policy development and is unlikely to be reflected

by a scheme that considers all these aspects to be only exogenous. Economic anthropology extends the perspective to the study of different cultures and societies and notes that the anthropological model proposed by the neoclassical economy is extremely restrictive, deficient and misleading.

2.5. The vision of the green economy

The ecological economy can be defined as a heterodox approach that explicitly understands the economy both as a social system and as constrained by the biophysical world, but at the same time it must not be confused with the environment economy. It is a branch of studies applied in economic neoclassicity and extrapolates the marginalist criteria of logic and welfare economy into the environment as if it were a simple matter of outsiders or just a good of the market. It goes beyond the perspective of the neoclassical environmental economy, which relies solely on the preferences and welfare of individuals. The ecological economy does not address environmental and resource issues than external effects or as a problem of public goods but perceives the economy and people as parts of an ecological whole.

The ecological economy differs substantially from the individualist notion of Homo Economicus. The neoclassical economy conceptualizes the environment fundamentally externally for the person who perceives it in terms of the logic of consumption (utility) or production (exploitation). Instead, the environment in the organic economy is not regarded as exogenous, but as a constitutive factor of the identity and existence of the individuals themselves.

The ecological economy questions both individualism and the claim of universality in the neoclassical model of anthropology; proposes a broader analysis in the context of the so-called human ecology. Concerning the behavior of Homo Economicus optimization, the neoclassical economy considers it in marginal analysis of decisions (marginal utility, marginal product, marginal cost). In this respect, welfare economy models and theorems are based on multiple maximizers that interact to achieve maximum social welfare. Consequently, cost-benefit analysis is applied to assess environmental issues, assuming axiological monism, in which all utility objects have certain common characteristics that allow them to be compared. However, the environment considered as a whole is qualitatively different from any object of consumption or particular production factor; consequently, it can not be understood coherently, according to the logic of marginal analysis of optimization based on the ceteris paribus condition.

Removing or adding a species to an ecosystem, for example, will affect other species and the overall integrity of the system in unpredictable ways. In addition, the effects may vary from time to time when a change is made. In evolutionary systems, it is impossible to change things and keep things constant. The existence of qualitative criteria and non-marginal change is a strong argument for the rejection of microeconomic theory.

The idea of full rationality is also taken into account in the ecological economy. Specifically, individuals often enter in temporary myopia, seeing and arbitrarily preferring the present more than the future.

This is precisely one of the causes of the current ecological problem. Rational individuals seek a maximum benefit of the use of natural resources in the short term; however, collective action in this way ends by affecting and even destroying the availability of long-term resources.

Thus, what seems reasonable at the individual level in the short term can not be so bad for the individuals themselves. Therefore, the inter-temporal neoclassical analysis, which uses discount rates to take account of the importance of future environmental gains or losses, is not limited, but is also misleading. Some phenomena that are considered anomalies in the neoclassical economy are actually part of the behavior of real agents. For example, endowment effects arise when individuals arbitrarily assign more value to things because they hold them, which may affect the implementation of specific ecological solutions such as ecological subdivision models.

Another example is the hyperbolic discount that occurs when individuals appreciate the near future considerably longer than the distant future. Taking this phenomenon into account, environmental managers who want to act rationally from an integral perspective need to calculate not only the rate of economic time update but also the ecological time update rate.

A third example of how individual preferences can provide extremely misleading information about social outcomes is the partial problem. This happens when individuals value the sum of the individual parts of an object more than the whole object itself. To correct this, an analysis in terms of complex systems is needed to understand the economy in its environmental context.

From an ecological perspective, the neoclassical notion of Homo Economicus should be questioned. A theoretical framework that considers that environmental issues are just exogenous or simply applied subjects can not be an appropriate guide to rationality, because Homo Economicus rationality can lead to ecological irrationality. Therefore, the ecological approach indicates a profound reformulation of the economy.

3. Conclusions

The neoclassical scheme of Homo Economicus is obviously inadequate and insufficient to describe the complexity of human behavior. I used five approaches to criticize the notion of Homo Economicus, which underlies the whole framework of the neoclassical economy.

From the study of psychology, the behavioral economy has shown that there is no rationality or perfect criterion for optimization; on the contrary, our perceptions and decisions are systematically affected by cognitive prejudices and limitations.

From the analysis of how behavior is modeled by social norms, the institutional economy has established that we are not isolated subjects with given preferences, but are constitutively formed by social norms and structures. Even our apparent individuality and preferences are influenced by social factors.

The perspective of social and power relations shows that political economy finds that individuals do not exist separately and independently. People exist in groups or social classes in a hierarchical scheme. The self-interesting nature of Homo Economicus is not universal; on the contrary, it is a social construction of capitalism itself.

According to cultural development, economic anthropology questions the universality of Homo Economicus, showing that in pre-capitalist economies, social interaction schemes based on cooperation and solidarity can not be reduced to self-interested motivations. The complexity of motivation involves some deeper and transcendent connotations.

Finally, from the broader conceptualization of human beings as part of a large ecosystem, the ecological economy considers the environment not as an exogenous thing that can be approached as a subsidiary issue in economic theory. On the contrary, it should be considered endogenous as something that needs to be approached consistently from a holistic perspective and not from the limited neoclassical scheme.

Despite these critical perspectives, the Homo Economicus defense remains in place because it legitimizes and rationalizes the functioning of the current market society. A number of contradictions have arisen in market societies and reveal the urgent need to overcome the approach created by joining Homo Economicus.

The first contradiction involves the hedonistic principles of Homo Economicus, linking happiness or well-being to the consumption of goods and services. The quality of people's lives may actually decrease in terms of diet, clothing and housing.

Second, the logic of optimizing production and consumption in an increasingly competitive capitalist accumulation environment, lowers the commodity price. In neoclassical theory, this result is treated as an indicator of the success of capitalism. However, the logic of optimization has also led to deteriorating working conditions and reducing the pay of the working class. The failure of the neoclassical economy to address this trend, reveals a lasting alliance between mass economy and capitalism.

Thirdly, the model of the market society in the industrial metropolis (rich countries) is not globally generalized. The level of production achieved in these metropolitan centers is based on increasing use of non-renewable energy and raw materials. This process can only be sustained by the absorption of energy and raw materials from the countries of the south of the world and by ecological colonial practices such as the exploitation of the most polluting industries on their territory.

The ecological economy shows how the expansion of the current model of society and its increasing dependence on the degradation of energy and unprofitable raw materials has already reached the limits of the planet. Thus, it is becoming more and more urgent to take into account the relatively short deadlines for exhausting a whole series of unprofitable raw materials and breaking the basic ecological balances that make life on earth possible.

The notion of Homo Economicus continues to dominate the thinking of mass economists and by extension of other agents of the capitalist economy. To achieve consistent and genuine progress towards a fairer and more sustainable economy, a multi-paradigmatic vision is needed.

Notes

(1) John Stuart Mill (20.05.1806 - 8.05.1873), one of the most influential thinkers in the history of classical liberalism, has contributed greatly to social theory, political theory and political economy, being the most influential Anglofon philosopher of the nineteenth century. Mill's concept of freedom justified freedom of the individual in opposition to the unlimited control of the state and society.

(2) Herbert Alexander Simon (June 15, 1916 - February 9, 2001), an American economist and political scientist whose main focus was decision-making within organizations, being known for the theories of limited rationality and satisfaction. His research was noted for his interdisciplinary nature and covered the fields of cognitive science, informatics, public administration, management and political science. He has been among the pioneers of several modern scientific fields, such as artificial intelligence, information processing, decision-making, organization theory.

(3) Marcel Mauss (10.05.1872 - 10.02.1950), a French sociologist whose academic work has crossed the boundaries between sociology and anthropology. Today, he is probably best acknowledged for his influence on anthropology, especially as regards his analysis of subjects such as sacrifice and gift exchange in different cultures around the world. His most famous book is The Gift (1925).

(4) Potlatch is a feast-giving feast practiced by the indigenous peoples of the North-West Coast of Canada and the United States of America, among which traditionally the primary economic system. It has gone through a rigorous ban on history from the Canadian and US federal governments, continuing underground, despite the risk of criminal punishment, and has been studied by several anthropologists.

(5) Marshall David Sahlins (born 27.12.1930) is an American anthropologist known for his ethnographic work in the Pacific and for his contributions to anthropological theory. Currently, he is Professor Emeritus of Anthropology and Social Sciences at the University of Chicago.

References

Babbage, C., 1963. *On the Economy of Machinery and Manufactures,* Yale University Press, pp. 175-176.

Bastien, C., Cardoso, J.L., 2007. From homo economicus to homo corporativus: A neglected critique of neoclassical economics. *The Journal of Socio-Economics* 36, pp. 118-127.

Durkheim, E., 1947. *The Division of Labor in Society.* Glencoe, Ill, pp. 45-53.

Herskovits, M., 1998. *Economic Anthropology: A Study in Comparative Economics.* 2nd ed.; New York, pp. 126-135.

Keynes, J.K., 1891. *The Scope and Method of Political Economy*. London Macmillan, p. 32.

Lawlor, M.S., 2005. William James's psychological pragmatism: habit, belief and purposive human behaviour. *Cambridge Journal of Economics.* 30, pp. 321-345.

Marx, K., 1970. *Economic and Philosophical Manuscripts of 1844*. New York Business Writings, pp. 113.

MILL, J.S., 2007. *Essays on some Unsettled Questions of Political Economy*, Cosmobooks, pp. 105-110

Moore, W.E., 2001. The Attributes of an Industrial Order. Man, Work, and Society. *New York Journals,* Vol. 7, pp. 92-93.

Persky, J., 1995. Retrospectives: The Ethology of Homo Economicus. *The Journal of Economic Perspectives,* Vol. 9, No. 2, Spring, pp. 221-231.

Smith, A., 1937. *The Wealth of Nations.* New York Economic Institution, p. 7.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 233-238

The economic coordinate of Alvin Toffler's Work

Cezar VASILESCU
Economic Highschool "Ion Ghica", Targoviste, Romania
cezvas08@yahoo.com

Abstract. *In this article we tried to capture the economic coordination of the work of Alvin Toffler, a reputed American sociologist and futurologist. Even if he is not a professional economist, reporting to economic coordination, both as a premise and as an effect, takes place in his entire work. We tried to group the economic analyze of Toffler's work in two directions: macroeconomic trends and intrusion into the everyday microeconomic area. As macroeconomic trends we presented synthetically: the rapidity of the real economy, the transition from the agrarian and industrial society to the knowledge society that has as consequences changes in the nature of power in the global economy, the rise of global corporation, the change of managerial paradigm and instability of the banking-international financial system in the last half of the 20th century. As microeconomic level we have presented as well as expected trends by Toffler the development of intelligent environments, the disappearance of the traditional family and the increased of the role of women in society.*

Keywords: agrarian society, industrial society, knowledge economy, managerial paradigm, intelligent environment.

JEL Classification: O11, O14, O33, O57.

1. Introduction

Alvin Toffler was a reputed American sociologist and futurologist. Chronologically his work is delimited over a period of more than 3 decades in the XIX century and the beginning of the XXI century. Thus, the trilogy made up of the international bestseller *The Future Shock (1970)* then *The Third Wave (1980)* and *The Powershift (1990)* is followed by the emergence of an enlarged synthesis in 1995, *Creating a New Civilization.* Toffler's last book is *Revolutionary Wealth (2006).* It also worth mentioning the strictly economic *Eco-spam* and *Corporative Adaptable* work as well as *Consumers of Culture.* Overall, it can be said that Alvin Toffler's work analyzes the influence that social and economic evolution has on many areas of human life: micro and macro-economic, behavioral and family, social and political. Despite the fact that he hasn't a professional economist, the economic coordination is done both as a premise and as an effect for explaining the complex phenomenon that characterize the current state of affairs. Next, we will synthetically present some of the ideas of an economic nature that emerge directly and indirectly from Alvin Toffler's work grouped in two directions.

2. Visionary of macroeconomic trends

The predilection for anticipating future trends is successfully achieved economically.

A. The trend of rapid evolution of the real economy is the essential feature of Toffler's work.

The alley of highway, presented in Revolutionary Wealth where 10 cars run at different speeds is suggestive in this regard. Thus the car 1 with the highest speed (100 mp/h) is the company, successfully followed by the car 2 the civil society (90mp/h), the car 3, the family (80mp/h)and successive trade unions, the governmental bureaucracies, the educational system not adapted of economic and social changes the last places being the international organizations of IMF and WTO and policy structures and on the last position the legislative system (10mp/h) (Toffler, 2006, p. 37). Rapid changes in the economy and society are outlined in his very first book *Future Shock* when in the part I *The death of Permanence* in subchapter *The 800 life period* makes a suggestive delineation of social's existence of 50000 years in average life spans of 62 years, concluding that we currently live the 800th life time.650 lifetimes man live in caves, 70 periods ago he invented the writing and the last six period the printing press, just in the last two, the electric engine. To characterize the acceleration of the rhythm of existence the author introduces new concepts. For example *transient,* the sped of movement of different realities in the individual's life with objects, places, organizational environment and time. Another concept, *progeria,* the disease of old age is presented by the example of a person who at an early age had the characteristics of an old man (Toffler, 1970, p. 11).

B. The transition from the agrarian and industrial society to the knowledge society.

The Toffler's famous book of the 80's **The Third Wave** shows extensive this aspect. The authors considers that the economic and social evolution followed three stages. The first wave of the **agrarian society** lasted most and was characterized by the system of the natural economy and the closeness of man to nature. The exchange wasn't very developed, the

production and implicitly the goods necessary of the existence were made at the level of the family household when the members of the several generation lived together. The second wave-i**ndustrial society** is born with the invention of the steam engine and the development of the first industrial branches. The standardized, synchronized and specialized mass-production required division of labour and the emergence of automated assembly lines. The consequences were the development of large series production the expansion of companies and the development of the sales markets. In social terms, the emergence of routine work and fixed program, the latter leading to the migration of people from the village to the city where they lived together with the members of a single family. The third wave-**the information and knowledge society**, of the recent duration, came with the invention of microprocessor and computer as well as new information and communication technologies. Their introduction into productive processes has major socio-economic consequences. Rapidity, instant communication product diversification and reduction of the lifecycles according to the dynamic needs of the customers are some features of the new wave of the development. In his next two books, *Powershift* and *Revolutionary Wealth,* the author presents the new forms of power and wealth in the new society based on information and technologies.

C. The third wave of economic and social development has, according to Toffler, the following features:

1. The rise of global corporation and the change of managerial paradigm. In the subchapter *Everywhere tentacles* (Eco-spasm) it shows a statistic of the multinationals in the US in the XX century. If there where at the beginning of the 20th century, the widespread takes place in the post-war period. In 1950, US companies invest $12 billion in west and middle east oil and mineral extraction. In 1968 the sum reached $65 billion of which 2/3 were invested in Europe in production or trade and not in resources. In 1973,140 multinationals in the US had aggregate goods worth $380 billion higher of the GNP of any state outside of the US or URSS (Toffler, 1975, p. 29).Toffler concludes that the expansion of multinationals at the expense of small firms is based on freedom of action and their foreign policy independent of the country of origin. An important role in this aspect are the economies of scale, respectively the reduction of costs due to the integration of technology in the production processes. Contrary to this aspect, in Adaptable Corporation which shows the evolution of Bell System (the famous AT&T) it is believed that the moto "*a company, a universal service* "that Bell adopted under the management of Theodor Vail in the first half of the twentieth century and which has the basis for the expansion of the company, the economies of scale isn't actually. The solution is the "pink princess policy", respectively offering diversified services in an expanded market whose needs and preferences are constantly changing leads to the restructuring of AT&T in 1970s interesting is the comparison they make between the Vail's primary management conception and the new aspects that economic development require. We present successively some ideas extracted from the presentation by the antithesis that the author makes between the two aspects. Thus: "the information is just as important, perhaps even more important as land, labour, raw materials and capital as we move from the mass-production of factories to a new artisanal or cerebral production system based on information and super-technology and that the end product of this system is no longer millions of standardized pieces but goods and services

tailored to the customer's order not that bureaucracy is the best form of organization but adherence, so every organizational component is modular and independent, each division interact with many others laterally not just hierarchically and decisions are made according to client orders rather than standardized, that work from more people needs to be varied non-repetitive and responsible, stimulating the individual's ability to discretion, evaluation and judgement adaptable (Toffler, 1995, pp. 105-106). Some of this ideas about the new management paradigm are also presented in his famous bestseller Future Shock when the old bureaucracy characterized by permanence (the human organizations links that generates the loyalty of the employees to the firm) hierarchy (the tasks come on the hierarchical scale from above to down) and the extensive diversification of work (Toffler, 1970, p. 104).This is replaced by a new *ad-hocration* generated by the ubiquitous acceleration trend a transposition of the democratic model of microeconomic scale. This is based on the elimination of the cultural hierarchies due to the takeover of a smaller amount of information and communication of better-trained employees.

2. Instability of the banking-international financial system in the last half of the 20th century. In the first part of Eco-spasm, Toffler characterised the economy of the seventh decade of the XIXth century as a huge *casino-global.* This is due to the inability of national regulatory mechanisms to cope with transnational realities and the emergence of new unregulated forces. The development and bankruptcy of transnational banks (their spasm) are eloquently presented. For example, CYTY Bank in the 1970s had 311 branches that were hard to control, located in 65 countries, with 22,000 employees. (Toffler, 1975, p. 16). In the *Butterfly Node* subchapter it shows the attempt to attenuate the effects of uncontrollable loans of European companies on the American market. It is suggestive in this regard the quote: *"American bankers have become unable to flee an elephant with butterfly nets*" (Toffler, 1995, p. 18). In the *Temporary Dollar*, subchapter presents historically the evolution of the international financial system based on fixed exchange rates to the international financial system based on floating exchanges. At the end of this book, the author presents two possible scenarios, the consequences of the transition to floating exchange rates: the superinflation scenario and the generalized depression scenario. The first tendency was the one that manifested itself in the western economy at the end of the seventh decade and which made the Keynesian economic policies applicable successfully in the post-war period and not valid in that period.

3. Changes in power in the global economy is the new macroeconomic trend found by Toffler. Thus, China will consolidate its major economic power status and in the long time will ally with Brazil and India to influence foreign exchange rates.US will depend on China from the point of view of imports required for consumer goods but also for components specific to the production of weapons, radars, hybrid automobile. On the other hand, the South African states will benefit from sustained economic growth and the phenomenon of migration from the Orient to the Western states will intensify (fact confirmed by the phenomenon of migration in recent years, faced also by East European countries, among which and Romania).

3. The incursion into the everyday microeconomic area

Although the author doesn't make a special analysis of the effects of changes in the economy and society on the individual's life, a series of phenomena can be revealed that

affect everyday life. A series of them are generated by digital revolution characterized by a fusion of technologies that sharpen the boundaries between the worlds - the physical, the digital and the biological.

A) The smart environment (Internet of things and widespread of robots).
The rapidity of the transmission of information, named by the author, *petabyte era* (the gigabyte's superior storage unit a 2000 PB HDD allows storage of the whole human culture since it exists until today) cause major changes in everyday life. Home automation expands rapidly. Now we can control the lights, the heating system, the air conditioning system and the remote security systems. More autonomous vehicles could communicate with each other to prevent accidents.

Using smartphone and portable gadgets makes technology more personal and change the perception of what it means to be online by wiping the line between physical and digital worlds. To this conclusions recently arrives, Fulvia Montresor Director of the World Economic Forum at the Davos International Forum in 2016: „*By 2020, approximately 22% of cars around the world will be connected to the Internet (290 million vehicles), and by 2024 more than half of domestic internet traffic will be used by household appliances and other electronic equipment*" (http://www3.weforum.org/docs/WEF_AM16_Report.pdf). According to dates provided by OECD in 2015, the highest density of devices belonging to the Internet of Things (IOT) category is in South Korea. There are 37.9 online equipments per hundred inhabitants. The second place is, surprisingly, Denmark, followed by Switzerland. The United States is only fourth, with 24.9 online equipment per 100 inhabitants. Regarding at the robotic invasion, it spread at the beginning of the sec xx when the first industrial robots started appear. This aspect has both good and disadvantages aspects the following quote is suggestive in this regard: "*Automation could mean earnings for companies and job losses for thousands of people. Where are the new businesses? And I am here to tell you that it is our responsibility for all of us to make these changes for the benefit of society, to make sure that the digital revolution creates more winners than losers. That's what we did in past times of technological change, but in this fourth revolution it might be harder*" said Joe Biden, US Vice President at the Davos Forum in 2016.Toffler shows this trend in in the *Future Shock* where in the third part about novelty in the subchapter *Cyborgs among us* predicts the increasing growth of robotics in the next century (Toffler, 1970, pp. 162-168).

B) Enhancing the role of women in society
Women will have unprecedented decision-making power, they will occupy more and more important posts, the percentage of women in leadership positions will reach an unimaginable level. Also, the phenomenon of aging populations will lead to a fourfold increase in total spending on pensions and elderly care, and the US health insurance system will cease to exist in its current form (Roman, 2018, p. 2).

C) Disappearance of the nuclear family
The nuclear family (also called the simple family) is that family composed of husband, wife and minor children who live and manage together. This combination is considered to be the minimum social organization, and it is the nucleus of all other forms of family structures. It is worth mentioning that Toffler surprisingly comprehends the influence of

economic and social changes specific to "every wave" on the family structure. Thus in the age of the first wave (the agricultural one), all members of the extended family consisting of grandparents, parents, children and relatives lived together and participated to the production of the goods necessary for the existence, given that the specific economic system was that of the natural economy. The second wave, based on industrialization, due to the changes it brings, standardization, synchronization, specialization of production requires the closeness of man to work. This aspect has as a result the disappearance of the traditional family and the emergence of the nuclear family. Finally, the third wave will lead, in the view of Toffler, to the dissolution of traditional family unit. The author said that this dissolution would lead to an increase in divorce rates, while society would begin to embrace the LGBT community. LGBT is an acronym that refers to lesbian, gay, bisexual and transgender collectivities. He noted that "*we will see more and more family units consisting of one adult with one or more children. Also, the ever-changing society will promote the postponement of the decision to have children.*" (Toffler, 1980, p. 232).

4. Conclusion

As a general conclusion, Alvin Toffler, in his entire work, is trying to capture the economic and social changes in many areas of human life. Even though he didn't plan the economic coordination, the author, in all his analyzes, starts from the phenomena that affect the economy in the 20th century and attempts to synthesize all the next changes on a global level. We can say in broad terms that *Future Shock* regards the process of change, the way it affects people and organizations, *The Third Wave* focuses on the diversity of change, and *Powershift* examines the control of change. Toffler was not only a sociologist and, with his work, it was possible to say that futurology was born as a science.

References

Toffler A., 1970. *Future Shock,* Penguin Random House, LLC, SUA.
Toffler A., 1975. *The Eco-Spasm Report,* Bantham Books, SUA.
Toffler A., 1980. *The Third Wave*, Bantham Books, SUA.
Toffler A., 1990. *Powershift*, Bantham Books, SUA.
Toffler A., 1993. *War and Anti-War-Survival at the Dawn of the 21st Century,* Little Brown, SUA.
Toffler A., 1995. *The adaptable Corporation*, Bantham Books, SUA.
Toffler A., 1995. *Creating a new Civilization-Politics in the third Wave,* Turner Pub. SUA.
Toffler A., 2006. *Revolutionary Wealth,* Alfred A. Knopf, SUA.
https://ro.wikipedia.org/wiki/Alvin_Toffler
https://evz.ro-Alvin Toffler' predictions for 2050-Thursday, October 10, 2010
https://adevarul.ro/cultura/carti-What the Future Shock meant? The predictions of the American writer for the next decades, June, 30, 2010;
http://www.rador.ro/2018/10/04/-Roman Luminita -Alvin toffler's predictions for the next 40 years;
http://www3.weforum.org/docs/WEF_AM16_Report.pdf

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 239-252

Recruiting for agile jobs: an analysis of Romanian IT labor market

Alina-Ramona BUTNARIU
"Ștefan cel Mare" University of Suceava, Romania
alinaramonabutnariu@gmail.com

Abstract. *Many of the recent studies have shown that there is a growing need for IT specialists in Romania and human resources companies and professionals have striven themselves to tackle the special needs of recruiting personnel in this field. With agile project management proving its advantages in IT companies all over the world, this paper aims at discussing alternative trends in personnel recruitment in order to achieve an optimal assessment of human resources potential and future job performance. The methodology used in this paper includes an examination of present day agile jobs characteristics with regards to the required skills, job responsibilities and facilities for over 100 job announcements published on several recruitment websites. The results of this paper are meant to demonstrate that an agile mindset, availability for communication of results, interaction, problem-solving and continuous adjusting to changing conditions in working environment are key components on IT labor market.*

Keywords: recruitment, qualifications, skill based jobs, agile recruitment.

JEL Classification: M510.

1. Introduction

The growing trends in technology during the last decades have led to a better and faster connectivity of devices, bigger data volume and faster computers, with improved automated systems, appearance of artificial intelligence and robotic devices being able to perform tasks more quickly and efficiently than humans. Progress in technology and increased use of it means that complexity of tasks has raised and employees are requested to put into action exceptional skills and increased knowledge. This exponential growth is challenging since it is meant to reshape workforce and redefine the jobs of the future. Also, we should not oversee the effects of knowledge economy expanding into several areas, making changes into the employment markets and structure of organizations. Service fields such as education, healthcare or IT require more than ever social skills needed for interaction, networking and team adjusting while they focus on emotional intelligence or wellbeing of the employees. This flow is likely to become even more important as youths are entering the workforce with advanced technological skills, higher creativity and aim for new perspectives on professional environments, ethical matters and communication or interaction styles.

This is added to the divergent demographics with an employee profile which is likely to include more diverse age groups and much more diverse cultural backgrounds. With this in mind, we debate on the fact that jobs of the future will be much more flexible, agile and network influenced.

Effects of such boost in society are not without implications for a wide variety of stakeholders, among which we mention individuals, private companies, state governments or agencies and even entire communities.

At a personal level, employees are required to be competitive and have new skills needed for the future, different mindsets and relevant education and training, along with embracing lifelong learning in order to be equipped with skills, knowledge and capabilities complementary to those of artificial intelligence. Digital literacy might be of essence for job seekers of the future in any field, even constructions, if they wish to succeed in the new knowledge economy in which *smart* is fundamental. Even today, the better paid jobs are not those in fields of human arts, but those in areas such as science, technology, engineering or even mathematics. A shift movement from basic skills of yesterday to those of tomorrow demands for change in attitudes and perception, job market adaptability and resilience to further changes, as for example rapid job movements, loss or job creation. Being always prepared to face change asks for dynamic individuals and their readiness for future job types.

Equally fundamental is the attention that governments have to pay to vulnerable and divergent demographics in order to encourage vulnerable groups or minorities to participate and be included in the new jobs market available tomorrow. Consequently, tangible and appropriate measures have to be taken in order to prepare both employees and employers for different and innovative job types, and adopt policies that can predict current jobs that are likely to become automated, identify those jobs to be created in the future and create the framework for a harmonious transition for all stakeholders.

Additionally, companies are faced with the challenge of continually adjusting their business models to become even more competitive and efficient. Restructuring the workforce, education for new and innovative mindsets and creating the right pathway to achieve agility may be not an accessible objective, but a worthwhile one in the knowledge economy. We are all striving to find our ways when debating on these issues, but changes are rapidly transforming society and unanswered questions of today need more than ever to foster tomorrow's answers.

Having set the premises of the current paper, we are discussing the Romanian IT jobs and the trends that are influencing the process of recruiting personnel with high skills, knowledge and consistent experience in specific fields (computer science, engineering, mathematics, etc.). Our approach is defined by an extensive analysis of job announcements in IT with a particular interest on agile project management as main focus of companies that are recruiting nowadays.

Based on observed tendencies on the job market we have chosen qualitative methodology to conduct our research, and built two hypotheses that we are going to test:
H1. Agile project management in IT field is increasingly important in Romania in what concerns the required or desired skills, knowledge or experience in the recruiting process;
H2. There is a clear-cut need and pressure for redefining jobs and process of recruiting for agile jobs in Romania.

2. Agile project management as innovative methodology within business development

There is a common agreement that challenging times require changes to be made in several areas and during the last decades rapid transformations have conducted to appearance of different kinds of methodologies which both private and public organizations have tried to embrace in order to become more purposeful and future-oriented. Agile project management has been adopted firstly in the software development field, but is lately adopted in a variety of forms and to some extent by an increasing number of organizations (West et al., 2012).

Patrick Lebrun, Deputy Managing Director of VINCI Energies, was taken an interview in "The Agility Effect Magazine" in 2018 and tried to analyze the changes that take place nowadays in expertise and business activities. In this interview he stated that "three decades ago, people aimed for a career. Now they look for a workplace experience that offers fulfillment and meaning", as well as "top-down management is a thing of the past and today's talent wants a more participatory, collaborative approach" (The Agility Effect Magazine, 2018). With that being said, it is no wonder that agile project management has become so popular among companies since agile might mean a multitude of things, but it usually expresses a desire for an organization that is able to adapt with speed and flexibility, at the same time thriving on change and fast learning.

The enthusiasts of agile methods and techniques have made two main claims about the impacts of their practice. On the one hand, they sustain that these methods produce better software products. This claim has been largely researched and studies have shown enough

evidence to support the dependence of project success on agile practices. The second claim of agile researchers and specialists is that individuals working in agile teams are more motivated and satisfied (Tripp and Riemenschneider, 2014).

The rising prevalence of agile approaches, along with the decrease of traditional ones lead to a growing pressure to take into account adopting any form of agile, and consequently they all contribute to the need for HR departments, specialists and managers to address as many challenges as possible associated with skills, talent, knowledge or any other individual issues. When analysing available literature e.g. Nerur, Mahapatra and Mangalaraj (2005), Schuh (2004) and Conboy et al. (2011), one is easily drawn to the conclusion that agile environments are entirely different in what concerns the context to those traditional environments (Table 1), although the distinction between the two is not so definite in terms of daily-life business approaches.

Table 1. *Differences between Traditional and Agile approaches in project management*

Project component	Traditional approach	Agile approach
Control	Centered on process	Centered on people
Management style	Command and control	Leadership and cooperation
Knowledge management	Explicit	Tacit
Roles among team members	Individual, demand for specialization	Self-organizing teams, role changing among members is encouraged
Communication style	Formal, only when necessary	Informal, continuous
Customer	Usually involved only at the analysis phase of the project	Critical role, continuous involvement
Project cycle	Task and activities guidance	Guided by product features
Structure of organization	High formalization, bureaucracy	Organic, flexible and participative
Technology	No restriction	Technology centered
Location of team members	Predominately distributed	Predominantly collocated
Team size	Large teams, usually more than 10 members	Usually less than 10 members
Process of learning	No restriction, but with focus on initial specialization	Encouragement of continuous learning
Management culture	Command and control	Responsive
Team members involvement	Not compulsory	Mandatory
Project planning	In initial stage	Continuous
Feed-back	Not easily obtainable (due to bureaucracy and dependent on milestones)	Availability at any moment
Project documentation	Great amount of documentation	Minimal documentation

Source: Author's research adapted from Nerur, Mahapatra and Mangalaraj (2005), Schuh (2004) and Conboy et al. (2011).

Agile project management approach makes use of different agile techniques and methods, including scrum, XP, kanban, lean or a combination of hybrid practices (Version One, 2018). Agile teams usually work in short cycles in which they deliver functional software incrementally and iteratively and they focus on understanding the problems and challenges during project development. By contrast with traditional teams, agile team members are not focus on specifying system requirements and design in the initial phase of the project or fully understanding the problem early on because they lack the long project cycles typically employed by traditional project management methodology (Tripp et al., 2018).

Since agile adoption becomes reality on a much larger scale, we could presume that the successful adoption of such innovative techniques is in the hands of team members, of the individuals having the ownership of this process. That is contrary to the traditional approach in which the management and the organizational culture have dictated the

development of a company. Being faced with such great responsibility, the individual is empowered to take decisions in the benefit of the team in order to ensure a strong agile adoption. Also, careful consideration is needed for persons to have or quickly educate themselves to skills that have never been required before on a regular basis. What type of skills is required from and agile worker is a question that is still pending for answers from researchers, HR specialists or agile practitioners.

3. Agile jobs in Romania

One of the essentials of the Agile Manifesto values "individuals and interactions over processes and tools" (Fowler and Highsmith, 2001). This means a greater focus on individuals and the interactions between people over processes and tools, especially where these processes and tools should support human interactions and not undermine them. Human resources departments and specialists are in essence meant to support the first in all stages of their activity, including when recruiting for new talent. Once the Agile Manifesto was released, back in 2001, a variety of stakeholders, especially in the IT field have come to the conclusion that not only software development encountered problems, but management of projects and organizations must align with the pace of technology progress and focus on core values based on respect and trust for each other and promotion of organizational models centered on people, collaboration, and building the so-called desirable organizational communities.

In The Future of Jobs Report of 2018 (Schwab, 2018) key findings show that "workforce transformations accelerate, the window of opportunity for proactive management of this change is closing fast and business, government and workers must proactively plan and implement a new vision for the global labor market". Also, we concur with the conclusions of the report that state that technological progress will dominate the next 5 years period as driver positively affecting growth of business while a great majority of companies surveyed declared their intentions for expanding adoption of technology. The findings in the 2018 report are to be analyzed with high consideration since it is estimated that in the period up to 2022 new emergent roles are set to be required, such as Data Analysts or Scientists, Software and Applications Developers, Ecommerce and Social Media Specialists, roles which are significantly based on and enhanced by the use of technology.

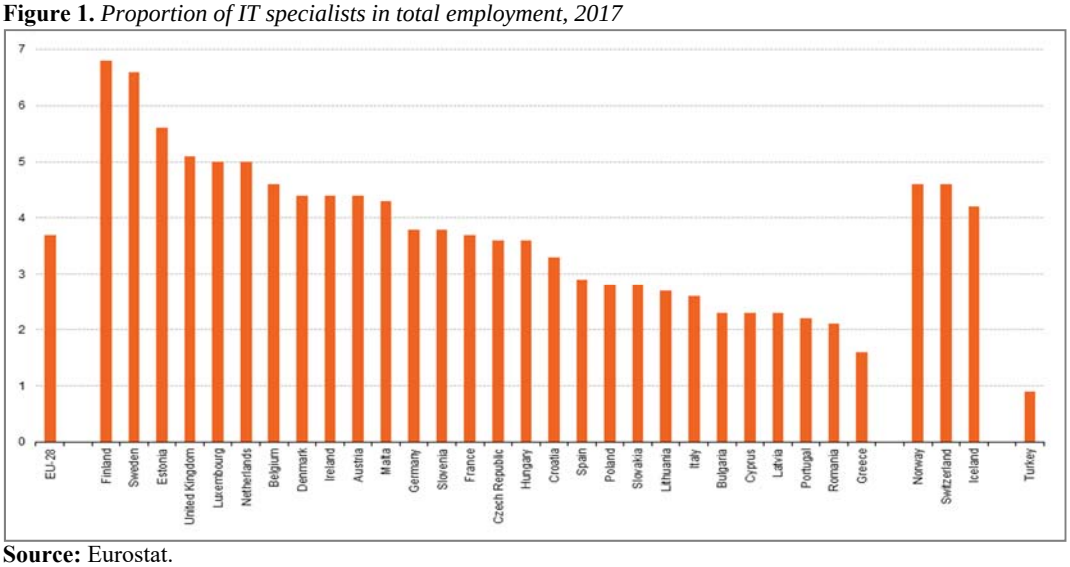
To have a better view on the IT sector and the trends of job transformation in this field, we have examined the Stack Overflow platform and the annual survey of 2018 in which the developer community is asked about favorite technologies, methodologies or job preferences. 2018 marks the eighth year they have published the Annual Developer Survey results, with the largest number of respondents so far. This particular report is based on a survey of 101,592 software developers activating in 183 countries throughout the world. Almost 60% of respondents identify themselves as back-end developers, and the remaining respondents have jobs consisting in combinations of front-end, mobile or full-stack developer, database or system administrator, DevOps specialist, data or business analyst, QA or test developer, engineering or product manager. Out of these, about three-fourths of professional developers worldwide have the equivalent of a bachelor's degree or higher and

we found that it is not so rare to find professional developers who have not completed a degree or a certification.

Since the purpose of this paper is to identify agile jobs, we define those by the jobs in the IT field using agile project management methodologies or any sort of combination or hybrid models. We base our premises that agile jobs are on the rise since in the 2018 Stack Overflow Annual Developer Survey Agile and Scrum are the most popular methodologies for developers to use on their projects, with 85.4% of respondent preferring Agile.

In Romania there are currently over 17,000 companies which are, with almost 3,000 more than in 2012. During 2017 their businesses went up by the threshold of 4.9 billion euros, and it was estimated that in 2018 will be exceed 5.4 billion euros. Compared to 2007, software businesses grew by 150%, compared to 2016 by 5.4%, indicating that the market has matured. According to an ANIS study, in Romania in 2017 the total number of employees with full time contracts in the software and IT services sector reached the number of 89,850 specialists, a growth of 7.5% compared to 2016. Of these, 88.6% have technical positions, the rest holding positions in non-technical departments. Still, we are referring to the full-time contracts, not counting the part-time employers or the freelancers. It is estimated that there are over 280,000 IT specialists and the demand for IT professionals is rapidly increasing. According to Eurostat, the number of ICT specialists in the EU grew by 36.1% from 2007 to 2017, over 10 times as high as the increase (3.2%) for total employment. Across European Union, IT specialists accounted for 3.7% of the total workforce in 2017. The relative share of IT specialists in the total workforce in Romania was 2.1% (see Figure 1). Still, we consider human capital in IT sector to be a driving force for digital and innovations and may be considered crucial for the competitiveness of current economies. Although this segment of the labor market is quite small, employment in IT field was relatively resistant to the cyclical nature of economic events during the last decade.

Figure 1. *Proportion of IT specialists in total employment, 2017*



Source: Eurostat.

Bucharest is apparently concentrating at the moment more than half of the IT workforce in Romania. 70% of the top 25 software companies with the highest turnover in Romania have their largest Romanian teams in Bucharest. Big companies such as Adobe, Ixia, SAP or Bitdefender also have their R&D centers in the country capital. Equally present are other big companies in the field: Oracle, Accenture, IBM, Ubisoft, Intel, HP, Luxoft, Amazon in Bucharest or other big cities of Romania, such as Timișoara, Cluj, Brașov, Sibiu or Iași.

In light of these findings, we started to analyze the types of jobs in the sector of software development and concluded that there is a growing need for IT specialists in Romania and human resources companies and professionals have striven themselves to tackle the special needs of recruiting personnel in this field.

4. Methodology of the study

The purpose of the current study is to carry out an empirical analysis of available jobs in the IT field in Romania and some of the trends that are influencing the process of recruiting personnel with high skills, knowledge and consistent experience in specific fields (computer science, engineering, mathematics, etc.). Our approach is defined by an extensive analysis of job announcements in IT with a particular interest on agile project management as main focus of companies that are recruiting nowadays. We preferred to analyze job announcements examining online sources since they are the most used by a majority of companies in IT in order to advertise for vacant positions.

Henceforth job announcements were gathered from websites such as https://www.linkedin.com, https://www.bestjobs.eu, https://ro.jooble.org, https://ro.indeed.com/ and https://www.ejobs.ro/. We have gathered a total of 110 random job announcements for positions in the IT field by searching available positions with regards to a main code associated to these jobs, which is *agile*. The tool we used to introduce data was NCapture and uploaded into NVivo software for the process of coding. NCapture is a web browser extension that is used to capture online data and materials which is then imported into NVivo. NVivo is a Qualitative Data Analysis computer software package which is produced by QSR International and has many advantages that may significantly improve the quality of research when analyzing text-base and multimedia information. Researchers collect the data which is then organize into different nodes or conceptual themes based on coding process of NVivo and then analyzed (Hilal and Alabri, 2013).

One of the assumptions of this study is that analysis of job announcement content is a valid representation of the workforce requirements for IT professionals since we were able to interpret the frequency of certain words and phrases in a systematic way. We also understand that some of the announcements were more accurate than the others and thus limitations are represented by the acceptance of the fact that no study can identify all available jobs advertised on the market and that some positions are filled without publicizing an advertisement.

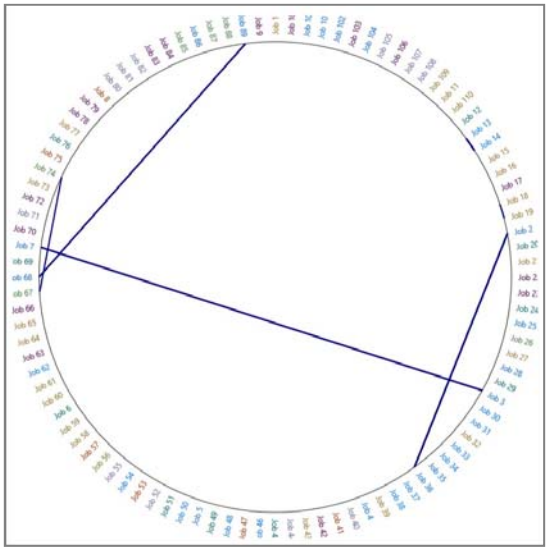
For the purposes of this study, we intend to understand if agile project management is of interest on the jobs IT market in Romania and what is the spread of that particular interest with regards to the demands of companies activating in the IT field. For this reason, the information and conclusions resulting from the analysis of available job announcements examined by the author was synthesized in the form of figures and tables which are presented in the following section, analysis of results.

5. Analysis and discussion of results

For the purpose of the current study, the results of the examination of the jobs announcements were correlated with the hypothesis initially formulated:
H1. Agile project management in IT field is increasingly important in Romania in what concerns the required or desired skills, knowledge or experience in the recruiting process;
H2. There is a clear-cut need and pressure for redefining jobs and process of recruiting for agile jobs in Romania.

A first step in this study was represented by the consideration that companies advertise the available jobs on several distinct websites and thus we ran a cluster analysis to explore whether coded job announcements available on one website are identical to others considered for this study. Furthermore, we have concluded that a total number of six job announcements were similar, thus being necessary to exclude them from our analysis, as seen in Figure 2, resulting in a total number of job announcements to further examination.

Figure 2. *Analyzed job announcements clustered by total word similarity*

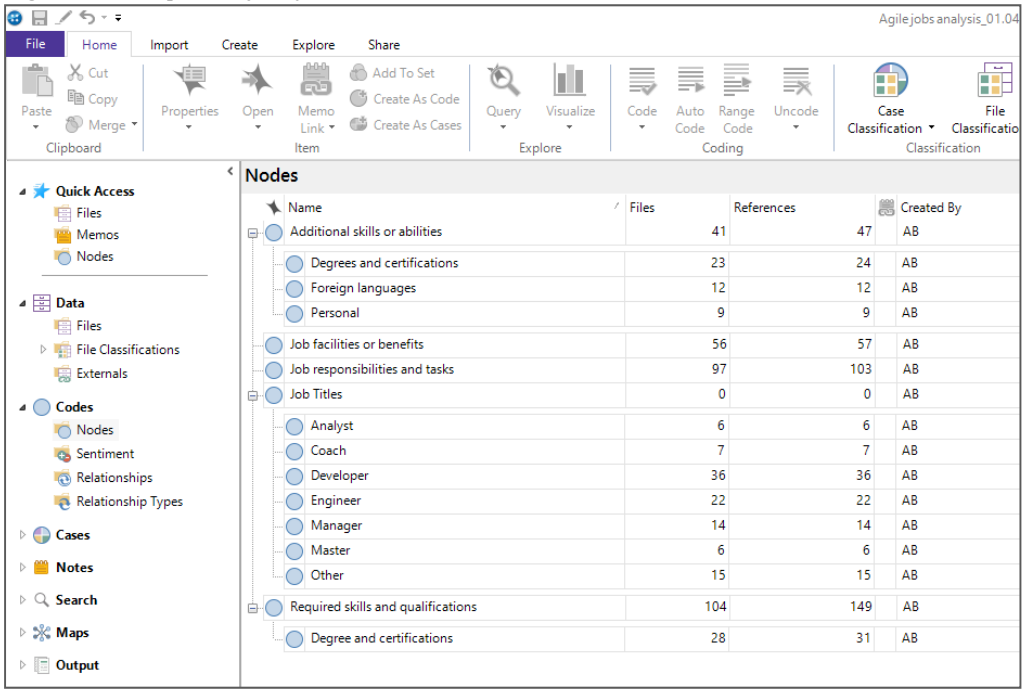


Source: Author's research.

Coding in NVivo has been a continual process as job announcements were examined and final nodes are reflected in Figure 3 below.

In terms of job titles, this is the primary identifier for any job seeker whether a position is suitable and this is the reason that initial job title investigation was pursued during this research. Figure 3 shows the job titles word cloud frequency included in our sample.

Figure 3. *Nodes per analyzed job announcements in NVivo*

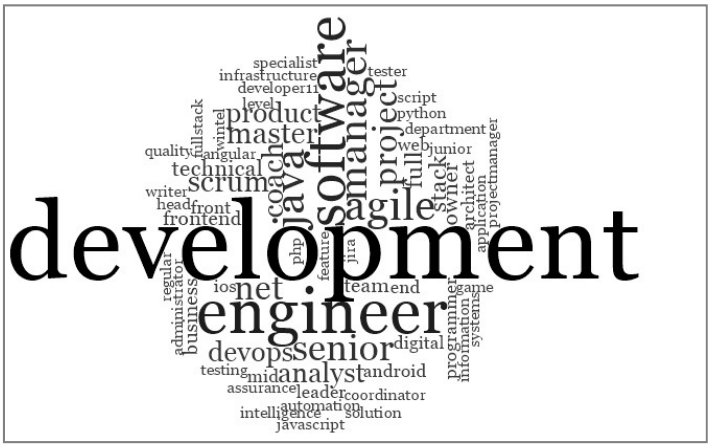


Source: Author's research.

An interesting and paradoxical fact discovered in our endeavor was that degrees and certifications (Bachelor degree or Masters in IT, computer engineering, mathematics, etc. or renowned certifications such as project cycle management, scrum master, etc.) were not as often required as it is the case with other specialized jobs. Instead, there are more than often considered as advantages in the recruitment process for potential employees. We consider this to be revolutionary for Romania jobs market, alongside with requirements more frequently discovered, such as experience or proven knowledge in the field.

Another compelling discovery to sustain our initial hypothesis that IT jobs are of a particular type and need redefining in terms of recruiting and advertising is that personal traits are of the essence in a large number of job announcements. Henceforth, team cooperation, the ability to be open-minded, adaptable to changing environments, innovativeness are generally required and possessing values like trust, passion and assertiveness are a plus to being employed in 9 out of 104 jobs. In fact, in several job announcements we have discovered playful descriptions of the ideal candidate to the job and we even found one that advertised that the perfect candidate must be guided by the same company's motto "*Love beer is minimum, love food is a plus*".

Figure 3. *Job titles word frequency*



Source: Author's research.

Examined positions were consistent to Stack Overflow survey results mentioned above as to job titles, such as: back-end developers, front-end, mobile or full-stack developer, database or system administrator, DevOps specialist, data or business analyst, QA or test developer, engineering or product manager. Some of the advertised jobs have marked the seniority requirements (Junior or Senior) and many of them have the term *agile* included in their title to show the methodology required to be used further (agile scrum master, agile coach, etc.). Table 2 is illustrative for the number of coding references related to major titles in IT jobs (analyst, coach, developer, engineer, manager, master or other).

Table 2. *Job main titles compared by number of coding references*

Codes	Number of coding references	Aggregate number of coding references	Number of items coded	Aggregate number of items coded
Nodes\\Job Titles\Analyst	6	6	6	6
Nodes\\Job Titles\Coach	7	7	7	7
Nodes\\Job Titles\Developer	36	36	36	36
Nodes\\Job Titles\Engineer	22	22	22	22
Nodes\\Job Titles\Manager	14	14	14	14
Nodes\\Job Titles\Master	6	6	6	6
Nodes\\Job Titles\Other	15	15	15	15

Source: Author's research.

As for the geographical location of these jobs, we have found that a majority of them are advertising for available jobs in Bucharest, then Cluj, followed by big cities in Romania like Timișoara, Iași or Sibiu. The findings in Table 3 are consistent with major trends which are assessing that not only the capital city, but other cities in Romania are catching up with the IT jobs market nowadays, offering meaningful positions to persons interested in activating in the field via multinational companies or even smaller, inland firms.

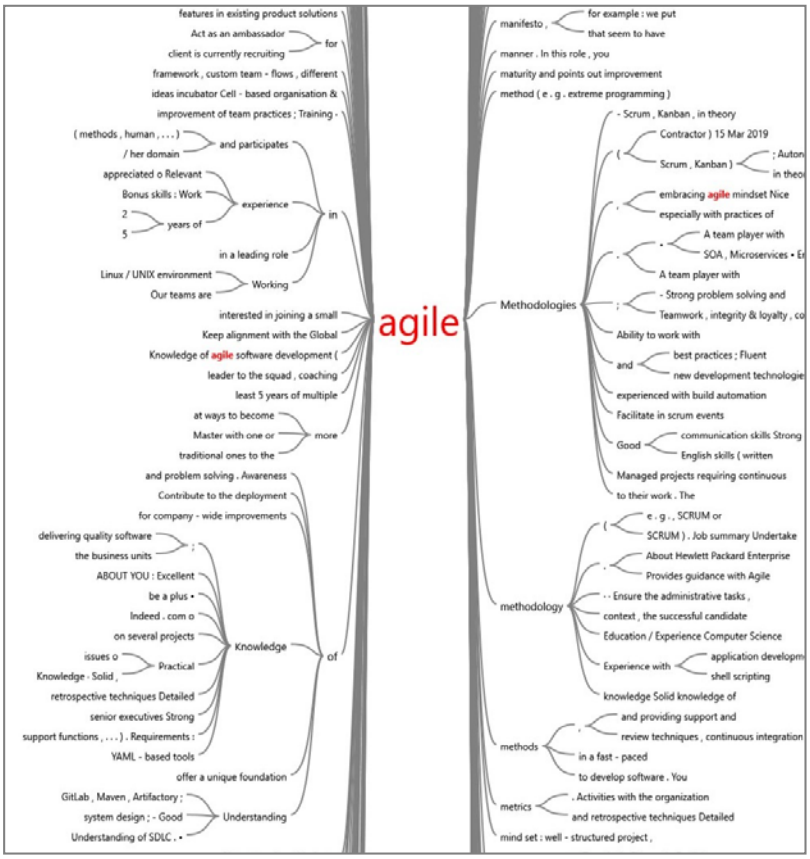
Table 3. *Job announcements listed by their geographical location*

Town	Number of scoped items which have that particular attribute value combination
Unassigned	68
Bucharest	27
Cluj Napoca	9
Timisoara	2
Iasi	2
Sibiu	2

Source: Author's research.

With regards to the agile principles and methodology used in analyzed positions, we have run a word frequency count and found 44 job announcements which included agile management as a main characteristic either of the company as a whole interested in recruiting or of the team or project that are part of a larger company. Needless to say, a potential candidate is required to be familiar or even expert in agile project management. Scrum, as a favored methodology is present in 20 announcements and Kanban in 1. An illustrative word tree has been created in NVivo to reveal text search results in all job announcements examined by the author and a crop is presented in Figure 4 to show the context of agile project management.

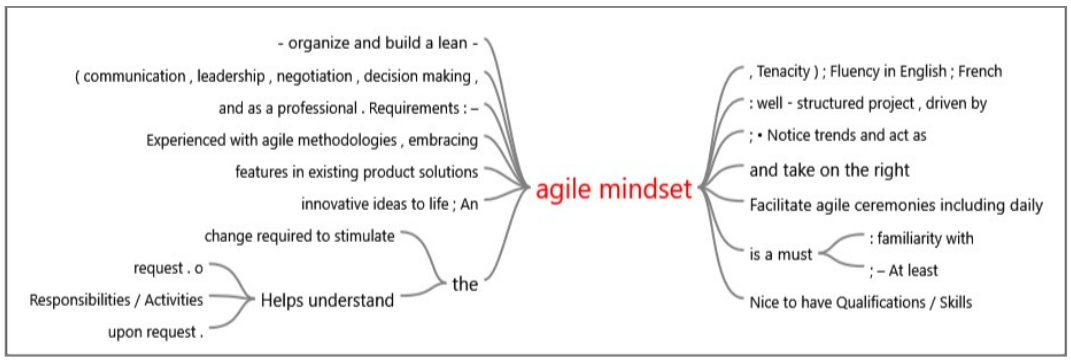
Figure 4. *Contextual word tree for agile*



Source: Author's research.

A particular interest we had in discovering in job descriptions indicators of agile mindset and what are those attitudes, behaviors and beliefs supporting an agile work environment, so that teams can become high-performing. Thus, Figure 5 represents a synthesis made in NVivo software with results of text search.

Figure 5. *Contextual word tree for agile mindset*

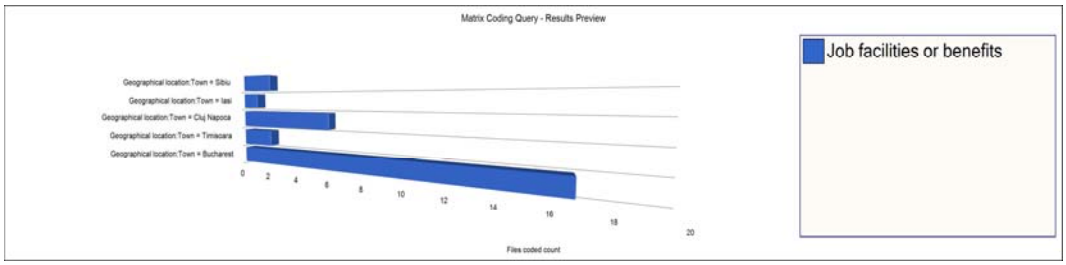


Source: Author's research.

We have found that agile mindset does have a role ("is a must") in some of the advertised jobs and is characterize by communication, leadership, decision making and other personal traits, but we conclude that our research was not refined enough in order to list the exact characteristics of an agile mindset.

The issue of job benefits or facilities is of interest to any potential candidate for a job and this is the reason we have examined them with regards to their type and occurrence in distinct positions in Romania. Among benefits we have found that employers offer a wide range of conveniences, such as: competitive salaries or bonuses, stock options, challenging projects, the chance of working from home, private medical insurance, life and disability insurance, sports and health benefits, social animation, continuous learning through training and certifications, flexible working hours and attractive working environment and others. As to the distribution of job benefits throughout the cities in Romania, Figure 6 illustrates this particular discovery. We conclude that Bucharest based companies are offering the majority of benefits in IT jobs, followed by Cluj Napoca and cities like Timișoara, Sibiu and Iași.

Figure 6. *Distribution of job facilities or benefits in major cities in Romania*



Source: Author's research.

6. Conclusions

This research aimed at discussing the agile job market in IT in Romania in order to improve the personnel recruitment in the field. We feel that this is only a first step made for achieving an optimal assessment of human resources potential and future job performance with regard to agile project management concept. The methodology used in this paper includes an examination of present day agile jobs characteristics with regards to the required skills, job responsibilities and facilities for over 100 job announcements published on several recruitment websites.

Our study tried to verify two hypotheses initially set out in the current research:

H1. Agile project management in IT field is increasingly important in Romania in what concerns the required or desired skills, knowledge or experience in the recruiting process. This hypothesis is verified and confirmed by the results of our search on distinct websites specialized in job announcements. Henceforth job announcements were gathered (with *agile* as a search word) from websites such as https://www.linkedin.com (2.284 job announcements), https://www.bestjobs.eu (621 job announcements), https://ro.jooble.org (1.471 job announcements), https://ro.indeed.com/ (1.776 job announcements) and https://www.ejobs.ro/ (646 job announcements). This considerable number of job announcements, together with some of the findings of the current study, are relevant enough to prove the increasing interest in agile methodology required from job applicants in the IT field in Romania.

H2. There is a clear-cut need and pressure for redefining jobs and process of recruiting for agile jobs in Romania. This hypothesis is verified and partially confirmed as the current analysis covers only some aspects of few job structure descriptions (104) in cities such as Bucharest, Cluj Napoca, Timișoara, Sibiu and Iași. The findings regarding certifications and degrees not being mandatory in approximately 25% of the examined job announcements, as well as the large variety of facilities offered to applicants are relevant to the fact that IT agile jobs are a distinct category among the national jobs market. Also, we state that an analysis of national strategies is required at this time and updating them if needed in order to be better prepare for the ever changing economy.

At the same time, the results of this paper have tried and succeeded in demonstrating that an agile mindset, availability for communication of results, interaction, problem-solving and continuous adjusting to changing conditions in working environment are key components on IT labor market.

We are convinced that examination of IT job announcements in Romania is a process that needs continuance and in-depth analysis since change and progress affects all fields of economy and human resource and knowledge are valuable assets of the future. NVivo software proved to be an optimal tool for this research, although we do not deem to be exhaustive of the trends in the agile IT field in Romania. More findings could be discovered and debate needs to be continued as several facets of agile management are proven right or to be improved in work environments.

Furthermore, taking into account the results of the current research, we consider it appropriate to explore several other details of agile jobs structure and specificities, with more job announcements analyzed to have a better and more accurate view and evaluation of the job market and to be able to define the ideal candidate with an agile mindset, non-linear in thinking, with improved skills and prepared for the knowledge economy of the future.

References

Conboy, K. et al., 2011. People over process: Key challenges in agile development, *IEEE Software*, 28(4), pp. 48-57. doi: 10.1109/MS.2010.132.

Fowler, M. and Highsmith, J., 2001. The Agile Manifesto (Article), *Software Development Magazine: The Lifecycle Starts Here*, (August).

Hilal, A.H. and Alabri, S.S., 2013. Using NVivo for Data Analysis in Qualitative, *International Interdisciplinary Journal of Education*, 2(2), pp. 181-186. Available at: 12/12/2016 <www.iijoe.org/v2/IIJOE_06_02_02_2013.pdf>

P. Nerur, S., Mahapatra, R. and Mangalaraj, G., 2005. Challenges of Migrating to Agile Methodologies, *Commun. ACM*, 48, pp. 72-78. doi: 10.1145/1060710.1060712.

Schuh, P., 2004. *Integrating Agile Development in the Real World*. 1st ed. Rockland, MA, USA: Charles River Media, Inc.

Schwab, K., 2018. *The Future of Jobs Report*, *World Economic Forum*. doi: 10.1177/1946756712473437.

Thoren, P., 2017. *Agile People: A Radical Approach for HR & Managers (That Leads to Motivated Employees)*. USA: Lioncrest Publishing.

Tripp, J.F. and Riemenschneider, C.K., 2014. Toward an understanding of job satisfaction on agile teams: Agile development as work redesign, *Proceedings of the Annual Hawaii International Conference on System Sciences*. IEEE, pp. 3993-4002. doi: 10.1109/HICSS.2014.494.

Tripp, J., Rienemschneider, C. and Thatcher, J., 2018. Job Satisfaction in Agile Development Teams: Agile Development as Work Redesign, *Journal of the Association for Information Systems*, 17(4), pp. 267-307. doi: 10.17705/1jais.00426.

West, D. et al., 2012. Forrester Research : Research : Agile Development: Mainstream Adoption Has Changed Agility. Available at: http://www.forrester.com/Agile+Development+Mainstream+Adoption+Has+Changed+Agility/fulltext/-/E-RES56100.

The Agility Effect Magazine, No. 5 Winter 2018, VINCI Energies, France.

<http://stateofagile.versionone.com/>

<https://it-teams.com/2019/02/26/outsourcing-to-romania-and-the-oecd-statistics/>

<https://keysfin.com/RO/#!/Pages/News/NewsDetails&title=romania-silicon-valley-ul-europei-business-ul-din-industria-de-software-romanesca-depaseste-54-miliarde-de-euro-in-2018>

<https://www.anis.ro/studiu-anis-piata-locala-de-software-si-servicii-it-inregistreaza-o-crestere-sub-asteptari-in-2017-putin-peste-2/#.XKja5pgzaUl>

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 253-264

Labour market in the Republic of Moldova: reality and challenges

Alic BÎRCĂ
Academy of Economic Studies of Moldova
alicbir@yahoo.com

Abstract. *The study aims to investigate the labour market in the Republic of Moldova by presenting the real situation of the last several years, the disparities compared to other member states of the EU, and the challenges faced by the country. Therefore, we underline the most important elements of the labour market in the Republic of Moldova and the European Union in order to present the realities of the local labour market. For this purpose, we assess the most relevant indicators describing the labour market: employment rate, structure of employment by age, level of education and industry. Also, we overview the countries of destination targeted by the local labour force in search of employment. To conduct this study, two research methods have been used: a statistical and a comparative method. Statistical data used in the study were provided by the National Statistical Office of Republic of Moldova and EUROSTAT.*

Keywords: labour market; employment rate; unemployment rate; employees, migration.

JEL Classification: F15, F16, J62, J64.

1. Introduction

Labour market in the Republic of Moldova has been under transition to competitive economy and undergoing a process of globalisation of national economy. The economic pressure in the Republic of Moldova moved the issues related to human problems in the background, including unemployment. It generated specific malfunctions of labour force employment covering various aspects that clearly differentiate the labour market of the Republic of Moldova from other countries, including the member states of the European Union.

Globalisation, urbanisation and the evolution of social structures accelerate the pace of changes on the labour market and in the field of competencies. Development of new abilities and competencies aimed to fully exploit the potential for economic recovery has been a priority and challenge for national public authorities.

Firstly, the issue of employment in the Republic of Moldova has been impacted by aging of its population, which will significantly shape the labour market in the future, and secondly, by the international migration of its labour force.

To develop a competitive economy and to ensure a high level of quality of life, high level of employment should be ensured for all categories of people. New requirements imposed by the competitive economy made specific categories of people, especially poorly educated categories, exclude themselves from the labour market. In these conditions, the state intervention through the implementation of active measures on the labour market for maintaining the labour force professionally active becomes immanent.

Currently, the level of employment in the Republic of Moldova is influenced by a multitude of issues requiring medium and long-term solutions. Mainly, these refer to:

- low rate of unemployment;
- high number of low productivity and insufficiently paid jobs that are unattractive for the population able to work;
- high share of informal activity in several sectors of national economy;
- high share of population employed in agriculture;
- migration abroad of qualified labour force;
- low involvement of companies in professional training of labour force, ignoring the requirements of the labour market, etc.

2. Literature review

Generally, labour market is referred to as an economic space, in which, labour supply and demand are adjusted, and where users of labour (capital holders) freely engage in trade as buyers, owners and sellers of workforce by means of labour price mechanism and free competition among economic agents, and through other specific mechanisms.

Labour market is the place where decisions regarding are mad, and it comprises all labour buyers and sellers (Ehrenberg and Smith, 2000).

In another interpretation, the concept of labour market is, on the one hand, all supply and demand of individuals and households as potential employees, and, on the other hand, the organisations, enterprises, institutions as employers of labour supply and the relationships among them, whether balanced or not.

A significant aspect of labour market is its segmentation which has been widely researched by local and foreign authors. The theoretical framework of labour market segmentation was first developed by Adam Smith in his work „The Wealth of Nations" where he put forward the idea of labour division and specialisation. Later, labour market segmentation became a topic of research for M. Priore, Doeringher, P.B., Harris, J.R. Todaro, M.P., Dickens W.T. and Lang, K. Lately, labour market segmentation has drawn the attention of several researchers (Petit, 2004; Hudson, 2007; Fields, 2009; Conn, 2009; Nam, 2010; Moscarola, 2010 and others) who have been studying it from several angles.

The performance of labour market may be assessed using a multitude of indicators: rate of employment, level of payment, rate of unemployment, etc. Rate of unemployment is one of the most known and used indicators for assessing labour market. Nevertheless, it has been accepted that this assessment has disadvantages affecting its utility in international comparisons. This is the case of the Republic of Moldova, where the transition from planned to market economy resulted in disappearance of dozens or thousands of workplaces. Still, the rate of unemployment in the Republic of Moldova has been quite low compared to other EU member states.

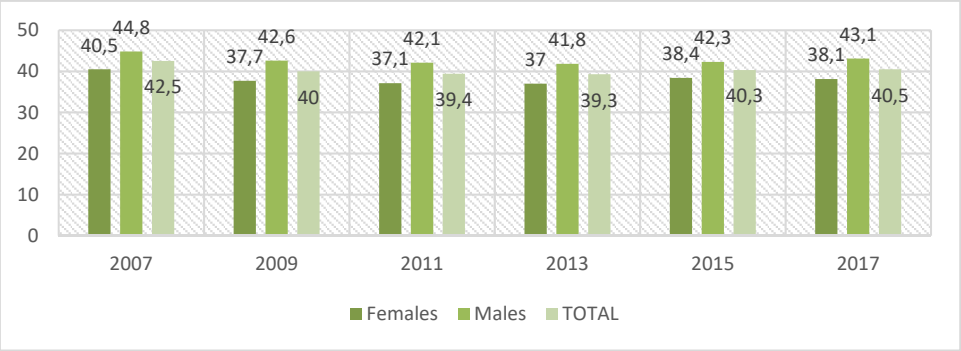
3. Used methodology

To conduct the research, we applied the statistical and comparative methods aimed to present the real image of the labour market in the Republic of Moldova, on the one hand, and compare it to other countries of the European Union. In this context, the most representative indicators describing the labour market by means of statistical data provided by the National Statistical Office of the Republic of Moldova and EUROSTAT were collected using labour force survey.

4. Analysis of labour force employment

Employment rate is an indicator reflecting the level of employment at national and regional level by different categories of population. Figure 1 shows the rate of employment by gender.

Figure 1. *Rate of employment by gender during 2007-2017*



Source: Processed by the author based on data provided by the National Office of Statistics.

By analysing the information in Figure 1, we observe a low rate of employment of labour force. For the studied period 2007-2017, the employment rate decreased from 42.5% in 2007 to 39.3% in 2013, with some improvement, reaching the level of 40.5% in 2017. Analysing the rate of employment by gender, we note that it is even lower among women. In the same period, the rate of employment decreased from 40.5% in 2007 to 38.1% in 2017. At the same time, the rate of employment, on average, was approximately 4 per cent higher among men than women. Also, it should be noted that the gap between men and women has been diminishing year by year.

Making a comparison between the rate of employment in Republic of Moldova and the EU, we note that it is significantly higher. In 2017, the rate of employment in the EU was 1.6 times higher than in the Republic of Moldova. If we refer to the Netherlands and Germany, countries with the highest rate of employment, we discover that it is almost 1.87 times higher. Compared to Greece, the country with the lowest rate of employment in the EU, it was 32% higher than in the Republic of Moldova.

Similarly, we observe specific challenges and trends in rate of employment by age (Table 1).

Table 1. *Employment by age during 2010-2017 in the Republic of Moldova*

No.	Age groups	2010		2012		2014		2017	
1.	**Total**	**1143,4**	**100**	**1146,8**	**100**	**1184,9**	**100**	**1207,5**	**100**
2.	15-24 years	117,8	10,3	106,6	9,3	94,5	8,0	79,8	6,6
3.	25-34 years	275,8	24,1	285,4	24,9	302,0	25,5	302,1	25,0
4.	35-44 years	262,8	23,0	268,4	23,4	282,6	23,8	301,9	25,0
5.	45-54 years	311,1	27,2	298,1	26,0	292,6	24,7	267,9	22,2
6.	55-64 years	153,4	13,4	164,3	14,3	181,5	15,3	209,7	17,4
7.	over 65 years	22,5	2,0	24,0	2,1	31,7	2,7	46,1	3,8

Source: Processed by the author based on data provided by the National Office of Statistics.

Data shown in Table 1 proves that employment by age in the Republic of Moldova is disproportionate. Studying the structure of employment in dynamics, we note its decrease in the 15-24 years' age group from 10.3% in 2010 to 6.6% - in 2017. In absolute value, employment in 14-24 years' age group decreased by 38000 people during this period. Therefore, there has increased the number of the young expressing their desire to go abroad if they manage to find a well-paid job ensuring them a higher quality of life.

Studying the structure of employed population by level of education in the Republic of Moldova, we observe that it has had a negative trend in the last years (Table 2).

Table 2. *Employment by level of education in the Republic of Moldova during 2010-2017*

No.	Level of education	2010		2012		2014		2017	
		Number of people	%	Number of people	%	Number of people	%	Number of people	%
1.	**TOTAL**	**1143,4**	**100**	**1146,8**	**100**	**1184,9**	**100**	**1207,5**	**100**
2	Higher	262,8	23	295,6	25,8	288,7	24,4	297,7	24,7
3.	Secondary, college	180,2	15,8	185,5	16,2	163,8	13,8	159,8	13,2
4.	Professional secondary	277,2	24,2	258,9	22,6	279,3	23,6	276,1	22,9
5.	High-school, general secondary	236,8	20,7	216,9	18,9	227,4	19,2	234,5	19,4
6.	Secondary and primary	186,4	16,3	189,9	16,5	225,7	19,0	239,3	19,8

Source: Processed by the author based on data provided by the National Office of Statistics

Table 2 shows a slowdown in the increase of the share of employed population having higher education in total population during 2011-2017. Also, we observe a reduction by almost 20 thousand people in the number of employed population having secondary or college education. It could be attributed to current educational reforms in the Republic of Moldova.

It is worrying that there has been an increase in the number of population lacking professional training in total employed population. In 2017, each fifth employed individual in the Republic of Moldova had only secondary education. It makes the labour market in the Republic of Moldova even more vulnerable as it cannot ensure sustainable employment for these categories of people, and the risk of becoming unemployed is much higher compared to categories of employed population having professional education.

The structure of employed population by level of education also depends on the level of development of national economy sectors. In countries with highly developed industry, the share of employed population having professional secondary education in total population is much higher.

The employed individuals are classified by professional status according to international classification of Professional Status (ICSE-93). Professional status is the status held by an employed person reflecting the way in which it generates income through its activity, namely, employees, owners, self-employed and unpaid family workers.

Of total employed population, the employees have the highest share compared to other categories of labour force. *Table 3* presents the structure of employed population by professional status in the Republic of Moldova.

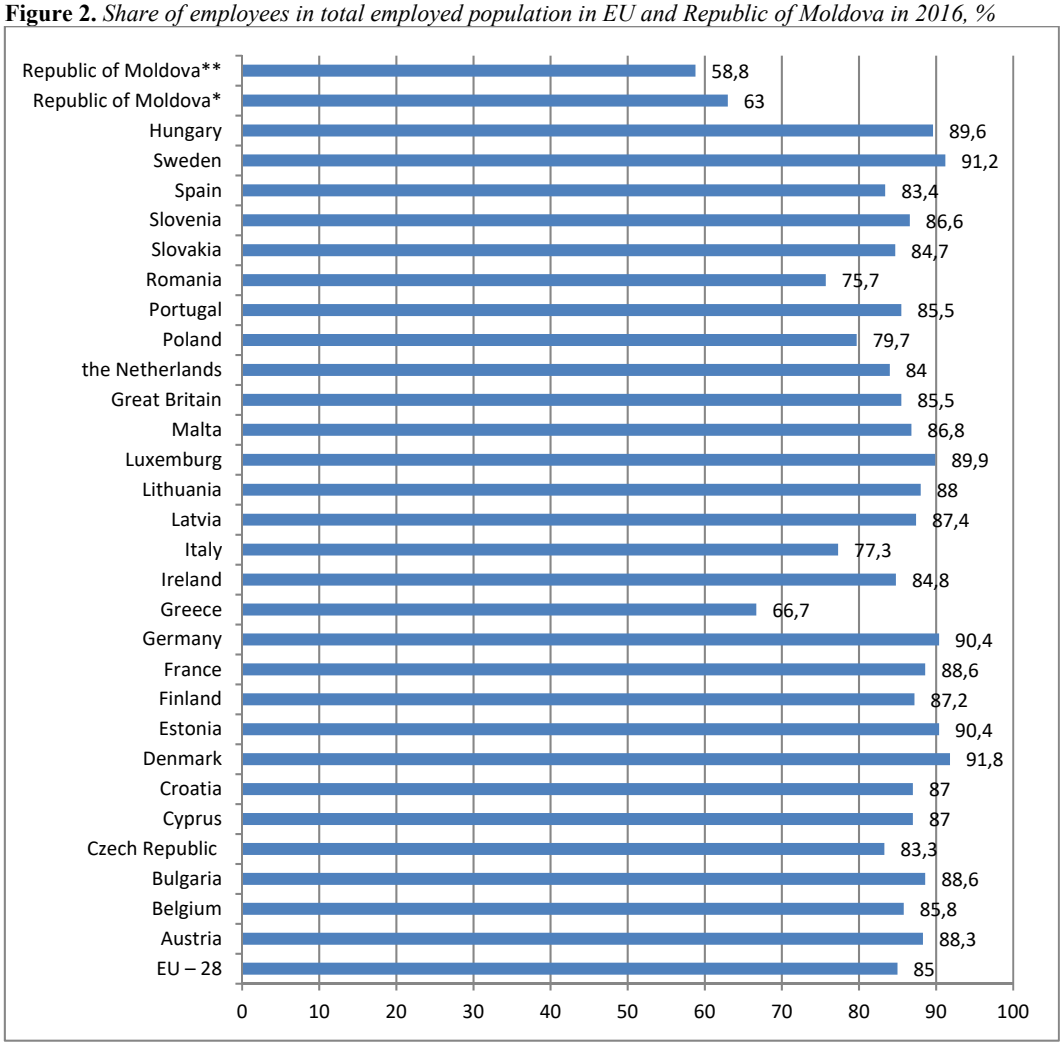
Table 3. *Employed population by professional status in the Republic of Moldova, %*

Professional status	2009	2011	2013	2015	2017
Owners	0,9	0,7	0,7	0,6	0,3
Self-employed	25,9	25,6	28,3	30,1	30,7
Unpaid family workers	2,6	3,1	2,1	3,8	3,8
Employees	70,6	70,6	68,8	65,4	65,2

Source: Made by the author based on data provided by the National Office of Statistics.

Table 3 shows that the highest share of employed population in the Republic of Moldova is among the employees followed by the self-employed. Although the employees have the highest share, it is worrying as between 2009-2017 their number reduced by 5 per cent from 70.6% to 65,2%. Comparing the share of employees in total employed population in the Republic of Moldova and in the member states of the European Union, we note that it is much lower (*Figure 2).*

Figure 2. *Share of employees in total employed population in EU and Republic of Moldova in 2016, %*



* Share of employees based on Labour Force Survey.
** Share of employees based on Statistical Reports of Enterprises.
Source: Processed by the author based on statistical data of the European Union and data provided by the National Office of Statistics of Republic of Moldova.

Figure 2 shows that the share of employees in total employed population in most EU member states exceeds 80%, except Greece, Romania and Italy. Compared to 2009, the share of employees in total employed population has increased in most EU member states.

It is not true for the Republic of Moldova. According to Labour Force Survey, the share of employees in total employed population was 70.6% in 2009. Although the share of employees in total employed population was among the lowest in 2009 compared to other EU member states, it had diminished by 6.4 percentage points until 2016. If we examine the Statistical Reports of Enterprises, the share of employees is even lower in total employed population. It allows us to observe that some employees work on the black market having signed no employment agreement with the employer.

The self-employed in the Republic of Moldova are the second category in total employed population. During 2009-2017, its share in total employed population grew by almost 6 percentage points from 25.9% to 30.7% (Figure 3). Unpaid family workers are the third category in total employed population. Even in this case, we note an increase in its share in the studied period. Compared to 2009, the share of unpaid family workers in total employed population grew by 1.2 percentage points in 2017 (*Table 3).* In the Republic of Moldova, we observe that entrepreneurs are the category with the lowest share in total employed population. In the studied period, it decreased almost three times, being significantly different compared to other EU member states.

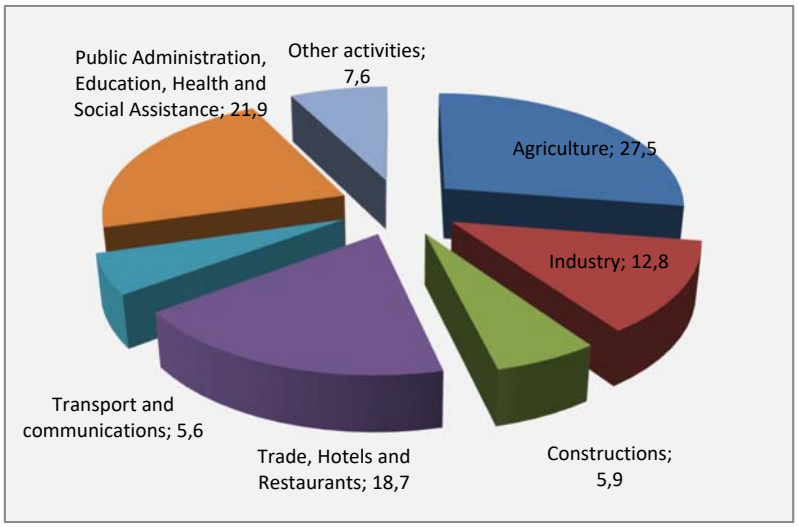
Comparing the share of self-employed in total employed population in the Republic of Moldova and the EU, we note that it is much higher. In the Republic of Moldova, it is 3 times higher than in the European Union. In the European Union, Greece is the country with the highest share of self-employed in total employed population. In 2016, it amounted for 22.2%, almost 10 percentage points lower than in the Republic of Moldova. The share of the self-employed in total employed population is almost two times higher than in Ireland, Romania and Poland, and three times higher than in Belgium, Cyprus, Italy and Portugal, and 6 times higher than in Estonia, Germany, Luxembourg, Sweden and Hungary, and 7 times higher than in Denmark.

The same applies to unpaid family workers. Studying their share, we could observe that it is growing. Compared to 2011, the share of unpaid family workers in total employed population grew by 1.5 percentage points in 2016 from 3.1% to 4.6%. As for the self-employed, the share of unpaid family workers in the Republic of Moldova in total employed population is the highest, except Romania, where, in 2016, it was 7.8%. In the EU member states, in 2016, it was below 1%, except Greece, Croatia, Italy, Poland and Slovenia.

The low share of entrepreneurs in total employed population is due to the historical past of the Republic of Moldova, a country emerging from a socialist system, where there practically was no entrepreneurship. Also, Moldovans, as such, have a less developed spirit of entrepreneurship that could tempt them towards developing their own businesses.

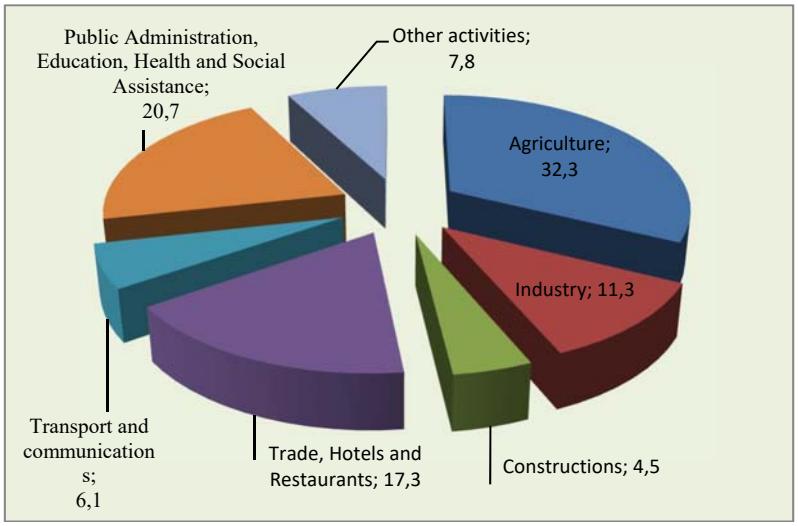
The level of development of national economy sectors impacts the degree of absorption of employed population in a country at a specific moment. Studying employment by industry in the Republic of Moldova, we notice that most employed population is involved in the agricultural sector (Figure 3 and Figure 4).

Figure 3. *Employment by fields of activity in 2010*



Source: author's processing.

Figure 4. ***Employment by fields of activity in 2017***



Source: author's processing.

The industrial sector holds the third position by number of employees. In 2017, the share of population employed in industry was 11.3%, 1.5 percentage points lower than in 2010.

For the Republic of Moldova, we cannot talk about performant economy as a third of employed population works in agriculture. It allows us to observe that the economy of the Republic of Moldova cannot compete in current conditions with economies of the EU member states.

5. Analysis of international migration of labour force

Another major challenge related to the behaviour of the labour market in the Republic of Moldova refers to international migration of local labour force. In the last years, there has been a trend for going abroad in search of employment of a high number of population that is able to work, leading to even higher aggravation of the context on the labour market. Now, employers in the Republic of Moldova are facing a high deficit of qualified labour force. Although some unofficial sources report that between 500 000 and 1 000 000 of people able to work in the Republic of Moldova could be working abroad, the National Statistical Office provides contrary information. *Table 4* presents the first 9 countries where most citizens of the Republic of Moldova are working.

Table 4. *Population of the Republic of Moldova aged over 15 working or in search of employment abroad during 2009-2017*

- thousands -

No.	Countries	2009	2011	2013	2015	2017
1.	**Total**	**294,7**	**316,7**	**332,2**	**325,4**	**318,4**
2.	Greece	3,2	2,4	1,5	1,4	1,6
3.	Israel	8,4	6,5	7,1	9,2	11,9
4.	Italy	54,7	58,3	50,7	49,2	50,5
5.	Portugal	6,3	4,4	3,9	2,4	2,0
6.	Romania	2,3	2,4	3,5	2,7	6,0
7.	Russian Federation	177,1	204,7	223,4	206,2	164,6
8.	Turkey	8,4	7,3	7,6	11,0	8,1
9.	Ukraine	8,6	5,1	5,4	4,6	2,0
10.	Other countries	25,5	25,5	29,0	38,7	71,8

Source: Processed by the author based on data provided by BNS.

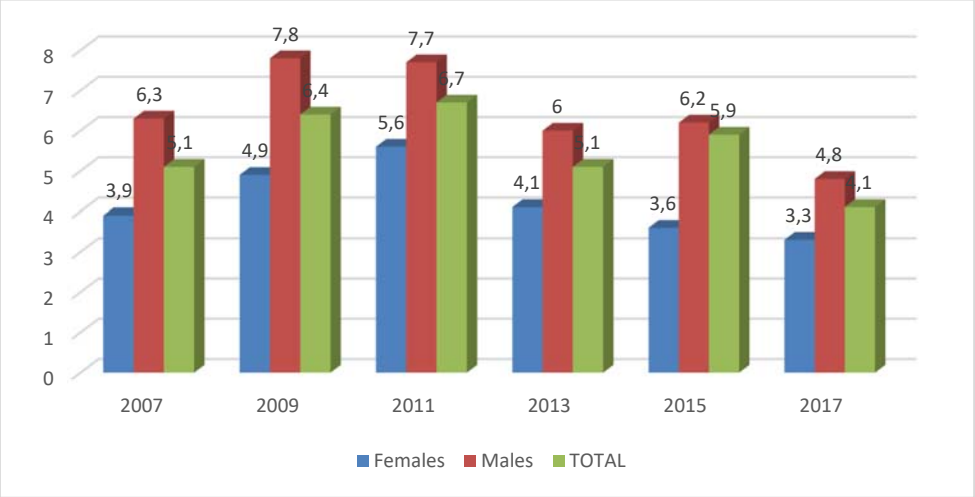
Data presented in *Table 4* show that of total population able to work aged 15 and over, most work in the Russian Federation. If in 2009, 60,9% of total population, aged 15 and over, declared as being abroad, were in Russian Federation, in 2014, this indicator reached 67,2%, amounting for almost 2/3 of total labour force declared as being abroad. High share of local labour force on the labour market of the Russian Federation was due to access with no restrictions to this country and due to knowledge of Russian language making the integration of Moldovan citizens into the labour market of this country much quicker. Starting with 2014, as a result of limitation of the access for the local labour force to the labour market of Russian Federation, and due the fact that it became less attractive, there has been a significant reduction in the number of Moldovans working in this country. In 2017, a little over 50% of population, declared being abroad for work, was found in the Russian Federation.

Also, EU countries have become more attractive for the local labour force and due to this fact there has been an increase in the number of people leaving the country. It is mainly caused by the level of payment in some EU member states. Secondly, acquiring Romanian citizenship provides many rights, including the right to work legally. Starting with 2013, the number of people declared being abroad, of which, most in EU member states, has grown by almost 2.5 time over a period of 4 years.

6. Analysis of unemployment

The rate of unemployment is a key indicator of the labour market describing the level of unemployment at national level and the degree of economic development in a country. *Figure 5* presents the evolution of the rate of unemployment in the Republic of Moldova during 2007-2017.

Figure 5. *Rate of unemployment in the Republic of Moldova during 2009-2017, %*



Source: Processes by the author based on data provided by BNS.

Analysing the rate of unemployment in the Republic of Moldova (Figure 5), we observe that it has not changed significantly in the studied period. Even the financial crisis at the end of the 20th century has not influenced significantly the rate of unemployment in the Republic of Moldova. It reached the level of 6.4% in 2009. Compared to 2009, the rate of unemployment decreased by 2.3 percentage points, 4.1% in 2017. Also, the rate of unemployment was higher among men than women.

7. Conclusions

The labour market in the Republic of Moldova undergoing a process of reforms after transition from planned to market economy has not reached a level of maturity which could ensure its well-functioning. Being under a process of development, the labour market has been hit by new challenges generated by globalisation, one of which is linked to high growth of international migration of local labour force. Currently, there are significant gaps between the labour market of the Republic of Moldova and the European Union in what regards the rate of unemployment, share of employees in total employed population, level of payment, etc., and also there are discrepancies which local governmental institutions will have to sort out quickly in order to align the labour market to community standards.

Rate of unemployment in the Republic of Moldova is very low compared to other EU member states. Although the share of employees in total employed population in most EU member states has grown for the studied period, it decreased by almost 7 percentage points

in the Republic of Moldova. The decrease in the share of employees in total employed population automatically leads to growth in the share of other categories of labour force, such as the self-employed and family workers. Finally, it generates an increase of informal employment which brings no beneficial effects for the economy of the Republic of Moldova.

Although the Republic of Moldova has the lowest rate of employment compared to other member states, we note that the rate of unemployment is similar to other EU member states which have the highest rates of employment. It shows the imperfection of the labour market in the Republic of Moldova, as well as the behaviour and culture of the local labour force. Maintenance of the low level of rate of unemployment is not the merit of the governmental institutions reflected in policies promoted in this field. And, the funds allocated for labour market measures in relation to Gross Domestic Product have been very low compared to other member states.

All these reflect the immaturity of the labour market in the Republic of Moldova and suggest that measures need to be adopted at the macroeconomic level by designing proper and efficient policies leading to the improvement of the current situation. At the macroeconomic level, the awareness of companies should be raised on this issue, as well as on the need for the implementation of concrete actions that could supply them the labour force they need.

References

Andersen, T.M., Svarer, M., 2007. Flexicurity-Labour Market Performance in Denmark. *CESifo Economic Studies.* 53 (3). pp. 389-429. Available at: <https://academic.oup.com/cesifo/article-abstract/53/3/389>

Atkinson, J., Storey, D.J., 1994. *Employment, the small firm and labour market.* Routledge Library Business: small business.

Bauder, H., 2006. Labor Movement: How Migration Regulates Labor Markets. *Journal of International Migration and Integration,* 9 (2), pp. 239-240.

Blau, H. and other, 1997. Labour Market Studies: Germany. The European Commission, Directorate-General for Employment, Industrial Relations and Social Affairs. Available online at: <http://aei.pitt.edu/60345/1/GERMANY.pdf>

Bonoli, G., 2010. The political economy of active labour market policy, *Politics & Society,* 40 (1), pp. 435-457.

Bostan, I., Grosu, V., 2010. The social effects of the current economic crisis on the European Union labour market, *Revista de Cercetare si Interventie Sociala,* 31, pp. 7-21.

Cace, S., 2006. *Politici de ocupare in Europa Centrala și de Est.* București: Expert.

Clancy, G., 2007. The Labour Market and the Economy. *Economic & Labour Market Review,* 3 (2), pp. 17-20.

Clasen, J., Clegg, D., Kvist, J., 2012. European labour market policies in (the) crisis, (12). European Trade Union Institute. Available online at: <https://www.etui.org/Publications2/Working-Papers/>

Dickens W.T. and Lang, K., 1988. The Reemergence of Segmented Labor Market Theory. *The American Economic Review* 78 (2). pp. 129-134. Available online at: <https://www.scribd.com/ document/237129469/>

Doeringher, P.B., Priore, M., 1970. Internal labor markets and manpower analysis. Available at: <http://files.eric.ed.gov/fulltext/ED048457.pdf>

Fields, G. S., 2009. Segmented Labour Market Models in Developing Countries. Available online at: <http://digitalcommons.ilr.cornell.edu/articles/162>

Fine, B., 1998. Labour Market Theory. A constructive reassessment. Routledge Frontiers of Political Economy. Available online at: <https://www.scribd.com/doc/258705491/Labour-Market-Theory-a-Constru-Ben-Fine>

Frunzaru, V., 2009. *Ocuparea fortei de munca. Politici europene*, Tritonic, Bucuresti.

Haahr, J.H. and other, 1997. Labour Market Studies: Germany. The European Commission, Directorate-General for Employment, Industrial Relations and Social Affairs. Available online at: <http://aei.pitt.edu/60343/1/DENMARK.pdf>

Harris, J.R., Todaro, M.P., 1972. Migration, Unemployment and Development: A Two-Sector Analysis. *The American Economic Review* 60(1), pp. 126-142. Available online at: <https://isites.harvard.edu/fs/docs/icb.topic1222150.files/Session%2018/harris_todaro70.pdf>

Hudson, K., 2007. The new labour market segmentation: Labour market dualism in the new economy. *Social Science Research,* 36, 286-312. Available online at: <http://elsevier.com/locate/ssresearch>

Jacobi, L., Kluve, J., 2007. Before and after the Hartz reforms: The performance of active labour market policy in Germany. Zeitschrift für ArbeitsmarktForschung – Journal for Labour Market Research, Vol. 40, Iss. 1, pp. 45-64. Available online at: <https://www.econstor.eu/bitstream/10419/158652/1/iab-zaf-v40-i1-pp045-064.pdf>

Leschke, J. and Watt, A., 2010. 'How do institutions affect the labour market adjustment to the economic crisis in different EU countries?', ETUI Working Paper (4) Brussels: ETUI.

Moscarola, F.C., 2010. Informal Caregiving and Women's Work Choices: Lessons from the Netherlands, *Labour,* 24 (1), pp. 93-105.

Penn, R., Rose, M. and Ruberry, J. (eds), 1994. *Skill and Occupational Change.* Oxford: Oxford University Press.

Petit, H., 2004. Cambridge contre Cambridge: une version segmentationiste. *Economies et Sociétés,* 23, p. 15.

Rubery, J. and Wilkinson, F., 1981. Outwork and segmented labour markets, in F. Wilkinson (ed.) The Dynamics of Labour Market Segmentation (London: Academic Press).

Viebrock, E. and Clasen, J., 2009. Flexicurity and welfare reform: A review, *Socio-Economic Review,* (7), pp. 305-331.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 265-275

Dimensions and Trends in Human Resources Management

Constanța POPESCU
University of Valahia, Targoviste, Romania
tantapop@yahoo.com
Georgeta GOGEANU
Coresi School, Targoviste, Romania
g_gogeanu@yahoo.com

Abstract. *Every person is an entity that includes a unique set of values, norms, convictions. As a social being- zoon politikon as a person is influenced by the national, ethnic, cultural, religious and political setting in which he/she develops. All these influences have an impact on the choices, activities and initiatives he/she has in the public and private life, including at their work place.*
Within every organization, there are more competitive forces (national and international competition, privatisation, productivity, taking away informational, social, commercial divisions) and social (labour mobility, unemployment, immigration, labour aging, level of preparation, client and beneficiary's requests) which interact. The way in which all these are managed generates a positive or negative impact on the activity and development of the institution.

Keywords: human resources, competitivity, economic advantages, organisational efficiency, tendency.

JEL Classification: J24, M54, O15.

1. Introduction

Generally speaking, organizations need to maintain a balance between the types of resources that are used, whether material, financial, human, informational.

With the evolution of the managerial thinking and practice, there have been mutations in addressing the role that man plays in ensuring competitive advantage, with the attention of specialists shifting from the material factor to the human resource: *people are a common resource and, at the same time, a key resource, a vital resource, today and tomorrow, of all organizations that ensure their survival, development and competitive success* (Manolescu, 2003).

P. Drucker, considered the parent of human resources management, believes that *man is the only resource at the disposal of man that can be developed; people must be considered as resources ... Managers and workers are together the human resources of an organization.*

Smith and Kelly think that *the economic and strategic advantage will come to organizations that can attract, develop and keep the most talented and innovative people on the market.*

The superiority of the human resources upon the other resources resides in:
- the ability of the human resource to create useful assets in an oblique or intangible form;
- the creativity of the human resource, the ability of innovation, through which goods and processes evolve;
- the efficiency of using all other forms of resources that depends on the efficiency of using, developing and improving the human resource. (Nicolescu, 2004)

In any field of activity, organizations need employees with income-generating, skilled and experienced skills, motivated and result-oriented. As the source of success or failure, *human resources are the first strategic resources of the organization* (Besseyre, 1988) and these resources cannot be easily changed. *Human resources are the creative, active and coordinating element of the activity within the organizations, which decisively influence the effectiveness of the use of material, financial and informational resources. Describing people as "resources" emphasizes their importance and shows that their management requires high levels of sincere concern for people, attention and professionalism* (Cornescu et al.).

The human resource consists of all the efforts, skills, knowledge and skills of the people. To highlight some organizations, they use the term "human resources", others use "labour", "staff", "human capital" or "employees". The question is whether the basic meaning remains the same. (Manmohan, 2013, p. 15).

Table 1.1. *The man in the organisation*

Reference Elements	Labour force	Human Resources	Human Capital
The Content of the concept	All the physical and intellectual skills	All the physical and intellectual skills, creativity, initiative, traditions, skills etc.	The combination of intelligence, skills and experience
Economic perception	Cost	Value	Economically active

Reference Elements	Labour force	Human Resources	Human Capital
Managerial perception	All the people able to work	Persons holding specific skills with different needs and behaviours	Entrepreneurs who can choose where and how to invest their skills, time and energy
Discriminatory character	Use of the categories; "productive workforce" and "non-productive workforce"	There are no discriminatory economic categories	There are no discriminatory economic categories
Employee initiative	Employees' initiative is not supported	The employees' initiative is supported and appreciated by the senior management of the organizations	The employees' initiative is perceived as an essential element in institutional development

Source: Adapted from Bîrcă, 2016. p. 27

Organizations must be preoccupied with adapting to change, emphasizing the interdependence of functions, processes, organizational relationships and positions, abandoning traditional thinking because today employment is not reduced to activities or tasks foreseen in the job description, but it involves a combination of shared responsibilities for the organization and the individual.

Given that people have *different agendas* (Senyucel, 2009) manifested by their own behaviours, attitudes, orientations, intentions, principles and beliefs, the achievement of the organizational goals is clearly determined by the ability of managers to manage diversity and to maximize it.

2. The concept of human resources management - objectives, activities

In an increasingly competitive environment in which we face a diversification of requirements, but also with changes in the demographic profile and labour mobility, the role of human resources management is increasingly important. The current conditions and the multitude of determinants require a reconfiguration of the purpose and role of the human resources management.

In line with the overall strategy of the organization, human resources management has the task of contributing to its objectives.

In any organization, human resources management pursues two categories of goals:

- medium and long-term *strategic objectives* centred on forecasting, planning and human resources policy;
- *operational objectives*, which are aimed at running the current human resources activities.

Starting from the idea that *HRM systems can be the source of an organizational vision, thus enabling enterprises to learn and capitalize on new opportunities* (Ulrich; Lake, 1990), the process is of utmost importance setting strategic and operational objectives.

From another perspective, HRM objectives can be structured into four categories:

- *social* (responding to the needs and challenges of society, aimed at minimizing the negative impact of the company/clients demands on the organization);

- *organizational* (human resources department is closely related to other departments, through the activity that is carried out, the major contribution to the achievement of the organizational efficiency);
- *functional* (the human resources department is concerned with the adjustment of the staff to suit the organization's needs);
- *staff* (they support employees to achieve their personal goals by contributing to that it is related to the organizing of the organizational needs). According to M. Armstrong, human resources management aims to achieve the goals for several directions of action:

• ***Organizational efficiency*** - HRM contributes to streamlining work within an organization.

Strategies in the field of human resources have the role of providing the institution with a set of values and clairvoyance, supporting programs to increase efficiency and organizational efficiency.

• ***Human Capital*** - represented by what individuals bring with them in terms of physical abilities (biological capital) and skills acquired through education (educational capital), in other words, *the ability of a person to produce income through work* (Di Bartolo, 1999).

However, these abilities must be preserved and developed by offering opportunities for learning, specializing or retraining. At the same time, the HRM must ensure a rigorous selection of staff, offset performance, motivate and maintain this well-qualified resource and connect to all types of market change.

• ***Knowledge management*** - in today's society knowledge has become a force especially if we are talking about a *knowledge-based economy and ideas* (Luban, 2005). They constitute resources that can ensure the survival and development of the organization on the basis of economic efficiency. Human resources management has the ability to use existing knowledge/skills to create new knowledge to support performance.

• ***Working relationships*** - maintaining consensus, harmonious climate at the organization level, a compliance with the legal and psychological contract is one of the priorities of the human resources management.

• ***Reward Management*** - HRM through rewarding policy aims to attract, motivate and maintain the best performing, innovative human resources in the organization, while harmonizing the individual objectives with the organization's interests.

Rewarding employees' work, recognizing their merits is the most effective way to keep enthusiasm and dedication to the team.

• ***The fulfilment of other needs –*** HRM intends to promote the diversity of cultural and ethnic heterogeneous workforce needs, age, skills etc. In order to achieve the objectives, several functions are fulfilled at the level of each organization/institution.

The human resources function or functions, as it is called in the literature, greatly contributes to the creation of an optimal work environment for the efficiency of the human resources activity. Practically speaking, the role of this function is to advocate, advise, design strategies to target and value employees, thereby contributing to the overall

objectives of the organization, increasing its internal/international competitiveness through the effort and people's involvement.

Regarding the types of activities performed by the human resources management, the literature retains several approaches.

Analysing the views expressed by several specialists and summarizing the information contained in them, we can say that five types of activities are specific to the human resource management:

- *staffing activities*: job design and analysis, human resource planning, recruitment and selection, promotion/sanction policies (resignation, dismissal), hiring practices or current administration;
- *training*: continuous training, career planning, performance evaluation;
- *reward*: work schedule, payment systems, flexible reward plans, tailored to the individual performance, benefits;
- *employee health and safety*: plans and procedures to ensure worker protection and health, the environment and working conditions, well-being;
- *relations*: communication, information, hierarchical counselling, social relations, personnel management, participation and involvement, external relations (Perreti, 1997).

They can be added to other activities required by the internal and external challenges of the social, economic, political and technological environment:

- *International/multinational HRM* - refers to the recruitment, selection, retention, employee development under a flexible labour market and widening the scope of international or multinational organizations.
- *Strategic management of the human resources* - under the conditions of the internationalization of the workforce and of a knowledge-based society, the strategic role that human resources have as a key factor in obtaining and preserving organizational competitiveness is increasingly important.
- *Risk management and employee protection* - Employee welfare, protection for employees, respect for the law and employee in the field of labour protection are important concerns of the human resources management specialists.
- *Diversity Management* - Equal Opportunities, Promotes Employee Needs and Employee Skills, contributing to their transformation into value added for the organization.

Although different approaches to HRD - specific activities also have common points on human resource prediction, maintenance and support.

In order to achieve the company's objectives, the quality of the performance of each activity is essential: between them there are interconnected relationships, even dependence ones, the effectiveness of one interacting with the effectiveness of the other.

The driving force of the human resources management is to gain competitive advantage by:

- establishing competitive human resources policies;
- providing high-quality goods and services;

- correlation of price policies with productivity;
- flexibility of strategies and policies, including human resources;
- capacity to innovate and adapt to the changes imposed by the economic, political, social, technological environment.

Regardless of the approach, human resource management is an integral part of the organization's management, an ongoing process of human resource management based on adhesion, positive motivation, productivity gains, guidance, and effective communication. Focused on each individual, to competitive success and employee satisfaction, but especially to the future, human resources management has the role of identifying, designing, implementing the most innovative strategies that reflect institutional priorities

3. Trends in the human resource management

In an era that is troubled by economic and financial crises, and that is marked by the inevitable diminishing of the resources, when we are confronted with the change of geo-political boundaries and authority poles, there are inevitably important mutations in the labour force.

In order for the EU economy to become an *intelligent, sustainable and inclusive society*, the Europe 2020 strategy has been created which proposes three priorities:

- smart growth: developing an economy based on knowledge and innovation;
- sustainable growth: promoting a resource-efficient, greener and more competitive economy;
- inclusive growth: promoting an economy with a high employment rate that ensures social and territorial cohesion.

With regard to the workforce, one of the objectives the strategy proposes is that 75% of the 20-64 year olds have a job.

In 2016, the employment rate in the EU was 71.1% for people aged 20-64. The highest occupancy rate (81.2%) was recorded in Sweden. Romania is part of the group of countries with a 60% employment rate.

It is a real challenge for Romania to increase the employment rate to 70% in the period 2016-2020, as it proposed through the National Employment Strategy 2014-2020.

At economic, political, social, cultural level, there are a number of mutations that affect human organizations and resources:

- Multinational organizations have become a constant presence in the economic environment.
- Organizations experience higher levels of risk and uncertainty.
- The effects of globalization make organizations more flexible and agile.
- There are increased political and social pressures for environmental and social responsibility.
- Organizations are confronted with problems caused by demographic imbalances.

- Work and people are more mobile and more global in orientation, leading to increased labour migration.
- Work tasks are more complex and interdependent
- There is a growing discrepancy between the skills required and the talent/skills available.
- More work is done by various work teams, often at a distance.
- Decrease loyalty between organizations and employees.
- The traditional definition of the family is under continuous transformation.
- There is an increased need for respect for cultural sensitivity.
- The use of technology is growing at a rapid pace.

The management of human resources has to adapt to new trends in order to be a relevant partner in the development of the organization. We are going to present some of these tendencies:

• *Globalization and its implications*
European economies are increasingly interconnected. Although the competition from developed economies (US, Japan) and emerging economies (China, India) is very high, Europe has the potential to grow as one of the most open economies in the world. The economic crisis has highlighted the close links, but also the contagious effects that exist between national economies at EU level. Organizations need to prepare staff to face the challenges of the globalization.

Increasing the number of multinational corporations brings new requirements for the human resources managers who need to ensure that employers are able to cope with the global missions, knowledge holders, skills and cultural adaptability. Employees must have knowledge not only of the professional but also of the language and culture of the country in which they operate.

• *Diversity of workforce*
In the past, human resource management has been considerably simpler because the workforce has been extremely homogeneous. Today's workforce is composed of different people in many respects: sex, age, social class, ethnicity, religion, education, language, values, beliefs, ideologies, physical aspect, personality characteristics, civil status, lifestyle, etc. Diversity is related to the strategic direction of the organization. This brings potential benefits to the growth of creativity, the power of innovation, the ability to make decisions and, last but not least, contributes to increasing the competitiveness of the organization.

For the employee diversity to be a progress factor for the organization, the HRM must consider adaptive policies and benefits packages for the staff. These include family-friendly offers: flexible work schedules, childcare and education offers, and a balance between family life and work.

Human resources management has to deal with the fact that the family of each employee is somewhat happy, because a happy employee is an efficient employee. Family relationship is a cost to the employer in terms of time, but it is a motivating factor for the employee that leads to high productivity.

In addition to diversity caused by gender and nationality, the HRM must also be aware of the age differences that exist in the workforce, having to train people from different age groups and effectively manage the diversity of opinions that each of them offers.

Human resources management must develop mechanisms whereby people from different cultural backgrounds work together to achieve organizational goals, minimizing the effects of potential conflicts. In this sense, it is necessary to make practices in the field of human resources more flexible.

• *Contingent labour force*
A very important part of the modern workforce is contingent employees. Contingent employees are people who are employed for shorter periods of time. They perform specific tasks that require special skills and are employed when an organization encounters significant deviations in the workflow. The decision to employ contingent labour brings with it a number of challenges for HRD. Among these, we identify the identification of employees' virtues, ensuring their availability by offering programming options that respond to their needs as well as potential benefits.

The use of contingent labour is made on the basis of careful planning, with the HRM having the responsibility to adapt it quickly to the requirements of the organization.

• *Aging workforce*
The rapid aging of the population is a real challenge. In Romania, between June 2016 and June 2017, the demographic aging index had an ascending trend, rising from 107.7 to 109.2 elderly/100 young people. Human Resources Management has the role of finding the most appropriate way of harmonizing generational differences and strengthening solidarity between generations, but also of continuing to work after reaching retirement age.

• *Changing requirements for labour force qualification*
Recruiting and developing skilled workforce is important for any company that is effectively interested in competitiveness, productivity, quality and efficient manpower management. The lack of competence translates into significant losses for the organization from the point of view of productivity, the increase in the number of accidents among employees and customer complaints.

The Human Resources Department will need to carefully analyse skills gaps and develop appropriate training programs to put an end to the gaps and deficiencies noted.

• *Self-employment*
Job sites are now more decentralized and the capabilities of the telecommunications system make it possible to locate employees anywhere in the world. This provides opportunities for companies to move their business to an area where lower wages predominate. Employees on self-employed workplaces are full-time employees of the organization, unlike contingent workers.

The same sites can offer opportunities not only to organizations but also to a diverse workforce. Thus, those who have family responsibilities, such as childcare or those with disabilities, may prefer to work from home instead of going to the headquarters of the organization.

The management of the self-employed workforce is a challenge, the managers in the field being equally concerned with the establishment and assurance of the quality of work, its completion on time, the reorganization of the compensation policy.

• *Employee involvement*
In order for our organization to be successful it is necessary to involve the employees. This can be accomplished through delegation, participatory management, work teams, involvement in goal setting, employee training, and empowerment of employees. HRM has an important role to play in engaging employees by addressing support management. Employees who are expected to delegate, have early decisions, work in a team or set goals: they can do so only if they know and understand what they have to do. Employee empowerment requires extensive training in all aspects of the workplace and here it shows the importance and authority of the HRD.

• *Personalized remuneration*
The concept is close to contingent remuneration and interconnected with talent management. There are today organizations/corporations that set different employment conditions based on learning styles or personalities, allowing employees to choose between lower base salary and higher bonuses or higher basic salary and lower bonuses.

Thus, HRM has to develop principles for understanding the optimal level of personalization in the work relationship. Moreover, as personalization will often mean that different employee groups establish certain employment arrangements depending on their skills, needs, or how they contribute to achieving the goals, the HRM must develop principles that provide leaders with the necessary arguments to explain these differences employees.

• *Continuous improvement programs*
Continuous work improvement programs focus on the long-term well-being of the organization. It is a process by which an organization focuses on quality and builds a better base to serve its customers. This often involves a company initiative to improve quality and productivity. Organizations strive to improve everything they do, from engaging high-quality people to the latest details of meeting customer needs.

Such initiatives can not be easily implemented; they require collaborative efforts between all departments of the organization and top management. HRM plays an important role in implementing continuous improvement programs by preparing people to determine change. This requires clear and extensive communication of the reasons for the change and its effects on employees.

There are situations when the programmes of continuous improvement of the activity are not efficient, especially for organizations that function in a dynamic environment that is confronted with rapid and constant changes. Such an organization can really need a radical or quantic change that has as a result the reorganization of the organization.

Human resources management must have mechanisms for employees to understand the direction the organization is facing and the consequences of change, to manage potential conflicts that may arise, to provide employees with training in order to retrain.

• *Personnel reductions*

Whenever an organization reduces the number of staff, they try to increase efficiency. The Human Resources Department plays a very important role in resizing the institution. People in the field of human resources must ensure that adequate communication is made to minimize the negative effects of rumours and that people are informed with factual data.

• *Health*
Physical and mental health and comfort of the employees are extremely important, recalling their value in the quality, productivity, and competitiveness of the organization.

HRM must go to another level by paying health insurance for the staff, subscriptions to wellness clubs or fitness centres, etc. This is not just a productivity growth strategy but also a strategy used to attract and retain valuable employees.

• *Technological change*
Along with the current technological advancement and its projection in the future, human resource management has gained new dimensions and increased efficiency. There have been a number of computerized systems that help HRM. Major or multinational organizations using human resources IT systems have the advantage of having a mobile database. With particular emphasis on personal data/staff safety, HRM's priorities include the need to train staff to operate such systems and develop its integrity to address the sensitivity of the problem.

This is certainly not a limiting list of the challenges human resources management has to answer. The world is changing, and the HRM must be prepared to face the changes in the labour market.

4. Conclusions

In a knowledge-based society, the HRM aims to develop and implement policies that strike a balance between organizational needs, the individual or group needs of employees and the needs expressed by society.

Valuing the positive valences of trends in the human resources comes to enhance the role that HRM has in ensuring the competitive success of the organization, of society as a whole, gradually becoming a social, political and economic phenomenon.

Therefore, the key to improving organizational performance is human productivity, service and quality human resource activities, and HR strategies are designed to support programs to improve organizational effectiveness and efficiency by developing policies in areas such as knowledge-based management, talent management.

Any system or organization that does not have a proper configuration of human resources management over time will encounter difficulties in managing its usual activities and in particular in achieving its objectives. For this reason, today, organizations need to multiply their efforts to create strong and effective human resource management with triple significance: organizational, social, and professional.

References

Armstrong, M., 2006. *Strategic Human Resource Management: a guide to action.* ediția 3. Londra: Thomson-Shore, Inc.

Armstrong, M., 1996. *Personnel Management Practice.* Londra: Kogan Page.

Besseyre, C.H., 1988. *Gerer les ressources humaines dans l'entreprise.* Paris: Les Edition d'Organisation.

Bîrcă, A., 2016. *The Redimensioning of the management of human resources in the context of the Republic of Moldova's joining to the European.* Chișinău: s.n.

Cascio, W. F., 1986. *Managing Human Resources.* s.l. Mc Graw-Hill.

Cornescu, V., Marinescu, P., Curteanu, D. and Toma, S. *Management - de la teorie la practică.* [e-book] Available through: Biblioteca Centrală Universitară „Carol I" București. s.l. <http://ebooks.unibuc.ro/StiinteADM/cornescu/cap12.htm> [Accessed 16 January 2019].

Di Bartolo, A., 1999. Modern Human Capital Analysis: Estimation of US, Canada and Italy Earning Functions. Luxemburg: LIS.

Druker, P.F. apud Cornescu, V., Marinescu, P., Curteanu, D., Toma, S. Management - de la teorie la practică. [e-book] Available through: Biblioteca Centrală Universitară „Carol I" București. s.l. <http://ebooks.unibuc.ro/StiinteADM/cornescu/cap12.htm> [Accessed 16 January 2019].

Europa 2020. O strategie europeană pentru o creștere inteligentă, ecologică și favorabilă incluziunii. <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:RO:PDF> [Accessed 16 January 2019].

Introduction to Human Resource Management. <http://online.vmou.ac.in/oldweb/studymaterial/BBA%2008.pdf> [Accessed 16 January 2019].

Luban, F., 2005. Formarea continuă și managementul cunoașterii. <http://www.management.ase.ro/reveconomia/2005-1/11.pdf> [Accessed 16 January 2019].

Manolescu, A., 2003. *Managementul resurselor umane.* Bucureşti: Economica.

Manmohan, J. ed., 2013. Human Resource Management. Available through: bookboom.com. ediția 1.

Nicolescu, O., 2004. *Managerii şi managementul resurselor umane.* București: Economică.

Peretti, J.M., 1997. *Ressources Humaines.* Paris: Vuibert.

Peretti, J.M., 2013. *Gestion des ressources humain.* ediția 18. Paris: Vuibert.

Itika, J.S., 2011. Fundamentals of human resource management. Groningen: African Studies Centre.

Roberts, K., Hunt, D., 1991. Organizational Behavior. Boston: PWS-Kent Publishing Company.

Senyucel, Z. ed., 2009. Managing the Human Resource in the 21st century. Available through: bookboon.com. s.l.: Ventus Publishing ApS.

Smith, A.F., Kelly, T. apud Hesselbein, F., Goldsmith, M., Beckhard, R., 1997. *The organization of the future.* San Francisco: Jossey Bass.

Torrington, D., 1994. *International human resource management: think globally, act locally.* Londra: Prentince Hall.

Ulrich, D. and Lake, D., 1990. *Organizational Compatibility: Competing from the inside out.* New York: Wiley.

Wright, D., 2013. *The Myths and Realities of Teamwork,* s.l. Available through: bookboon.com. ediția 1.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 276-281

Economic policy – the gateway to the development of the European Union. Opportunities and challenges

Mihaela MUSAT
Bucharest Academy of Economics, Romania
musat.mihaela11@gmail.com

Abstract. *The desire of states to boost their economic growth and rebuild their economic strength affected by Second World War, have influenced the process of coordinating Member States policies that began with the establishment of the first European Coal and Steel Community. The ECSC was the first international organization to be based on the principles of supranationalism and started the process of formal integration which ultimately led to the European Union.*
With the support provided by the State, the economic policy influences the legislative power through political measures. And when we refer to the development of the European Union, we can bring into attention the economy development, which is an important extension, though different from the traditional economy.

Keywords: economic.

JEL Classification: P16, P35, F63, O23.

1. Introduction

In order to modernize the economy at European level, I believe that effective regulatory policies can help bring about favorable results. Of course, all economic policies must be subject to the essential objective: economic growth. But is it doing the economic growth we want if our involvement is not high enough? Here comes the analysis of economic policies, which starts from the leading "algorithm" of an economy. We need to make a distinction between objectives, indicators, intermediate targets and instruments and start with the first step, namely to establish clearly the macroeconomic objectives, where there is a strategic objective (where we identify a social welfare function and an individual welfare function, and both functions want to be maximized) and tactical objectives, such as price stability, balance of payments, etc. Then follows the identification of the optimal macroeconomic policy instruments to achieve the objectives that refer to the interest rate, public spending, marginal tax rate, etc., followed by the indicators that provide information in order to obtain better performance in achieving the proposed objectives.

2. Economic policy in the view of economic growth policy

All government strategies existing so far have as objective the growth of society's well-being. Economic development, and at the same time increasing the well-being at the society level, lead to a sustainable economic growth. The whole process of economic growth is the fundamental engine for raising the standard of living. The gateway to the development of the European Union is given by the economic policies, through the importance of the economic growth in the market economy revealed by the association of this process with the strengthening of the economic strength of the EU member states and also with the increase of their wealth and welfare.

Economic growth is a long-term complex process and phenomenon, subject to constraints such as inefficient use of resources, institutional and cultural patterns that slows development, limited resources, excessive population growth, and so on.

The economic growth of the European Union states can be achieved by more efficient use of the existing resources and by increasing the production capacity. At national level, economic growth policy (PCE/EGP) pursues the social finality of economic growth, marked by the rise in quality of life, pursuing the setting of long-term development goals whose touch allows material and spiritual well-being in a healthy natural environment, identifies, orientates and dimensions the resources needed to reach the targets, be it material, human, financial or other resources.

Costs and Benefits of Economic Growth Policy (PCE/EGP):

PCE / EGP costs	PCE/ EGP benefits
Giving up or postponing the satisfaction of needs	Bad synchronizing between costs and effects, when costs are at a time, and the effects appear much later
The opportunity cost of growth, given by the expenditure with resource consumption (natural, financial, human, etc.) of the present generation to ensure the production and consumption of future generations	Wealth and living standards
Social costs and personal costs of growth	Massive revenue growth and comfortable lifestyle

Source: Author's assessment.

3. Involvement of economic policies

- The European Union supports and defends citizens' interests, and economic policies help by providing support, in particular through job creation, economic growth and innovation.
- To describe the role of the state, implicitly economic policies, in economic life, we identified the most commonly used typology supported by the three functions proposed by Richard Musgrave in his "Theory of Public Finance" (1959), namely: Allocation, Stabilization and Distribution.

A) Allocation function, given by:

a) Pareto's optimum that shows that economic efficiency consists in using all the resources available so as to maximize consumer satisfaction. Economic theory supports the efficacy criterion proposed by Vilfredo Pareto (1906), which shows that the allocation of resources between different possible positions is optimal when we can no longer improve the satisfaction of the individual without harming the satisfaction of the other;

b) The deficiencies of the market economy that show us that the economic analysis shows two main situations that can contribute to a more efficient allocation of the whole economy, namely, the pure collective services, on the one hand, which at the time of use is used at the same time by all members of a community and for whom a private producer can not exclude beneficiaries who do not want to contribute to the financing of that service (such as national defense, justice, road network, public lighting, etc.) and, on the other hand, externalities that show that an individual's preferences have effects on the well-being of other individuals who, however, can not be considered in commodity exchanges.

B) The stabilization function - presents the policies that tend to regulate the evolution of macroeconomic variables, with the aim of avoiding or limiting the main imbalances susceptible to affect the national economy. This identifies the four objectives, Nicholas Kaldor's "magic quadrilater", namely:

a) Growth, which is measured by the percentage of annual GDP growth (GDP=gross domestic product), and allows the increasing of employment, national income and per capita income, too, given the fact that the population grows slower than GDP . The growing of the economy and the activity within a state also puts pressure on inflation, but stimulates the risk of a trade deficit, thus identifying a compatibility with the jobs but an incompatibility with price stability and external balance;

b) Jobs - aim to obtain the highest possible productivity, reduce unemployment to the minimum voluntary unemployment that is necessary for the good functioning of the labor market due to the delay of searching for the information necessary to choose the best job, even when there is, for each , at least one job suitable to the qualification it has;

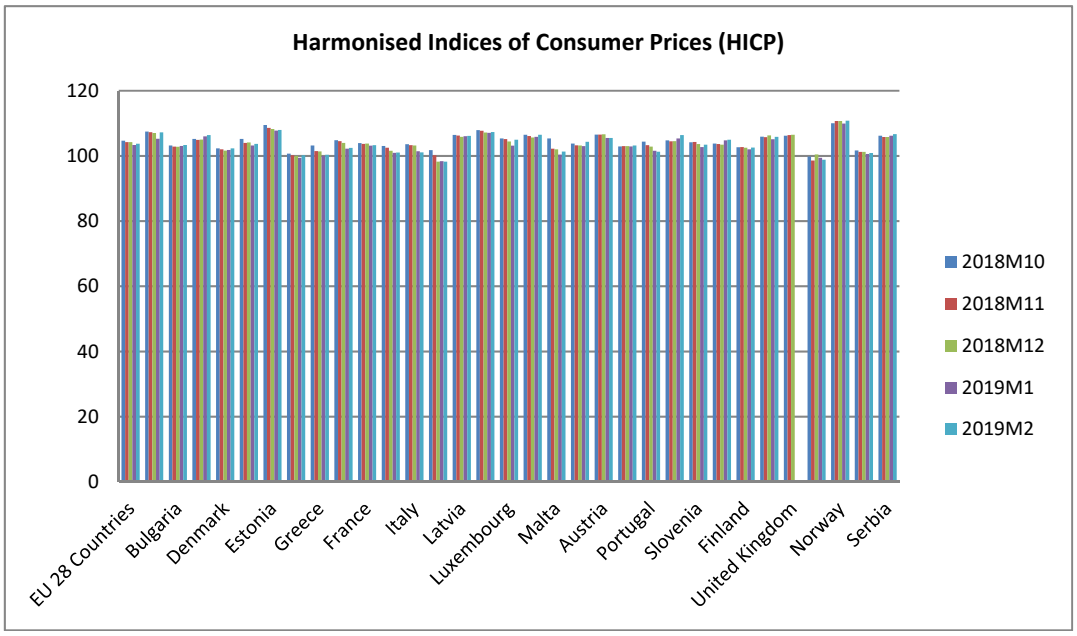
c) Price stability - targets a relatively low (1-3%) inflation rate and shows that a minimum of price increase seems inevitable in a growing economy where there is constant pressure from demand for goods and services;

d) External balance - which means balancing the balance of payments, where are the three essential components: current payments, non-monetary capital movements and the variance of the banking sector's exchange reserves.

C) The distribution function, which shows us:

a) The distribution of income and wealth - where the state operates a direct redistribution on its allocation and stabilization functions, and a re-launch of the economy through consumption can be made as a priority for the benefit of those more disadvantaged employees, and a revival through investment can improve business profit;

b) A neglected function due to the lack of a decision criterion because it is not allowed to assess the distribution of income and wealth among individuals. Distribution casts the issue of decision, but there is no operational assessment criterion in economic theory. In Pareto's view, the optimal is the situation where one individual monopolizes all the wealth and income. Regarding the economic policies, as the allocation function is easily understood by most economists, economic policy theory and information is most often centered on the study of stabilization policies.



Source: Eurostat.

I have thus identified the consumer price index between October 2018 and February 2019, both at European level and particularly for different countries.

Thus, I found that the consumer price increased at the beginning of 2019 - compared to the end of 2018.

4. Are the economic policies favorable to the European Union development?

For the harmonious development of the European Union, we are following the ascending route of economic policies where EU member states present yearly, in April, the medium-term macroeconomic scenario, the national targets supporting the implementation of the EU's Employment Strategy, Europe 2020 economic Growth, but also identifying the obstacles to economic growth and the measures to support the economic initiative.

At European level, the most common recommendations given by the Council of the European Union on economic growth and economic policy improvement refer to the following issues:

- recommendations on the economic policy of the Eurozone;
- supporting a strong increase in investment and exports;
- sustainable fiscal development and socio-economic policy , respecting the Union's rules and guidelines, taking into account the need to strengthen the global economic governance of the European Union by contributing to the following national decisions.

5. Conclusions

Following the evolution of the European Union, we find that the involvement of economic policies leads to a high degree of cooperation between Member States, a higher quality of life standards and easier integration into the labor market. We see economic policies as a point of support and the cornerstone in terms of the development of the European Union and we contribute to economic growth both at European and global level.

In the economic life of each state, we meet economic policies, policies that trying to show their contribution to the development of the EU and, implicitly, to the citizens' standard of living, show a form of interventionism in the market mechanism by using a number of tools, strategies, plans and legal regulations.

References

Angelescu C., Socol C., 2005. *Politici economice: politici de creştere economică: politici sectoriale,* Bucureşti, Editura Economică.

Angelescu C., Socol C., Socol A.G., 2009. *Politici economice*, Editura Economica.

Aronson R. Schwsrtz E., 1996. *Management Policies in Local Government*, ICMA Publishers, Washington.

Baldwin R., Wyplosz C., 2004. *The Economics of European Integration,* McGraw Hill, New York.

Bărbulescu G., 2005. *U.E. Politicile extinderii,* Editura Tritonic, Bucureşti.

Bean C., Bentolila S., Bertola G., Dolado J., 1998. Social Europe: one for all?, Monitoring European Integration 8, Centre for Economic Policy Research, Londra.

Burda M., Wyplosz C., 2001. Macroeconomics, Oxford University Press, Oxford.

Cohen, J., *Politics and economic policy in the United States,* Houhton Mifflin, Boston; 1997.

Checci D., Lucifora C., 2002. Unions and Labour Market institutions in Europe, *Economic Policy,* pp. 361-368.

Daianu D., Vranceanu R., 2003. *Romania si Uniunea Europeana: inflatie, balanta de plati, crestere economica,* Editura Polirom, Iasi.
Eyestone, R., 1972. *Political economy, politics and policy analysis,* Markham Publishing, Chicago,.
Gheorghe H. Popescu, 2007. *Economie europeană,* Editura Economica.
Godard O., Beaumais O., 1994. Economie, croissance et environnement. Des nouvelles strategies pour des nouvelles relations, *Revue economique*, Vol. 44.
Magone J., 2003. *The Politics of Southen Europe,* Editura Praeger, Londra.
Pelkmans, J., 2003. *Integrare europeana. Metode si analiza economica,* editia a doua, Institutul European din Romania, Bucuresti.
Richard A. Musgrave, 1959. *Teoría de la hacienda pública,* Madrid.
Saint-Paul G., 2000. *The political Economy of Labour Market Institutions,* Oxford University Press, Oxford.
Stephen G., Bache I., 2001. *Politics in the European Union,* Oxford University Press.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 282-286

Europe's soft power – a key to regaining European integration models strength

Silvia-Elena IACOB
Academy of Economic Studies, Bucharest, Romania
popescusilviaelena@yahoo.com
Andreea Teodora IACOB
Academy of Economic Studies, Bucharest, Romania
tia.iacob@gmail.com

Abstract. *Every nation, in his own way to global attitude gaining, has to be considered according to its own strengths and weaknesses.*
Because, as I think, the European integration model has proven its weaknesses and its oversights. The answer to a better understanding of the European integration model's needs, at the moment, taking into consideration the financial crisis, the national debts crisis, refugee crisis, and others, could be a better understanding of the European states potential, as regarding soft power. Soft power could act like a booster for real convergency and could really help Europe, seen as an integration model, regain its personality and his strength.

Keywords: European integration model, weaknesses, financial crisis, nominal convergency, real convergency.

JEL Classification: E6, F02, F6.

Introduction

At the moment, the European space has to deal with his serious injuries caused by the way European and Monetary Union has been made, in its beginnings. The road is clear – we want a bigger and united system. To do that, we, as EU, need to learn and to deal with what happened in 2008 and in 2010. Those two periods have shown that the European system has been blocked by its own willing to go further with a deeper integration. Aspects such as insufficient real convergence, or unfounded, theoretically speaking, foundation, or insufficient correlation of economical policies – mostly fiscal policies, and financial policies – have bought European integration model in impasse.

Those vulnerabilities are vulnerabilities considered as regarding economic domain. European integration model has, after this first regarded domain, many other valences: socially, politically, cultural valences, religious, ecological, etc. All of them, also the economic one, are working as a complete unitary cause and effect model.

This model is too complex to afford such failures and oversights.

This is why, after what the actual state of European Integration Model shows on first side, mostly aspects regarding the Monetary Union state, the European Integration model has to deal with aspects that involve and watch over the real unity of the European construction: problems such as lack of political convergence and unity, distrust in the European unity model (see Brexit) lack of military integration, etc.

One favorable context of unity in the European construction could lead to a better consolidation of the economic power, the military power and the soft power. Because, after all, the main objective of the European integration model is to manage to gain such a perfect mobilization of those 3 powers, that could lead the system to an even better and bigger competitor at global level.

Among those three, the one that I consider the most powerful – let's say, the one that I consider the most needed in the mix – in soft power.

Every nation, in the "game" to global hegemony, must be treated mainly by its own "qualities" and "defects". We cannot ask China for the soft power of America or Europe, just as we cannot ask America for Russia's resources. Every nation is what it is, beyond the ambitions of the rulers. Of all the power sources, soft power is a defining competitive advantage of Europe. Europe has grown over time, exploiting soft power, without much difficulty, unlike other powers (China, for example) that are making great efforts to gain ground from the perspective of soft power.

The chance of the euro-zone and, in general, the chance of the European integration model, I think, is to recapture in soft power, as the main engine of advancement in the integration process - with all the valences and all directions of integration - moving towards increasing real, from the inside to the outside, more than "formalizing" from the outside to the inside. In the regarded context, what could be a flavor of strengths, weaknesses, threats and opportunities, in the way of consolidating EU's soft power?

1. Weakness: insufficient investitions in research, and development, education and cultural investment

Europe counts 27 Universities among top 100 global, while USA counts over 52 Universities, according to Top Universities Ranking, in 2018, for 2017. Even more, first three Universities are occupied by USA: Massachusetts Institute of Technology, Stanford University and Harvard University.

According to dates by Eurostat, during 2001-2011, Europe spent, in average, from 24.6 percent to 26.9 percent from PIB per Capita in education, both in public system and private system. Simultaneously, USA spent, in average, from 29.7 percent, to 30.2 percent regarding the same indicator.

Even more, as regarding R&D spents, Europe has spent, in average during 2006 and 2015, from 1.49 percent from total public spents, to 1.38 percent, in 2015. Simultaneously, USA has spent, in the same context, from 2.75 percent in 2005, to 2.4 percent in 2015. HAS SPENT, IN THE SAME CONTEXT, FROM 2.75 PERCENTS IN 2006, TO 2.4 PERCENTS IN 2015.

Tendencies show, indeed, a change in terms of growth, in Europe, but still left behind comparative to USA.

More or less, as regarding R&D, and education spent, one of the biggest and most important soft power growth engines, Europe still invests and collects less than USA.

2. Weakness: Natality level decrease

Europe's soft power is dramatically threatened by the demographic problem, seen from natality and population ageing.

As regarding natality, according to Eurostat, among EU, from 5,469,434 births in 2008, the level has decreased to 5,114,128 in 2016. The decrease has begun from 2008, simultaneously with the financial crisis effect propagation among the population. The same decrease has been maintained over 6 years, until 2014. Unfortunately the natality growth trend is not sustained, as seeing that 2015 had another decrease.

Still regarding the population, Europe population has the oldest population among global powers. In 2005 Europe had 9 from 10 countries with the oldest population among world countries.

Natality decrease and population ageing are a real weak point for Europe's soft power. Besides impact over economic growth and military unity, there are also other aspects, that show the real threaten that this indicator tries to communicate.

For example, a natality increase, in a simultaneously and identical trend with the Mondial flux, could sustain, technologically, Europe's economic growth. Europe's interests are the same as others world powers. All we need is a boost of population, to maintain our activity, technologically speaking, on the track. This way we could be a 1:1 partner in development, know how consolidation, etc.

3. Threaten: immigrants and European resistance

Resilience in immigrants absorption is, on the other hand, a threaten over Europe's soft power. European culture, in contrast to USA culture, it doesn't have the character to grow through diversity.

For example, America is one of the few states that can keep a fix share in global population and that can avoid demographic decline. Fears regarding the effect that immigration has among states natural population are disintegrated, as regarding America. A census took over 2010 population have shown a Hispanic population growth, managing to replace African American population, with over 16 percent, becoming the biggest minority of USA. The important aspect is that USA is a nation of immigrants, with a strong faith for the new entries, and that grows and glows in diversity itself.

More, not only that the immigration doesn't have bad effects among America's culture, as described above, but has benefic effects in matter of global power of America, on long term. America imports more and more students and prosper graduated. Studies show that the bigger the number of graduates immigrants, the bigger the number of patents per capita. A quarter of start-up's in tech domain have an immigrant as the owner, and over 4 percent of first 500 Fortune companies have been built by immigrants or their children.

Even more, America's soft power grows through the lobby of immigrants will and desire to come to America and the capacity of America to assimilate fast and benefic, mostly, the immigrants. The first good effect of this lobby is the fact that America manages to bring intelligent people, and powerful as human capital, in their culture of prosperity and diversity.

On the other hand, the immigration problem changes in a big part discussion context. European culture, although works in diversity, it doesn't have the needed instruments to get richer through diversity, like USA case.

Immigration problem and, specially, the impact of this problem, over soft power, enters the scene specially at the level where European culture doesn't have the capacity to absorb and to prosper with this absorption of immigrants. The openness of the European culture over the immigrants would have permitted Europe the demographic resuscitation, on the one hand and, on the other hand, would have been a big step that would have helped Europe demonstrate the fact that all its nations can collaborate for a common wellbeing. This demonstration would have shown that Europe's faith itself, Unity and common wellbeing, can be and it is sustained by all the construction's valences.

Even more, Germany's efforts to stop population's ageing, by encouraging immigration, have been devastating for Europe, permitting a wave of terrorism that really gained momentum, and that managed to send Europe a step back in its efforts to grow in unity.

You could say that Europe is beginning to demonstrate, progressive, the fact that the faith of unity and common wellbeing is more appropriate for internal perspective, more than a globally affordable solution.

More and more, globally, big powers are beginning to behave like families. Each family has its own rules and its own laws, not transmissible to the other families. What works for a family, won't work, in the same mix, for another family. Each country has a "parental" figure, more preeminent or softer (China versus America). Each family has its own faith shrill or subtle (Russia versus Europe). And, the most important aspect, each family grows in its backyard its ground can handle.

In other words, as I believe, each nation, in the power gaining game, has to be treated, specially, thinking about its own strengths and weaknesses, its own qualities and its own flaws. We can't ask China the soft power of Europe or America, the same as we can't ask America Russia's resources. Each nations is what it is, above and after leaders ambitions. And, no matter the times, each nation will manage to gain the supremacy place when this fit could lead to the common wellbeing.

References

D. Daianu, A. Socol, E. Kallai, 2016. Adoptarea Euro in Romania: constrangeri si oportunitati;
Eurostat Database, Data extractiilor: Ianuarie 2018
H. Kissinger, 2015. *Ordinea mondială,* Editura RAO,
Joseph S. Nye. Jr., 2017. *S-a sfarsit oare secolul American?,* Editura Comunicare.ro

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 287-295

The Perspectives of the European Cohesion Policy for Romania

Ioana Andrada GAVRIL
Bucharest University of Economic Studies, Romania
ioana.gavril@economie.ase.com
Tamara NAE
Bucharest University of Economic Studies, Romania
nae.tamara@gmail.com

Abstract. *Achieving economic, social and territorial cohesion and reducing regional disparities by investing in infrastructure, human resources and diversifying regional economies remains a major objective for EU Member States. Achieving this goal would not be possible without the development and implementation of cohesion policy strategies at regional and national level. This article analyzes the dynamics of inequalities, poverty and regional disparities in Romania, in relation to the cohesion policy, which has the goal of achieving convergence and improving the living standards of the population to a comparable level to the one achieved by the other member states of the European Union.*

Keywords: cohesion policy, convergence, regional disparities, inequality, poverty.

JEL Classification: H20; O11; P25.

Introduction

Cohesion policy has as main objective the reduction of economic and social disparities in the European Union. This complements the regional policies implemented by national authorities in the poorest regions. In this respect, the regional policy arguments related to the risks of disintegration caused by free movement and the disparities in a large competitive environment are at a stage of integration, but the differences remain structurally and economically important.

The Cohesion Policy aims to act against regional disparities by developing redistributive measures and by equipping poorer regions with the tools needed to improve their productivity growth and also potential growth.

The multiannual financial framework of the cohesion policy has both a political role, as it establishes the political priorities of the period, and a budgetary one, as it sets out the areas in which investments are to be made and specifies the objectives to be achieved in order to achieve desirable growth in line with the Europe 2020 objectives.

EU Cohesion Policy has the role, at least theoretically, of stimulating a strong economic growth process (as it stimulates demand for goods and services through the investments it finances), on the one hand, and to reduce catching-up, on the other hand, by investing in infrastructure and human capital.

At the same time, in practice, the analysis of the effectiveness of cohesion policy is under discussion. According to the European Commission, investments in infrastructure and human capital financed by the Structural and Cohesion Funds contribute to increasing productivity and competitiveness, which allows for increased long-term and, implicitly, economic growth.

Overall, cohesion policy has contributed to a stable convergence process (reducing disparities in GDP per capita), noting that in the context of the 2007-2008 financial crisis, the effectiveness of Cohesion Policy has been jeopardized, as it has created an unfavorable climate for investment and convergence. However, although in this context regional convergence has been reduced, the Commission notes that the results of econometric analyzes suggest that there would have been divergence in the absence of cohesion policy.

However, some empirical studies challenge the economic effectiveness of cohesion policy (Sapir et al., 2004), arguing that in some cases the effects of cohesion policy are neutral or, worse, even negative, as it causes fiscal and bureaucratic distortions and leads to sub-optimal allocation of resources (Boldrin and Canova, 2003). In order to increase integration, increasing Romania's absorption capacity of structural funds is a prerequisite for increasing economic competitiveness and sustainable development. The Structural and Investment Funds (ESIF) are aimed at job creation, sustainable economic growth and improving environmental conditions, all of which lead to an increase in the living standard of the population. These funds consist of the following:

- The Cohesion Fund (CF) focuses on Member States whose gross national income per capita does not exceed 90% of the EU average. The objective of the Cohesion Fund is

to reduce economic and social disparities and achieve sustainable development. If a beneficiary state has an excessive deficit and does not take the necessary measures to reduce it, its allocated funds may be suspended.

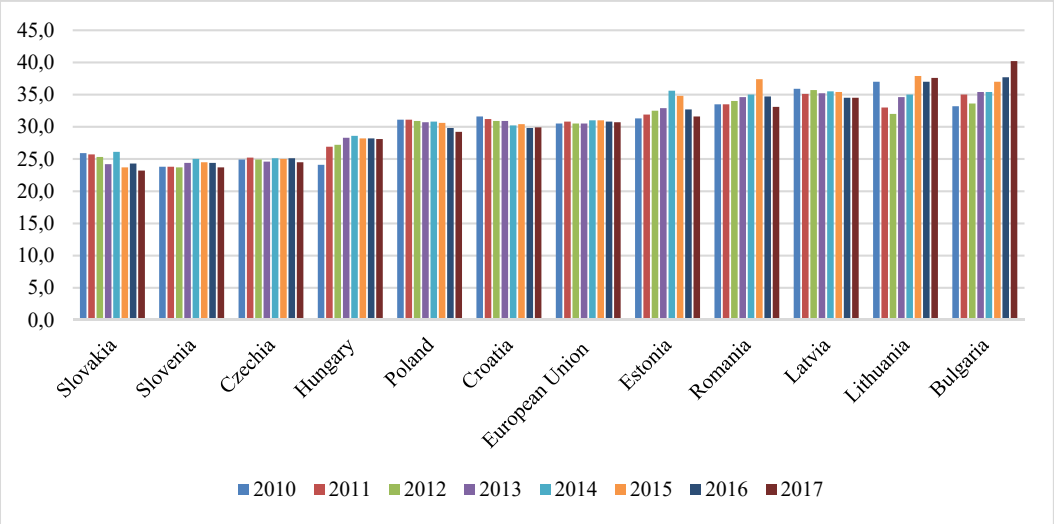
- The European Social Fund (ESF) is the main instrument by which the European Union aims to support the creation of better jobs and the provision of fair employment opportunities for all citizens. This fund operates through investments in human capital and seeks to improve the employment prospects of those who find it difficult to find a job.
- The European Regional Development Fund (ERDF) aims to strengthen economic and social cohesion in the European Union by reducing disparities between its regions.
- The European Agricultural Fund for Rural Development (EAFRD) supports the European Union's rural development policy, which helps rural areas to cope with the challenges posed by economic and social factors and develop so as to converge with urban areas.
- The European Maritime and Fisheries Fund (EFFM) helps to adopt sustainable fishing practices and diversify economies to improve the quality of life along European coasts.

Challenges in Romania

Romania's economy is in great need of funding in key areas such as infrastructure, education, health, agriculture and rural development, but not only. Cohesion policy should be managed in such a way as to contribute to economic development as a whole, but especially to the reduction of poverty, inequality and regional disparities, given that Romania has significant problems in these areas.

Analyzing the evolution of the Gini coefficient in Romania, it is noticed that during the first 5 years after the accession to the EU, inequalities have significantly decreased, but from 2012 onwards they have been on an upward trend. In fact, the situation of inequalities in Romania worsened in the context of the crisis, with Gini rising from 33.5 in 2010 and 2011 to 37.4 in 2015, but then slightly diminished and reaching 33.1 in 2017. This progress was determined, amongst other things, by raising the minimum wage in the economy, and obviously led to a more advantageous position in the CEE ranking of the Gini index. If in 2015 Romania ranked second among the Central and Eastern European countries (CEE), only Bulgaria having higher inequalities, in 2017 three other CEE states recorded more pronounced inequalities, namely Bulgaria, Lithuania and Latvia (Figure 1).

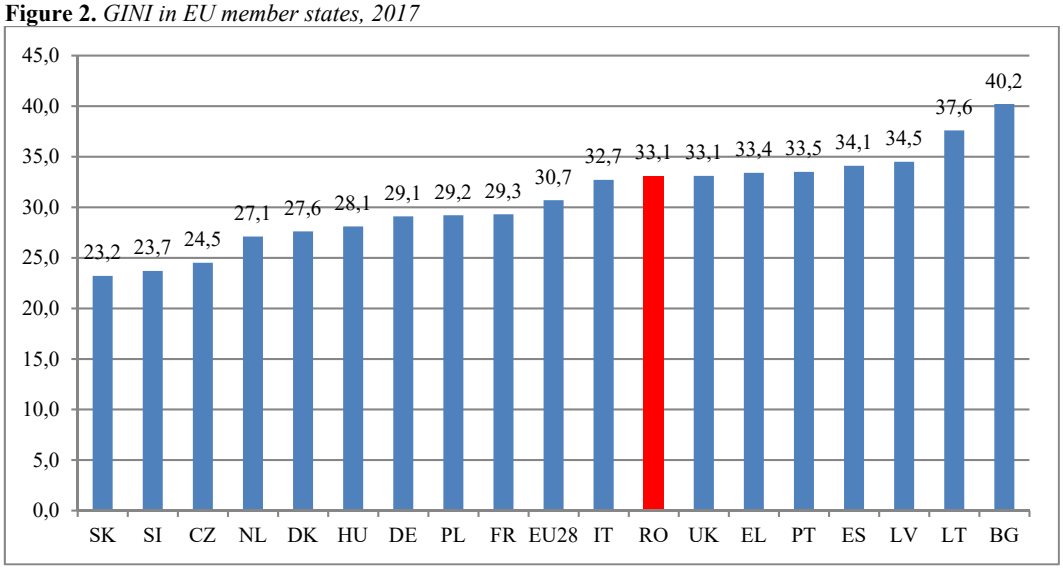
Figure 1. *GINI in CEE countries*



Source: Eurostat.

Although Romania has a high Gini index, it should be noted that at the level recorded in 2017 was lower than the ones reported in some of the southern Euro zone countries (Spain, Portugal, Greece), being at the same level as the value recorded by the United Kingdom (Figure 2).

Figure 2. *GINI in EU member states, 2017*

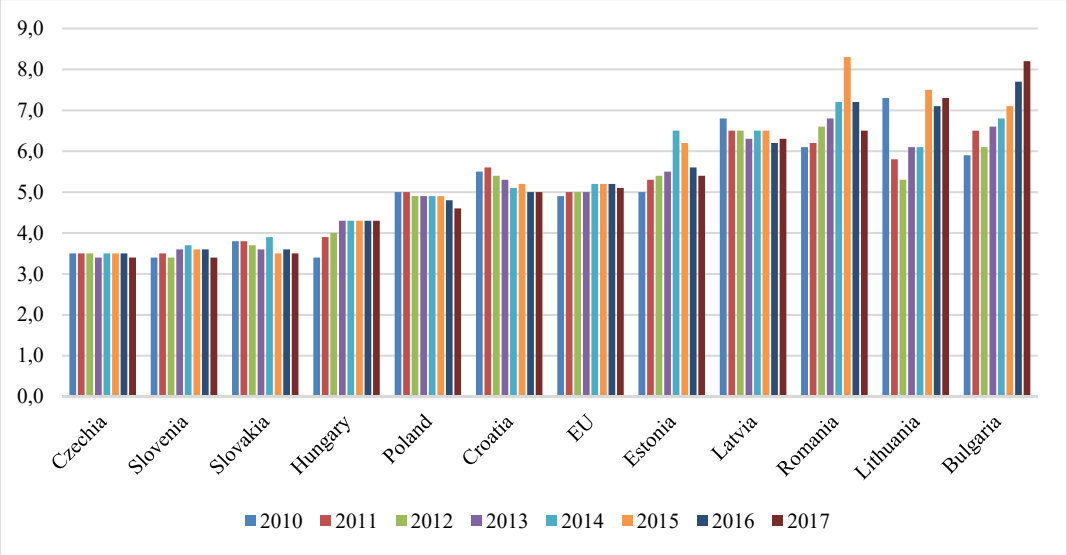


Source: Eurostat.

The situation of inequalities seems to be more serious when comparing the income ratio of the upper quintile (the richest 20% of the population) to the lower quintile (the poorest 20% of the population). In 2017, Romania recorded a ratio of 6.5, which means that the richest 20% of Romanians had 6.5 times higher incomes than the poorest 20%, only Lithuania and

Bulgaria registering bigger values. The figure recorded by Romania was above the EU average of 5.1, but it should be noted that Romania has made significant progress in this respect, given that in 2015 it recorded the largest S80/S20 ratio in CEE, of 8.3.

Figure 3. *S80/S20 in CEE countries*



Source: Eurostat.

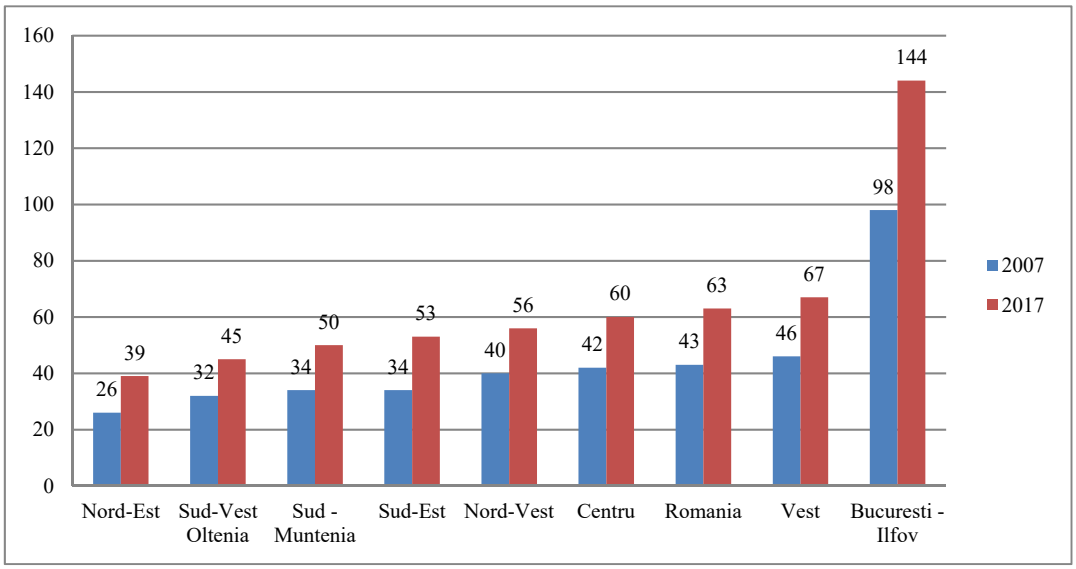
As an emerging country, Romania is among the low-income countries where inequalities appear to be greater, with significant differences between urban and rural areas, as well as high regional disparities. Although progress has been achieved in all the regions as compared to the year of EU accession, Romania still has significant regional integration issues, given that in 2017 two regions recorded a GDP per capita at PPS of less than half of the EU average (North East - 39% and South-West Oltenia - 45%), and South-Muntenia was exactly 50% of the EU average.

	GDP/inhabitant (% EU average)		GDP/inhabitant at PPS (% EU average)	
	2007	2017	2007	2017
Romania - total	25	33	43	63
Macroregiunea unu	24	30	41	58
Nord-Vest	*23*	*29*	*40*	*56*
Centru	*24*	*31*	*42*	*60*
Macroregiunea doi	17	23	30	45
Nord-Est	*15*	*20*	*26*	*39*
Sud-Est	*20*	*28*	*34*	*53*
Macroregiunea trei	34	48	60	91
Sud-Muntenia	*20*	*26*	*34*	*50*
București-Ilfov	*56*	*75*	*98*	*144*
Macroregiunea patru	22	29	38	55
Sud-Vest Oltenia	*18*	*24*	*32*	*45*
Vest	*27*	*35*	*46*	*67*

On the other hand, the Bucharest-Ilfov region, that is the most developed, had a GDP per capita at PPS of 144% of the EU average in 2017, over three times higher than the values recorded in the least developed regions. Moreover, this region has outpaced major metropolitan areas in developing countries, such as Madrid (124%), Berlin (118%), Rome (111%) or Lisbon (100%) regarding the GDP per capita at PPS (expressed as a percent of the EU average).

Thus, especially in the context of Romania joining the Eurozone in the future, the regional disparities need to be significantly reduced and the living standards in the disadvantaged regions to increase, in order to ensure the welfare of the population in these areas and to reduce the income inequalities.

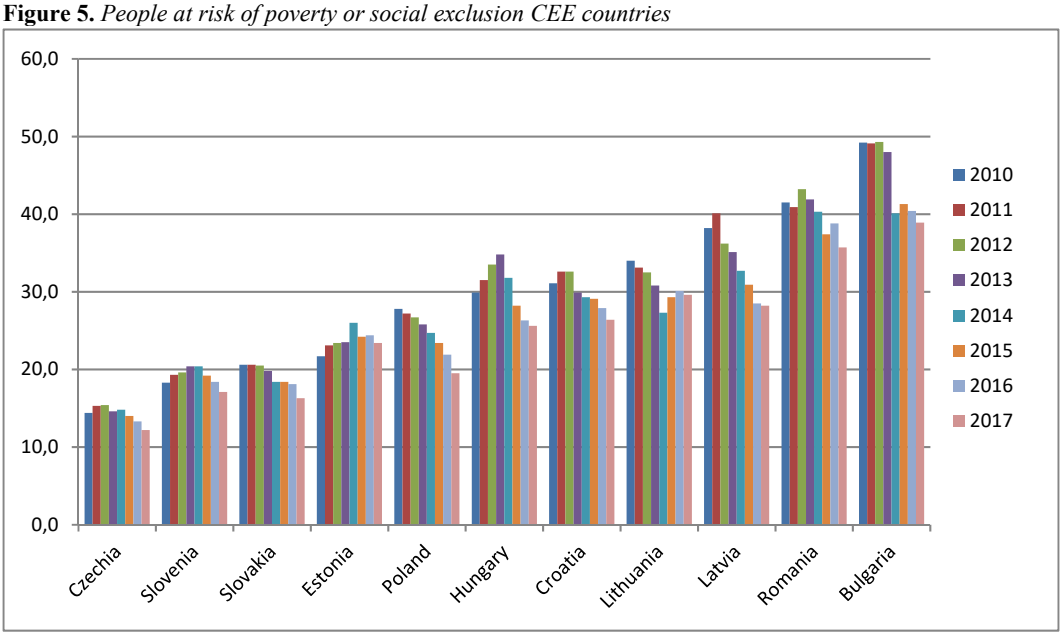
Figure 4. *GDP per capita, PPS, by NUTS2 (%EU average)*



Source: Eurostat.

Besides inequalities and regional disparities, there are serious concerns about people at risk of poverty and social exclusion, as in 2017 Romania ranked second within the CEE countries. However, it is worth mentioning that since 2010 it has reduced the poverty level by 5.8 percentage points, to 35.7% in 2017, from 41.5% in 2010. The best performing country in this area is the Czech Republic, which holds the best position in the CEE ranking since 2010, followed by Slovenia and Slovakia, which also have a low rate of people at risk of poverty and social exclusion, compared to Romania.

Figure 5. *People at risk of poverty or social exclusion CEE countries*



Source: Eurostat.

Cohesion policy in Romania

As a new EU member state, Romania was in a position to influence the current and future design of regional policy, depending on the national interest, but at the same time it faced the problem of an insufficiently developed administrative-institutional capacity, which may influence the absorption capacity.

The absorption of community funds requires the existence of an efficient administrative structure, a coherent legislative framework, good inter-ministerial and inter-institutional coordination and effective management, going through all the specific phases, from programming, implementation, monitoring and evaluation. In the case of Romania, the lack of strategic milestones, the weaknesses in administrative capacity and the limited budget available for co-financing have fueled the main concerns of local authorities in accessing Community funds.

In Romania, immediately after accession, the Regional Operational Program 2007 - 2013 had the strategic objective to support the regional progress both economically and socially, for a sustainable territorial harmony. At the same time, the aim of this program was to support the sustainable development of urban growth poles, as well as significantly improving the business environment and strengthening the infrastructure underlying it.

Following the ROP 2007-2013, the Cohesion Policy continued with the implementation of ROP 2014-2020, a program based on the analysis of the economic and social situation of the regions of Romania. This analysis has resulted in a number of issues on which strategic objectives have been set in order to improve Romania's economic and social situation. The

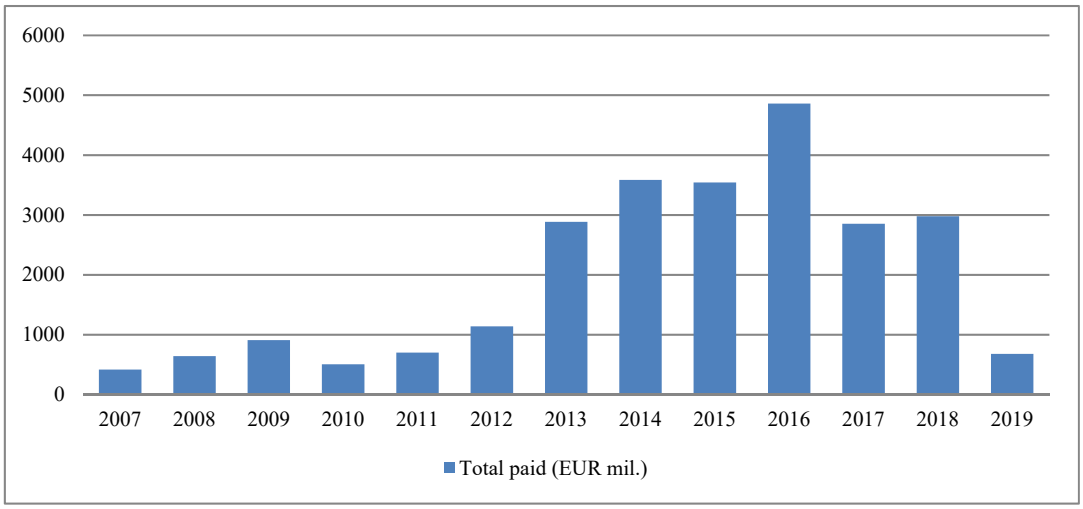
strategic objectives were materialized through the creation of 12 priority thematic axes different from those of ROP 2007-2014, which also take into account the environmental preservation.

For the implementation of the ROP 2014-2020, funds were allocated for a total amount of approximately EUR 8.25 billion as follows: EU support under the ERDF was EUR 6.7 billion and EUR 1.5 billion represented the national contribution. This Operational Program has as a general objective both increasing economic competitiveness and improving the welfare aspects of the local and regional population by supporting the business environment, infrastructure and services, with a view to the sustainable development of the regions, in a way that they can productively manage their resources and develop their potential for innovation and absorption of technological progress.

ROP 2014-2020 aims to achieve a continuity of the strategic vision in view of the regional development in Romania, implementing and intensifying the previously mentioned objectives.

The absorption of the ESIF funds since the EU accession was mainly concentrated on human capital, infrastructure, competitiveness, technical assistance, regional development, administrative capacity, agriculture and fishery, cooperation. It should be noted that the amounts paid are smaller at the beginning of the operational program, due to administrative delays, but tend to increase towards the end of the program (Figure 6).

Figure 6. *The Absorption of ESIF Funds in Romania*



Conclusions

Romanian economy is on its path to convergence, but progress should still be made in order to increase the standards of living of the population. Income inequalities have declined and in 2017 Romania has the lowest level of poverty and social exclusion in the last 10 years.

Still, the poverty rate is still high and needs to be reduced. Moreover, regional disparities are high and efforts should be taken to diminish them.

As the fiscal space in Romania is very limited, the most important source of funding that can help Romania to meet its sustainable and inclusive growth objectives is represented by structural and investment funds. Romania needs financial support within the cohesion policy, as otherwise the converge process would be much slower.

Romania needs further administrative reform so that the institutions become fully effective and facilitate the absorption of European funds, especially in the context in which EU membership not only provides financing, but also a reference framework, institutional structures and examples of good practice, helping to improve inter-institutional cooperation and transparent and efficient management of Community funds.

References

Benedek József, Török Ibolya, Máthé Csongor, Dimensiunea regională a societăţii, diversitatea etnoculturală şi organizarea administrativ-teritorială în România, 2013 accesat la <http://www.ispmn.gov.ro/uploads/ISPMNN%20WP%2051+08-nov.pdf>

Boldrin, Michele, Canova, Fabio, 2003. Regional Policies and EU Enlargement, CEPR Discussion Papers3744, CEPR Discussion Papers.

European Commission, 2010. Communication from the Commission: EUROPE 2020 – A strategy for smart, sustainable and inclusive growth, Brussels

European Central Bank, 2018. Convergence Report.

Gheorghe Zaman, George Georgescu, Zizi Goschin, Daniela Antonescu, Florina Popa, *Dezvoltarea economică endogenă la nivel regional. Cazul României*

Gheorghe Zaman, Zizi Goschin, 2014. O tipologie a creşterii economice regionale în România

Ivana Katsarova, Politica de coeziune, provocări şi aspecte; <http://www.luhan.ro/docs/Politica%20de%20coeziune%20%20provocari%20si%20aspecte.pdf>

Ministerul Fondurilor Europene, Programul Operațional Regional (POR); <http://www.fonduri-ue.ro/por-2007#prezentare> Obiective POR

Ministerul Fondurilor Europene, 2017. Raportul Final de Implementare POR 2007-2013.

Ministerul Afacerilor Externe; Politica de coeziune a Uniunii Europene, <http://www.mae.ro/node/1623>

Raportul de evaluare ex-ante POR 2007-2013, <http://www.inforegio.ro/ro/rapoarte-de-evaluare.html>

Sapir, A et al., 2014. An Agenda for a Growing Europe: The Sapir Report

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 296-308

Economic crisis perspective

Doina Constanta IACOB
University of Craiova, Romania
iacobdoina@yahoo.com
Ahmed Hussein Radhi AL-RUBAYE
University of Craiova, Romania
a_h_radhi@yahoo.com, alradhi63@gmail.com

Abstract. *The continuing economic crisis has spurred debates about the inadequacies of our current financial and economic systems. It has drawn fresh attention to alternative economic narratives and arguably has generated an acceleration of social innovations.*
In the years following the start of the recession concern over the various repercussions on social values has waned, but concerns expressed by counter movement such as occupy live on and are combined with other frustrations about inequality and feelings of losing out, anxieties over tax evasion by the wealthy few and multinational companies, the social and environmental damage caused by production systems, the social and budgetary costs of an aging population, and the poor employment prospects of the emerging labor force.
Meanwhile, many political and public debates seem to be primarily concerned with standard, relatively short-term economic issues, such as monetary losses, stop-and-start economic growth, increasing unemployment, falling real estate prices, failing banks, virtually bankrupt nations, and how to get back on course to economic growth.
The standard responses when national governments are struggling to get their economies healthy again are mostly about inducing more money, austerity measures, and introducing financial regulations, all often part of a broader financial-economic logic.
The dominant focus on fighting economic deficits and problems at the expense of investing in social and ecological deficits thereby failing to address persistent problems in these areas can be argued to be a short-term strategy to prop up an inherently unmanageable system. Examples are the support of system banks with public money and the green growth strategy.
Transition theory suggests that such short-term fixes are typical regime-based strategies to sustain existing structure cultures, and practices, and to fend off the threats of more radical systemic change.

Keywords: crisis, economic, political, public, financial.

JEL Classification: O.

1. Introduction

Crisis is an important and influential event in human life whether individuals, organizations or countries. The crisis has become a part of people's lives and is a source of concern for the leadership, officials and citizens alike, because it is difficult to control because of sudden and sudden changes in the political, economic, social, technological and legal environment and the weakness of responsible management in the ability to adopt an appropriate management model for changes on the other hand. The existence of crisis has been associated with the existence of man on earth, it is not characteristic of the present age.

Actually, "That crisis planning was carried out marginally within public institutions. Especially in the planning of collisions for aircraft, air disasters and others. That in recent decades war disasters have been added to them, and in the same context when talking about planning. In crisis over the Cold War, and a look at the talks, agreements and wars. Nuclear weapons and international reactions to the cold war.

And what happened from disasters and floods. In the eighties of the last century, the conscience of some of the managers and leaders at the time and therefore spread. Alarms especially in the modern world of rapid communication. If the end of the cold war.

The political agenda has stimulated the preparation for external crises, while internal crises have an article. Second, the events of September 11, 2001 occurred in the Western world where. Terrorists attacked the World Trade Center followed by events Madrid, London and events Bali. Which directed the specialized institutions so that it can happen what they do not think of those institutions. Ready and prepared, and the devastation caused by events in New Orleans and events. Katrina has informed people that events are rising in the world, and after all that has become planning for the period. Which precedes crises is important and relevant to the issue of crisis management" (David, 2004: 39-40).

Crisis managers, especially in organizations that prepare for the crisis in a high way, are easier to perform than other organizations, and most crisis planners in public institutions have normal tasks. Trying to reconcile bureaucratic elites and politicians to employ resources for planning and training, and finally conclude, saying that preparing for a mission is not an impossible task. But it is a difficult task to accomplish. Therefore, crisis planners who struggle in pre-period planning tend to be low predictive levels. This is a cumbersome process because pre-crisis requires considerable cooperation by interested stakeholders and institutionalizes, but paper preparation is easier and cheaper cost effective preparation during simulation and pilot systems (David, 2004).

2. Economics: What? How? When? Where? Who?

"Economists have found that when one is considering a choice among a variety of alternatives, often it's unnecessary to look a total benefits and total costs. All one need look at are marginal costs and marginal benefits. These are key concepts economics, and it pays to learn them early on" (David, 1994 and 1995: 8).

"One of the most important features of economic diagrams is the rate at which the line or curve being sketched runs uphill or downhill as we move to the right" (William and Alan, 2006: 15).

"Economics is the study of how individuals and societies choose to use the scarce resources that nature and previous generations have provided. The key word in the definition is choose. Economics is a behavioral or social science. In large measure it is the study of how people make choices. The choices that people make, when added up, translate into societal choices" (Karl and Ray, 2002: 2).

“Economics is the science of choice-the science that explains the choices change as we cope with scarcity. All economic choices can be summarized in five big questions about the goods and services we produce. These questions are:

What? How? When? Where? Who?
A-What Goods and Services are Produced and in What Quantity?
B-How are Goods and are Produced?
C-When are Goods and are Produced?
D-Where are Goods and are Produced?
E-Who Consumes the Goods and Services that are Produced?" (Michael et al., 2000: 5-7).

"Financial crisis have occurred four hundreds of years. However, the fact that they often appear without warning is something that most people have apparently forgotten in the recent past. Hence the financial crisis that started in the summer of 2007 came as a surprise to many observers. In particular, it was astonishing to see that a breakdown in just one part of the housing market, i.e. the US subprime mortgage market, did lead to a systemic crisis the escalated and spilled over to financial markets all over the world. Thus, the financial crisis, that began in the US, did not only spread to Europe but became global, even affecting emerging markets and less developed countries that resisted the bad lending practices, did not purchase toxic in excessive risk taking through derivatives.

One important reason for the global impact of the 2007 financial crisis is massive illiquidity in combination with an extreme of economically and politically relevant parties to liquidity needs and market conditions. As a consequence, many financial instruments could not be traded anymore, investors ran on a variety of financial institutions particularly in wholesale markets, financial institutions and industrial firms started to sell assets at fire sale prices to raise cash, and central banks all over the world injected huge amounts of liquidity into financial systems" (Frank et al., 2011: 3).

The re-reading of the history of crises in the world shows that not all crises were bearing in their effects evil, as some of these crises have created many jumping points to urge scientists to do research and studies have resulted in the emergence of intellectual and economic growth in the world, and these crises. Energy crisis where the doors opened to inventions that led to optimal use of energy and thinking in more economical alternatives, as well as the high cost of communications and the crisis of communication between countries communities have pushed for faster and cheaper means, including the use and development of a network internet at the global level.

The world today is based on a new formulation of international relations through balance the strategic powers and interests of the great powers, as these countries became crisis-makers and others must deal with this crisis reality and act in a way that makes them get something so they can get from the interests of their people and accept even minimum.

3. The Concept and Definition of Crisis in terms of Language and Terminology

The crisis is an old term whose historical origins refer to Greek medicine – a turning point in the sense that it is a decisive moment in the life of the patient – and it refers to a dramatic and sudden change in the human body. In the sixteenth century, ten to indicate the high degree of tension in the relations between the state and the Church, and by the nineteenth century frequency of use to indicate the emergence of serious problems or moments of transition in the development of political relations, economic and social.

"The word crisis in English means is derived from the Greek origin as is the word (krisis) and it is the name of the verb (krinein), which it means the point or the moment that made the decision had to back that her sense of the decisive moment or turning point, and therefore, the crisis calls for a decision" (Lobo, 2016: 7).

Some writers found that the word "crisis" in Chinese means "Wei ji / 危机) Means a letter (Wei / □) a word (danger). In English either character (ji / 即 (Meaning) opportunity), which means that the crisis represents a risk and opportunity at the same time as in the Chinese proverb that "opportunities are always present in the midst of the crisis" (Li, 2011: 7).

"Crises are an integral part of organizational life. No company, regardless of its size, nature, or type of industry, is immune to crises whether internal or external" (Santana, 1997: 36).

The crisis in the administrative disciplines knew as a kind of tension and confusion among officials within the institution and the impact on the administrative aspects and performance of the employees and the entity of the strategic institution and its relationship with the public and the objectives that resulted. As for the social crisis, it is defined as imbalance and imbalance in the elements of the social system in light of situations of tension, anxiety, feeling of helplessness among individuals, inability to establish social and human relations, and the emergence of values and moral standards that are different from prevailing culture.

"There are some concepts that have a close relationship with the concept of crisis and that some may imagine the crisis as war, the crisis is not war and often come crises after the wars, as happened in the First World War, for example, and produces crises and wars of deep causes may be similar but do not cause each other but Sometimes there may be a link between the two" (Gartem, 2001: 5).

"And have varied and numerous concepts that were given to the crisis, according to the side, which dealt with as that most science has dealt with the crisis of their own definitions, and the earliest concepts of the side accounting is (the crisis in the economic fields), therefore, crisis identified according to the economic concept that is the event, which

strongly affects the financial institution's ability to continue its activities" (Mohammed, 2006: 31).

"At present, the crises have differed significantly from the crises of the past in several respects, the Conference of Organization for Economic Co-Operation and Development (OECD) in Geneva, Switzerland, on 28/June/2012about joint crisis management with the presence of 40 participants from 12 countries and these are the lamentations:
A. It has a sudden and unexpected effect.
B. Its new forms and types unprecedented in previous crises.
C. Its trans boundary nature may exceed the limits of one country" (Baubion, 2013: 6).

"The crises are the events that threaten the organization's strategic objectives" (Swart, 2010: 2).

There is no specific definition of the financial crisis, but most of the definitions contained in the studies and research agree that the financial crisis is a state of deep imbalance and sudden severe turbulence in some economic balances followed by a collapse in a number of institutions that spill over into other sectors. In particular, the crisis is triggered by the imbalances between the production and consumption sectors. The economic impact of the crisis is represented by deflation, economic stagnation, low levels of investment and the panic and panic of financial markets.

"Crisis is defined as a defect that has a material impact on the entire system and also threatens the main assumptions underlying the system. It is the final result of the accumulation of a set of effects, the occurrence or the occurrence of a sudden defect that affects the main components of the system and constitutes a clear and clear threat to the survival of the organization or the system itself" (Al-Thahir, 2009: 4-5).

"Crisis can also be defined as a critical moment and a turning point, or a sudden position leading to new situations of instability and undesirable results, in a short time, requiring high skill to manage and address them. However, this is not always possible. Usually during the crisis, the parties concerned are unwilling or unable to cope" (Mohammed, 2006: 31).

"The crisis has also been identified as an important event that effects on stakeholder expectations and has an impact on the organization's performance" (Timothy et al., 2010: 6).

"The crisis knows that is the final set to accumulate a range of effects or sudden glitch will impact on the components of the president of the regime and pose a threat to the survival of the organization" (Tawalbah, 2005: 4).

"And defined it as a malfunction that materially affects the entire system – the organization's system – and threatens the main elements on which this system is based. Thus, two conditions must be met:
A. Very serious defect in the system has significant material or financial effects.
B. Direct threat to the survival and continuation of the organization has severe psychological effects" (Haikal, 2006: 22).

4. Dimensions of Crises

It can be said that the crisis is the result of a cumulative sequence feeding each other until they reach the brink of explosion and the crisis explodes.

"There are a number of dimensions of the crisis as they affect most of the parties in the Organization as well as their wide impact and wide impact which can be identified in the following dimensions:
A. Time dimension.
B. Institutional dimension.
C. Psychological dimension.
D. Administrative dimension.
E. Social dimension.
F. Economic dimension.
G. Political dimension.
H. Creative dimension" (ibid.: 38).

5. Causes for the Emergence of Crisis

Despite the passage of nearly a century, the crisis of 1929 is still doomed to survive as well as to say about the current financial and economic crises that followed. The current global financial crisis is a major historical event at the beginning of the twenty-first century. It has resulted in intellectual and economic disputes that explain the causes of the crisis and describe their manifestations.

For each crisis are introductions evidenced by the evidence refers to the occurrence initial, middle and final appearances promoted by each event or did the repercussions and effects before market anguish and it may be a prelude to something happening in the future and whatever there is a different causes for the emergence of crises.
A. "Misunderstanding.
B. Poor perception" (Al-Khudairy, 2002: 66).
C. "Assessment and evaluation.
D. Random management.
E. Desire to be black.
F. Despair" (Al-Marri, 2014: 58).
G. "Rumors.
H. The review of force.
I. Human Mistakes.
J. The planned crisis" (Chwastiak et al., 2008: 317).
K. "Target conflict" (Abdullah, 1989: 42).
L. Conflict of interest.

6. Stages of the Crisis

"The crises varies by difference of nature its, where a some crises are going through stages are difficult predict it. There is possible to predict the occurrence since the beginning and

the researchers in the stages of the emergence of the crisis is different but not in contents. Crisis divided in three main stages " (Odeh, 2015: 22) and (Santana, 1997: 70). As follows:

"The pre-crisis phase, crisis and post –crisis phases which some have a divorced them the life of the crisis cycle and some expansion of the division of these stages and divided by seven stages including" (Al-Shahrani, 2005: 20).

"Where the section of the stages of the evolution of the pre-crisis phases to formation and birth and the stage of the crisis in three stages the stage of escalation and explosion and maturity and the post-crisis phase it was as the phase of decline and the stage of disappearance. They agreed with some authors like Odeh about the three basic stages of the crisis. In general, the stages of the crisis is represented in five stages" (Al-Khafaji, 2010: 196).
"A. The stage of the crisis.
B. The growth & expansion" (Al-Ajlouni, 2009: 7).
C. "The maturity and completion.
D. The decline & contraction.
E. Disappearance of Crisis" (Al-Radhy'ee, 2011: 30).

7. Types and Classifications of Crisis

The concept of crises faced by administrative entities in organizations and companies differs in terms of the causes and severity of their effects, the crises facing the community or administrative entity at the state level. As a result of sudden public disasters and emergency situations such as epidemics, floods, earthquakes and wars comprehensive or limited.

"Indeed, the classification of crises depends on the aspect from which we look at the incident. This classification is also influenced by the nature of the specialization, where the classification of crises is characterized by the number of writers and researchers in this field. Some authors classified them according to the type of event, sets are in each group several types, as technological crises, economic crises, natural crises, psychological crises and health crises" (Dawn and Priscilla, 2008: 16).

"In general, crises can be classified as follows:
A. Depending on the nature of the occurrence.
B. By target. And its' can be classified as an in terms of,
C. Goal.
D. Source.
E. Depth.
F. Repetition.
G. Duration.
H. Impacts.
I. Purpose.
J. Level of treatment.
K. Appearance" (Al-Sha'alan, 2002: 49).

8. Characteristics of the Crisis

"The sudden changes in the internal or external environment of the organization without to a free opportunity to avoid them is considered a crisis" (Al-Azzawi, 2009: 9).

"The main characteristics of the crisis can be divided as follows:

A. The significant negative impact on the administrative and financial entity of the Organization.
B. This increased negative impact if there are no quick processing of the situation and may lead to risks threatening the existence of pain systems.
C. The sovereignty of a state of instability and the deficit and the inability to deal in light of the elements of uncertainty and clarity of vision due to lack available of full information about the events.
D. Escalation of risks, threats and losses to the organization.
E. The crisis is a point turning in emergency events and it may effect on the general objectives of the organization.
F. The emergence of behavioral disorders such as anxiety, tension, suspicion, apathy, lack of belonging, rumors and vandalism" (Haikal, 2006: 39).
G. "The surprise and speed of occurrence and is unexpected.
H. The crisis represents a non-routine event and that this situation needs to be ways and means of extraordinary require a departure from the familiar regulatory patterns may require external forces, drawing on sometimes to resolve the crisis" (Ulmer and Seeger, 2007: 7).
I. "The crisis is characterized by a significant reduction in economic performance over a long period of time" (Voelker, 2011: 15).

The characteristics of the crisis illustrate the magnitude of the challenges that crisis management requires to address them and deal with them, they are with the required planning and preparation for dealing and positive interaction with events that are difficult or sometimes impossible to predict accurately and accurately, require crisis management. Also, there should be effective means and systems to absorb and mitigate the effects of the crisis.

9. Crisis Management Team

The term crisis management originated within the public administration to refer to the role of the state in the face of sudden public disasters and emergency conditions such as earthquakes, floods, epidemics, fires, air strikes and all-out wars.

"The concepts of crisis of management and the management with crisis should be distinguished, management of crisis it means how to overcome the crisis using different scientific and administrative tools, and avoid its disadvantages and benefit from its positives. While crisis management is based on creating an imaginary crisis through which the forces of economic and economic action are channeled into a crisis or behavior on the other hand, considering international relations since World War II, this kind of management prevails.

In many international interactions, particularly by the major powers in the implementation of their policies, the elimination of countries third world. However, this method is no longer commensurate with the spirit of the times and with increasing awareness and height living standards and the recent communication revolution in information technology" (Aliwa, 2004: 25).

"Barton (2001) identifies the common members of the crisis team as public relations, legal, security, operations, finance, and human resources. However, the composition will vary based on the nature of the crisis. For instance, information technology would be required if the crisis involved the computer system. Time is saved because the team has already decided on who will do the basic tasks required in a crisis. Augustine (1995) notes that plans and teams are of little value if they are never tested. Management does not know if or how well an untested crisis management plan with work or if the crisis team can perform to expectations. Mitroff, Harrington, and Gia (1996) emphasize that training is needed so that team members can practice making decisions in a crisis situation. As noted earlier, a CMP serves only as a rough guide. Each crisis is unique demanding that crisis teams make decisions. Coombs (2007a) summaries the research and shows how practice improves a crisis team's decision making and related task performance. For additional information on the value of teams and exercises refer to Coombs (2006) and the Corporate Leadership Council's (2003) report on crisis management strategies" http://www.facoltaspes. unimi.it/files/_ITA_/COM/Comunicazione_di_Impresa_-_Crisis_Management_and_Communications.pdf

10. Crises Treatment Methods

The big tasks that deal with the crisis management team requires the open built on the data possible state level and its departments and put them at the disposal of crisis management team and the circumstances may have to the restructuring of these departments in order to carry out their extraordinary tasks in crisis conditions and necessity the government's response to these measures.

"There is no way to succeed restructuring without a strong foundation of government actions covering various policy aspects economic" (Stone, 2002: 23).

Many countries in the third world are working in this manner, and because there are no specialized departments to look ahead and see the crises and predict them before they happen. There are no public relations and crisis management departments, and if they exist, they operate on a very small scale with a lack of resources and wide authorities to avoid crises. There three types of methods to deal with the crisis.

10.1. Traditional methods of remedial crisis

A. "They deny the crisis, conceal it and hide it in every way.
B. Form a team to study the crisis, a specialist and a certain number to be addressed before deployment.
C. To delay the emergence of the crisis, as far as possible until radical solutions are found.

D. To mitigate the crisis, by compensating and dictating the vacuum created by the crisis in society or in goods and others.
E. Emptying the crisis of its content, addressing the factors that help to expand the crisis
F. Isolating the actors in the crisis, identifying the people and the reasons and treating them individually
G. Allowing the internal pressures to appear, giving way to the emergence of the impact of the crisis and the emergence of opinion and seek assistance and compensation.
H. Putting out the crisis, after the crisis is solved, the process of treatment is supported by the media and social awareness to forget the effects.

10.2. Non-restrictive approaches to address the crisis

These methods are used in advanced countries because they have specialized departments that look forward to dealing with future crises and to chart the right path in the path of the state and contribute to economic and political decisions for the future of the country to ensure that there are no crises that harm citizens and the national and foreign political economy.

A. The team is comprised of specialists in all fields who are ready to work in the most demanding and time-bound manner.
B. Save reserves, store and prepare all necessary foodstuffs, equipment, spare parts, support, repair, rescue, training and equipping teams periodically on a yearly basis and work on training and practice to prepare for any emergency.
C. Democratic participation, from all governmental, civil and community institutions to support the public effort to get out of the crisis or find solutions to it.
D. Containment of the crisis, after laying out the outlines and knowledge of the damage caused by the crisis is contained in all aspects and stop the spread.
E. The escalation of the crisis, this method is used in the case of dealing with several people who are one front, but without leadership is escalating and show weakness and acceptance of the discussion with a single leader shows the differences between the leaders of the one front to take the helm of leadership, which causes their weakness once.
F. Destroying the crisis from within, dealing with each element individually and individually.
G. The announcement of the virtual abundance, announcing the availability of all elements, materials and resources that were cut off by the crisis.
H. Turning the course of the crisis, from crisis directed towards a people or a state or a particular resource to a crisis directed to a small sector to reduce the role of rumors and the negative impact of the crisis on citizens" https://newmediawiki.com/2014/04/26/

10.3. The scientific method of eliminating the crisis

This method is used in almost all developed and late countries, but the main point is to benefit from this information to learn about the crisis and to listen to those who warn of a crisis in the future. Many of those who write in the newspapers warn against future crises, but there are no measures in this regard.

"The crisis in this concept takes two main dimensions:

The first dimension: after the horror caused by the serious threat to the interests and the fundamental goals of the special in the current and future administrative entity and the resulting panic, fear, tension and anxiety opens the door, for more widespread concerns, uncertainties and possibilities as a result of the breadth of the unknown and the escalation of the crisis.

Second dimension: after the time caused by the time limit available to crisis managers to take the decision is quick and correct, and does not include any error because there will be no time or space for delay or to fix the error of the emergence of new crises more difficult than the first and may eliminate the administrative entity and does not keep any pillars or rules to ensure continuity and renewal.

The crisis may become more acute when the decision-maker's vision shifts to what may happen future and with them" (Al-Khudairy, 2002: 66).

Conclusion

There are reasons for each crisis, but it is difficult to control these reasons that lead to the crisis may be beyond the control of the company and even the State in some cases and it is not possible to limit the reasons that lead to the crisis as these reasons are different and renewed and unpredictable especially for crises that have not yet occurred.

The crisis has its stages before and until it is finished. Economic unity requires it to be guarded in the stages of development and growth at the peak of the crisis and to recover its potential as it recedes and disappears, as well as lessons learned during the crisis to try to avoid future crises.

All emergency events are not crises. There is an emergency event that is normal and requires normal treatment. There are emergency events that may have a high or low impact depending on the time available to confront them, the level of threat to economic unity, the degree of control of events and the extent of response to actions taken.

It is possible to define the crisis as an emergency event characterized by a certain degree of the risks and uncertainties facing the economic unity which affects the achievement of its objectives and may be the crisis other parties have the opportunity to achieve certain goals of the crisis.

The causes of many different crises cannot be confined to these points and that these reasons are considered to be only a general and also renewed and different crises and it cannot expect most of them as soon as these reasons, the occurrence contemporary world crises have never occurred in the past and that a unknown reason and unclear and multiple do not stop at one of the reason for these reasons only.

It could not be possible to determine the economic due to disasters, crises and war consequences.it is in this case that the effects of these crises will be treated as a regional or international responsibility as they may be the state in which these crises have been

established is capable of addressing these crises, which requires assistance regional or international levels of control or to minimize such effects on the State concerned and prevent the transmission of their effects into regions other.

References

Abdullah, Abdul Khaliq, 1989. *The Contemporary World and International Conflicts*, The world of Ma'arifa, Kuwait.

Al-Ajlouni, Mahmoud Mohamed, 2009. *Crisis Management in the Banking Sector in the North Region*, Journal of Baghdad College, Issue.20.

Al-Azzawi, Najem, 2009. *The Effect of Strategic Planning on Crisis Management*, Research submitted to the Seventh International Scientific Conference, University of Al-Zarqa'a, Faculty of Economics and Administrative Science.

Aliwa Al-Saeid, 2004. *Crisis and Disaster Management, the Risks of Globalization and Terrorism International*, Third Edition, Dar Al Amin, Cairo.

Al-Khafaji, Karrar, 2010. *The causes of the emergence and management of crises*, a survey of the views of a sample of members of the Iraqi Council of Representatives, University of Kufa, Faculty of Management and Economics, Journal of Kufa, Issue 5.

Al-Khudairy, Mohsen Ahmed, 2002. *Crisis Management: The Knowledge of Possessing Full Strength in the Very Moment of Weakness*, Second Edition, Arab Nile Group, Cairo, Egypt.

Al-Marri, Hamad Mohamed Hamad, 2014. *Strategic Planning and its Role in Crisis Management*, thesis of doctorate submitted to the College of Graduate Studies, Sudan.

Al-Radhy'ee, Khalid Waleed Juma'a, 2011. *Preparedness for Crisis and Disaster Management*, Master Thesis submitted to the Faculty of Commerce, Department of Business Administration, Islamic University, Palestine.

Al-Sha'alan, Fahad Ahmed, 2002. *Crisis Management, Foundations, Mechanisms*, Naif University for Security Sciences, al-Riyadh, Saudi Arabia.

Al-Shahrani, Sa'ad bin Ali, 2005. *Management of Security Crises Operations*, Naif University for Security Sciences, AL Riyadh.

Al-Thahir, Naeem Ibraheem, 2009. *Crisis Management*, World of Modern Books, Irbid, Jordan.

Baubion, Charles, 2013. *OECD risk management: Strategic Crisis Management*, Geneva, Swiss.

Chwastiak, Lehman, Michele and Glen, 2008. *Accounting for war, Accounting Forum*, Elsevier Ltd, Vol. (32), United States.

David C. Colander, 1994 and 1995. *Economics*, Second Edition, Printed in the United States of America.

David E. Alexander, 2004. *Cognitive Mapping as an Emergency Management Training Exercises*, Journal of contingent–cries and crisis Management, Vol. 12, No. 4, December.

Dawn R. Gilpin and Priscilla J. Murphy, 2008. *Crisis Management in a Complex World*, Oxford University Press, Inc. New York.

Frank Liz Allen, Elena Carletti, Jan Pieter Kranhnen and Marcel Tryrell, 2011. *Liquidity and Crises*, Published by Oxford University Press Inc., Printed in the United States of America.

Gartem, D. David, 2001. *Studies in International Conflict and Crisis Management*, Emirates Center for Strategic Studies and Research, United Arab Emirates, Abu Dhabi.

Haikal, Mohamed Ahmed, Al-Tayeb, 2006. *Crisis Management Skills, Disasters and Difficult Situations*, Egyptian General Book Commission, Cairo, Egypt.

Karl E. Case and Ray C. Fair, 2002. *Principles of Economics*, Sixed Edition, Printed in the United States of America.

Li, Yan, 2011. *Lessons from the crisis: Dangers and opportunities in the Asian financial crisis*, thesis of doctorate, University of Leicester, British.

Lobo, Francisco Sousa, 2016. *Crisis of meaning Crisis of form*, thesis of doctorate, University of Goldsmith, London, 2016.

Michael Parkin, Melanie Powell and Kent Mathews, 2000. *Economics*, 4th Edition, Published by Pearson Education Limited, Printed and bound by Grafos S.A., Arte sobre Paple, Barcelona, Spain.

Mohamed, Alsaeid. Saeed Abdulwahab, 2006. *Crisis and Disaster Management Strategy*, Dar Al Oloum Publishing, Cairo, Egypt.

Odeh, Jihad Odeh, 2015. *Crisis Management and Strategic Planning*, Arab Knowledge Office, Cairo, Egypt.

Santana, G.G., 1997. *Crisis Management: Towards a Model for the Hotel Industry: An Examination of Crisis Preparedness and Stakeholder Relationships in Crisis Situations*, thesis of doctorate, University of Bournemouth, London.

Shaker, Atta Allah Ahmed (n.d.). *Management of Media Institutions*, "*The three methods of crisis management"*, Posted by Husamaltaee on 2014/04/26. Retrieved from: <https://newmediawiki.com/2014/04/26/> [Accessed 19 Mar 2019].

Ston, Mark, 2002. *Restructuring in the Corporate Sector (Role of Government in times of Crisis)*, Publications of International Monetary Fund, June, Economic Issue. 31, Washington.

Swart, Yolandy, 2010. *An Integrated Crisis Communication Framework for Strategic Crisis Communication with the Media: A Case Study on a Financial Services Provider*, Master of Arts, University of South Africa.

Tawalbah, Haidar Abisat, Ziad, 2005. *A Field Study on Availability of a Crisis Management System at the Free Zones Institute*, Studies Directorate, Amman, Jordan.

Timothy, Sherry, W. Timothy Coombs and Sherry, J. Holladay, 2010. *The Handbook of Crisis Communication*, Hong Kong, Singapore.

Ulmer, R.R., Sellnow, T.L. and Seeger, M.W., 2007. *Effective Crisis Communication: Moving from Crisis to Opportunity*, London.

Voelker, Ansgar, 2011. *Financial Disclosure and Market Reaction in a Crisis Situation*, thesis of doctorate, University of Surrey, British.

W. Timothy Coombs (30/10/2007). *Crisis Management and Communications*, *"Crisis Management Team"* Retrieved from: <http://www.facoltaspes.unimi.it/files/_ITA_/COM/ Comunicazione_di_ Impresa_-_Crisis_Management_and_Communications.pdf > [Accessed 19 Mar 2019].

William J. Baumol and Alan S. Blinder, 2006. *Economics: Principles and Policy*, Printed in China.

Theoretical and Applied Economics. Special Issue
Volume XXVI (2019), pp. 309-320

From big data to data: The value behind Metadata Governance in Statistics

Iulia Alexandra NICOLESCU
The University of Economic Studies, Romania
nicolescu.iulia@gmail.com

Abstract. *Metadata plays a vital role in both the development and use of statistical information. The production of information requires that Data and Big data, to be viewed as a totality rather than individually; thus, Metadata management must be an integral part of statistics production, in order to represent Value of the end-user. Official statistics was probably the first area to recognize the importance of metadata (Sundgren, 1973). Furthermore, the complexity of statistics give meaning to Metadata Governance. A clean, well-defined system can make the difference in analysing the data and delivering actionable business statistics. As the Open Forum on Metadata emphasises, 'Statistical metadata describes or documents statistical data, as microdata, macrodata, or other metadata. Statistical metadata facilitates sharing, querying, and understanding of statistical data over the lifetime of the data.' Harvard Business Review (Boncheck, 2013) identified the 3 primary ways Big data and little data (Metadata) differ: focus, visibility and control. This paper provides an answer to Big data challenges a user faces, in a statistics interrogation. A general model useful for metadata representation is illustrated and described, relationships to existing frameworks and standards are also discussed.*

Keywords: big data, metadata management, statistics, data governance.

JEL Classification: Z – Other Special Topics.

Introduction

To better understand the big deal about Big data, the study starts with an understanding of the associated terms, such as: taxonomy, master data, master data management. The value that metadata, or little data, brings to big data is in the structure and meaning it provides by serving as asset discovery by identifying data and allowing them to be found by relevant criteria. The main objective of this paper is to provide a workflow structure of data dissemination for a statistical user. Walking the steps from data to Big data analysis leads to discovering the language of Metadata according to international Nomenclators and Standards, like The Semantic Knowledge Network, or the Generic Statistical Information model (UNECE, 2013). This study provides a research agenda in helping users to find the statistical information they need and understand what they find. Moreover, since metadata provides the basis for human understanding of data, the cognitive aspects of metadata must also be addressed.

Unstructured data is just that – data laid out on a slab where there is just data. Metadata link data assets by associating relevant criteria. This is particularly beneficial in Big data initiatives, in areas like statistics, whereby standalone keyword-driven interrogations can include an agglomeration of less relevant information. As data becomes more and more hard to control and analyse, Metadata management must be part of the overall organizational data governance practice, for positive outcome to end-user but also in production. It is a critical component of any robust data governance practice. Stewarding metadata will further ensure data consistently, to provide Big data analytics decision making and understanding at an accurate level.

Literature review

Big Data is…

Big data refers to data sets that are too large and complex to manipulate or interrogate with standard methods or tools. The term has been in use since the 1990s, with some giving credit to John Mashey (1998) for popularizing the term. A 2016 (de Mauro, Marco, Grimaldi, 2016) definition states that *'Big data represents the information assets characterized by such a high volume, velocity and variety to require specific technology and analytical methods for its transformation into value.'*

Similarly, Kaplan and Haenlein (2018, p. 62) define big data as *'data sets'* characterized by huge amounts (volume) of frequently updated data (velocity) in various formats, such as numeric, textual, or images/videos (variety). This leads us to the most widely used definition in the industry. Gartner (Beyer and Laney, 2012) defines Big Data in the following. *'Big data is high-volume, high-velocity and/or high-variety information assets that demand cost-effective, innovative forms of information processing that enable enhanced insight, decision making, and process automation.'*

According to a 2011 McKinsey Global Institute report, three main components and ecosystems characterize big data, as follows:

- Techniques for analysing data, such as A/B testing, machine learning and natural language processing.
- Big data technologies, like business intelligence, cloud computing and databases.
- Visualization, such as charts, graphs and other displays of the data.

According to The Economist (February, 2010), this industry was worth more than $100 billion and was growing at almost 10 percent a year: about twice as fast as the software business. More than anything, Big data has increased the demand of information management specialists so much so that Software AG, Oracle Corporation, IBM, Microsoft, SAP, EMC, HP and Dell have spent more than $15 billion on software firms specializing in data management and analytics.

Metadata explained

When a digital asset is creates, so is metadata about its origin, time, date format and so on. But that's not enough to stay organized in the digital era. It is crucial to invest the necessary time in making sure the asset is properly named, tagged, stored and archived in language consistent with other assets in the collection. Maintaining a consistent methodology to asset management makes the assets more valuable, easier to find and distribute.

Many distinct types of metadata exist, among these descriptive metadata, structural metadata, administrative metadata, reference metadata and statistical metadata (OECD, 2019).

Metadata is the glue that holds all data together and helps producers align data sources so that users can understand the data and use it to make smarter decisions for business or scientific use. Without it, data pretty much means nothing, which is why having a robust metadata management outfit is essential for today's users. Metadata enables to: find the data, figure out what the data is saying, foster a more efficient use of time for the user.

Metadata for Big Data success

In a recent Gartner review (Beyer et al.), unstructured data content represents as much as eighty percent of a firm's total information assets. Managing the ever-growing volume of structured data and unstructured data content in an effective manner creates a competitive advantage that many believe if not realized will ultimately cost them market share or severely hamper their servicing of ever-changing client requirements.

Metadata can manage the entire data life cycle, processes, procedures and customers or users affecting specific business information and can provide an audit trail that can be essential, especially for regulated businesses, at any given point in time. Big Data metadata is the foundation for harnessing these vast amounts data from new disparate data sources and information repositories before they become unmanageable.

Metadata is the information that describes other data – 'data about data' (Froeschl, 1997). It would be more appropriately defined as 'information about data'. It is represented in the form of any number of characteristics associated with the data information asset such as type of asset, author, date originated, workflow state, and usage within the Enterprise, among numerous others. Though once defined, metadata provides the value and purpose

of the data content, and thus becomes an effective tool for quickly locating information – a must for Big Data analytics and business user reporting. But metadata can also identify 'Little Data' that ultimately provides structure to what becomes Big Data. A recent article in Harvard Business Review (Boncheck, 2013) identified the three primary ways Big Data and Little Data differ:

- **Focus**: The focus of Big Data is to advance organizational goals, while Little Data helps individuals achieve personal goals.
- **Visibility**: Individuals can't see Big Data; Little Data helps them see it better.
- **Control**: Big Data is controlled by organizations, while Little Data is controlled by individuals. Companies grant permission for individuals to access Big Data, while individuals grant permission to organizations to access Little Data.

But to realize the true value that metadata, or Little Data, brings to Big Data we need to look at the definition of structure whereby it helps us to find data during data discovery and allows a way to interpret and use Big Data in an accurate manner.

Metadata can link data assets by associating relevant criteria. This is particularly beneficial in Big Data initiatives whereby standalone keyword-driven results can include an agglomeration of less relevant information. But when leveraging this metadata association, Big Data and analytics users can quickly locate the right information despite the vast amount of content residing across and within these disparate repositories.

It is very important that metadata allow producers to create and maintain data consistency. A future Big Data metadata management consideration would be to incorporate the Resource Description Framework (RDF) model. Although RDF has been around since it's inception in 1999 it has recently gained more popularity in Big Data circles for its support model representing metadata. The RDF model defines the breakup of data into 'triples' which categorizes it as subjects, predicates and objects. This keeps the data and the metadata to be tightly coupled so querying is more straightforward.

Data governance

"To be successful, a solution to both Metadata Management and Data Governance should be integrated", (Dataversity, 2017) said Christian Bremeau, CEO and President of Meta Integration Technology.

What they mean is that metadata management must be part of the overall enterprise data governance practice. It is a critical component of any robust data governance practice.

An approach to support this also in the public governance or institutions, is the establishment of data stewardship for metadata.

Stewarding metadata will further ensure data consistently to support the enterprise and provide Big Data analytics decision making at an accurate level. Stewardship is necessary for the implementation of enterprise data governance practices since it provides the users of this data with value and a context for understanding the data and its components. Some of the major responsibilities of the metadata data steward include documenting the context of the data content (data heritage and lineage) and the data definitions for data store entities & attributes, identification of the relationships between data, and providing validation of

data timeliness, accuracy and completeness. Meta data stewards will also assist in the development of data compliance and associated legal and regulatory controls for data governance adherence.

According to IBM (Haber, 2017) data governance is a shared responsibility and consists of building blocks of governance thereby providing clarity and insight, and drive stewardship.

Therefore, we take that data governance includes 3 important goals:

- Maintaining the quality of the data.
- Implementing access control and other data security measures.
- Capturing the metadata of datasets to support security efforts and facilitate end-user data consumption.

One way to approach big data governance is through data tagging. In this approach, the metadata that will govern the data's use is embedded with the data. Furthermore, this metadata is enhanced to include information beyond common attributes. For examples, it might include business metadata that would help a data scientist evaluate its usefulness in a predictive model.

The role of metadata in statistics

Metadata plays a vital role in both the development and use of statistical information. The production of information requires that data and metadata be viewed as a totality rather than individually; thus, metadata management must be seen as an integral part of statistics production. Moreover, since metadata provides the basis for human understanding of data, the cognitive aspects of metadata must also be addressed.

The concept of "metadata" and related concepts such as "metainformation", "meta-databases", and "metainformation systems" were first defined in Sundgren (1973). Official statistics was probably the first area to recognize the importance of metadata, but even here it took about two decades (and a number of unsuccessful projects) until some real progress could be seen. During the 1980's and the 1990's the Statistical Division of UN/ECE organized several meetings on statistical metainformation systems (METIS). One tangible result was a Guideline; Sundgren (1993). In 1993 Eurostat arranged a workshop on statistical metadata.

Only recently other sectors of society, including the private business sector, have felt the need for a more comprehensive and serious approach to metadata. To some extent these needs have been triggered by the interest of companies and organizations to reuse their operational data for more strategic purposes, by organizing the data in so-called data warehouses, and by using new techniques like On-Line Analytical Processing (OLAP) and data mining.

While the dictionary definition "data about data" is concise and accurate, it lacks the specifics and context needed to communicate meaning. What does the term "metadata" mean with respect to our field of official statistics? So, a few years ago, members of the Open Forum on Metadata developed the following definition:" Statistical metadata

describes or documents statistical data, i.e. microdata, macro-data, or other metadata. Statistical metadata facilitates sharing, querying, and understanding of statistical data over the lifetime of the data."

Metadata descriptions go beyond the pure form and contents of data. Metadata are also used to describe administrative facts about data, like who created them, and when. Such metadata may facilitate efficient searching and locating of data. Other types of metadata describe the processes behind the data, how data were collected and processed, before they were communicated or stored in a database. An operational description of the data collection process behind the data (including e.g. questions asked to respondents) is often more useful than an abstract definition of the "ideal" concept behind the data. There are several examples of existing metadata standards. For example, the Dublin Core(1) is a set of 15 metadata elements intended to facilitate discovery of electronic resources. Metadata content standards now exist for a variety of subjects, including biological and geospatial data(2).

Methodology and Discussions

This paper uses a qualitative method for approaching the subject of Big data in statistics. There have been some aspects covered by researchers and journals, in time, but there is still a large amount of content to be emphasized on this topic. If we chose to target our analysis on the user end, there are some sour points which need coverage from a user needs point of view.

The methodology starts by trying to answer a few clear questions:

- What is metadata for Big data?
- What does metadata in a structured way, look like?
- Why is this attribution so important?

In a structured world of data, there are no Big data without Metadata. Therefore, Metadata is the value users get from scientists who structure Big data and get true content from that vast amount of information collected. Metadata looks like attributes. Attribution (or metadata) allows us to do sophisticated processing/analysis against structured data. We can ask sophisticated questions when there are attributes attached to the data.

There is structured data and unstructured data. Unstructured data is just that – data laid out on a slab where there is just data and only data. And then there is structured data. When we lay structured data under the microscope and we start to examine it, what do we find? We find that in addition to data, there is some stuff called metadata that is tightly interwoven into our structured data.

This article provides a research agenda in those areas, building on our current work in helping users to find the statistical information they need and understand what they find.

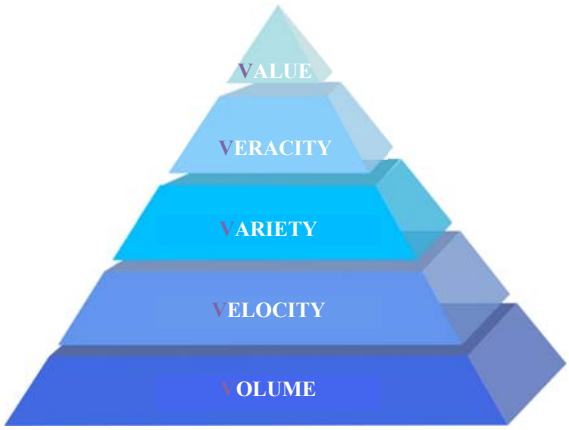
Big Data challenges or when you look for the needle in a haystack

We have an unprecedented wealth of data at our discretion and under considerable watch and scrutiny from creators, users and stakeholders. Organizations need to change

accordingly to respond and create new solutions. The challenge with big data is how to manage it. That includes everything from: Identification, Capture, Curation, Storage, Search, Sharing, Analysis. Metadata refers to descriptive details about a digital asset and provides information about a single file while Big data gives you the ability to discover patterns and trends in all of your data If metadata is the needle then Big data is the haystack. Fortunately, the needle is smart nowadays and can assist in finding what you need.

The 3 V's of Big Data are now 5

Image 1. *The 5 V's of Big Data*



Source: Author's interpretation.

According to scientists, if we see big data as a pyramid, **volume** is the base, which, according to calculations, doubles every 40 months. Then **velocity** refers to the speed with which data are being generated and considered more important than the volume itself. **Variety** in Big Data refers to all the structured and unstructured data that has the possibility of getting generated either by humans or by machines. These are considered the classical 3 v's of Big Data but, consequently, there was the question of quality and subjectivity of the data, so there naturally emerged the next 2 characteristics. The fourth V is **veracity**, which is equivalent to quality. We have all the data, but could we be missing something? Are the data "clean" and accurate? Do they really have something to offer? Finally, **value** sits at the top of the big data pyramid. This refers to the ability to transform a tsunami of data into business.

There is structured data and unstructured data. Unstructured data is just that – data laid out on a slab where there is just data and only data. And then there is structured data. When we lay structured data under the microscope and we start to examine it, what do we find? We find that in addition to data, there is some stuff called metadata that is tightly interwoven into our structured data.

Breaking down big data: the value in metadata

To better understand the big deal about big data, start with an understanding of the associated terms, which include:

- **Metadata** simply stated is information that describes other data; essentially, data about data. It is the descriptive, administrative and structural data that defines assets.
- **Taxonomy** is the classification of information into groups or classes that share similar characteristics. It provides the consistency and control in language that can power the single source of truth as expressed in a DAM or CMS and is a key enabler for organizing any large body of content.
- **A Controlled vocabulary** is a set of defined terms that populate a drop-down or pick list. Establishing "preferred terms" is a good way to provide control, authority and consistency to your digital assets. You not only need to know what it is you are describing but how it may best be described.
- **Structured data** refers to information with a good level of control and organization, for example, a "date" value in an "Expiration Date" field. Structured data is usually found in a controlled data environment with inherent meaning and purpose.
- **Unstructured data** lacks that control and meaning, offers a confused sense of purpose and requires analysis or interpretation to restore meaning. Using the example above, if a "date" is discovered with no "field" in which to provide that control and structure, what does that tell you? Wrangling all that data will create a more structured sense of purpose for the content in your organization. It makes information more relevant, palpable, understandable and useable.
- **Master Data** is business critical data that is governed and shared across multiple systems, applications or departments within an organization. Master Data can be identifiers, attributes, relationships, reference data and yes, metadata!
- **Master Data Management (MDM)** is the set of processes, tools and governance standards/policies that consistently define, manage and distribute Master Data. Everything starts with data modelling, and data modelling is inherently tied to metadata (ISO-IEC 11179)[3].

The value that metadata, or little data, brings to big data is in the structure and meaning it provides. It serves asset discovery by identifying assets and allowing them to be found by relevant criteria. Metadata also brings similar assets together and distinguishes dissimilar assets. Value is added by managing data.

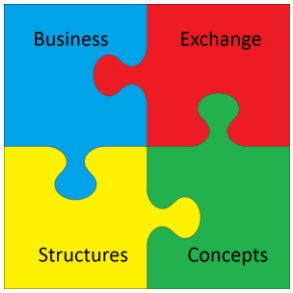
Metadata in the Statistical Knowledge Network

Metadata is integral to many processes in the Statistical Knowledge Network (SKN) a GovStat project to unify the statistical info and nomenclatures. Recently, efforts such as the SemanticWeb and others express the importance of metadata in supporting integration of information across multiple sources. Critical challenges in building the SKN are identifying what metadata is needed, and at what point in the cycle of production and use of statistical information it must be available and establishing an architecture that supports metadata acquisition and use throughout the SKN.

In a unified approach matching the definitions provided by Androvitsaneas et al. (2006) and SDMX (2009), as well as the information objects identified in GSIM (UNECE, 2013b), metadata are viewed as part of a wider system where different metadata typologies are related to one another and connected to quality. Hence the need to explicitly consider three metadata categories is advocated:

- Metadata related to data structure and content include all that is necessary to give a definition and a meaning to statistical data;
- Process-related metadata describe the statistical business process in terms of methods (e.g., sampling, collection methods, editing processes) and quality (e.g., timeliness, accuracy).
- Business-related metadata are useful for the management of an NSI in planning, executing and assessing both statistical and support activities. These metadata allow stakeholders to connect data and processes with NSI's strategic objectives (e.g., long term goals) and with the different management plans of each Institute (e.g., methodological investments); to assign responsibilities and resources to the objectives; to plan schedules and timetables of different actions; to evaluate the achievement of objectives and to assess performance and efficiency.

Image 2. *The Generic Statistics Information Model*



Source: GSIM-Statistical Classifications Model.

GSIM Top-level Groups & Information object are as follow:

BUSINESS ▪ Statistical Program ▪ Statistical support program ▪ Statistical Need ▪ Business Process ▪ Process Step	EXCHANGE ▪ Information provider ▪ Information consumer ▪ Exchange channel ▪ Provision Agreement ▪ Product
STRUCTURES ▪ Referential metadata set ▪ Referential metadata structure ▪ Information resource ▪ Data set ▪ Data structure	CONCEPTS ▪ Variable ▪ Population ▪ Concept ▪ Unit ▪ Statistical classification

Proposed classification mapping with the GSIM information objects

BUSINESS RELATED METADATA

- Business: Statistical program, statistical support program, statistical need

PROCESS RELATED METADATA

- Business: Business Process, process step
- Exchange: Information provider, information consumer, exchange channel, provision agreement, product
- Structures: Referential metadata set, referential metadata structure, Information resources

METADATA RELATED TO DATA STRUCTURE AND CONTENT

- Structures: Information resource, data set, data structure
- Concepts: Variable, population, concept, unit, statistical classification

This paradigm is not new and has also been used in similar contexts, for example, in metadata classification (Statistics Sweden 2008) and in other applications, for example, in the definition of a framework for Enterprise Architecture (Zachman 1987). According to GSIM (UNECE, 2013c), a business process is "the set of Process Steps to perform one or more Business Functions to deliver a Statistical Program Cycle or Statistical Support Program".

Users of statistical data in Romania

The people that do the big data analytic job are called data scientist nowadays. Thomas H. Davenport and D.J. Patil coined the term "data scientist" in a Harvard Business Review article (2012). The article described the role and called it "the sexiest job of the 21st century". Nonetheless, common users are usually far from data scientists, so things need to be simple and intuitive.

Users of statistical data in Romania are mainly: the Government, Companies, Organizations, Researchers, Journalists, Students, General public. The NIS metadata database(4) presents in a structured way the methodologies underlying the statistical activities of the Annual Statistical Plan elaborated by the INS or other institutions with which the INS cooperates, the definitions of the resulting indicators and the most used terms, as well as the notions of theoretical statistics.

The metadata database, the classification system, and the TEMPO-online(5) statistical indicator database are interconnected so that the visitor of the INS site can navigate on any of these.

The metadata associated with the statistical indicators describes each indicator by features such as: definition, statistical activities in which it is used or derived, the data source from which it is retrieved, correlated indicators, the end year of the time series, the calculation formula used, and date of the most recent update. The link between indicators and statistical

activities is interactive so that the user can access metadata related to statistical activity from a single indicator. At the same time, based on a certain statistical activity, all the resulting indicators, the correlated ones and the terms used within it can be displayed.

Findings and conclusions

Invocation for metadata grows with an increasing demand on statistics and analyses based on different sets of statistics.

Metadata has a core role in the management of data quality, and it is an important component of overall management of a statistical institution. Data quality and metadata quality should have the same degree of importance in a statistical institution.

Statistical metadata are needed to help a human user to transform statistical data into information.

User metadata needs and problems must be identified in a user study, in order to provide an appropriate metadata and functional end-user tool. In this case, a statistics database needs to be able to provide: the definition of an economic indicator, definitions of specific indicators, examples of economic indicators, mapping of geographic entities about which user might find data, available geographic granularity for a given indicator, the currency of a given indicator, rules for valid comparisons.

Efforts on harmonisation of metadata in various processes and standards and connect these standards with each-other. Developing and managing a statistical metadata system a concern that should involve the whole statistical institution.

Notes

(1) http://purl.org/metadata/dublin_core
(2) http://www.fgdc.gov/metadata/contstan.html
(3) http://metadata-standards.org/11179/
(4) http://colectaredate.insse.ro/metadata/public.htm
(5) http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table

References

Beyer, A. Mark; Laney, Douglas, 2012. The Importance of 'Big Data': A Definition, Gartner.

Davenport, Thomas H.; Patil, D.J., 2012. Data scientist: the sexiest job of the 21st century, Harvard Business Review, October.

De Mauro, Andrea; Greco, Marco; Grimaldi, Michele, 2016. A Formal definition of Big Data based on its essential Features. Library Review.

Dennis, Amber Lee; Metadata Management and Data Governance: The Essentials of Enterprise Architecture, March 1, 2017, retrieved at <https://www.dataversity.net/metadata-management-data-governance-essentials-enterprise-architecture/>

Froeschl, Karl A., 1997. Metadata Management in Statistical Information Processing, Vienna: Springer.

Haber, Marc; The data governance story: An introduction to governance and metadata, IBM Big Data Hub, February 15, 2017, retrieved at <https://www.ibmbigdatahub.com/blog/data-governance-story-introduction-governance-and-metadata>

John R. Mashey: Big Data... and the Next Wave of InfraStress, Slides from invited talk. Usenix: April 1998.

Kaplan, Andreas; Haenlein, Michael, 2018. Siri, Siri in my Hand, who's the Fairest in the Land? On the Interpretations, Illustrations and Implications of Artificial Intelligence, Business Horizons, 62(1).

Manyika, James; Chui, Michael; Bughin, Jaques; Brown, Brad; Dobbs, Richard; Roxburgh, Charles; Byers, Angela Hung, Big Data: The next frontier for innovation, competition, and productivity. McKinsey Global Institute, May, 2011.

OECD Statistics; OECD Glossary of Statistical Terms - Reference metadata Definition, stats.oecd.org. 2019.

Sundgren, B., 1973. An Infological Approach to Data Bases. Stockholm University and Statistics Sweden.

The Economist, Data, data everywhere; February 2010. Retrieved at <https://www.economist.com/special-report/2010/02/27/data-data-everywhere>

UNITED NATIONS DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS, STATISTICS DIVISION, Generic Statistical Information Model (GSIM): Statistical Classifications Model, 2013-2015.

Zachman, J.A.; A Framework for Information Systems Architecture. IBM Systems Journal 26, No. 3. Available at: <http://www.zachmanframework.com/images/ZI_PIcs/ibmsj2603e.pdf 1987>