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Monetary reward as an impulse for spikes of the work productivity, yet limited in time

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Abstract. *The present state is that we consider the monetary rewards given to an employee, as a motivating factor and furthermore, an impulse to his or her productivity towards the business ambitions, imperatives and goals. We are expecting to identify an impact in their behavior towards productivity, being higher on the date of the salary payout (to be more precise, the date of the salary and up to another 5 working days). The paper is looking to analyze and gather the trends and studies existent in the market, and compare it with the current reality of the outsourcing industry in Romania.*

Keywords: productivity, salary, behavior, outsourcing, employee, wage.

JEL Classification: L2, J3.

Introduction

This paper is structured in 3 main parts:

Part 1. The general knowledge gathered on the topics from various sources, bringing multiple views on the potentiality of a relation between wage and productivity.

Part 2. The narrowed observations of the service industry, BPO, for a deep dive into actual data of salary payment date ("wage payday") in relation to productivity.

Part 3. The directions of potential conclusions and observations; further investigations for a demonstrative link between "wage payday" and productivity spikes.

Part 1

As per the domain literature related to the link between salary and productivity, there are certain opinions that tend to sustain the fact that the relation or the impact is very strong, meaning that the wage does have an impact on the overall productivity. As per a recent article elaborated by Michael R. Strain, 2019 February, "The link between wages and productivity is strong", certain assumptions and studies carried throughout several decades have analyzed the potentiality of such a correlation. The paper is more keeping the focus on how the setting the entire process of wage is being done, looking at various elements as inflation, production/labor workers, excluding supervisory roles. The conclusion is yet sustaining such a relation.

While many papers on this topic have made a thorough analysis on various aspects on the topic: such as wage definition, also the different understanding of a compensation, which we may refer to as "wage" or "salary", may in fact mean a sum of variable pays: monthly one time salary, benefits in kind, other bonuses, shift allowances, and so on. Other aspects considered were the inflation rate of the wages, rather than a mere analysis of the wage.

Although it is not a very recent paper, elaborated by Frederik Huizinga and Peter Broer in 2004 with the title "Wage moderation and labor productivity"*, it has once again brought in another view of the long discussed and measured elements of wage and productivity. The conclusion that they have reached, considering also the Nordic markets of labor, is that a wage push is not necessarily a predictive element of higher productivity on the long run. While it may have a positive impact in the short range, it is surely not a predictor of productivity, yet it is a certain fix for unemployment. The full study and paper can be read for a more detailed opinion and discussions, which are offering a wide span over time even shortly after the second world war.

A more recent short paper, published June 2018, keeps focus on the "Gap between wages and productivity" as per Bela Galgoczi, and given his considerations, wages have never been at the level of productivity, and some European countries even experienced a wage decrease over a period of 16 years, as compared to productivity, which went up.

Change of real wages and productivity, 2016/2000, %
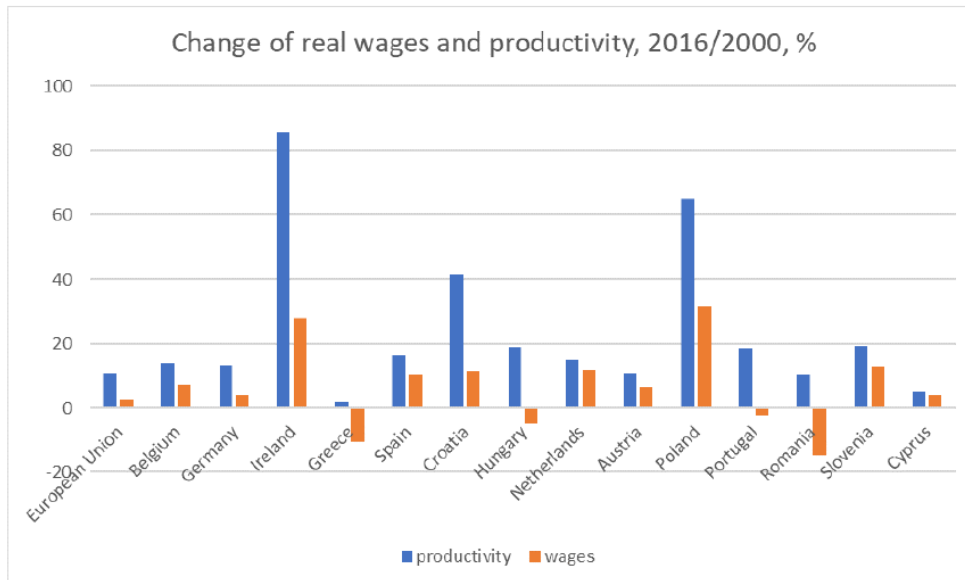
Source: real compensation/worker, real productivity per worker (AMECO, 2018).*
*Figure retrieved through the paper of Bela Galgoczi, Figure 1 page 2/4 Real Productivity and wage developments in the EU 28 and in selected members states.

Part 2

Common Terms understanding in the industry of services

From a beneficiary perspective, meaning the employee:

Wage/Salary – commonly used for the monthly payout on an individual basis agreed terms during employment contract agreement. Weather hourly paid or fix amount/month this is what is commonly considered as the earnings of a person.

Compensation – is what the employee sees and received over and above the hours worked/the fix amount agreed, and it is commonly seen in the industry and the geography as a combination of various elements like benefits, medical health insurance, performance bonuses, special events incentives, etc.

Income – as a practice, more to the local market, it refers to the gross value that a person is cashing in.

From an employer perspective:

Occupancy: to drill down into the reality of the market/industry of services, occupancy is the time that a person spends at work, being active as per the agreed tasks. It means to be in the office/work premises, as in a physical presence, presumably busy with the agreed deliverables, towards employer's expectations and understanding. It is usually considered the percentage of time spent in the office/work desk/active in any proven form on the work location. Commonly mistaken for productivity.

Productivity is the percentage of effective time/activity during the time spent in the work place. Hence, let's imagine a person spends 65% time on the floor, meaning the occupancy is 65% of the total 100% agreed. Rest of the 35% of time is nonproductive, in all forms. The productivity is measured within the occupancy span. That means that within the 65% time of occupancy we are measuring a range of 0 to 100% productivity on the agreed tasks (i.e. processed invoices, resolutions, transactions closed, average call handling time and number of calls takes, and so on).

Types of transactions for productivity measurements/analysis

In the service industry (BPO – Business Process Outsourcing), where the model of business is solely relying on transactions and other services monitored through various tools and processes, productivity is a matter of contractual agreements. Volume income and processed operations are typically a result of predictions and historical data. Even so, we need to make a clear distinction between certain services, mostly voice and non-voice transactions).

In the current paper, the focus and emphasis on the study I have proposed to address, not yet thoroughly analyze, is the non-voice transactions. Reason for such a distinction is the fact that voice operations, call centers, contact centers and other live services, do not have an element of lagging services. They usually are served by rightly staffed teams, in real time, with immediate resolution. Hence, a wage impulse would not have a direct impact on the serviced customer, rather yet it may have an effect on the morale and the employment satisfaction, or other employment factors, not subject to this paper.

The non-voice transactions, like tickets, emails, workflows, etc. all of these with a given service level for resolution (SLAs could be hours to multiple days for resolution) are the target subject of this paper, as the touch point from entry to end resolution are strictly dependent on the handling time, human intervention and as a less measurable factor, willingness to close transactions in a productive, more efficient and timely manner, lastly this being the productivity of the agents, that is an individual service providers.

Basis above context of productivity for non-voice transactions, we have made the assumption that there must be a set of various factors or impulse at measure to dictate productivity. Hence, this paper's intent is to investigate the current reality of financial service operations floor, which means email interactions for various financial services like invoice scanning, posting, invoice registering and payment. Below graph is a depiction of 6 months activities (August 2019 to January 2020), in which we have taken the average transactions income and the average of the once processed. As per below, and also looking at the raw data, while there is a congruence of income and processed, it is not a reliable result and source to conclude that the wage has had in impact on the processed transactions. Hence, there is not a strong relation between processed transactions and the wage payment, which in the below case is on the 8th day of every month. As stated at the beginning, monetary reward can be considered as a factor of impulse for a better productivity. While the below shows a higher rate of processing at random moments in the month, around and before salary payment 5th to 7th of the month, again between the 10th to 13th of the month

the productivity seems to be higher than the actual requests coming in, and then throughout the 16th to the 22nd the productivity spikes above the requests.

Figure 1. *Average of Processed transactions (emails, tickets) vs. requested transactions in the financial services of a BPO environment. Data valid for August 2019 to January 2020*
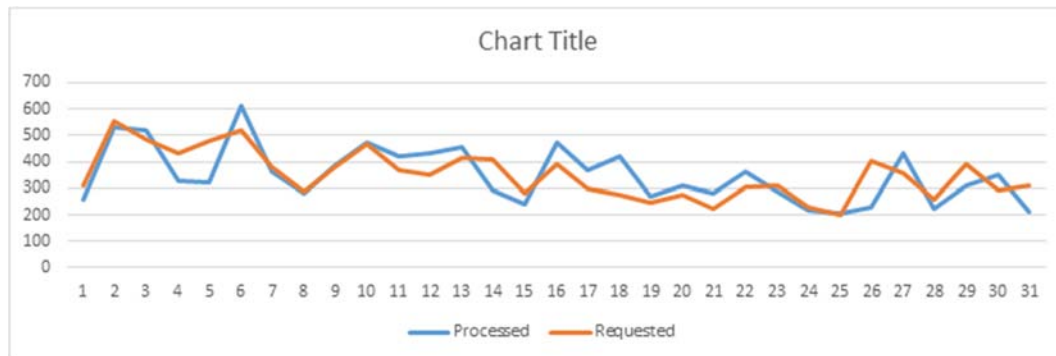
Also, maybe the fact that the analysis is on services and also transactions monitored on contractual basis, which are to be adjusted with cross-trained teams, may have an impact on the individual conclusion, as we are looking here not at the granular lever, yet more as an initial hypothesis, assumption that wage payment and productivity around the payment date, may have an impact on short term basis.

The source of the analyzed data from the above table and considerations, come from the operational services of one of the "Leaders" in the industry of services, as per the Gartner ranking Magic Quadrant., February 2019. As per Everest ranking, same company scored in the top 3 positions for Business Service Delivery Automation. The above numbers analyzed reflect the services offered towards a European customer, with outsourced financial services throughout multiple EU countries.

Part 3 **

In all fairness to the multiple views and data gathered in this short paper, a reliable conclusion is prone to a more thorough research. Nevertheless, as a subjective observation, basis the literature that is available on the subject, and given the data of the investigated industry, while there may be a link between salaries as a general factor, better yet the "wage payday" as a more granular element and productivity, I truly believe that elements, which are intrinsic, rather linked to behavioral economy. Such observations lead this paper to a more complex approach and may announce a further investigation and research, which need to be considered for a more thorough academic conclusion.

**The views, the elaborate content (not linked to refer materials) and conclusions of this paper represent the personal views and observations of the author and it is not linked to any institute, association or other form of public research.

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The impact of geopolitical risk on economic growth

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Abstract. *The "fathers" of geopolitics are Kjellen, Ratzel, Mahan, and Mackinder, Haushofer. In his "Geographical pivot of History" (Mackinder, 1904) emphasized the causal link between geography and history and the end of the Columbian Epoque. (Sempa 2015). Ratzel inspired his theory from biology and considered states as living organisms with a permanent struggle for the Lebensraum, translated as space for living. Dario Caldara Matteo Iacoviello Federal Reserve Board North Carolina State University, (Caldara and Iacoviello, 2018 created a geopolitical index, using relevant geopolitical information from newspapers. The geopolitical risk indicator of Caldara and Iacoviello was the starting reference for the articles of (Cheng and Chiu, 2018), (Tiwari, Das and Dutta 2019). Chi-ChuanLeea Chien-ChiangLee 2020 refers to geopolitical risk of Caldara and Iacoviello (2018) in the Brics countries. For (Mamuna et al., 2020) increased geopolitical risk, is associated with higher volatility using for the geopolitical risk the Caldara and Iacoviello GPR index (2018).We utilise an the Caldara, Iacoviello geopolitical risk indicator to emphasize the relation of the geopolitical risk with the economy using the database Caldara Iacoviello (2018) https://www.policyuncertainty.com/. We employ data from the World Bank indicators. We employ data from Eurostat for analysis of the relation of the economic growth performing regression with the gross national product per capita, influenced by research and development expenditures for business, public and academia, employment rate and unemployment rate, education attainment rate for secondary sector and tertiary sector.*

Keywords: geopolitical risk, geopolitics, GDP per capita, econometric analysis, economic growth.

JEL Classification: A14.

1. Literature review geopolitics

The "fathers" of geopolitics are Kjellen, Ratzel, Mahan, and Mackinder, Haushofer. In his "Geographical pivot of History" (Mackinder, 1904) emphasized the causal link between geography and history and the end of the Columbian Epoque (Sempa, 2015). Ratzel inspired his theory from biology and considered states as living organisms with a permanent struggle for the Lebensraum, translated as space for living. British geographer Halford J. Mackinder described the concept of Eurasia presenting his theory of the "Heartland"– (Mackinder, 1904) Who controls East Europe dominates the Heartland; who controls the Heartland dominates the World-Island; who controls the World-Island dominates the world (Mackinder, 1919, Democratic Ideals and Reality, p. 150) Yale's Nicholas Spykman stated that the "Rimland", or the Eurasian territory that surrounds the heartland is more crucial territory (Spykman, 1944). Who controls the Rimland rules Eurasia; who rules Eurasia controls the destinies of the world. Dario Caldara Matteo Iacoviello Federal Reserve Board North Carolina State University (Caldara and Iacoviello, 2018 created a geopolitical index, using relevant geopolitical information from newspapers. The geopolitical risk indicator of Caldara and Iacoviello was the starting reference for the articles of (Cheng and Chiu 2018), (Tiwari et al., 2019). Chi-ChuanLeea Chien-ChiangLee 2020 refers to geopolitical risk of Caldara and Iacoviello (2018) in the Brics countries. For (Mamun et al., 2020) increased geopolitical risk, is associated with higher volatility using for the geopolitical risk the Caldara and Iacoviello GPR index (2018). We utilise an the Caldara, Iacoviello geopolitical risk indicator to emphasize the relation of the geopolitical risk with the economy using the database Caldara Iacoviello (2018) https://www.policyuncertainty.com
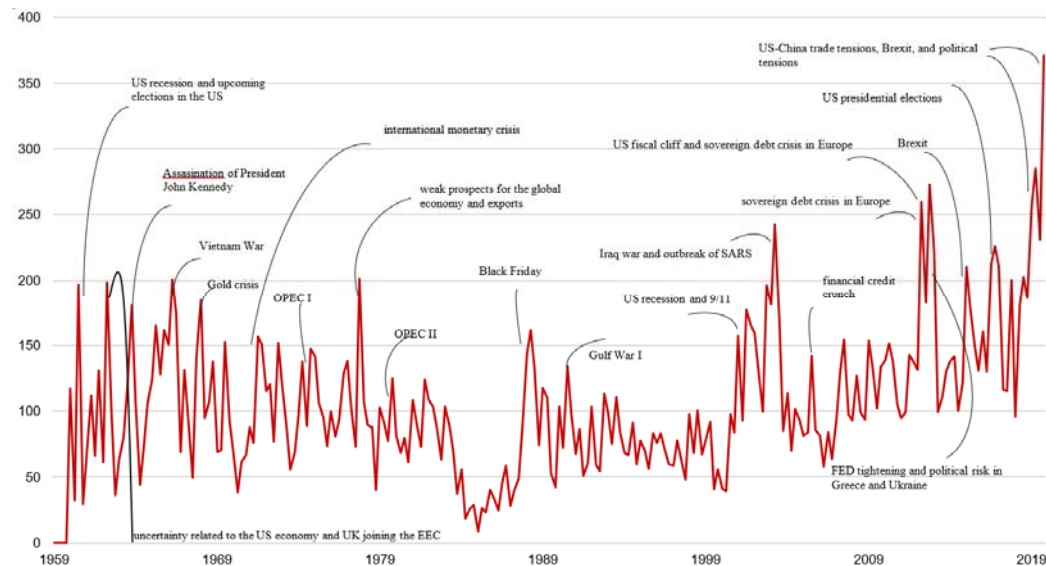
Word Uncertainty Index
Source: Ahir, H, N Bloom, and D Furceri (2018), "World Uncertainty Index", Stanford mimeo.

The word uncertainty index is constructed for 143 countries by Hites Ahir (International Monetary Fund, Nicholas Bloom (Stanford University) and David Furceri (International Monetary Fund)

2. Economic growth

Starting from the seminal article of Mankiw, Romer and Weil 1992, "A contribution to the empirics of economic growth we employ a Cobb Douglas Function". The Cobb Douglas Function can be estimated as a liniar relation with the help of logarithm function.

$Log_e(Y) = \alpha_0 + \sum \alpha_i log_e(I_i)$

I input;

Y output;

α_i coeficients;

$Y = C^{\alpha} M^{1-\alpha}$;

C capital;

M labor.

We employ data from Eurostat for analysis of the relation of the economic growth performing regression with the gross national product per capita, influenced by research and development expenditures for business, public and academia, employment rate and unemployment rate, education attainment rate for secondary sector and tertiary sector. Now we run a multiple liniar regression analysis, for the countries: Belgium, Bulgaria, Czechia, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyrus, Latvia, Lithuania, Luxemburg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, United Kingdom, Iceland, Norway, Switerland, Monternegro, North Macedonia, Serbiaand Turkey. For economic growth measurement we use GDP per capita as instrument. The response variable we are using is GDP per capita. Gdpcapteu. The explanatory variables are gerdbusiness, general expenditures for business, gerdgovernp ~c, general expenditure for government, gerdhighedu, general expenditure for higher education, euattainsec, eu attainment for secondary level, euattaintert, eu attainment for tertiary level, unemployeu, unemployment rate eu, employeurate, employment rate eu.

regress gdpcapteu gerdbusiness gerdgovernpublic gerdhighedu euattainsec euatta

> intert unemplyeu employeurate

```
     Source |      SS           df      MS      Number of obs   =      388
------------+-----------------------------------   F(7, 380)      =    42.83
      Model | 1.8957e+10    7    2.7082e+09   Prob > F        =   0.0000
   Residual | 2.4030e+10  380  63237607.9   R-squared       =   0.4410
------------+-----------------------------------   Adj R-squared  =   0.4307
      Total | 4.2987e+10   387  111078755    Root MSE        =  7952.2
```

```
------------------------------------------------------------------------------
  gdpcapteu |     Coef.   Std. Err.       t    P>|t|    [95% Conf. Interval]
------------+-----------------------------------------------------------------
gerdbusiness |  -.0410449  .3721382   -0.11  0.912  -.7727529     .690663
gerdgovernp~c |  .7094784   .538434    1.32  0.188  -.3492048    1.768162
 gerdhighedu |  -11.3136   4.486574   -2.52  0.012  -20.13522  -2.491977
 euattainsec |  -151.5358  32.7148    -4.63  0.000  -215.8605  -87.21109
euattaintert |   679.2193  70.23412    9.67  0.000   541.1231   817.3155
   unemplyeu |  -811.2669  134.9165   -6.01  0.000  -1076.543  -545.9905
employeurate | -179.6704  122.2124   -1.47  0.142  -419.9677  60.62679
       _cons |    34874.5  8512.639    4.10  0.000   18136.73   51612.28
------------------------------------------------------------------------------
```

3. Conclusions

In the stata output first we have the R squared ad this number next to the R squared tells us that 44.10% of the variance of the response variable Gdpcapteu is explained by our regression model. Similarly we have adjusted R Squared which has a similar interpretation but just takes into account the number of the variables in our regression model. Now if we focus on the table down we see our response variable gdpcapteu. Our explanatory variables gerdbusiness, gerdgovernp ~c, gerdhighedu, euattainsec, euattaintert, unemployeu, employeurate and finally the constant for the regression ecuation. So for the constant and for each of the explanatory variables we have the regression coefficients, the standard errors, the values of the t-test statistic, the corresponding p-values, and finally the 95% confidence intervals. Now we are interested in figuring out whether or not there's any evidence of relationships between our explanatory variable and our response variable controlling for the other component or variables and to do that we set up a series of hypothesis tests, which have corresponding null hypothesis and the null hypothesis are as follows First in the population there is no linear relationship between gerdbusiness and gdpcapteu,. Secondly in the population there is no linear relationship between Gdpcapteu and euattainment. Now we run our t test and find our p values. For gerdbusiness the p value is not particularly low 0,912so we don't have enough evidence to reject the null hypothesis of no linear relationship.

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Antisocial personality traits in today's corporate world

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Abstract. *In the Diagnostic and Statistical Manual of Mental Disorders (DSM 5) there is the diagnosis of antisocial personality disorder. People with antisocial personality disorder are usually charismatic, attractive and expert at attracting compassion from others, for example – appearing victims of injustice. Some studies suggest that antisocial people have sharper intelligence than the average. Also, the Antisocial has a superficial charm, can be thoughtful and cunning and has an intuitive ability to quickly observe and analyze others, to evaluate their needs and preferences and to approach them in a way that facilitates their manipulation and exploitation. In the pursuit of money and success, it is no wonder that antisocial people often reach top positions in corporations or politics.*

Keywords: leader; antisocial; dark triad; corporation; litigation.

JEL Classification: M5; G34; K410.

1. Introduction

Daniel Goleman (2000) talks about six leadership styles:
- The Coercive style – It is the most authoritarian style of all. Employees/followers have to do what they are told. This style can be best in times of crisis.
- The Authoritarian style – This style of leadership involves attracting followers and giving them the freedom to choose the methods they want to employ in order to achieve the goals. Performance can be better when the team needs a new goal.
- The Affiliate style – This style of leadership puts people first and foremost. The style helps team cohesion, but focusing on recognizing merits can lead to uncorrected mistakes. It works well in times of stress, creating the feeling of a safe environment.
- The Democratic style – Allows all team members to be involved in the decision making process. But the downside of it can be that it becomes a long process of debate and lack of direction.
- The Progressive style – This style sets high standards and is based on using the leader's own example. So the style is suitable for the self-motivated and competent employees. But for the rest of the employees, this style can create frustration.
- The Coach Style – This style focuses more on developing people in the organization, than on getting immediate business results. If the team members are willing to do this, this style brings good results.

Leadership research has focused mainly on transformational and charismatic leadership, a model with a long history, based on heroes or religious and political leaders. Thus it came to the theory that charismatic leadership would be based on altruism in the process of mass leadership. But over time, there have also been those who have wondered how many of the transformational and charismatic leaders really have altruistic motives, and if there is a dark part of this kind of leadership that aims to achieve personal goals. (Conger and Kanungo, 1988; Bass and Steidlmeier, 1999)

When talking about the dark side of transformational leadership, Bernard Bass (1990) describes it as pseudo-transformational and Jay Conger (1990) draws attention to a dark side of charismatic leadership. The bright and dark side of the charismatic leadership actually describe the two sides of the same coin. The luminous and idealized side represents the hero with whom we have become accustomed, with altruistic motivation and oriented towards the common good. The dark side refers to the anti-hero, which is characterized by an orientation towards personal interests.

Although in an idealist vision of the world the good always triumphs against evil and the leaders should represent story heroes, it has been shown that the reality is different. In 2000, Maccoby claimed that many leaders are narcissistic. And the reality is that people will always be fascinated by narcissistic personalities, at least in the first phase. The fascination with the anti-hero can be explained by the fact that ignoring the rules as if they didn't apply to them raises everyone's dark side and their adrenaline need. Despite the strong differences between hero and anti-hero, both can have the common purpose of power. Both go beyond the limits, disregarding rules and laws, being led by a social or personal ideal. The heroes possess self-control, are socially responsible, honest and fight for the community. Anti-heroes are more impulsive, less socially acceptable, selfish and maybe even dishonest.

However, both heroes and anti-heroes have an agentic social style, according to the research of Jonason, Li and Teicher (2010).

Dark leadership is part of the yin-yang antagonist pair, a selfish and impulsive leadership that can be as effective and successful, at least temporarily, as the organization-oriented leadership. Thus, from the beginning of the 2000s, the tendency to reanalyse very positive and idealized theories on leadership can be observed, by researching what has been called the Dark Triad of personality traits (Paulhus and Williams, 2002).

2. The Dark Triad

The Dark Triad (Paulhus and Williams, 2002) is one of the hallmarks of psychology over the past 18 years, and the impact this concept has had is proven by the large number of research in the field (Jonason and Webster, 2010).

The Dark Triad is made up of three undesirable personality traits: Narcissism, Machiavellianism and Psychopathy.

Figure 1. *Graphic representation of the Dark Triad*
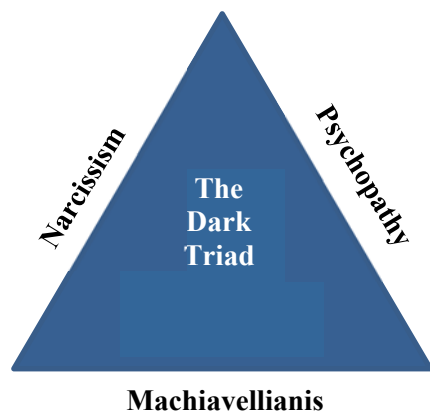
The notions of narcissism and psychopathy originate in the psychiatry literature, referring to two personality disorders. It should be noted, however, that when talking about the Dark Triad, the themes of Narcissism and Psychopathy refer to a subclinical version of the personality disorders defined by the American Psychiatric Association in the Diagnostic and Statistical Manual of Mental Disorders (DSM 5). Machiavellianism is related to the name of Niccolò Machiavelli, a diplomat and 16th century author. He wrote *The Prince,* an important literary work, in which politicians were encouraged to act in depreciable ways to maintain their position of power.

The concepts of Narcissism, Machiavellianism and Psychopathy overlap empirically: all involve traits of selfishness, emotional coldness, duplicity and manipulation (Furnham et al., 2013; Paulhus, 2014; Paulhus and Williams, 2002). However, of the Narcissist, Machiavellian and Psychopath, the Narcissist is considered the most adaptive and desirable, while the Psychopath seems the least adaptable and acceptable (Rauthmann, 2012). The

strongest correlations can be observed between Psychopathy and Machiavellianism, and the lowest associations between Narcissism and Machiavellianism (Furnham et al., 2013).

The model of the interpersonal circumplex (ICP) has become in the last decades the most popular model for the conceptualization, organization and evaluation of the interpersonal dispositions (Kiesler, 1983; Wiggins, 2003). ICP is defined by two axes: a vertical axis (status, dominance, power or control) and a horizontal axis (solidarity, friendship, warmth or love). It has become conventional to identify the two axes with broad metaconceptions of Dominance (autonomy/superiority) and Agency (affiliation/communion), linked to helping and forming mutual caring relationships with others (Horowitz, 2004; Wiggins, 2003; Locke, 2006).

Figure 2. *The interpersonal circumplex*[1]

| A | B | C |
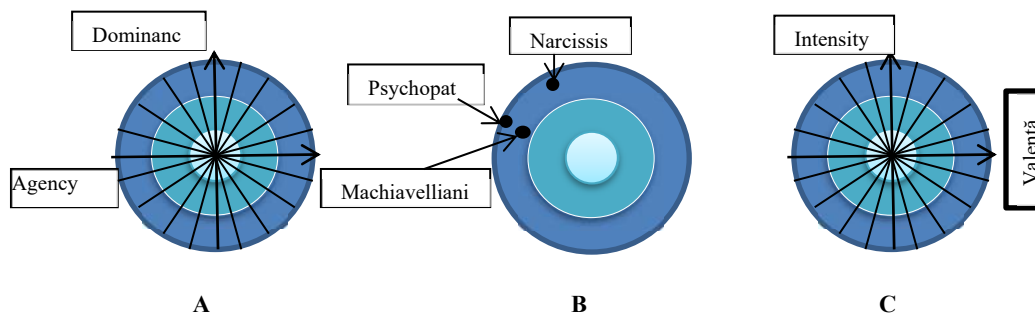
(A) The interpersonal circumplex used as personality taxonomy, with radially divided concentric circles superimposed over the two orthogonal dimensions of agency and dominance.
(B) The interpersonal circumplex used to represent the Dark Triad[2]
(C) The interpersonal circumplex used as taxonomy of emotion.

Narcissism is characterized by a high degree of dominance, psychopathy by a mixture of high dominance and low affiliation, and Machiavellianism by low affiliation.

The Atlas of Personality, Emotion and Behaviour[3] is a catalogue of 20,500 descriptive words of personality, emotion and behaviour.

Figure 3. *Atlas of personality, emotion and behaviour* [4]
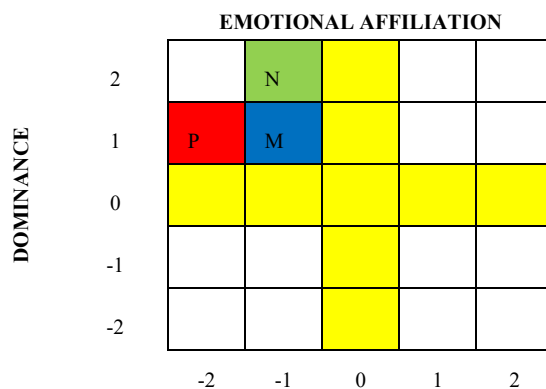
The words in the catalogue were noted according to two-dimensional matrix taxonomy, with orthogonal affiliate and dominant dimensions. The adjectives representing the behavioural patterns described by Dark Triad were scored based on the atlas and viewed using the density paths of the nucleus in two dimensions. The atlas clearly delineates the three components of the Dark Triad, narcissism (green), Machiavellianism (blue) and psychopathy (red).

Matrix taxonomy of the personality created by the ordinary division of the dimensions of belonging and domination. Neutrally, the dominant behaviours and traits are affiliated in yellow. Behaviours can be classified independently by reference to each orthogonal axis.[5]

Paulhus's (2014) research shows that psychopathy has the highest impulsivity, followed by narcissism and Machiavellianism (Malesza and Ostaszewski, 2016). Psychopathy and Machiavellianism have a high level of manipulation in common. Narcissism has the highest level of grandiosity, followed by psychopathy, while Machiavellianism does not seem to be associated with grandiose fantasies. In contrast to Machiavellianism and psychopathy, which exhibit a greater tendency toward negative (aggressive, destructive) humour styles, narcissism is characterized by a positive humour (Veselka et al., 2010). Related to socio-emotional skills, narcissism appears to be positive, Machiavellianism negative and psychopathy both positive and negative (Nagler et al., 2014). Thus, on average, narcissists continue to appear as the most social among dark personalities.

Paulhus (2014) provides an overview of the manifestation of the key features of the Dark Triad.

Figure 4. *Key features of the Dark Triad (based on Paulhus, 2014)*
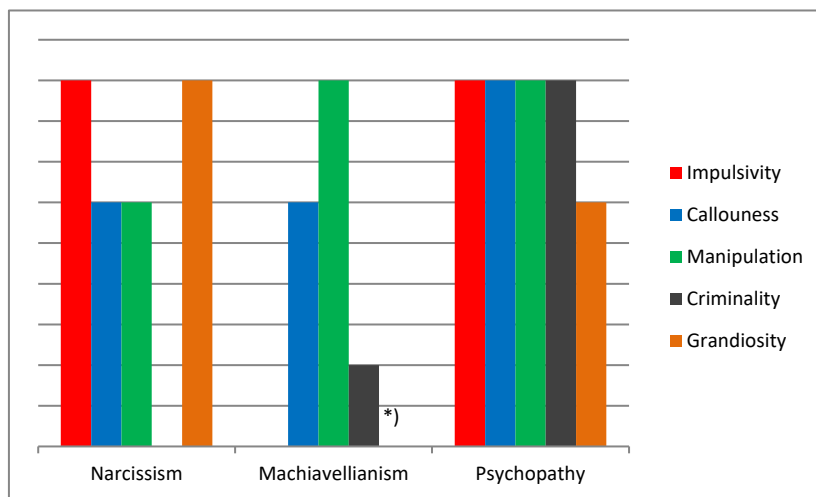
*) crime in Machiavellianism appears only under intellectual/financial form

According to the American Psychiatric Association, narcissistic personality disorder represents a pattern of need for admiration and a lack of empathy for others. A person with a narcissistic personality disorder may have a grandiose sense of self-importance, a sense of self-righteousness, taking advantage of others, or lacking empathy.[6]

Raskin and Hall (1979) developed the Narcissistic Personality Inventory (NPI), which is a subclinical version of the personality disorder defined by the American Psychiatric Association in the Diagnostic and Statistical Manual of Mental Disorders. At the conceptual level, the main issues included in the Inventory of Narcissistic Personality consist of grandiosity, entitlement, dominance and superiority (Paulhus and Williams, 2002). Back and his colleagues (2013) approached narcissism as having two sides – a "bright" side and a "dark" side. The "bright" side refers to narcissistic admiration and implies the pursuit of uniqueness, grandiose fantasies and charming behaviour. The "dark" side refers to narcissistic rivalry, characterized by pursuit of superiority, devaluation of others and aggressive behaviour. While narcissistic admiration gives the appearance of a self-confident, dominant and expressive person, narcissistic rivalry implies arrogant and belligerent behaviour. Leckelt, Küfner, Nestler and Back (2015) note that in the medium and long term, narcissistic rivalry leads to a sharp decline in popularity within social groups.

To some extent, all people have a dose of narcissism – most want for themselves what is best in life and, strictly from a psychological point of view, all our actions aim at an emotional reward. The distinction between narcissism and normal behaviour is done by the indifference to the harm done to others. As long as he reaches his goal, the narcissist will not care about the effects of his actions on others. This type of behaviour is increasingly common in modern society, based on the logic of survival of the fittest. This type of selfishness has become accepted by society, perhaps even desirable, especially in business or political circles. Today's world tells us, more or less directly, that in order to be successful you must have a high dose of selfishness.

According to Paulhus (2014), Machiavellians are masters of manipulation, pursuing long-term calculated social manipulation. As Hawley (2003) points out, Machiavellians are "coercive controllers", with an adaptive combination of pro and anti-social tactics to best achieve their goals for career success. Machiavellians are cynical, tactical, and believe that the secret to success in life is interpersonal manipulation (Furnham et al., 2013). They are tough and cold-blooded, and their main motivation is to obtain money, power and status (Furtner and Baldegger, 2016). Unlike the narcissist, the Machiavellian does not feel the need for admiration, unless that would be somehow useful in obtaining something else, such as more power or money. Thus, self-promotion and self-enlargement are not final goals per se for the Machiavellians, but rather means for achieving other goals.

Cleckley (1976), Hare (2003), Paulhus and Wiliams (2002) describe subclinical psychopathy as being characterized by impulsivity, the search for strong feelings, low empathy, hardship and interpersonal manipulation. Hare (2003) argues that psychopathy can be divided into two interrelated factors:
- Factor 1 with stunting and manipulation traits (primary psychopathy).
- Factor 2 with antisocial behavioural tendencies (secondary psychopathy).

Jones and Figueredo (2013) point out that secondary psychopathy differs greatly from narcissism and Machiavellianism. Thus, Jones and Paulhus (2011) demonstrated that psychopathy is related to dysfunctional impulsivity, while narcissism is associated with functional impulsivity. Psychopaths are unable to inhibit their antisocial impulses and

exhibit high risk-taking behaviour. Unlike narcissism, psychopathy and Machiavellianism show stronger positive relationships with self-reported violence (Pailing et al., 2014). Moreover, psychopathy is most strongly associated with bullying behaviours, followed by Machiavellianism and narcissism (Baughman et al., 2012).

Thus, of the three personalities of the Dark Triad, psychopathy seems to be the most socially aversive, partially dysfunctional and therefore "the darkest".

3. Recent Research in the Field of the Dark Triad

Research from the last decade (Book et al., 2015; Jonason, Li, Webster and Schmidt, 2009; Jones and Paulhus, 2011; Jones and Figueredo, 2013) has focused on analysing the idea that the Dark Triad's antisocial personalities would have a common core. Although there is overlap and a potential dark core, the features of the Dark Triad should be best viewed as separate domains. Indeed, newly developed inventories confirm the unique contributions of each feature to laboratory behaviours and real-world results (Paulhus, 2014).

Five-factor personality model – Big Five (Goldberg 1990) is currently the most widespread taxonomy for classifying personality traits. This model claims that the description of personality can be summarized in five first-order bipolar factors: Openness to experience (inventive/curious vs. consistent/cautious); Conscientiousness (efficient/organized vs. relaxed/careless); Extraversion (extrovert/energetic vs. solitary/reserved); Agreeableness (friendly/compassionate vs. defiant/detached) and Neuroticism (sensitive/anxious vs. confident/confident).

Within the five-factor personality model, low agreeableness is the strongest negative correlate of the Dark Triad (Furnham et al., 2013).

Another potential dark core common within the Triad might be the Sincerity-Humility from the HEXACO Personality Inventory of Ashton and Lee (2001). HEXACO practically involves the Big Five model to which the sixth factor was added. This sixth factor distinguishes between pro-social and anti-social behaviour and, therefore, may be more appropriate in the analysis of the Dark Triad. Lee and Ashton (2005) also showed that all three features of the Dark Triad are strongly negatively correlated with the Sincerity-Humility factor.

The Sincerity-Humility factor is described by the following:
- Facets: sincerity, fairness, avoidance of avarice, modesty
- Adjectives: sincere, honest, faithful, loyal, modest, who does not boast/versus/naughty, deceitful, greedy, pretentious, hypocritical, boastful, pompous.

4. Leadership Dark Triad Traits

Dominance and prestige are two strategies for evolving into social hierarchies. Dominance is the strategy by which people move forward using restraint, intimidation and power, while prestige implies advancement in the social degree by demonstrating a high level of valuable knowledge and skills and gaining the respect of others. (Maner, 2017)

Dominant leaders tend to show arrogance, superiority and vanity. They exceed the average in terms of aggressive, unpleasant and manipulative personality traits. These are leaders who achieve high scores in the features of the Dark Triad.

Maner (2017) argues that leaders who use domination as a strategy make great efforts to maintain their position of power, even to the detriment of the group. They are willing to coerce others through reward and punishment. Often, they view talented members as a threat to their position. Domination-oriented leaders might ostracize a talented group member and choose to work with an incompetent one. Maner recalls another study in which leaders isolated their subordinates and prevented them from making connections, as alliances between subordinates were viewed as potential threats.

Investigating the link between the Dark Triad personality traits and workplace manipulation techniques, Jonason, Slomski and Partyka (2012) found that subtle tactics were applied in the case of narcissism (e.g., complimenting and mimicking admiration), in the case of psychopathy, the tactics were harsher (constraint, threatening) and in Machiavellianism both variants were encountered. According to the study, Dark Triad personalities rather tend toward harsh tactics than subtle ones. In a recent research, Roeser and his colleagues (2016) analysed the extent to which the Dark Triad personalities use unethical behaviour (deception and lies). Thus, the research revealed that in the case of Machiavellianism the use of deception was confirmed, in the case of psychopathy – deception and impulsive lie, but in the case of narcissism it was not possible to detect unethical behaviour (accompanied by deception or lie). Thus, narcissism would seem to be the most adaptable social dimension of the Dark Triad (Rauthmann and Kolar, 2012, 2013).

Studying the link between professional interests and the Dark Triad, Jonason, Wee, Li and Jackson (2014) concluded that this can be useful for career inventories and talent management. Thus, it has been found that in general, dark personalities are interested and excel in certain types of careers:
- Psychopathy was correlated with realistic vocations;
- Narcissism was correlated with artistic and social vocations.
- Machiavellianism was correlated with the aversion to artistic and social vocations

Regarding the perception of the workplace, the Machiavellians and psychopaths perceived their jobs as competitive, while the narcissists perceived them as a source of prestige and autonomy. (Jonas et al., 2015).

Spurk, Keller and Hirschi, in a 2016 survey, analysed the correlation between the personality traits of the Dark Triad and the professional success of people at the beginning of their career. It has been found that narcissists and Machiavellians can be objectively successful. At the same time, the traits of the Dark Triad of leaders can specifically influence the professional success of subordinates. For example, Mathieu, Neumann, Hare and Babiak (2014) showed that psychopathic leaders have strongly negative effects on subordinate's well-being and job satisfaction, and Volmer, Koch, and Göritz (2016) demonstrated that narcissism has positive effects on the career of subordinates, both at the subjective level (career satisfaction) and at the objective level (salary increase and promotion). This study concluded that narcissistic leaders are actually trying to retain and reward their followers in order to satisfy their own need for admiration and appreciation.

5. The Impact of the Dark Triad on Corporations

5.1. The Psychopathic Corporate Leader

In organizations, the psychopath wants to become a kind of God of power and control over other people. He will prefer to work at the highest levels of the organization, allowing him to control the largest number of people. Psychopaths who are political leaders, managers and CEOs fall into this category. In the organizations in which they work, the possessors of personality traits with inclinations towards psychopathy seem, in general, to be intelligent, sincere, powerful, charming, wise and fun communicators. They have the ability to quickly assess what people want to hear and create stories that fit those expectations. They will manipulate people to work in their place, assume the merits for the work of others, and even share their work to be executed by less experienced team members who could not refuse them. They have little patience when dealing with others, empathize superficially, are unpredictable, untrustworthy and do not take responsibility if something goes wrong because of them. (Clarke, 2012)

According to a study conducted by Hurst and his colleagues (2019), psychopaths are favoured when they are led at the workplace by a person with the same traits in the Dark Triad and are more likely to thrive under abusive bosses, being more resistant to stress, including interpersonal abuse and needing less positive relationships than others.

Dutton (2012) argues that the most commonly employed psychopaths are: General Manager (CEO), Lawyer, Moderator (TV/radio), Sales Agent, Surgeon, Journalist, Police Officer, Cleric, Chief Chef or Public servant.

Regarding how psychopaths come to occupy leadership positions, Clarke (2012) states that they use the following steps:
- Entry – psychopaths use highly developed social skills and charm to be employed in organizations. At this stage, there is no evidence of psychopathic behaviour and, in the beginning period at work, they may be perceived as jumpy and even benevolent.
- Evaluation – psychopaths will measure the people around them according to their usefulness, and will choose those around them in two categories: Pion (who has some informal influence and will be easily manipulated) or Patron (who has formal power and will be used by the psychopath as a shield against attacks).
- Manipulation – the psychopath will create a scenario in which positive information about themselves will be interwoven with negative misinformation about others, a story in which the role of each will be well defined as part of a network of pawns and patrons they will manipulate to adhere to their plan.
- Confrontation – the psychopath will use techniques to destroy the image of those who stand in the way of them reaching their goal, and those around him will be cast as pawns or used as patrons.
- The Ascension – at this stage the psychopath will get rid of the patrons and all those who have supported his ascension, taking the power in his own hands.

Baibak (2007) and Clarke (2012) argue that, without wanting, corporations hire people with psychopathic traits because of the formulation of recruitment announcements and their desire to attract people who are ready to do anything to succeed in their careers. Thus, at

least in one case, a company explicitly asked for a sales manager with psychopathic tendencies. The title of the recruitment announcement was: "Psychopathic New Business Media Sales Executive Superstar! £50k - £110k"[7].

Corporate psychopaths are easily recruited by organizations, because they are noticeable and make a positive impression in interviews. They seem to be attentive, friendly and easy to understand and talk to. (Hammond, 2017). They seem to have many skills, are well-adjusted emotionally and reasonable, and these traits make them attractive to recruiters. Unlike narcissists, psychopaths are better able to create long-lasting favourable impressions, although people can eventually see what is behind the image they create (Babiak and O'Toole, 2012). Unwanted traits of psychopaths' personality can be easily interpreted in a positive way even by skilled interviewers. For example, their irresponsibility can be perceived as risk taking or entrepreneurial spirit. Their tendency to search for adrenaline can be transmitted as high energy and enthusiasm for work or work. Their superficial charm can be misinterpreted by interviewers as charisma (Babiak). It is worth noting that psychopaths are liars in general, so they are even more likely to lie in interviews. Thus, psychopaths can come up with CVs that will include fictitious jobs or invented diplomas, certifications or prizes.

Corporate psychopaths within organizations can be selected for rapid promotion because of their refined charm and the appearance of determined and cold-blooded people (Boddy, 2011). They are also helped by their skills of manipulation and intimidation. They create confusion around them by the "Divide and conquer" method using intimidation to achieve their goals (Shellenbarger, 2014).

Boddy (2011) suggests that the style of psychopathic corporate leaders of abusive supervision generates negative feelings from employees towards the company. This can lead to a high level of counterproductive behaviour, as employees will direct the anger towards the corporation on whose behalf the psychopathic leader is acting. At the same time, Boddy postulates that corporate psychopaths have contributed to the global financial crisis from 2007-2008. He argued in 2011 that the same corporate psychopaths who probably caused the greed and aversion crisis in 2007-2008 are the ones who then made recommendations to the US government on how to get out of the crisis.

5.2. The Narcissistic corporate leader

According to Alan Downs (1997), corporate narcissism occurs when a narcissist becomes the CEO (or other leadership role) and gathers an appropriate mix of co-dependents around him to support his narcissistic behaviour. Narcissists declare their loyalty to the company, but they are really only involved in their own plans. Thus, their decisions at the organizational level are based more on their own interests, than on the interests of the organization as a whole. As a result, a certain type of charismatic leader can lead a company to financial success on unhealthy principles (at least for a while). (Skynner and Cleese, 1994)

Neville Symington (1993) suggested that one of the ways to differentiate a good enough organization from the pathological one is its ability to exclude narcissistic leaders from key positions.

Crompton (2007) introduced the distinction between what he calls productive narcissists of non-productive narcissists. Maccoby (2003) drew attention to the fact that productive narcissists, however, tend to be overly sensitive to criticism, overly competitive, isolated and grandiose. He considered that what distinguishes them is that they show a sense of freedom to do whatever they want, rather than being constantly constrained by circumstances and through their charisma they are able to attract people to their vision and gather groups of disciples who will follow his dream.

Slosar (2009) questioned the positive aspects of narcissistic leadership, considering that the dramatic collapse of Wall Street and the financial system in 2009 should have been an alarm, given that the collapse was due to narcissistic leaders. It can certainly be concluded that, at best, there is a pretty fine line between narcissistic leaders who have destructive behaviour in the workplace and those who achieve scandalous success based on their dark features. (Crompton, 2007)

5.3 . The Machiavellian corporate leader

Machiavellianism involves the use of manipulative and deceptive behaviour to undermine others (Greenbaum et al., 2017).

Machiavellians do not show confidence in others (Dahling et al., 2009), prefer to adopt an authoritarian, even abusive, style of leadership (Kiazad et al., 2010) and centralize decision-making (Lewin and Stephens, 1994), which allows them to dominate and control others (McHoskey, 1999). These power games, lack of confidence in others and the need for control, lead to micromanagement and may damage the quality of relationships with top management and can generate destructive behaviour from top management towards subordinates.

People with Machiavellianism – specific personality traits may be more willing and able to lie in the recruitment interview, but they are less likely to give honest answers (Fletcher, 1990), compared to a psychopath or narcissist, and are more likely to consider that the lies in interviews are correct and justified (Lopez, 2004).

6 . Conclusions

Given their charismatic traits, desire to gain power and the need to lead or dominate others, people in the Dark Triad will always be attracted to leadership positions. Therefore, it can be assumed that most of the management positions are occupied by narcissists, Machiavellians or psychopaths.

Certainly the field of leadership research will develop and model a lot in the next period, given that the implications of the leaders of the Dark Triad on organizations have not been sufficiently studied. It will be necessary to develop models to measure employee traits in order for them to be screened before they reach leadership positions, in order to minimize the negative impact on subordinates and the corporation. At the same time, it is necessary to investigate the possibilities of tempering the features of the Dark Triad through couching and training of the leaders.

Notes

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(3) Mobbs, Anthony E. D. (2020). An atlas of personality, emotion and behaviour. PLOS ONE. 15 (1): e0227877.
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(5) Mobbs AED (2020) An atlas of personality, emotion and behaviour. PLoS ONE 15(1): e0227877. https://doi.org/10.1371/journal.pone.0227877
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Motivating the human resource leads to increased competitiveness in a private corporation

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Abstract. *Today's commercial companies to progress depend to a considerable extent on the efficiency with which they have the human, natural and financial resources available. People have always endeavored, as from every unit of labor, human resources or money to be spent, to ensure the greatest increase in the volume and quality of production, to obtain increased quantities of material goods and services. Corporate responsibility is not just about providing jobs to people, guiding them how to work, but also recording their performance, so managers need to do this. In addition to this, it is an investment for the company, because by the power of people to act efficiently and effectively, they add value. Currently, human resources are perceived and implicitly treated by more and more managers as essential to the activity of an organization. The quality of the personnel is materialized in the level of training, attitudes, value systems, beliefs, behaviors, etc. The staff is the only resource that has the capacity to increase its value with the passage of time, unlike all other resources, which are used if not physically, then morally.*

Keywords: competitiveness, motivation, human resource, corporation.

JEL Classification: M11, M12, M54.

The quality of the personnel is materialized in the level of training, attitudes, value systems, beliefs, behaviors, etc. The staff is the only resource that has the capacity to increase its value with the passage of time, unlike all other resources, which are exhausted if not physically, then morally. That is why a well-selected and recruited workforce in terms of quantity, quality and properly motivated, as well as its rational use, decisively leads to the achievement of the objectives set, as well as the economic-financial results. The motivation term is older in the specialty literature and has had various approaches, enjoying numerous studies. Its widespread use is due in part to ambiguous and attractive connotations, at the same time, which refer to the secret hope of entering into the intimate resorts of the conduct of others, of manipulating and modeling it. We cannot say that we have a unified theory of motivation, although over the years there has been much interest in the same problem. Motivation is one of the traditional problems of studying organizational behavior and for years it has aroused the interest of managers, researchers, but also sports coaches. In the works of organizational psychosociology, motivation is treated theoretically (they are not standalone works but only chapters integrated in the cited works). In today's organizations where competition is strong, motivation has become even more important. This is due to the need for high productivity, in the idea of becoming competitive on the market level on which the company operates.

Requests for flexibility and attention to consumers who require high levels of initiative are about to replace the stable systems of rules, regulations and procedures that once led the behavior. This initiative depends on motivation. To paraphrase Malraux we could say that tomorrow's venture will be motivated or not at all. Knowing how to capture the creative and productive energy of the people who make up the company is, in fact, the profound essence of the human resources management of the company. The basic problem of a manager, in this context, should be how he can influence the performance of the people who work in the company run by him. Concerns regarding behavior in/and towards the organization cannot be avoided by managers. Such problems arise as the organization attracts financial and physical resources, and develops. In order to operate these resources, human intervention is required. Katz and Kahn pointed out that organizations need three fundamental behaviors: people need to be attracted to the organization but also detained; people need to be good in the positions they have been hired and to work in a positive way; People must go beyond this positive role of performance and engage in creative, spontaneous and innovative behaviors at work. In other words, for an organization to be effective, it needs to master the motivational issues involved in participating in the decision making and in the decision to produce goods and services. Regarding the motivational strategies, these have been known for decades and represent aspects that sometimes the management tends to lose sight of or diminish their importance. These actions that only cost "creativity" can motivate the employee towards performance. What is found in the school of human relations, in 1959, is still valid today. Leaders who learned the names of subordinates, smiled at them, treated them "as if they were human beings" recorded "increased benefits". It is advisable, say the specialists, "that the actions of positive feedback and recognition be extended". The presentation of solutions regarding the motivation of the human resources that have an applicative character and the attempts of

generalization aim to print to the present work a useful character, a working tool for all who are related in their activity to the problem of the human resources management.

The nature of the people-organization relationship is influenced by motivating the employees and the satisfaction that derives from it. Managers achieve results through the efforts and performances of other people. The ability to motivate staff to work with pleasure and efficiency is an essential ingredient of successful management (Nica and Iftimescu, 2003, p. 285). If managers want to improve the work of the organization, they must pay attention to the motivation level of its members. Managers should encourage their staff in the direction of their efforts towards successfully achieving the goals and objectives of the organization. The desire of the staff to do their job well should be encouraged and supported by the opportunities for performance and the realization of their full potential. People need to have a sense of fulfillment and professional growth in a meaningful and intentional job. This way the staff will feel more motivated to work better. Motivation derives from fulfilling the needs and expectations of the individual. "Motivation is a process by which people choose from many possible variants of behavior, in order to achieve their personal goals." (Cole, 2000, p. 100)

For many employees, job satisfaction is directly related to their personal motivation or to the motivation they identify in friends, acquaintances, colleagues, subordinates, hierarchic superiors. Motivation is said to be a well-hidden "animal" that any organization would like to capture. The success of a team can be determined by the ability of a manager to identify the motivational factors for each team member and to respond appropriately to their expectations. Satisfaction derives from the congruence between the individual expectations of being rewarded (morally and/or materially) for a particular performance and the value of the reward, which must be directly proportional on a mutually accepted scale of values. One of the least exploited ways to increase productivity is to improve performance by motivating employees. The performance within the private company is when it contributes to the achievement of the proposed objectives, especially under the financial report. "Motivation should not be interpreted and analyzed as a goal in itself, but used in order to achieve a high performance, a higher level of achievement of the goal." (Vagu and Stegaroiu, 2007, pp. 92-97). What is of particular interest is the value of motivation and its propulsive efficiency. The level of performance depends on the perceived expectations regarding the expected effects and the desired result (Mullins, 2001, p. 237). For example, a dispatcher wants a higher status and be promoted to the head of the bus station. This desire will lead to a higher level of performance only if he believes in the opportunity for promotion. Here is a strong expectation, that a high performance will lead to promotion, and that promotion will result in a change of salary and a lifting of the status. Another direction of action with a view to improving the motivational relationship - the performance within the private company is represented by the relations with the employees. Relevant to work satisfaction are relationships with colleagues and relationships with the direct hierarchical boss. Human relations can be "easily and independently modified by the technological conditions of the work, depending on the general social conditions as well as the degree of culture and civilization of the community" (Tabachiu, 1997).

A third direction of action of the private environment in order to improve the motivation-performance relationship is the definition and redefinition: the objectives of the position, the tasks of the position, the competences of the position and the responsibility, as follows:

The objectives of the position are derived from the general objectives of the company and are, in fact, their transposition at the individual level. To fulfill these tasks, the occupant of the respective position has assigned tasks, competences and responsibilities. The objectives of the position justify the establishment and existence of the position in the company structure at a certain time. We emphasize the fact that all Tesa and auxiliary positions must be re-analyzed given the dynamics of the activities in the company, the increase in the number of employees and the decrease of the labor productivity per employee. Clear goals will be set for each position, after which certain positions may no longer be justified and may be eliminated. In the analysis of the position will be taken into account what is actually done at that position, the activities performed and not what should be done (so the position, as it is presented, not how it should be).

In conclusion, we can say that to work well, people need to be strongly involved in their work and eager to achieve certain goals, from the simplest (such as the desire to make money or get home faster), to the most complex and useful to the organization (to do important things, to find new efficient methods, to do what pleases them). Thus, a highly motivated employee submits a sustained activity at the workplace, and implicitly will have a high efficiency and a high productivity.

Conclusions

Following the analysis carried out within the private company, several conclusions can be drawn regarding the management of human resources, among which we list:

- In the human resources office there is no complete, clear and rigorous information regarding the evaluation of the employees' performances. Evaluation sheets non-differentiated by professions are used, where tasks and responsibilities are common, which causes some uncertainty in the evaluation. Due to the fact that the evaluation is done for a certain period of time (one year), without being able to intervene on it, negatively influences the motivation for work of the employee as well as the organizational climate and implicitly, the achievement of the objectives derived from the global strategy of the company. Frequently, sub-dimensioning or over-dimensioning may occur from the point of view of the need for personnel for various activities. Also, there is a lack of well-defined programs that allow taking into consideration performance criteria in the process of evaluating staff with management positions in within the organization. The evaluation of the activities carried out by the managers is particularly complex, as it involves aspects that can be difficult to quantify if, previously, the performance criteria have not been clearly specified. The lack of such an instrument can often cause problems and sometimes even conflicts between managers and executives, because, in most cases, the results of their last effort is a concrete one, expressed in quantity and in value. Through the performance criteria, a

reward can be provided for each employee, depending on the performance achieved in a given period.

- There are also no clearly defined criteria for the selection and recruitment of staff in positions and functions. The specificity of the position is given by the individual objectives, and the holder can achieve them if the recruitment and selection activities were considered clearly defined criteria, reflected in the specific requirements of the position. Failure to comply with this agreement has obvious effects on the performance of the execution activities and directly influences the achievement of the objectives set by the management.

- There is no system of differentiated motivation of the personnel involved in the technical, economical, computer, or execution field. This weakness points to the content of the above, emphasizing the lack of motivational tools for personnel who carry out execution activities. The contribution of these employees is more difficult to be determined, because the effects can be observed after a longer period of time. Neglecting these aspects in the process of differentiated motivation can lead to the loss of employees with great intellectual and professional potential, because they will no longer be stimulated to produce more value using the potential they have.

- Insufficient information is noticed for the managerial staff from the middle and lower levels regarding the perspective concerns of the company and with the policies in the field of human resources. There is no connection between managers on different hierarchical levels supported by communication. The information of the executive managers, if provided properly, would present an important database for substantiating personnel policies, and those transmitted by the top management, would represent the basic coordinates in the field of human resources for achieving the objectives of the global strategy.

- The personnel salary activity requires the appointment of a specialist in this field, who will base, implement and evaluate the employee payment policy. This weak point justifies, to some extent, the low productivity, human resources strategy and policies specific to the field. Also, ecology and environmental protection, become basic activities, in which the management of the company must be involved. The observance of the norms for maintaining the ecological balance in the county, but also in the other spaces in which it operates, as well as the protection of the environment, become conditions for the integration of the company in the European economic system. Under these conditions, it becomes obvious the employment of specialists in each of the mentioned fields.

- Insufficient correlation of the training and qualification of the personnel assigned to the Tesa and management positions with their general and specific requirements. Neglecting this correlation has direct negative influences on the quality of the activity and on the degree of achievement of the individual objectives defined at the job level. The economic substance of the company is realized in the operational places. That is why managers at this level need to be permanently prepared to perform. The economic efficiency of the organization increases if each executor knows very well what individual goals he or she has to achieve and whether the basic training or additional qualifications acquired through training programs support this continuous process.

- Existence of distortions and lack of continuity in the communication process between managers at the same hierarchical level and/or from different hierarchical levels. Within the company, due attention is not paid to the aspects of informal communication. The quality of the management process is given by the quality of the communication in the formal structure, but also in the informal one. This weak point is a result of the management system in the organization, practiced by the managers of the higher hierarchical levels in the relations with the others. Poor communication often causes employees to distort and/or filter the content of informational messages. The lack of communication in some cases creates syncope, discontinuity, sometimes decisively influencing the quality of the relationship between the employees from different hierarchical levels and the superior management of the company.

In order to make the activity more efficient and increase the productivity of the employees' work, I propose:
- Elaboration and implementation of a system of evaluation of the performances of the employees in differentiated professions and positions.
- Informing the employees about the principles for which the company payment system was designed, the performance evaluation criteria, the objectives needed to be achieved by each employee separately (concrete and measurable, without possibilities of interpretation, with a good horizon defined by time, realistic and achievable).
- Identification of the professional needs and possibilities of each employee of the company. Setting high goals and high standards motivates staff in achieving superior performance by imposing hard-to-reach goals. The staff must be held accountable for meeting the required standards. It is also important for each employee's career planning activity to be a coordinated process and not to be left to chance.
- Institutionalization of a direct interdependence between the accomplishment of the work task and the reward offered by the company, oriented towards satisfying the dominant needs of the employees (identified early on). It is known that good results are obtained from the positive feedback given to the employees and the encouragement for them to have additional motivations to perform. Involved in innovation and in finding new solutions, in the direct solution of some service tasks, they will have a positive attitude towards their own activity and organization.
- Designing, formalizing and implementing an efficient pay system within the company based on the stated direct interdependence.
- Feedback, meaning the permanent updating of the reward/payment system of the company by the management team.

Therefore, if the observations and proposals made will be taken into account, the organization will be able to be oriented towards the client and the provision of high quality services, as it will have valuable human resources. Thus the employees will fit in the organizational values, and thus the company is one step ahead of the competition in gaining new customers and markets.

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The new Public Management, a performance management for a sustainable enterprise

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Abstract. *The context of changing public organizations now is raising the issue of resource management. The more we think about "performance", targeting, allocating resources or measuring results, the more we seem to be moving away from the essential concerns of the public sphere. In conclusion, the dichotomy identified between respect for public service values and new issues in terms of results pushes decision makers to ask differently about the means, their allocation and the effects within the structures.*
The success, performance and competitiveness of any organization depend, to a large extent, on the content and quality of human resources management, because, as many experts in the field emphasize, the competitive advantage of an organization resides in its people.

Keywords: change, organization, new public management.

JEL Classification: P27, P47, M11.

The reform strategies of the local public administration aim to identify certain measures to ensure the modernization of the public administration in order to optimize the decision-making process, to improve the management of human resources, public finances, quality and public services by introducing and promoting quality management.

The reform strategy of the Public Administration 2016-2020 wants to extend the components from the internal mechanisms of the Government at central level to the local public administration, where the components need to be consolidated.

Within the strategy:
- the costs of the efficiency of the activity of the public administration will be correlated in order to obtain qualitative results;
- the power will be decentralized, meaning the clear definition of the relations within the central public administration, between central and local government, between public administration and the private sector;
- the activity is more focused on the citizen, more comprehensive and coordinated;
- contributes to the implementation of the Moldova-EU Association Agreement.

The term "innovation" is preferable to the classic term "administrative reform" because it is more neutral. Administrative reform involves the notion of improvement, which pushes us into the subjectivity of preferences: privatization or deregulation will be seen as an improvement or degradation from the judge's point of view. Margaret Thatcher from the United Kingdom and Ronald Reagan from the United States wanted to improve their respective administrations by dismantling the legacy of the past, which they considered suffocating.

The word innovation has another advantage because it focuses our attention on the phenomenon of diffusion of innovations. Indeed, the few administrative reforms are the result of pure inventions. By far, the largest number is actually emulations: we adopt or adapt an idea or technique from somewhere else. The success of an innovation in a similar context is reassuring for the administration that adopts it.

Considering the techniques studied on the political and cultural field, on the innovation process, we can elaborate a set of questions regarding each innovation studied:
1. In terms of technical rationality, is it quite accurate or does it distort the original model? Does it have expected effects or unexpected effects?
2. In terms of political rationality, are there winners and losers or does it have an impact on power relations? Do elected representatives find their interest, accept the divestment involved by the NMP, and are they able to control the administration of a posteriori and not a priori?
3. At the institutional level, what is the share of existing institutions in terms of adoption and progress of the reform, and what are the changes in the institutional relations introduced by the reform?
4. Does administrative law fit these innovations? What about the traditional values of the public service of equality, continuity and neutrality?

In evaluating the results obtained, two observations seem to be essential for us. On the one hand, administrative reforms rarely deliver on what they promised. However, long-term

studies indicate that they have significant cumulative effects. In the United States, March and Olsen concluded that even the failure of the presidential reform proposals had an educational effect that changed the attitude.[1] In France, Bezes observes for more than four decades a "sedimentation effect, each sequence having causal effects on the following and creating threshold effects".

In general, administrative innovations or reforms work best when introduced in a pragmatic and experimental manner. On the other hand, we are dealing with reforms that require changes not only in rules and behaviors, but also in beliefs and culture, and therefore profound changes. Then, there is a third rationality that is not always addressed in the specialized literature on public management or political rationality, which deals with the power relations both within the administrations and between them (elected, groups and citizens). Therefore, the state is positioned at the intersection of three types of rationality: political, legal and managerial.

Following the emergence of public management, the analysis of the literature presents its conceptual and programmatic content and identifies its effects at international, national and local level.

Indeed, studying performance within organizations means studying the diffusion of a concept and its instruments in a specific environment: the public sector. Public organizations have in the past become an alternative to private organizations because of different purposes. Over the past 30 years, performance has become the main promise of the public sector. The use of the same word by public and private organizations signals the weakening of their distinction.

The ambition of this research is to reveal the complex dynamics generated by this public/ private percussion. The literature review identifies the main results of current developments. On the one hand, the objectives and means proposed to public organizations to become more efficient are identified by analyzing the currents that make up the discipline of public management. On the other hand, the typical configurations that result from the implemented reforms are explained. Finally, it should be emphasized that national administrations and local authorities face a differentiated reform dynamic, presenting the characteristics of organizations, their role and effects on the management of local authorities. These analyzes and classifications provide important support both to operationalize the research problem and to prepare data collection.

Laufer and Burlaud, in their book "Public management: management and legitimacy" (1980), consider that the specificity of public management is to manage the tension between rationality and legitimacy. They place the appearance of public management in a long process of evolution of the legitimacy systems. According to the authors, "if the confusion between the public and private sectors seems so difficult to conceive, this distinction is based on the legitimacy of the principles of action that govern each of these universes. Therefore, it is not surprising that it is precisely around this concept of legitimacy, become problematic and they can articulate a coherent definition of the way of managing these ambiguous situations (Burlaud and Laufer, 1980, pp. 45-53).

Rouban (1996) showed that when users are asked about certain public services (education, transportation, etc.), the perception is much more positive than when they are asked about public services in general (Rouban, 1996, pp. 139-159). In the same perspective, the Public Services Barometer of the Paul Delouvrier Institute regularly shows that the average user satisfaction of public services is much higher (71%) than the French user (49%). This means that the evaluation is more positive for those who have been in contact with the service than for those who have not used it. In both cases, the real proximity to the service leads to greater satisfaction. This gap in the satisfaction between the general and the private, between the experience of the service and the image that it can have, suggests the stereotype character of such a perception.

This paradoxical observation also applies in the Anglo-Saxon countries, as Goodsell (1994) has shown that citizens have a negative attitude towards administration in general, but when studies focus on individuals, the negative tends to disappear. In addition, Hill (1992) has shown that positive (and therefore specific) evaluations have no influence on the negative image of the administration (Hill, 1992, pp. 112-114). An anti-bureaucratic ideology has gradually become dominant: "The anti-institutional sentiment has become commonplace". This representation does not form a coherent whole, but rather a fog of scattered arguments. Du Gay distinguishes three "bureaucratic" currents.

Popular conception: denounces the tendency of large organizations to apply abstract rules to particular cases. In this case, anti-bureaucratic sentiment is often based on unique experiences.

Taylorism or the Movement of Scientific Management has a unique place in the history of management science. Taylorism is indeed not only a theory, but also a founding act of managerial science and its dominant model. The founding act of Taylor's eminent goal was to overcome the political economy and the opposition of Marxist and Socialist liberals with regard to the sharing of wealth in favor of a scientific reflection on how to increase the general level of wealth, which would benefit both owners and workers and it would limit the tensions between them. Managerial thinking focused on how to create and maintain organized and sustainable collective action. As a result, management sciences could not be reduced to an applied sociology or economics. Taylorism is also the dominant model in management science, although an evolutionary perspective of organizational theory, believes that the movement of scientific management may be limited in the early twentieth century, to make room for other theoretical trends (Scott, 2001, pp. 218-221).

Taylorism invites us to pursue a more dialectical perspective of organizational theory. Thus, Bibard (2005: XI) states: "Management is more than ever captive in a contradiction inherent in its nature: it would be necessary for performance to be guaranteed and these operations take place in the midst of an increasingly chaotic world. The expression of this contradiction takes the form of an increasing tension between the practical reality with experience, the management imperatives that are registered sooner or later".

Taylor's fundamental contributions can be summarized from four general organizational principles (Plane, 2000, p. 11):

1) *Horizontal division of labor*: it leads to fragmentation of work, specialization of tasks and study of execution times to determine the best way of doing things.

2) *The vertical division of labor*: Its purpose is to distinguish with rigor the performances of the designers of the work. This principle encourages us to place the right person in the right place, the best person in the right place.

3) *A performance payment system*: This system based on workplace productivity bonuses aims to develop motivation in the workplace. Here, Taylorism joins neoliberalism as defined above. According to Plane, Taylor views workers as rational agents by consciously maximizing their monetary gains. According to Hood, "although unconsciously, Taylor took over the two Bentham principles of individualistic division of labor and rewarded the unit of work".

4) *A work control system*: Every gesture of the worker is tracked. This led to the establishment of heads in the factories responsible for carrying out this control activity.

In an informational society, the performance of organizations is constantly presented, deciphered, analyzed, and commented. This forces companies to weigh any information and to consider important measures in case of crisis communication.

In a difficult economic context, performance is at the center of the expectations of the stakeholders of the organization. Therefore, it should be clearly defined to agree on the purpose of reflection. It is not necessary to focus only on measuring or reducing the analysis to some related notions, such as objectives or the concept of efficiency, which is widely used in the literature.

The notion of performance has changed significantly with management theories. Therefore, we can ask ourselves what are the differences, but also the links between the main notions related to performance (goals, results, effectiveness, efficiency and means).

The complexity of the organizations led to the consideration of the various factors and the extension of the concepts studied in terms of performance. New approaches and analyzes have appeared, much more global, the massive integration of the human factor.

Conclusions

Performance is a key word, especially in the field of management, where we talk a lot about "performance management". It is even a notion that is increasingly found in public organizations, adopting indicators of the private sector in search of efficiency. Also, we often hear about productivity, while the notion is difficult to specify and refers to production, which excludes service companies or is closely linked to the knowledge-based economy. To better understand the concept of performance, it is about defining the framework and looking for a correct definition.

Therefore, performance could be defined as the ability to act according to very different optimization criteria, to obtain a result. But performance refers to both the result and the actions that made it possible.

Performance management includes processes, actions and means that could enable profitability. In a traditional approach, performance would be an outcome indicator, referring to the notion of return on invested capital. ROI (return on investment) is the best known indicator. This approach focuses on the result and returns to the allocation/retrieval of the required sequence.

Efficiency introduces the notion of optimization and represents the conformity of the achieved objective, while the effectiveness implies respecting the constraints of the resources, that is the negotiated ones. Achieving success involves both efficiency and effectiveness in a given situation. Because performance remains relative and context dependent, which will be effective in one situation, in another situation it may no longer be (revised goals, different context). A simple example is found in the sales forecast in the business unit, which is compared with the previous year's figures. It is sufficient to change the context (weather, external event) in order not to reach the result of the reference.

The notion of performance is relative to the definition of objectives and implies a rational coordination of the activities, in order to reach the implicit common goals. The pursuit of an objective is the very condition of the existence of an organization. In the 1950s, attempts were made to classify organizations according to their objectives, which led to a functional approach. Parsons sees the company as a living organism and differentiates the organizations according to the goals they pursue and the functions they fulfill.

The current system of management of human resources in the public sector is not a sufficient tool for the institutions to reach the objectives in the most efficient way, does not encourage the transparent recruitment and the efficient use of the state budget, because: the current number of staff positions within the ministries and their subordinate institutions is unfounded in calculating the real needs (an optimal number of public sector employees has not been established), without reviewing the functions and volumes of the ministries and subordinate institutions and of the unidentified factors that affect the volume of institutions. The maximum number of staff positions of civil servants or employees working under a labor contract and receiving a salary from the state, municipal budgets or public funds is determined by the last number of years and does not reflect the real need to fill the positions.

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Communication and performance evaluation in the use of human resources

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Abstract. *The key to success is given by the existence of an implicit and sincere communication because it represents both the essence of social behavior and relationships between people, as well as the fundamental of individual and pre-entrepreneurial success. At the same time, the organizational communication is a lever in the success of any management system by the fact that it is present in all the actions undertaken by the organization.*

The concept of communication is a globalized ideology, as many authors believe that we live in a society where people talk too much and understand each other too little. Communication thus becomes a way of linking some automatisms learned over time.

The notion of communication is closely related to that of information, these are two distinct but interdependent concepts. What differentiates them is the existence in the process of communicating feedback from the receiver, which makes the process an interactive one through which one human is in relation to another human.

Keywords: communication, organization, performance, human resource.

JEL Classification: O32, M12.

It is almost impossible to find a universally valid explanation of communication because, over time, each author has tried to outline an exact definition of this process from the perspective of personal opinions. Thus, this phenomenon is noted by a multitude of definitions that have emerged. These include the one suggested by François Gondrand: *"Communication is either a process by which information is transmitted by a sender to a receiver, or an interpersonal relationship by which two or more persons can understand each other."*

The concept of communication is a globalized ideology, as many authors believe that we live in a society where people talk too much and understand each other too little. Communication thus becomes a way of linking some automatisms learned over time.

1. The notion of communication is closely related to that of information, these are two distinct but interdependent concepts. What differentiates them is the existence in the process of communicating feedback from the receiver, which makes the process an interactive one through which one human is in relation to another human. (Lamarzelle, 2014, pp. 10-54)

In an organization, communication is a point of support in achieving common goals while also having a crucial role in the existence, preservation and development of interpersonal relationships. Therefore, the group activities become impossible to carry out without the existence of communication and regardless of the area in which the organization operates, the communication process is included in all the activities carried out. Thus, the authors encountered obstacles in the conceptual delimitation of the organizational communication process and in determining its role in an organization. Therefore, 5 roles associated with this process were identified and unanimously accepted:

- management functions, without communication, lose their operational characteristics because any strategic process is based on the transmission of messages. Thus, communication becomes essential for achieving organizational success while at the same time being the manager's highest responsibility;
- through communication, the personal relations within the group are created and maintained, which have as purpose the transmission of messages for the achievement of correct self-evaluations in relation to the managerial requirements and the organizational culture;
- the feedback helps to correct the personal and general results of the institution;
- the communication process is located at the base of the motivation process. Thus, the correct identification, use and knowledge of the various categories of needs and incentives lead to the achievement of wage performance;
- communication helps to create and maintain sincere and efficient relationships both with the external environment and within the organization between managers and staff at lower hierarchical levels and/or between staff at the same hierarchical level. (Marinescu et al., 2003).

Internal communication includes all the communication documents concluded within an organization, the means of use being different from one institution to another. From the formal point of view, the internal communication includes the managerial communication that implies the presence of the manager within the communication process. From an

informal point of view, the internal communication is associated with the communication at the personnel level, more precisely between the employees located at the same hierarchical level or in different departments. (Balanica, Comunicare în afaceri)

The main roles of internal communication are:
- To present different financial results and to inform the basis of the decisions.
- To transmit different information and to clarify the duties.
- To explain new projects, ideas.
- To motivate collaboration and involvement in achieving the objectives.

Internal communication allows the implementation of an organizational spirit and motivates people. This, along with external communication, helps to form and maintain the positive image of the organization. The experience of the prestigious organizations shows that success is given by motivating and informing the employee so that he becomes able to respond to the challenges and to spread the success.

The company's performance is the result of the performance of the employees. Performance evaluation also bears the name evaluation of results, being defined, in a broader sense, as *"an action or a certain type of cognitive activity by which an evaluator assesses or estimates a person's performance against established performance standards, as well as with its mental representation, with its own system of values or with its own conception regarding the obtained performance".*

Performance evaluation is the most important activity of the human resources management being at the same time the process by which the efficiency of the personnel of an organization is determined in relation to the objectives and the established standards. Thus, the evaluation becomes a control management in order to fulfill the organizational objectives.

The evaluation activity carried out with too high a frequency can create a negative effect on the company because through permanent verification, the employees will feel lack of confidence. Thus, it is recommended that the frequent evaluation activities be replaced by communication.

By evaluation:
- The progress of the obtained performance and its improvement areas are established.
- There is a measurement of the degree of fulfillment of the expectations of performance, but also of the competences or behaviors that determined their achievement.
- There is a dialogue between the employee and his supervisor, and in case of divergent views regarding the final qualifications, the decision belongs to the superior.

2. In the field of human resources activity, management practice demonstrates that performance evaluation is important both in the recruitment and selection of personnel, as well as in the decisions of remuneration, advancement and dismissal of employees. Thus, within the organizations, two systems of performance evaluation were born: formal evaluation and informal evaluation. (Gondrand, 1981)

In the relationship between motivation and performance, the latter is influenced by motivation being a result produced by it. In the motivation-performance circuit, over-motivation or sub-motivation actions can occur that create damage in the performance

plane. Thus, the motivational optimum must be determined, that is the critical point in which the diminution of the results is recorded. According to Bellanger's research on motivational optimality in 1981, there is a triangle of motivation. In the three peaks there is self-confidence, legitimacy and identification. When there is a balance among the three, the optimal motivational is formed.

3. Evaluation is both an essential managerial act in that the manager officially appreciates the results obtained throughout the year and identifies the potential resources that can contribute to the improvement of the performances, as well as a means of communication that concentrates the feedback on the results and the way in which were obtained. Also, through this process, the employee and the manager have the opportunity to improve their communication relationship being about evaluating and being evaluated as objectively as possible, based on the facts, results and behaviors found, which lead to the creation of difficulties in exercise because it is essential to differentiate between facts, opinions and feelings. (Lefter et al., 2012).

Within a private company, the evaluation process determines both the level of responsibility of the job and the working environment, as well as the operational and development objectives of the behavioral components. Thus, in accordance with the values of the organization, behavioral competences were born such as:

- **Orientation towards the result** that takes into account the behaviors that allow the objectives to be set and put into practice managing the associated risks.
- **Customer orientation** that refers both to listening and understanding his needs and to adopting an appropriate reaction.
- **Human development** that refers to the identification and implementation of the professional development axes of each employee.
- **Cooperation** that promotes the recognition of personal contribution to the collective effort.
- **The management of the team** that aims at both the organization and management of the team, as well as the character of the manager towards the employees and their responsibilities.

From the point of view of both the employee and the manager, the evaluation has three moments, namely:

- **Preparation of the evaluation process** which implies that the manager is informed about the most suitable evaluation techniques for the group of employees that he leads. Also, at this stage the manager assists his subordinate employees to prepare for the evaluation process.
- **During the evaluation meeting**, the objectives set at the beginning of the year are recapitulated, the degree of achievement is analyzed, the strengths discussed, the involvement of the employee and the areas that need improvement are identified and the actions for developing the technical and behavioral competences are identified. The meeting ends by expressing professional aspirations from the employee and the manager explaining the future stages.
- **After evaluation**, the levels of appreciation that must be impartial and transparent are established. Also, rewards are awarded for the performances obtained.

4. Ensuring a competitive base salary at the market level is the basis of a compensation and benefits policy of a responsible employer. Within the analyzed company, this is one of the priorities, besides respecting all the legal forms related to it and the payment of all the social contractures that give the employees the security of a long-term income. Thus, the gross basic salary remunerates the employee for the proper performance of the duties of the function in terms of competencies. Also, the basic salary evolves by compensating for taking on new responsibilities or using new skills. (Mulgan and Albury, 2003).

Within the company, the performance reward is achieved by granting monthly bonuses and annual bonuses, which represent the variable part of the remuneration that rewards the outstanding performances of the employees both from the point of view of the individual results and those of the team. In conclusion, the salary is considered fair and motivating only if it is granted according to the work submitted and at a level comparable to the one in the field in which the company operates.

Conclusions

Throughout the entire scientific communication it can be observed that the basis of the activities undertaken by a company is the existence of an effective organizational communication as a means of concentrating and associating the efforts because it is formed within all hierarchical levels. We also concluded that man is a vital and inexhaustible resource for the contemporary world and for this reason the training, evaluation and remuneration of the employees are decisive elements in determining the profitability of a business that lead at the same time and to an efficient use of the labor force.

The performance assessment process is cumbersome and controversial, but nonetheless an absolute must for an organization. Therefore, for it to be as relevant as possible and its results to be correctly interpreted, it is necessary both to use innovative techniques of assessment, and to use rationality and common sense in setting the principles of appreciation of performance levels and of the procedures used.

In conclusion, the benefits of the evaluation process can only be used to their true potential if its results are properly handled. Thus, there come up some ideas in order to improve the way of the evaluation meeting. These include:
- The idea that in carrying out the evaluation process, for the manager, it counts both the competencies that led to obtaining the respective results within the team, as well as the way in which those results were obtained.
- According to another principle, for an assessor it must count only the degree of fulfillment by the employee of the contractual obligations specific to the position. It does not favor the subjective evaluation based on the manager's opinion from the point of view of the work style specific to each employee.
- A final idea suggests that both the benefits of evaluation need to be accepted and understood by both sides of the process, and that this leads to increased productivity within the company by improving employees' skills.

In conclusion, the practice demonstrates that the basis of the competitiveness of an organization is the efficient management of human capital. Therefore, the success of a company lies in the individual performances that lead to a general victory. Thus, performance at the employee level is dependent on both stimulation, improvement and implementation of tasks.

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Communication, a vector for increasing the performance of the manager in sports activities

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Abstract. *This term called "communication" is actually an essential component of life. In order to be able to achieve our goals, we must understand the basic elements of communication as accurately as possible. Drawing a parallel with other sciences, the way of communicating can be compared with the exchange of particles from one part of space, to another part of space, taking different forms as: object, written message or idea. If we were to frame communication within an exact science, its formula would be composed of several factors: cause + distance + effect + intention + attention + reproduction + understanding. The relationship between communication and management is stable. The functioning of business strategies is closely linked to their usefulness and implementation mode.*

Keywords: communication, management, performance, sporting activity.

JEL Classification: O32, M11.

Tom Duncan and Sandra E. Moriarty developed a three-point communication model, as follows: message - stakeholders - interactivity. The model is based on building relationships through marketing communication and captures the interactivity between the sources of message transmission within an organization and its various stakeholders (Duncan and Moriarty, 1998, pp. 1-13).

Modern optics say that "the process of communication is a dialogue between the company and its customers, which takes place during the stages of preparation of the sale (pre-sale), consumption and post-consumption" (Kotler, 2003, p. 806). The communication model proposed by Philip Kotler highlights the factors that contribute to the effectiveness of a communication process. First, broadcasters need to encode their messages based on the target audience they are targeting and how they should be decoded. Secondly, the transmitters must select those effective means of communication, by which the transmitted message reaches the receiver, so that the organization receives a response from it, in order to change, in a favourable way, the purchasing and consumption behaviour (Kotler, 2003, p. 806).

The concept of communion has been addressed over time from multiple perspectives. The universe of communion has been sought by linguists, anthropologists, psychologists and psychiatrists, philosophers, sculptors, engineers, scientists, and has determined the most specific definition of the communication.

In a corporation it is the main factor that should be based, because it has a specific role in the development and development of the business in a company.

Communication between o people or groups of people means an exchange of meanings and signals that can be circulated from one to another through messages, through different language forms.

To communicate means to send and receive messages, to send stimuli and to listen to responses. Once sent and received, the message becomes overwhelming, since it will belong to both the one who sent it, and the one who received it. "Ammunition causes the interlocutor to feel, to think, or to share in a certain way" (Moarcăş, 1999, p. 8.). *"Ammunition is a prose by chance, both in the animal world and in human societies, transmitted from a receptacle to a receptacle. Information through some signals or signal systems it is involved in the interaction and has certain effects, producing changes"* (Moarcăş, 1999, p. 8.)

Today, concerns about the analysis of communion have highlighted the simplicity of it. But for the usual communication, it means essentially transmitting information, mostly using the word, to the specialists in the sciences of community, it has acquired different meanings. Regardless of the significance attached to the term, all gravitates around information and interest management. You have two terms that define the content of communion. The assets, the sects, the meanings of it are often different, depending on the others involved in the exchange of messages.

A first feature of communication is permanence and continuity. The communication is done by codes of symbolic and conventional character, being carried out in complex systems and

languages, through gestures, attitudinal behaviors, etc. For the formation of an individual system, the code must be memorized by each person through an active assimilation and selection process, leading to the retention of what is essential, so that the communication process has a common basis for all interlocutors. The messages gain communication value as long as each partner uses and shares the same common code, finally the messages can be coded and interpreted correctly.

Adaptability is another feature and functions as a communication requirement involving reciprocity in attitude, whereby the transmitter is influenced by the receiver, in turn, the receiver being forced to adapt to the broadcasts. In the communication process each participant can transmit what he wants, when he wants and in his own and original way, thus another characteristic of the communication appears, namely the intentionality.

The message is transmitted by the sender to a person (receiver). The transmitter acts in such a way that its objectives are reached when the receiver also has that information. Therefore, the mode of connection between the transmitter and the receiver is the equalization of the information, being a means of satisfying certain needs.

Management as a definition can be framed: "Communication management represents a holistic approach to meeting the communication needs of a company with internal and external intermediaries and target groups. Target groups and intermediaries are intra-dependent on each other and interdependent with each other.

From the point of view of this definition, communication management is a part of general or strategic management. There are three important terms used as concepts in business management: communication management as a function of strategic management, organizational communication as a function of operational management and organizational marketing as a process within strategic and/or operational management. There are certain observations regarding communication management and its strategic approach. It can be said that communication management was not regarded as a discipline, most aspects being found in areas such as marketing (advertising, advertising, promotion), human resources (communication with and between employees), or finance (relationships with or between investors). This type of management was not taken into account through the approaches and processes of planning and strategic control. There were strategic departments dealing with these aspects of communication, inter-relationships being rare.

The role of the press department in its quality as a broadcaster intervenes when the strategy is finalized.

Independent communication management can be achieved through (Abord de Chatillon and Richard, 2015, pp. 53-71):
▪ Extending communication problems through globalization trends; a good example are companies that have problems at global level, such as relationships with investors or employees, which need to be solved;

Target Group Fragmentation: All sectors or areas of activity are influenced by fragmented groups, such as adjusting the political communication exercised by non-governmental organizations (NGOs) or organizational communication;

- The emergence of a new electronic mode of communication and the transformation of the classical communication channels, which exclusively concern the formal part of the communication.

The functions of communication have a special significance in the knowledge of communication, these in fact underlining its role closely related to the environment and the types of communication, which by the numerous classification take into account its vital importance.

The communication sphere can also define management:
- "Communication management represents a holistic approach to meeting the communication needs of a company with internal and external intermediaries and target groups. Target groups and intermediaries are interdependent and interdependent with each other."

If we refer to managerial communication we can bring up several issues related to the communication activity within the company, a very important factor, in terms of stimulation in the productive activity.

There are types of communication with scientific connotation and impotence 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 goals.

The most important factor, having the greatest influence on management, is communication. Without this feature management cannot operate in any field.

Due to the development of management, communication has acquired new forms, corresponding to management, forming the concept of managerial communication. Also, any experienced manager must address a certain type of effective communication in the management process. A good example of the relationship between management and communication would be the interaction of the manager of an organization, both with the internal environment and with the external one. When we say the external environment we refer to collaborators, clients or possible negotiations that they may have with them.

Therefore, both at the managerial level and internally, the communication has a positive and effective influence on the way in which the organization carries out its activity, the managerial communication being used to a large extent by the individuals who work in the managerial department.

The efficiency of the instructor-student communication in sports activities can be realized in two specific ways (Mitchell, 1982, pp. 80-82):
1. By understanding the importance of moving from the direction/style of communication training, effective for physical, sports coaching, to a leadership/collaboration style, which is most effective for supporting the well-being of the learner.
2. Identifying ways to eradicate words, expressions, language, which are unfair, offensive, disrespectful to learners - because it is neither effective for enhancing sports performance nor for developing their well-being.

Sport is an activity in which communication is ubiquitous, influential, complex and is performed not only by participants such as instructors/coaches, sportsmen, but also by spectators at sporting events. Amateur and professional sports organizations, sports management bodies and fan clubs occupy an important place in the sports community. Based on the studies in the field of communication in sports activities, one can highlight the multitude of ways in which communication informs and models the experience of sports management.

Although the actual performance of the sport is a communication of the physical activity in the sport, it influences both the physical performance of the athletes and the social construction of the sports experience. Whether it's coaches who train athletes, viewers watching a game through the media, or a sports organization running a public campaign to develop support for a local sports franchise, communication is critical to the sport's experience. For this reason, the sports community is a rich place for communicative exploration and is a community that is, in fact, co-created and sustained in communication. Through communication, participants (for example, coaches, sportsmen, trainers, and referees), spectators (for example, at current sporting events and through mediated channels), sports organizations (for example, professional and amateur sports franchises, etc.) and sports environments are interconnected (Gavrilă and Lefter, 2004, p. 201).

The sports community is an ideal place for exploring communication. This chapter aims to identify and organize communication practices within the sports community. Accordingly, we analyse the relevant literature for sports communication, namely (Roussel, 2000, p. 20):
a) literature in the field of communication studies;
b) the literature of the researchers in communication, but published in the journals of another discipline;
c) literature published by researchers in other disciplines (e.g. sports psychology, sport sociology, marketing).

This review of the literature will facilitate subsequent efforts to recognize and conceptualize the communicative character of sport and will foster the development of communication and sport as a viable study context in the field of communication studies.

In sports, the word is used by instructors and trainees in different situations, with special intentions and methods of approach (Thill and Vallerand, 1993, p. 89):
a) The forms of communication, which are modes of communication, such as writing or drawing, are distinct and separate, each having its own messaging system. So, when signs are marked on paper according to certain rules (grammar and spelling), words and "forms" are created in writing.
b) The communication medium is a means of communication that combines many forms. The environment can be used as a vector, for example, a book is a medium that uses forms of communication, images and drawings.
c) Mass media are mass media, such as radio, television, magazines etc.

In all sports, non-verbal communication exists and is specific to each individual, as it results from codes, signs, drawings, etc. established between athletes. However, it can be stated that there are no "pre-established laws" as in verbal communication.

A frowning face of the trainer indicates disapproval and has a powerful effect on the athletes. A sign of positive learner approval at the right time can provide the extra energy needed to win a contest, even when at a critical time.

The student's knowledge and understanding of the technical terms can greatly facilitate the instructor's work. An adequate awareness of one's own training and especially of one's body combined with the desire to win can greatly facilitate communication between learner and instructor.

The attitude of the athletes can be "read" in positions and facial expressions (gaze in space: indifference, disinterest or boredom; raised eyebrows indicate mistrust, listening with a bowed head shows interest, an explanation with open palms indicates sincerity and so on).

In sports, for developing non-verbal communication skills, we can use rhythmic themes, gymnastic elements, dance elements, mimicry and pantomime.

Conclusions

1. Good communication can increase the performance of a sportsman or a team, being one of the main elements of the performance; Good communication with the instructor makes the road to high performance easier and more enjoyable.
2. The art of communication is not a natural process or an ability with which we were born; we learn to communicate, so we have to study what we are learning, so that we can use our knowledge more effectively.
3. Any communication involves the creation and exchange of meanings; these meanings are represented by "signs" and "codes". It seems that people have a real need to "read" the meaning of all human actions.
4. Observing and understanding this process can make us more aware of what happens when we communicate.

In this chapter we analysed the selective and illustrative literature that examines the communicative activities of the sports activity. Bringing this literature together in a coherent statement reveals the significant and intimate connection that exists between communication and sports, and highlights the potential of exploring the intersection of the two. We inspected several lines of research, coming from different sources and from different disciplines, to integrate the existing knowledge about communication and sports. To understand this body of work, we chose to discuss four interdependent communication activities: adoption, recreation, consumption and organization of sport.

The sports community is a dynamic, intentional and influential community that deserves the attention of the students. Theoretical research on communication in sports activities has the potential to complement the existing knowledge, recognizing the subtleties and nuances through which the exchange of messages, daily talk, narration, rhetorical texts and the like give meaning to the experience of the sport. As a new and expanded field for communication studies, there are many plans available for exploration. The panel that offers considerable perspectives for the application of our theories, as well as significant opportunities to address the socially significant issues embedded within the sports community.

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East-West economic convergence and international economic funding in the European Union as of 2020

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Abstract. *In the context of former socialist bloc countries such as Poland and the Baltic tigers' rapid economic development, we can address the question of whether some former Eastern Block countries will manage to achieve full economic convergence in the next 15-20 years with the European Union average or even surpass it in some fields. Indeed, despite lags in industry and infrastructure, the Eastern Block has made significant advances in education, technology and employee preparation for technology intensive jobs, with another notable example in this field being Finland. More broadly viewing the problem in terms of winners and losers of European convergence and European funding as well as further integration needed as a consequence of Brexit, this article aims to explore how the European Union might look in the future in terms of economic specialization regional clusters of education, development drivers and economic wealth creation in a more highly technologized world.*

Keywords: discrepancies, European Union funding, regional development, economic interdependence, industry, high-tech.

JEL Classification: N90, N94, O10.

1. Introduction

2019 has been the year which marked an important psychological landmark in the collective memory of the people of Central and Eastern Europe, with 30 years having passed since the 1989 collapse of the Eastern Block. As a new decade opens up with 2020, which promises to be a decade about more high level technology, more environmentally friendly energy, expanses in Internet speed and connectivity with 5G and evolving health standards; but also new questions about international trade, integration in the global economy and potentially new trade reorganization; the European Union can address a very fundamental question: that being of economic convergence.

This question is of high relevance in the current context of a historical leaving of the EU by an important member in terms of contribution, population, technology, finance, culture, hard and soft power. Indeed, since the United Kingdom has renounced its membership of the European political and economic group earlier this year, the European Union must work to coalesce the remaining members into a more important global trade position, better track to innovation as well as more integration of people and businesses and a higher level of convergence.

2. Background

Historically speaking, since the 1990s to the turn of the century in 2000, the Eastern and Central Europe have seen economic reductions, in some cases such as Romania and Hungary, even in double digits, while Western Europe continued to grow economically, technologically, culturally, in terms of population and soft and hard power. The early 2000's saw a steady increase in the economies of Eastern and Central Europe, with Poland being the first country to revitalize itself economically, early in 2004 (Andor, 2019).

In the meantime, Western Europe was growing constantly year by year and very quickly especially in countries such as Germany, France, the United Kingdom and the Nordic countries. While free speech, freedom of the press as well as small businesses were beginning to emerge again in Central and Eastern Europe, the West was seeing the ascension of it's corporate giants conquer new markets in the Americas, Asia, Africa and also to a certain extent, Eastern Europe. While a new class of small entrepreneurs and more educated, skilled workers was emerging in Central and Eastern Europe, the West saw a rise in its high net individuals, innovations in finance and the development and diversification of the management class.

2007, the first year of the crisis surprised a world in the beliefs and expectation of constant and optimistic growth for the next decades. While all the Western economies were growing, the Central and Eastern European countries were seeing unprecedented, even double digit GDP growth rates for their economies followed by rampant housing speculation and the emergence of new stock markets and the development of the already established ones. The financial crisis, repeating again an experience of deep, double digit contraction, again for the Central European Economies, similarly but for a shorter time span than the 1989 regime

crisis, now paved the way for more cautious presumptions, investments in safer industries such as banking, less riskier jobs and government policies.

The period of 2014-2017 marked for Romania, Poland and to a lesser extent Bulgaria and other countries in the Central and Eastern Group a new hope for higher prosperity, with booming outsourcing in services sector firms from the West, re-emerging growth accelerating growth rates in GDP and salaries, and with them also increases in the capital markets and investment diversification.

The same period saw a reversal in Western European attitudes, with the gaining of momentum of nationalist parties, Eurosceptic parties and widely accepted Eurosceptic sentiments in the context of low growth, stagnating salaries for a large portion of the native population and wider social divisions between immigrants and natives as well as different economic classes.

3. Effects

Migration from East to West has been beneficial to some extent to both of the regions, the net beneficiaries of this having been the West. Although remittances from migrant workers to the West have reached levels as high as 3 % of GDP for countries such as Romania and Lithuania, the long term effect of youth migration cannot be sustained economically for the countries in the East. Also this period has marked record percentages of work force migration, with more than 5% of the workforce in Poland working across its borders and similar records of 10% being passed in the cases of Romania and Lithuania (Andor, 2019).

Migration has also meant that a large number of professionals have returned with more experience and skills, however, these are mostly concentrated in low paying jobs, the effect of the brain drain caused by the migration of the most educated and most skilled at the moment not showing any way of replacement.

Another important economic question to ask is in terms of sectorial specialization. Having that in the European Union, agricultural production is dominated by the West, as well as most of retail producing industries and economically strategic sectors such as banking for both East and West being controlled by the West, an important question arises regarding the direction of where the East should specialize.

Indeed, there are some local agricultural products dependent on certain climate such as apple and wine production, which have continued to increase in the East as well as some industrial sectors especially in metal extraction. From the point of view of services, the East is both the home of low cost offsourcing corporate employment for the best as well as the home of some high tech clusters such as programming and Internet technology services in countries such as Romania and the Baltics. However, many of the funds from these jobs are spent in the purchase of Western agricultural and industrial products as well as in the Western financial institutions such as banks and stock markets, which leaves the East vulnerable to currency shocks as well as not being able to save and invest consistently both from Government and private investors.

The most important concern however might be in regards to global specialization. If the world continues it's tendency of international clusters of trade specialization being dominated by a few power groups such as the US, the Commonwealth, East Asia and the European Union, then what form of diversification and unique specialization Central and Eastern Europe can bring to this equation remains uncertain.

4. Fields of optimism

Following years of positive economic growth as well as net salary growth in the East, with more development in terms of better infrastructure, medicine, services, retail and education, one can remain positive about the future prospects of Central and Eastern Europe, however, convergence still remains an unattainable prospect due to brain drain, high demographic changes from East to West as well as the prospect of Central and Eastern Europe economies remaining fringe satellites of economic activity gravitating around economic powerhubs in the West such as Germany and France.

As far as predictions for the future can be made, the European Union might look more insular with regional economic hubs formed by large cities and their surroundings forming nodes connecting surrounding places of lesser economic activity. In terms of demographics, more educated classes of workers are emerging from the East both from migration to more developed countries as well as long term innovation back home and the ability to focus on less people albeit with fewer staff.

5. Social convergence

In parallel with addressing economic convergence, we can also address social convergence (Eurofund, 2020). Despite unprecedented European, regional and global openness to migration, important areas such as religion, culture, politics, culture and representation need to be covered. As seen in the past with the European enlargement of 2007, in spite of economic growth, tensions were created between cultures trying to integrate as well as social systems, norms and identities being put under pressure. Indeed, the current context has seen nationalism and xenophobia rise and for the future the West must not only adapt to Eastern European Migrants but even more so to African and more recently rising number of Asians.

This economic mixture can have great impacts for economic, intellectual and technological progress and global cooperation but care must be taken with lagging social structures and symbols which greatly postdate the economic expansion.

6. The possibility of Eastern Members outranking the West

It is probable that in the following decade we can hope to see some of the Eastern members of the European Union outranking their Western counterparts, at least in some areas. Poland has seen unprecedented economic growth as well as levels of investment. The Baltic

countries, especially Latvia have become a beacon of innovation. Romania is quickly gaining ground with it's programming and Internet and Technology sector as well as improving on its great Internet access and paving the way to 5 G. At the same time, Bulgaria is becoming a growing beacon of tourism and efficient shipping and transportation.

Strategically all these sectors can be strategic for the European Union and comparative advantages can be harvested for the general economic wellbeing, stability and growth of the European Union both in terms of intercommunity markets as well as global competitiveness.

7. Conclusion

In spite of real wage and national economic convergence still seeming improbable in the following decades between East and West, a number of strategic advantages from the East will outrank the West and the European Union as a whole should further try to utilize to greater potential these areas of strategic comparative advantages in emerging markets.

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Customer behavior towards mobile banking

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Abstract. *One of the remarkable emerging technologies worldwide that are successfully adopted by banks is Mobile banking. The following study is an examination about this phenomenon and its adoption for users and non-users in an attempt to nourish the positive intentions behind the mobile banking usage.*
The study covers the interest of customers in mobile banking, considering the acceptance of such technology and its effect on them. A detailed survey has been used over 120 people through a questionnaire, rich data has been collected and analyzed using statistical techniques: T-Test and open-ended questions interviews.
We can conclude that specific criteria are mandatory to maintain customer trust in the application. Criterion such as the ease of use, innovative services and security, usefulness and word of mouth. This result will give the firms an enlighten on what factors to focus on.

Keywords: Mobile banking, adoption, security, usefulness, ease of use, satisfaction, consumer behavior.

JEL Classification: D1, G2.

Introduction

With the rapid improvement in technology, banks were forced to compete in offering their customers the best technological options while being innovative to maintain customers' trust and create value. And since customers' hands on technology are reflected nowadays mainly in the use of mobile devices, banks were able to offer customers multiple electronic channels that help in completing most daily transactions at ease through mobile banking applications, thus allowing them to view their account statement, transfer money between different accounts, pay their bills and other services such as contacting their bank clerks life through their mobile phones (Chung and Kwon, 2009). Apart from becoming part of our daily life and a tool to connect with the rest of the world, mobile devices has been innovatively developed in the banking sector to bring lots of benefits to customers. Mobile banking is quick, convenient and time efficient. It provides 24 hours services, location free access, time saving, easiness-to-use and much more. Mobile banking has made Lebanese customers' life easier in conducting financial transaction anytime and anywhere, using their mobile phones without the need to visit traditional branches, get jammed in traffic, or miss work hours. Such service quality show banks' goodwill and establishes a long term relationship with customers. It is also the responsibility of the bank to provide secure and confidential transactions (Mattila, 1970). Another useful approach is to get intimate with customers and understand their behavior, values, concerns, and orientations in order to provide them with a better and convenient applications. Mobile phones are greatly affecting the behavior of customers through communication, information gathering, and engagement, in addition to monitoring their behavior.

Overview of the sector/domain/organization

The banking sector is considered a major driving force in the Lebanese economy with 69 registered banks with 780 branches spread across the country and managing more than USD 45 billions as assets. The banking control commission was established in 1967 that governs banking activities and ensuring compliance with the various regulations. The overall banking activities are subject to the Code of Commerce (1942) and the Money and Credit Code (1963) (A leading economic sector in Lebanon: Banks & Insurance sector, n.d). Three Lebanese banks were studied: BLOM Bank, Bank MED, and BYBLOS bank.

BLOM Bank was established in 1951 and distributed across 12 international countries. It acquired the subsidiary of HSBC's Bank Middle East in 2017 and is considered the second largest bank by market capitalization. Its competitive advantage is derived from its customer focus marketing strategy and its adoption to technological advances that attracts technology-seekers. It offers e-Blom suite mobile banking service as a second channel for customers to manage their daily transactions 24/7 in a climate of trust, privacy, and confidentiality. E-Blom application allow users to check account statement and balance, view transactions, view and settle credit card payments, pay bills, transfer money between accounts, and recharge mobile and ATM locations. To activate an e-Blom application, users have to personally visit the bank and receive their account credentials and with any online transaction, a One-Time-Password (OTP) is sent via SMS to the user to enhance the security of online banking services.

BANK MED was established in 1944 with head office located in Beirut and distributed across 5 international countries. MED mobile application allow users to get in touch with the bank and be able to perform most of their transactions online 24/7. In addition, to being able to locate the nearest ATM. MED Mobile security policy depends on encrypting data transferred, session time out, and multiple layers of credentials.

BYBLOS Bank was founded in 1950 as "Société Commerciale et Agricole Byblos Bassil Frères & Co." and was established in 1963 with head office located in Beirut and distributed across 10 international countries. It was the first bank in Lebanon to introduce E-Branches, Smart ATMs, and Internet banking services. BYBLOS users can access their online account from any electronic device, using their credentials and will be logged off after 5 minutes of inactivity.

The above three banks in addition to most Lebanese banks, already have a mobile application in place, offered free of charge, that allow users to access their accounts and manage most of their finances virtually and from the comfort of their homes or offices 24/7.

Literature

The Internet has become the new distribution channel for banking that benefit the customers and banks together. At any time and at any place the customer has access to make any transaction in a rapid and lower cost. Mobile banking is a mobile commerce application that allows customers to bank virtually because of its ubiquity and consistency. Mobile banking has a lot of features that benefit the customer including: Checking statement of account, Viewing account transactions, Payment of bills on spot, and Account Administration. (Pousttchi and Schurig, 2004). Banks are now gaining strategic advantage with premium features using mobile banking application. Banks's product image being innovative and visionary improves the banks' reputation in the banking sector and among customers that could be large firms, individual customers and stock markets. Being a technological leader, the bank can attract technology seekers and customers looking for improved products and services and prevent switching those people to other banks while looking for those services. Globalization and technology advancement has reduced the inhibitors for market entry thereby increasing the competition. (Tiwari et al., 2006a). Since security is the most important concern in the use of mobile banking. Three basic needs were identified: First of all the encryption of sending data must take place, the channel between sent and received data should also be encrypted. Second, authorization before access. Third, the authorization has to be easy, direct and simple. Perceived usefulness, satisfaction and social influence have also been found as important factors in mobile banking adoption (Islam, 2014). The value perceived by customers can be stated as the "consumer's overall assessment of a utility of a product depending on perceptions of what is received and what is provided". To create customer value the customer must react and interact with the mobile application. Then, grade this application among other applications he already knows or used before. At the end, the customer decides if the application meet his subjective preferences and satisfy his functional and situational needs (Kashani and Kasmani, 2015). Perceived ease of use can be an important determinant, perhaps even more than perceived

usefulness (Tiwari et al, 2006b). Banks should improve services to gain customer e-satisfaction and as a result increasing the usage rate and driving them into adopting mobile banking. Nowadays banking sector is becoming more customer oriented and considered as an added value to customers due to customization based on their needs and preferences (Adewoye, 2013). Services must give the customer his needs regarding when, where and how to gain their satisfaction and retention and to reach new customers (Laukkanen and Lauronen, 2005). Trust is also a critical issue in the exchanging relationships involving unknown risks. The role of trust is very important in the online shopping environment. The potential risks may come from multiple sources such as the vulnerability of wireless and Internet communication platforms and the technical capability of banks (Luo et al., 2010). Electronic banking users are worldwide growing and the situation may not be different in Lebanon. Lebanese banks offer internet banking to their clients, yet the level of innovation for online banking differs from one to another. People's attitudes to multi-channel banking have also been grown with customers appreciating the easiness of ATM's, internet banking and other electronic banking channels are supplying. Most Lebanese banks provide online services including internet facilities and mobile services that enable customers to perform banking transactions, view their balance account, transfer funds within their account or from one account to another, obtain online statement of account, view loan simulator and settle payments. The price of an online transaction is much lower than the price of face-to-face branch transaction (Robinson, 2000). Robinson assures that due to several factors the internet banking enhances the relationship between the bank and the client. Robinson illustrates that the bank creates customer loyalty when the bank presents services and products used by the customers at home, office or mobile phone. Online banking benefits customers in several ways: it provides clients a wide range of services that are not provided at branches either free or inexpensive, mobile banking is not limited by time or place and it changes as a result of customer needs, thus saving customer's money and time, and it provides convenience and accessibility and has a positive impact on customer care.

Research methodology

In this study the primary data was through structural questionnaire. Both primary data (using SPSS statistical software) and secondary data sources were used. The current state of affairs can be better explained by primary data.

Simple random sampling was used in this study in order to select the sample. This is a straightforward probability method. It offers an equal opportunity for choice between the sample population. Customers were randomly selected from the chosen population size. This ensured that all members of the population had an equivalent opportunity of being selected for the research. The reason for selecting this sample population was that these individuals are people engaged in retail banking and could very well be among the potential customers of mobile banking services. The sample size included people from different places. In fact, the samples of respondents constitute customers from different banks that are either users or non-users of mobile banking in Lebanon in order to ensure their suitability. Convenience sampling was the sampling techniques used in this study. A total of 120 respondents were considered as sample and distributed equally 40 participants for each bank.

Based on the nature of this study, it was necessary to analyze data using quantitative research. A quantitative method was used in this study based on different measurements scales; the goal was to investigate the factors affecting customer adoption in Lebanon of mobile banking. The quantitative method was used to generate data in a numerical form to test a general theory (Saunders et al., 2009).

The questionnaire was developed to collect data from the sample of the study. Five-point Likert scale was employed, it ranged from "Strongly disagree" (1) to "Strongly agree" (5). Likert five contained three domains of questions, the first section was about demographic questions (Age group, gender, occupational status) about the study population, the second was about mobile banking usage and was covered by 8 questions, the third section was about customer satisfaction and adoption of mobile banking divided into two domains for adopters and non-adopters (Security, satisfaction, usefulness, ease of use and word of mouth).

The Data analysis used SPSS version 20 to calculate all the statistical results. The following statistical tools were utilized in this study:
1) Frequency and Descriptive analysis.
2) Parametric Tests (One-sample T test).

In the literature review, mobile banking adoption drivers were discussed. Close and open-ended questions were collected to identify those factors, facts and figures were collected via telephone interviews. Both closed and open-ended questions were preferred on the basis of guaranteed consistency of response, ease of monitoring, cost-effectiveness and convenience. The closed-ended questionnaires aimed to ensure the standardization and consistency of the respondent's answers. On the other hand, unstructured (open-ended) questions allowed the participants to express their views on unaddressed problems and questions. It also allowed the respondents answer the questions which the respondent did not address in the past. The questionnaires were divided into subsections covering specific aspects of the study more closely related to the research objectives. Sampling was done in order to save time and costs. Under this study, the semi structured questionnaires has been adopted as tool of data collection. Our information and data source was from the three banking officers of the three banks. In a general term questionnaire include all techniques of data collection in which each person is asked to respond to the same set of questions. Data collected from the study was entered into the statistical package, SPSS (statistical package for social science) for analyzing, discussing and presenting the results of this research. The descriptive statistics were entered on a Microsoft Excel sheet to analyze the demographic information.

Data analysis method

The strategy used by this research is accountable for the effective completion of the research as it plays a noticeable role in data accumulating processes. The common types of research strategies are experiment, survey, case study, action research, ethnography and observation. The current study used the survey strategy because it helps to accumulate the latest, fresh and primary data. The current research is focused on the assessment of the relationship between mobile banking adoption and the technology factors, channel factor,

social factor and consumer behavior factor. As the research population, the customers of the three selected banks are determined, involving 120 customers distributed among the three banks. Then, for analysis, the raw data was entered using SPSS.

Table 1. *Variable sets*

Variable sets	Variables
Technology Factors	Usefulness
	Ease of use
Channel Factor	Security
Social Factor	Word of mouth
Consumer Behavior Factor	Satisfaction

Fact finding results

The sample was divided into two main groups: Mobile banking application technology adopters and non-adopters.

Figure 1. *Frequency of adopters and non-adopters*
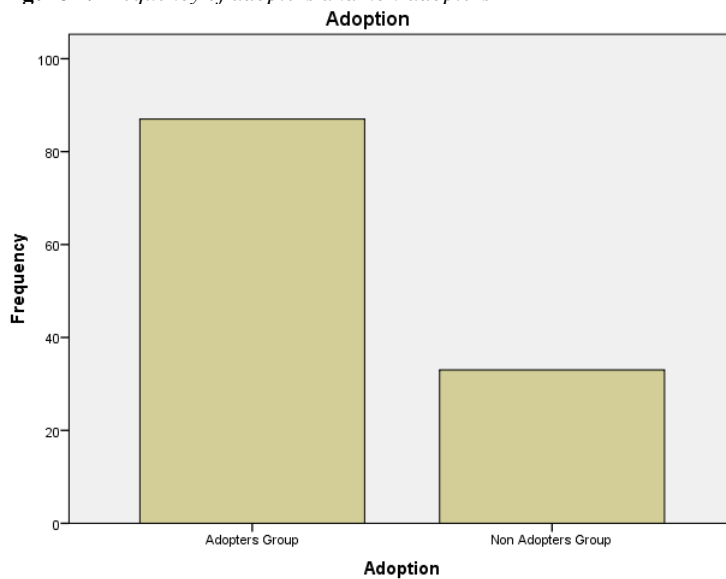
Table 2. *Frequency and percentage of mobile banking adopters and non-adopters*

Adoption					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Adopters Group	87	72.5	72.5	72.5
	Non-Adopters Group	33	27.5	27.5	100.0
	Total	120	100.0	100.0	

Variables

Variable 1: Security

The extent to which customers feel secure is measured and linked to each group (adopters and non-adopters) using the Likert scale.

Figure 2. *Security measures based on mobile adopters and non-adopters*
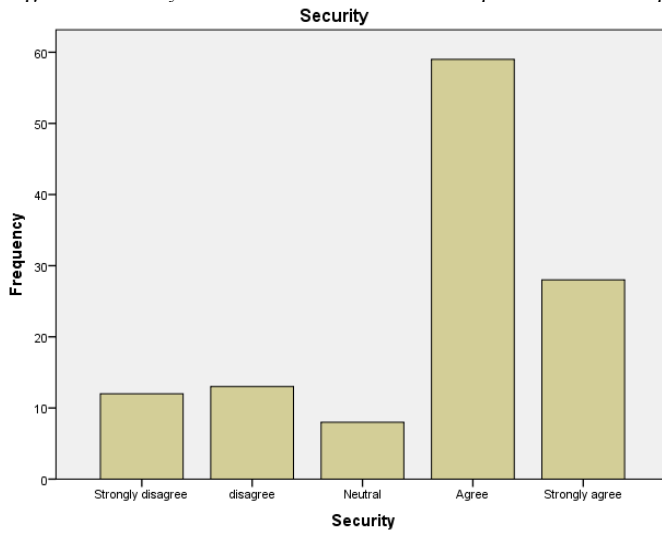
Table 3. *The frequency and percentage of security measures by mobile banking adopters and non-adopters*

Security					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	12	10.0	10.0	10.0
	Disagree	13	10.8	10.8	20.8
	Neutral	8	6.7	6.7	27.5
	Agree	59	49.2	49.2	76.7
	Strongly agree	28	23.3	23.3	100.0
	Total	120	100.0	100.0	

Variable 2: Word of mouth

This variable was used to test whether the word of mouth has an influence on the decision of mobile banking adoption.

Figure 3. *The influence of word of mouth on mobile banking adoption*
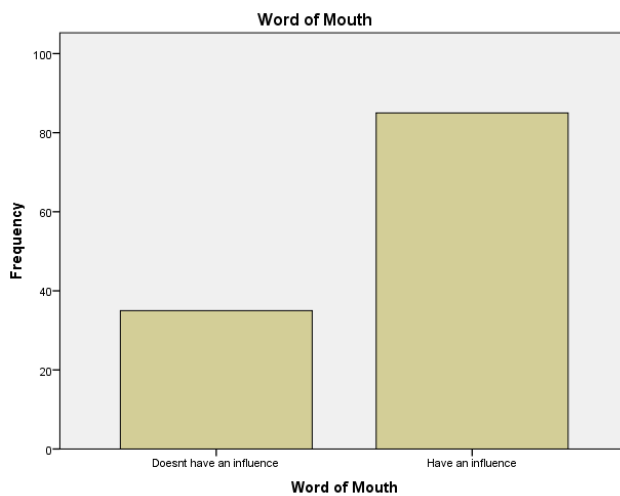
Table 4. *The frequency and percentage of influence of word of mouth on mobile banking adoption*

Word of Mouth		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Doesn't have an influence	35	29.2	29.2	29.2
	Have an influence	85	70.8	70.8	100.0
	Total	120	100.0	100.0	

Variable 3: Satisfaction

Here we wanted to evaluate the satisfaction level of customers and the drivers of their satisfaction or dissatisfaction.

Figure 4. *Satisfaction levels by mobile banking adopters and non-adopters*
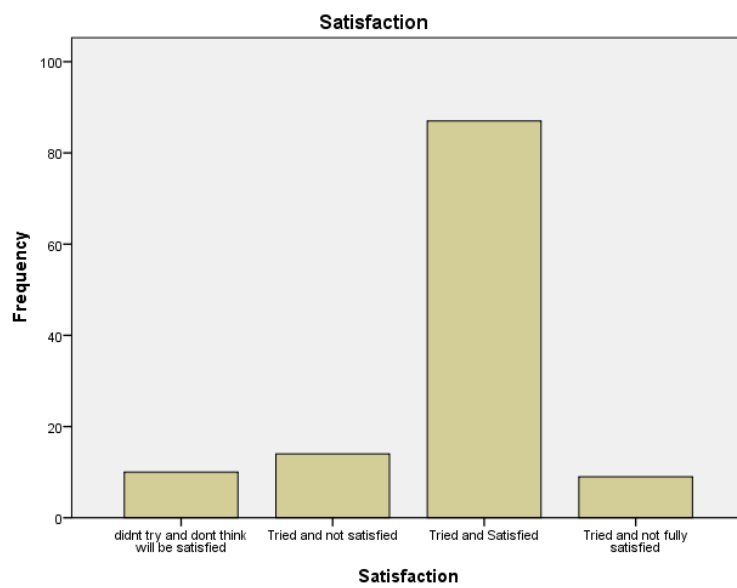
Table 5. *Frequency and percentage of satisfaction by mobile banking adopters and non-adopters*

Satisfaction		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Didn't try and don't think will be satisfied	10	8.3	8.3	8.3
	Tried and not satisfied	14	11.7	11.7	20.0
	Tried and Satisfied	87	72.5	72.5	92.5
	Tried and not fully satisfied	9	7.5	7.5	100.0
	Total	120	100.0	100.0	

Variable 4: Usefulness

The level to which customers view that mobile application is useful, which in turn could derive them to be adopters or non-adopters.

Figure 5. *Usefulness measures by mobile banking adopters and non-adopters*
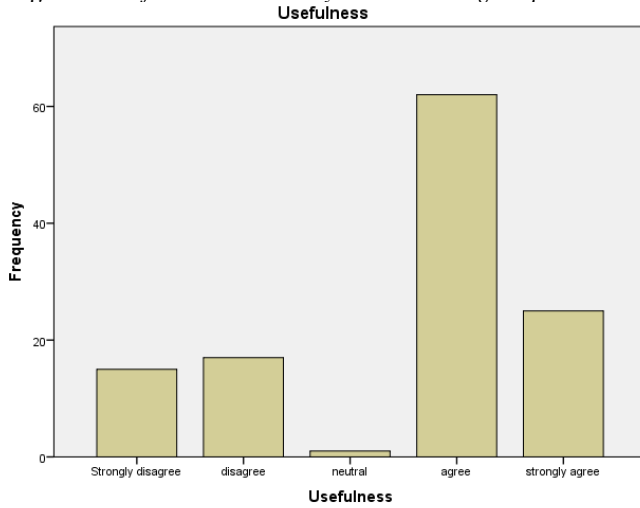
Table 6. *The frequency and percentage of usefulness measure by mobile banking adopters and non-adopters*

Usefulness					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	15	12.5	12.5	12.5
	Disagree	17	14.2	14.2	26.7
	Neutral	1	.8	.8	27.5
	Agree	62	51.7	51.7	79.2
	Strongly agree	25	20.8	20.8	100.0
	Total	120	100.0	100.0	

Variable 5: Easiness

Easiness is the extent to which customers feel and believe that it is easy to use and adopt the mobile application they use or intend to use.

Figure 6. *Easiness measure by mobile banking adopters and non-adopters*
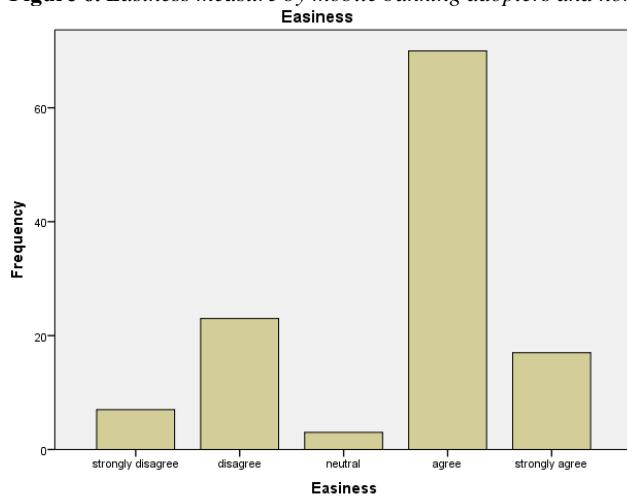
Table 7. *The frequency and percentage of easiness measure by mobile banking adopters and non-adopters*

Easiness		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	7	5.8	5.8	5.8
	Disagree	23	19.2	19.2	25.0
	Neutral	3	2.5	2.5	27.5
	Agree	70	58.3	58.3	85.8
	Strongly agree	17	14.2	14.2	100.0
	Total	120	100.0	100.0	

To verify the hypothesis being tested, one-sample T-test was used. The output of this hypothesis includes two tables. The first table called the one sample statistics illustrates the name of the variable and number of observations in the sample, the average, the standard deviation and the standard error mean. The second table which is the null hypothesis called the one sample test includes the test value. If the significance level in the second table is less than is less than 0.05 (Pre-specified alpha level), the null hypothesis will be rejected and the hypothesis being tested will be verified.

H1: *Mobile application security has a direct impact on mobile banking adoption.*

Table 8. *One sample Statistics of Security*

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Security	120	.65	1.234	.113

Table 9. *One Sample Test for Security*

One-Sample Test						
	Test Value = -1					
	T	df	Sig. (2-tailed)	Mean Difference	99% Confidence Interval of the Difference	
					Lower	Upper
Security	14.644	119	.000	1.650	1.36	1.94

H1 is being tested to verify that adopters of mobile banking strongly agree that security has an effect on their adoption decision. Then the null hypothesis would be that the security has no impact on adoption (-1). The significance is used to accept or reject the null hypothesis of the mean being equal= -1, our significance level < 0.05 then we reject the null hypothesis for the population mean as being equal to -2. We are 95% confident that its different from -1 and is it less or greater than -1. We're looking at the average of 0.65, which implies it's greater than -1.

As a conclusion, H1 is verified and the null hypothesis is rejected.

H2: *Word of mouth has a positive impact on mobile banking.*

Table 10. *One Sample statistics for word of mouth*

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Word of Mouth	120	1.88	.668	.061

Table 11. *One Sample test for word of mouth*

One-Sample Test						
	Test Value = 2					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Word of Mouth	-2.049	119	.043	-.125	-.25	.00

H2 is being tested to verify that mobile banking adopters agree that word of mouth has an effect on their adoption decision. Then the null hypothesis would be that the word of mouth does not have any impact on adoption (2). The significance is used to accept or reject the null hypothesis of the mean being equal=2, our significance level < 0.05 then we reject the null hypothesis for the population mean been equal to 2. We are 95% confident that it is not equal to 2.

As a conclusion, we reject the null hypothesis (word of mouth has no impact on mobile banking adoption) and accept the alternative hypothesis.

H3: *Customers satisfaction and convenience has a direct effect on mobile banking adoption.*

Table 12. *One sample statistic for satisfaction*

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Satisfaction	120	1.79	.697	.064

Table 13. *One sample test for satisfaction*

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Satisfaction	28.164	119	.000	1.792	1.67	1.92

H3 is being tested to verify that mobile banking adopters have attempted mobile banking and they are satisfied which in turn affect their adoption decision. Then the null hypothesis would be that satisfaction didn't occur (0). The significance is used to accept or reject the null hypothesis of the mean being equal= 0, our significance level < 0.05 then we reject the null hypothesis for the population mean been equal to zero. We are 95% confident that its different from zero and is it less or greater than zero? We look at the average which is 1.79 this means that its greater than zero. As a conclusion H3 is verified and the null hypothesis is rejected.

H4: *Usefulness has direct impact on mobile banking adoption.*

Table 14. *One sample statistic for usefulness*

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Usefulness	120	.54	1.309	.119

Table 15. *One sample test for usefulness*

One-Sample Test						
	Test Value = -1					
	t	df	Sig. (2-tailed)	Mean Difference	99% Confidence Interval of the Difference	
					Lower	Upper
Usefulness	12.905	119	.000	1.542	1.23	1.85

H4 is being tested to verify that adopters of mobile banking strongly agree that usefulness of mobile banking application has an effect on their adoption decision. Then the null hypothesis would be that usefulness has no impact on adoption (-1). The significance is used to accept or reject the null hypothesis of the mean being equal -1, our significance

level < 0.05 then we reject the null hypothesis mean as being equal to -1 for the population. We are 95% confident that its different from -1 and is it less or greater than -1? We look at the average which is 0.54 this means that its greater than -1.

As a conclusion, H4 is verified and the null hypothesis is rejected.

H5: *Ease of use has a direct impact on mobile banking adoption.*

Table 16. *One sample statistic for ease of use*

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Easiness	120	.56	1.129	.103

Table 17. *One sample test for ease of use*

One-Sample Test						
	Test Value = -1					
	T	df	Sig. (2-tailed)	Mean Difference	99% Confidence Interval of the Difference	
					Lower	Upper
Easiness	15.125	119	.000	1.558	1.29	1.83

H5 is being tested to verify that mobile banking adopters strongly agree that ease of use of mobile banking application has an effect on their adoption decision. Then the null hypothesis would be that ease of use does not have any impact on adoption (-1). The significance is used to accept or reject the null hypothesis of the mean being equal= -1, our significance level<0.05 then we reject the null hypothesis for the population mean been equal to -1. We are 95% confident that its different from -1 and is it less or greater than -1? We look at the average which is 0.56 this means that its greater than -1.

As a conclusion, H5 is verified and the null hypothesis is rejected.

Conclusions

Internet banking, e-banking and now mobile banking made it possible for the bank to be properly linked to the customer and vice versa. Customer feels appreciated and is more likely to be loyal to the bank. Mobile banking not only helps the bank to reduce costs, but also enables it to retain its valued customers. As far as customers are concerned, this facility makes it feasible for the customer to bank anywhere, at any time and under any circumstances.

Mobile banking helps both the customer and the bank to lighten the burden of today's world and to save time, money and energy that is greatly needed and appreciated.

At present mobile communications are not considered to be luxury, as they have reached the grass root of the society where everyone could own a mobile phone. Mobile phones have created a platform to expand commercial transaction in a very easy way and have generated a broad range of business opportunities through the expansion of wireless communication. Therefore, mobile banking has been recognized as one manner to expand banking services. A range of products have been implemented by banks to encourage mobile banking. However, the primary goal of the research was to measure the factors influencing customer satisfaction in mobile banking services. The result of this research

showed that customer satisfaction in mobile banking facilities is affected by the usefulness, ease of use, security challenges, world of mouth and consumer behavior. Also, it might be affected by relative advantage, perception on risk and user lifestyle and current customer needs.

The overall objective of this study was to identify factors that affect the adoption of mobile banking in three banks in Lebanon. The study attempted to specifically assess the components of technological factors that include usefulness, ease of use, channel factor that is emphasized in security challenges, social influence which is the word-of-mouth, and consumer behavior factors that are related to the level of customer satisfaction on mobile banking adoption. With regard to the first specific objective of assessing usefulness and ease of use, mobile banking adopters admit that mobile banking applications are easy to use and useful.

The second specific objective was to demonstrate that the security issue is linked to the adoption of mobile banking. The third objective was to establish the influence of word of mouth on mobile banking. The study concludes that social influence had an impact on mobile banking adoption. The fourth objective aimed to illustrate the importance of service satisfaction by mobile banking users on mobile banking adoption. It was proved that satisfaction and adoption are related positively.

We can conclude in this study that mobile banking application enhance customer satisfaction. However, mobile banking application should be designed in a way to enable customers to confirm transactions as they use mobile banking services. The study also concludes that it should be simple for mobile banking customers to acknowledge the mobile banking application of their banks on their phone. This will be accomplished if the user interface of customers' mobile banking application is designed properly.

We can state based on findings that the factors that have a direct impact on people adoption to mobile banking application are: usefulness, ease of use, security, word of mouth, and satisfaction.

Mobile banking has been effectively used by consumers. Accordingly, bank updates must be periodically made in order to retain and satisfy customers. Updates should include information about the behavioral intention for the transfer of amounts, funds, credit, debit, etc.

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The mercantilism or the beginning period of economic science

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Abstract. *In this article, I have tried to capture broadly the mercantilist economic conception, considered rightly, as being both chronologically and theoretically, the first paradigm of economic thinking. From the beginning, I presented in broad terms the economic context of the time in which the mercantilist ideas appeared and developed-16th-18th centuries-the period of the great geographical discoveries, the development of international trade, the emergence and development of guilds, etc. Then, I presented the main representatives and their works, namely the English mercantilism-Thomas Gresham, Thomas Mun, John Law, Josiah Child and Richard Cantillon – but also the French one-Antoine de Montchrestien and Jean Baptiste Colbert. Subsequently, we made a brief summary of the mercantilist ideas on the following fields of analysis: international trade as a source of enrichment of the nation, production, distribution and consumption of goods, currency as a tool of exchange and enrichment.*

Keywords: mercantilist economic conception, international trade, production, distribution and consumption of goods, currency, etc.

JEL Classification: B10, B11.

1. Introduction

It is a well-known truth the fact that is a biunequivocal relationship between the real economy and economic science that studies it. In his famous book *Revolutionary Wealth*, American sociologist Alvin Toffler expresses suggestively this aspect through the highway allegory associating the various economic-social entities, for example, the company, the public institutions, the legal-institutional system, etc. with cars that moves at different speeds in the same direction on a hypothetical highway thus highlighting the contretemps evolution of the main pillars on the economic-social life (Toffler, 1995 p. 223). Starting of this fact, in this study, I presented the paradigm of mercantilism thinking related to the context of the era that the respective authors analyzed and of which, of course, they expressed their own ideas in their works. Therefore, for the beginning, I will present in broad outlines, the main specific economic-social phenomenon of the sixteenth-the first half eighteenth centuries, the period in which the mercantilist ideas appeared and developed and with them the economic science. Subsequently, I will present on three economic levels-international trade, currency as a tool of exchange and enrichment, the production and distribution of goods-the main ideas that constituted the mercantilist paradigm.

2. The context of the mercantilism era

The context of the era in which the mercantilist ideas appeared and developed is a different period of that of the Middle Age when the society had just overcome. The great geographical discoveries of the late of fifteenth century–the discovery of Africa, the Indies and late of America-and the formation of the Portuguese and Spanish colonial systems allowed the intensification of trade between the European states and the New World not only of land but also at sea. The mirage of the gains of the spice trade in India, the slave trade in African States and the precious metals trade in America are unprecedented premises for the development of the respective areas and for international trade. It is time to sign The Navigation Acts in England, the development of the maritime trade, the development of the famous Indian Companies, but also the emergence and development of banking systems in the developed countries.

At the same time in Western Europe at the end of The Middle Age, the trades grouped in guilds contribute to the manufactures develop. The fact itself, allows the intensification of the exploited surfaces, the extensions of the villages, and their proximity to the cities, as well as the development of the cities as commercial and urban centers. Reffering to the mercantilist period, the Romanian professor Stefan Zeletin affirms in his book *The Romanian Bourgeoisie. Origin and its historical role* the fact that "mercantilism is a doctrine of nationalism and economic protectionism" (Zeletin, 1991 p. 35).

In general, these are the main phenomenon, that have marked the evolution of the respective period and have allowed to some personalities of the time – directors of commercial companies, bankers, bourgeoises, or even politicians, to express their own ideas of an economic nature.

3. The main representatives and their works

Detaching itself for the others categories English mercantilism has as main representatives in chronological order Thomas Gresham (1519-1597) Thomas Mun (1571-1641),Oliver Cromwell (1599-1658), Wiliam Petty (1623-1687), John Law (1621-1729) Josiah Child (1630-1699) and the last of them Richard Cantillon (1630-1734),the one who deals with physiocracy Thomas Gresham, a merchant and financier for British Crown was educated at St. Paul School and Caius College Cambridge. In 1544 he became a representative of St. Mercher's Company in the Netherlands and in 1565 established The Royal Exchange. Thomas Mun, director of Est-India Company, played an important role in ensuring the stability of England in the 1620 crisis. His main works are *A discourse of trade from England to the East-Indies (*1621) and *England's Treasure by Foreign Trade (1628)*. In addition with political and military activity, Oliver Cromwell was also a good farmer and was named Lord Protector from 1653 to 1658. He also has writings of an economic nature, a suggestive example being *The writings and Speeches of Oliver Cromwell.* William Petty, a British scientist, economist and politician with a prolific activity published several books, the most representative being *A Treatise of Taxes and Contributions* (1662) *and Political Arithmetic* (1676-published posthumously in 1690). John Law, a Scottish economist created in 1617 Occident company responsible for French Louisiana. In 1719, the Occident Company absorbed other French colonial companies including The French East India Company, becoming the Perpetual Company of India. In 1720 followed a merger between The Royal Bank and the Perpetual Company of India because of in January 1720, John Law is appointed general director of finance and proposes the introduction of banknotes in France, being practically the creator of the new economic exchange based on the currency. The main book was *Money and Trade Considered* (1705). Sir Josiah Child (1630-1699) was a merchant, politician and governor of The East India Company, his main work being *A new Discourse of Trade* (1693). Richard Cantillon (1680-1734) was an Irish-born economist. His main work was *Essay on the Nature of Trade in General* (published in 1756) considered by William Stanley Jevons the birthplace of the political economy as a science. If English mercantilism was main representative in terms of publishing, French mercantilism had few representatives but whose works remained pillars of reference for posterity. Thus, it was worth mentioning Antoine de Montchrestien with his famous *Traicté d'économie politique: dédié en 1615 au Roy et à la Reyne mère du Roy*-but also Jean-Baptiste Colbert knew for posterity with his work *Letters, instructions et memoires de Colbert* (published in 1863).

4. Mercantilist paradigm – in short

Studying economic phenomenon varied, however, mercantilist reach a common denominator of ideas. There is a chronological evolution of the main mercantilist ideas, for about a century. Primarily and without having to claim an exhaustive approach, we have made a brief summary of the mercantilist ideas of the following fields of analysis: international trade as a source of enriching the nation, production, distribution and consumption of goods, currency as a tool of exchange and enrichment.

A) International trade as a source of enrichment of the nation

The first representative of English mercantilism, Thomas Mun in his book *England's Treasure by Foreign Trade* in chapters-4 praises the advantages brought by international trade for development of the international treasure. In the first chapter, Mun presents a set of 12 qualities that a good trader must have: a good mathematician and a good accountant, expert in preparing the documents that accompany the transactions, a good connoisseur of the measures the freight and the value of the currencies that accompany the exchanges, good connoisseur of applicable taxes and good, connoisseur of necessary/excesses of goods in which any state abounds, good navigation knowledge, general knowledge of the structure and materials with the ships are made, a good traveler and a good connoisseur of other external cultural systems, good connoisseur of Latin language, best in preparation of the documents in case of the accidents at sea, good connoisseur of prohibited goods for export (Mun, 1664, pp. 2-7). In the second chapter it is argued that the development of exports is the reason for the increase the national treasury and in the next it presents the particular methods and means for increasing the English exports and reducing consumption of foreign goods. In the fourth chapter it presents the importance of investments in goods for exports and in the fifth underlines the fact that the development of the international trade can increase the value of its own lands cultivated for exports. In chapter seven he presents hypothetical situations of winning for international trade: for the trader, for the Commonwealth countries and for the king (Mun, 1664, pp. 7-28). Continuing Mun's ideas John Law in the book *Money and Trade Considered* in chapter II *On trade and how to do it depends on money* assumes that the trade is generally divided in domestic and international trade. Both branches are beneficial when the amount of currency allocated for the payments of the workers who make the increasing of the goods. Regarding at foreign trade Law considers as undeniable advantages: the export of the manufactured products over domestic consumption, the import of foreign manufactured products at a lower price and their resale at a higher price (Law 1762, pp. 19-62). Josiah Child in his work *A new Discourse of Trade* in chapter IX considers that a trade balance of a country must be understood in two ways: a general as a tool by which a state gains or loses from international trade and particularly when the causes of each of the two situations are known. For the first aspect, it refers to the general opinion that a strict control of the value of exports over imports determines a surplus of the trade balance the surplus being quantified in ingots that increase the treasure and wealth of a nation. However, the situations of commercial exchange must be analyzed in particular because of the factors that make export-import quantification difficult: product theft, difference of value by area, undervaluation of imports, unforeseen situations such as transport accidents, adverse weather, bankruptcy, etc. (Child, 1693, pp. 114-130). In the same note, Richard Cantillon in part III *International Trade and Business Cycles* of his famous *Essay on Economic Theory* explains how the circular flow of the economy is expanded through international trade using exchange rates especially those occasioned by the transport of the currency as a payment instrument. Moreover, he considers that the exchange rate depend on the trade balance of some states, the deficit causing the devaluation of the currency and vice versa (Cantillon, 1756, pp. 183-244).

B) Currency – an instrument of enrichment as well as the basis of economic flow

The mercantilists even through their first representative Thomas Mun attaches a major importance to the currency as a tool for exchange and treasury. He stresses that the tolerance of foreign currencies for the payments of goods in a country at a high exchange rates compared to the value of national currencies cannot have the purpose of increasing the national treasure. The importance of bills of exchange and banks is major for the national treasury because they don't allow the devaluation of the national currency (Mun, 1664, p. 21). John Law in his work *Money and Trade Considered* in chapter *III Of the different measures which has been used to preserve money and of banks* is of the opinion that a great amount of money in circulation leads to the employment of more workers, to the increase of exports and to the increase of the national treasury. Only the methods of increasing the amount of currencies in circulation differ from country to country Law praises the emergence and development of banks especially in Italy, Switzerland and Netherlands (Law, 1762, pp. 63-78). Josiah Child remarks in his work *A new Discourse of Trade* the importance of bills of exchange as a payment instrument in trade and especially the speed of trade (Child, 1693, p. 98). Richard Cantillon in part II *Money and Interest* regarding at the circulation of the currency is of the opinion that the model of circular economic flow, according to which the rent obtained by owners of land is used for the payments of the workers and for the payments of the goods and the payments of goods from the entrepreneurs cannot have instead of using the currency thus establishing the ratio between the currency and the value of the annual output. Large transactions are made through barter or bills of exchange that don't require a large amount of currency in circulation but small transactions related to the population require the use of currency in circulation. In addition anticipating modern inflationary theories Cantillon believes that a large amount of currency in the economy will result in price increases and relative prices of goods also depend on their nature and perishability. In addition, the trade balance is a balancing instrument of international monetary flows by the fact that the surplus of the trade balance determines an increase in the monetary mass in the economy which generates price increases and as a contraction an increase of the imports to realize and sell products at high prices and a balancing of the balance of trade. The interest rates are set according to the risk of non-payments of the debtors but also according to the income made by them from the investments (Cantillon, 1756, p. 202). Other positive factors that can discourage lending and reduce the interest rate are savings, peace and national debt payment. In part III *Of the international trade and business cycles* in chapter 4 *The variations in the proportions of value regarding to the metals used at money* is of the opinion that the price of gold and silver is determined by markets, by the utility but also by the actual cost of production. If fixed stables exchange rates between gold and silver coins, the overvalued metal goes out of circulation (Cantillon, 1756, p. 209). Regarding at banks and the lending process he notes that there may be such institutions that grant loans from deposits increasing the amount of money in circulation but risking not returning in real times the value of deposits. Surprisingly, however, he considers that the National Banks are of small utility because it doesn't offer a large amount of money in circulation (Cantillon 1756, p. 233).

C) Production, distribution and consumption of goods

The development of monetary flows and international trade is based on the production, distribution and consumption of goods. The mercantilist period is characterized by the appearance of guilds and manufactured production but also by the development of agriculture as the basic economic branch, by incipient mechanization, the extensions of cultivated areas for consumption personally as well as for export. Regarding at the production capacity, Josiah Child emphasizes in the chapter X *Concerning plantations*, the importance of quality land, colonies, but especially the importance of the existence of the workers. The following Child's statements are relevant to support this idea: lands that are naturally of qualities don't enrich any country, the tendency of populating a country tends to enrich it, most of the nations of the world are richer or poor according to the number of the population (Child, 1693, p. 148). In contrast to the others mercantilists who considered wealth to be represented by currency, Richard Cantillon believes that it's represented by consumer goods made with the help of land and labour (Cantillon, 1756, p. 21). The existence of production needs intended for consumption at the level of certain localities implies property rights over the lands and requires a certain amount of work but also the division of labour. City markets as shopping centers depend of the size of the economies they serve and allow transactions with goods according to the demand supply ratio established by the producers. The expansion of the big cities depends on the manufacturing industries that produce for export but also of the production of their own cultivated lands, an essential role having the cost of transporting the goods to the markets. Establishing capitals allow their development as dimensions because their attract a greater amount of work and productive businesses, becoming practically large commercial centers (Cantillon, 1756, p. 35-39). Of course, due to the division of labour, specialized employees make higher profit than non-specialized ones and the number of different categories of employees is proportional to the demand from them which derives from the demands of consumer goods. Anticipating the future value theory, Cantillon considers the intrinsic value of a good as being represented by the quantity and quality of the land and the labour used to make it, but the market price is established by the demand supply- ratio (Cantillon, 1756, p. 53).

5. Conclusion

Mercantilism represents the first main current of economic thinking, practically the beginning moment of the development of economic science. A period of approaching a century and a half -beginning of the sixteenth – the first half of an eighteenth century - the real economy and economic science experienced an exceptional period of development. From a scientific point of view, the mercantilist doctrine lays the foundations of nationalism and economic protectionism through its main pillars of support. First of all, the international trade is the key of economic development, because exports allow the accumulation of wealth and increase the national treasure. For this fact the export must be developed as much as possible and the import reduced by various measures: development of the production for export, especially for agricultural origins but also manufactured and measures to ban imports. Secondly, the currency is key to the existence of development of

economic flows, the precious metal being practically the basis of the physical existence of the currencies but also a source of enrichment. I n that period was not a monetary system but mercantilist studied the exchange relations between currencies, the conditions of granting the loans and the evolutions of the interests as well as the bank functions. Thirdly, the export can be developed through the development of the agricultural production mainly because it can only take place by expanding the cultivated areas. In conclusion, even if at present in a real economy based especially on information, the mercantilist doctrine cannot be applied absolutely, for the respective period it represented a step forward for both the real economy and economic science.

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It is also the economic behavior of Baby Boomers, Millennial's and Generation Z different or only the social one?

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Abstract. *The aim of this paper is to see if there is a link between the economic behavior of the three main generation classes and their social characteristics. I have portrayed the main trays of the three generations regarding their social and psychological characteristics and then, I have tried to identify those expenditures that could be relevant for the economic behavior of these generation classifications.*

Keywords: Baby Boomers, Millennials, Generation X, iGens, differences.

JEL Classification: D00, I00, J00.

1. What are the social difference between the characteristics of the generations

The main generations that are now living are divided by their social and psychological characteristics. The names are generically and they are meant to describe in one or two words the whole generation. The main generations are: The silent generation (born before World War II), The Baby Boomers, Generation X, Millennials and iGens.

What are baby boomers?

Following World War II, there was a "baby boom", which gives this generation their nickname.

The increased birth rates make them a large portion of the population, and they are typically born between the early to mid-1940s, to 1960 - 1964.

They benefited from a time of increasing affluence and higher levels of income than their parents, and a surge in consumerism, enjoying more money to spend on food, clothes, and holidays.

Key features:

Baby boomer refers to a member of the large demographic generation who was born between the end of World War II and the mid-1960s.

Due to the number and relative prosperity of the US economy during their careers, baby boomers are an economically influential generation.

Today, baby boomers are reaching retirement age and are facing some key challenges, including retirement financing.

What is Generation X?

Following the baby boomers, Generation X are born between the early-to-mid 1960s, and the early 1980s.

Culturally, Generation X saw the rise of musical genres such as grunge and hip-hop, as well as indie films.

They are sometimes called the "MTV Generation", as they experienced the emergence of music videos, and the MTV channel.

What are Millennials?

This is the term that most people recognize the most, commonly associated with avocado on toast, and 'snowflake' culture.

They are born between 1980 or the months before to the mid-1990s or early 2000s, so many young adults nowadays would define themselves as Millennials.

The generation was severely impacted by recession, as it caused record unemployment, affecting young people joining the workplace, as well as a period of economic instability.

Research has shown that the millennial generation is the most ethnically and racially diverse in US history. Gen Y tends to be progressive and less religiously respectful in its political views and voting habits than its predecessor, Gen X.

What are iGens or Generation Z?

There is a slight overlap between Millennials and Generation Z, as Generation Z are said to be born between the mid-1990s to mid-2000s. They are known as iGens.

They are mainly the children of Generation X, but could have parents that are Millennials.

As they have had the internet from a young age, Generation Z tend to be knowledgeable of technology and social media more than all other generations combined.

2. What are the characteristics of the economic behavior of the generations

The growing wealth gap led Millennials to start with lower household incomes. The most popular personal financial priority: having enough money for their daily expenses. Compared to a slow labor market, some Millennials have delayed work in favor of higher education or additional diplomas. Others are suitable for part-time or "concert" positions. Not surprisingly, others who get a full-time job believe that entry-level jobs are at the bottom of the wage scale. Of course, they are more concerned about the present than the future, and strive to set up a budget to help other financial goals.
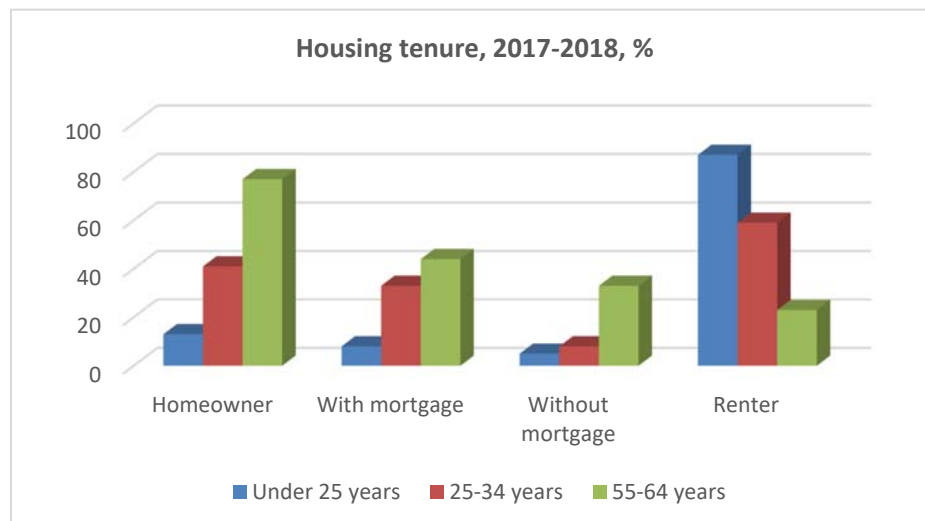
Source: Consumer Expenditure Survey, US Bureau of Labor Statistics, September, 2019.

Lack of financial support from parents is one of the defining characteristics of an adult and a child. Life from salary to salary, as many millennia do, does not make it easy. However, gaining independence should be linked to income, rather than economic. Wealth accumulation requires broad, long-term thinking and apparently the younger generations

are not capable of that yet. They tend to rent more and are not focused on owning material things as the older generations.

Annual average expenditures as a percentage of total income after taxes, 2017-2018

Age group	Value
55-64 years	90,5
25-34 years	88,8
Under 25 years	109,5
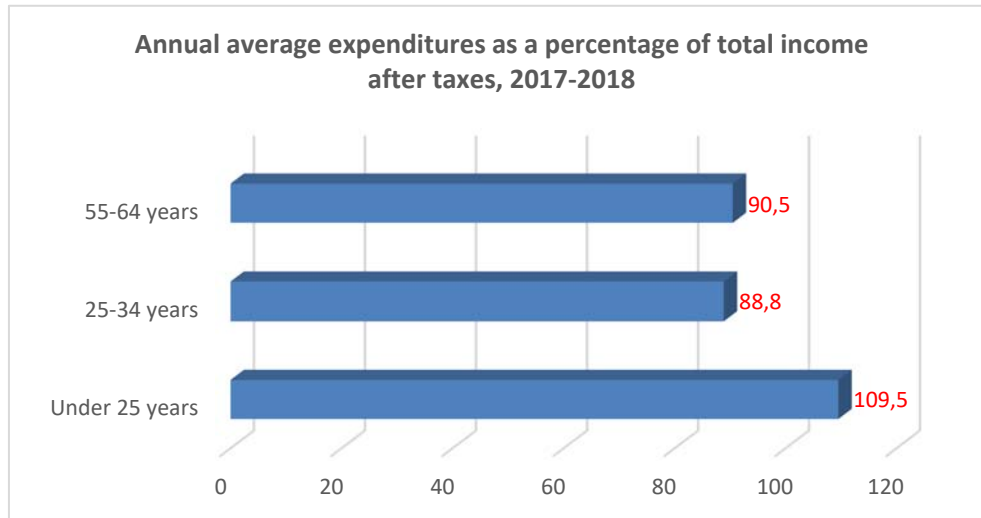
Source: Consumer Expenditure Survey, US Bureau of Labor Statistics, September, 2019.

Repaying student loan debt has become increasingly difficult for many who are struggling with unemployment and low-wage jobs. Although paying off debts as quickly as possible is a matter of course, it may not be the best way. The younger generations also have to let the money work for them.

Annual average expenditure as a percentage of total income after taxes by category of expenditure, 2017-1018

Categories (top to bottom): Personal insurance and pensions, Tobacco products and smoking supplies, Education, Reading, Personal care products and services, Entertainment, Healthcare, Transportation, Apparel and services, Housing, Alcoholic beverages, Food

Legend: 55-64 years, 25-34 years, Under 25 years
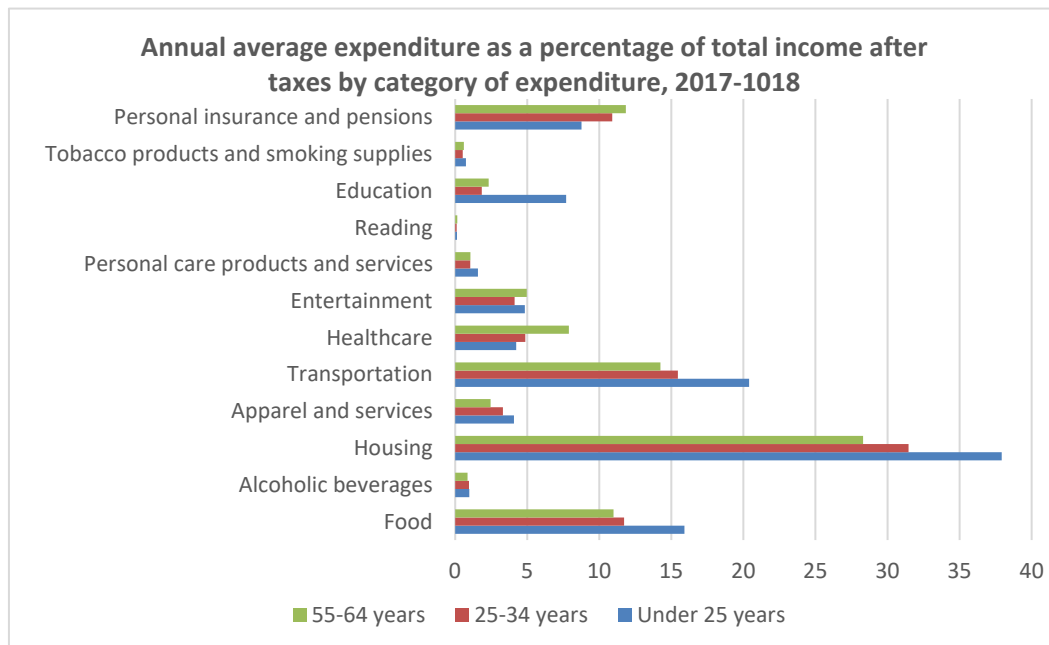
Source: Consumer Expenditure Survey, US Bureau of Labor Statistics, September, 2019.

Millennials are facing the most uncertain economic future of a generation in America since the Great Depression.

Add to this financial reality the record amount of debt (especially student loans) that this generation bears, they have to decide a serious economic dilemma. Though often referred to as materialistic, pampered, and embellished with a sense of sophistication, many Millennials have reason to believe that they will not be able to achieve life goals such as finding a dream job, buying a home, or achieving a goal to get retirement much later in their life than previous generations.

3. Conclusions

There are many differences between all these generations, there always was and there always will be, but nowadays all these differences are more visible and more accentuated than ever.

But the differences are not only regarding the social behavior, they are also regarding the economic behavior.

The young generations are more inclined to pay more for an ecofriendly product than the elder generation, but the baby boomers are more inclined to be a home owner then the new generation, because they are more grounded and more analytical.

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Regional integration and economic convergence in the European Union

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Abstract. *After more than half a century since the establishment of the European Economic Community, the regional group continues to be considered by both political decision-makers and researchers a unique participant in the economic and political fora. Although the European Union has reached an advanced stage of integration and gathered together 28 European states, there still are economic discrepancies between the founding countries and the newcomers from Central and Eastern Europe. Moreover, in the last years it became more and more obvious that convergence in the European Union is threatened not only by the economic gaps between nations, but also by the divergences between regions. The main purpose of this paper is to study real convergence in the NUTS 3 statistical regions of the European Union based on GDP per capita, using β- and σ-convergence. The results of our study confirms the neoclassical growth model assumptions: the catching-up process was faster in the less developed regions from Central and Eastern Europe and it was accompanied by a reduction of income gaps between 2000 and 2017.*

Keywords: European Union, real convergence, NUTS 3 statistical regions, β-convergence, σ-convergence.

JEL Classification: O11, O40, R11.

1. Introduction

European Union has been considered a unique figure in the contemporary economic and political landscape, which evolved in less than half of century from the stage of custom union to Economic and Monetary Union. Moreover, the European Union gathered 28 European countries and since Brexit 27, which although had different historic paths, they are nowadays united by the European values. One of the main challenge of the regional bloc is to preserve the unity between its members, mainly after the exit of the United Kingdom and the separatist movements from other European countries which threaten the European stability. In this respect, assuring a sustainable level of economic convergence between its Members is essential for the stability of the regional group. The main purpose of this paper is to study income convergence in the European Union's regions at NUTS 3 level. In order to illustrate if the European Union's regions are catching up or in contrast, are diverging, we have divided the group in three main clusters depending on the geographic location: Western. Central and Eastern and Southern European regions.

2. Literature review

Convergence has been a complex process that has been studied from different perspectives, taking into consideration a wide range of determinants and levels. From the perspective of Tokarski (2019), real convergence refers to the process of catching up by the less developed states or regions. Similar to other analysts, Tokarski analyzed convergence from two perspectives: nominal and real. Fulfillment of the nominal criteria is a condition for entering into the Eurozone. In contrast, real convergence is usually referring to the process of reaching similar levels between the economies in terms of standard of living, labor market, productivity, investments, competitiveness and quality of life. From Marelli's perspective (2007), real convergence can be analyzed from two perspectives. In the long term real, convergence involves the reduction of structural discrepancies between countries or regions in order to achieve similar equilibrium states, as stipulated by the conditional convergence hypothesis. In this framework, there is a close connection between the level of development of countries and regions and their economic structure. In the short term, real convergence aims similar business cycles and shocks between economies.

The analysis of convergence between regions has expanded in the last decades, with the creation of the Economic and Monetary Union and accession of the ex-communist European states. Taking into consideration its complexity, convergence at regional level has been studied from different perspectives. Artelaris et al. (2010), Neven and Gouyette (1995), Geppert and Stephan (2005) and Goecke and Hüther (2016) examined income convergence, while others were interested in identifying potential relationships between economic parameters in order to explain convergence (Šaroch et al., 2005; Soukiazis and Castro, 2005; Tokarski, 2019). Moreover, analysts studied regional convergence taking into consideration different levels: NUTS 2 (Tondl and Vukšić, 2003; Artelaris et al., 2010) or NUTS 3 statistical regions (Goecke and Hüther, 2016). Neven and Gouyette (1995) studied regional convergence in the European Union, concluding that the growth rates were lower comparing to the United States between 1975-1989. Moreover, the analyst identified

different patterns of growth in the Northern and Southern European regions, Within the European regions, the analyst identified different trends depending on the geographical location: Northern and Southern Europe. From another point of view, Geppert and Stephan (2005) studied convergence, combining parametric and non-parametric methods. Analysts have illustrated that disparities between European Union's regions decreased between 1980 and 2000, but the process of absolute convergence occurred only at national level, not also between regions. The analysts concluded that the national economic and political framework significantly influence the growth path of the states and regions.

From another perspective, Goecke and Hüther (2016) studied convergence based on σ- and β-convergence models, taking into consideration the NUTS 3 statistical regions. In this respect, analysts have identified major regional discrepancies both between and within nations, mainly in countries such as Germany and Italy. Goecke and Hüther found evidence in favor of β-convergence hypothesis, namely that the poorer regions recorded higher GDP growth rates than the more developed ones. Regarding σ-convergence, the analysis of Goecke and Hüther suggested that during 2000-2009 the coefficient of variation had a predominantly downward trend, subsequently increasing. However, in spite of the frequent use of the neoclassical growth model tests, Petrakos and Artelaris (2009) considered that the β-convergence cannot be successfully applied in all the studies, as it does not take into consideration the relative importance of regions in the overall framework.

Lopez-Bazo et al. (1999) were interested in studying if the economic performances of regions were linked to the geographic location. In this respect, the analysts studied the evolution of GDP per capita and GDP per employee in the NUTS 2 statistical regions. According to the experts, there was a high polarization between regions from the same country, mainly in the Southern Europe at the end of the last century. Consequently, Lopez-Bazo et al. identified some regions in the peripheral states that converged to the level of the richer regions of the European Union, due to the high concentration of economic activities in these areas. Another important conclusion drawn by Lopez-Bazo et al. was that the GDP per employee growth rate was lower than of the GDP per capita.

3. Methodology and results

The main objective of this paper is to study real convergence at NUTS 3 level using the neoclassical growth models initially applied by Sollow (1956): β- and σ-convergence. In this respect, our database includes data referring to a number of 1180 NUTS 3 statistical regions[1] for the period 2002-2017. We have also divided the regions in three main groups depending on the geographic location: Northwestern, Central and Eastern and Southern Europe. Convergence β refers to a potentially negative relationship between the initial level of income and the subsequent growth rates. The concept of σ-convergence implies that the income gaps decrease over time. Consequently, the β-convergence hypothesis assumes that less developed states or regions tend to grow faster than developed ones, which is a necessary, but not sufficient condition for reducing the income gaps (Gligor and Ausloos, 2008). According to Gligor and Ausloos, although low-income countries grow faster than high-income countries, this might not be enough to lead to income equalization.

Figure below illustrates the evolution of β-convergence at NUTS 3 level between 2002 and 2017. The negative slope of the trend line illustrates that the regions that had lower economic performances in 2000 experienced higher GDP growth rates between 2002 and 2017. According to our calculations, the catching-up speed was significant in the Central and Eastern European regions, mainly those from Romania: Bucuresti (11.47%), Alba (11.4%), Salaj (11%), Cluj (11%). The majority of the Romanian NUTS 3 regions recorded high GDP growth rates, above 9%. Other regions that experiences important GDP growth rates were Stara Zagora (9.2%), Kauno apskritis (9.1%) and Sofia (9%), all three from Bulgaria. The Northwestern regions experienced average GDP growth rates, which ranges between 6% (Coburg, Kreisfreie Stadt - Germany) and -0.87 (Wolverhampton - United Kingdom). As far as the Southern European regions are concerned, the catching up speed ranged between 4.84% (Malta) and -1.82% (Thesprotia – Greece). According to our calculations, negative economic growths were recorded mainly by the NUTS 3 statistical regions from Greece and United Kingdom, while the highest catching up speed was recorded by the Romanian and Bulgarian regions. Overall, we found evidences in favor of the β-convergence hypothesis as the poorer regions from Central and Eastern Europe experienced a higher speed of catching up than the developed regions from Western Europe.

Figure 1. *β-convergence in NUTS 3 statistical regions based on GDP per capita*
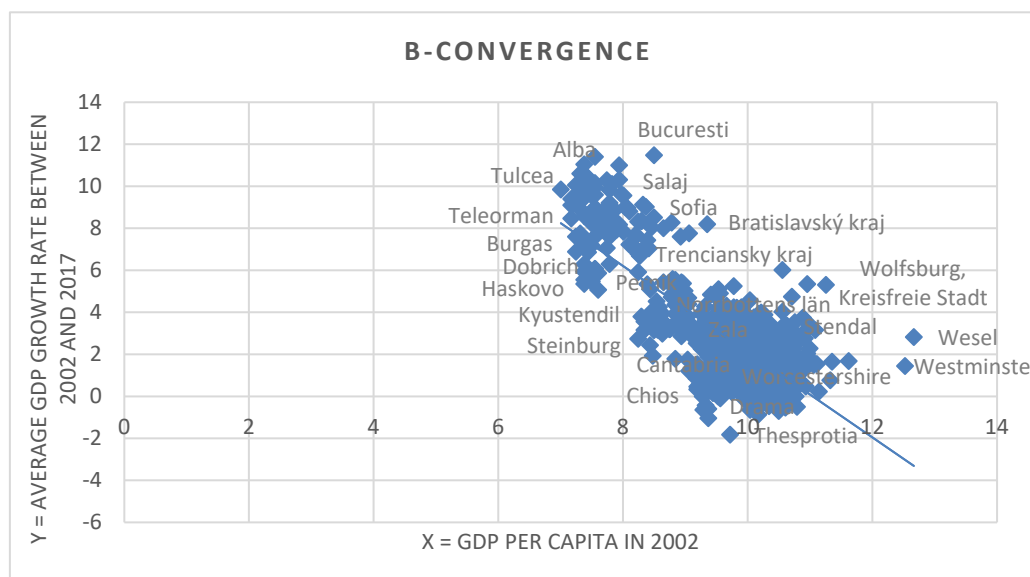
Source: Authors' calculations based on data provided by Eurostat.

Figure 2 illustrates the evolution of σ-convergence for the European Union (28) and the three cluster of regions divided based on the geographic location. According to our calculations, the coefficient of variation had an erratic evolution during the analyzed period, reaching its highest value in 2015 (0.80) and the lowest in 2008 (0.71). Overall, between the 16-year period, there were not significant improvements in terms of income distribution at Community's level. As far as the Northwestern group of regions is concerned, the highest

increase of income gaps was experienced in 2007 (0.73), while the lowest values were recorded in 2003 (0.63). The Central and Eastern European regions experienced a decrease of income gaps between 2002 and 2017, as illustrated by the evolution of the coefficient of variation. The σ-convergence decreased with 23%, from 0.71 to 0.55, which suggests that the higher GDP growth rates from these regions were accompanied by a decrease of income gaps. Although in the Southern European regions, the income distribution didn't improve between 2002 and 2017, the values of the coefficient of variation remained the lowest from the European Union – 0.35 in 2017. Consequently, the Southern group experienced the highest convergence in terms of income distribution. Overall, we found evidences that support the hypothesis that β-convergence was accompanied by σ-convergence in the European Union.

Figure 2. *σ-convergence in the European Union by cluster of regions based on GDP per capita*
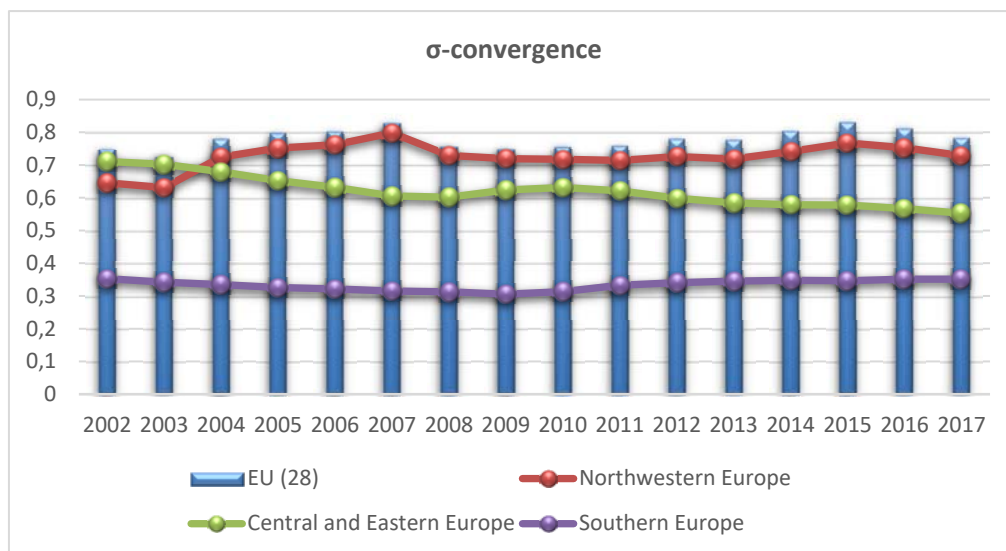
Source: Authors' calculations based on data provided by Eurostat.

4. Conclusions

Convergence is a complex process that has been studied from different perspectives, taking into consideration a wide set of parameters or different levels of analysis. Given the expansion of the European Union with the countries from Central and Eastern Europe, convergence has become increasingly studied both at national and regional level. The main purpose of this paper was to study real convergence based on GDP per capita in the NUTS 3 statistical regions. In this respect, we have used the neoclassical growth models (β- and σ-convergence) and we have included in our panel a number of 1180 regions. The results of our study confirms the β-convergence hypothesis, as the poorer regions from Central and Eastern Europe experienced a higher speed of catching-up than the developed regions from Western Europe. Moreover, we have found evidences in favor of σ-convergence for the Central and Eastern European regions, as the income dispersion decreased over the

16-year period. Although convergence has not been achieved so far at Community's level, it seems that the Central and Eastern European regions are making important steps in terms of catching-up and reducing the income gaps between them.

Note

[1]   We didn't include in our panel the regions from France and Poland due to data unavailability for the entire period of time.

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Preferences and biases
in Romanian young tourists' behavior

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Abstract. *In the past decades, the Romanian tourist market has expanded exponentially as more Romanians choose to spend their vacations abroad and many travel agencies are willing to supply this increasing demand. Since there are so many variables, which need to be accounted for when choosing a travel package and so many options to choose from, one can notice that sometimes the purchase process could be suboptimal. Following this rationale, this paper inquiries into the decision making process in order to analyze how rational biases such as confirmation, in-group, positive expectation, post-purchase rationalization, observational selection, negativity, bandwagon effect, projection, anchoring and also affective biases such as overconfidence, endowment or loss-aversion shape the consumption behavior of the Romanian tourists. From a methodological perspective, we use cross-sectional data collected from questionnaires in order to design a behavioral pattern of the Romanian tourist and to assess how this behavior is subjected to a number of variables. Our findings reveal occurring biases in the purchasing behavior on the travel services market.*

Keywords: behavior, preferences, biases, stereotypes, revenue management, tourism.

JEL Classification: L83, Z30, A13.

Introduction

The last decades have been marked by a serious development of tourism activities. As a result of favorable international factors, tourism has seen a real development, this sector bringing significant revenue to many areas of the world and being constantly subject to the challenges created by a very competitive environment.

According to the World Travel and Tourism Council, the tourism and travel sector is one of the areas of great importance in generating prosperity, accounting for 10.4% of global GDP and providing 313 million jobs or 9.9% of total employment workforce in 2017 (World Travel and Tourism Council, 2018). In Romania, the aforementioned sector contributed with 14% to GDP creation in 2017, generating directly or indirectly 6.3% of the total national employment (World Travel and Tourism Council, 2018). Experts in the field predict that the sector will continue to grow by an average of 3.3% per year by 2030, when 1.8 billion tourists will cross the borders and will exert significant environmental influence (UNWTO, 2018).

Starting from the importance of tourism both in the economic sphere, but also in the social, cultural, etc. in recent years, studies in the area of tourism have taken on a new dimension, being among the most diverse. Thus, there have been undertaken from researches focused on revenue management, to studies addressing behavioral issues in the case of hotel managers or tourists. The complexity of the studies already done, however, does not guarantee the coverage of all domains and connections so far, the vastness of the domain being impressive.

The present study is based upon previous findings in the field of revenue management and will show which related factors can be taken into account when conducting wider research in the domain. Thus, as a rule, the studies addressing the revenue management issue start from the hotel units, since the revenue management is defined as: „the constellation of tools and actions dedicated toward the achievement of an optimal level of the hotel's net revenues and gross operating profit by offering the right product to the right customers via the right distribution channel at the right time at the right price with the right communication. Its arsenal includes various pricing, non-pricing and combined revenue management tools used by hoteliers to maximize the revenues and the yield of their properties" (Ivanov and Ayas, 2017).

Many of the previous studies dedicated to revenue management are mainly focused on demand management, considering the issue of optimizing prices and managing perishable asset inventory availability, in particular focusing on forecasting room occupancy and customer demand (Pereira, 2016). Demand for each customer segment, hotel segment and room and specific time intervals (for example, before, during and after events, during the week versus weekends) were predicted in previous studies (Pereira, 2016). Forecasting used methods emphasized regressions, non-causal time series models, econometric methods, and artificial intelligence-based methods (Wu et al., 2017).

Revenue management (RM) has evolved over time from the preoccupation for the variable demand manifested in the case of the products/services offered for sale to the way customers and channels respond to prices and to how the respective information can be

used to direct and shape consumer behavior. Different software and software solutions have been developed to assist revenue managers in their requesting decisions.

The specific revenue management literature is quite extensive. That is why a comprehensive literature review of revenue management cannot be done here. Only those aspects that are tangentially related to our research will be considered.

Ivanov and Zhechev (2012) showed that revenue management can be viewed as an ensemble with four structural elements: data and information, hotel revenue centers, RM software and RM tools, beside the RM process and the RM team. For the system with four components to function properly, it is necessary that the RM process to be very well organized and the RM team to have suitable training. The RM process is considered to have several stages. There are authors who identify 7 stages: goal setting, information collection, analysis of data, forecasting, decision, implementation and monitoring of the whole RM process (Ivanov and Zhechev, 2012). At the same time, the five-stage model was proposed, which involves: preparation, supply and demand analysis, implementation of RM strategies, evaluation of RM activities and monitoring and modification of the RM strategy (Emeksiz et al., 2006). Tranter et al. (2008) developed a more complex model, with eight stages of the RM process – customer knowledge, segmentation and market selection, internal evaluation, competitive analysis, demand forecasting, channel analysis and selection, dynamic pricing and management of channels and stocks.

In the three models presented, it can be observed that the RM process could not take place unless there was a thorough analysis of the tourist's behavior, which represents, in the end, the object of the work performed by all those employed in the hotel industry.

Our study starts from this connected element that is at the base of the operation of the hotel industry and implicitly at the base of the RM process, namely the client - tourist. Starting from the model developed by Ivanov and Zhechev in 2012, later adapted by Ivanov and Ayas in 2017, we would like to add in its schematic structure a few well-known factors that deserve to be studied and taken into account whenever the problem of analyzing hotel revenue management system arises (Figure 1). Thus, the present paper will analyze elements such as: confirmation bias, ingroup bias, observational selection bias, the herd effect, post-purchase rationalization and negativity bias, as related factors that influence customer behavior and, implicitly, the RM process and the training of RM team.

Figure 1. *Hotel revenue management system (adapted from Ivanov and Ayas, 2017)*
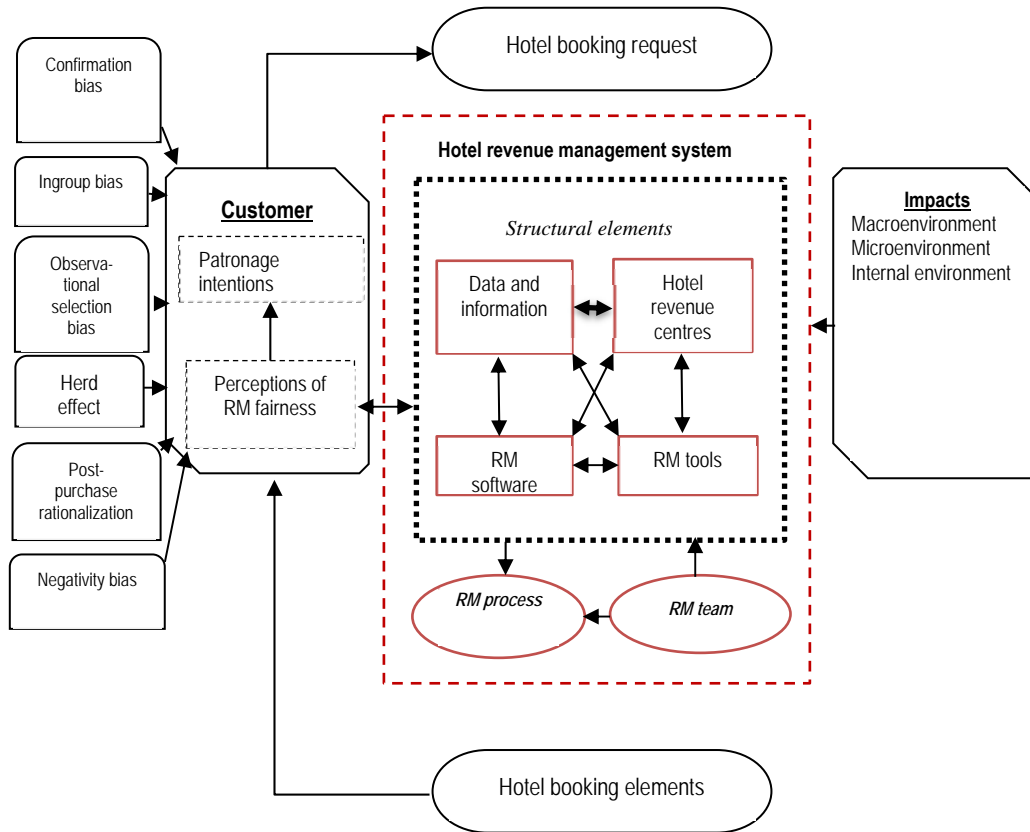
Thus, starting from the mentioned elements, we consider that a revenue manager needs to have the skills to correctly analyzing behaviors of customers, their price sensitivity and also the actions of competitors. That means the RM team, besides the analytical skills, communication, negotiation and leadership skills needs to have social competencies and also to be able to understand the factors that influence the consumer behavior.

We discovered that nowadays, a common issue among economists and not only is related to identifying those specific factors that have a significant influence in the decision of buying a package tour or in holiday destination choice. This work is useful both for scientific research on the behavior of the tourist, and especially for hotels and tour operators in Romania and beyond, since the aspects mentioned are important in drawing up some competitive strategies.

Section 1 presents a summary of the current state of knowledge of the field under investigation, Section 2 is dedicated to the research methodology, and Section 3 highlights the results and discussions generated by the study of 710 subjects, bringing into the foreground aspects of some bias that could be detected in the behavior of young Romanian tourists, such as confirmation, group membership, the "herd" effect, observational

selection, post-acquisition rationalization and negativity. The last section was dedicated to the conclusions of the study mentioned above.

1. Review of scientific literature

Articles published so far are the most diverse, analyzing relationships between different variables. Thus, in a first phase, in studying the acquisition decision, most economists relate to the theory of demand and the factors that influence it. According to the theory of demand, the decision to travel is affected by the income level, hence there we have to study a budgetary constraint (Crawford et al., 1991), empirical studies showing that the income positively affects the decision to purchase a tourist package (Eugenio-Martin and Campos-Soria, 2011; Fleischer and Rivlin, 2009).

Some studies emphasize that the choice concerning the tourist's destination is conditioned by the mental image that the tourist has created about his vacation destination, this image being in its turn influenced by interests, values and attitude of the individual living in a social environment (Obenour et al., 2005). In the model developed by Woodside and Lysonski (1989), the choice of touristic destination is based on a series of explicit and implicit decisions, starting from a certain level of awareness of the specific conditions characterizing the chosen destination, here preferences playing a central role. Hsu et al. (2010) found that there is a significant link between the tourist's expectations of the destination, his motivation to visit it and the adopted attitude.

Nuraeni et al. (2015) show that factors influencing the choice of destination should be studied in hue depending on the age of the tourist. They show that young people, regardless of gender and occupation, only consider income when choosing their destination, being less interested in the quality of offered services and more concerned with local specificities and a friendly environment.

Bernini and Cracolici (2015) emphasize that demographic issues have a strong effect on family tourism behavior, cohort and age effects acting in different ways on the decision to travel and on the amount of money allocated to tourism. Bernini and Cracolici (2015) present the age as having a negative effect on the desire to travel, but a positive one on tourism spending. Furthermore, the size of a family and the way a family is structured (i.e. the number of children and/or of elderly) affects the preferences on destination choice and the allocated amount for tourism. Thus, observations revealed that smaller, non-children families are likely to travel more than large families, the last ones having more economic and physical constraints (Collins and Tisdell, 2002). At the same time, generational analysis can be useful in understanding attitudes, preferences and travel behaviors (Pendergast, 2010).

In addition to the already mentioned issues, others such as the level of education and the type of occupation have to be taken into account. Education and employment are typically used as a proxy for future income expectations and in order to represent social class differences (Alegre et al., 2010). Some empirical studies indicate that the level of education

positively influences the decision to travel and the level of consumption (Alegre and Pou, 2004).

The perceptions of tourists with a high respect for values can be analyzed from different perspectives, because their emotional or rational behavioral intentions vary depending on several aspects, such as: culture consumption (De Rojas and Camarero, 2008), inclination to sports activities (Hutchinson et al., 2009) or to the use of wellness-based products (Howat and Assaker, 2013).

Expectations and illusions are generated by personal experience, media, advertising campaigns, and the experiences of others. When these expectations do not correspond to reality, the regret of the choices appears (Bonifield and Cole, 2007), and this can often be observed through negative reviews written by the tourist on specialized sites such as booking.com, TripAdvisor (Pesonen and Horster, 2012), on the personal blog or on Facebook, Twitter, etc., thus influencing the choice of destination made by another tourist (Volo, 2010). As modern technology begins to be present in almost all aspects of our existence, tourism cannot make an exception. Thus, the concept of smart tourism was invented, involving the combination of modern information technology with services, management and marketing in tourism, and having as a centerpiece the interactive tourists' experience (Yao and Lu, 2013).

Moreover, tourists incline to rely on their past experiences when formulating their present choice (Letho et al., 2004). An average comparison emphasized that the effects of one travel experience can influence the intentions of the future decisional behavior of the tourist, contributing to the selection criteria for the tourist destination (Pavesi et al., 2016).

Presenting the specificity of the destination brands, Caldwell and Freire (2004) highlighted the existence of two dimensions: one is related to the mental representation that the tourist perishes, and the other one is of a functional nature and is based on the utilitarian aspects of a destination. The more distant the destination is, the less well-defined expectations and the specific culture of the place (Gran, 2010) are formed despite the consultation of the online sources of information.

Del Bosque, SanMartin and Collado (2006) highlighted the importance of previous people's experiences and perceptual images created by travel agencies. The various media, especially cinema, glorify certain destinations on the big screen, some of them being or not as glorious in reality (Butler, 2011). Some studies claim that interpersonal influence and the spectacular presentation of some destinations in the virtual world influence the decision-making processes of tourists (Morgan, 2012; Neuhofer et al., 2012). It is well-known that in social situations, the travel stories of relatives and friends can be "adorned", thus increasing expectations among potential travelers.

Several cognitive psychologists have studied the influence of narration on the individuals' memory (Lorenzetti and Lugli, 2012) and have found that narrations are an effective way to promote tourist destinations. The emergence of social media has been a key moment in this respect (Tussyadiah et al., 2011).

There is also a category of studies that highlight some „hidden reasons", which may explain the decisions of acquiring a certain type of touristic package, such as searching for news, searching for variety and of a specific type of sensation, or the importance of subconscious factors. At the same time, such studies show that emotions are of crucial importance to consumer satisfaction and may underpin their behavior (Barsky and Nash, 2002; Ene and Schofield, 2011). It is believed that more than 90% of information is processed subconsciously in the human brain, and it is precisely this that plays a significant role in consumer decision-making (Agarwal and Dutta, 2015).

Intercultural differences in the context of tourism have also been analyzed to understand the tourist motivation (Reisinger and Mavondo, 2005), the behavioral quest for information (Chen, 2000), attitudes, preferences and travel behavior (Reisinger and Mavondo, 2005).

Moreover, today, it seems that the consumer's decision is no longer influenced by tourism agencies, because today the consumer has the opportunity to use the Internet and to give up the experience of a travel agent (López-Bonilla and López-Bonilla, 2010), relying on the abundance of reviews, tips, and multitude of information provided in the virtual environment. One of the important factors currently used by tourists is electronic word-of-mouth (eWOM). With the development of science and technology, social media entered quite easy in our lives, putting his mark on the way people do business today. More and more customers are posting online reviews about their experiences staying at a particular hotel, thus influencing the decision of another potential tourist and, implicitly, the financial performance of the hotel (Cantallops and Salvi, 2014). Hotel management has found a way to respond to this trend. Thus appeared the use of eWOM through online management, which meant, among others, the design of online forums that encourage the spread of positive eWOM by emphasizing the responses offered by managers to negative comments, significantly influencing the intentions and behavior of future customers. At the same time, using eWOM by analyzing data from online customer reviews can prove to be a useful tool for hotel managers to better understand customer expectations and needs and thus improve their products and services (Xiang et al., 2015).

2. Research methodology

The aim of this paper is to observe the buying behavior of Romanian customers when it comes to purchasing tourist and travel services and to detect if there is any biases that could disturb the rational decision making process. In order to tackle the biases and the way in which these are detrimental to the customer behavior we have conducted a quantitative analysis as an attempt to define some decision making patterns among Romanian young tourists.

In this context, we devised a questionnaire that was distributed online via social networks during one month period and it was filled out by 710 individuals. The survey was completely anonymous and voluntary.

From the demographical perspective, the collected data shows that: (1) 98 percent of the individuals are living in urban areas; (2) 68 percent are women and only 32 percent are

men; (3) the vast majority of the individuals (90 percent) are young (50 percent are between 25 and 34 years old and 40 percent are less than 24 years old); (4) most of them (78,9 percent) are not married and they do not have children (85,9 percent); (5) 76,1 percent are master graduates and 11,3 percent are BA graduates while only 11,3 percent are only high school graduates; (6) 50,7 percent of the individuals that answered to our questions have a job in a multinational company, 12,7 percent are working in a public institution while 11,3 percent are entrepreneurs and the rest are still students; (7) most of them (60,6 percent) have a monthly revenue per capita between 1500 RON (approx. 350 USD) and 3000 RON (approx. 700 USD), also 14,1 percent are earning less than 1500 RON (approx. 350 USD) per months while 12,7 percent have a monthly revenue per capita higher than 3000 RON (approx. 700 USD); (8) 57,1 percent answered that they use to spend their holiday abroad while the rest have chosen Romania as their main tourist destination.

To summarize, our study most probably focuses on young individuals with higher studies that are without children and not married, live in urban areas, have jobs in corporations, make between 1500 RON (approx. 350 USD) and 3000 RON (approx. 700 USD) per month and use to spend holidays abroad, but are not entirely rejecting the possibility to choose Romania as a travel destination.

Besides general demographic information, the questionnaire was divided in other two parts that focuses on: (1) opinions regarding the quality of the Romanian tourism services and (2) questions that reveal the consumer decision making process when it comes to buying travel services. As a research strategy we choose to ask questions about the quality of Romanian tourism services only to "conceal" the real aim of our investigation and to create the impression that the person will provide an opinion about the quality of tourist services and not necessarily about his purchasing behavior. In other words, while the individual focuses on giving the right answers and assessing the quality of services he also answered to some other questions that even though were closely related with the quality of services they were more focused on the individuals purchasing behavior. The data collected from each of these type of questions revealed some biases that could be detected in the behavior of Romanian young tourists such as confirmation bias, ingroup bias, observational selection bias, the herd effect, post-purchase rationalization and negativity bias. These findings are further discussed in the following section of this paper.

3. Results and discussions

3.1. Confirmation bias

First, our study investigated the possibility that there could be a confirmation bias among Romanian tourists consumer behavior. In a simple theoretical view, confirmation bias is one of the most common type of cognitive bias that occurs when an individual is misled by an inductive inference argument toward a confirmation of the assumption under study. In other words, confirmation bias is closely related to the inductive reasoning and usually happens when individuals tend to search and give more weight to observations that confirms their decisions, and dismiss or underweight data that is not consistent with their argument. In this context, confirmation bias can be revealed by analyzing individual

behavior when is selecting those arguments that will stand for its decision. In order to reveal this type of bias we asked the question "To which extent are you willing to travel to a place that you have already visited and that confirmed you positive expectations?" and the responses may be observed in Figure 2.

Figure 2. *Willingness to travel to a place as a confirmation bias*
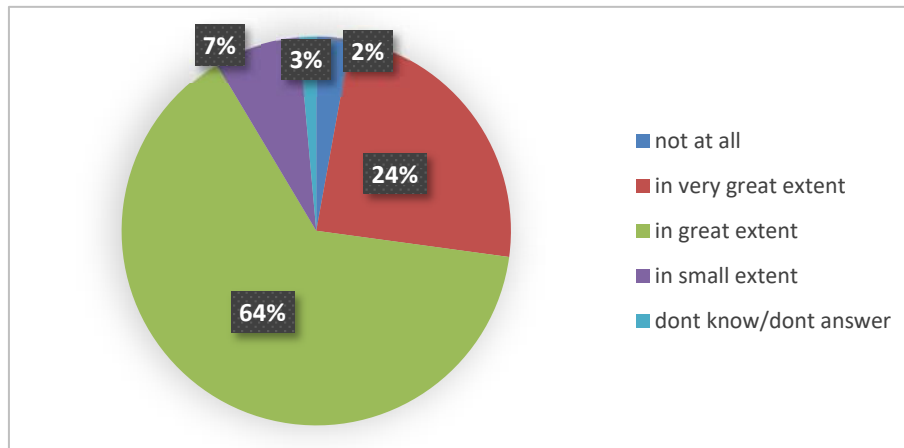
Almost 88 percent of the individuals answered that they are in great or greater extent willing to travel in a same place that they have already been if that particular place raised to their expectations. These findings reveal that could be a confirmation bias in the decision making process and that people tend to unconsciously choose those perspectives that fuel their pre-existing views, while at the same time ignoring or dismissing other possibilities. The confirmation bias found in our study could explain why many Romanian tourists seem to choose same travel destination for many years in a row.

3.2. Ingroup Bias

Related to confirmation bias our study also tried to investigate the ingroup bias which occurs as a result of individuals need to be part of a group and to place more weight on the opinions, behaviors, values and views of their group and ignore all the arguments or actions that are coming from people outside the group Usually the ingroup bias creates a „herd effect" which in tourism industry could be observed as people tendency to travel to overcrowded destination and ignore other destinations that are not in trend. In order to reveal this type of bias we asked the following question: "To which extent are you willing to travel to a place that was recommended to you and is also visited by people that you value from professional or personal perspective?" and we obtained the results that may be observed in Figure 3.

Figure 3. *Willingness to travel in a place as a result of ingroup bias*
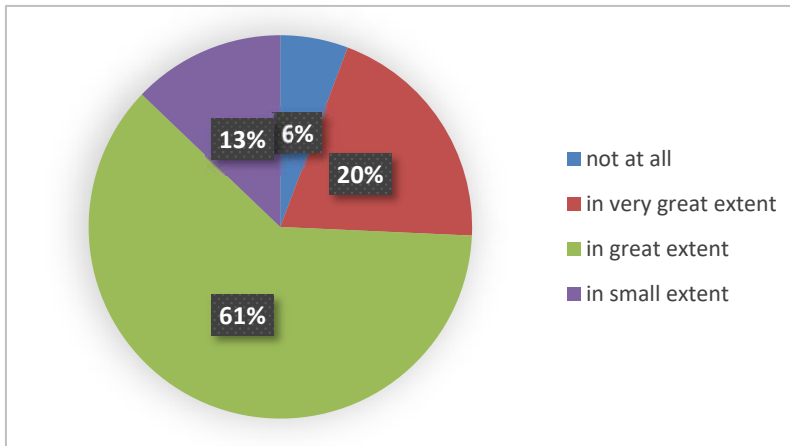
Around 81 percent of the individuals gave positive answers to this questions which shows that people could be under the effect of ingroup bias and tend to act accordingly to the behavior of other individuals. As in the case of confirmation bias, the ingroup bias could be a valid explanation of Romanian young tourists' tendency to favor some particular travel destinations for a long period of time.

3.3. Observational selection bias

Furthermore our investigation focused on observational selection bias that describes a context in which individuals suddenly tend to detect that other people made the same choices that they have made. Even though the reality is the same as it was before their decision, people really are certain that these items or events are happening more often than before which increase their confidence in their own behavior. In addition, the individuals tend to dismiss the idea that the occurrence of this confirming events is only a coincidence. In order to investigate this bias among Romanian tourists we asked the following question: "How often happened to notice that the travel destination that you choose have been also chosen by other people?" (Figure 4)

Figure 4. *Observational selection bias among Romanian young tourists*
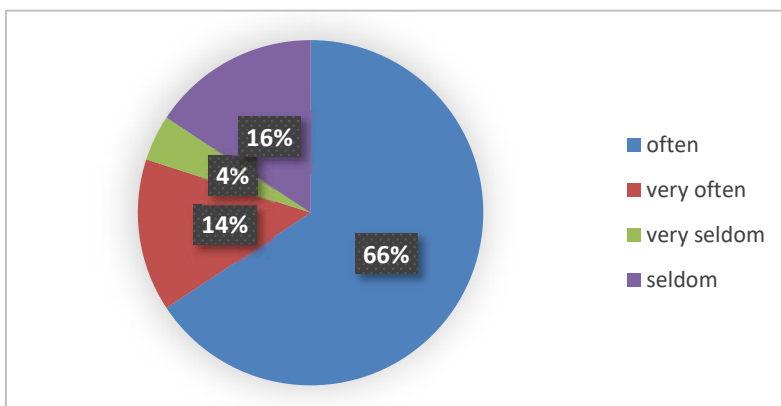
Around 80 percent of the individuals reported that they have noticed very frequent or frequent these issue. These findings reveal that tourists could also be influenced by an observational selection bias that makes them select the item in their mind and, in turn, are noticing it more frequently. On the other hand, these type of behavior is closely related to confirmation and ingroup biases. In fact observational selection bias could be another way in which tourists seek for a positive confirmation for their purchasing behavior. In this context, observational selection bias could be the third link that explain the Romanian tourist behavior in terms of constantly choosing the same travel destination for many years.

3.4. The herd effect

The next step in our investigation was to analyze if the purchasing behavior revealed by the previous three questions is entirely rational or at least some part of it is unconscious. Put it in another words we tried to find out if the people are aware of the fact that they are acting as the result of a „herd effect" or they behavior is under the influences of cognitive biases and they just do not realize that. In order to analyze this we asked the following question: „To which extent are you choosing your travel destination according to "the trend"?" (Figure 5).

Figure 5. *Choosing a travel destination as a result of the „herd effect"*
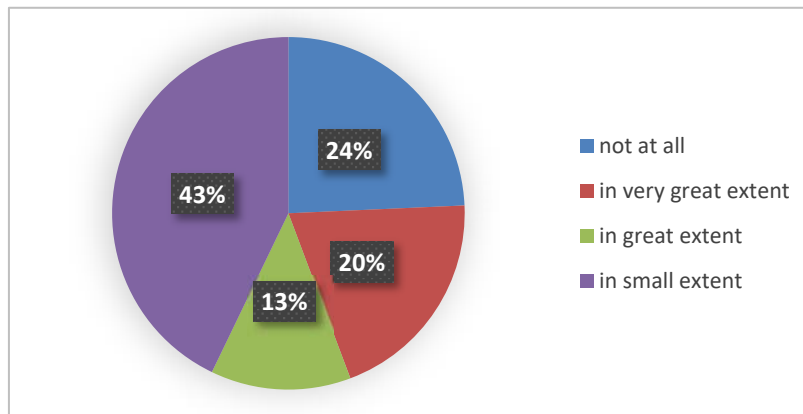
Around 87 percent of the individuals stated that their choices are entirely or almost entirely taken without taken into consideration the existent trends. These results clearly reveal that Romanian tourists are not aware that their choices are consistent with a trend and they are also not aware that parts of their decision are the results of cognitive biases such as confirmation, ingroup or observational selection bias.

3.5. Post-purchase rationalization

Another striking result of our study reveals that Romanian tourist could be also influenced by post-purchase rationalization bias. This bias focuses on the consumer behavior after the purchase was already made and reveals people tendency to search and find arguments that will justify their choice. This type of behavior is the result of individual psychological desire to stay consistent with their decisions and avoid a state of cognitive dissonance. In order to analyze this behavior we asked the following question: "After you purchased a

tourist package and prior to travel to your destination, in which extent are you searching for information that will confirm your choice?" (Figure 6).

Figure 6. *Searching confirmation as a post-purchase rationalization bias*
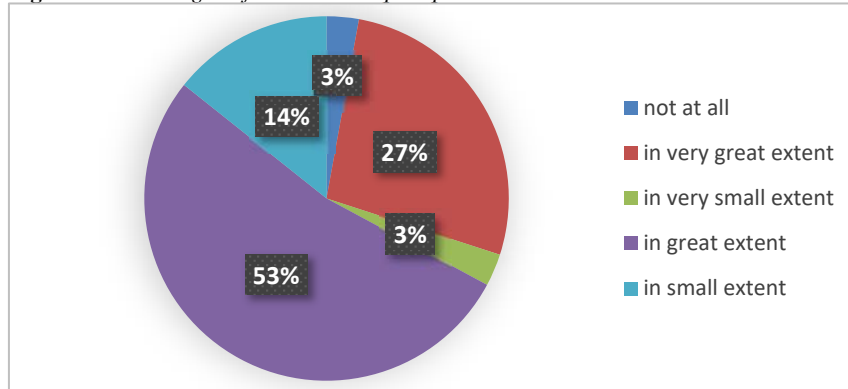
More than 80 percent of the individuals stated that they are searching for this kind of information. These findings reveal that Romanian young tourists could be under the influence of post purchase rationalization bias. Relative to the medium income of the individuals, buying a travel package seem to be perceived as an important decision that does not end with the actual act of purchase. Many Romanian tourists try to convince their selves that they made the best decision although, at least from a rational point of view, this process does not matter since the purchase has already been done.

3.6. Negativity bias

According to behavioral economics people tend to pay more attention to bad news and to perceive negative news as being more important or profound. The negativity bias argues that individuals tend to be more influenced by bad news and to act accordingly. This type of behavior could be perceived among tourists that tend to avoid destinations once they have heard some bad news about them. In order to analyze this behavior among Romanian tourists we asked the following question: "To which extent are you willing to travel to a destination where a terrorist attack just happened?" (Figure 7).

Figure 7. *Avoiding travel destinations as a result of negativity bias*
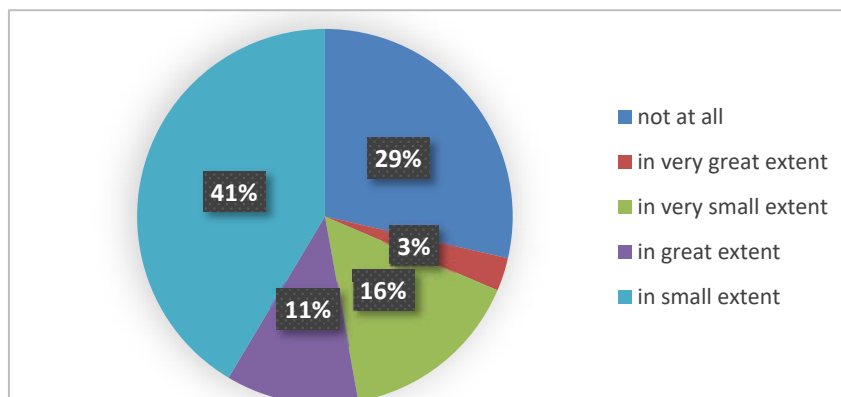
Around 81 percent of the individuals answered that they will try to avoid such destination, these answers reveal that Romanian tourists are very sensitive to bad news and tend to act accordingly. On the other hand, this type of behavior could be the result of negativity bias since from a statistical perspective there are less chances that an event happen twice. Nevertheless, this negativity bias could explain why Romanian tourist changed their perspectives on some destinations that were very popular prior to some events that changed their perspectives (e.g. case of Turkey).

4. Discussions

The empirical study focuses on young Romanian adults providing a series of findings that could be relevant for revenue management process as it delivers valuable data that contributes to a better knowledge of this particular type of customer. Furthermore, the results could be employed to various stages of revenue management such as segmentation and market selection, demand forecasting or dynamic pricing and management of channels (Tranter et al., 2008). Consequently, our findings could be applied in different stages of revenue management identified by Ivanov and Zhechev (2012) like information collection, analysis of data, forecasting and decision. Since these so called cognitive errors already exist and different categories of clients experience behavioral biases, business owners and entrepreneurs should adapt and use these biases to design and implement better revenue management strategies.

The empirical results of the study reveal the prevalence of ingroup bias and/or the „herd effect" in the case of young Romanian adults which is the tendency to act accordingly to the behavior and opinions of peers or other individuals. In the age of digitalization these behavioral habits, opinions and reviews are effortlessly made public via social networks, forums, mobile applications and other online platforms. In this context the results of our study are in line with previous findings that emphasize the prominence of electronic word of mouth (Cantallops and Salvi, 2014) and the need for online data analysis as an effective tool to better understand customer expectations and needs and to improve products and services (Xiang et al., 2015). At the same time, the manifestation of the ingroup bias conveys a strong signal toward a well-designed strategy to amplify positive information and control or alleviate negative information. Since the ingroup bias could bear positive as well as negative consequences, this strategy should boost the spread of positive comments, reviews or any other positive information in order to build a critical mass that could generate the „herd effect" among potential customers. Simultaneously, this strategy should invest in an effective management of relevant feedback to potential negative information that could hinder the efforts to increase positive attitudes.

Exploring confirmation bias among young Romanian adults, our study reveals that the vast majority of respondents are to great or greater extent willing to travel to the same place they have already been if that particular place raised to their expectations. These results, on one hand, enhance the knowledge of these customers behavior, and, on the other hand, provide valuable insights for a more efficient revenue management strategy: while the prevalence of ingroup bias could help mangers bring new customers, the occurrence of

confirmation bias could be employed as an effective tool for market segmentation and customer retention. The results of our study lead to the idea that the efforts to draw new customers that already experience confirmation bias being attracted by other tourist destination could bear an excessive cost related to benefits. Consequently, the revenue mangers should be aware of the market segmentation in terms of biased preferences and behaviors and avoid targeting customers that are under a deep confirmation bias. On the other hand, the confirmation bias could be a powerful resource when working in favor of a particular destination. If a revenue manager is able to identify their own clients that experience confirmation bias, he or she could use these clients to build the critical mass that will draw new clients via ingroup bias. As previously noticed, effective communication that enhances and spreads positive messages is key for successful retention and engagement of customers.

The relative lack of simultaneity between acquisition and actual consumption of purchased services that tourist industry features could lead to other cognitive errors such as observational selection bias and post-purchase rationalization. According to our research around 80 percent of respondents experienced both observational selection and post-purchase rationalization biases. From a revenue management perspective, the occurrence of these biases could significantly alter the post-acquisition customer behavior and could go so far as canceling reservations and requesting refund. It becomes more evident that, as the information technology made booking tourist services more accessible and more convenient, the amount of last-minute cancellations is also increasing (Horiguchi, 2015; Delgado, 2016). This kind of behavior is of major concern for tourist industry since cancellations lead to significant revenue losses (Saito et al., 2019). In this context, one could easily notice that the actual booking does not necessarily mean that the service provider has reached the finish line. As there are numerous alternatives available, more effort into keeping customer decision should be invested. The prevalence of observational selection and post-purchase rationalization biases reveals that the initial decision is not perceived as definitive since the customer continues their search for relevant information to support that preliminary choice. Our study backs this assumption, and in the light of these findings, it becomes apparent that revenue managers should subsequently focus on customers and provide incentives for a positive attitude toward initial decision. As part of actual demand forecasting, revenue managers should be interested in conveying messages that will feed the need for post purchase rationalization of potential clients. Our study shows that an efficient method to avoid cancelations might be encouraging loyal customers to signal their choices and, via observational bias, potential clients could be persuaded not to change their decision during post purchase rationalization process.

Finally, according to findings, young Romanian adults are very sensitive to bad news and tend to act accordingly by avoiding tourist destinations where various types of hazards occurred. Usually, these hazards are external factors such as political events or ecological disasters, their probability is very low and even though they tend to have significant negative consequences on revenue they are beyond control of hotels or other tourist destination managers. However, the prevalence of negativity bias in tourist behavior draws attention to the need to find efficient methods to alleviate signals that could lead to negative attitudes towards once a popular destination. As previously acknowledged, these methods

could rely on competent management of feedback to negative information and the spread of positive messages through various communication channels with a special focus on electronic word of mouth.

Concluding remarks

Our empirical study focused on explaining the behavior of Romanian young tourist and the extent in which this behavior could be under the influence of some cognitive biases as we searched for patterns in Romanian young tourists' behaviors. In this context, the study provides data that could enhance knowledge of this particular type of customer and, on the other hand, aims to find relevant behavior patterns relevant for revenue management process. The main pattern that we found was that Romanians tend to choose the same travel destination for a long period of time and that they are very reluctant in changing their travel destination. The next step of our endeavor was to find out if these behavioral patterns are entirely the results of rational decisions or part of these patterns are under the influences of some cognitive biases. Our empirical study reveals five cognitive biases that impact the purchasing decision of Romanian young tourists and create a „herd effect".

The most important biases that contribute to the „herd effect" are: (1) the confirmation bias which shows that tourists tend to unconsciously choose those destinations that already confirmed their positive expectations; (2) the ingroup bias which reveals the tendency of Romanian young tourist to act accordingly to the behavior of other individuals and (3) observational selection bias which shows that Romanian tourists tend unconsciously seek confirmation for their choices by noticing the behavior of others. We have also verified and concluded that Romanian tourist are not entirely aware that their behavior could be attached to the „herd effect" as the majority of individuals answered that their decisions are not consistent with „the trend". Beside the biases that create the „herd effect", we have also found another two biases that impact Romanian tourist behavior: (4) post purchase rationalization which reveals that many Romanian tourists try to convince their selves that they made the best decision after the decision was already made and (5) negativity bias which shows that Romanian tourists are very sensitive to bad news and tend to act accordingly. In line with these findings, research further focuses on efficient strategies and methods to prevent negative outcomes or even to benefit from potentially positive consequences of these biases. Consequently, a strategy focused on eWOM to raise a critical mass of loyal customers could trigger ingroup bias and positive „herd effects", while relevant feedback that alleviates unfavorable messages might avoid the culprits of ingroup or negativity biases. Moreover, our research suggests that revenue managers could use observational and post purchase rationalization biases to decrease the amount of cancelations and refunding.

Even though our empirical study revealed that there are biases in Romanian young tourist decision making process we could not tell the extent in which these biases impact on behavior. From this perspective, some studies that will devise a clear mechanism that can compute a ratio between biases and rational choices will further contribute to the extension of knowledge in this field.

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Economic education towards economic convergence

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Abstract. *Economic disparities between countries continue to exist despite the efforts of economic policies to tackle their negative effects on population. The analysis of root causes of these disparities highlights, inter alia, the lack of economic knowledge and skills of population when confronted with economic decisions. From this perspective, the article proposes to analyse the countries in the European Union, with country's average GDP per capita higher that the EU average to size the role of economic education in those countries. An individual skilled with economic education will contribute to the forecast of the economic cycle by anticipating the downturns of the economic environment. In this way, preventive actions will be proposed to deal with factors that trigger the economic disparities, which contributes to the increase of welfare across nations. Good economic behavior in economic policies has the supreme reward that nations experience economic growth, which facilitates their easy access towards the economic convergence.*

Keywords: economic convergence, economic cycle, economic education, economic environment.

JEL Classification: A20, I21, I25, O47.

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[1] Disclamer: "The information and views set out in this article are those of the author and do not necessarily reflect the official opinion of her employer".

Introduction

The necessity of counting with solid economic education derives from the need of understanding how economic phenomena take place within the economic environment and how these events are influenced by our individual decisions. From this point of view, the economic education plays a key role in the development of economic knowledge of an individual. This is to say, a basic level of economic knowledge contributes to the development of critical thinking of individuals, enabling them to take economic decisions independently and supporting their spirit of initiative. However, the economic education *per se* is not compensated economically in addition to the existing wages, but it is considered as a complex factor in the economic knowledge development of the individual as part of the society, which subsequently will contribute to make the *Gross Domestic Product* (GDP) of countries more sustainable.

The convergence is the process when countries with low levels of GDP per capita are catching up with countries with higher levels of GDP per capita. In addition, the convergence of the real economy constitutes a topic of discussion largely debated by the economists, who try to respond to the question whether the convergence of the real economy can only be achieved based on competitive markets according to the neoclassical models. It is to be highlighted that such question has generated numerous controversy for which large-scale studies and models have been employed. In order to highlight the root causes and trends of the real convergence process, studies and models have been carried out, and which can be classified in three major trends. In the first trend, the convergence is considered a natural process based exclusively on market forces, according to which the larger, the more functional and the less distorted the market is, the convergence process is safer and faster. The second trend denies the fact that, under the current competitive market conditions, there would indeed be a process of genuine convergence of the poor with the rich countries. Furthermore, it agrees with the existence of a tendency to polarization and the widening of inequalities between the center and the periphery. The third trend considers necessary and possible to achieve the real convergence under competitive market conditions, but when economic policies are implemented to compensate for the negative effects of inequalities, and, at least until economic systems are mature enough and reach the so-called critical mass for self-underpinning the real convergence process.

The economic convergence can be perceived as best when it is achieved through the light of market forces that belong to the neoclassical theory of growth. In the same way the economic result (GDP per capita) is given by the contribution of several inputs (capital, labour, natural resources, technological progress), the neoclassical model takes as a fundamental assumption the reliance on the specific characteristics of the return on capital, which has, in general, a downward trend compared to economic growth.

The current situation at European level shows that less developed countries and regions are characterized by capital shortages and by a reduced capacity of savings due to the low level of income per inhabitant. This shows that the territorial entities of those countries offer opportunities for development and attract available capitals from the countries where capital is abundant, and, count with companies interested in operating in large, secure and profitable markets. Some European countries have increased capital inflows resulting in

investments, and in foreign direct investment, which has become the most important mean of attracting different intangible resources, such as new technologies, knowledge, expertise, managerial experience, etc. Foreign direct investments have certain advantages over financial investments, and their presence in a country or territory is linked to the existence of necessary conditions to ensure sufficient quality infrastructure facilities to pursue the lowest transaction costs, to abundant and cheap local resources, and to making horizontal investments based on economies of scale as close as possible to the potential clients.

In their path towards economic convergence, it is necessary that markets become fully functional and they ensure the necessary competitiveness. A systematic policy of cleaning up the markets from anti-competitive elements, by prohibiting state subsidies, protectionist measures and other elements that would lead to distortions in the functioning of the markets is considered of outmost importance. Furthermore, most of the economic reform measures applied in some European countries have as main objective to achieve a competitive market. From this perspective, to role of the economic education in an economy plays a crucial role, since by acquiring economic knowledge, the individuals involved in economic decisions could better understand the economic environment and the evolution of the economic cycle, which would create a solid basis towards the achievement of economic convergence.

Literature review

From a global perspective, the economic convergence is primarily related to the structural transformation of the economic system and, furthermore, to the adaptation to the characteristics of the global business cycle of Kondratieff type. Although many academics do not accept the long wave theory, we observe, and we agree that Kondratieff sets out both the causes and effects of recurring joint events in capitalist economies throughout the history. They have a duration of around 50 years, they are driven by major technological innovation and they are composed of an alternation of economic cycles that are carried out over a shorter duration. If we have to mention the economic convergence from the conceptual point of view, it is to be pointed out that the concept of convergence is linked to a high number of acceptances, from which the main one is the difference between the nominal and the real convergence. Therefore, in Table 1, we started highlighting main differences between the nominal and the real convergence.

Table 1. *Difference between the nominal and the real convergence*

Nominal convergence	Real convergence
It follows up the achievement of the Maastricht Treaty criteria;	It is concerned about an approximation of economic and social development levels;
It shows a convergence of the nominal variables reflecting a certain degree of macroeconomic stability;	It shows similarities in the performance patterns of the national economies in the long term;
It is a binding criterion for the Economic and Monetary Union.	It represents a reduction in the existing disparities of development and level of income in various countries.

Source: Elaborated by the authors.

The convergence criteria are presented as the economic test to evaluate the stage of preparation of an economy to participate to the third stage of the Economic and Monetary Union. These convergence criteria were established by the Maastricht Treaty and were ratified by all EU Member States in 1993, and state the following:

1. **Price stability:** Where the average inflation rate over the last 12 months does not exceed 1,5 percentage points than that of the 3 best performing Member States in terms of price stability and, this development must prove to be sustainable.
2. **Public finances:** The government's financial position has to be sustainable, the government debt should not exceed 60% of GDP and the government deficit should not exceed 3% of GDP.
3. **Interest rate:** The nominal average long-term interest rate over the past 12 months must not exceed by more than 2 percentage points that of the 3 best performing Member States if we refer to price stability.
4. **Exchange rate stability:** This stability must remain in the range between the fluctuation margins under the exchange rate mechanism for a period of at least two years without severe tensions, in particular without any initiative being made at the devaluation of the national currency against the euro.

The European economic and monetary integration is focused on the principle of convergence and on economic and monetary integration. More specifically, the nominal converge refers to the coordination of economic policies which have an impact on aggregated demand (monetary, fiscal, revenue), and the convergence concerns the approximation of policies within the scope of the aggregate supply, such as structural reforms which have an impact on the economic potential.

To start with the economic development, we have to highlight that its analysis can be made on a quantitative basis with the help of macro indicators, and on the other hand in qualitative and institutional terms, where it is not just about the paradigms of neoinstitutionalisation, but also of empirical models, which take into account various determinants and factors, which strive to quantify the qualitative factors. Mankiw (1992) argued that the theories of endogenous growth, as opposed to neoclassical models, focus primarily on the answer to the question why the countries develop and not on the answer why some countries grow faster than others do.

Results and discussions

In the current article, we will focus primarily on the real converge from a perspective of approximation of economic development of countries, focusing our analysis in the role of economic education in those countries. We started our analysis by studying the economic convergence pattern in the EU-27. Figure 1 lists the GDP expressed in Purchasing Power Standards (PPS) in the EU-27 Member States during 2018. From a first analysis, the GDP of Luxembourg and Ireland are the highest in the EU-27, followed by the Netherlands and Denmark. These are the countries with the highest levels of GDP per capita in EU-27 that are to be catched up by the countries with lower levels of GDP per capita in the process called convergence. Nevertheless, it is important to highlight the fact that although the

Netherlands and Denmark are classified in the third and fourth position within the EU-27, their GDP per capita is very closely followed by countries such Austria, Germany, Sweden and Belgium.

Figure 1. GDP per capita in PPS in EU-27 in 2018
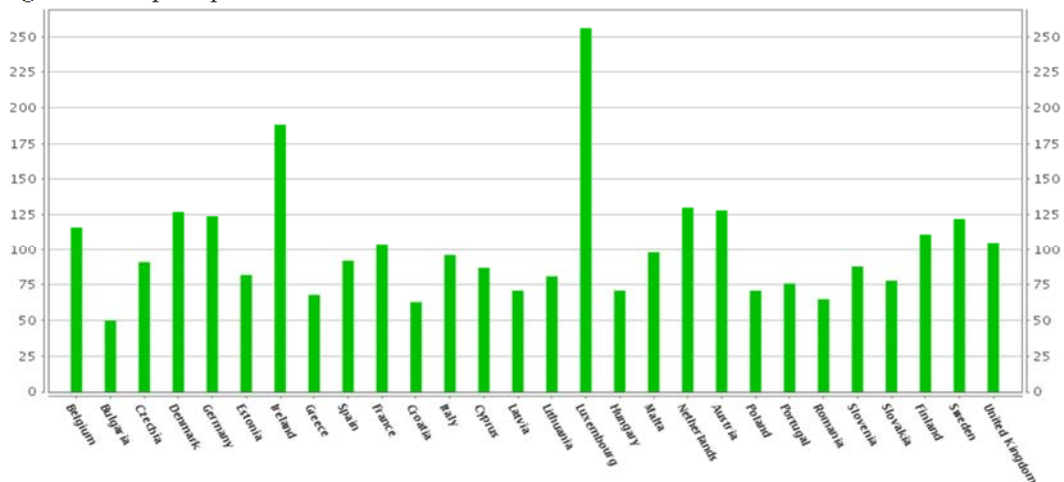
Source: Eurostat (2020).

Following Sánchez-Barrioluengo (2016), the education is a non-market service, and, from this perspective, in the current paper, we continue our analysis by trying to find out how much countries with highest income within EU-27 spent in education, in general. As indicated in Figure 2 by the Purchasing Power Parities (PPP) related to education in EU-27 during 2018, the price level indices and real expenditures in education provide a comparison of countries' price levels with respect to the EU-27 average. This analysis indicates that countries that are above the EU average like, for example, Luxembourg, Sweden, Austria, Denmark *inter alia*, are countries which are considered to be expensive compared to the EU average. If we correlate the information provided in Figure 1 with the information provided in Figure 2, we may draw the conclusion that the countries with the highest expenditures in education are the countries with the highest level of GDP per capita. Therefore, there is a positive correlation between investment in education and the income of countries. Various studies have been analyzing this correlation from at least two perspectives: firstly, countries with highest GDP per capita tend to further invest in education in order to maintain or increase their welfare and, secondly, low-income countries invest in education in order to catch up with wealthier countries. Nevertheless, it is important to state the role economic knowledge plays in the path towards economic growth of countries.

Figure 2. PPP's related to education in EU-27 in 2018
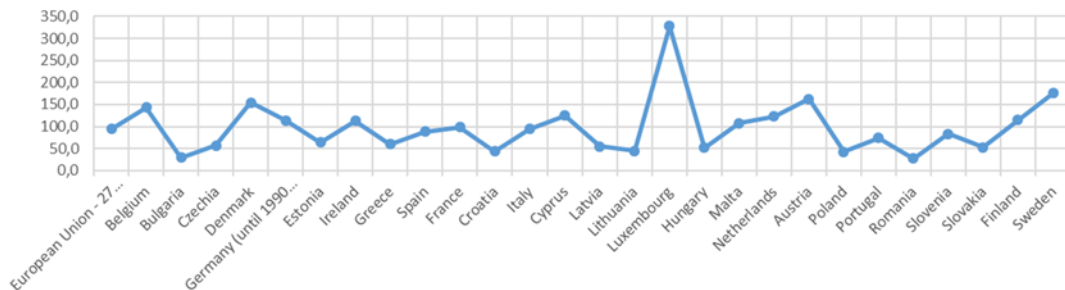
Source: Eurostat (2020).

Batsaikhan and Demertzis (2018) indicate a stronger association between financial literacy and the level of GDP per capita in developed economies. The financial literacy forms part of the economic education of individuals enabling them to learn and understand the basic concepts of the economic environment (i.e. borrowing, saving, etc.). Meanwhile some European countries have included the economic education as a subject of school curriculum, as it is the case of Sweden, the Netherlands and Belgium, some other countries, as Spain, for example, have created an interactive on-line platform to disseminate basic economic knowledge to individuals. In addition, some targeted studies have been carried out by the private sector with the aim to indicate that school curricula should also include basic economic education. The purpose of these studies was to allow not only the liaison between the theory and practice, but also the update of basic economic/financial knowledge of individuals to the evolution of the economic environment, especially in the years after the financial crisis from 2008.

Empirical evidence highlight that more financially knowledgeable people are they are more likely to take better financial decisions and, therefore, contribute to the development of their households economies, which contributes positively to the economic growth of nations. Lusardi (2011) indicates that only one third of the global population is familiar with the basic concepts that underline everyday financial decisions. From the real economic convergence perspective, by reducing the economic disparities in the income levels of individuals, by being more financially literate, it triggers the reduction of economic disparities across nations. This enables countries to move faster towards achieving economic growth, which determine the increase of welfare and reduction of living costs.

Conclusion

In conclusion, income disparities between countries could be reduced by increasing the economic knowledge (including financial literacy) of individuals, who take better decisions in the economic environment, which further enables the convergence towards the economic growth of nations. Low-income countries need to catch up with high-income countries, and, for this, the role of economic education should not be underestimated. Basic financial literacy, for example, enable the individuals to better understand and anticipate the downturns of the economic cycle. In comparison with the nominal convergence that counts

with criteria defined by the Maastricht Treaty, the real convergence does not count with pre-defined criteria. The real convergence enables the attainment and the sustainability of the nominal convergence by reducing the exposure of the economies to asymmetric shocks. Theoretical and empirical literature suggest that low-income countries observe the experience of countries that have grown faster and try to follow their economic growth path in becoming high-income countries.

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Professional development, initiative and entrepreneurship in the undergraduate school system

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Abstract. *One of the key objectives for the UE and the member states is represented by the development of entrepreneurship abilities both for the citizens and for organizations.*
For secondary schools and high schools the idea of initiative and entrepreneurship is connected with the sixth key competence defined in art.68 from National Education Law, and concerns mainly, national curriculum.
To which extent teachers from the undergraduate school system possess this competence, and the effect that lifelong training/learning has on the development of the initiative and entrepreneurship among teachers, these are the questions answered by this empirical research.

Keywords: professional development, initiative, entrepreneurship, education, opportunities.

JEL Classification: I21, M53.

1. Introduction

Education can be a powerful weapon. The sense of initiative and entrepreneurship is one of the eight key competences of lifelong learning, defined by the European Union and included in the legislative documents governing the activity of the national education system.

Entrepreneurs are crucial to building a prosperous society that provides opportunities for all. In emerging economies, as is the case in Romania, interest in entrepreneurship is higher than ever. 21st century citizens need to know how to use the initiative and turn it into services, goods or values that contribute to local and regional economies, and just as importantly, to their own well-being.

Entrepreneurship determines economic change and innovation, extending to developing students' ability to capitalize on opportunities by unleashing the initiative.

Implementing the idea of initiative and entrepreneurship through education will be a challenge that can highlight the evolution of the level of skills and qualifications that students must acquire during their education.

Until recently, the sense of initiative and entrepreneurship was less relevant to education, being viewed with interest primarily in the economic environment. Therefore, the development of skills in this regard has been better represented at the level of university education or non-university tertiary. For primary or lower secondary education, these skills, for a long time, were formed by involving students in various educational or extracurricular activities and, to a certain extent, within the course hours of various specialties. It is certainly more problematic when trying to infuse initiative and entrepreneurship in primary and secondary education.

Schools need to focus on active and practical learning, implementing innovative thinking strategies, learning as much as possible beyond the classroom. An extremely interesting impact that entrepreneurship can have on education, is the high level of motivation and involvement of the students that it can trigger, materialized in the deep learning. Students can become highly motivated employees and to create value based on the knowledge they acquire, which can fuel learning and provide practical relevance of knowledge. Students who demonstrate a strong interest and a special aptitude to create value, may afterwards continue with specific courses and programs that focus on initiative, innovation and why not, on developing new business ideas embodied in building new organizations.

Through entrepreneurship education the aim is to develop key skills, both in compulsory education and lifelong learning, and teachers are the first who should comply with the requirements imposed by the new developments in society.

We live in a society where information and knowledge follow one another quickly. Understanding their strength, organizations and people need to redefine their position and agree that their core values are what they know and how they use that knowledge. Training and professional development, evolution in the teaching career is absolutely necessary and compulsory. *Teacher training* is a continuous and equally cumulative process through which teachers' skills are acquired and developed. This process is based on the concept of

lifelong education and consists of two components: initial training and lifelong training, the latter contributing to updating and developing skills, as well as to the acquisition of new skills.

Teachers must demonstrate a firm commitment to vocational training: regarding the use of new technologies; to improve the ability to learn how to learn; how to take into account diversity and inclusion; and to meet the needs of disadvantaged people, such as Roma, children with disabilities or those from migrant families. The ultimate objective of all these activities should be to improve learning outcomes (The European Commission, 2012), or as I said before, deep learning is achieved when students are motivated, have initiative and interest in learning.

2. Connection between teacher training in secondary education, initiative and entrepreneurship

Undoubtedly, teachers are one of the most important socio-professional categories for the future of Romanian society. The quality of their initial and continuous training is reflected in the students' actual and future performances.

Generating new skills, training of human resources in secondary education has an impact on the level of theoretical and practical training of students, on their ability to adapt to a constantly changing competitive environment.

Alvin Toffler said that in the 21st century, illiterate will not be the one who will not be able to write and read, but the one who will not be able to learn continuously. This necessity claimed by the knowledge society is felt strongly by institutions and professionals in the education system. Participation in continuous training experiences aims to increase professional competitiveness.

Regarding the experiences and knowledge gained by the students through the training programs, the statistics prove that they have achieved their objectives (Table 1), most of the participants in the training being very satisfied (44%) or satisfied (22%) of the quality of the scientific and professional training acquired. Remains a significant percentage (34%) of teachers participating in training courses that din not reached the optimal level of satisfaction regarding the acquisitions acquired within them or their theoretical and applied consistency.

Table 1. *The level of scientific and professional training offered by the training programs*

Criteria	Respondents	Percentage	Valid percentage	Cumulative percentage
Total agreement	44	44%	44%	44%
Agreement	23	22%	22%	66%
Unconcerned	7	7%	7%	73%
Disagreement	17	17%	17%	91%
Total Disagreement	9	9%	9%	100.0%
Total	100	100.0%	100.0%	

Source: personal contribution.

2.1. Relevance and importance of the study

Through the Action Plan "Entrepreneurship 2020" and the Communication "Rethinking education", the European Commission stressed the need to integrate learning demonstrating initiative and entrepreneurship in all sectors of education. Both documents require Member States to offer all young people a practical experience in the field of entrepreneurship before completing compulsory education. The importance of learning through practice is presented within the education and training process, regardless of the level of education.

To help practitioners integrate the idea of initiative and entrepreneurship into teaching the basics, they must have the necessary expertise, gained through the lifelong learning process.

2.2. Research methodology

The investigative approach regarding vocational training, initiative and entrepreneurship has used a complex research strategy, which combines both quantitative and qualitative methods of investigation. Below is the set of methods and techniques used for collecting information and the purpose for which they were used.

The research objectives were aimed:
O1 – identifying teachers' level of entrepreneurial skills, regardless of their subject;
O2 – identifying the position of teachers in undergraduate education related to the introduction in the future training programs of a component for entrepreneurship;
O3 – developing within the classroom lessons, regardless of the subject taught, the skills to stimulate initiative and entrepreneurship.

The hypotheses that guided our approach were:
Hypothesis 1 – Teachers in secondary education have a low level of development of entrepreneurial skills.
Hypothesis 2 – There is a positive correlation between the level of professional training in the field and the level of entrepreneurial skills of the students.

In the study carried out the following stages have been completed:
- Establishing objectives and working hypotheses.
- Sampling.
- Establishing methods of collecting information.
- Preparation and application of the questionnaire.
- Validation, processing, analysis and interpretation of questionnaire results.

The research tool

In order to reach the research objectives and to investigate the hypotheses, surveys were carried out at five school units located in the urban and rural areas, early education level, primary and secondary, using the questionnaire method.

The questionnaire was divided into four sections. The first section covers the socio-demographic, socio-professional and contextual aspects of the teachers included in the investigated sample. The second section consists of a question regarding the level of the

training of the teachers to develop the initiative and entrepreneurial spirit of the students. Section three contains 10 items related to professional skills, as the basis of an effective teaching that leads to the development of initiative and entrepreneurial spirit among students. The last section is focused on identifying the degree of determination between vocational training and the level of entrepreneurial skills of the students.

In interpreting the items included in the last three sections, Likert's 5-step attitude scale was used, where answer 1 means total disagreement and answer 5 means total agreement.

The sample

The investigated group consisted of 18 teachers for pre-school education, 29 teachers for primary education, 31 teachers from lower secondary education and 22 teachers from upper secondary education. The respondents were distributed relatively evenly according to their environment: 42% from rural areas and 58% from urban areas.

The questionnaire had fifteen minutes to be filled in, and the period in which the questionnaire was applied was November 2019.

Table 1. *Characteristics of the population included in the target group*

Target group	Gender		Age / years old				Accumulated service					
	M	F	18-25 years old	26-35 years old	36-45 years old	over4 6 years old	0-2 yea rs old	2-6 yea rs old	6-14 years old	14-22 years old	22-25 years old	Over 25 years old
Teachers	22	78	17	29	33	21	5	17	13	24	22	19

Source: author's contribution.

2.3. Research results

Due to the pace at which the changes in the contemporary society take place, the importance of professional training and development has increased dramatically. The forces that bring about change and which put pressure on organizations in the direction of training and professional development are (Zorlenţan, 1998): globalization of competition, major changes in technology, attrition of knowledge, of the labour force.

In the research approach, we considered appropriate to identify and understand the level of entrepreneurial skills acquired by the 100 respondents included in the target group. From the analysis of the questionnaires it was observed that the majority of the respondents (69.00%) appreciated that they did not benefit from a thorough training on the concerned issue. In detail, this opinion is shared by 77.77% teachers from pre-school education, 93.54% teachers from primary education, 68.18% lower and 50% teachers from upper secondary education. We can highlight the homogeneity of the respondents' opinions given that the standard deviation calculated in this case was 0.801.

There were differences of opinion of teachers by seniority. Thus, 23% of novice teachers and trainees consider themselves very satisfied with this aspect, a similar opinion having only 46% of the other teachers.

Figure 1. *The level of development of entrepreneurial skills*
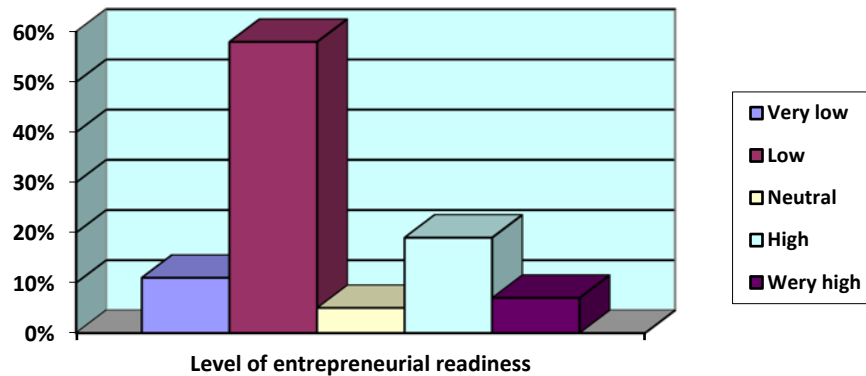
Source: author's contribution.

Improving the quality of the education system is the result of developing the personal and professional competences of the employees in education. Continuing education should be regarded as a life-long process, from the initial training of the teacher to his retirement. The need for training refers to any drawback in the actual or potential performance of the employee, drawback that can be rectified by using an appropriate training. From the analysis of the questionnaires applied, the need arises to train the teachers so that they have sufficient skills that will help them in their effective approach of teaching - learning and in building, in time, the entrepreneurial skills of the students.

Promoting the initiative in education forces schools to evolve and adapt to fulfil their mission of preparing students for a constantly changing world at the technological, cultural, economic and demographic level. Success in our future will depend on today's students using 21st century skills. In order to implement these skills, it is necessary to develop among the teaching staff a basic academic level of knowledge and understanding of the subject, in this case, the initiative and entrepreneurship in education.

In this regard, we have tried through the empirical research undertaken to establish the level of skills held by the human resources in the target group, necessary for success in today's world.

Beyond the theoretical acquisitions, their applicability in the instructional - educational process and their effects reflected in the students' competences are important. In this regard (Figure 2) most respondents appreciate the balance between the theoretical and practical side of the training programs, as well as their quality from the point of view of the developed skills.

Figure 2. *The level of scientific training and professional training programs offered*
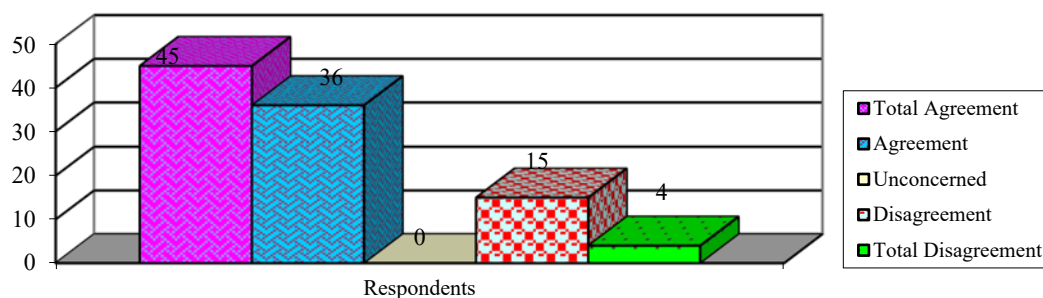
Source: author's contribution.

At the individual level, continuing education programs should bring about changes in the professional profile of the participants, contributing to the diversification of the range of competences held, to the increase in their professional quality.

Relevant to this study is the identification of the degree of knowledge and understanding of the acquired knowledge by participating in training courses with an impact on the development of initiative and entrepreneurship spirit.

For the analyzed field were identified, by prioritizing, five dominant components: communication and collaboration (91%), evaluation (86%), ICT (information, communication and technology) (80%), critical thinking and problem solving (60%), creativity and innovation (58%).

Regarding the other aspects discussed and which contributes majorly to the development of initiative and entrepreneurship, there is a significant percentage of teachers who do not benefit from training on these coordinates: ethical behavior – 45%, financial, economic, business and entrepreneurial literacy – 44%, emotional intelligence and self-esteem – 31%, productivity and responsibility – 34%, initiative and career – 9%. From data analysis, results a necessity to connect the needs of individual and institutional training to the reality demanded by the company, by the natural evolution of the Romanian education connected to the European education.

Table 2. *Relevance of training courses for developing the spirit of initiative and entrepreneurship*

	Total agreement	Agreement	Uncon-cerned	Disagre-ement	Total disagreement	Didn't participate
Critical thinking and problem solving	19%	41%	2%	18%	15%	5%
Creativity and innovation	26%	32%	1%	11%	17%	13%
Evaluation	47%	39%	0%	9%	5%	0%
Financial, economic, business and entrepreneurial literacy	17%	25%	1%	8%	5%	44%
Communication and collaboration	67%	24%	0%	9%	0%	0%
ICT (information, communication and technology)	34%	46%	0%	4%	6%	0%
Initiative and career	22%	32%	4%	23%	10%	9%
Productivity and responsibility	11%	19%	6%	21%	9%	34%
Ethical behavior	14%	12%	3%	17%	9%	45%
Emotional intelligence and self-esteem	12%	30%	2%	19%	6%	31%

Source: author's contribution.

Entrepreneurial education means more than training on how to run a business. It refers to how to develop entrepreneurial attitudes, skills and knowledge that should, in short, allow a student to "turn ideas into action" (The European Commission, 2014).

In order to be able to inspire students and teach them entrepreneurship, they must first of all have these skills. Based on this consideration, we have tried to find out which areas of competence the teachers consider relevant in order to be able to make a major contribution to the development of students' entrepreneurial attitudes, aptitudes and knowledge, as well as the degree of determination between them and the competences of the students.

Thus, we were able to outline the profile of the teacher who has the necessary skills for developing students' initiative and entrepreneurial spirit:
▪ He is concerned about his own training, developing a career plan.
▪ Has got communication skills with colleagues, parents, students, authorities, community.
▪ Develop partnerships with various institutions and invite external experts to participate in teaching activities.
▪ It is dialogue oriented, in social and professional contexts.
▪ It is focused on developing skills among students and not on transmitting information.
▪ Prefers hands-on learning experiences.
▪ It uses methods and strategies that stimulate creativity and initiative.
▪ Draws correlations between theoretical aspects taught and students' life experiences.
▪ Strengthens students' self-confidence and self-esteem.
▪ It is flexible, open and responsible.

Respondents' opinion regarding the relationship of determination, respectively of proportionality between the professional competences in the field and the performance of the students shows us that 66% of the respondents are in total agreement, 26% agree, and 8% have not expressed an opinion in this regard.

Figure 3. *The relationship of determination between the level of professional training in the field and the level of entrepreneurial skills of the students*
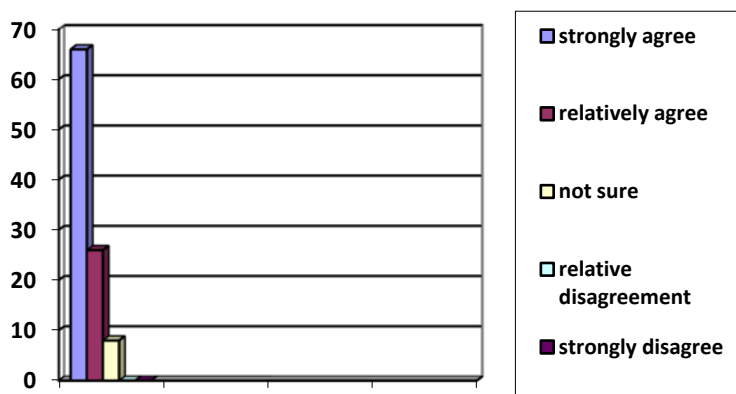
Source: author's contribution.

Conclusions

Teachers in pre-university education have the openness to participate in training courses that offer the relevant methods and tools for stimulating the initiative and entrepreneurial spirit among young people. However, it is found that although the confidence in the quality of the training programs is high, however, the level of entrepreneurial competence felt and made aware by the teachers is relatively low. At the same time, the questioned teachers establish positive relationships between the personal skills / qualities and the performance level of the students.

Since the two hypotheses" Hypothesis 1 – Teachers in secondary education have a low level of development of entrepreneurial skills", " Hypothesis 2 – There is a positive correlation between the level of professional training in the field and the level of entrepreneurial skills of the students" it is confirmed, it is necessary a reorientation of the policy of teacher training in pre-university education that will target this extremely important area of expertise, demanded by the society of the future.

 Teachers with entrepreneurial spirit have a passion for teaching. They have the power to inspire, have an open mind, are confident, flexible and responsible, but sometimes they are the ones who break the rules. They know how to listen, they can use and "sell" ideas and they can orient their activity according to the students and towards the action. They are team players and they are part of a developed network (European Commission, 2014).

The main limitations of the study are related to:
- The limited horizon of the empirical research, the results presenting validity only for the undergraduate education institutions in which the study was conducted, the investigated group being reduced.
- report the study only to the opinion expressed by the teachers

The personal initiative represents a proactive behavior that helps to overcome the barriers to reach an objective. Future jobs will require from people more personal initiative, but also entrepreneurial skills that will allow identifying and capitalizing on opportunities for institutional growth and development. Education has the mission to create the educational and professional profile to allow current students to integrate into the labor market. For this it needs teachers to benefit from entrepreneurial learning in the initial training, institutions designed to train teachers with a clear mission and vision for addressing entrepreneurial strategies in teacher training, training programs implemented in entrepreneurship, and entrepreneurial teaching networks.

Acknowledgments

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Migration phenomenon and its impact on socio-economic level. The case of Romania

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Abstract. *The migration phenomenon is widely debated and analyzed, both at the level of our country and at European level. Given the effects it generates, against the background of declining birth rates and the aging of the population it is important to know its causes, in order to identify the most appropriate action measures to improve the situation on the labor market. The objective of this research is represented by the analysis of the migration phenomenon in Romania, between 1989-2019. The year 1989 is the year in which the migration began to intensify in an obvious way as a result of the opening of the state borders. Subsequently, both periods of ascension and decline in the migration phenomenon followed after the year of 1989, those of ascension were mainly due to the need for people to be remunerated properly and in accordance with the work submitted and those of decline due to the difficulties of obtaining a long-term residence, but also a work permit in the host countries. The migration phenomenon is a very complex one, which requires a detailed analysis, both of the main positive and negative externalities, as well as of the effects it generates, especially in the country of departure.*

Keywords: migration, demography, Romania.

JEL Classification: F22, O15, R23.

1. Introduction

In the current context, at European level the migration phenomenon is essentially the most controversial and complex demographic phenomenon. At the same time, in relation to other demographic phenomena, such as births or deaths, the migration phenomenon acquires more and more important nuances through the measure of changes in the population structure. Also, the flows of the migration phenomenon are currently experiencing rapid fluctuations, given that most demographic characteristics change at a lower rate.

Migration began to manifest in Romania at the time of the fall of the communist regime, more precisely in 1989, thus becoming a phenomenon that generated some imbalances in the labor market, especially for certain fields and specializations. According to the information published by Eurostat, in 1989 about 15 percent of the total population in Romania migrated to other European states mainly due to the opening of borders. Also, in the respective year approximately 96,929 persons left Romania, and in the next 3 years, the value of this indicator increased considerably, the number of people who migrated reaching to 170,00. An important aspect to mention is the fact that Romania is generally a state characterized by net emigration, which brings with it a series of dramatic consequences from an economic, social and, not least, demographic point of view. Over the years, a number of restrictions have been introduced in Romania aimed at obtaining visas and work permits, so that the migration rate in Romania gradually decreased in contrast to the temporary migration rate, which saw a significant increase.

The literature on the impact of international migration is quite broad and complex. The major impact of the global migration phenomenon on the host states, but also on the states of origin, focuses on the effects of immigration on the natives, especially from the point of view of the unemployment rate, occupational choices, but also wages (Borjas, 1989, Zimmermann, 2005). In general, the effects are significant for both the state of origin and the state of destination. Taking into account the country of origin, the emigration part of the total workforce leads to two major effects: first, emigration causes a substantial change in the size and structure of the workforce (education, skills) and secondly, emigration through money transfers clearly influences the level of consumption and investment. At the same time, in the case of a developing state, the emigration of a part of the workforce, especially the highly skilled ones can inevitably lead to the diminution of the productivity of other workers in the market, this effect thus reducing the welfare gains registered by the emigration. (Clemens, 2011, p. 89)

The analysis of the migratory effect on the states of emigration is highlighted in the OECD report, Effects of migration on sending countries: What do we know?, To which Louka T. Katseli, Robert E.B. Lucas and Theodora Xenogiani (2006). This study focuses very much on the importance of remittances sent by migrants to the country of origin and also presents the consequences that are felt both at the macroeconomic level and at the microeconomic level. The conclusion reached was that temporary migration tends to lead to an increase in remittance flows, in contrast to permanent migration, especially in the case of low professionally qualified people, who are expecting to return later to their country of origin.

Studies on the effects of migration on the labor market in Romania show that Romania, being a distorted state of the labor market, will have short term benefits as a result of this phenomenon, but on the long term it will become an importing country of labor force. (Silași and Simina, 2008). Also, in the context of the increase of the migration phenomenon in Romania, this will lead to the slowdown of the economic growth and to the shortage of labor force in certain areas. (Nicolae, 2007).

2. The migration phenomenon in Romania between 1989-2019

During the period of the communist regime, more precisely in the years of the industrialization process, Romanian citizens migrated, especially from the rural to the urban area, due to the fact that at the city level the state-owned enterprises offered people suitable jobs, but also advantages from a point of view financial. Thus, it can be stated that the main orientation of the people at that time was the migration from the village to the city. In accordance with the situation in Romania, the process of economic, but also political transition took place after 1989, when the fall of the communist regime significantly influenced the demographic context. During the years 1990 and 1991 Romania was characterized as a global state with a high level of emigration, which led to the slowing of the economic growth. Starting with 1992 the decrease of the birth rate as well as the increase of the mortality rate caused the natural decrease of the population on the territory of Romania. Other factors that contributed to a considerable decrease in the population were: unemployment, changes due to population behavior, political, but also social instability, lower wages, as well as lack of housing for citizens.

Chart 1. *Evolution of emigrants according to the country of destination*
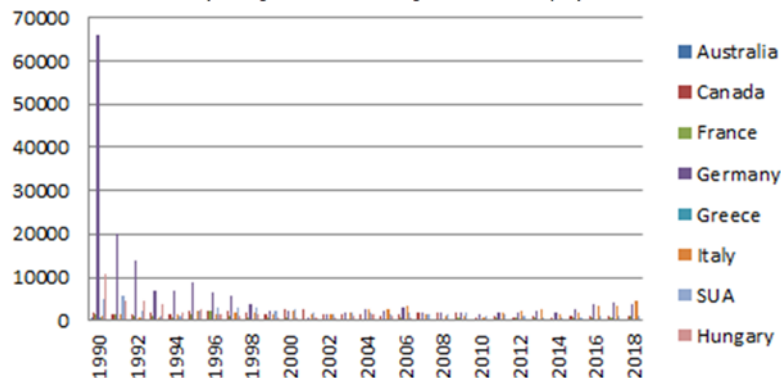
Source: Own processing based on data provided by the National Institute of Statistics, accessed on 05.02.2020.

From the point of view of the migration phenomenon in Romania it has developed the same as in any European state knowing both periods of ascent and periods of decline which were influenced by economic, social, but also political factors. In accordance with the information published by the National Institute of Statistics, INSS, every year, in Romania, migration and emigration processes were registered the first category sometimes reaching several thousand and the second category varying between 10,000 and 15,000 of people. The main problem in the case of Romania is emigration among young people with higher

education, which is about 25%. The states that these people mainly chose were: Germany, which recorded the highest value in 1990- 66121 persons, Hungary- 10635 persons, United States and Canada. At the same time, during the analyzed period the values have fluctuated significantly.

At the same time, the migration phenomenon in Romania has undergone various evolutions and has also developed in several stages. Thus the first stage took place between 1990 and 2001 during which the emigration of minorities, as well as Romanians was initially realized due to the existence of economic, political and social problems, later in 1994 and 1996 there was a decrease in the migration phenomenon from Romania to European states, as a result of the gradual improvement of the economic context. At that time, the main category of emigrants was the people who wanted to do seasonal or illegal work. However, that improvement in the economic situation was temporary since between 1996 and 2001 there was an increase in emigration flows. The main destinations chosen by the Romanians were the United States of America and Canada, but not all of them were able to reach that far and they later turned to the European states. The phenomenon of real migration was much more pronounced in the United States and Canada, compared to Europe. From the point of view of circular migration, which is referred to in the specialty literature and incomplete migration it began to be common in the states at European level where the Romanians decided to do illegal work. In the afore mentioned period namely: 1990-2001, the migration experienced in some years periods of decline, which were due to the political uncertainties that destabilized the entire economy, so that Romania was known at that time as a country of emigration. At the same time, the migration phenomenon has been influenced by a number of significant factors, including: the increase of the unemployment rate, the recording of the labor shortage in certain European states such as Italy, Spain and Germany, the gradual decrease and worsening of the level of standard of living for Romanian citizens against the backdrop of the necessity of people with the situation in the economy and not least, the right of Romanians to free movement in the Schengen area. The migration of people after 1989 was considered a migration for temporary work as the number of Romanian citizens working in seasonal activities on the territory of other states reached in 2007 about 2 million.

Starting with 2001, the number of Romanian migrants from the territory of other states began to decrease. The factors that contributed to this improvement were: the reduction of the recruitment agreements of the Romanian employees from various states, such as: Spain, Italy, Germany and Portugal, the elimination of the visa requirement in the states of the Schengen area and, last but not least, Romania's accession to the Union European since 2007. When Romania became a member of the European Union, this allowed the Romanian citizens to have free access to the European market level since in 2007 the peak of emigration was reached, which reached 544074 people, these people turning to Italy and Spain. Although the situation of the legal migration phenomenon has improved that of the illegal migration has expanded and in 2002 reached the highest value, thus exceeding by 20 percentage points the legal migration. Regarding the economic-financial crisis, from 2008-2009, as well as other moments of recession of the Romanian economy, such as the economic recession from 1997-1998, they led to the improvement of the migration context, but this was temporary, because later it experienced a significant increase. The factors that caused the Romanian citizens to give up the "return migration" (Sandu, 2010; Netedu, 2016)

were the structural changes that took place at the level of the European states, such as: decrease of wages, decrease of work places and increase of unemployment rate. After 2012 it can be stated that the lowest level of the migration phenomenon has been reached the difference registered between the number of migrants and emigrants being 2920 persons. Since 2014, there has been a gradual increase in the number of migrants, although the wage level has been increased in line with labor productivity and conditions within the European Union. An eloquent example to highlight the aforementioned idea, can be represented by the fact that in 2007 the level of the average monthly net nominal salary was 1042 lei, subsequently it increased by about 1341 lei, its value being 2383 lei in 2017. This percentage represents an increase of 128% compared to the moment of accession to the European Union.

Chart 2. *The evolution of emigrants in the period 1990-2018*
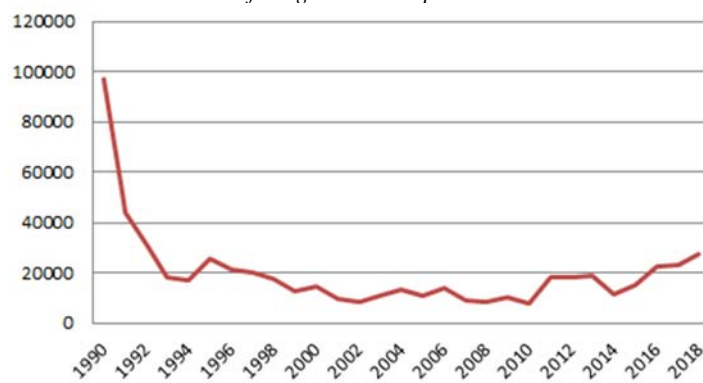
Source: Own processing based on data provided by the National Institute of Statistics, accessed on 05.02.2020.

In the case of definitive emigrants, the highest value was recorded in 1990 by 96929 persons, subsequently the values fluctuated considerably. Also, there has been a substantial increase in the number of emigrants over the 10 years, after Romania's accession to the European Union. An eloquent example to highlight the aforementioned idea may be the fact that in 2017, the number of definitive emigrants was 23156 persons compared to 2007 when their number was 8830 persons.

Chart 3. *Evolution of the number of emigrants according to age group*
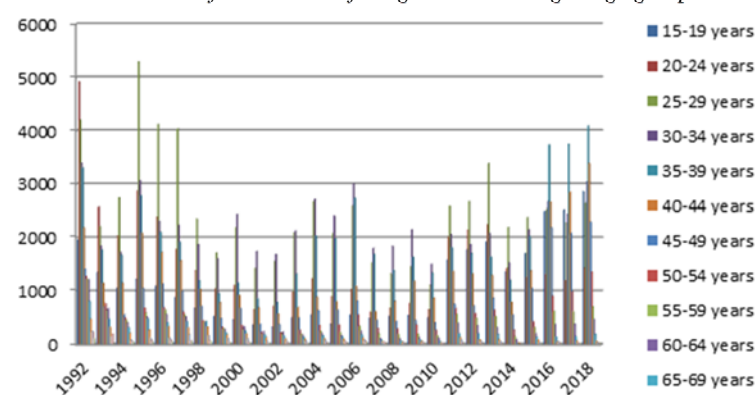
Source: Own processing based on data provided by the National Institute of Statistics, accessed on 05.02.2020.

If we analyze the age structure of the definitive emigrants in the period 1992-2018 it can be observed that the highest weight is represented by persons with the age group 20-24 years and the group 25-29 years. The consequence of the migratory phenomenon among young people will have the effect of appearing important problems related to the labor market, but also effects on the pension system in the coming years. With the development of the migratory phenomenon among young people, the phenomenon of demographic aging in the case of Romania is expanding due mainly to the changes in structure by age groups of the population.

Chart 4. *Evolution of the number of immigrants in the period 1991-2018*
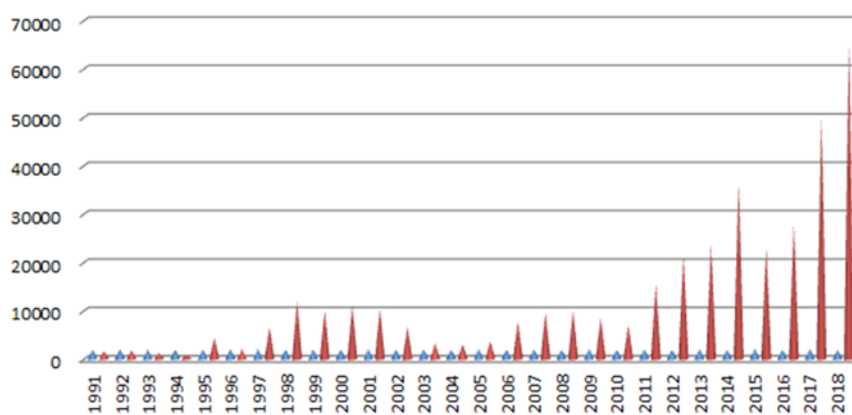
Source: Own processing based on data provided by the National Institute of Statistics, accessed on 05.02.2020.

The graph above shows the evolution of the number of definitive immigrants, the period considered being 1991-2018. As can be seen, from 1990 until 2010 there was a downward trend in the number of immigrants, and in 1990 the lowest migration balance was recorded. Then from 2011 there is a constant increase of those who immigrate. In 2018, the number of permanent immigrants is the highest compared to the other years considered in the analysis.

3. Causes and effects of the migration phenomenon

According to the information published by the International Organization for Migration, at present there are two categories of factors that influence the migration phenomenon: push factors and pull factors. The first category includes the standard of living, lack of a favorable and appropriate job, ethnic problems, low standard of living, crises resulting from natural disasters, economic, financial, political crises, as well as social conflicts and in the second category are included: the standard of living, the possibility of finding and of get a better job, better salary level, individual freedom, etc. At the same time, the decision of the individual to migrate is also influenced by a number of non-economic factors, such as: language, geographical contingency, traditions, customs, history.

At present, Romania represents both a country of origin and a country of destination in terms of international migration, so it is considered to be a state of net emigration. As

mentioned above, the main countries to which Romanians go are: Italy, Spain, Germany, the United Kingdom and Israel. It is worth mentioning that about two thirds of the remittances come from Romanian citizens who have left to work in the territory of Spain and Italy. Regarding the persons who emigrate legally, they are represented in a percentage of about 10-12% of the graduates of higher studies, who are oriented towards other more highly developed states from the technological point of view and of the research-development and which also offer them the opportunity to get a great job and a salary in line with expectations. One can affirm the idea that the Romanian migration is mainly composed of the migration of the young population, who are in optimal working conditions and in which the Romanian state has invested in training. This obviously determined the emergence of a crisis situation, which manifests itself at the level of the labor market and at the same time, at the level of the insurance and social services market, because when a large number of young people migrate to other states, it will be exercised a much greater pressure on the population that is in employment on the labor market at the moment. Thus, the changes that occur from a structural point of view of the age group and gender of the population in conjunction with the decrease of the fertility rate in Romania, thus contribute to the demographic aging gradually.

Another negative consequence of the migration phenomenon is the direct correlation between education and the economic growth of a long-term state. Thus, when skilled and highly qualified persons migrate, one of the main sources of economic growth diminishes, which could have led to increased labor productivity and the development of certain fields of activity. This migration is considered by the economic specialists, as a negative externality of the native state of the respective persons. At the same time, this theory of the migration process brings with it two significant effects, the first one being the ex-ante one, which results from the major investments that are made over the years in the educational field, given that it can be used inside the country and can bring with it a number of advantages, and the ex-post effect that is determined by the decision of these citizens to emigrate to other states.

In addition to the economic effects mentioned above, among which are: population aging, declining employment, diminishing investments in education, pressures on the state's ability to support an increasing number of retirees in relation to the population active resident, there are also social problems that increasingly affect the economic context of the Romanian state, because at the time of migration there was a significant number of children abandoned by parents who decided to work in another country, a large number of suicides, most of them minors, domestic violence, aggression against minors, high alcohol consumption, marginalization of children without parents, increasing the risk of poverty and social exclusion, as well as school dropout. In general, the most affected by these migrations are children because they are left to deal with the financial resources sent by parents, but in their absence they experience certain emotional traumas that affect them from many points of view, affecting their ability to integrate and develop properly in a society. In most cases, these young people represent a vulnerable category at the level of Romania because they end up being marginalized by the people around them unable to handle themselves in such a society.

Conclusions

After 1989, Romania knew all three forms of the migration process, namely: emigration, immigration and transit. Each of these three forms determines at the state level a series of economic, political, social and indisputable security issues, which unfortunately affect the good functionality of the economic activity as a whole. Mainly, the periods of decline, regarding the migration phenomenon, were influenced by the conditions in the economy, as well as by the political factor, which contributed to the development and extension of the illegal migration phenomenon. At the same time, the discrepancy between citizens expectations regarding the labor market and the contemporary reality continues to be major, as those who leave are people with higher education and those with technical studies, in short people who have the ability and the opportunity to do anything.

The effects of the migration phenomenon are both economic and social in nature. Those that belong to the category of economic effects, such as: decrease in labor productivity, slowdown in economic growth, decrease in the number of resident active persons, etc. it does not represent serious consequences, compared to the abandonment of close persons.

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Forecasts evaluation in intelligence analysis

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Abstract. *Forecasting is the process of predicting possible future outcomes by analyzing past and current data. Accurately forecasting global events requires on one hand a complex set of skills, so it can be stated that forecasting is a learned skill, at least in part. On the other hand, forecasting is a skill at which we can all become better with practice. Starting from Tetlock's study (Tetlock, 2006), we present an experiment plan that aims at improving the manner of forecasting major events in world affairs. In order to numerically asses the aspects of forecasting, we use a metric based on the probabilistic understanding of the difference between the prediction probability of an event to its possible outcome and the actual outcome.*
The Brier score is a standard decisions theory metric by which two or more forecasters of similar events are compared against each other. Different quality aspects of the forecasts are identified through the Brier score decomposition given that all estimates are equally important (Brier: 1950). The overall aim is to use a general method, the Brier score, in order to obtain feedback about the forecasting quality of the subjects involved in our proposed experimentarch.

Keywords: forecasting, geopolitical forecasting, accuracy, Brier Score, intelligence analysis.

JEL Classification: C1.

Introduction

Forecasting is a tool through which informed estimates of the future are made by using past and current data as inputs. Thus, the primary goal of a forecaster is to identify the entire range of possibilities, having as task to map uncertainty for building a window of opportunity. Forecast accuracy is very important for various analytics communities. The quantitative accuracy of the forecasters is tracked and can be proactively used to improve their skills. Each community has different perspectives over the accuracy of forecasts (e.g. meteorology is less sensitive compared to finance, earthquake forecasts or intelligence analysis) largely depending on the involved actors. Regardless of the perspective, the costs for poor predictions are always quantified in terms of money and ultimately in human lives.

The following actors can be identified: users, managers, forecasters and the rest of the world. In general, the users are the decision makers that rely heavily on good-quality forecasts. There is a need to know the quality of forecasts for decision making and maintain or grow the degree of trust placed in their sources. Even though the rest of the world is not directly interested in the forecasts quality, they are the ones ultimately affected by the decisions taken by the users and financially contributing for providing them with forecasts (for example the taxpayers contributing to the state of law).

Forecasters are capable of making predictions, based on the prior knowledge about the topic and skills, and they are directly interested in the quality of their work and market competitiveness. Since the analysis work is performed in groups, the managers of these groups need to know how well their analysts are performing.

In this context, we need to contribute and formulate clear ideas about how forecasting and psychology studies corroborated with intelligence education will give rise to new methods and proceedings which will help intelligence agencies around the world to improve the human resources selection process. Experts may, on average, be poor at exercising good judgment in complex domains like geopolitical forecasting, other authors suspect that there are systematic individual differences – and that some forecasters will consistently outperform others (De Mesquita, 2009), (Tetlock, 2006).

A complex research on prediction was performed by Philip Tetlock of the University of Pennsylvania, psychologist who has made the study of prediction his life's work and presented it in "Expert Political Judgment: How Good Is It? How Can We Know?" (Tetlock:2006).

Based on Tetlock's work (Tetlock:2006), we propose an experiment by adding some new hypotheses and using the Brier Score to numerically assess the quality of the forecasts. The first part of the paper describes the experiment framework. A brief introduction on the Brier Score follows. The concluding remarks and future work are presented at the end.

Experiment description

Tetlock and his colleagues conducted a study supported by the US intelligence community and their goal was to find ways to predict with better accuracy major events in world affairs

(Tetlock, 2006). The study revealed that the individuals who preferred to consider multiple explanations and balance them together before making a prediction performed better than those who relied on one single big idea.

The forecaster were classified as foxes or hedgehogs depending on their profile.

The foxes, more eclectic, knew many small things and were able to improvise ad hoc solutions to keep up with the dynamics and fast changing rate of the modern world. This type of forecasters were less prone to overconfidence in their political predictions, given the strong openness to self-correction, cognitive flexibility, astute judgment and tolerance for ambiguity.

Whereas, the hedgehogs, intellectually aggressive, knew one big thing and sought to explain the phenomena trough the power of that theory. Their tendency was to assign high probabilities to low frequency events and push big ideas as far as reasonable and often beyond, while the foxes pick bits and pieces of big hedgehog ideas and create eclectic puzzles that, on average, have more predictive power than the original ideas.

Thus, it can be stated that in order to improve predictions it is necessary to thoroughly understand the psychological characteristics of the individuals involved in the analytical judgment process.

Starting from Tetlock's experimental model, the article proposes an empirical study plan regarding the geopolitical forecasting based on five working hypotheses as follows:

Hypothesis 1. *Individuals with greater skill at inductive reasoning, cognitive control, and numerical reasoning will be more accurate forecasters.*

Hypothesis 2. *More open-minded forecasters will be more accurate forecasters.*

Hypothesis 3. *More politically knowledgeable forecasters will be more accurate forecasters.*

Hypothesis 4. *Dispositional variables, such as intelligence, open-mindedness, and political knowledge will add to the prediction of forecasting accuracy, beyond situational variables of training and teamwork.*

Hypothesis 5. *Behavioral variables that reflect engagement, including the number of questions tried, frequency of updating, and time spent viewing a question before forecasting will add to the prediction of forecasting accuracy, beyond dispositional and situational variables.*

The experimental study will measure the following individual and collective attributes in order to determine what has the greatest weight in improving predictions:
a) **Intelligence** – it should be determined whether the forecasters who have high score on various intelligence tests tend to make more accurate predictions. It must be evaluated if cognitive intelligence matters more early on than it does by the end of the study.

Cognitive intelligence can be a big advantage when entering in a new domain and trying to make predictions, however, once everyone has settled in, there should be an evaluation whether being smart still helps in equal measure.

Three aspects of intelligence relevant to geopolitical forecasting should be monitored:

1. *Ability to engage in inductive reasoning*, or make associations between current problems (for example the likelihood of a leader to fall from power) and potential historical analogies - Individuals must look for regularities, form hypotheses, and test them.

2. *Cognitive control* (also known as cognitive reflection) - Someone with greater cognitive control has the ability to override seemingly obvious but incorrect responses and engage in more prolonged and deeper thought.

3. *Numerical reasoning* - Numeracy would be especially important for economic questions such as: "The price of gold for October, 2018 will exceed …$ by a given date?"

If the correlation between intelligence and accuracy will be positive and remain constant, it can be said that superior intelligence is necessary for better predictions.

But if the correlation between intelligence and accuracy will be stronger at the beginning and weaker toward the end, it can be said that deliberative practice can increase cognitive level and generate better predictions.

b) **Domain expertise –** It should be determined whether the forecasters who will have better score on political knowledge test tend to make better predictions. Political knowledge refers to content information necessary for answering factual questions about states of the world. Even the most intelligent and open-minded forecasters need political knowledge to execute multidimensional comparisons of current events with pertinent precedents.

c) **Practice improves accuracy –** It should be determined if top-performing "super forecasters" will be consistently more accurate or only become better over time. Practicing more, making more predictions and participating more in multiple tests can be helpful to improve prediction ability?

d) **Teams consistently outperform individuals** – It should be evaluated if forecasters perform better on their own or as part of a group.

e) **More open-minded people make better predictions -** Actively open-minded thinkers can be more accurate at estimating uncertain quantities? Moreover, we should find if actively open-minded thinkers can have greater tolerance for ambiguity and weaker need for closure.

f) **Training in probability can protect against bias -** Some of the forecasters should have or should receive training in "probabilistic reasoning," which basically means they will have clear indications to seek for data on how similar cases had turned out in the past before trying to predict the future. The experiment will evaluate if the forecasters with this type of training will perform better than those without training and if those with growth mind-sets who view learning and achievement as cultivatable skills are likelier to perform better than those who view learning as innately determined. More accurate forecasters are presumably those with enhanced mindsets.

g) **Rushing produces bad predictions -** The experiment should find out if individuals or groups that allocate more time to deliberate before making a forecast will perform better than those with fast choices. This was particularly true for those who were working in groups.

h) **Revision leads to better results -** Forecasters will have the option to go back later on and revise their predictions, in response to new evidences or information. The experiment will find out if individuals which revise their predictions will perform better to those which will not.

For this experiment the main focus will be on the fallowing aspects:
- **Ability to change one's mind, frequently and in little bits -** According to (Mellers et al., 2015, p.1-14), one of the best things you can do is to be open to change. People who slightly and frequently adjust their estimates, based on new information, about how likely something is to happen are much more likely to end up calling events correctly than are people who don't change their mind ever or who flip-flop more dramatically.
- **Work in teams -** By working in teams where everyone has "equal rights and responsibilities ... increased their level of engagement and produced highly accurate forecasts." as mentioned in (Mellers et al., 2015, pp. 1-14). Even superforecasters, it seems, benefit from working with people who have different ideas and perspectives to make their predictions better. And people who were more open to working in groups tended to do better than people who preferred to work alone.
- **Make actual predictions -** By imposing on participants to answer with firm predictions, and assigning actual probability values (e.g. there is an 80 percent chance Trump will get re-elected), we end up getting predictions that could be proven categorically true or false. The more that people do this, the more people can be held accountable for getting things wrong — which forces them to adjust the way they think about the world, hopefully for the better.
- **You have to know at least a little -** It helps to have *some* background in order to make good predictions. According to (Mellers et al., 2015, pp. 1-14), people who knew more about world politics and were given some training in probability theory tended to do better in the tournament. Smarter people, as measured by IQ tests, also tended to do better

The Brier Score explained

The forecast error b, for a single binary event E, is defined as:

$$b = (f - o)^2,$$

where f represents the prediction for the probability that event E happens, and o is the outcome of the same event (1 if the event happens and 0 otherwise). For a set of N events, the forecast error for the i-th prediction is given by $f_i - o_i$ so the mean squared forecast error is:

$$B = \frac{1}{N} \sum_{i=1}^{N} (f_i - o_i)^2.$$

The formula was proposed by Brier in 1950 (Brier:1950) representing a metric based on a probabilistic understanding of error (measuring the squared average deviation from the true outcomes of the events). It is commonly used to evaluate the skill of probability forecasts

of binary events in meteorology (e.g. snow, no snow). With a value that lies between **0** and **1**, the better probability forecasts are associated with lower Brier score values. There are different decompositions of the Brier score that give insights on the outcomes and the forecasts (for example the 3-components decomposition (Murphy, 1973, pp. 595-600)). The prediction accuracy assessments based on the Brier Score is used in various fields like meteorology (Young, 2010), medical imaging Steyerberg, Ewout (2009) and intelligence **(**Mandel and Barnes, 2014), (Mandel, 2015, pp. 111-120).

Concluding remarks

In this paper we propose the framework of a future empirical study regarding geopolitical forecasting in order to define new selection criteria for finding individuals with better analytical skills, which will be able to understand and predict future events.

As future work, the focus of the experimental study lies around justifying the need to introduce intelligence studies as a compulsory subject that is part of the curriculum of the first academic cycle.

The study will have arguable value and aims to find out whether individuals that take part into academic or professional training programs in Intelligence, develop and have better analytical capacities than those who did not take part in these forms of training. The numerical assessment of the forecasts will be done by computing the associated Brier score.

Likewise, the results will help to improve the psychological test batteries used in the selection of human resources for the analysis departments of the public and private intelligence organizations.

The personnel selection will be oriented towards individuals with desirable attributes and special cognitive qualities, which can make the difference in improving predictions. It is imperative to introduce and study Competitive Intelligence in national universities, where, the subject matter must to be adapted according to each faculty.

Furthermore, the experiment will provide a test framework for defining and identifying socio-economic early warning indicators. Preliminary assessments of relevant developments in the global economic environment will be carried out by translating concepts and methodologies from the area of competitive intelligence or business intelligence.

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The influence of the cohesion process on social progress

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Abstract. *A current challenge of the European economic policy is to eliminate the disparities in the countries of the European Union, but also at the regional level and achieve a high degree of economic, social and territorial cohesion. The social dimension of cohesion has long been present on the agenda of the European Union. Recently, it has gained greater importance, especially with regard to the governance framework of the European Union. Through this paper we will conceptually analyze social cohesion and social progress as well as the main challenges that Romania faces in the context of reaching a high degree of cohesion and social progress. Furthermore, the last part of this paper will address to policy recommendations in order to improve the social situation at national level in Romania.*

Keywords: regional disparities, cohesion policy, social cohesion, social progress.

JEL Classification: B55; O11; R10.

Introduction

We live in a period of continuous change, both economic and social. Globalization is revolutionizing the way we live and work through new technologies, but with the change, new economic and social problems arise which we must face.

Change has both positive and negative sides. There are individuals who enjoy new opportunities, while others fear that they will not survive or will live on the bottom of living conditions, always under pressure. Despite the concerns of the European Union for achieving a higher degree of economic, social and territorial cohesion, the connection between its states is characterized by a high degree of divergence.

Completion of the economic integration process by achieving full cohesion has remained a topical objective of the European Union, this was highlighted in 1992 through the Maastricht Treaty, and later, it was reconfirmed in the Lisbon Strategy draft (2000), as well as in the Europe 2020 Strategy draft.

However, many people live without full rights and are discriminated by sex, religion, ethnicity or sexual orientation. Domestic violence remains at a high level in less developed countries.

„Economic growth has raised hundreds of millions of people out of poverty and improved the lives of many people over the last half century" (Deaton, 2013), but it is quite obvious that a model of societal development that relies only on economic progress is not enough, there is a need for social progress. (SPI, 2019)

The final objective of the European social model is sustainable economic growth and social cohesion. This vision implies full employment, quality jobs, equal opportunities, social protection for all citizens, social inclusion and citizens' involvement in decisions that affect their lives.

A society must respond to basic human needs, improve the life quality of its citizens and protect the environment. If the society cannot fulfill these functions, it cannot achieve its cohesion objective, because it requires both economic and social progress. Recently, social progress has begun to receive more attention from researchers, as there is concern that an imbalance between economic and social progress obstruct economic progress and they can lead to serious obstacles in terms of political stability.

The main challenge for the European Union in the context of development and social progress is represented by the existence and persistence of development gaps between countries, but also within the countries. (Goldin, 2017)

The motivation for studying this topic consist at the contribution to the intensification of the socio-economic debates on this topic.

The objective of this paper is to conceptually analyze the social progress, highlighting the main challenges that make it difficult to reach a high degree of social cohesion. The last part of this paper will include a series of recommendations aimed to improving the social situation in Romania, as well as accelerating social progress.

Literature review

Social progress is not a widely used concept, therefore, there is no unanimously accepted definition in the literature. In order to analyze the social progress we will approach a historical analysis of the concept.

The notion of progress comes from the Enlightenment period, when most scientific discoveries and achievements that mark our existence have come to the surface.

(Turgot, 1750; Condorcet, 1795) were among the first researchers to tackle the intensification of debates on progress. In the first writings on this subject, the main aspect studied was the scientific progress that depended on the mathematical and technological progress. (Nisbet, 1980)

Turgot attributed to the progress a wide coverage, not only the arts and sciences, but the entire cultural, institutional, economic and social activity. In Condorcet's vision, social progress was characterized by clear measures such as eradicating slavery, increasing the literacy of the population, diminishing gender inequalities, reforming harsh prisons and reducing the poverty rate. (Nisbet, 1980)

Later, in the 19th century, Hengel and Marx (1845) they supported the idea that conflict is the one that generates social progress and, without war, the population would have no motivation to work for the common good of society and to progress in this way at societal level.

At the same time, Comte (1853) argues that the driver of social progress is the intellectual improvement of the individuals of a society, stating that the significance of progress is indeed a constant moral improvement.

For a better understanding of the concept of social progress, we can make a distinction between the associated terms delimiting the concept from other notions, such as evolution and development.

Evolution and development are terms borrowed from biology which means that the main characteristics of the meanings of these terms with social implications are common, but the analysis of concepts is historical.

Evolution means an orderly movement or change from one condition to another or from one process to another in a visible way, without having a well-defined direction. Evolution does not necessarily mean change for the better, so it is clear that we cannot say that social evolution necessarily implies social progress (Hobhouse, 1911).

Development is represented by formal and structural changes in an organism. For society, development means the concentration of collective energy for a certain direction, harmony, general development.

In the case of a society, evolutionary change refers to a branching of a root in several directions, which is continuously divided. "Social progress" does not mean mere development or evolution.

Social progress was born of the desire for equality and to improve the living conditions expressed by the affected part of the population. In some cases, citizens have been forced to fight for their rights, for example. The status of women before the First World War, they were considered to be a lower class. After the First World War, women were granted, for the first time, the right to vote.

The authors of the Social Progress Index define social progress as "the ability of a society to respond to the basic human needs of its citizens, establish the blocks that enable citizens and communities to improve and support the quality of their lives and create the conditions for all individuals to reach its full potential". (Social Progres Index Report, 2017)

Measuring social progress

Economic growth creates an incomplete picture in understanding what social progress means. GDP does not reflect sustainability, failing to capture the general progress of society. (Stiglitz, 2008; SPI, 2018). The UN Secretary-General suggested that "We must move beyond the gross domestic product as the main measure of our progress and make a sustainable development index that puts people first" (Ban Ki Moon, 2012).

In 2016 elaborated a composite index that completes the understanding of social progress, which aims to capture as much as possible the economic and non-economic aspects related to the success of an economy.

The Social Progress Index offers a framework for measuring multiple aspects of social progress based on three dimensions: basic needs for survival, the foundations of well-being and opportunity.

Initiatives to measure the EU's social situation and the social impact of policies have produced a number of other tools, up to SPI, which complete the assessment of economic performance. These can help to present a more comprehensive picture of the state of societies, so that, besides the social progress index, there is also the social scoreboard, which accompanies the European Pillar of Social Rights, as well as the social progress indicators foreseen in the 2020 Strategy that assesses progress in the fields of employment, research and development, climate change, education, poverty and social exclusion.

The regional disparities in Romania reduce the effect of the economic growth at national level. Also, the significant differences of development at regional level prevent the Romanian economy from converging with the EU countries. The main cause of the persistence of development discrepancies between the regions of Romania is the lack of infrastructure, both transport (which hinders the mobility of the labor force between the regions), as well as the educational and health infrastructure.

Figure 1. *EU Regional Social Progress Index*
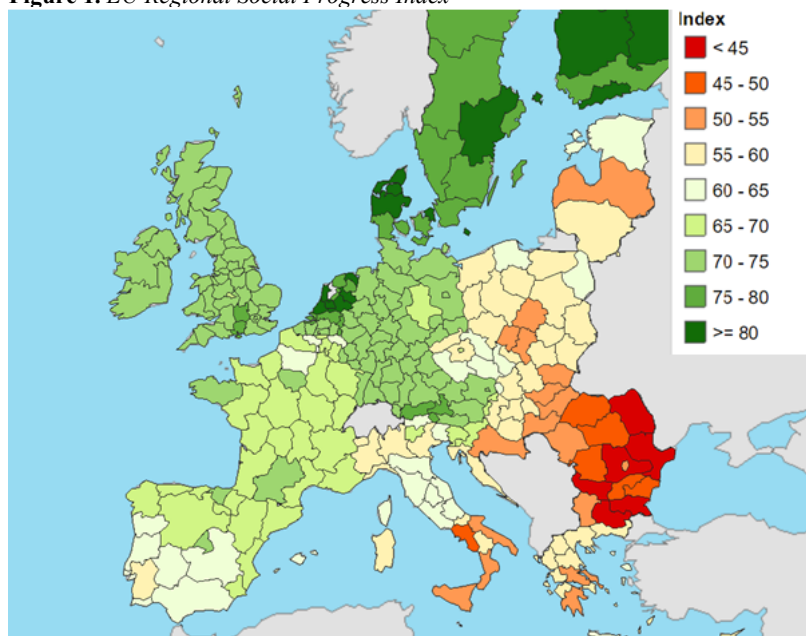
Source: European Commission.

The latest data from the regional index of social progress shows that, at European level, the highest degree of social progress is registered in the regions of the Nordic countries and in the Dutch regions. A moderate degree of progress is recorded in Germany, Luxembourg, Austria, Ireland and the United Kingdom.

In Central and Eastern European countries, progress is closer to the lower limit, and in Romania the lowest values of social progress are recorded, 3 of the regions being at the same time and in the top of the poorest regions in the EU, respectively North-East region, South-East and South-Muntenia.

Analysis of the main barriers to achieving cohesion and social progress in Romania

The main challenges that social cohesion and social progress face at EU level are the following:
- **The increase and persistence of income inequalities**, which is a concern not only at the level of Romania and the EU, but is a challenge at global level. Many authors consider inequalities a topical social issue (Stiglitz, 2012; Piketty, 2014; IMF, 2019).
- **High rates of poverty and social exclusion, both at national level**, compared to other EU Member States and at regional level. Poverty is a social problem in Romania, given that despite the improvements achieved, since the accession to the EU, certain regions are still strongly exposed to the risk of poverty and social exclusion. (Avram, 2019)
- **Insufficiency and inefficiency of public spending on education and health.**

Although in recent years, Romania has reached important values of economic growth, the degree of social cohesion remains weak. Due to the high level of inequality in Romania, as well as the high poverty rates, the economic growth registered in the last years is undermined. The effects of growth are not observed in the well-being of citizens, inequality and poverty reaching considerable levels. Inequality prevents poverty reduction, but also social progress. As income inequality grows, there are various associated social problems, such as decreased life expectancy, decreased well-being of the population, especially among children, which in turn leads to decreased educational performance or even school dropout. (Deaton, 2013)

Figure 2. *The evolution of income inequalities in Romania*
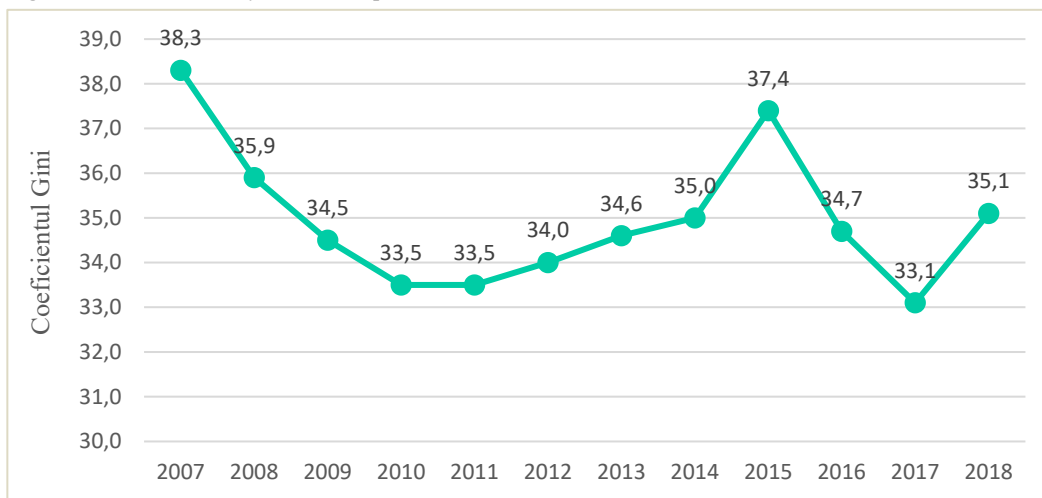
Source: Eurostat.

In the period after the economic crisis, the inequalities did not have significant fluctuations, but they decreased considerably compared to the value of 2007 due to the policies adopted in order to diminish the effects of the economic crisis. Currently, in Romania, the income inequality measured by the Gini coefficient is 35.1%, increasing by 2 percentage points compared to the previous year and significantly higher compared to the levels registered in the other EU Member States. The large income inequalities in Romania reflect a low efficiency of the fiscal policy, as well as of the redistributive capacity. Social transfers can reduce inequalities to a certain extent. As the effect is still expected, countries must have a certain degree of development that will allow social transfers to have a significant reduction effect of inequalities.

Figure 3. *Redistributive effect in ECE countries, 2018*

Source: Eurostat.

The redistributive policy had different impact across countries to another depending on the measures taken and the priority.

Social transfers play an important role in reducing income inequality in general, as they are, for some people, the only source of income. For Romania, the impact of social transfers was only 2.9 percentage points, while in countries such as Hungary (5.4), Slovenia (5.4), Poland (4.9), the redistributive effect was significantly higher.

Figure 4. *Employment rate of the population by gender UE, 2018*
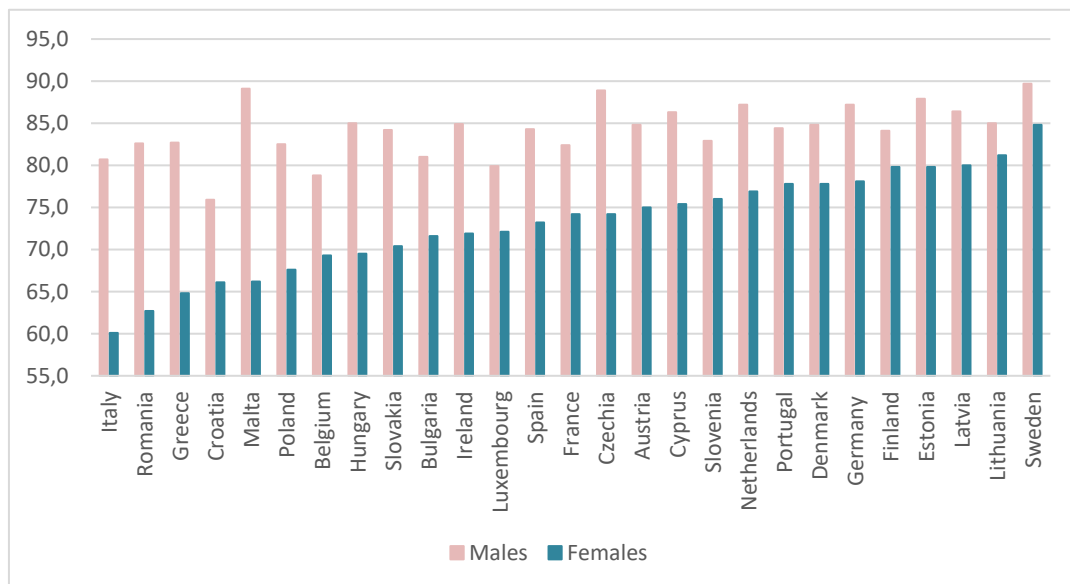
Source: Eurostat.

Income inequality is highly dependent on the degree of participation of women. The population of Romania is composed of 51% women. Although progress has been made in the field of gender equality, some challenges remain regarding the preconceptions of the population regarding the role of women in society and family, women's participation in decision making, wage disparity and violence against women.

Romania has the highest poverty rate in the European Union. Over 50% of the people at risk of poverty and social exclusion are from rural areas. This percentage indicates a higher potential for poverty reduction in rural areas in the event that policy makers would assume the objective of reducing the poverty rate.

The main obstacle in managing this problem is that direct cash transfers to poor households (social benefits) are not large enough to offset the tax burden (indirect taxes). This is particularly relevant for rural households and families with children. (World Bank, 2018) The economic crisis has affected the people who were already at the bottom of the average available income.

As a country gets poorer, the health statistics in the respective country are getting worse because the amounts allocated for health spending do not cover the provision of quality health services. As a result, individuals whose health is poor will not get to work as productive as individuals with good health, which hinders development and deepens polarization.

Figure 5
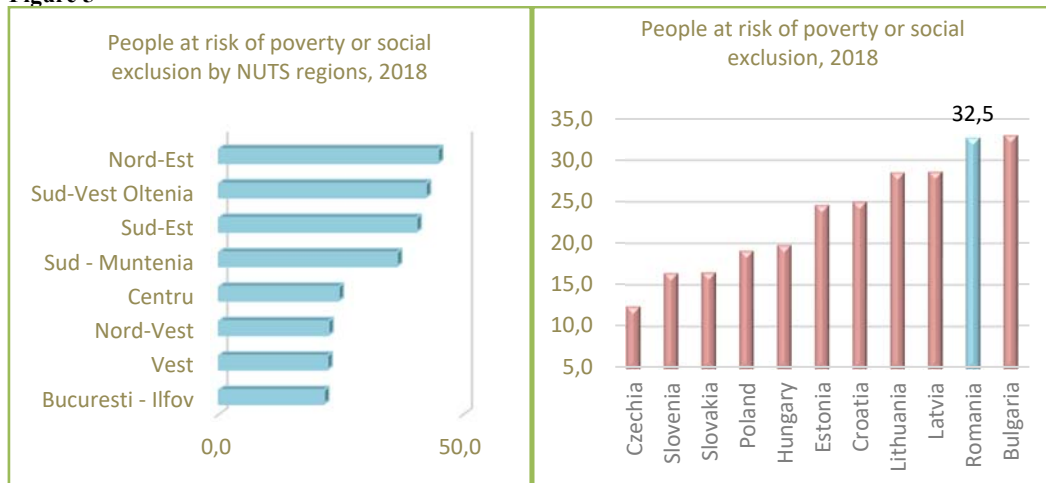
Source: Eurostat.

Achieving inclusive growth is hampered by inefficiency in education and health systems

High rates of poverty and inequality prevent Romania's ability to achieve inclusive growth, but education and health systems also have a significant implication. According to the human capital index, in Romania children are most prone to poverty and social exclusion, and due to deficiencies in education and health systems, children born today have to enter

the labor market with only 60% of the real potential, the lowest level from the EU. (World Bank, 2018; IMF, 2019)

Insufficient investment in education has significant consequences on equal opportunities. Ensuring equal opportunities for children from poor or Roma families is rather deficient, moreover, for those who have access to education systems there is a mismatch with the demands of the labor market, and digital skills are less developed.

Figure 6. *Total expenditures of the public administration for education, 2018, (% of GDP)*
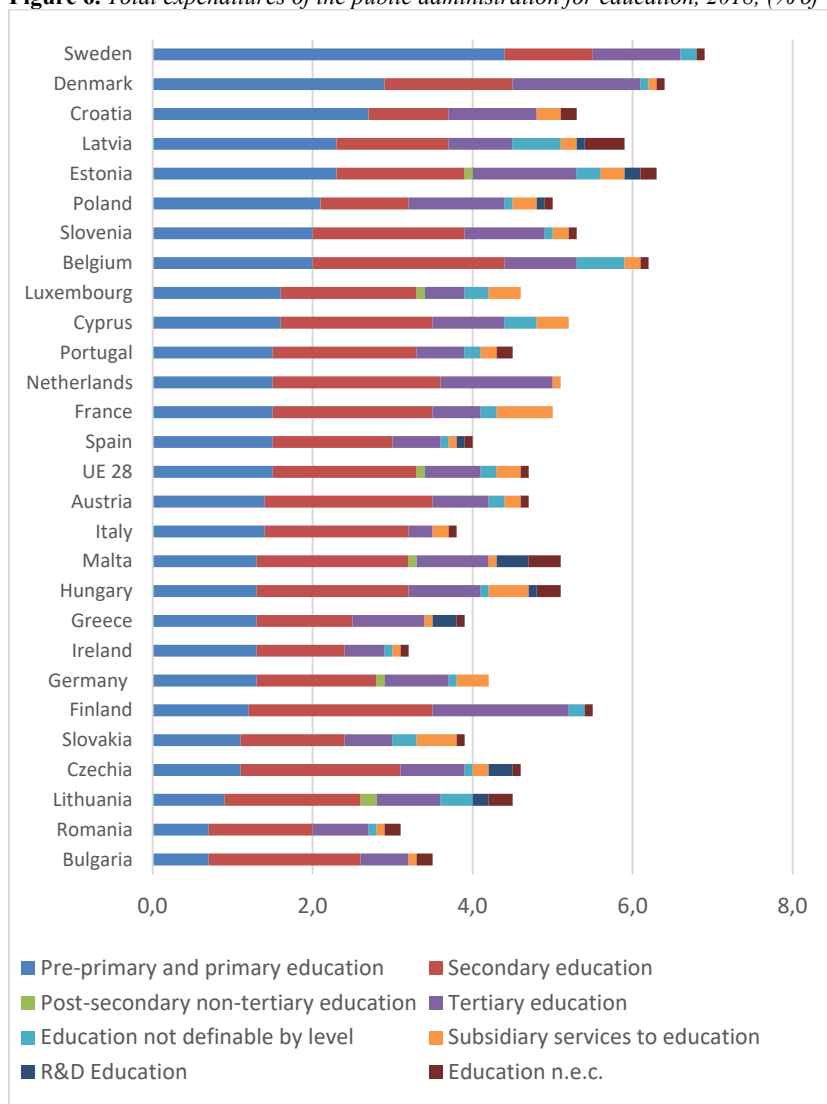
Source: Eurostat.

The health status of Romanians has improved over time, but life expectancy at birth remains among the lowest in the EU. Although people live longer, it is not universally valid, and socioeconomic and health inequalities still persist. Health system reform has

been constant, but often inefficient, largely due to political instability. Recent reforms have focused on introducing cost-cutting measures and improving access and efficiency. It is shown that increasing public spending on health and education reduces income inequalities (Jianu, 2016), therefore one measure that could improve access to education and health services for disadvantaged people could be increasing public spending in these area.

Health expenditure in Romania is the lowest in the EU both per capita and as a percentage of GDP. Access to health care services is characterized by significant disparities at regional level in Romania. People from rural areas, those from marginalized communities and groups with lower socioeconomic status are facing greater obstacles to obtaining healthcare.

Also, the health infrastructure presents major deficiencies in Romania because a large part of the medical staff trained in Romania emigrates to work in other countries for much more consistent wage benefits, as well as a lower tax burden. This unequal distribution amplifies the problems related to citizens' access to medical services.

Figure 7. *Health expenditure (% of GDP), 2018*
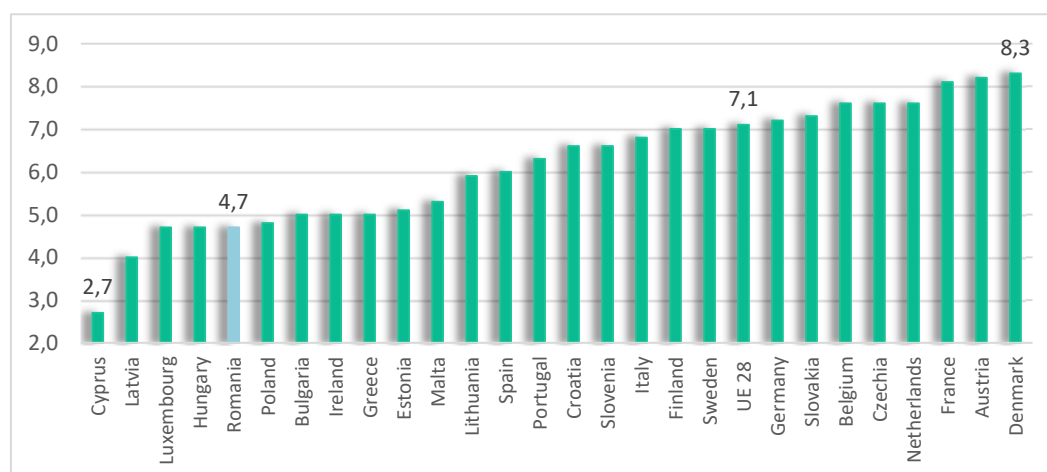
Source: Eurostat.

Policy recommendations

Economic growth in most developing countries creates a basis for improving the lives of their citizens, but it is not enough. Measures to improve social policies are needed such that the polarization effect between the social classes is diminished.

In order to achieve a high degree of social cohesion, the Government of Romania should set clear objectives aimed to mediating inequalities, reducing poverty and increasing the efficiency of public spending, especially in education and health. The main recommendations in this respect are the following:
- **Improving the degree of participation of women in the labor market.** In terms of mediating income inequalities, the Government should create the right framework to

attract as many women as possible to the labor market, thus the gap between the employment rate between men and women would be smaller, and total household income could grow substantially.

- **Assuming an objective of reducing the income inequalities from the Government.** The main instrument that could help a more equitable distribution of incomes, acting through a redistributive effect is the fiscal policy that can mediate income inequalities through taxes and social transfers.
- **Reducing poverty and social exclusion in rural areas.** More than half of the share of people exposed to poverty and social exclusion in Romania is found in rural areas, this information could help policy makers to orient a greater part of public investments towards the rural areas.
- **Increasing spending on education and health.** The quality of both education and health services and infrastructure, as well as the inclusion of as many disadvantaged people as possible, can increase population well-being and productivity.

Concluding remarks

There is no single approach to solving the social problem. The nature of the appropriate policies depends on the underlying decision-makers and the country-specific policy and institutional settings.

All the three challenges I have highlighted in this paper: the increase and persistence of income inequalities, the high degree of poverty and social exclusion, as well as the inefficiency and insufficiency of public spending on education and health, undermine social cohesion and, implicitly, the progress. In the context of globalization and technological progress, without clear policy measures, the effects of these challenges will lead to a social regress.

The main instrument for reducing income inequalities is fiscal policy. It acts through a redistributive effect on the incomes of households.

The degree of education in a society can be a major source of deepening or mediating inequalities depending on accessibility. The more education accessible to more individuals, the mobility of the workforce will create the right framework for the development of a more equal society.

Both in terms of education and health spending, their share of GDP is among the lowest in the European Union. The Romanian government does not allocate enough money to integrate as many people as possible to benefit from quality health and education services. In the peripheral areas there are more and more households that have limited access to these services.

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Improving the procurement process by using AHP model.
Case study on a purchase of laboratory equipment

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Abstract. *The procurement process has been cataloged by Webster and Wind, since the beginning of 1970, as a real decision-making process. The model defined by them, named "Buying center", defines both the participants in the procurement process, such as the initiator, decision maker, user, influencer, buyer, and the activities that they undertake in order to successfully complete the procurement process.*
In the research and development institutes in Romania, owning the adequate laboratory equipment is a prerequisite since the preparation phase of the research projects. The fact that the laboratory equipment is outdated or non-existent can lead to blocking or delaying the start of certain research projects. Then there is the need to start procurement projects in order to purchase the necessary laboratory equipment.
An important stage in the procurement process is the awarding stage in which the procurement contract/framework agreement will be awarded to the bidder who has submitted the most economically advantageous offer. Currently, the law stipulates the following award criteria: the lowest price; the lowest cost; the best quality-price ratio; the best quality-cost ratio. The existing procurement process has one major weakness: only one award criterion can be used. By using the AHP model, the procurement process is greatly improved by the fact that several awarding criteria can be used simultaneously depending on the decision maker's preference.
In the present study it is desired to implement the AHP model to improve the procurement model.

Keywords: procurement, improvements, AHP model, laboratory equipment, buying center, SEAP (Electronic Public Procurement System).

JEL Classification: C1.

Introduction

Nowadays, there are many terms that are used with reference to the procurement function, such as: supply, purchase, acquisition.

The classic definition of supply is the following (Lysons and Farrington, 2006, p. 6): "buying the materials in the right quantity, having the right quality, from the right supplier, who will deliver them in the right place, at the right time and at the right price".

Acquisition is understood to be the activity by which products, services, capabilities, knowledge necessary to operate under the most favorable conditions are procured.

1. Contextual background

Considering the large quantity of grape must sold and demanded on the market in a short period of time, an important national institute of research and development for biotechnologies in horticulture from Romania (hereinafter referred to as "the institute") undertook the following decision: the purchase of a pasteurizer to use the grape must for a longer period of time.

By pasteurization the grape must loses its fermentation property. Thus, the grape must is kept for sale for a longer period of time, at least until the winter holidays. Taking into account the market demand from the last autumn campaign, the procurement is safe in terms of profit growth.

2. Main stages of the procurement process

Thus, the procurement process refers to the following activities:
1) Identification of the necessary purchases (study of the project budget, of the financing request, identification of any additional needs, omissions). It is important to check whether the procurement is foreseen in the project budget, without deviating from any provisions (there may be procurement programs included in the approved project, the description of activities or other mentions that are related with the purchases).
2) Management of the necessary acquisitions. Any acquisition that is not foreseen in the financing application will be made only after an additional act which introduces that acquisition in the project budget and in the financing application. It is necessary to correlate the purchases with the schedule of activities, the start and end dates of each activity, as well as the correlation with the periods when experts or other activities related to the acquisition are available.
3) Elaboration of the documents that justify the necessity of the acquisitions. For public institutions it is necessary to elaborate some reports of necessity, according to the provisions of the legislation on public procurement. Necessity reports will include mandatory elements provided in the respective laws (estimated prices, unit prices, names of items to be purchased, minimum technical specifications, description, quantities). The report is issued, for public institutions, in the last quarter of the previous year, but may be modified if necessary or new purchases may be issued when additional

needs are identified. At this stage, the following members involved in the procurement process are needed: the public procurement expert, the financial expert, the specialized experts and the project manager. The necessity report for the purchases already approved in the project also serves as a check list for each purchase (if the purchase is still necessary and justified, if there have been changes to the specifications or names that require an additional document, if it has not been allocated to another partner, if the estimated value has not changed).

4) Elaboration of the annual strategy of public procurement, respectively of the annual program of public procurement in the case of public institutions.

5) Establishing the law applicable to each procurement is done taking into account: the type of the purchaser (private entity or public authority), the association/partnership with a contracting authority, the estimated value of the contract without VAT and the object of the contract (services, products, works). Depending on the situation, it can be determined whether the general law on public procurement is applied (for all situations where the purchaser is a contracting authority, but also in situations where the law expressly stipulates the obligation of the private purchaser to apply the legal provisions).

3. Procurement process: life cycle and participants

The phases of the project that constitute the cycle of the procurement process are:

- Identification: the activities of the project and the needs of procurement, partners, beneficiaries and the target group are identified, in general, no detailed planning of the project is made. Usually, the procurement expert is not involved.
- Preparation: includes preparing the application for financing, defining the project budget and planning the activities. In most cases, the procurement expert is not involved.
- Implementation: setting up the management team (including hiring the procurement expert if necessary), analyzing the financing contract, re-planning the activities, carrying out the procurement, reporting. The involvement of the procurement expert is mandatory. It requires the correlation of the activities and the coordination of the contributions of other departments/experts.
- Closing: reporting of final results (including reporting of procurement activities), archiving of documents, ensuring communications with managing authorities. Usually, it continues after the official conclusion of the project. It may involve significant contribution of the expert in procurement and correlation with other experts/departments.

Organizational purchasing is the result of a complex process in which the decision does not always belong to a single person, but to a decision group. The entities the decision-making group interacts with at the level of an organization can be made up of the following persons:

- The beneficiary of the project/the partnership leader and the partners/consultants.
- Final beneficiaries - the persons or entities that benefit from the services, products or works that are provided in the project.
- Entities with attributions regarding public procurement: ANAP, SEAP operator, Court of Accounts, Ministry of European Funds, CNSC. For example, the publication of

procurement announcements as a private beneficiary is done on the MFE website and requires the registration of the project, which is done by the partnership leader. Announcements are published on that account by all partners who have obligations in this regard. The publication of subscriptions in the SEAP implies the registration in this sense of the entity that publishes the announcement (each partner who has obligations to publish must register separately). ANAP validates the participation announcements published in the SEAP and is the only institution with powers regarding the control of the public procurement and which can apply countervailing fines. The managing authorities control the public procurement strictly in relation to the financing contracts, not having the right to control the purchases that are not made from the funds provided in the project.

- Bidders (or potential bidders involved in the award procedures): the relationship with them is ensured by the person responsible for carrying out each award procedure. It is advisable to avoid telephone conversations or direct meetings (except those required by the award procedure). It will be requested to send the questions in writing using the contact details indicated in the award procedure.
- Contractors: the one or those who signed the public procurement contract/framework agreement. The relationship with them is provided exclusively by the project team that manages all the signed contracts.
- Managing authorities. It is necessary to report the procurement procedures performed, the response to any possible findings. Also, it is necessary to report the activities carried out by the procurement expert (activity reports).
- Audit and control institutions. They have responsibilities in the verification and control of the public procurement carried out within the projects.
- Certification, authorization, approval institutions. They may be institutions such as ANAP, which approve the award documentation and/or participation announcements prior to publication in the SEAP. They may be entities that provide electronic signature services (the case of digital certificates required for publication in SEAP). They may be entities that provide quality management system services or institutions that certify the quality of personal data operator. All of these entities may require compliance with rules that influence procurement procedures.
- The press. Any public procurement can easily become the subject of articles in the press, especially if a general image of lack of transparency is created. In order to be efficient and effective, a procurement procedure must be transparent and eliminate ambiguities, so attention to detail is important. The press can contribute to the publicity of a procedure, but also to diminish the confidence of the potential bidders in its correctness.

4. Description of the purchase and the needs

The offer is submitted for the product described below:
- Product: Multi-parameter oenological automatic analyzer + hydrostatic balance + automatic distillation unit COD CPV 38000000-5
- Required quantity: 1 pcs.
- Minimum technical characteristics:

Table 1. *Specifications*

Description	Automatic analyzer with 120 tests/hour, equipped with operating system and data reading, with Windows, with the possibility of printing data + consumables code: EN001S, EN003, EN005, EN007, EN008, EN009, EN011, EN013, EN014, EN015, EN016, EN0180, EN019, EN020, EN021W, EN022, EN023, EN025, EN026, 2-8-point calibration, halogen lamp, self-calibration for all filters, 1% accuracy. Hydrostatic balance with self-calibration, accuracy 5x10-5, length of determination 0.5-0.25; certified alcoholic solution, repeatability 0.05. Digital distillation unit for wines and alcoholic beverages, with alphanumeric display, including the flavor generator, controlled by microprocessor, with cartridge for demineralization, determines alcohol concentration and volatile acidity.
Material	Consumables for analyzers: free and total SO2, glucose-fructose, citric acid, copper, iron, malic acid, total polyphenols, anthocyanins, catechins, tartaric acid, acetaldehyde, ammoniacal nitrogen, acetic acid, lactic acid, glycerol, catechins, calcium, magnesium, potassium, sugar. Equipment with Windows XP operating system, software, printing system, 2 reading tanks. Hydrostatic balance: special control method and masses, flow cylinder. Digital distillation unit: balloons, washing glass, test reagents, cartridge demineralization
Capacity	Automatic analyzer - 71x62x36 cm, 38 kg, Hydrostatic balance - 210x355x360mm, 7.5 kg Digital distillation unit - 290x300x1200 mm, 41 kg
Other specifications:	-
Warranty	minimum 36 months

- Delivery time of the product: The products will be delivered to the institute with the means of transport of the supplier within a maximum of 30 days from the signing of the product supply contract.
- Quality requirements: The quality of the products must be certified by documents issued by the manufacturer.
- Reception: The final reception will be carried out by a commission consisting of the representatives of the supplier and the beneficiary.
- Warranty period: at least 36 months after commissioning.
- Service intervention during the warranty period: maximum 24 hours.
- Award criterion: the lowest price.

5. Procurement decision

After the product specification has been drawn up, it was signed by the decision committee consisting of 4 members and it was published in SEAP.

5.1. Offers

Shortly after publication, offers have been received from the following economic agents, which fulfill the conditions of participation (qualification) stipulated in the Specifications:

Table 2. *Bids*

No.	Economic agent	Price (lei) without VAT
1.	PROANA	118.000
2.	RUSSINI	118.583
3.	NITESR	119.500
4.	AMEXIM	98.612,61
5.	BIV	73.000
6.	NITESR	98.000

5.2. Making decision process applied by the institute

5.2.1. Step 1: Analysis at first sight

As a result of considering the prices presented as unusually low, one or more of the offers were rejected.

The analyzer offered by BIV company has a very low price compared to everything found in the SEAP catalog and on the market consulted when the project was founded, which led to its rejection. The difference of around 45000 lei compared to the most expensive one has determined the committee to exclude the offer.

The analyzer offered by NITESR on the point 6 in the above table is another model, with a lower price than the first one offered and therefore the committee considered only the second offer, the one with the price of 98,000 lei.

After the evaluation of the bids, the following results were obtained:

Table 3. *Acceptance/Rejections of the bids*

No.	Economic agent	Mark	Decision (accepted/rejected)
1.	PROANA	acceptable	accepted
2.	RUSSINI	acceptable	accepted
3.	NITESR	acceptable	accepted
4.	AMEXIM	acceptable	accepted
5.	BIV	unacceptable	rejected
6.	NITESR	unacceptable	rejected

5.2.2. Step 2: The best quality-price ratio

In a second meeting, the committee evaluated the remaining offers and the final hierarchy was established:

Table 4. *Evaluation matrix*

Criteria / Alternatives	Compliance with the minimum requirements in the Specifications	The best product in terms of technical characteristics	Delivery date	Warranty	Laboratory staff training	Manufacturer's authorization certificate to sell, install and maintain the product
Weight	30%	30%	10%	10%		20%
PROANA	Analyzer without savings on consumables during the analysis performed 20	Product without FT-IR spectroscopy 20	56 days 5,5	12 months 5	-	No 0
RUSSINI	Analyzer with savings on consumables during the analysis performed 30	Product with FT-IR spectroscopy 30	50 days 6	12 months 5	-	Yes 20
NITESR	Analyzer without savings on consumables during the analysis performed 20	Product without FT-IR spectroscopy 20	30 days 10	36 months 15	-	No 0

Criteria Alternatives	Compliance with the minimum requirements in the Specifications	The best product in terms of technical characteristics	Delivery date	Warranty	Laboratory staff training	Manufacturer's authorization certificate to sell, install and maintain the product
AMEXIM	Analyzer without savings on consumables during the analysis performed 20	Product without FT-IR spectroscopy 20	21 days 11	0 months 0		No 0

The final hierarchy established by the committee is the following:

Table 5. *Bids hierarchy*

No.	Economic agent	Score	Hierarchy
1.	PROANA	50.5	4
2.	**RUSSINI**	**91**	**1**
3.	NITESR	65	2
4.	AMEXIM	51	3

5.2.3. Step 3: The decision of the commission

According to Law no. 98/2016 regarding the award of public procurement contracts,

The winning bidder on the 1st place is RUSSINI with an offer of 118,583 lei without VAT and the delivery condition in 30 days. After telephone discussions, the company confirmed that there is no possible anymore to deliver the supply in the agreed period, which led to the cancellation of the purchase.

The winning bidder on the 2nd place is NITESR with an offer of 98,000 lei without VAT, delivered within 30 days.

This contract has not been finalized either, on the grounds of notification from the company BIV, which asks us to respect the procedure, the award criteria posted in SEAP: the offer with the lowest price will be the winner.

BIV GROUP considered that the Institute violated the basic principle of Law no. 98/2016, the principles underlying the award of public procurement contracts:
a) non-discrimination;
b) equal treatment;
c) mutual recognition;
d) transparency;
e) proportionality;
f) taking responsibility;

5.3. Partial conclusion

As a first partial conclusion, the institute does not have a fair behavior towards the BIV economic agent, excluding it from the analysis from the beginning.

BIV company has fairly proceeded by sending the notification to the institute, taking into account the award criterion published in SEAP and the fact that the product offered by BIV GRUP complied with the requirements from the specification.

The institute must review its method of evaluating and analyzing the offers received, but also the award criteria in accordance with the type of the required acquisition.

Even if the award criterion had been the 'quality-price ratio", two major mistakes are evident in the analysis process:

▪ the evaluation matrix was not normalized, the criteria not having the same unit of measure;

▪ being about the quality-price ratio, it can be easily observed that the price was not considered in the analysis.

Choosing the product offered by BIV GRUP at the end was the best action that could be undertaken taking into account the conditions presented above and respecting the law and the principles of the awarding procurement process.

6. Improving the procurement process

6.1. Simple actions to be taken in order to improve the procurement process

The first actions that can be implemented quickly, with minimum effort, adjusting the decision-making process, are the following:
1. Establish and choose the correct awarding criterion in SEAP, when the request is published, not later, in order to avoid the confusion created on the bidders side;
2. Define the correct criteria depending on the awarding process;
3. Set the type of the criterion: maximum or minimum;
4. Normalize the evaluation matrix;
5. Use a valid Multi-Attribute Decision Making Method: the most simple one is the Simple Additive Weighting Method. Of course, there are others methods that can be used like: Electre Method, Topsis Method and so on.

Let's see how the evaluation matrix and the final hierarchy look like after the implementation of the above considerations:
1. The awarding criterion is "the best quality-price ratio";
2. The price will be used as a criterion in the evaluation matrix;
3. *"Maximum" criteria*: Compliance with the minimum requirements in the Specifications, The best product in terms of technical characteristics, Warranty and Manufacturer's authorization certificate to sell, install and maintain the product.
"Minimum" criteria: Delivery date and Price;
4. Depending on the type of criterion, the matrix is normalized;
5. Simple Additive Weighting Method is used as the Multi-Attribute Decision Making Method;

Table 6. *Bids hierarchy using simple additive weighting method*

Criteria / Alternatives	Compliance with the minimum requirements	Best technical characte-ristics	Delivery date	Warranty	Price (lei)	Manu-facturer's authorization	Score	Hierarchy
Weight	20%	20%	10%	10%	20%	20%		
PROANA	0.66	0.66	0	0.33	0.0045	0	0.3	5
RUSSINI	1	1	0.1	0.33	0	1	0.643	2

Criteria \ Alternatives	Compliance with the minimum requirements	Best technical characte-ristics	Delivery date	Warranty	Price (lei)	Manu-facturer's authorization	Score	Hierarchy
NITESR	0.66	0.66	0.46	1	0.17	0	0.45	3
AMEXIM	0.66	0.66	0.62	0	0.16	0	0.36	4
BIV	0.66	1	0.46	1	0.38	1	0.75	1

Even if we are talking in terms of "lowest price" or "the best quality-price ratio" as the most appropriate award criterion, the winning bid is offered by BIV GROUP.

6.2. Complex actions to be taken in order to improve the procurement process

Of course, there are more complex methods that can be implemented into the procurement process. One of them is AHP method, Analytic Hierarchy Process.

The Analytical Hierarchy Process (AHP) structures the problem as a hierarchy. The first level of the hierarchy is the purpose, the purchase of a laboratory equipment. The second level of the hierarchy consists of the criteria that will be used to decide the purchase.

To analyze the decision of purchasing a laboratory equipment using the analytic hierarchy process the next steps should be followed:

1. Develop a model

Figure 1. *Hierarchical breakdown*
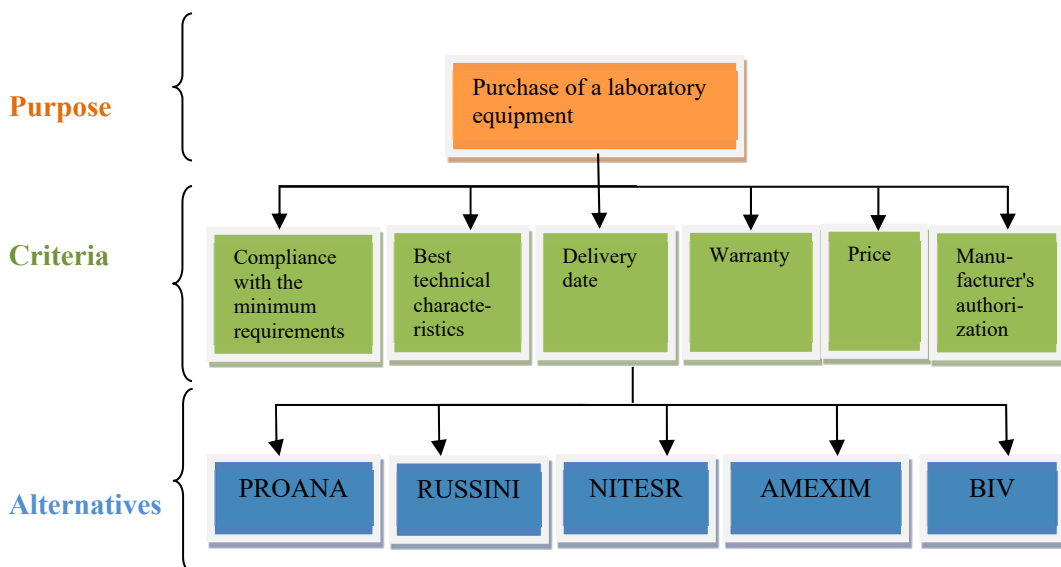
The advantages of this hierarchical breakdown are clear. By structuring the problem in this way, it is possible to better understand the decision to be met, the criteria to be used and the alternatives to be evaluated. This step is crucial and here, in more complex situations, it is possible to request the participation of experts to ensure that all the criteria and possible alternatives have been considered. Also, in complex situations, it may be necessary to include additional levels in the hierarchy, such as sub-criteria.

2. Establishing the weights for the criteria

The importance of each criteria is compared pairwise respecting the desired aim of obtaining their weights.

The consistency in terms of proportionality and transitivity is then checked in order to ensure a reasonable level.

3. Establishing the preferences for the alternatives

A similar process is followed as in the previous step, the alternatives are compared pairwise.

4. Establishing the global preference

All alternatives are combined as a weighted sum – like it was previously made using the Simple Additive Weighting Method – in order to establish the overall priorities of the alternatives. The best choice is the alternative with the highest overall index.

5. Sensitivity analysis

This step is more like a model validation, to see how changes in the weights of the criteria could affect the final decision.

6. Making a final decision

Based on the last two steps, a decision can be made.

The starting point of the AHP process can only be triggered by a meeting with all members (procurement analysis committee) to establish, at group level, the pair preferences of both the criteria and the alternatives. After that, depending on the complexity of the acquisition, the process can be managed either manually or automatically using specific software (e.g. SuperDecisions).

Conclusion

The Analytical Hierarchy Process (AHP) has been widely discussed and has been used since its official appearance (Saaty, 2012). Although there have been discussions about certain aspects of AHP theory (Brunnelli, 2015), AHP is one of the most widely used methods of multi-criteria decision-making in the world because of its intuition and mathematical rigor. The method is used both in academia and government as well as in many companies, becoming part of the essential tools of modern managers and leaders.

Regardless of the method used for the multi-criteria decision making process, whether it is TOPSIS, ELECTRE, AHP or the simple additive weighting method, the most important thing is to apply it accordingly, to respect the law and the procurement process principles: non-discrimination, equality between bidders, mutual recognition, transparency, proportionality and responsibility.

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The transmission of shocks through banks' lending supply: A survey of the literature

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Abstract. *Banks have an important role in the economy as they allocate capital from agents with excess financial resources to those with high financing needs and good economic projects, as well as they provide liquidity to the economy in the form of credit lines and deposits. The rapid globalization of the financial system in the last 20 years and the developments that follow the Global Financial Crisis showed that there is a significant gap in our understanding of how financial shocks are transmitted to the economy through banks' lending supply. The paper surveys the theoretical and empirical works from the literature and extracts the important ideas, the methodological approaches and the main takeaways for policy makers.*

Keywords: bank lending channel, liquidity, shock transmission, foreign banks.

JEL Classification: E51, F34, G21.

1. Introduction

Banks have an important role in the economy as they allocate capital from agents with excess financial resources to those with high financing needs and good economic projects. They are able to do this due to their higher knowledge (and lower costs) in assessing, monitoring and managing risks. Before the 1980s, the banking sector was not considered to be a major source of shocks for the economy. This view was based on works of Friedman and Schwartz (1963) that stated that the monetary supply was the most important financial aggregate *(money view)* and banks matter mostly because they create money in the economy. Another highly important work that sustained this view was Modigliani and Miller (1958) that argued the financial structure is not significant in determining the firms' decisions. Other economists (Minsky, 1970, 1977 and Kindleberger, 1978) thought the opposite, but their works were overlooked at the time. Minsky (1970) gives a very good description of the mechanisms that lead to builds-up of vulnerabilities within the financial sector and trigger financial crisis and economic recession or even economic depression. Kindleberger (1978) shows the importance of the link between asset price booms, especially those funded by bank credit, and financial crises.

Starting with early 1980s with works of Stiglitz and Weiss (1981), Blinder and Stiglitz (1983) and Bernanke (1983), a new theory, the credit channel theory that promoted the credit view of monetary policy, started to gain traction. According to this theory (Bernanke and Gertler, 1995), the interest rate channel of monetary policy is amplified by endogenous changes of external finance premium through two different linkages. The first, initially named as *the balance sheet channel* (Khwaja and Mian, 2008, uses the term *the firm borrowing channel*), regards potential impact on the borrowers' financial situation and takes into account that bank loans and bond funding are not perfect substitutes. The second, *the bank lending channel*, regards the impact of monetary policy on the banks' supply of credit (as opposed to the *money view* that stated that central banks affect the volume of money). Bernanke (1988) provides a good overview of the differences between the *money view* and *credit view* of the monetary policy.

Even after the formulation of the credit channel theory, the banks role in the transmission mechanism of the monetary policy was still considered to be limited. Therefore, the banking sector was not included in central banks' macroeconomic models. An important factor to this situation was the difficulties in evaluating the bank lending channel since both demand and supply factors acted simultaneously on credit volume (Bernanke and Gertler, 1995). Moreover, the first empirical works on the bank lending channel found only weak evidence and even questioned its existence (Oliner and Rudebusch, 1995; Angeloni et al., 2003). After GFC, the bank lending channel was revaluated by a series of works that looked at credit supply shocks with loan level data and new methodologies (Khwaja and Mian, 2008, Repullo and Suarez, 2010, Jimenez et al., 2012, Iyer et al., 2014, Hanson et al., 2015, Ippolito et al., 2016, Degryse et al., 2019).

The paper is structured as follows. The section 2 surveys the theoretical and empirical works from the bank lending channel literature. The section 3 presents the results from the literature on the transmission of financial shocks to the economy through banks' loan supply. Section 4 reviews the literature on international transmission of shocks through

banks' lending. Section 5 discusses the main methodologies used to evaluate both the bank lending channel, as well as the channels for shock transmission through banks' loan supply. Section 6 concludes with some policy lessons.

2. Bank lending channel

The most important theoretical works on the credit channel theory and, more specifically, the bank lending channel, are Bernanke and Blinder (1988), Kashyap, Stein and Wilcox (1993), Kashyap and Stein (1995), Stein (1998) and Repullo and Suarez (2000). According to the theory, banks adjust their lending supply after a monetary policy shock due to endogenous changes in external finance premium and to the imperfect substitution between different type of funding. Thus, banks cannot easily and without additional cost cover the shortage in funding (after, for example, central bank draws liquidity from the market) by attracting non-deposits funding and decide instead to reduce lending. Bernanke and Blinder (1988) develop a model of aggregate demand based on IS/LM model that allows for both money and credit to play a role. The aim of this model is to test the credit view of the monetary policy. Stein (1998) constructs a theoretical model that allows banks to be liquidity constrained due to information and agency problems, as opposed to previous ones, for example Diamond (1984). Under the new assumptions, banks might restrict credit also due to financial frictions. Repullo and Suarez (2000) develop a model based on a simple moral hazard problem between borrowers and lenders that banks can mitigate through monitoring. The authors show that the mechanism underlying the broad credit channel is fairly robust.

The first empirical papers found that imperfections in the credit market interfere with the monetary policy transmission mechanism although the overall effect of a bank lending channel is difficult to quantify. Kashyap, Stein and Wilcox (1993) shows that a tightening in monetary policy determines a shift in the firms' funding structure (commercial papers increases, while bank loan decreases). These changes in finance also affects firms' investment activity. As opposed to these findings, Oliner and Rudebusch (1995) argue that disaggregated data on firms' balance sheet information (they looked at US manufacturing firms from 1973/Q4 to 1991/Q2) provide no evidence for the bank lending channel. This outcome might also be the result of limitations of the econometric methodology used to assess the bank lending channel[1].

The functioning of the bank lending channel depends on various factors. A first set of factors are how much the firms depend on bank lending (Kashyap and Stein, 1995) and how able are the credit institution to shield against monetary policy shocks (Tsatsaronis, 1995). In the case studied by Kashyap and Stein (1995), the level of dependence was quite high for both small firms (more than 80% of their funding) and medium-sized firms (77%). The higher the role for bank lending, given the imperfect substitution with other type of external finance, the stronger the impact of the bank lending channel on the economy. Banks might reduce part of the negative impact if they can access other type of finance at low cost. In addition, stronger the links between banks and financial markets, more

powerful the implications of financial shocks on banks incentives in deciding their lending activity (Gambacorta and Marques-Ibanez, 2011).

One way banks can reduce the impact of the monetary policy is by tapping into the available funding at group level if the bank is part of a financial group active internationally (Gambacorta, 2005; Ashcraft, 2006). Another method is by resorting to loan securitisation (Loutskina and Strahan, 2006, Altunbas et al., 2009). This last method works most during normal times. In a financial distress, this situation could reverse if the quality of those loans deteriorates rapidly. Another set of factors found by the empirical literature to affect the bank lending channel are those related to institutional aspects: state guarantees and ownership of banks, insurance guarantee schemes and the importance of banks' networks (Ehrmann et al., 2003; Ehrmann and Worms, 2004).

Banks characteristics (their size and their financial condition) are playing a major role in the way the bank lending channel is functioning. According to Kashyap and Stein (1995), small banks reacts more strongly to an increase in the monetary policy interest rate by reducing more the supply of credit. Kashyap and Stein (2000) goes even further and looks at the banks' liquidity position. According to their results, banks with lower liquidity buffer (measured by securities holdings relative to total assets) tend to reduce lending more. Other papers that find similar results are Gambacorta (2003), Gambacorta and Marques-Ibanez (2011) and Abuka et al. (2019). In the same way, lower capitalized banks will contract more their credit supply under monetary policy tightening (Peek and Rosengren, 1995; Kishan and Opiela, 2000; Ashcraft, 2001; Van den Heuvel, 2001; Gambacorta and Marques-Ibanez, 2011; Abuka et al., 2019).

The adjustments on lending supply triggered by a monetary policy shock is observed not only at intensive margin (banks are lowering the amount of loans for firms from their portfolio), but also at extensive margin (banks are granting less to new firms). Jimenez et al. (2012) looks at the extensive margin of the bank lending channel with loan application data for the Italian credit market. The authors find that a higher interest rate reduce the credit activity by diminishing the loan granting activity. The impact is asymmetric in the sense that banks with lower capital and/or liquidity react more strongly. A similar dataset on loan applications is used by Abuka et al. (2019) with data for a developing country and finds similar results. Ivashina et al. (2019) looks at how the bank lending channel works on different loan types. They find that the main type of loans that propagate shocks through banks' balance sheets is cash flow loans, whereas asset-based loans act more on intensive margin.

The monetary policy transmission mechanism interacts with the perception and pricing of risk by economic agents (the bank risk-taking channel, first introduced by Borio and Zhu, 2012). There are multiple ways through which the changes in the monetary policy stance can affect risk tolerance of agents. One is through asset valuation and profits (similar to the financial accelerator mechanism). A decrease in the interest rate will increase the values of assets (and, implicitly, the collateral value) and profits making firms more willy to take risk. Another way is by the enhancement of the search for yield as lower interest rate lowers the expected returns on financial investment and may determine the financial institutions manager to increase the holding of riskier assets in order to meet their rate of return

objective. A third way is through changing the transparency about future policy that can increase or decrease the level of uncertainty and, therefore, the level of risk tolerance by market participants. Empirical papers that looked at the importance of risk-taking channel are Ioannidou et al. (2009), Maddaloni and Peydró (2011), Jimenez et al. (2014), Dell'Ariccia et al. (2014), Geršl et al. (2015), Dell'Ariccia et al. (2017) and Heider et al. (2019). A more recent paper, Jimenez et al. (2019) looks at how credit supply in boom affect the fragility of the banking sector. Their results suggest that higher credit supply during credit boom episodes contributes only modestly to economic growth but substantially to bank risk-taking (including lower lending standards) thus increasing the overall vulnerabilities in the banking sector.

Another possible complementary channel to the bank lending channel is the banks credit standards channel. Maddaloni and Peydró (2013) finds that a change in the short-term interest rates affects also banks' credit standards due to adjustments in their perception of risk regarding firms' and households' loans. These changes are in line with the ones in the expected profit and income. Policy uncertainty can also work through the bank lending channel. Berger et al. (2018) find evidence of liquidity hoarding and bank loan reduction when policy uncertainty rises.

Other recent works (Kashyap et al., 2014; Diamond et al., 2017; Jimenez et al., 2017) look at the bank lending channel from the macroprudential policy perspective and assess how regulatory measures impact lending. More specifically they assess the impact of macroprudential regulation on banks decisions in a Diamond and Dybvig (1983) framework. They find that prudential regulation improves the social welfare, but the incentive for regulatory arbitrage is relatively strong (as the rents accrued by banks is lowered through regulation).

3. Transmission of shocks through banks' lending supply

A financial shock that significantly affects the banks' liquidity position[2] or their capital position[3] is likely to determine a reduction in the banks' credit supply due to the same factors as those identified in the case of the bank lending channel of the monetary policy.

A seminal paper in assessing the banks' transmission of shocks to the economy through the bank lending channel is Khwaja and Mian (2008). The authors show that banks pass their liquidity shocks to firms, but while the large firms can find alternative funding sources, the small ones face increased financial distress. The magnitude of the bank lending channel, in the case studied in this paper (an exogenous liquidity shock after a nuclear test), is quite significant. At intensive margin, more than half of the shock is transmitted to firms. The impact is asymmetrically tilt towards small firms as almost 90% of the shock is transmitted in this case. At extensive margin, there is also a large effect. A 1% drop in banks' liquidity leads to a 12-basis points reduction in the probability of lending to new clients and a 21 basis points decrease in the probability of continuing lending to existing clients.

Iyer et al. (2014) looks at the impact on bank lending supply of an unexpected freeze of the inter-bank market. They find that banks that rely more on this type of funding contract

more the lending supply. Similar is Khwaja and Mian (2008), they show that the impact is stronger for smaller firms as these firms cannot compensate the lost funds from banks. In addition, they find evidence for the amplification mechanism through banks' solvency position. Less solvent banks reduce more credit supply after the liquidity shock.

Acharya et al. (2018a) studies the impact of a capital shock (in the form of forward-looking capital requirements after stress tests) on banks' loan supply. They prove that stress-tested banks reduced their credit supply and changed the composition of their credit flow by moving away from riskier borrowers *(Risk Management Hypothesis)*. The authors study the effects at both intensive and extensive margin and find that both are confirming the *Risk Management Hypothesis*. Moreover, stress-tested banks reduced lending supply more for commercial real estate credit and credit card loans, which are the riskiest type of loans.

3.1. Transmission of shocks through banks' liquidity supply

Banks major advantage compared to other financial institution is that of providing liquidity to the economy. They do that by providing credit lines that firms can use when needed and deposits that can be withdraw at demand. Kashyap et al. (2002) shows that a bank can benefit from the two type of activities if it does not experience correlated liquidity demands from asset and liability sides and if it has access to low cost funding from financial markets to help it manage the excess liquidity demand.

Acharya and Mora (2015) and Ippolito et al. (2016) look at how banks managed to fulfil this function when exposed to a financial crisis. Both papers study banks behaviours in the context of liquidity pressures from both asset and liability sides and both are finding evidence supporting the idea that the impact of double liquidity runs affect significantly the banks' lending supply. Acharya and Mora (2015) shows that, after the crisis, liquidity-exposed banks (with a high share of wholesale funding) lowered the overall credit (both in terms of amounts granted as well as commitments) by reducing especially the extension of new loans and commitments. Banks exposed more to loan commitments increased their deposits interest rates significantly higher than the other banks. But even after doing that, these banks recorded lower deposits growth than their counterparts and were forced to cut the amount of loan origination. According to the authors, the health of the credit institutions did not play a significant role during the crisis when banks faced pressures from both asset and liability sides. The ability of banks to fulfil their function as liquidity providers was sustained by the large support from the government and government-sponsored agencies.

Ippolito et al. (2016) finds evidence for a front-loading behaviour of banks in the sense that banks with higher inter-bank exposure adjusted their credit supply immediately before the market freeze. They did that both to the existing firms (intensive margin) and to new firms by granting fewer credit lines especially to the financially constraint firms (extensive margin). These results indicate that banks with more fragile funding sources managed ex-ante their liquidity risk by lowering their exposures to assets with higher liquidity risk. By doing that they limited the risks of a double liquidity run. In addition, the authors find evidence for a shift in demand for liquidity as firms were more likely to drawdown credit from banks with higher inter-bank exposures in anticipation of future credit supply restrictions. Ippolito et al. (2019) goes even further and shows that liquidity constrained

banks impose tougher terms on existing credit line contracts when they have the opportunity to do so (when firms violates a covenant) both regarding the amount of credit and the price (the spreads and other fees) determining the firms to move away from bank funding. This behaviour diminishes the value of credit line as an instrument to manage liquidity risk for firms as it affects more the financially constrained firms (that also have the higher probability of breaking a covenant on the credit line contract) when the bank becomes itself financially constrained. This channel is defined by Acharya et al. (2018b) as the liquidity insurance channel.

4. International transmission of shocks

Among the first studies to have documented the international transmission of shocks are Peek and Rosenberg (1997, 2000). The authors present how an exogenous shock (a sharp fall in stock prices in Japan) in the late 1980s and early 1990s led to a reduction in lending of Japanese banks' subsidiaries in the United States. The transmission mechanism was determined by the way the regulated capital was established for the Japanese banking sector. At that time, the capital requirements for the Japanese banks were based on the 1988 Basel Accord which provided for the possibility of including up to 45% of unrealized gains on equity security holdings (revaluation reserves, also referred to as hidden reserves). The significant correction of the prices of shares on the Japanese capital market led to a major reduction in the value of banks' capital and, in the case of many of them, below the regulated minimum value (8%). Given that the shock analysed is exogenous to the evolution of US credit demand, the analysis allows a fairly good identification of the impact on credit supply. A similar study is Aiyar et al. (2014). The authors analyse the impact on cross-border lending of changes to bank-specific capital requirements for UK banks during the period 1999-2006. Their results show that an increase in capital requirements led to a differentiated reduction in lending. Thus, banks lowered their credit more to countries where they have a reduced activity, especially lending to other banks (including foreign affiliates). All these studies emphasize the importance of cross-border spillovers of prudential regulation in the presence of multinational credit institutions.

Another set of empirical studies looked at the international transmission of liquidity shocks. Schnabl (2012) shows that banks financed from international financial markets transmit shocks from these markets to the local economy. One important assumption of the paper is that bank ownership can reduce the information asymmetries between borrowers and lenders due to the better monitoring abilities of the lender when holding an equity stake of the borrower. Therefore, the analysis differentiates between foreign-owned banks, local banks with funding from international financial markets and local banks with local financing. According to the paper, the transmission of the liquidity shock was stronger for the second group of banks (local banks with foreign funding), intermediate for the first group of banks (foreign owned banks) and weakest for the last group of banks (local banks with local funding). These results indicate that foreign ownership might help mitigate the transmission of shocks from international financial markets. These findings are in line with other findings from the literature on foreign banks and internal capital markets (for example, Ashcraft, 2006). A similar result is obtained by Ongena et al. (2015). The authors

show that both internationally-borrowing domestic and foreign-owned banks reduced credit more during crisis than domestic banks that are funded only locally. In contrast to foreign banks, local banks were shielded more from the effects of the 2007-2008 financial crisis and recorded a steady flow of lending compared to the multinational banking groups (Claessens and van Horen, 2014; De Haas and van Lelyveld, 2014). The same asymmetry is observed also at firm level. The firms that are dependent on bank lending and have a lending relationship with a bank from the first two categories (internationally-borrowing domestic and foreign-owned banks) report lower economic performance and face higher financing difficulties. The firms most affected by the reduction in lending are small firms and those in relation only with one bank.

A comprehensive analysis of cross-border contagion and how liquidity shocks affected credit supply is Buch and Goldberg (2015). The paper is based on 11 other studies that evaluate the importance of these transmission channels for different countries. According to this study, the asymmetries in the transmission of the shock depend on whether the banks are drawing on official-sector liquidity facilities (the central bank's operations for injecting liquidity into the market), on liquidity management across global banks and the balance sheet characteristics of banks.

Another paper from this strand of the literature, Correa et al. (2019), studies how a liquidity shock suffered by the branches of euro-area banks in the United States (due to the European sovereign debt crisis) led to a reduction in lending for US firms. Like Ivashina et al. (2019), the reduction in credit was mainly under the form of revolving credit. The bank lending channel worked both at intensive, as well as at extensive margin. The affected firms responded by a cut in investments and hoarding up liquidity. This last result is similar to the evidence found by Acharya et al. (2013) that firms tend to increase their cash holdings during periods when banks increase the price or decrease the supply of credit lines. According to these papers, the financial globalization has intensified the international transmission of shocks.

Other studies looked also at policy actions determined by the need to reduce the cross-border transmission of shocks. Such a policy action was the Vienna Initiative I Agreement which required the signing European banking group to maintain the exposures to countries from Central and Eastern Europe CEE). De Haas et al. (2015) studies the effectiveness of this agreement in isolating local markets from shocks from international financial markets. The paper uses data for 350 European banks for the period 2008-2011. The results show that both local and foreign banks reduced domestic lending, but the banks that signed the Vienna I Agreement provided a more stable credit flow. According to the analysis, the agreement had a beneficial effect on the participating countries and did not adversely affect other Central and Eastern European countries (even if a banking group had subsidiaries in both signing and non-signing CEE countries).

4.1. Foreign banks

One important factor in determining the way the cross-border shocks are transmitted to local economy is the presence of foreign banks. According to the literature, foreign banks can act either as (i) a source of stability, as they usually have higher abilities to manage

risks and/or have easier access to financial markets (from internal or international capital markets), or as (ii) a source of risks, as they are more exposed to international financial shocks, their funding depend more on the group financial situation and less on the conditions from the local economy and, even, might have a lower ability to assess the local borrowers' worthiness. Empirical studies that find evidence for the first hypothesis are Peek and Rosengren (2000), Detragiache and Gupta (2006), Ashcraft (2006), Schnabl (2012), while studies that document the second one are Berger et al. (2001), Mian (2006) and Detragiache et al. (2008), Cetorelli and Goldberg (2011, 2012a, 2012b), Giannetti and Laeven (2012), De Haas and van Horen (2013), Claessens and van Horen (2014), De Haas and van Lelyveld (2014), Ongena et al. (2015). The mechanism of transmission of shocks is determined by the type of financial group the bank belongs to (Campello, 2002), by the financial groups policy of allocating the intra-group funding (Lamont, 1997) and by the presence of specific financial frictions like principal-agent (Rajan et al., 2000).

An important paper that studied the role of foreign banks in transmitting shocks from international financial markets is Cetorelli and Goldberg (2011). The shocks to emerging countries lending is transmitted through three channels: the direct cross-border lending supply of foreign banking groups, the loan supply of foreign banks' affiliates in the emerging markets to local borrowers, and the loan supply of domestic banks as a result of the decrease in inter-bank and cross-border lending. The results of the paper show that foreign banking groups have significantly reduced the supply of credit in the emerging countries and that both foreign-owned banks and local stand-alone banks are affected by foreign liquidity conditions, although differentiated based on their exposure to cross-border funding and to the internal capital markets of the banking groups in which they participate. Other studies of the two authors, Cetorelli and Goldberg (2012a, 2012b), reach similar conclusions that support the hypothesis that foreign banks contribute significantly to the transmission of shocks from the international financial markets to the local economy. How these shocks are transmitted, however, depends on the size of the branch (Cetorelli and Goldberg, 2012a), as well as on the importance of the branch in generating revenue (Cetorelli and Goldberg, 2012b). According to the authors, the banks affected by a liquidity shock decide to reallocate the funds available within the group according to the importance of the entities within their financial group (based on the extent of local funding of affiliates and on the importance of that affiliate market to the business of the banking organization) and not according to the specific conditions of the economy in which they operate.

Giannetti and Laeven (2012), by studying syndicated loans, find evidence of a *flight home effect* after the crisis. According to the authors, banks increased significantly the home loan origination (by approx. 20%) to the disadvantage of foreign borrowers after experiencing negative shocks to their net wealth. Moreover, the shift was similar for all borrowers, irrespective of their quality, and thus was different than a *flight to quality effect*. The adjustment in the structure of loan origination was stronger for banks with less stable funding and, therefore, more vulnerable to liquidity risk.

De Haas and van Horen (2013) also find evidence for the shift in bank lending during crisis based on the closeness of the bank-firm relationship. The authors show that banks continued to lend more to countries and firms they were closer to. In addition, bank lending

varied according to the degree of integration of foreign banks with the banking sectors of the host countries. The main hypothesis tested in this study is that banks decision to curtail lending to foreign borrowers was determined by certain characteristics of the bank-borrower relationship. First, the authors show that foreign banks more integrated with local banks and borrowers are less likely to exit from the local market. Second, the geographical location of the banks country of origin, as well as, their experience in lending to the local market also reduces the risk of a reduction in credit supply to the local borrowers. Third, the banks with local presence on the local market are also more stable providers of loans, especially in countries with relatively weak institutional environments.

5. Methodologies

To prove the existence of the bank lending channel, the early empirical papers used time series models (Bernanke and Blinder, 1988; Kashyap, Stein, Wilcox, 1993; Oliner and Rudenbush, 1995), vector autoregression (King, 1986; Bernanke and Blinder, 1992; Kashyap and Stein, 1995; Tsatsaronis, 1995), structured vector autoregression (Bernanke, 1986) and vector error regression models (Ramey, 1993). The idea behind this type of models was to test if financial debt instruments (for example, commercial papers, securities holdings) and bank loans respond differently to a monetary policy shock. If the monetary policy works only through interest rate channel, all types of funding should decrease in a relatively same way after a monetary tightening, but if the bank lending channel exists then the bank loans will react more strongly. This type of methodologies has a major drawback because they cannot distinguish between the true effect of a bank lending channel and the demand factors that result from the interest rate channel. The evidence found by these papers were mixed and even questioned the existence of the bank lending channel (Oliner and Rudenbush, 1995; Tsatsaronis, 1995).

A second layer of papers used bank level data with either cross-sectional models (Bernanke and Lown, 1991; Kashyap and Stein, 2000) or panel models (Angeloni et al., 2003) for the volume of loans. The econometric methods used are either ordinary least square (OLS) or generalized method of moments (GMM) if dynamic panels are estimated (Ehrmann et al., 2003), gambacorta2004. These methods rely on the assumption that there is a homogeneous reaction of loan demand across all banks for the model to correctly identify the supply shock (Ehrmann et al., 2003). However, even if these approaches used more granular data compared to the previous papers (bank level data vs. macroeconomic data), they still do not account fully for demand factors (Jimenez et al., 2012). For example, if the estimations show that banks with lower liquidity tend to restrict more credit after a monetary policy tightening (as in Kashyap and Stein, 2000) this might be also the result of a decrease in demand. Even more, part of the borrowers rejected by liquidity constrained banks might be financed by the banks with a better liquidity position, thus mitigating the effect of the credit contraction of the other banks. Therefore, the identification issue remains a challenge for this type of models.

Another significant problem that these models have is the omitted variable bias (Jimenez et al., 2012). If the econometric method is ordinary least square method (OLS) instead of

fixed effects approach, the estimated coefficient (of the observed credit supply shock) could be biased if the credit supply shock is correlated with the unobserved demand factors (Freixas et al., 2015). For example, if the correlation between the two is positive, then the OLS coefficient will overestimate the impact on lending. For example, after a monetary policy shock, the banks' funding decreases simultaneously with the demand for credit (possible because of higher funding costs - the interest rate channel), making the overall effect on lending obtained with the OLS model higher than the real one. The opposite is true if the correlation between the credit supply shock and the demand for credit is negatively correlated. In this case, the demand increases after a monetary shock, and the OLS estimator is lower than the actual one. To correct this possible bias, the models should include fixed effects to capture any unobserved demand factors.

The more recent works on bank lending channel use granular data (firm-bank or loan level data) in order to identify correctly the loan supply shocks. The main econometric approaches are panel models with various fixed effects (Repullo and Suarez, 2010, Jimenez et al., 2012, Iyer et al., 2014, Hanson et al., 2015, Ippolito et al., 2016, Epure et al., 2018, Degryse et al., 2019) and difference-in-differences models (Khwaja and Mian, 2008, Cetorelli and Goldberg, 2011, Buch and Goldberg, 2015, Kapan and Minoiu, 2018). This type of models solves the identification problem as they control for demand factors as well as for other unobserved heterogeneity. The demand factors are captured with various fixed effects (like for example, county fixed effects). The assumption for the loan supply identification problem is less strict the methodologies presented above: the credit demand should be homogeneous at cross-sectional unit level (for example, at county level).

To control for demand, most papers use time-invariant factors like county, sector or, even, firm level fixed effects. To capture also the shifts in credit demands, some papers use time-varying fixed effects defined as interacted terms between the cross-sectional unit (*county*, *sector* or *firm*) and time (like *county x quarter*). The fixed effects approach allows us to estimate the impact of the observed credit supply shock (for example, due to a reduction in the banks' external funding) on the borrowers from the same cross-sectional unit (like *county* or *sector*) or even for the same firm (with a condition that these firms borrowed from at least two banks).

Some papers used more complicated factors to control for very granular differences in credit demand like triple or quadruple interaction fixed effects. For example, Degryse et al. (2019) uses *industry-firm location-firm size-time fixed effects*. One limitation of this approach is that it looks only at those borrowers that have same characteristics (same industry, same location, same size) and obtained credit from different banks. For example, if one bank is specialized in granting credit to a specific industry or to firms from a specific location and there is no other information on other banks' lending to firms from the same industry or location, that set of information will be drop out from the estimation sample. The higher the granularity of the fixed effects, the higher the restrictions on the data sample. For example, if the fixed effects are at firm level than the sample will be restricted only to those firms that obtained loans from at least two banks. Ivashina et al. (2019) show that not accounting for loan heterogeneity might bias estimates of the bank lending channel as

different loan types plays distinct roles in the transmission of shocks to the economy through credit supply.

The difference-in-differences models (*diff-in-diff models)* use the first difference data on bank information and use fixed effects to capture demand heterogeneity. By doing that, all the specific demand shocks will be absorbed by fixed effects. This type of set up allows us to assess the intensive margin of a credit supply shock. For example, if the fixed effects are at firm level, the model will estimate if the same firm will experience a higher decrease in credit from the bank with the larger decline in its funding or liquidity position (Khwaja and Mian, 2008). By setting the fixed effects at firm or even at *firm x credit type fixed effects* the sample is severely limited only to those firms with loans (or, even, the same loan type loans) from at least two banks. The share of the credit market that can be covered by this assessment can sometimes represent only a small fraction of the credit market (Ongena and Smith, 2001, Degryse et al., 2009, Kysucky and Norden, 2016).

Another major limitation of the *diff-in-diff* models is that they evaluate the impact only for one-off exogenous event (Khwaja and Mian, 2008) and cannot say anything about the function of the bank lending channel during normal times. Also, finding an exogenous event might prove to be difficult, especially when assessing the credit supply shock. A recent work, Jimenez et al. (2019) expand the methodology of Khwaja and Mian (2008) by combining the estimations on the bank-firm panel model with the one at firm level. Looking only at the bank-firm link is not enough to capture the net effect at firm level as some firms affected by the reduction of bank lending might seek alternative funding sources. Therefore, by combining the estimations from the two regressions, the authors are able to obtain the real effect of a credit supply shock at the firm level.

6. Conclusions and policy discussions

Banks fulfil important functions in the economy by allocating credit and providing liquidity. Their supply of loans is subject to monetary and macroprudential policy changes. The banks' ability to fulfil these functions might be affected by financial shocks in the context of vulnerabilities stemming from the banks' financial situation, financial frictions that limit banks access to alternative funding and of the financial and economic conditions. By adjusting their credit and liquidity supply to the economy banks are transmission these shocks to the economy. The financial globalization has intensified the international transmission of shocks. The presence of multinational banking institutions, as well as the increase access of local banks to international financial markets, adds channels to the transmission mechanisms of shocks to the banks' supply of credit and liquidity.

Once the banks' ability to mitigate the negative impact of a financial or policy shock is impaired (financial frictions prevented banks to successfully restore their financial condition in order to sustain the same level of credit supply or banks changed the composition of their credit flows in anticipation of a severe double liquidity shock), the banks will curtail their credit and liquidity supply, thus transferring the shock to the economy. The transmission is significantly asymmetric with smaller and higher bank dependent firms being more affected. In addition, the shock might be amplified if banks

are financially constrained. Under tighter monetary and economic conditions, a reduction in bank capital might trigger a credit crunch (Jimenez et al., 2012). The foreign banks reduce their lending also due to higher risks associated to emerging markets. The impact on the economy might be significant as firms affected by the reduction in bank funding and/or liquidity tend to reduce investment and hoard liquidity.

The rapid globalization of the financial system in the last 20 years that culminated with the Global Financial Crisis (GFC), as well as, the severe contraction of credit that followed the economic recession after the GFC showed that there is a significant gap in our understanding of how financial shocks are transmitted to the economy through banks' lending supply. The recent developments of the literature of bank lending channel and of the transmission of financial shocks though banks' loan and liquidity supply reduced this gap and created a better environment for policy makers for designing and implementing adequate policy measure in order to mitigate the negative impact of these shocks. These advances were possible due to higher availability to granular data (especially credit registry and supervisory data) and improvements in the econometric methodologies.

The recent findings from the literature point to some important policy lessons. First, central supervisory and macroprudential authorities should ensure that banks have suitable liquidity and solvency position to limit the transmission of shocks to the economy. Strong banks' financial condition might help not only in slowing credit contractions after a shock, but can also help in speeding up the credit recovery Kapan and Minoiu, 2018.

Second, macroprudential measures designed to foster the financial integration of foreign banks may help the stability of credit flows during crisis (De Haas and van Horen, 2013). An increase cooperation at international level regarding the supervision and regulation of financial institutions might limit cross-border spillovers of regulatory changes and contribute to a level playing field for financial institutions across jurisdictions.

Third, policymakers need to design mechanisms to ensure an uninterrupted supply of credit to creditworthy borrowers (Acharya and Mora, 2015) and, even, to coordinate policy actions across different jurisdictions in order to limit spillovers effects of financial shocks. Example of such policy actions are direct interventions in markets, government funding of temporary programs to help banks continue lending to the economy provided they are suitably priced and made contingent on bank quality (Acharya and Mora, 2015) and regional agreement like Vienna Initiative I (Cetorelli and Goldberg, 2011; De Haas et al., 2015).

Notes

[1] I discuss these limitations in the section on methodologies.
[2] For example, reduce banks' wholesale funding or limit the access to the inter-bank market as a result of a market freeze or due to exposures to risky assets.
[3] For example, due to a sharp decrease of the financial assets value or higher capital requirements.

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Sustainable development in European Union as expression of social, human, economic, technological and environmental progress

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Abstract. *This paper analyse the way how the sustainable developments components are interacting between them and reflects on a possible trade-off between social, human, economic, technological and environmental progress. In this context, I have computed the Pearson correlation coefficient between the mentioned forms of development for 2010-2018 period, but in some cases, my analysis was limited to a lower period due to the data availability. At all, I have concluded that social, human, economic, technological and environmental development are positively linked, but the link between technological and social development depends on the degree of automation which may spread certain social imbalances across the European Union on short-run. However, the link between social and technological development remain positive when it is assessed through the digitalisation channel or the growth of the IT&C sector.*

Keywords: development, social, economic, technology, environment, human, sustainable.

JEL Classification: O10, B55, A10, O14, O13, O15.

1. Introduction

Theory of development, in all its forms, associates the effects of well-being with progress, prosperity, emancipation and modernity. From this point of view, the theory of development is at the center of economic science, and the development process is the stake of mature societal strategies.

The European Commission has set out six priorities for the period 2019-2024, the first one being related to the transformation of Europe into a climate-neutral continent by 2050. In order to achieve this objective, Commission published its "Communication on European Green Deal", which highlights the measures needed for supporting the transition to a green economy.

Currently, one of the most provocative challenges that European Union is facing with consists in the climate change issues. In this regard, the "European Green Deal" will allow European citizens and businesses to benefit from a transition to a climate-neutral economy, as long as it becomes functional and takes into account the national specificities. The pact militate for reducing the greenhouse gas emission, investing in research, innovation and green technologies. Also, through the Annual Sustainable Growth Strategy 2020 (which is a part of the European Semester cycle), the European Commission sets the general priorities in the economic and employment field and places a special emphasis on sustainable development and social inclusion, as it has already been set out in the "European Green Deal", priorities that will guide the national reform plans and complement the efforts made at EU level to achieve the general objective of inclusive and sustainable growth.

The set of priorities identified in the Annual Sustainable Growth Strategy 2020 covers four interdependent dimensions, aimed at addressing the long-term challenges: (i) the environment; (ii) productivity; (iii) macroeconomic stability; (iv) fairness. As can be seen, the European Commission started to increase its focus on the need of an equilibrium between the social, economic and ecological dimensions. Within the strategy, technology is seen as a useful tool that can facilitate the achievement of many specific goals related to sustainable growth. However, some factors of technological development may also have adverse effects on some forms of development, such as social progress.

The reason for choosing the theme lies in the need for a unitary development at the European Union level, in the growing concern of the economists in this field, as well as in the existence of a potential trade-off between some forms of development, which requires the identification of a way to promote sustainable development.

The main objective of the paper is to identify the relations between the development forms at the European Union level, and the possible compromises between them. This can be achieved by reaching the following specific objectives:
(a) identifying the relationship between technological development and other indicators relevant for development, as well as analysing the relationship between automation and economic growth;
(b) identifying the relationship between automation and other factors relevant for development (including human, social and ecological development);

(c) identifying the relationship between the share of households having access to internet and other factors relevant for development (including human, social and ecological development).

2. Literature review

The scientific literature in the field of development, its forms, as well that related to the interaction between these is very extensive, with many studies in this field. These include Smith (1869) who stated that progress, a significant aspect of civilization, spins around development towards urban, scientific and technological civilization. The author described four stages of civilization as follows: (i) hunting nations (the lowest status of society); (ii) shepherd nations (a more advanced state of society); (iii) agriculture; (iv) civilized and urban society.

On the other hand, Hoyle (1953) stated that civilizational development originates from a technological discovery - the discovery of agriculture. Further, the discovery of agriculture led to subsequent discoveries, such as the discovery of metal processing, which later led to many significant discoveries. Guizot (1997) remarked that civilization is the result of progress, development, and of the people going forward. Another opinion is that of Fagan (2008) who stated that climate change is the consequence of technological progress, which generated new threats for civilization.

Bowden (2016), highlighted that people cannot live outside a society, and a certain degree of socio-political cooperation and organisation is necessary for the foundation of civilization. Social and political progress appear before any form of progress, and all other forms of civilization are dependent on these. Moreover, Starobinski (1993) stated that civilization is an important factor in social development.

Regarding technological development, Solow (1974) proved that technological progress can support countries in overpassing the constraints that availability of natural resources exercise on economic growth. In this respect, technological progress ensures the possibility of switching from one resource to another, when the stock runs out, so as not to limit economic growth and to ensure long-term sustainability.

On the other hand, Grossman and Krueger (1995) stated that when countries records positive growth rates, environmental degradation grows until it reach a level, after that it begins to decrease and environmental quality starts on a positive path. The explanation is that in the early stages of the development process environmental degradation may be accepted as a side effect. However, after a certain level of economic well-being, people become more sensitive and willing to pay for improving the quality of the environment, by promoting/calling measures to remedy the effects of climate change.

Nordhaus (2008) affirmed that the problem of global warming can be solved by setting prices for environmentally harmful activities. Therefore, as global warming increases progressively, technological solutions that reduce greenhouse gas emissions should be introduced on the market. However, Malik (2012) stated that the decline of the environment is caused by the vast quantities of waste, the global growth of modern capitalism, huge

investments in technologies that do not take into account the environment, the corporate interests that aim to increase profits without taking into account by the impact on the environment, the governments that promote the interests of corporations and the consumerism.

As regards technological progress, Galbraith (2016) saw this process as a potential source for increasing income inequality, when qualifications are discriminated. Another argument is that, as a result of technological progress, the labour demand for workers who undertake a repetitive activity is diminished, given the possibility of technology to replace the service tasks provided in the respective field (Acemoglu and Autor, 2011) which also favors poverty and inequality. In addition, Jaumotte et al. (2008) have demonstrated that the increase of inequality and poverty from the last two decades was also a consequence of the technological progress. A solution for promoting sustainable development was provided by Jianu et al. (2019), who showed that improving the quality of institutions has the capacity to moderate income inequality and to allow an adequate level of wellbeing.

3. Methodology

In this paper, I analysed the relations between the forms of development, namely social, technological, economic, ecological and human development. For this purpose, I have used the analysis period 2010-2018. However, given the reduced availability of certain statistical data, I have also used the period 1996-2016 in the case of automation data (total operational stock of industrial robots, the number of industrial robots per thousand workers), respectively the period 2010-2016 in the case of other relevant indicators for development. In this context, I have used the Pearson statistical correlation, which I calculated according with the following formula:

$$Pearson correlation(x, y) = \frac{covariance(x, y)}{sd_x sd_y}$$

$$covariance(x, y) = \frac{\sum_{i=1}^{n}(x_i - \acute{x})(y_i - \acute{y})}{n - 1}$$

$$sd_x = \frac{\sum_{i=1}^{n}(x_i - \acute{x})}{n}$$

where sd_x and sd_y represents the standard deviation of the select variable in European Union countries.

Therefore, I have calculated Pearson correlation in Panel window (using Eviews 9.0) at the level of EU-28, covering the same period at the level of each Member State.

The relationship between the development components was analysed using specific indicators for each form, (as shown in Table 1). Further, I have identified the development components that may exercise negative effects on other forms of development, this approach being used to check if there is a potential trade-off between these. In this context, the mention relationships were assessed in Eviews 9.0 software and Microsoft Office Excel using Scatterplot Graphs technique.

The analysis of the relationship between technological progress (which also involves automation) and other forms of development, such as economic, human, social and ecological development at EU level was carried out in four stages as follows:

1. general assessment of the relationship between technology (the share of IT&C value added in GDP/share of high-tech exports in total exports/share of households having access to internet) and other indicators relevant for development over the period 2010-2018;

2. analysing the correlation between the percentage change of the number of industrial robots and the economic growth, covering the period 1996-2016 at EU-28 level;

3. a. analysing the correlation between the percentage change of the number of industrial robots and other relevant factors for development (the percentage change of the greenhouse gas emissions, the share of households having access to internet/the share IT&C value added in GDP/the share of people exposed to poverty risks/the economic growth) over the period 2010-2016;

3. b. analysing the correlation between the share of households having access to internet and other relevant factors for development (the percentage change of greenhouse gas emissions/economic growth/percentage change of the number of industrial robots/the share of IT&C value added in GDP/the share of people exposed to poverty risks) over the period 2010-2016;

4. a. analysing the correlation between the percentage change of the number of industrial robots and the human development index and that between the share of household having access to the internet and the human development index in 2016 at EU-28 level;

4. b. analysing the correlation between the percentage change of the number of industrial robots and the people at risk of poverty rate and that between the share of households having access to the internet and people at risk of poverty rate in 2016 at EU-28 level.

It is worth mentioning that statistical the following indicators were not available for all Member States: the number of industrial robots, the number of industrial robots per thousand workers and the share of enterprises using industrial or service robots.

Table 1. *Data used*

Variable	Source	Relevant for
Human development index	United Nations	human development
Economic growth (%)	Eurostat	economic development
High-tech exports (% of total exports)	Eurostat	technological development
Households having access to internet (% of total households)	Eurostat	technological development
Informations, technology and communications value added (% of GDP)	Eurostat	technological development
People at risk of poverty rate (%)	Eurostat	social development
Unemployment rate (%)	Eurostat	social development and economic development
Percentage change of GHG emissions (thousand tonnes) all sectors	Eurostat	ecological development
Total operational stock of industrial robots	Bruegel, IFR	technological development
The number of industrial robots per thousand workers	Bruegel, IFR	technological development
The share of enterprises using industrial or service robots (% of total enterprises)	Eurostat	technological development

Source: Own processing using Microsoft Office 2016.

4. Results and interpretations

Sustainable development is an extremely important process at global level and should be promoted through appropriate policies having the objective to facilitate an equilibrium between the following dimension: social, economic, technological, environmental and human. According to the methodology used and to the results of the correlation between economic, human, technological and social development, I have demonstrated that these are positively correlated (Table 2). In this respect, I found a high negative correlation between people at risk of poverty rate and the share of households having access to internet of -47.0% in EU-28. The internet access rate at household level is also negative correlated with the evolution of unemployment rate -44.3%, these evidences signalising the higher capacity of internet use to provide more economic opportunities for population and to reduce unemployment and the number of people at risk of poverty. In addition, these evidences also prove a potential positive link between digital transformation and social development. In line with these results, I have also found a negative correlation between the share of IT&C value added in GDP and people at risk of poverty rate, which creates the premises of the existence of an inverse relationship between these variables, since, the higher is the value added generated by this sector, the lower is the unemployment, this driving the poverty falling down.

However, the negative correlation between the share of households having access to internet and the people at risk of poverty rate is higher than the one between the share of IT&C value added in GDP and poverty rate (-12.1%), which indicates the possibility of a negative impact exercised by a technological development factor on poverty rate, such as automation. Regarding the share of high-tech exports in total exports, it is also positive linked with economic growth (31.0%), human development index - HDI (38.0%), the rate of access to internet (81.6%), the share of IT&C value added in GDP (29.4%), but also negative linked with unemployment and poverty. Besides that, economic growth and HDI are positive linked with analysed components of technological development and social progress (reduction of poverty and unemployment).

Table 2. *The correlation matrix between the relevant indicators for development in the period 2010-2018 (Panel Pearson correlation)*

Correlation matrix 2010-2018 (EU28 MS)	Economic growth (%)	Human Develop-ment Index (HDI)	High-tech exports (% of total exports)	Households having access to internet (% of total households)	Informations technology and communications value added (% of GDP)	People at risk of poverty rate (%)	Unemploy-ment rate (%)
Economic growth (%)	1.000	0.098	0.310	0.292	0.392	-0.044	-0.348
Human Development Index (HDI)	0.098	1.000	0.380	0.816	0.294	-0.523	-0.339
High-tech exports (% of total exports)	0.310	0.380	1.000	0.437	0.589	-0.422	-0.443
Households having access to internet (% of total households)	0.292	0.816	0.437	1.000	0.352	-0.470	-0.498

Correlation matrix 2010-2018 (EU28 MS)	Economic growth (%)	Human Development Index (HDI)	High-tech exports (% of total exports)	Households having access to internet (% of total households)	Informations technology and communications value added (% of GDP)	People at risk of poverty rate (%)	Unemploy-ment rate (%)
Informations, technology and communications value added (% of GDP)	0.392	0.294	0.589	0.352	1.000	-0.121	-0.246
People at risk of poverty rate (%)	-0.044	-0.523	-0.422	-0.470	-0.121	1.000	0.399
Unemployment rate (%)	-0.348	-0.339	-0.443	-0.498	-0.246	0.399	1.000

Source: Own calculations using Eviews 9.0, Eurostat and United Nation database.

Figure 1. *The evolution between economic growth, poverty rate, ITC value added in GDP and unemployment rate in the period 2010-2018*
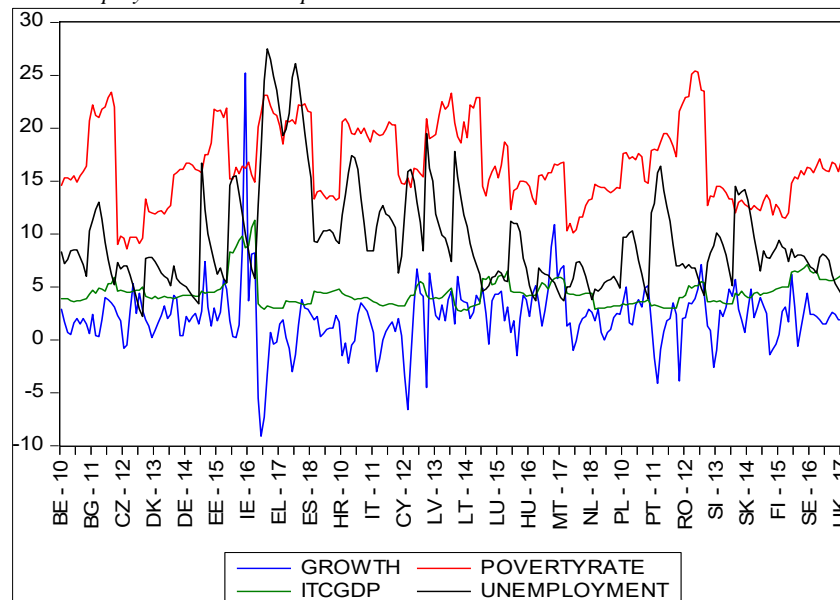
Source: Own processings using Eviews 9.0, Eurostat database.

Moreover, I have found a high correlation between the economic growth rate and the added value of the ICT sector - expressed as a percentage of GDP (39.2%) at EU-28 level, which can also be visualised in Figure 1. However, there is a negative relationship between economic growth and the people at risk of poverty rate (-4.4%), as well as between economic growth and unemployment rate (-34.8%).

I have also checked the relationship between economic growth, unemployment rate, poverty rate and the share of IT&C value added in GDP by analysing the correlation matrix scatterplot generated following the computation of EU-28 panel data series over the 2010-2018 period (including the data for all Member States for each series). In Figure 2, a strong correlation between the added value of the IT&C sector in GDP and the economic growth is visible. This is a consequence of the fact that IT&C sector boost the economic growth,

through jobs, investment, digitization, and automation. I have also found, a positive relationship between poverty rate and unemployment rate, given that people in unemployment make low incomes and are more likely to fall into the category of people at risk of poverty than employees. On the other hand, another negative correlation was reported in the case of the relationship between the poverty rate and the share of IT&C value added in GDP, as was demonstrated in the first part of the analysis when I used the data reported for EU-28 time-series.

Figure 3 shows the evolution of three indicators in the European Union between 1996 and 2016 (statistical data for a longer period were not available): the percentage change of the number of industrial robots, the economic growth and the number of industrial robots per thousand workers. As can be seen in the graph, the percentage change in the number of industrial robots is evolving in the same direction with the economic growth, which shows a strong positive relationship between automation and economic growth at European Union level. It can be also observed the shock caused by the economic crisis at the level of both indicators. However, the robot density continued its progressive path, given that the number of industrial robots increased with lower rates compared to the occupied population, which steadily decreased, especially during the economic crisis, when unemployment reached extreme levels.

Figure 2. *Scatterplot matrix (economic growth, poverty rate, share of ITC value added in GDP and unemployment rate)*

Source: Own processings using Eviews 9.0, Eurostat database.

Figure 3. *The relationship between percentage change of total operational stock of industrial robots, economic growth and the number of industrial robots per thousand workers in European Union (28 MS) in the period 1996-2016*
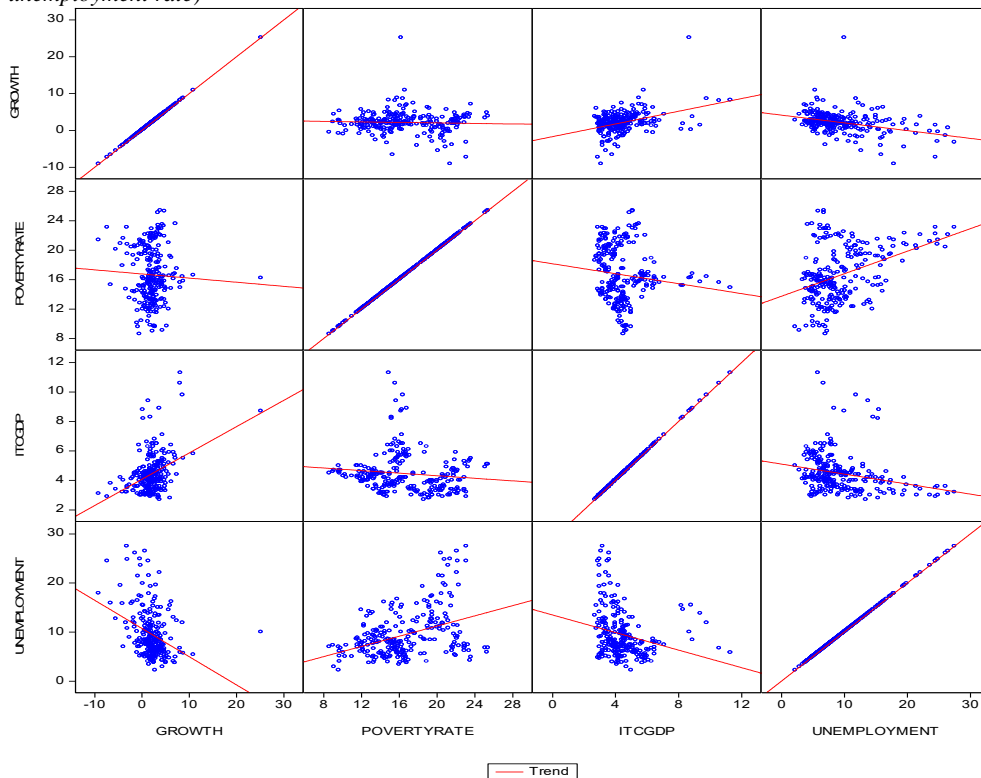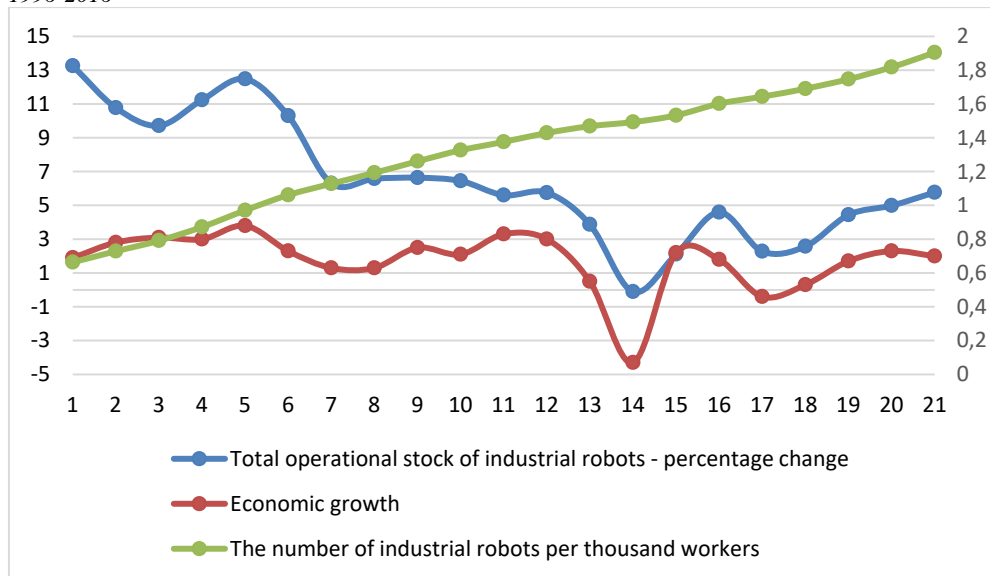

Source: Own processings using Eurostat and Bruegel, IFR reports.

Table 3. *The correlation matrix between the relevant indicators for percentage change of total operational stock of industrial robots in the period 2010-2016*

(Panel Pearson correlation)

Pearson correlation	Percentage change of GHG emissions (thousand tonnes) all sectors (%)	Economic growth (%)	Percentage of households having access to internet (%)	Informations, technology and communications value added (% of GDP)	People at risk of poverty rate (%)
Percentage change of total operational stock of industrial robots (%)	0.246	0.948	0.541	0.915	0.406

Source: Own calculations using Eviews 9.0, Eurostat and Bruegel, IFR database.

Next, I analysed the correlation between the percentage change of the number of industrial robots in the European Union and the relevant indicators for development. According to the Table 3, the number of industrial robots is positively correlated with the percentage change in the greenhouse gas emissions, economic growth, the share of households having access to internet, the share of IT&C value added in GDP and the poverty rate. The strongest correlation was reported between the percentage change of total number of industrial robots and economic growth (94.8%), respectively between the first mentioned indicator and the share of IT&C value added in GDP (91.5%). Industrial robots replace employees in the labour market activities and optimize the production process, as it increase the speed and efficiency of this process, which have a positive impact on the economy. Moreover, the increase of the percentage change in the number of industrial robots is favorable to the growth of IT&C sector. However, robotics may have also negative effects on social development, since it increase the number of people exposed to poverty through the channel of unemployment, which demonstrates the need to parameterize the trends in

automation. From another perspective of technology, Table 4 shows a positive relationship between the percentage of households having access to internet with all analysed indicators, excepting poverty rate, which was also analysed above over a longer period. In this case, the strongest correlation was registered between the share of households having access to internet and the percentage change of greenhouse gas emissions (56.8), which shows that certains factors of the technology favor harmful change of the environment/climate. Climate change is a serious issue at global level which negatively impact our lives on long-run.

Table 4. *The correlation matrix between the relevant indicators for percentage of households having access to internet in the period 2010-2016 (Panel Pearson correlation)*

Pearson correlation	Percentage change of GHG emissions (thousand tonnes) all sectors (%)	Economic growth (%)	Percentage change of total operational stock of industrial robots (%)	Informations, technology and communications value added (% of GDP)	People at risk of poverty rate (%)
Percentage of households having access to internet (%)	0.568	0.464	0.541	0.391	-0.189

Source: Own calculations using Eviews 9.0, Eurostat and Bruegel, IFR database.

Figure 4 shows the positive but not strong relationship between the percentage change in the number of industrial robots and the poverty rate. The automation of the production processes leads to the increase of the poverty rate, by reducing the number of jobs or of the highly paid ones. The Member States facing the highest levels of poverty rate are RO, BG, ES, LV, LT. On the other hand, even if it is facing the highest level of poverty, RO had the highest increase in the number of industrial robots (45%) in 2016, followed by SK and LT. It can also be observed that the European Union countries are very dispersed from the trend, the furthermost from it being CZ, SK, RO, BG and ES. Among these countries, the most correlated evolution between automation and poverty rate is shown in Romania, followed by HR, EE and LT.

Figure 4. *The relationship between percentage change of total operational stock of industrial robots and people at risk of poverty rate in 2016*
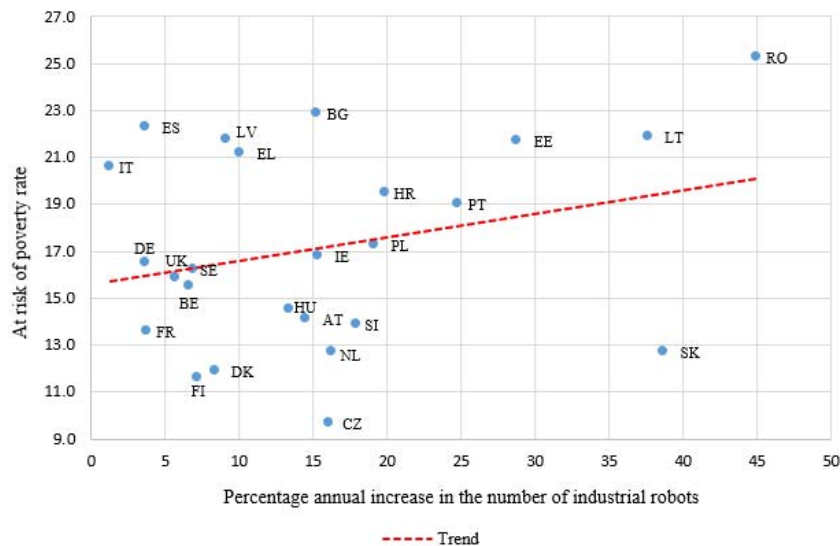
Source: Own processings using Eurostat and Bruegel, IFR reports.

On the other hand, Figure 5 shows a high negative correlation between the internet access and poverty rate. In this situation it can be seen that access to the internet, respectively access to information, leads to poverty reduction. RO and BG are the states with the fewest households connected to internet in relative terms. Member States are closer to the trend (with the exception of CZ), which indicates a better convergence at the level of EU from the perspective of the link between the mentioned variables.

Figure 5. *The relationship between percentage of household having access to internet and people at risk of poverty rate in 2016*
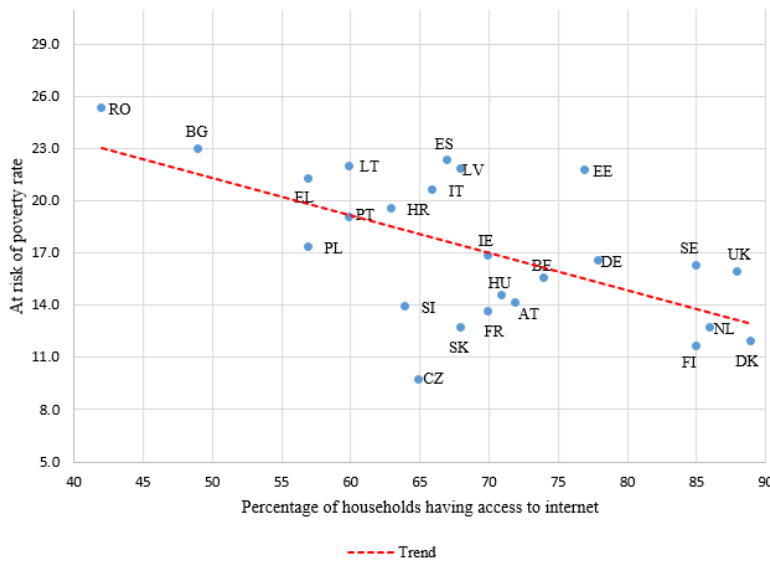
Source: Own processing using Eurostat and Bruegel, IFR reports.

Figure 6. *The relationship between percentage change of total operational stock of industrial robots and human development index in 2016*
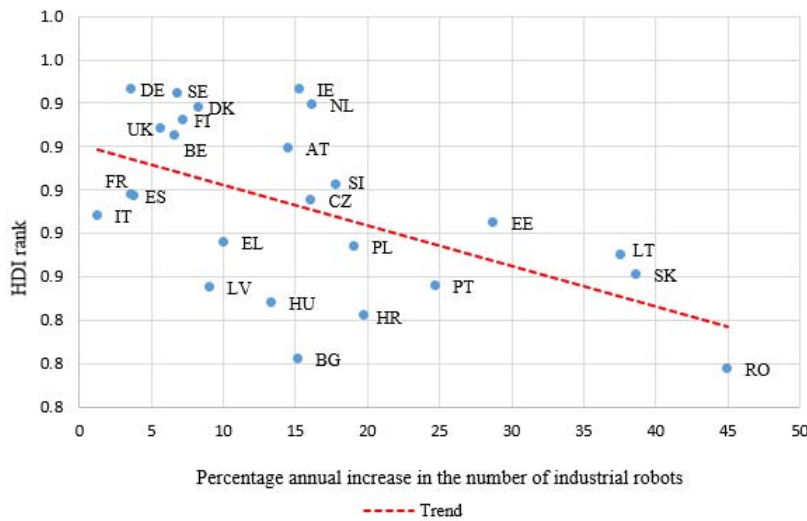
Source: Own processing using United Nations and Bruegel, IFR reports.

Further, in Figure 6, I have analysed the relationship between the percentage change in the number of industrial robots and the human development index, where a strong negative correlation was identified. The most diverging countries from the trendline are IE, BG, HU and NL, but the overall correlation indicates a strong inverse relationship between automation and human development.

Figure 7. *The relationship between percentage of household having access to internet and human development index in 2016*
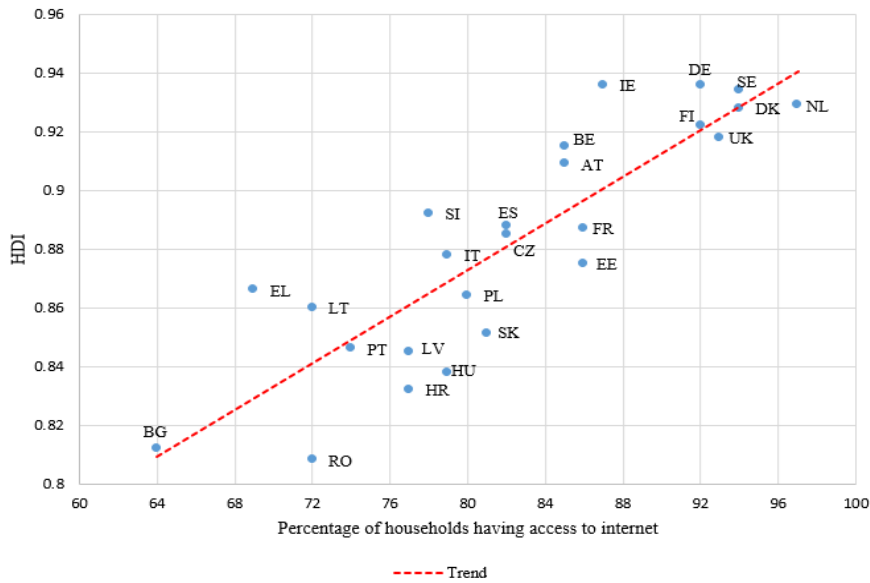
Source: Own processing using United Nations and Bruegel, IFR reports.

Figure 7 shows a strong positive correlation between the percentage of households with internet access and the index of human development. In this case, all countries are strongly correlated, which argues the importance of access to information for the human development process.

Figure 8. *The share of enterprises using industrial or service robots (%) in 2018*
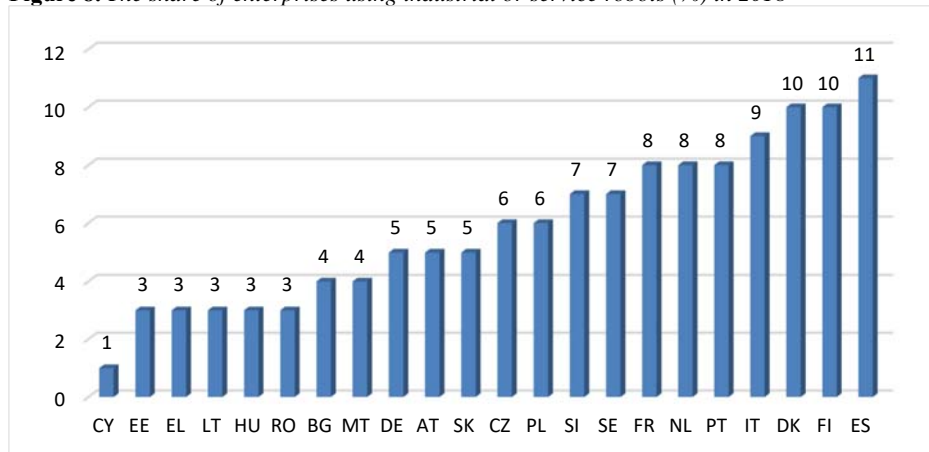
Source: Own processing using Eurostat database.

Finally, Figure 8 shows the position of certain Member States as regards the share of enterprises using industrial or service robots in total enterprises. Due to the fact that Eurostat published the dataset for this indicator only for 2018 year, there are still missing data for other countries such as BE, IE, HR, LU, LV and UK. As shown in the graph, the countries with the highest share of robots used in industry and services are ES (11%), followed by DK and FI (10% each). On the other hand, at the opposite pole is CY (1%), followed by EE, EL, LT, HU and RO (3% each).

All analysed data demonstrate that there is a possible trade of between automation and social development, but also between automation and human development, even if other factors of technological progress favor the other forms of development. This study also proves that automation is negatively linked with environmental development in some cases but this relationship needs to be further explored to increase the robustness of the evidences.

5. Conclusions

This study shows that technological progress favors other forms of development, namely social development, human development and economic development, excepting the environmental development. However, even if, generally, technology is well-being friendly, some of its components, such as automation, are detrimental to human and social development, which argue the need to parameterize the technological progress, in order to promote sustainable development.

In this context, this study identifies a positive relationship between the number of industrial robots and poverty rate, given that industrial robots replace the low-skilled workforce and increase the poverty risks for people facing unemployment. At the opposite, there is also a negative relationship between the rate of households having access to the internet and the poverty rate, which shows that low access to information affects the standard of living of citizens. Moreover, I have also found that the increase in the number of robots leads to a decline in the human development index. On the other hand, I have found a positive relationship between the rate of households having access to the Internet and the human development index, which creates the premise that access to information favors the development of individuals.

As regards the link between technological and environmental development, this paper also shows that there is an inverse relationship between automation and ecological development, given that the three industrial revolutions has favored the challenges we are facing today related to climate change. Nevertheless, an exhaustive analysis on this relationship is needed to identify the most appropriate solutions to adjust the relationship in positive way.

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Migration between widgets and integration obstacles

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Abstract. *The problem of immigration is among the most important preoccupations of most if not all countries of the European Union, whether it comes to countries with a long tradition of receiving immigrants (Germany, France, Belgium, the Netherlands) or new countries in this field (Italy, Spain and Portugal) that search All about the means that enable it to monitor and manage migrant flows according to the needs of receiving countries, as well as legal and practical measures that enable the integration of migrants into the societies of those countries. But the question remains: How does these two requirements actually work? Europe, which until the beginning of the twentieth century was a source of migration, has turned into a land of reception, and indeed one of the most important areas for receiving migrants. This need for people from outside Europe has been increasing year after year, especially since the last two decades of the twentieth century, as some European countries have shifted from countries of migration to receiving countries such as Italy, Spain, and Portugal late. The immigrant hand has been used in many areas and in war and peace situations During the first oil shock and the economic crisis that accompanied it in most European countries, the latter started to take several measures to stop importing foreign labor, and some ideas were promoted, such as:*

- *The era of great migrations is over.*
- *European unemployed would replace migrant workers.*
- *The international division of labor may render migration in vain.*
- *And progress will offset migration.*
- *But the noticeable was the opposite, as the number of foreigners coming to Europe did not stop, as did other forms and manifestations.*

Keywords: migration, immigrants, Europe, economic, labor.

JEL Classification: A14.

Introduction

The literature assumes that essentially, migrants living in a foreign country and returnees stream new ideas and narratives to their community members, which consequently shift the social norms and institutions in place at home.

the problem of immigration is among the most important preoccupations of most if not all countries of the European Union, whether it comes to countries with a long tradition of receiving immigrants (Germany, France, Belgium, the Netherlands) or recent countries in this field (Italy, Spain and Portugal) that search All about the means that enable it to monitor and manage migrant flows according to the needs of receiving countries, as well as legal and practical measures that enable the integration of migrants into the societies of those countries. But the question remains: How does these two requirements actually work?

In this paper, there are two types of questions.

First, does Europe really need a workforce? **Second**, is there a real merger or is it just a speech that some read?

The aim of this study is to complete what other researchers have found and find some solutions, to reduce the phenomenon of migration.

Europe and the need for labor

Europe, which until the beginning of the twentieth century was a source of migration, has turned into a land of reception, and indeed one of the most important regions for receiving migrants. This need for people from outside Europe has been increasing year after year, especially since the last two decades of the twentieth century, as some European countries have shifted from countries of emigration to receiving countries such as Italy, Spain, and Portugal later.

The immigrant hand has been used in many areas and in war and peace situations. During the two world wars, Britain and France, for example, did not hesitate to use their colonies to recruit a large number of people. Thus, between 70 thousand and 90 thousand Moroccans were recruited during World War II by France. After the Second World War, migrant workers contributed to the reconstruction of Europe in the field of construction and public works. They were also used as laborers in the mines and in the sectors of industry, agriculture, and services.

During the first oil shock and the economic crisis that accompanied it in most European countries, the latter started to take several measures to stop importing foreign labor, and some ideas were promoted, such as:
- The era of great migrations is over.
- European unemployed would replace migrant workers.
- The international division of labor may render migration in vain.
- As will progress will offset migration.

But the noticeable was the opposite, as the number of foreigners coming to Europe did not stop, as did other forms and manifestations.

From male and temporary migration to permanent and family migration

Immigration to Europe, which was initially of concern to males in particular, as it was considered a temporary phenomenon, has transformed since the seventies of the twentieth century, into permanent and family migration, which led to giving a new face to the phenomenon of migration, as well as several other problems.

Parallel to the decision to reduce immigration to Europe, the family gathering policy was launched, and this has resulted in an increase in the number of immigrant women, as well as the number of children and young immigrants.

From labor migration to brain drain

Globalization has been deepening the gap between the countries of the North and the countries of the South in the level of economic progress, especially in the field of advanced technology. This situation led to a new division of economic activities at the global level and the concentration of most modern technology services activities in the Nordic countries, and then the emergence of demand for migrant labor with a high cultural and scientific level. Therefore, the European Union countries began to receive an increasing number of researchers, engineers, doctors, media lawyers, etc.

It also embarked on a selective policy approach in the field of immigration to be able to attract some specialists in specific fields of science and knowledge (Green Card, Germany).

This selective policy results in "bringing in brains" from the countries of the South and making a large number of other people fall into a state of secrecy and unlaw.

Illegal immigration as a complementary to legal immigration

Parallel to the continuation of legal immigration. It has been observed since the end of the 1980s that the number of illegal immigrants rose globally in general and Europe in particular, as well as the multiplicity of smuggling networks and trafficking in human meat. The phenomenon of clandestine immigration is no longer confined to men only, but rather to women and children.

This rise is due to the increasing demand from some economic sectors in the receiving countries, which need a lot of labor permanently or on a seasonal basis: such as agriculture, construction and public works, textiles and domestic services, restaurants, hotels and services for the elderly.

It should be noted that from time to time, the legal status of some illegal immigrants is settled by European countries.

In France, during the two settlement processes in 1982-1983 and 1997, 30% of them worked in the construction sector, followed by restaurants, the elderly, housework and textiles. Also, the needs of European countries for immigrants will increase in the coming years due to the demographic characteristics of this continent, which are characterized by aging and low fertility.

Population aging lowers the percentage of the active population, as well as puts a lot of pressure on the social and educational security system. With regard to fertility, in order for generations to be renewed and to maintain the demographic level of the country, the fertility level for women must not be less than 2.1, but what is noticeable in Europe is that it reached only 1.6, but it decreased in some southern European countries such as Spain to 1.07 after it The year 1975 was at the level 2.8.

To compensate for this demographic deficit and prevent the pension system from collapsing, the United Nations demographic interests estimate that Europe should receive more immigrants in the future.

Merger between the discourse and practice

The transformation experienced by the phenomenon of immigration to Europe from temporary to permanent has had several effects, including but not limited to:
- The high percentage of immigrant women.
- High rate of mixed marriage.
- High level of naturalization.
- The high number of foreign children in educational institutions of all levels within receiving countries.

Thus, the field of immigrants is no longer confined to the framework of the work that it engages in. Rather, it has become an object that desires to integrate more with the rest of its family within the reception community and wants to enjoy full citizenship (especially for the second and third generation) through which it performs its duties and gets its Special rights at the level of housing, education and work. What are the legal measures taken in this area and what is the reality today?

1. Integration at the level of discourse

Everyone acknowledges that governments must play a major and effective role in the integration of migrants, as well as linking and strengthening relations between the various human groups present in any country.

Also, this issue is not only for immigrants and minorities but also for the entire community of receiving countries, which must interact in a way and make efforts to adapt and communicate with migrants.

On the official level, officials consistently affirm that public authorities work to ensure that migrants have the same rights as citizens of receiving countries, as well as equal opportunities, especially with regard to economic and social rights in the areas of education, health and housing.

2. Barriers to integration

Despite everything that migrants do in the development of receiving countries, they suffer from many forms of discrimination and exclusion in all areas: housing, education, employment, and social and cultural rights.

However, the severity of this exclusion and discrimination varies according to the immigrant ethnic origin, as well as their language and religion, as well as their legal status in the host countries.

Living: The level of benefit to housing and housing is one of the first indicators and symptoms that explain the extent of the merger or exclusion of a specific category. In this regard, we note that most migrants suffer from exclusion, but the severity of it varies with the duration of migration and the countries. But the dominant feature in this regard is:

Migrants, especially the Maghreb, gather in certain neighborhoods where deviation and marginalization are high.

In countries that have experienced a recent phenomenon of migration, such as Spain and Italy, some migrants (3, 4, or 5 people) accumulate in common rooms or in the workplace for peasant workers. The simplest health conditions are not in these homes.

Education: "School for all" is also sometimes just slogans because the migrant does not have the same cultural (language) and social (family environment) conditions to complete his course of study at best, and even if he managed to overcome various obstacles and difficulties and got levels High academic, for him this does not mean obtaining a job that matches his academic level and his academic and technical qualifications.

Work: This refers us to the problem related to work. Here it should be noted that many of the migrant workers are mainly concentrated in the mineral and agricultural sector... and many jobs that the locals do not accept.

Unemployment: The immigrants are the ones who suffer most from the problem of unemployment, and the situation is even more aggravating for immigrants from the Maghreb, Black Africa and Turkey. In France, for example, if the general unemployment rate is estimated at 12.4%, it changes for immigrants according to their ethnic origin and nationality. As for citizens of European Union countries, it is estimated at 10.1%, while it rises to 31.2% for others communities.

Selfishness, irrationality and subjectivity are often prevalent values in the labor market when it comes to allowing immigrants or people of foreign origin to work, because obtaining citizenship does not necessarily mean full integration and elimination of discrimination and exclusion. There are those who changed his name, but he could not change his skin and features.

Integration: The problem of non-integration of immigrants is most evident in the social sphere, as migration and crime are often confused. The situation is even worse for those of Arab and Muslim origin, as there are prejudices and rankings accusing them of committing crimes, extremism and terrorism in an arbitrary manner.

European officials recognize that Europe is an inevitable for immigrant. But there are those who still find it difficult to reconcile the preservation of the ethnic, cultural and civilizational serenity of Europe, and the need of this ancient continent for foreigners to cover the demographic shortage and respond to the needs of the various productive sectors of all kinds and levels.

There are also those who wish for the immigrant to be merely a means or a tool for producing goods and services and not as a human being with linguistic and religious peculiarities that must be recognized and coexisted with. Are we facing a phenomenon of slavery to others during the third millennium?

In the end the process of integrating migrants or those of immigrant background is a complex process that requires concerted efforts from all actors in the political, cultural, media and educational fields as well as various components of civil society to spread, deepen and apply the principles of tolerance and recognition of the right to migrants and different minorities present in one country and accept this difference And live with it

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A study of the level of tax convergence for Romania using Gini coefficient and alpha-convergence approach

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Abstract. *Real convergence is a milestone for Romania in its attempt to better integrate into the EU economic space 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: share of social contributions in gross domestic product, share of indirect taxes in gross domestic product, share of direct taxes in gross domestic product, gross domestic product per capita as a measure for the level of development of a country, share of gross value added in gross domestic product as a measure of the of tax base in a country, the annual growth rate of revenue in each country, and tax povern measured by the share of total revenue in gross domestic product. The analysis was conducted in four stages. Firstly, we have determined Gini coefficient for the group made my every member state of EU without Romania, and secondly we have determined the same coefficient for whole group of member states, including Romania. In the third stage we compared the values of Gini coefficient computed for the two groups, interpreting the differences as expression the influence that introducing Romania to the group has on the homegeneity of the values. In the final stage we used alpha-convergence approach in order to assess the trend of movements as an alternative methodology.*

Keywords: tax convergence, taxation, alpha-convergence, Gini coefficient, fiscal policies.

JEL Classification: E62, F02, F45.

Introduction

Economic convergence in general, and fiscal convergence in particular, is still a problem in defining a coherent economic space at European level. As we said elsewhere (Ogneru and Panait, 2019), the importance of fiscal convergence must be viewed at least from two perspectives: first, it can facilitate economic integration and reduce economic gaps by mitigating fiscal competition; secondly, fiscal policy can cancel or counteract the effects of monetary policy especially in the euro area. So far, convergence studies have focused on analyzing economic convergence and rather rarely on fiscal convergence, but very few studies have gone so far as to evaluate tax convergence on specific EU-wide taxes.

This article assess tax convergence by analyzing two groups: the group of states without Romania, as a control group, and the group of states including Romania. Firstly, we have determined Gini coefficient for the group made my every member state of EU without Romania, and secondly we have determined the same coefficient for whole group of member states, including Romania. In the third stage we compared the values of Gini coefficient computed for the two groups, interpreting the differences as expression the influence that introducing Romania to the group has on the homegeneity of the values. In the final stage we used alpha-convergence approach in order to assess the trend of movements as an alternative methodology.

Fiscal convergence was analyzed on several dimensions. The starting point of the analysis was the convergence testing on the indicator that reflects at aggregate level the fiscal burden, expressed as a share of the total tax revenues (including social contributions) of GDP. Subsequently, fiscal convergence was tested using the annual growth rate of tax revenues, while economic convergence was also tested using both GDP per capita as a measure of a country's development stage and the share of gross value added (GVA) in GDP, considering that the GVA approximates the tax bases related to the taxes applied in each Member State. As in Ogneru and Panait (2019), the connection between economic and fiscal convergence is evaluated through GVA. Finally, fiscal convergence was assessed at the level of each major category of taxes and social contributions: direct taxes, indirect taxes and compulsory social contributions in order to identify the sources of convergence, respectively non-convergence. The analysis used quarterly data since 2007, the year Romania and Bulgaria joined the EU.

We mention that in this article by fiscal convergence we refer strictly to tax convergence.

Literature review

In the studies regarding the economic convergence in general and the fiscal convergence in particular, the widely used methodology is the sigma convergence and the calculation of the variation coefficient. The second preferred method in such analyzes is beta convergence, which rather reflects conditioned convergence. The assessment of economic convergence and, subsequently, fiscal convergence, has been extended since 2000, one year after the entry into circulation of the single currency.

One of the first extensive studies is the one conducted 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. Shortly, Sosvilla-Rivero et al. (2001) highlights the need for fiscal convergence in the context of economic convergence in the community space in order to relieve the pressures of the common market. These authors use convergent beta and a gamma-convergent methodology on annual data from 1967 to 1995. Konceda et al. (2008), used the beta-convergence method as well, focusing on the 10 states that joined the Union in 2004. In terms of methodology, recently there are developments in analyzing the club convergence (Delgado and Presno, 2017; Arčabić, 2018).

Further methodological approaches follow the idea of combining several methods to verify the results obtained. For example, Vintilă et al. (2014) evaluates the fiscal convergence of Romania using the convergent sigma methods and cluster analysis, and Țibulcă (2015) calculates the coefficient of variation and as the control method uses the Gini coefficient. The Gini coefficients were used extensively to test the economic convergence of the group of newly admitted states in the European Union with the community space as a whole by Lucian Albu (2012). More recently, Ogneru and Panait (2019) used the beta and sigma convergence methods to evaluate the extent to which the identified convergence or non-convergence tendency is verified.

Regarding the indicators followed for the assessment of fiscal or tax convergence, the most popular is the fiscal burden measured as a share of tax revenues in GDP (Esteve et al., 2000; Vintilă et al., 2014; Delgado and Presno, 2017). Other authors analyze the link between fiscal convergence and fiscal competition (Zodrow, 2003; Tanzi, 2011) or the impact that the convergence process has on the business cycle (Pečarić and Tolj, 2018). Finally, some authors also evaluate the convergence by tax categories (Delgado, 2013; Vintilă et al., 2014).

Interestingly, regardless of the methodologies or indicators used or even the time periods analyzed, the conclusions of all studies indicate fiscal heterogeneity at the level of the European Union, contradictory convergence processes (alternating periods with sign change: convergence - non-convergence) or even tax or fiscal divergence processes.

In this article we propose some methods that concern the convergence process as a whole, the assessment of fiscal convergence in the case of Romania being made by comparing the belonging group with a control group. In addition, we applied, as the control or alternative method, alpha convergence, a method abandoned by the researchers, but which offers a different perspective on the process. The results of the present study are judged also from the results of the study published in 2019 (Ogneru and Panait, 2019).

Data and methodology

Data description

We used the same data as in our previous article (Ogneru and Panait, 2019) to have comparable results. UK is not part of EU anymore, but for initial data collected keeping UK make sense. Thus we have conducted our analysis on quarterly data for the period 2007

– 2018, for a selection of seven fiscal and macroeconomic indicators, for the 28 member states from Eurostat. As a result we have obtained a data base of seven panels each with 29 data series, each series including 45 observations.

Methods

In this paper we tried to assess the possible convergence of Romania to EU 28, from the fiscal point of view. We used two complementary methods: using the Gini coefficients and using the alpha regression method. The main purpose is to assess if Romania fiscal framework is having a high or low degree of similarity with the fiscal framework existing in the community formed by the other 27 member states (including UK).

For the first method we computed the Gini coefficient for the sample made by the other 27 member states (without Romania) and compared it with the Gini coefficient computed for the entire sample of the 28 member states (including Romania). If the latter value is smaller than the former, we interpret this as a possible sign of convergence, i.e. adding Romania to the sample decreases the polarization of the values in the sample. We did this for every indicator and for each period, which enabled us to see if there is a trend in time towards convergence or divergence.

We used an alternative for computing the Gini coefficient, according with the formula below, as half of the relative mean absolute difference, which is mathematically equivalent to the Lorenz curve definition. The mean absolute difference is the average absolute difference of all pairs of items of the population, and the relative mean absolute difference is the mean absolute difference divided by the average, to normalize for scale.

$$G = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n}|x_i - x_j|}{2\sum_{i=1}^{n}\sum_{j=1}^{n}x_j} = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n}|x_i - x_j|}{2n\sum_{i=1}^{n}x_i} = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n}|x_i - x_j|}{2n^2\bar{x}}$$

For the second method we calibrated a single linear regression where the dependent variable is the fiscal measure for Romania and the explicative variable is the fiscal measure for UE28. The intercept of the equation presented bellow should be close to zero if the dependent variable (in our case the measure for Romania) is converging to the explicative variable (i.e. the measure for UE28). Furthermore, the beta coefficient in the regression should converge to the value of one (this is the case of beta convergence).

$$R_{i,t} = \alpha_i + \beta_i R_{r,t} + \psi_{i,t}$$

We have calibrated one such regression model for each fiscal measure included in our study and checked weather the alpha coefficient is statistically zero when the regression is statistically significant.

Results and discussions

Tax convergence becomes a critical point given the fact that Member States' fiscal and budgetary policies could mitigate the impact of monetary policies in the euro area and, on the other hand, tax competition between Member States may hamper the process of economic convergence.

In assessing convergence, we focused firstly on the fiscal burden or tax pressure, as a synthetic indicator, which is determined as a ratio between tax revenue (including compulsory social contributions) and GDP. The Gini coefficient reveals that Romania seems to converge to the European fiscal framework. The difference between value of Gini coefficient for the group including Romania and value of Gini coefficient for the group without Romania is positive (Figure 1). This movement is kept for all the analyzed periods. On the other hand, the proximity between the Member States regarding the level of fiscal burden is clear, the values of the Gini coefficient being very low for all periods.

Figure 1. *Gini coefficient measure of convergence for tax burden*
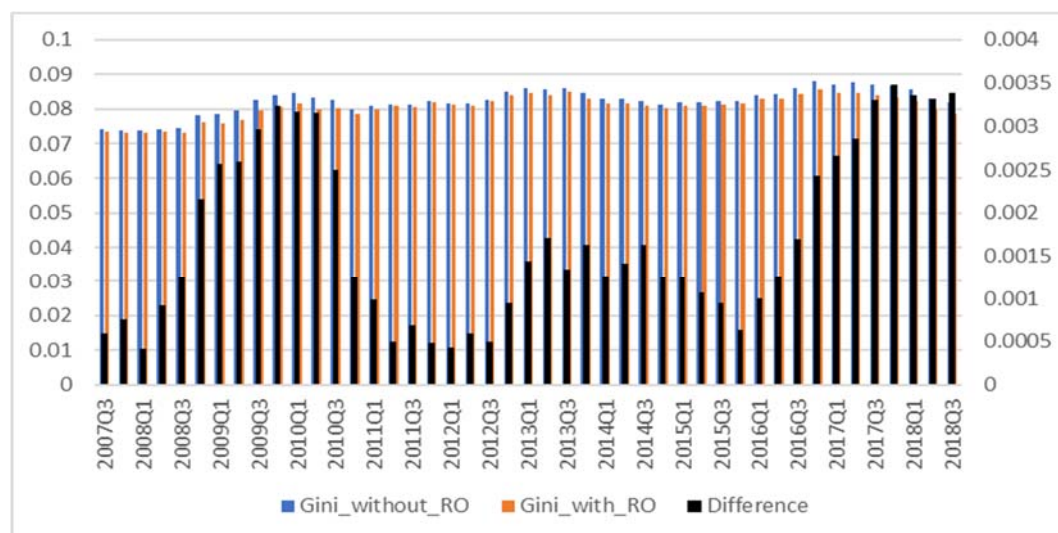
Source: own computations based on Eurostat data.

Nevertheless, these findings are not consistent with the results of alpha regression method (Figure 2), where alpha coefficient is not significant close to zero. This method reveals rather a process of non-convergence.

Figure 2. *The results of the regression model for tax burden*

Dependent Variable: ROMANIA_D				
Method: Least Squares				
Sample (adjusted): 2007Q4 2018Q3				
Included observations: 44 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UE28_D	0.222306	0.866913	0.256434	0.7989
C	-0.076673	0.100705	-0.761365	0.4507
R-squared	0.001563	Mean dependent var		-0.07025
Adjusted R-squared	-0.022209	S.D. dependent var		0.639968
S.E. of regression	0.647036	Akaike info criterion		2.011559
Sum squared resid	17.58352	Schwarz criterion		2.092658
Log likelihood	-42.25429	Hannan-Quinn criter.		2.041634
F-statistic	0.065759	Durbin-Watson stat		1.222951
Prob(F-statistic)	0.798867			

Source: own computations based on Eurostat data.

Figure 3. *Tax burden in the EU and Romania for each period*
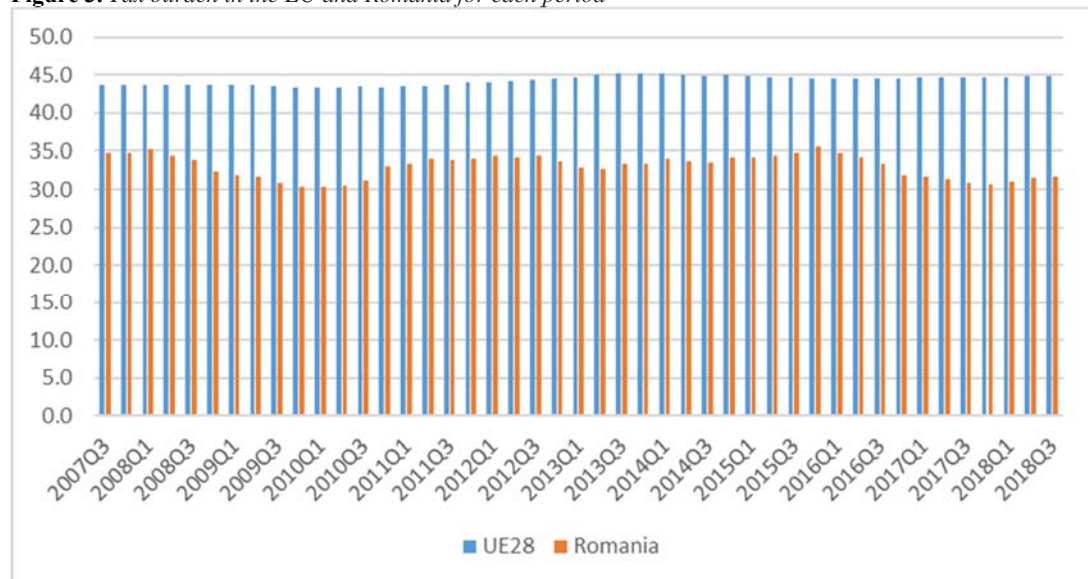
Source: Eurostat data.

Again, the seemingly contradictory results of the two methods require other dimensions or other indicators in assessing tax convergence. Other tax convergence tests were conducted on the basis of the annual variation in tax revenue (including social contributions).

From this perspective, the Gini coefficient method indicates a random process, rather contrary to the convergence, in the case of Romania (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. Gini coefficient shows high level of discrepances between Member States in terms of revenue growth rates.

Figure 4. *Gini coefficient measure of convergence for revenue growth rate*
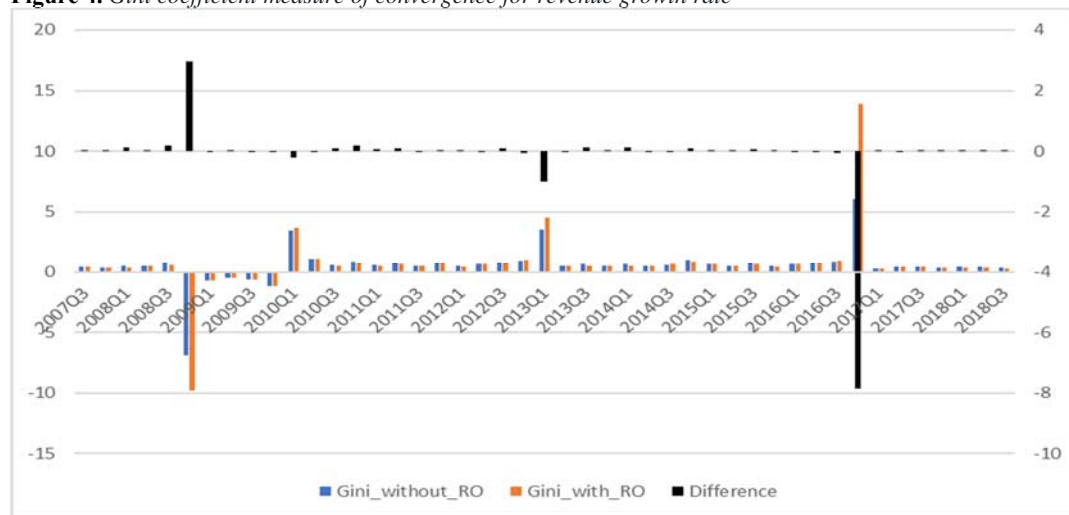
Source: own computations based on Eurostat data.

The alpha method applied to the annual growth rates of tax revenues shows, on the contrary, a process of convergence in the case of Romania, alpha coefficient being significant very close to zero (Figure 5).

Figure 5. *The results of the regression model for revenue growth rates*

Dependent Variable: ROMANIA_D				
Method: Least Squares				
Sample (adjusted): 2007Q4 2018Q4				
Included observations: 45 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UE28_D	4.083196	0.219292	18.61989	0
C	0.000144	0.009956	0.014448	0.9885
R-squared	0.889659	Mean dependent var		0.00238
Adjusted R-squared	0.887093	S.D. dependent var		0.198736
S.E. of regression	0.066779	Akaike info criterion		-2.53144
Sum squared resid	0.191754	Schwarz criterion		-2.451143
Log likelihood	58.95739	Hannan-Quinn criter.		-2.501506
F-statistic	346.7002	Durbin-Watson stat		2.672232
Prob(F-statistic)	0			

Source: own computations based on Eurostat data.

But we have to point out that high levels of variation of revenue in the case of Romania reveal rather an instability in terms of tax collecting, a high volatility (Figure 6).

Figure 6. *Revenue growth rates in EU-28 and Romania*
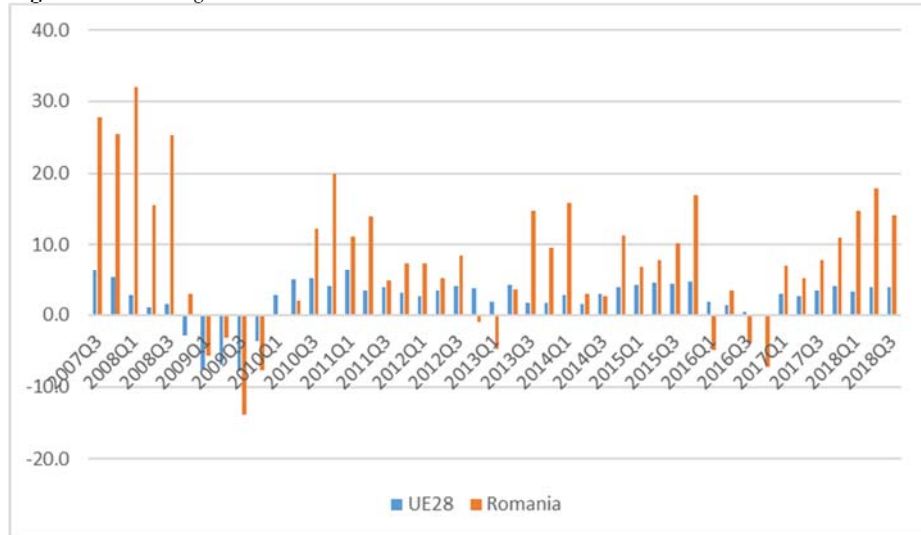
Source: Eurostat data.

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

Figure 7. *Gini coefficient measure of convergence for GDP per capita*
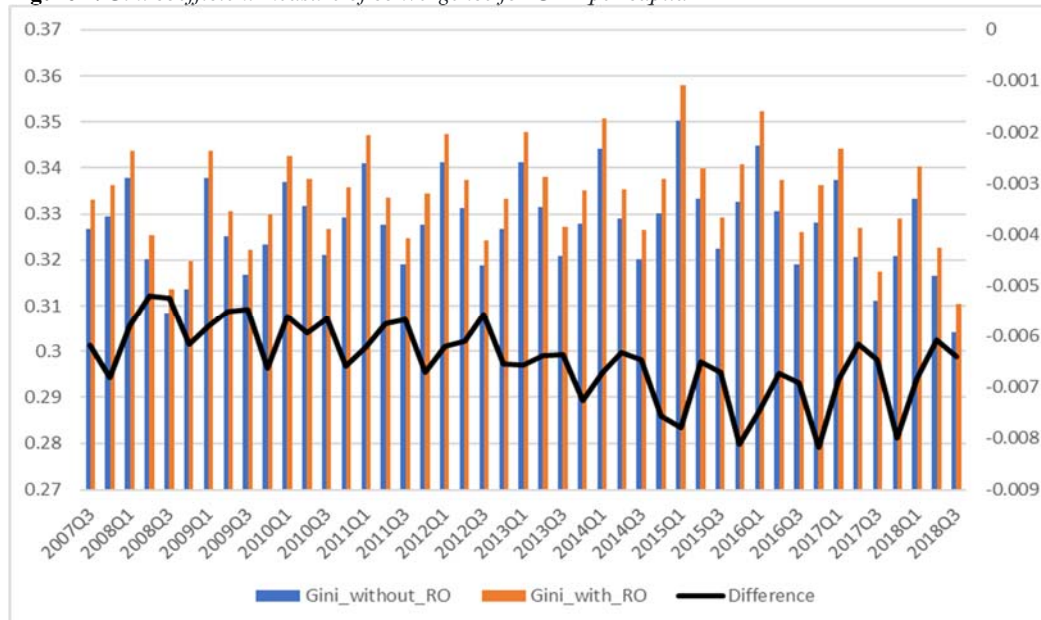
Source: own computations based on Eurostat data.

The Gini coefficient method reveals that Romania is still far from a real process of economic convergence, difference between values computed for the control group and the group including Romania being negative for all periods (Figure 7). On the other hand, the alpha method indicates a rapid convergence trend (Figure 8).

Figure 8. *The results of the regression model for GDP per capita*

Dependent Variable: ROMANIA_D				
Method: Least Squares				
Sample (adjusted): 2007Q4 2018Q3				
Included observations: 44 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UE28_D	1.332438	0.166728	7.991691	0
C	-9.066488	41.60612	-0.217912	0.8286
R-squared	0.603276	Mean dependent var		27.27273
Adjusted R-squared	0.59383	S.D. dependent var		430.4479
S.E. of regression	274.3306	Akaike info criterion		14.11093
Sum squared resid	3160806	Schwarz criterion		14.19203
Log likelihood	-308.4406	Hannan-Quinn criter.		14.14101
F-statistic	63.86713	Durbin-Watson stat		1.981816
Prob(F-statistic)	0			

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 non-convergence process in the case of Romania is confirmed.

Figure 9. *Gini coefficient measure of convergence for GVA*
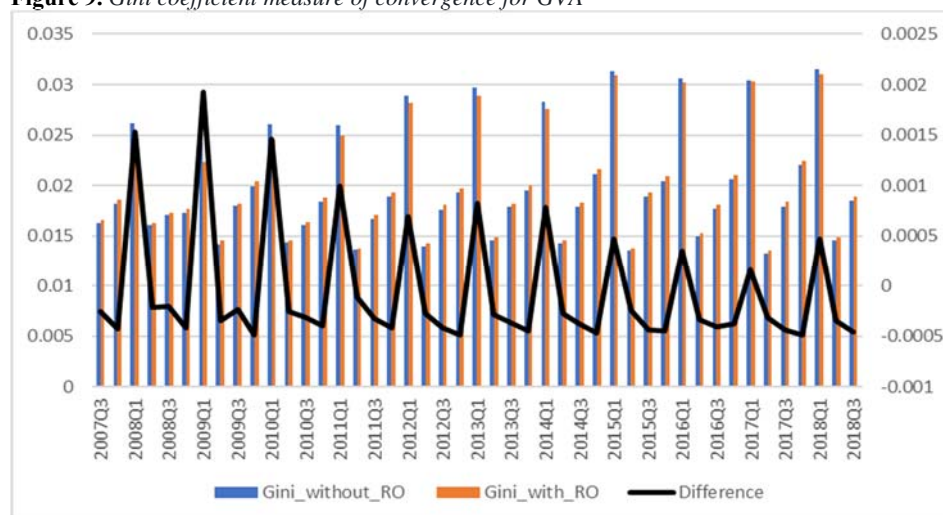
Source: own computations based on Eurostat data.

And again, we have a contradictory result, regression model showing an alpha convergence process (Figure 10).

Figure 10. *The results of the regression model for the share of GVA in GDP*

Dependent Variable: ROMANIA_D				
Method: Least Squares				
Sample (adjusted): 2007Q4 2018Q4				
Included observations: 45 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UE28_D	4.083196	0.219292	18.61989	0
C	0.000144	0.009956	0.014448	0.9885
R-squared	0.889659	Mean dependent var		0.00238
Adjusted R-squared	0.887093	S.D. dependent var		0.198736
S.E. of regression	0.066779	Akaike info criterion		-2.53144
Sum squared resid	0.191754	Schwarz criterion		-2.451143
Log likelihood	58.95739	Hannan-Quinn criter.		-2.501506
F-statistic	346.7002	Durbin-Watson stat		2.672232
Prob(F-statistic)	0			

Source: own computations based on Eurostat data.

A first conclusion is that the process of tax convergence is linked to the economic convergence process through the tax bases.

Figure 11. *Share of GVA in GDP for EU-28 and Romania*
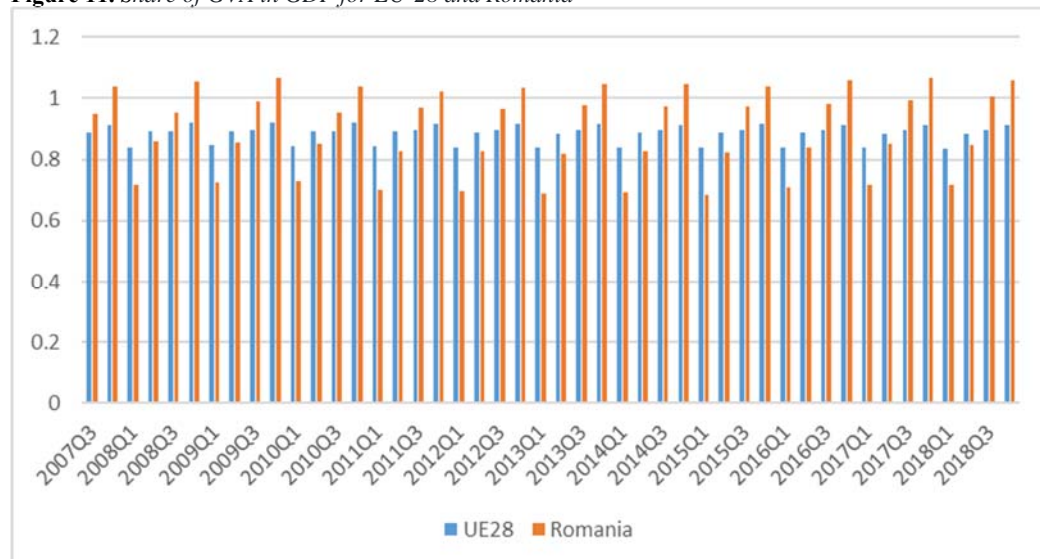
Source: own computations based on Eurostat data.

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 not on a convergence course, according to Gini coefficient. However, given the small values even for those negative, we can admit the existence of a relative process of convergence (Figure 12). This conclusion is strengthened by the results of alpha regression method (Figure 13).

Figure 12. *Gini coefficient measure of convergence for indirect taxes*

Source: own computations based on Eurostat data.

However, it is important to mention that, according other studies (Ogneru et al., 2020), there is no direct link between VAT revenue and the own tax base in the case of Romania.

Figure 13. *The results of the regression model for the indirect taxes*

Dependent Variable: ROMANIA_D				
Method: Least Squares				
Sample (adjusted): 2007Q4 2018Q3				
Included observations: 44 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UE28_D	2.140689	0.912213	2.346699	0.0237
C	-0.05958	0.05223	-1.140727	0.2604
R-squared	0.11592	Mean dependent var		-0.042197
Adjusted R-squared	0.09487	S.D. dependent var		0.360477
S.E. of regression	0.342952	Akaike info criterion		0.741937
Sum squared resid	4.939876	Schwarz criterion		0.823036
Log likelihood	-14.32261	Hannan-Quinn criter.		0.772012
F-statistic	5.506995	Durbin-Watson stat		1.564337
Prob(F-statistic)	0.023732			

Source: own computations based on Eurostat data.

Figure 14. *Share of indirect taxes in GDP for EU-28 and Romania*
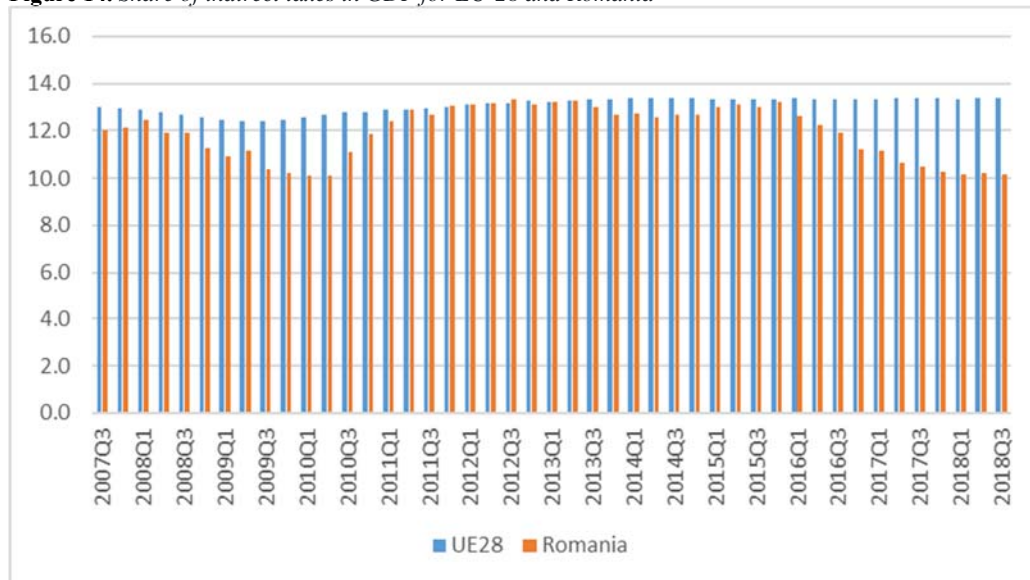
Source: own computations based on Eurostat data.

Direct taxes

From the perspective of direct taxes (seen as a weight in GDP), Romania is not in a process of convergence, this result being expected given the fact that there is not tax armonization at the level of EU, as is the case with indirect taxes. Both Gini coefficients (Figure 15) and alpha regression (Figure 16) show the same result: non-convergence.

Figure 15. *Gini coefficient measure of convergence for direct taxes*
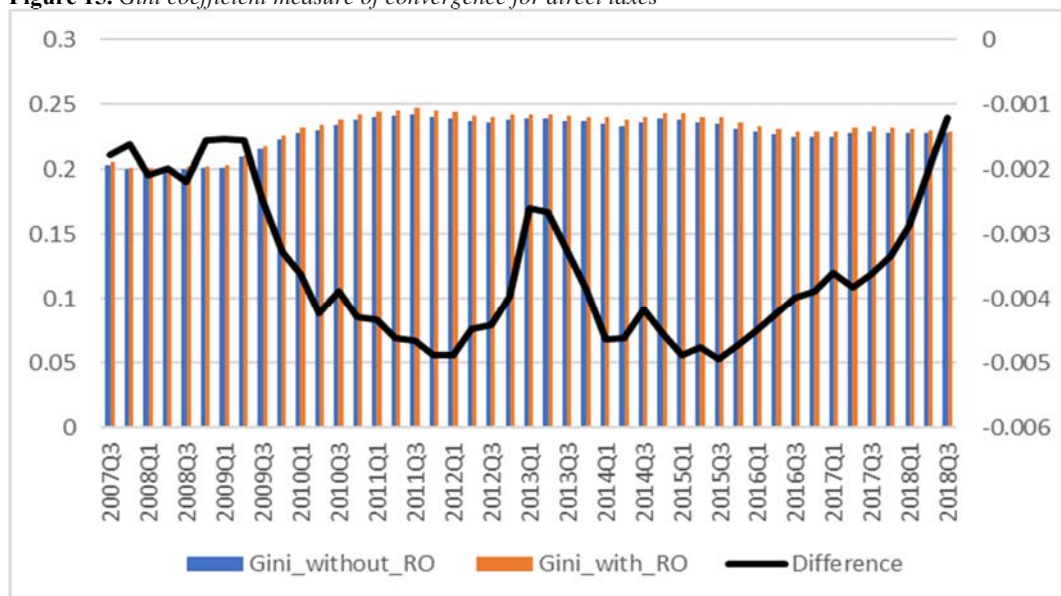
Source: own computations based on Eurostat data.

Figure 16. *The results of the regression model for the direct taxes*

Dependent Variable: ROMANIA_D				
Method: Least Squares				
Sample (adjusted): 2007Q4 2018Q3				
Included observations: 44 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UE28_D	0.428771	0.405883	1.056391	0.2968
C	-0.028747	0.034392	-0.835848	0.408
R-squared	0.025883	Mean dependent var		-0.027959
Adjusted R-squared	0.00269	S.D. dependent var		0.228386
S.E. of regression	0.228079	Akaike info criterion		-0.07386
Sum squared resid	2.184843	Schwarz criterion		0.00724
Log likelihood	3.624909	Hannan-Quinn criter.		-0.043784
F-statistic	1.115962	Durbin-Watson stat		1.365257
Prob(F-statistic)	0.296828			

Source: own computations based on Eurostat data.

Figure 17. *Share of direct taxes in GDP for EU-28 and Romania*
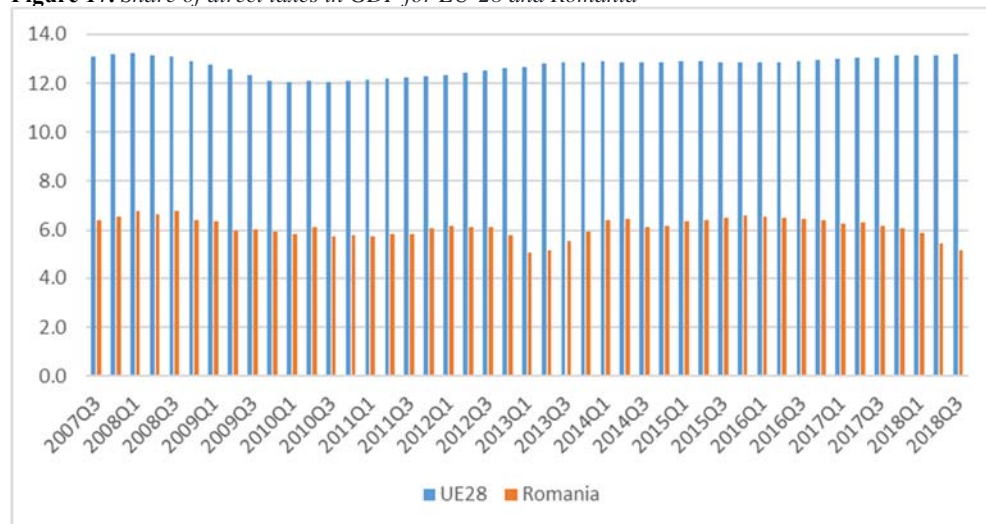
Source: Eurostat data.

Social contributions

In terms of social contributions, the Union's heterogeneity is evident, but in the case of Romania, even we have small values of differences, close to zero, it cannot be said we have a convergence process (Figure 18).

Figure 18. *Gini coefficient measure of convergence for social contributions*
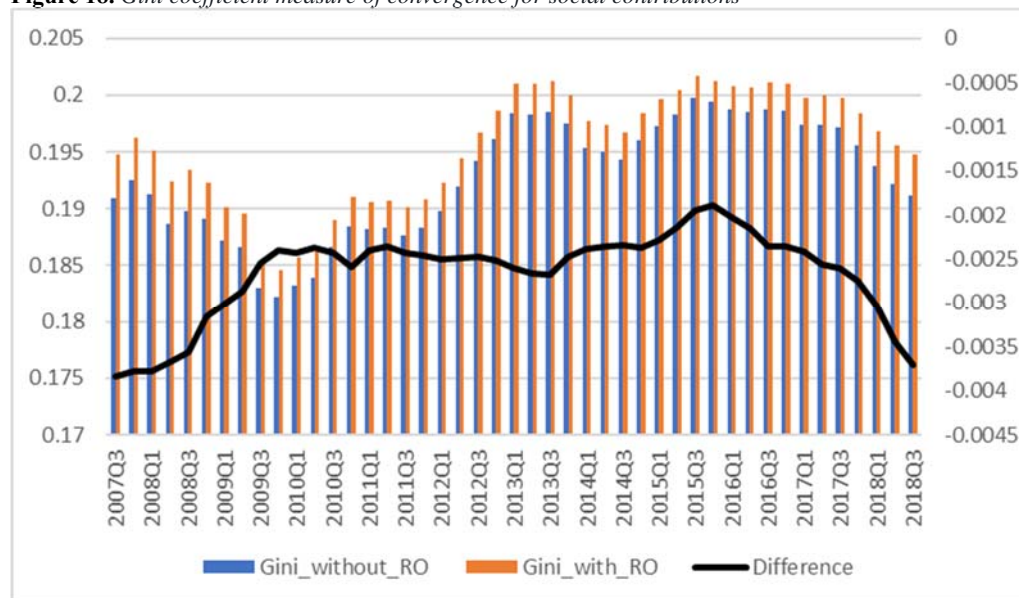
Source: own computations based on Eurostat data.

Figure 19. *The results of the regression model for the social contributions*

Dependent Variable: ROMANIA_D				
Method: Least Squares				
Sample (adjusted): 2007Q4 2018Q3				
Included observations: 44 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UE28_D	0.362842	0.536525	0.676282	0.5026
C	0.010358	0.033207	0.311914	0.7566
R-squared	0.010772	Mean dependent var		0.016162
Adjusted R-squared	-0.012781	S.D. dependent var		0.211436
S.E. of regression	0.212783	Akaike info criterion		-0.212697
Sum squared resid	1.901621	Schwarz criterion		-0.131597
Log likelihood	6.67933	Hannan-Quinn criter.		-0.182621
F-statistic	0.457357	Durbin-Watson stat		0.691086
Prob(F-statistic)	0.502569			

Source: own computations based on Eurostat data.

There is not an alpha convergence either, the regression model being non valid from statistical point of view (Figure 19). Thus, we can say that at the level of social contributions there is not a convergence process.

Table 1. *Share of social contributions in GDP for EU-28 and Romania*
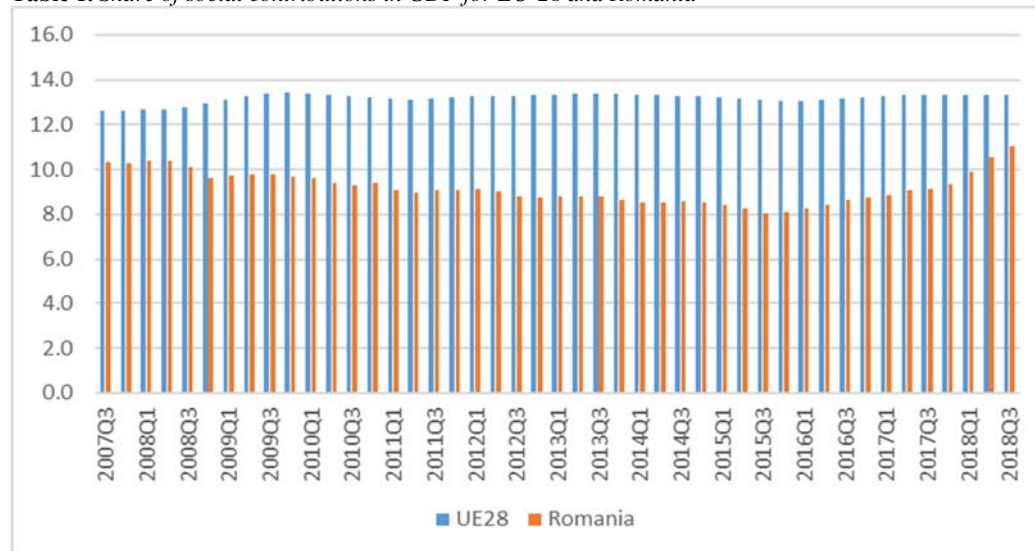
Source: Eurostat data.

Conclusions

From these results it appears that from a fiscal point of view, there is no convergence process, even though there seems to be a weak process of economic convergence. The fiscal non-convergence is clear from the results regarding the fiscal indicators.

Thus, with regard to the fiscal burden, it was found that there is no convergence. Even though the values of the Gini coefficient are positive, they are extremely low so they can say that there is convergence and we certainly do not have alpha convergence. Regarding the rates of increase of the tax revenues as a whole, the results are contradictory, in the sense that the movements are contradictory by applying the Gini measure (positive and negative values alternating from one quarter to another), but, on the other hand, there is alpha convergence. In the economic convergence plan, centripetal processes (convergence) have been identified, both for GDP per capita and for the share of GVA in GDP there is alpha convergence, and the negative values of the Gini coefficients are very low, close to zero. From this it appears that the movements of the tax revenue do not strictly follow the movements of the related tax bases, a finding consistent with the results of another study that identified that in Romania there is no direct connection between VAT, for instance, and the tax base (Ogneru et al., 2020). Regarding the three major categories of taxes and contributions, it was found that there is clearly non-convergence in the case of direct taxes and social contributions, the values of the Gini coefficients being negative for all periods and there is no alpha convergence. In the case of indirect taxes, the existence of alpha convergence was found, and the values of the Gini coefficients alternate from one period to another, but the values are very low. The process of fiscal convergence identified at the level of indirect taxes is explained by the fact that these taxes are harmonized at Union level.

The results are largely consistent with the results obtained by the beta and sigma convergence methods (Ogneru and Panait, 2019), with the difference that by using the alpha and Gini methods the centrifugal (non-convergent) side becomes more salient.

Given the relatively contradictory results generated by different methods, a reassessment of fiscal convergence is needed, extending the study to the level of each tax base. However, irrespective of the method used, the heterogeneity of the European Union in tax matters transpires, which will constitute a real obstacle in the convergence effort.

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The hidden motives of consumption

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Abstract. *People's financial decisions are influenced by a wide range of factors. Understanding these factors could contribute to improving financial behaviors and avoiding situations of financial difficulty. Usually, there are periods during the year such as the winter holidays, Easter holidays, vacations, when people are more likely to lose control over their financial resources, these events being followed by stressed periods, both financially and psychologically. Paradoxically, what should become a source of joy is rather a source of stress for the consumerist person. This article presents the main factors identified in the specialty literature, which influence the financial decisions during the high-pressured periods of the year, focusing especially on the social and psychological factors: compliance with social norms, materialism, locus of control, coping style, spendthrift tendencies and last but not least the personal values. The main focus of the article is to propose a statistical tool that will measure the magnitude of the influence of the mentioned factors.*

Keywords: consumption, financial decisions, psychological factors.

JEL Classification: D01, D1.

Introduction

There is evidence that people with lower income are more prone to have „everyday" debts being more vulnerable in financially high pressured periods, while those with higher incomes use more often credit debt (Lea et al., 1995). Analyzing this problem we discover that it is not strictly related to the inability to manage money and make some elementary forecasts for the future, but rather has a psychological substrate. A qualitative study revealed that people with debt problems continue to run into debt because they cannot give up to certain types of goods (e.g. gifts for children, fashion goods) (Lea et al., 1995). Thus, the way people classify the goods, either as necessities or luxuries influence their purchasing behavior, a topic discussed in economic psychology and explained by social comparisons (Livingstone and Lunt, 1992). It seems that people's needs and wants are influenced by what is accepted and promoted in their reference group.

This conceptual study has the aim to explain some of the factors that determine people to run into debt on holidays. An interdisplinary approach is recommended in analysing the factors that influence financial decisions which considers the theories from sociology, economic psychology and neuroeconomics (Baddeley, 2010).

Compliance with social norms

„There is no duty more indespensable than that of returning a kindness", says Cicero. This undoubtedly wise affirmation has different interpretations in the actual social and economic environment. Homo economicus, an individ guided only by instrumental rationality definitely would not agree with Cicero, but if we include in the equation homo sociologicus whos behavior is dictated by social norms, as sociologists postulate, we have more chances to explain the observed behaviors, because they are usually influenced by both: rationality and norms. In general, there are two ways of adopting a new behavior: first by trial-and-error learning, and second by imitating others, a so called social learning process (Witt, 2001). Reffering strictly to consumers' behavior it was observed that besides the necessity to satisfy the needs, their behavior is driven by another motivations, such as the desire to feel integrated in their social environment by complying with the unwritten rules of their community or by consuming in order to signal a status (Woersdorfer, 2010). The same author argues that social environment has the power to dictate what and how much to consume. Consequently those goods that are consumed by a great number of people on certain occasions become standardized goods, in this way being even harder to change the collective behavior.

However, the necessity to belong to a community is not the only reason why people choose to comply with the social norms. They also want to avoid „the feelings of embarrassment, anxiety, guilt and shame" that accompany a behavior that violates the social norms (Elster, 2016). An example of a social norm is reciprocity, which is manifested in the returnation of favors (Gouldner, 1960). This norm regulates also the gift-giving behavior. A person might feel obliged to offer a Christmas present to a relative, but only after the relative gave him first a gift. These „irrational and costly" behaviors can only be explained by the social norm of reciprocity. Looking the other way around, a person may try to benefit of a

wealthier friend by offering first a gift with the expectation to receive back something more valuable (Elster, 2016). Relying on previous findings, we expect that a higher degree of compliance with social norms will be associated with higher expenses and indebtedness during the holidays.

Materialism

The concept of materialism is so often utilised in our days that it seems unnecessary to define it. We often attribute the adjective materialistic to a person that is excessively concerned with material possessions or to the whole consumerist society, referring to it as to a negative characteristic. Rassuli and Holander (1986) define materialism as „a mindset...an interest in getting and spending". This interest, how it was later discovered, is psychological, in the sense that materialistic people consume in order to obtain a psychological comfort (Richins and Dawson, 1992). Materialists are not satisfied with themselves: they see a big discrepancy between how they are and how they would like to be, and this interior problem influence them to consume compulsively (Dittmar, Long, and Bond, 2007). In this way, by consuming more, materialists try to improve self-confidence, social relationships and their appearance in general, having the expectation that a purchase will transform radically one's life (Richins, 2011).

In other words, excessive consumption is like a surrogate for another immaterial needs, that are harder to realize and to achieve. Besides the fact that excessive consumerism is not an efficient solution for the problems that materialists feel and want to solve through consumption, it comes also with a spectrum of unwanted consequences. Materialist persons spend more than the average consumer (Pinto et al., 2000), they are worse at managing their money and are more worried about finances (Gardarsdóttir and Dittmar, 2012), overuse credit cards, borrow more and consequently they save less (Richins, 2011).

Materialism is related with the previous factor of influence- compliance with social norms, because a common characteristic of materialists is to engage in social comparison and to give importance to their identity in the society. In an experimental study, Giacomantonio et al. (2013) found that the strategy that people adopt to attain a goal- either a strategy oriented toward action or to comparison and evaluation can predict how materialistic that person is. They found that persons preoccupied with evaluating themselves in relation to the society are very likely to adopt it's standards. Thus, people living in big communities are more likely to become materialistic- because comparisons are made based on materialistic standards, while in small communities, where another values are promoted (e.g. spiritual values), people will try to adopt these values (Giacomantonio et al., 2013). The results suggest that both, the disposition of the person oriented to action or to evaluation and the values promoted in the society can encourage or discourage consumption behaviors.

We intend to measure the degree of materialism using the shortened version of the material values scale with 9 items proposed by Richins (2004) that is recommended to be used when measuring materialism at a general level (Richins, 2004). We expect that high materialistic persons will spend more during the holidays compared with low materialistic persons.

Locus of control

The locus of control (LOC) is defined as the perceived level of control over outcomes (Rotter, 1966). Persons with an internal locus of control consider that their actions influence the events happening in their lives, while those with an external locus of control attribute the events to fate, chance or to other's actions. The locus of control was found a significant variable in explaining financial behaviors. Saving and spending behaviors are influenced partly by the individuals' locus of control (Perry and Morris, 2005). Tokunaga (1993) found that in general people with an external locus of control are more likely to borrow. The phenomenon is explained by the fact that people in need see only external causes for poverty and unemployment (Tokunaga, 1993). On the other side, people with an internal locus of control are more averse to debts, being more involved in active budgeting (Kidwell et al., 2003).

To determine either persons have an external or internal locus of control we will use a scale proposed by Lumpkin (1985) with 6 items (e.g. "What happens to me is my own doing; Many of the unhappy things in people's lives are partly due to bad luck.") (Lumpkin, 1985). As found in previous studies, we expect that external locus of control will predict spending and borrowing during the holiday period (McNair et al., 2016).

Coping style

Coping style refers to the way in which people react when they are in stressful situations. Folkman and Lazarus (1985) highlight two types of reactions to a stressor: problem- and emotion-focused coping. Problem-focused or active coping is characteristic to the persons that are oriented to change the source of the stressful situation by their actions. On the other side, emotional coping involves a psychological effort to tackle the negative emotions arising from stress adopting one of the three attitudes- acceptance, emotional release or engaging in denial (Folkman and Lazarus, 1985).

Emotional release is considered more efficient than denial coping, because it is associated with a clearer thinking (Stanton et al., 2000).

Coping style was included in studies regarding the financial behaviors in stressed periods and it was found that emotional coping and denial coping are predictors of borrowing behavior (McNair et al., 2016).

The results suggest that different coping strategies influence different financial behaviors and in order to improve financial decision-making, psychological issues should be considered. In our study we will determine the coping strategy using a shortened scale proposed by Carver (1997) that contains one item for each of the four coping strategies (e.g. I say to myself "This isn't real", denial coping; I accept the reality of the situation that is happening- acceptance coping) (Carver, 1997).

We expect that people oriented towards active and acceptance coping will report lower levels of spending during the holidays as compared with people engaging in emotional or denial coping.

Spendthrift tendencies

Financial behavior is also influenced by the intensity with which consumers feel a psychological „pain" when they spend money. Persons that experience an intense pain of paying are called tightwads, while those that do not feel this psychological discomfort when they are spending are called spendthrifts (Prelec and Loewenstein, 1998). As a result, tightwads spend less than what they think is an appropriate level of spending, and spendthrifts spend more than their ideal plan of spending (Rick et al., 2008). The Spendthrift-Tightwad scale developed by Rick (2008) was predictive of credit debt and savings. Also, spendthrifts are characterized as more materialistic compared to tightwads. In our study we will apply the scale proposed by Rick (2008) with three questions. We consider that this psychological aspect will influence the consumption behavior during high-pressured periods of the year, namely that tightwads will report lower levels of spending than spendthrifts.

Personal values

It is generally accepted that personal values determine behavior. Each person has multiple values with different degree of importance. Schwartz (1992) proposed 10 broad values: power (social status), achievement (personal success), hedonism (enjoying life), stimulation (challenging life), universalism (tolerance, social justice), benevolence (honest, helpful), tradition (respect, traditional culture), conformity (politeness, self-discipline) and security (safety, harmony of family and society). For example, a person that values hedonism will engage more in pleasurable activities than a person that values conformity (Schwartz, 1992). Thus, values are an indicator for what is important in one's life and even if people do not think consciously about which are their values, they definitely know what it is important for them to achieve in life and they will act accordingly. Some decisions, even if they are unconscious, they still reflect a value: for example a person who has the habit to interrupt a partner in a conversation might signal that he values power or someone who can not resist to temptations values hedonism (Schwartz and Bardi, 2001). In other words, behaviors reveal what values are important to someone.

The relationship between personal values and materialism was examined by Richins and Dawson (1992) using Kahle's List of Values that comprises 9 values: financial security, warm relationships with others, sense of accomplishment, self-respect, family security, self-fulfillment, fun and enjoyment in life, being well-respected, sense of belonging. They found that for respondents low in materialism values such as warm relationships with others and self-respect were the most important, while respondents with a high degree of materialism were more likely to choose financial security as the most important value, followed by warm relationships with others, family security, and self-fulfillment. The results demonstrate that people with the same level of materialism share common values: low-level materialists are more preoccupied with their relationships, while high-level materialists are concerned with financial security.

Recent experimental research demonstrated that personal values can be activated by certain framing cues. For example, a computer task entitled „Consumer Reaction Study"

determined the participants to be more competitive, mistrustful and with lower preferences for social contact compared to the case in which the same task is called „Citizen Reaction Study" (Bauer et al., 2012). The results of the experiment demonstrated how powerful is the impact of the environment on consumers' choices and how fragile we are, starting from the psychological level to the abundant and aggressive marketing.

Considering the previous results we hypothesize that personal values influence financial behavior. We will evaluate peoples' values using the scale proposed by Schwartz (1992) as it is considered more complete than Khale's List of Values, and it was applied successfully in different contexts.

Conclusions and further research

This theoretical paper explores the socio-psychological motives of consumption: conformity with the social norms, materialism, locus of control, coping style, spendthrift tendencies and personal values. We consider that the problem of excessive consumption, that is observed especially in some significant periods of the year is determined not so much by peoples' actual needs and preferences, but by another motives, sometimes unknown even for the consumers. We hypothesize that the mentioned variables influence spending and borrowing for occasions such as Christmas, Easter or summer holiday. We intend to carry out an extensive study that will consist in the collection of data after the mentioned events through a questionnaire in which we will ask persons how much they spend for that specific event and whether they have borrowed money (dependent variables) along with the scales that measure the socio-psychological factors, that will be considered as independent variables in the study. The statistical tool proposed for data analysis is hierarchical regression that will permit to identify the incremental influence of each factor, analysis that will be performed in R.

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Social cohesion, the core of the European Union

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Abstract. *Built on the idea of unity of nations, the European model of integration has been pursuing peace and well-being since its beginning. Introduced by the Single European Act, the term social cohesion has evolved with the European model of integration, being highlighted both in the preamble to the TEU, which refers to solidarity and the creation of an ever closer union between the people of Europe and through the cohesion policy promoted by the EU. Reducing disparities between states, regions and reducing inequalities and social exclusion represents only a few of the obligations of Member States to achieve social cohesion which encompasses both economic and territorial cohesion. The future of the European Union depends on achieving social cohesion, which is the core of the European model's resilience to challenges.*

Keywords: social cohesion, European social model, social capital.

JEL Classification: A13, D63, I3.

Introduction

The term „social cohesion" was introduced for the first time in the Single European Act, signed in 1986, and was developed in a chapter together with economic cohesion. According to this, the policies promoted by the Union and the Member States must aim at achieving economic and social cohesion for a harmonious development of the Community. The development of this objective of the Union, social cohesion, was achieved with each new Treaty, and even from the first articles it was pointed out that the final purpose of the European Union is the foundation of a European society, a form of organization that demonstrates the solidarity of people and states.

The permanent concern of the community for the social dimension of the European Union has led to the development of a European social model that outlines the guidelines for the policies that must be promoted in order to achieve social cohesion. The European social model promotes the idea of the interdependence between economic and social progress. The policies supported and implemented should not have as purpose only pursuing economic development and financial gains but also solving social problems, increasing the social capital of citizens. So, we find policies regarding social inclusion, active participation of citizens in democratic processes, social dialogue, protection at work, increasing gender equality in terms of payment, redirecting funds to less developed regions, all promoting the welfare of society.

Literature review

 The Maastricht Treaty marks the main goal, The European Union represents a new step towards creating a closer union between the citizens of Europe, in which policies and forms of cooperation must be adopted in such a way as to support solidarity between the Member States (Maastricht Treaty).

The Treaty of Lisbon makes a step forward in presents the characteristics of European society. The Union is based on the values of respecting human dignity, freedom, democracy, equality, the rule of law, as well as respecting human rights, including the rights of persons belonging to minorities. These values are common to the Member States in a society characterized by pluralism, non-discrimination, tolerance, justice, solidarity and equality between women and men. It promotes economic, social and territorial cohesion, as well as solidarity between the Member States (Treaty of Lisbon).

In Europe, social cohesion has been defined as a process aimed at reducing inequality and, in general, at protecting against social exclusion (Berger-Schmitt, 2000, European Commission, 2004). The author concluded that social cohesion encompasses two dimensions - the first dimension refers to the reduction of inequalities, disparities and social exclusion, the second dimension refers to the strengthening of social relations and the connection between the members of society as well as between members of society and institutions.

The Council of Europe defines social cohesion as "the capacity of a society to ensure the well-being of all its members, minimizing disparities and avoiding marginalization,

focusing on the following directions strength of social relations and shared values, reciprocal loyalty and solidarity, sense of belonging, trust among individuals of society (the community), and reduction of inequalities and exclusion.

The OECD describes three pillars that characterize social cohesion social inclusion, social capital, and social mobility: "A cohesive society works towards the well-being of all its members, fights exclusion and marginalization, creates a sense of belonging, promotes trust, and offers its members the opportunity of upward mobility" (OECD, 2011).

Social cohesion is also regarded as a social contract that unites the members of society, and social capital as a form of trust that people show when they consider that they are treated properly and with dignity. That said, a society that is based on social cohesion and social capital also determines a productive economy, social progress that helps to strengthen the relations between the members of the society. Political decision makers, through the public policies they promote, can strengthen this social contract or, on the contrary, weaken it (Stiglitz, 2012).

Social cohesion in the policies of the European Union

Social cohesion is an important part of the European model of integration, achieving social cohesion being the last stage of the European model. Built around the idea of peace and as a model of society that will bring prosperity and unity to the citizens, the European model has seen a development in stages, moving from exclusively economic objectives to social objectives, which design to the idea of a European Community.

Achieving social cohesion in the European Union would demonstrate that the process of real convergence has been accomplished. Meaning, the level of well-being of citizens is similar throughout the Community, disparities have been reduced, development gaps have been eliminated and economic and territorial cohesion has been achieved. So, the European model could be declared a success, the most advanced model of integration, which has succeeded in producing both economic development and well-being, as well as the most important social cohesion. Also, the social purpose of the model would also represent the core of the model's resistance to shocks or challenges.

Different policies have been created at EU's level and various European Funds have been set up to support member countries in the adoption of national policies that will reduce regional disparities. Of these, the most relevant for our analysis is Cohesion Policy, the main investment policy of the EU, which addresses to the less developed regions and has a strong impact in several areas. The objectives of the policy are accomplished through three funds: European Regional Development Funds, the Cohesion Fund and the European Social Fund. Supporting job creation by increasing the competitiveness of SMEs, measures regarding education, improving network infrastructure, promoting social inclusion and combating poverty are just some of the objectives of Cohesion Policy that respond to the needs of citizens and support the idea of solidarity promoted by the European Union.

Figure 1. *Cohesion Policy's budget 2007-2013 vs 2014-2020*
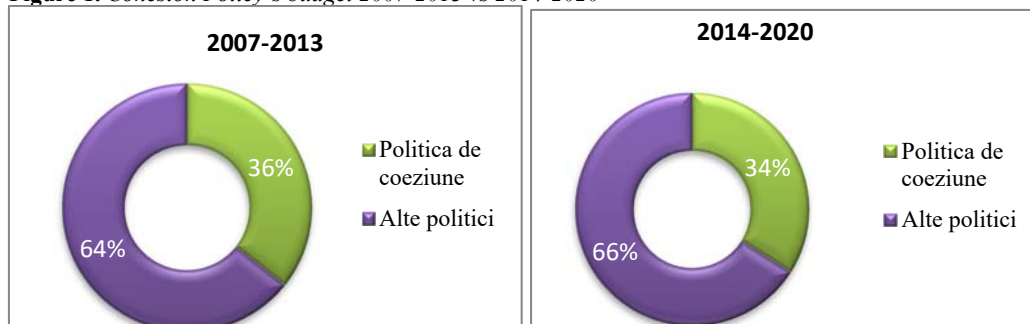
Source: Author's representation based on European Commission Data.

In the last two multiannual financial frameworks, the financial resources allocated to Cohesion Policy were represented about one third of the Union budget, as a proof of the value of this policy for the Member States.

The main goals of the 2014-2020 Cohesion Policy were focused on removing the economic and social effects produced by the economic crisis, and achieving the targets of the Europe 2020 Strategy. Adopted in 2010, the Europe 2020 Strategy was an important step in establishing a concrete plan for a smart and inclusive growth. Crossed by an economic crisis, the European Union has felt its full effects, from rising unemployment, increasing poverty, all of this put pressure on social cohesion.

On account of this, the Europe 2020 Strategy was conceived not only as an economic strategy design to eliminate the short-term effects, but as a long-term strategy that reaffirms the objectives of the European Union. This strategy takes into account social issues, sets targets to be achieved, all these in order to increase confidence in the European model. The three directions set out in the Europe 2020 Strategy refer to a smart growth, the development of a knowledge and innovation-based economy, a sustainable growth, a green economy, a competitive one with the rational use of resources and an inclusive growth, that is, not just a monetary growth but an economy with a high rate of employment, with a low rate of social exclusion that ensures the achievement of economic, territorial and social cohesion. Choosing these directions increases the probability of reaching the goal because they are interconnected and obtaining good results on one direction positively influences the other direction. For example, investments in research and innovation can help the development of many sectors, which means a higher rate of employment, which automatically lowers the rate of exclusion and the risk of poverty. The objectives arising from these established directions must be measurable and representative for each Member State, which gives greater visibility to the implemented policies, an increase of the citizens' trust in institutions due to the focus on the exact and real data of the social problems and the drawing of solutions.

Being unanimously admitted in the literature that social cohesion is also explained by the ability of society to reduce social exclusion and because this objective is also integrated in the Europe 2020 Strategy, we chose to analyze the rate of people at risk of poverty or social exclusion. In the figure below, it can be seen, the rate of people a risk of poverty or social

exclusion at the level of the EU member states in 2018, expressed as a percentage. The average in the European Union stops at 21.9% but overall all the member countries have quite high levels. However, the highest rates of people a risk of poverty or social exclusion are registered in Bulgaria, 32.8%, Romania 32.5% Greece 31.8%. On the opposite side, the Czech Republic with 12.2%, Slovenia 16.2% and Slovakia 16.3%.

Figure 2. *People at risk of poverty or social exclusion in 2018 (% of total population)*
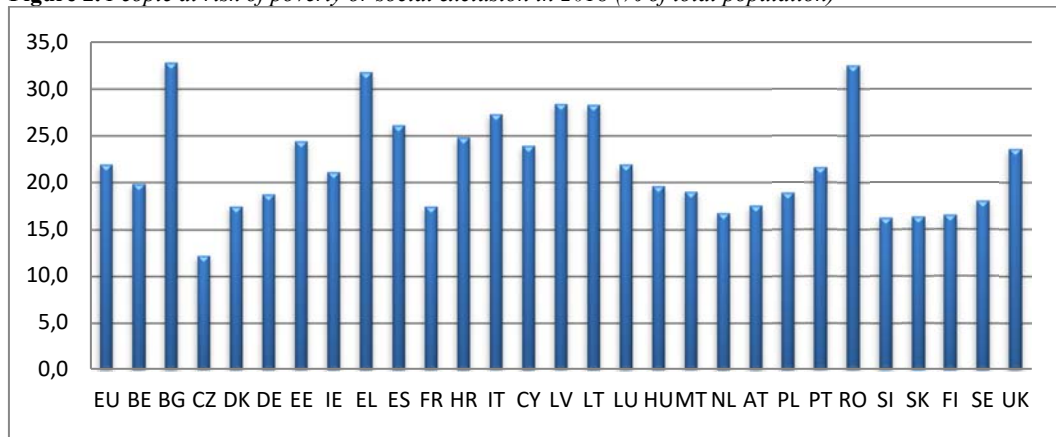
Source: Author's representation based on Eurostat.

Analyzing these data we could say that the EU's average is quite high and most Member States have values above the European average, which is an important obstacle to achieving social cohesion. If we take into account the data from 2008 and make a comparison over the last 10 years, we notice there has not been a single trend at EU's level as can be seen in the figure below. In 2008, the rate of people at risk of poverty or social exclusion reached almost 45% in some countries such as Bulgaria 44.8% and Romania 44.2%. Other countries with a high percentage were Poland 30.5%, Lithuania 28.3%, and Hungary 28.2%. These countries registered a decrease in the rate in 2018 compared to 2008, for example in Bulgaria the rate reduce by 12%, in Romania by 11.7%. In contrast, many countries in both southern and northern Europe have increased, for example Italy by about 2%, Spain 3%, Netherlands 2% and Sweden 2%. Even if they are not significant increases, they have happened in some of the most developed countries of the European Union. One explanation could be the migration of people from Eastern Europe to more developed countries, which have decreased percentages in the countries from which they left, but have increased the rate in the countries of destination.

Figure 3. *People at risk of poverty or social exclusion in the EU, 2008 and 2018 (% total population)*
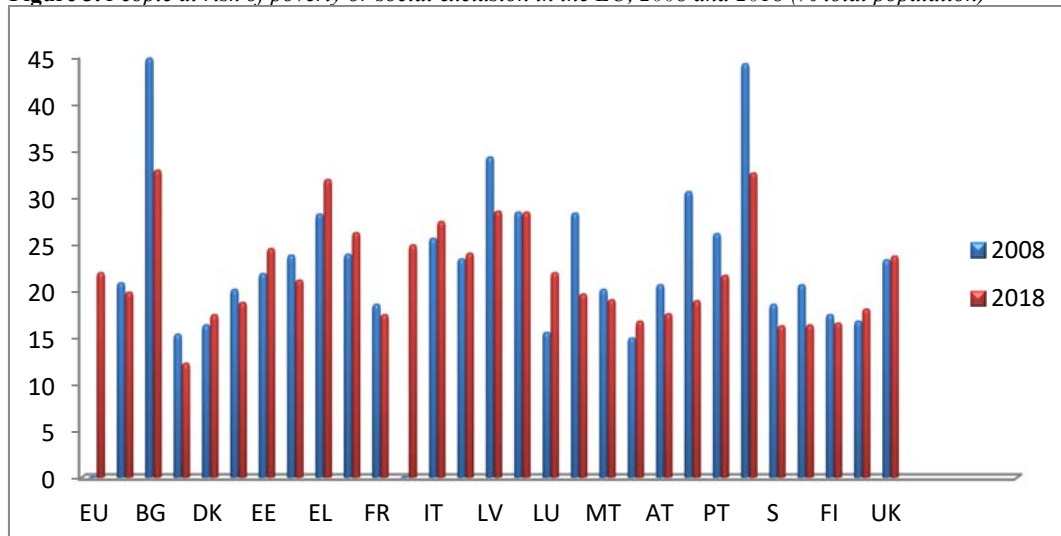
Source: Author's representation based on Eurostat.

Social cohesion and social capital

Social cohesion is specific to societies based on respect for human rights, which respond to people's needs and offer prosperity, freedom, independent justice, transparent institutions, etc. Adopting public policies for the benefit of citizens, which ensure economic development and social progress, contributes to achieving social cohesion. The measures taken by the European Union and the Member States regarding reducing inequalities, social exclusion, help to create a sense of belonging, security, trust, which further contributes to the development of social capital. Because of this, social cohesion can be regarded as a form of social capital.

Social capital refers to individuals while social cohesion characterizes a society, but society is made up of individuals, so, social cohesion depends on the accumulation of social capital. The relation between the processes specific to European model of integration leads to the achievement of social cohesion which encompasses economic and territorial cohesion. Starting from the idea that economic growth, the convergence of the Member States contributes to achieving social cohesion, we can say that these processes influence the development of social capital. The periods in which the economy registers growth determines an accumulation of social capital, expressed through citizens' trust, behavioral procedures, involvement in society, etc.

Figure 4. *Trust in European Union*
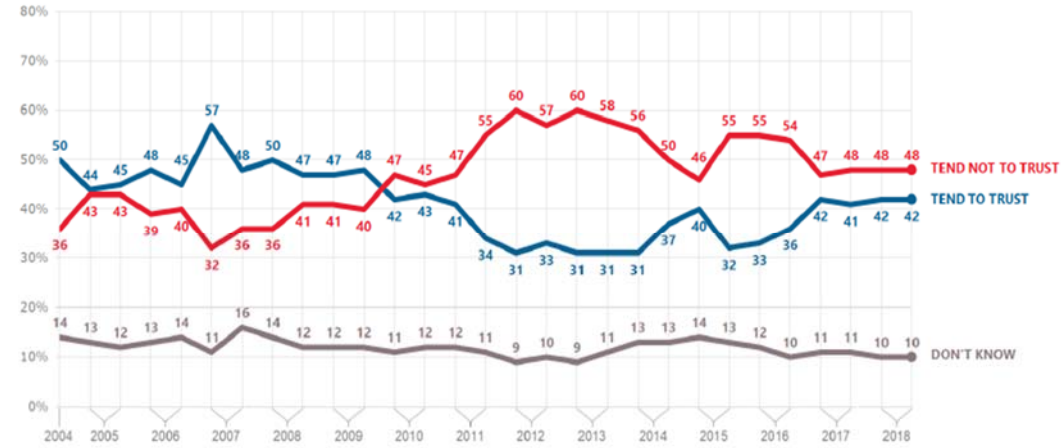
Source: European Commission.

As can be seen in the figure above, the confidence of citizens in the European Union has registered high levels during the economic growth period, but has decreased alarmingly since the economic crisis in the following years, when the austerity policies adopted by many EU's Member States have further increased the economic and social effects felt by the citizens.

Formal or informal participation in voluntary activities is also a form of social capital. The giving up of free time in favor of voluntary activities at the community level demonstrates the solidarity of the people, the acceptance of those who are in need and the involvement in bringing added value to the society. At the same time, it can be a free initiative on issues that are not sufficiently addressed by the qualified institutions, or it could mean the responsibility of the citizens for the problems that surround them.

Figure 5. *Participation in formal or informal voluntary activities or active citizenship (%)*
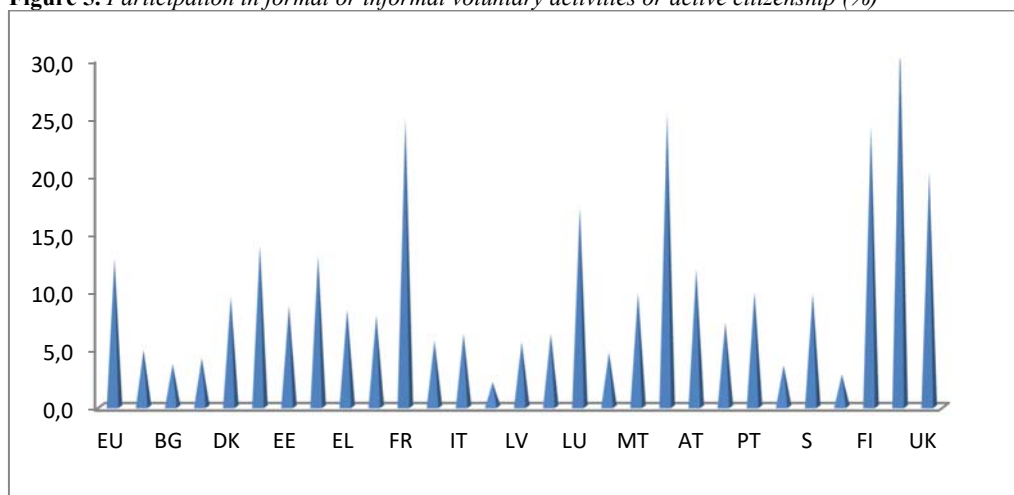
Source: Author's representation based on Eurostat.

As can be seen in the figure above, the data are not at all encouraging. Participation in voluntary activities is low in Europe, the highest rates being recorded in the Nordic or Western countries. Sweden has the highest participation rate with 31%, the Netherlands with 25%, Finland with 24% and France with 24%. At the opposite pole, with the lowest values are Slovakia, Bulgaria, Romania, but also Belgium and Italy.

Conclusions

In this paper, we have highlighted the importance of social cohesion in the European model of integration and how it is addressed in the policies of the European Union. The European project, started as an economic integration, in the variant of the common market, has reached the stage of EMU today, with formulas of political integration, institutional version and social purpose. The European social economy is based on the interconnectedness of economic and social development and supports policies at EU level that take into account the social dimension of the results, following not only financial growth but also the accumulation of social capital. The development objective of the European Union does not only mean economic growth, but that kind of economic growth that contributes to the welfare of society in achieving social cohesion.

The European Union supports policies that express European solidarity and contribute to the development of social capital and the achievement of social cohesion. Cohesion policy is one of the most important policies that encourage the economic development of the less developed regions of the EU. The distribution of over 30% of the Union budget towards this policy represents the political commitment of the Union in the fight against regional disparities. The measures against the rate of people at poverty risk or social exclusion are promoted at the level of the whole Europe, as the phenomenon affects both the least developed and the most developed countries. This social reality was also taken into account when the Europe 2020 Strategy was established, and as a consequence the one of the three directions was a growth favorable to social inclusion.

We have chosen to analyze some forms of social capital because the accumulation of social capital leads to social cohesion. The data taken into account was trust in the European Union and the voluntary rate at EU level. The analyze showed that the level of confidence in the European project decreased by about 20% in the years of economic recession, as a proof that the economic and social effects of the crisis as well as the austerity policies promoted by some states, affected the confidence of the citizens, leading to the erosion of the social capital and social cohesion. Volunteering also has low scores, which show that European citizens are not too involved in community issues.

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The future of cohesion policy in the context of Brexit

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Abstract. *After 47 years in the European Community, the United Kingdom left the EU on February 1, 2020, being the first country to take this decision. One of the most important consequences of the UK leaving the EU is the decrease of the European Union budget. In this context, it is important to analyze how much the EU budget will decrease, what are the solutions to this situation, and what is the future of Cohesion Policy after Brexit. Cohesion policy is one of the most important policies promoted at EU level, that underlies European solidarity, the core of the European integration model in the face of challenges.*

Keywords: cohesion policy, Brexit, European Union budget.

JEL Classification: Z18, E69, G20.

Introduction

Cohesion policy is one of the most important tools promoted by the European Union to support European integration. From objectives like reducing disparities between regions, or creating jobs, Cohesion Policy symbolizes the solidarity function of the European model of integration, being focused on the poorer regions of the Union. For the next 2021-2027 multiannual budget a reformed cohesion policy is desired, with simplified rules, with a more efficient communication of the results. Is taken into account the inclusion of new criteria for granting the funds, in addition to the GDP per capita, like unemployment rate among young people, low level of education, climate change and the integration of migrants.

Expectations from the Future Cohesion Policy are high and one reason is that many regions of Spain, Italy, Greece, Czech Republic, Romania are classified as less developed regions, with GDP/head bellow 75% of the European Union average. The challenges are also numberless and quite important, the departure of the UK leaves a lower budget for EU policies, and this means there is a risk that Cohesion Policy will receive less money. The current situation of the EU marked by the crisis of immigrants that is accentuating on the passing day, as well as the increasing awareness of climate change, may influence policy makers in refocusing their views and political support for other policies, to the detriment of Cohesion Policy.

Literature review

Osterloh (2011) demonstrates that regional transfers increase citizens 'support for the EU, if they directly benefit from funds. Citizens' awareness of receiving regional transfers depends on both their educational level and their information usage. This point is crucial to the success of the Cohesion Policy, because the visibility of political cohesion plays an important role in encouraging support for EU's regional policy and indeed the EU in general.

Another studies about the impact of the Cohesion Policy, underline that citizens are more aware of Cohesion Policy if they live in regions receiving a large number of EU regional transfers (Dellmuth and Chalmers, 2017).

The European Comission underlines the contribution of the Cohesion Policy. In the years between 2007-2014, more than 1 million jobs were directly created by the investments through Cohesion Poliy. Nevertheless economic disparities still remain, requiring substantial amounts of investment beyond the present programming period if they are to be reduced. The results recorded in the 2014-2020 were determined by a substantial amount of financial resources and by a several Several measures that were introduced to improve the effectiveness of programmes ex ante conditions, to stimulate structural reforms and to increase administrative capacity; smart specialisation strategies to identify local potential and prioritise investment in key sectors; a focus on results by programmes setting specific objectives and clear indicators of achievement (European Commission, 2017).

According to the European Parliament, the future multiannual budget should maintain the financing of the main policies of the European Union, cohesion policy and the common agricultural policy and underlines the need to reform the EU budget's revenue system by introducing new sources of income, such as the taxation of digital services, taxation of financial transactions, etc. These new sources of revenue should ensure the most efficient financing of policies (European Parliament, 2018).

The departure of the United Kingdom from the European Union would reduce the budget by approximately 10 billion a year, and in Hass et al.'s opinion (2017) the solutions to this situation would be to increase the contributions of the Member States, to cut costs or to combine the two. The authors also argue that this moment is a good time to reform the EU budget, and Member States would more easily accept the idea of increasing the contribution if the way of allocating and spending the money would be reformed.

Enderlein (2016) points out that Brexit provides an opportunity to substantially revise the EU budget arrangements, including changing the 7-year framework, developing its own true resources and a clearer and more efficient division of powers between European Commission and Member States

Adapting the budget to Brexit

The budget of the European Union is built on the contribution of Member States, customs duties, agricultural taxes and taxes on sugar and isoglucose, as well as a percentage of the estimated VAT collected by the Member States. The most important source of revenue is the contribution of the Member States, which covers about 70% of the total revenue. In 2017, the European Union had a budget of about 115 billion euros, and in 2018 the budget was a bigger one, worth 142 billion euros. The contribution of the United Kingdom was one of the most important in the constitution of the budget, around 13 billion euros in 2017 and 16 billion euros in 2018. On account of this, the departure of the United Kingdom from the European Union will decrease the Union budget by approximately 10 billion euros per year.

Figure 1. *The contribution of the UK to the EU's budget (%)*
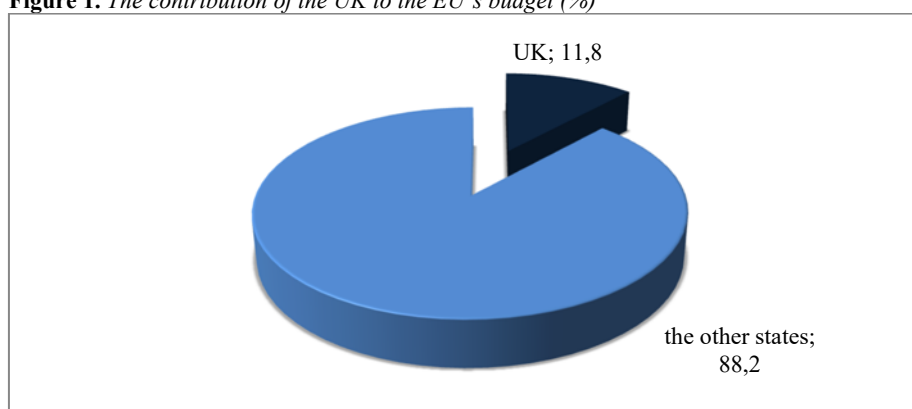
Source: Author's representation based on European Commission Data.

The options for the next long-term budget, which were proposed by the main European institutions, were aimed to increase the contribution of the Member States, like a solution to the lack of the UK contribution, but also to provide a solid budget that can assure the support for the main policies of the Union as well as responding to new challenges. In the proposals for the future budget that they have submitted since 2018, the European Commission suggest that the contribution of the Member States must be 1.11% of GNI, while the European Parliament proposes a bigger contribution, equivalent to 1.3% of GNI.

Figure 2. *Current vs. proposals for the EU's future long-term budget (€, billions)*
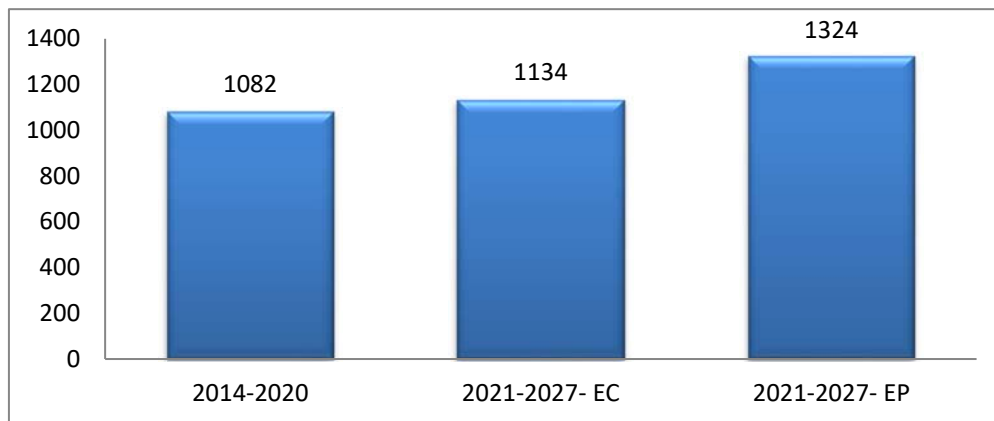
Source: Author's representation based on European Commission Data and EU Parliament.

The European Commission underlined in 2018, that the source of EU revenue has remained the same over the past decades and is the right time to be found some more, which will strengthen the budget. These measures are needed as the future will bring many challenges that will put pressure on the Union budget The proposals made by the Commission refer to three new categories of sources, like: a 3% call rate applied to the new Common Consolidated Corporate Tax Base; a 20% share of the auctioning revenue of the European Emissions Trading System; national contribution on the basis of the amount of non-recycled plastic packaging waste in each Member State. Based on the European Commission's calculations, these new sources of revenue could represent 12% of total Union revenue, and would amount to about 22 billion/year.

Figure 3. *New own resources for the EU's budget*
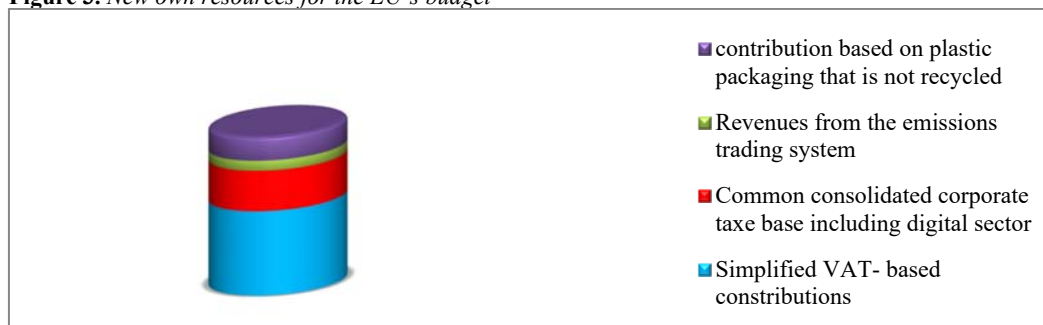
Source: Author's representation based on European Commission Data.

The future Cohesion Policy

The future Cohesion Policy has to provide the financial resources that are necessary to continue the implementation of the projects that are required, in order to reduce the disparities between Member States. If in the current long term budget, the projects implemented through the Cohesion Policy are focused on removing the effects of the economic crisis and to promote a smart, sustainable and inclusive growth, between 2021-2027 the projects that have the most visible results and which manage to improve the life of everyday citizens should be given priority. The challenges of the future Cohesion Policy are various, from the possibility of reducing the funds, to the prioritization of new policies within the European Union such as climate change, the immigrant crisis, etc. At the same time, Cohesion Policy will have to respond to expectations and provide some solutions for the long-standing problems that are present in many of the member countries, such as youth unemployment.

The UK's decision to leave the European Union is a challenge for the future Cohesion Policy. The financial impact on the Union budget is a significant one, and the main solutions to this situation concern is either to increase the contribution of the Member States or to cut the allocation of funds for Union policies. The most appropriate solution would be to reform the budget, to give financial support for the policies that bring results according to the ambitions of the European project, such as the Cohesion Policy, but also to encourage an efficiency of the expenses.

According to the European Commission, the new Cohesion Policy should be modernized in order to further support economic growth in the context of globalization. It is hoped that all regions will remain eligible for Cohesion Policy, the three categories of regions, less developed regions, in transition and more developed regions will be valid in the future financial framework. If during the 2014-2020 period, the Cohesion Policy had 11 objectives that set the directions of investments, in the future financial framework the policy objectives will be restricted to 5: *a smarter Europe*, *a Greener*, carbon free Europe, *a more Connected Europe, a more Social Europe and a Europe closer to citizens*. This new objectives are quite modest and seem to support the idea of diminishing the importance of the Cohesion Policy. Even more, European Commission proposes that most of the investments supported by the European Regional Development Fund and Cohesion Fund be directed to the first two objectives. The other three remain secondary, although a Social Europe and a Europe closer to citizens are the defining attributes for The European Union highlighted in the first articles of the European Treaties.

Under the conditions in which, the main problems faced by the European Union are social exclusion, social inequalities, Euroscepticism and the UK's decision to leave, all of them affecting social cohesion and trust in the European project, it was desirable that a large part of Cohesion Policy funds be allocated in this direction.

Functional changes

Major changes seem to be focused on the functionality and administration of Cohesion Policy, on the more careful management of funds. A smarter and simplified procedure is proposed, with more responsibility on the part of the member states. From this new perspective seems to benefit some of the member states.

One of the changes concerns the *ex ante* conditions that had to be met in the 2014-2020 program, and which are replaced by the so-called favorable conditions that the Member States will have to fulfill throughout the implementation of the projects. There are two type, general favorable conditions and favorable conditions specific to the European Regional Development Fund and the Cohesion Fund. Regarding the funds specific to the Cohesion Policy, the budget allocation will be made for 5 years, following that, after an evaluation of the stage of projects, of the progress made, as well as of the socio-economic environment and of the challenges encountered, an adapted and efficient allocation will be made over the next 2 years.

Another change involves the return to the co-financing rates that where used before the economic crisis for the specific funds of the Cohesion Policy. In consequence, 3 types of quotas are defined according to the regions, for example, for the objective "Investments for employment and economic growth" for the less developed regions the co-financing will be up to 70%, for the transition regions up to 55% and for more developed regions up to 40%.

The European Semester will be applied for better correlation between the use of funds and good economic governance. The Commission may ask a state to review or make changes to some programs in order to meet the relevant country-specific recommendations given by the Council. If the Member State does not take into account the Commission's recommendations it may suspend commitments and even payments.

News is also proposed in terms of program control. The number of these controls should be reduced, thus simplifying administrative burdens. The application of the single audit principle will be carried out in more and more cases.

The allocation of financial resources

For the multiannual financial framework 2014-2020 Cohesion Policy had distributed a budget of 371.4 billion euros. This means that the funds allocated to Cohesion Policy were about 35% of the Union budget, both in the multiannual financial framework 2007-2013 and in 2014-2020 period also. Now, the Commisssion's proposals provide for a budget of 331 billion euro, that is less than the last two multiannual budgets.

The European Comimission's opinion implies the reduction for all the three funds. Compare with 2014-2020 period, Commission proposes a significant cut for the European Regional Development Fund and the Cohesion Fund by 11.2%, and at the European Social Fund proposes a reduction of 6.8% of the financial resources.

In contrast with European Commission, The European Parliament proposal is to maintain the financing of Cohesion Policy for the EU-27 at the level of the 2014-2020 budget in real

terms. The European Parliament declares very clear to opposition to any reduction in the level of long-standing EU policies enshrined in the Treaties, such as Cohesion Policy.

Figure 4. *Current vs. proposals for the Cohesion Policy 2021-2027 (€, billions)*
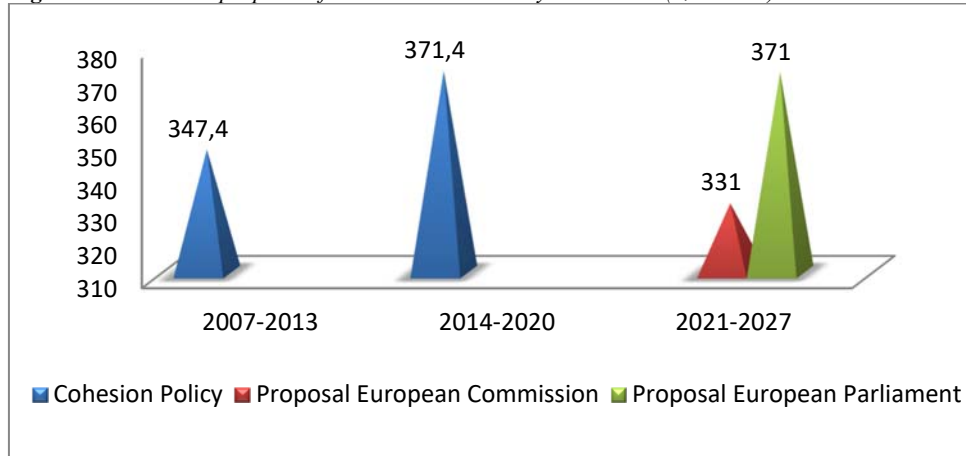
Source: Author's representation based on European Commission Data.

Analyzing the implementation of the Cohesion Policy for the 2014-2018 period, we can see that the states that attract the most funds are Poland, Italy, Hungary and Czech Republic. Most regions in the countries that attracted the most funds during the period analyzed, are included into the category of less developed regions, except Italy which is divided, the regions of the south of the country are less developed regions, and the regions of the north of the country are more developed regions. For these countries, but also for others such as Romania, Croatia, Spain, Slovakia, which have many, or all regions classified in regions with GDP/head bellow than 75% of the European average, Cohesion Policy and its funds are important because represent a large part of public investment.

Figure 5. *Cohesion Policy payments 2014-2018 (€, million)*
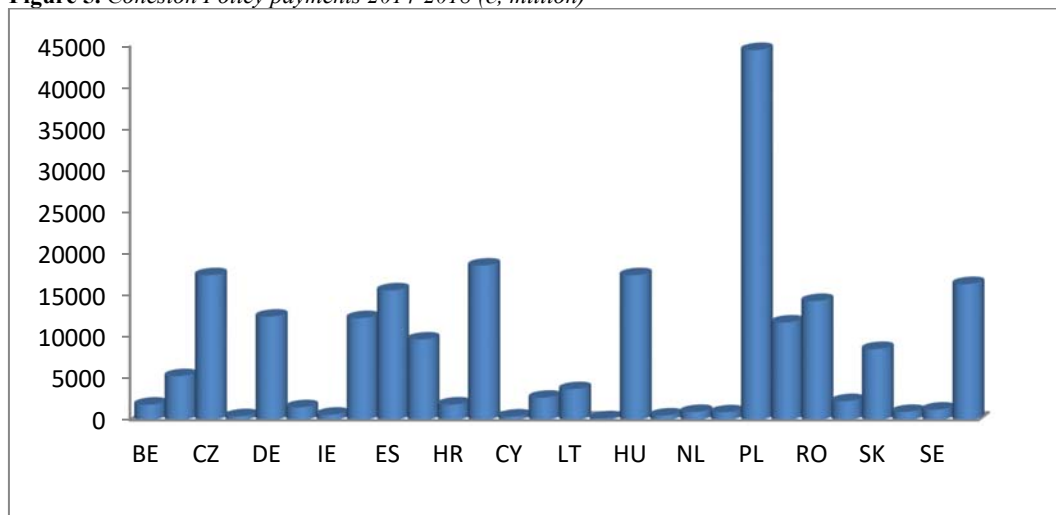
Source: Author's representation based on European Commission Data.

In the context of the new Cohesion Policy, the European Commission has made the proposal for the allocation of funds for each Member State, as can be seen in Table 1. Poland, with the highest amount, is among the countries that are proposed to receive the most funds, together with Spain, Italy, Romania, Portugal, Greece. Most of the mentioned countries are part of Southern Europe, not Eastern Europe, as we thought.

Table 1. *Proposed allocations to Member States*

	2018 Prices	Current Prices
BE	2 443 732 247	2 754 198 305
BG	8 929 511 492	10 081 635 710
CZ	17 848 116 938	20 115 646 252
DK	573 517 899	646 380 972
DE	15 688 212 843	17 681 335 291
EE	2 914 906 456	3 285 233 245
IE	1 087 980 532	1 226 203 951
EL	19 239 335 692	21 696 841 512
ES	34 004 950 482	38 325 138 562
FR	16 022 440 880	18 058 025 615
HR	8 767 737 011	9 888 093 817
IT	38 564 071 866	43 463 477 430
CY	877 368 784	988 834 854
LV	4 262 268 627	4 812 229 539
LT	5 642 442 504	6 359 291 448
LU	64 879 682	73 122 377
HU	17 933 628 471	20 247 570 927
MT	596 961 418	672 802 893
NL	1 441 843 260	1 625 023 473
AT	1 279 708 248	1 442 289 880
PL	64 396 905 118	72 724 130 923
PT	21 171 877 482	23 861 676 803
RO	27 203 590 880	30 765 592 532
SI	3 073 103 392	3 463 528 447
SK	11 779 580 537	13 304 565 383
FI	1 604 638 379	1 808 501 037
SE	2 141 077 508	2 413 092 535

Source: Author's representation based on Annex XXII to Commission proposals for a common provisions Regulation, COM(2018)375.

It is also important to make a comparison between the proposals for allocations to 2021-2027 period and the allocations that were made for the 2014-2020 period. As can be seen in the graph below, for example in the case of Poland, even if according to the allocation proposal for 2021-2027, the country receives the largest amount, compared to the 2014-2020 period, it can be observed a decrease of the funds by more than 20%. The same change is also found in countries such as Hungary, Germany, France, Croatia, which have a decrease in funds between 5% and about 25%. We can say that the states that win by this allocation proposal, both from the point of view of the allocated amount and compared to the previous period are Greece, Spain, Italy and Romania. For these, the increase of funds is between 2-3% to 15% in the case of Greece.

Figure 6. *Impact of Commission proposal on Cohesion policy allocations (%)*
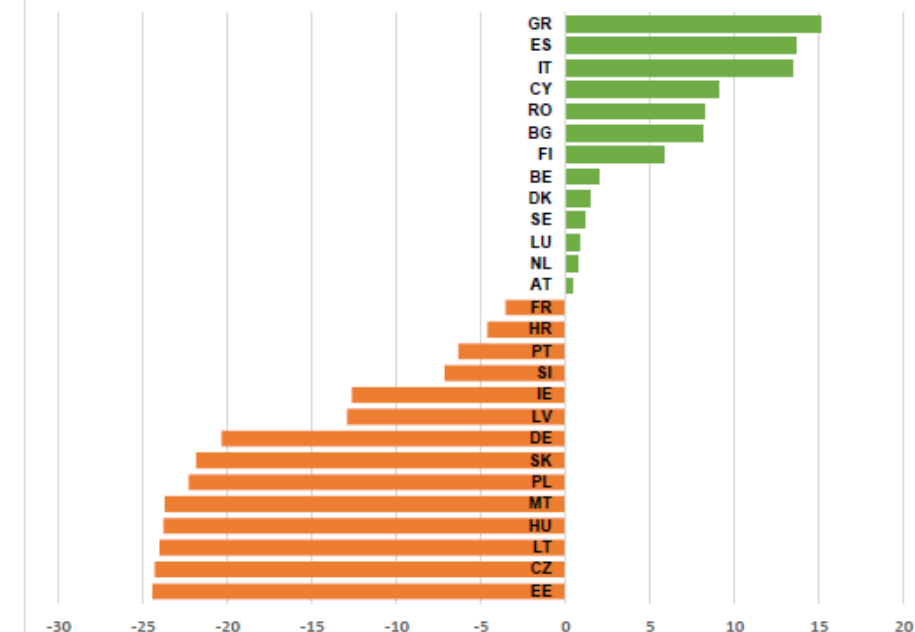
Source: Bachtler et al., 2019.

Conclusions

The departure of Britain from the European Union puts pressure on the EU budget and arouses contradictory discussions between EU institutions and between Member States regarding the solutions that should be adopted, from increasing the contribution of Member States to cutting the financial resources allocated to different policies.

The future Cohesion Policy depends on the EU's budget and the solutions that will be adopted in response to the UK's departure. If the European Parliament proposes to maintain the allocation of Cohesion Policy funds at the level of this current financial framework, the European Commission proposes a reduction of financial resources by approximately 40 billion euros, a smaller allocation compared to the multiannual financial framework 2007-2013. The challenges of the Future Cohesion Policy are not limited only to financial resources but also to the weakening of its political support in favor of other policies, respectively those regarding climate change or the immigrant crisis. Regarding policy reform, the points mentioned mainly are focusing to administrative and the functional part of the policy rather than setting goals or proposing new programs. The new objectives proposed are even fewer in number, only five compared to 11 in the current framework, and seem to be lacking in ambition even if the implementation of policies that ensure economic, social and territorial cohesion is one of the most important objectives of the European model.

Another proposal that also raised problems concerns the allocation of Cohesion policy funding to member states. With most countries receiving smaller amounts than the current

financial framework, the only winners from this allocation are being the countries of southern Europe, Spain, Italy, Greece.

The future Cohesion Policy should be reformed in the true sense and its importance should be supported by concrete objectives and allocations of important financial resources, especially at this moment of Brexit, which has placed significant pressure on social cohesion.

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The effect of income inequalities on innovation outcomes

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Abstract. *The perception of the European citizen belonging to the middle class on income inequality reflects an association with a low level of self-esteem, trust, participation and civic commitment, with a poor state of health and even with crime. Thus, income inequality has implications in many dimensions of social life, such as: the well-being of individuals, education, health, political participation, the participation and integration of women in the labor market, the economic activity in its fullness. The aim of this paper is to assess the effects of income inequalities on the outcomes of innovation at a country level. In order to do that, a panel data was used which includes 34 European countries (EU-28 and other 6 non EU member states: Iceland, Norway, Switzerland, Former Yugoslav Republic of Macedonia, Albania and Serbia). The analyzed time frame is 2000-2017. We managed to assess the inequalities effects on innovation outcome, using different measures for income distribution by quantiles: the ratio between top richest 10% and the poorest 10% (D9/D1), ratio between top richest 10% and the median (D9/D5), ratio between median and the poorest 10% (D5/D1). We included in our analysis as a control variable also the classical Gini index. Regarding the dependent variable (innovation outcome) the number of patent applications per million inhabitants was used.*

Keywords: income inequalities, innovation outcome, Gini index.

JEL Classification: C33, D31, O30.

1. Introduction

The importance of innovation as a major determinant of economic growth in the actual dynamic environment has increased in the last years. The prior reason is the changing focus of both private and public enterprises to improving productivity of the production processes. Income inequalities are also a challenge for the contemporary world. In the current economic context, under the influence of the dynamic phenomenon of globalization, countries are facing hard predictable evolutions and situations, their economies facing the effects of various determinants with a complex nature. The perception of the European citizen belonging to the middle class on income inequality reflects an association with a low level of self-esteem, trust, participation and civic commitment, with a poor state of health and even with crime. Thus, income inequality has implications in many dimensions of social life, such as: the well-being of individuals, education, health, political participation (the low voting participation of individuals belonging to groups characterized by a low level of income has implications in redistributive policies and implicitly on income disparities), the participation and integration of women in the labor market, the economic activity in its fullness.

Also, in order to explain as much as possible from the variation of the dependent variable, we included in our models a number of other independent (explanatory) variables that target several dimensions, such as the following: *economic dimension* (gross domestic product per capita), *international trade openness* (share of exports and imports of goods and services in gross domestic product), *demographic* (population density), *education* (public expenditure for higher education, share of population with tertiary education in total population) and *labor force* (share of working population) in knowledge-intensive sectors in the total workforce). In our study we used both traditional and spatial models as estimation methods. Both spatial and traditional models are based on the linear regression method, which establishes a statistical or stochastic link, respectively a correlation (which does not necessarily imply a causal relation) between endogenous variables and exogenous variables (determinants).

Depending on the evolution of income inequality, appears the tendency towards attracting new (innovative) products to the market or, by contrary, ensuring the mass production capacities of the existing products. Thus, regarding the beneficial or harmful effect of inequality on economic growth, which depends on the nature of technological progress, there are two main situations: when technological progress is due to the introduction of technologies for mass production, a high degree of inequality decreases economic growth; the opposite being when the engine of economic growth is supported by product innovations, such as the invention of higher quality products to satisfy the wishes of the rich.

2. Literature review

The numerous papers found in the international literature are confirming the importance of the analyzed topic in this study. Weinhold D. and Reichert U.N. (2008) examine whether income inequalities may explain the different intensity of the innovation process between

countries. They consider that the mechanism between the analyzed components is influenced by two factors, namely: the existence of a large middle class could have a significant influence on the quality of institutions, including the protection of intellectual property rights, rights which in turn could affect innovation (indirect influence); evidence from the economic history of the United States suggests a direct link between the share of the middle class population (income inequalities) and innovation, through supply and demand.

From the demand perspective, the presence of a large middle class contributes to the stimulation of innovation, due to the high demand for goods manufactured in series, standardized and relatively cheap. Also, the population characterized by a low level of income, will not purchase other goods than those necessary for the essential consumption (necessary for human existence), while the population with high incomes will opt for personalized goods and services, the latter individuals being willing to pay a higher price. Moreover, the existence of a large and economically active middle class contributes to the stimulation of the innovation activity, through the impact it can have on the evolution and quality of the institutions. The authors recall the case of the United States, where the economic and political participation of a large share of the population made the patenting activity different from that of Europe, namely, simpler, cheaper and implicitly accessible to a wider spectrum of the population.

On the other hand, from the perspective of the offer, the authors remain in the case of the United States, where innovative activities were widely dispersed, throughout the population characterized by a high degree of market participation. Thus, the activities in the field of agriculture or manufacturing industry, based on a large market, have actually led to a large participation of the population in the process of patenting the improvements made to old technologies, done step by step.

Tselios V. (2011) conducts a microeconomic study on 102 regions (Western Europe) over a time frame of 6 years (1995-2000), using data from the ECHP (European Community Household Panel), complementary with regional statistics data from the Eurostat international base. The author uses a panel data set. In order to analyze the relationship between innovation and income inequality, he uses econometric techniques of spatial estimation (models such as SAR and SEM) starting from the hypothesis that the accumulation of knowledge is realized within the regions, due to the cluster phenomenon, but also tests on Granger causality, or dynamic econometric techniques to consider the circular and cumulative effects that characterize innovation. The obtained results indicate that, when the income inequality will increase, the growth of the innovation results (number of patents) is favored. The author also states that geographical distance (geographical space) is a key factor in explaining the heterogeneous links between innovation and inequality; moreover, although innovation involves a variety of contexts, existing several approaches for it depending on the link envisaged, it is generally influenced by circular, cumulative and intraregional spillover effects. The author also states that not only inequality supports the growth of innovation, but also innovation itself supports inequality; this fact only highlights a causal relationship between inequality and innovation, characterized by endogeneity. The relation between the two variables varies in time and

space, this reminding of the conclusion drawn from the specialized literature according to which, the innovation is influenced by the existing (local) temporal and spatial conditions.

To quantify innovation, the author uses the number of patent applications per million inhabitants. In terms of income inequalities, it uses several variables, including the entropy index Theil (calculated based on the share of individual income of individuals in total income), Gini index and Atkinson index.

Authors such as Moreno, Paci and Usai (2005), Rodriguez-Pose and Crescenzi (2008) have shown that patenting activity in a certain territory could be influenced by the same activity undertaken by neighboring territories. Thus, geographical proximity is important in the transmission of knowledge and there is the possibility of spillovers not only within the regions, but also between these territories. However, knowledge dissemination works more efficiently within regions than between different regions, as the production, circulation and use of knowledge between regions would be more expensive (Gertler, 2003; Sonn and Storper, 2008).

In the theoretical literature, a first definition assigned to the income term belongs to John Richard Hicks, in his work *Value and Capital*, from 1939. He defines income as representing a maximum value that an individual can spend in a certain time frame and at the end of the respective time frame, it is in a similar situation to the initial one. Subsequently, other multiple approaches were derived to define this term (e.g.: gross and net domestic product, nominal domestic product, gross and net national product, personal available income etc.), being a topic of interest for measuring the results of economic activities, for the well-being of the population, but also for the individuals living standard of a society and implicitly of the economic inequalities existing in a society.

Gross income at the level of a household is calculated as the sum of the following components of gross personal income obtained by all members of a household: *labor income*, *labor income excluding wages*, *income from self-employed activities including royalties*, *pensions from individual private plans*, various social benefits which include *unemployment benefits*, *survivors' pensions*, various other *education allowances*. To these are added the following components of gross income: *income from rents* related to property or land, *allowances for children*, other benefits for *disadvantaged areas*, *periodic cash transfers* between households, *interest*, *dividends*, *profits from capital investments* and income received by *persons under the age of 16 years*. The total net income available at the level of a household is represented by the gross income of a household diminished by: income tax and social insurance contributions, payment of cash transfers made between households, wealth tax (Eurostat).

The measurement of income inequalities has as a starting point the *distribution*. Regardless of the group considered in the analysis, the distribution of income refers to the number of individuals in that group and the share of income of each individual in the total income of the group. The sample is divided into a defined number of subgroups equal in size, these being delimited by certain values of the variable of interest. Thus, there are the following possibilities of dividing a sample: *median* (the values of the studied variable are divided into two subgroups), *quartiles* (the sample is divided into four subgroups), *quintiles* (the

sample is divided into five subgroups), *deciles* (ten subgroups) and *percentiles* (the sample is divided into 100 subgroups).

In order to reflect the income inequalities in the European space, the analysed time frame being 2005-2017, the following tables show some interdecile quotas: quota between the percentage of income held by the richest top 10% from total income and the percentage of income held by the poorest 10% from total income (D9/D1), quota between the percentage of income held by the richest top 10% from total income and the percentage of income held by the middle class from total income (D9/D5). We added also the interdecile quota S8020, which reflects the quota between the percentage of income held by richest 20% from total income and the percentage of income held by the poorest 20% from total income. In this way, we can see how many times the percentage of income held by the richest ones is higher than the one held by the poorest, or how many times the percentage of income held by the middle class is higher than the one held by the poorest.

Table 1. *Interdecile quota D9/D1 in European countries, 2005, 2010, 2015 and 2017*

Country	2005	2010	2015	2017	Country	2005	2010	2015	2017
UE 28	-	4.90	5.25	5.25	CY	4.20	4.11	4.39	3.92
UE 27	4.68	4.90	5.25	5.25	LV	7.24	7.95	7.09	6.83
UE 19	4.50	4.87	5.25	5.21	LT	7.23	8.47	7.09	7.43
UE 18	4.50	4.87	5.25	5.21	LU	3.89	4.00	4.14	5.21
BE	3.61	3.92	3.89	3.94	HU	3.73	3.33	4.39	4.65
BG	-	5.88	6.91	7.79	MT	4.03	4.32	3.95	4.00
CZ	3.45	3.32	3.34	3.19	NL	4.34	3.71	3.66	4.06
DK	4.03	7.32	4.31	4.12	AT	3.68	4.44	4.00	4.58
DE	3.73	4.36	5.03	4.53	PL	7.00	4.81	4.97	4.74
EE	6.46	5.34	6.91	6.36	PT	6.16	5.17	6.08	5.77
IE	4.39	4.63	4.38	4.38	RO	-	6.50	10.20	7.90
GR	6.16	5.73	8.11	6.86	SI	3.56	3.50	3.68	3.50
ES	6.16	7.38	9.29	8.26	SK	4.12	4.03	4.21	4.28
FR	3.74	4.03	3.76	4.09	FI	3.34	3.37	3.41	3.29
HR	-	6.16	5.88	5.59	SE	3.51	4.27	4.47	4.38
IT	5.88	6.00	7.19	7.50	UK	5.73	5.32	5.29	5.36

Source: own computation using Eurostat database.

Table 2. *Interdecile quota D9/D5 in European countries, 2005, 2010, 2015 and 2017*

Country	2005	2010	2015	2017	Country	2005	2010	2015	2017
UE 28	-	1.79	1.79	1.79	CY	1.77	1.78	1.93	1.86
UE 27	1.77	1.81	1.79	1.79	LV	2.03	2.09	2.05	2.04
UE 19	1.76	1.78	1.79	1.78	LT	2.12	2.12	2.17	2.08
UE 18	1.73	1.78	1.79	1.78	LU	1.71	1.73	1.75	1.86
BE	1.63	1.64	1.67	1.63	HU	1.64	1.61	1.73	1.71
BG	-	1.91	2.00	2.06	MT	1.77	1.77	1.74	1.78
CZ	1.64	1.60	1.63	1.61	NL	1.64	1.66	1.65	1.67
DK	1.51	1.54	1.62	1.60	AT	1.65	1.69	1.63	1.69
DE	1.60	1.73	1.76	1.75	PL	2.00	1.84	1.82	1.77
EE	2.01	1.96	2.09	1.96	PT	2.14	1.95	1.95	1.90
IE	1.84	1.85	1.84	1.89	RO	-	1.95	1.94	1.90
GR	1.95	1.89	1.93	1.89	SI	1.58	1.59	1.57	1.57
ES	1.90	1.94	1.98	1.94	SK	1.63	1.64	1.54	1.47
FR	1.71	1.74	1.72	1.70	FI	1.63	1.60	1.63	1.62
HR	-	1.86	1.76	1.78	SE	1.56	1.58	1.64	1.63
IT	1.84	1.83	1.82	1.83	UK	1.96	1.91	1.87	1.92

Source: own computation using Eurostat database.

Table 3. *Interdecile quota S80/S20 in European countries, 2005, 2010, 2015 and 2017*

Country	2005	2010	2015	2017	Country	2005	2010	2015	2017
UE 28	-	4.9	5.22	5.1	CY	4.3	4.5	5.2	4.6
UE 27	5.0	4.9	5.22	5.1	LV	6.7	6.8	6.5	6.3
UE 19	4.7	4.9	5.16	5.1	LT	6.9	7.3	7.5	7.3
UE 18	4.6	4.9	5.14	5.0	LU	3.9	4.1	4.3	5.0
BE	4.0	3.9	3.8	3.8	HU	4.0	3.4	4.3	4.3
BG	-	5.9	7.1	8.2	MT	3.9	4.3	4.1	4.2
CZ	3.7	3.5	3.5	3.4	NL	4.0	3.7	3.8	4.0
DK	3.5	4.4	4.1	4.1	AT	3.8	4.3	4.0	4.3
DE	3.8	4.5	4.8	4.5	PL	6.6	5.0	4.9	4.6
EE	5.9	5.0	6.2	5.4	PT	7.0	5.6	6.0	5.7
IE	5.0	4.7	4.50	4.6	RO	-	6.1	8.3	6.5
GR	5.8	5.6	6.5	6.1	SI	3.4	3.4	3.6	3.4
ES	5.5	6.2	6.9	6.6	SK	3.9	3.8	3.5	3.5
FR	4.0	4.4	4.3	4.4	FI	3.6	3.6	3.6	3.5
HR	-	5.5	5.2	5.0	SE	3.3	3.8	4.1	4.3
IT	5.6	5.4	5.8	5.9	UK	5.9	5.4	5.2	5.4

Source: own computation using Eurostat database.

If we have a look at the above table, we can see that there are countries for which the income gap/ inequalities between the richest and the poorest has increased in the last year (e.g.: Bulgaria from 5.9 times in 2010 to 8.2 times in 2017), for some of them decreased (e.g.: Czech Republic, Denmark, Poland, Romania) and for others the trend is somehow steady (e.g.: Belgium around 3.8 times, France around 4.4 times, Finland around 3.5 times).

Nevertheless, official reports related to income inequalities are using a synthetic measure of inequality called *Gini index*, this being an instrument easy to use and interpret for different income inequalities comparisons regarding the evolution in time and space. Values of this index close to 1 are showing a high income inequality, while values close to 0 are suggesting a low income inequality.

Table 4. *Income inequalities in European countries using Gini index, 2005, 2010, 2015 and 2017*

Country	2005	2010	2015	2017	Dif. abs. from UE 28, 2017	Dif. rel. from UE 28, 2017	Country	2005	2010	2015	2017	Dif. abs. from UE 28, 2017	Dif. rel. from UE 28, 2017
UE 28	-	30.5	31.0	30.7	0.0	0%	CY	28.7	30.1	33.6	30.8	0.1	0%
UE 27	30.6	30.5	31.0	30.7	0.0	0%	LV	36.2	35.9	35.4	34.5	3.8	12%
UE 19	29.4	30.3	30.7	30.5	-0.2	-1%	LT	36.3	37.0	37.9	37.6	6.9	22%
UE 18	29.3	30.3	30.7	30.4	-0.3	-1%	LU	26.5	27.9	28.5	30.9	0.2	1%
BE	28.0	26.6	26.2	26.0	-4.7	-15%	HU	27.6	24.1	28.2	28.1	-2.6	-8%
BG	-	33.2	37.0	40.2	9.5	31%	MT	27.0	28.6	28.1	28.2	-2.5	-8%
CZ	26.0	24.9	25.0	24.5	-6.2	-20%	NL	26.9	25.5	26.7	27.1	-3.6	-12%
DK	23.9	26.9	27.4	27.6	-3.1	-10%	AT	26.3	28.3	27.2	27.9	-2.8	-9%
DE	26.1	29.3	30.1	29.1	-1.6	-5%	PL	35.6	31.1	30.6	29.2	-1.5	-5%
EE	34.1	31.3	34.8	31.6	0.9	3%	PT	38.1	33.7	34.0	33.5	2.8	9%
IE	31.9	30.7	29.7	30.6	-0.1	0%	RO	-	33.5	37.4	33.1	2.4	8%
GR	33.2	32.9	34.2	33.4	2.7	9%	SI	23.8	23.8	24.5	23.7	-7.0	-23%
ES	32.2	33.5	34.6	34.1	3.4	11%	SK	26.2	25.9	23.7	23.2	-7.5	-24%
FR	27.7	29.8	29.2	29.3	-1.4	-5%	FI	26.0	25.4	25.2	25.3	-5.4	-18%
HR	-	31.6	30.4	29.9	-0.8	-3%	SE	23.4	25.5	26.7	28.0	-2.7	-9%
IT	32.7	31.7	32.4	32.7	2.0	7%	UK	34.6	32.9	32.4	33.1	2.4	8%

Source: own computation using Eurostat database.

To have a visual understanding of the correlation between income inequalities and innovation level, the following pictures represent the cartographic distribution of these two variables.

Income inequality measured by interdecile reports, European countries, 2017
a.D9/D1   b.D9/D5
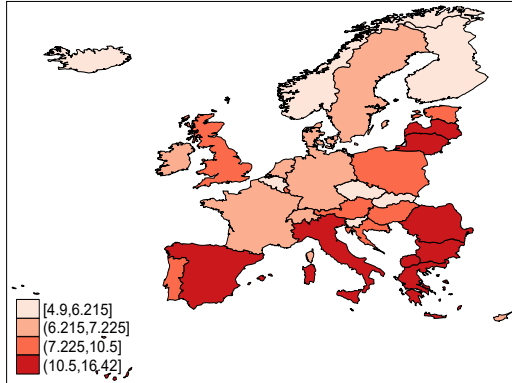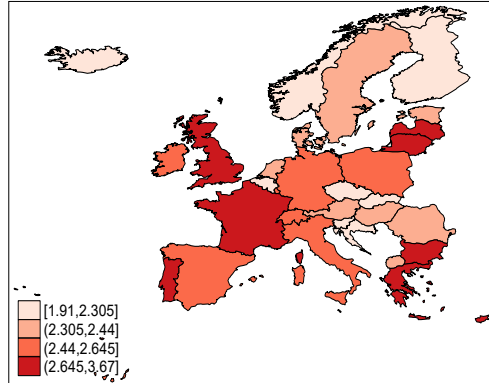
c.D5/D1
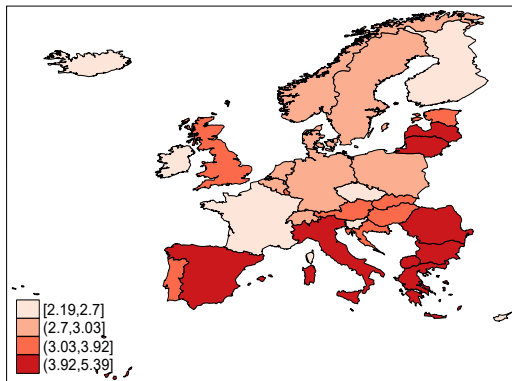
Source: own computation using Eurostat database and STATA.

Patents absolute number (a) and no. of patents per million inhabitants (b), European countries, 2017
a   b
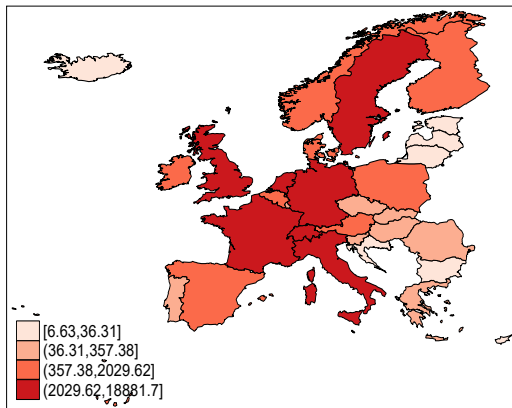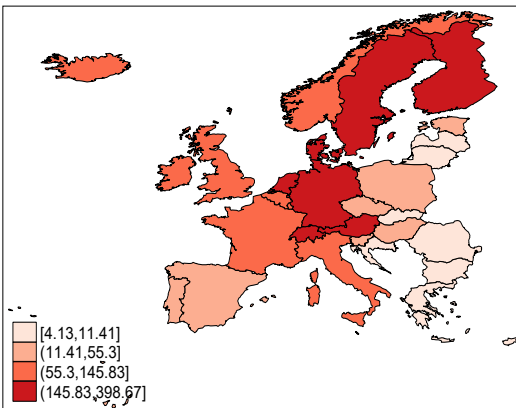
Source: own computation using Eurostat database and STATA.

After having a short look at the pictures, the evidence is that countries with high level of income inequality are characterized by a low level of innovation, while countries that show a low level of income inequalities are having a higher level of innovation.

3. Methodology

The aim of the present study is to identify and estimate the potential effects of income inequalities on the results of the innovation process.

To achieve the objectives of this paper, the analysis was performed on a panel data set. The data takes into account 34 countries from the European area (28 EU member countries and 6 other European states: Iceland, Norway, Switzerland, Macedonia, Albania and Serbia), the analyzed time frame being 2000-2017. The panel data set has a dual dimension, as it allows to the dynamic behavior and possible heterogeneity of the data to be taken into account, which would not be possible if the analysis were performed over time series. Moreover, the dual dimension of the panel provides a dual data information, namely: an individual dimension, as each country in the panel is different from the other; a temporal dimension, because the situation in the territory of a country differs from year to year.

The robustness of the parameters and implicitly, the accuracy of the built specifications are reflected by the logarithmic process of the control variables, but also of the dependent ones, so that the distribution of the panel data follows the normal probabilistic distribution. The reason for the logarithm is that the variables considered can be modeled properly if they follow a normal distribution.

The coefficient of determination (R-squared) indicates the proportion of the total variation of the dependent variable, explained by the variation of the control variables included in the specified models; it will always be positive, having values between [0, 1]. A value close to 1 indicates the existence of a strong correlation between the variable of interest and the independent variables chosen. A variable close to 0 indicates a weak correlation between them.

The econometric models were constructed using multiple linear regression. The multiple regression model analyzes the causal relationship between an endogenous or dependent variable and two or more independent or exogenous characteristics. The analysis of the linear relation between the dependent variable and one or more independent variables follows the explanation and the forecast of the variation of the dependent variable according to the independent variables. The robustness and compatibility of the obtained results are evaluated according to the sign and the size of the estimated parameters. The statistical significance of the parameters results from the assurance that the variation of the dependent variable is not due to chance, but is the result of the variation of one or more independent variables.

The general formula for multiple linear regression is as follows:

$$y = \beta_0 + \beta_1 * x_1 + \beta_2 * x_2 + ... + \beta_n * x_n + \varepsilon$$

where:

y   – dependent variable;

β_0 – constant (intercept);

$\beta_{1,2,\dots,n}$

           – parameter of independent variable (slope);

$x_{1,2,\dots,n}$ – independent variable;

ε   – error term of the equation.

In the empirical analysis, the models used start from a general model of the form of a linear regression, the estimation of the parameters being performed by linearization, based on a logarithmic function:

$$\log y = \beta_0 + \beta_1 * \log x_1 + \beta_2 * \log x_2 + \dots + \beta_n * \log x_n + \varepsilon$$

The terms of the regression equation above have the same meaning as those in the general multiple regression equation, except that they have been subjected to logarithm.

The **dependent variable**: as for the indicator used to quantify the dependent variable (the results of the innovation process), we used the number of patent applications per million inhabitants, source Eurostat. According to the specialized theoretical and empirical literature, this is the usual indicator for measuring innovation, since it is an element of the result of the innovation process and not a factor of innovation production such as research and development expenses.

Independent variables: as the results of innovation cannot be explained solely by income inequalities, the econometric models built include other independent variables of various dimensions such as: economic, demographic, educational, labor and commercial openness.

Fixed effects models: the research methodology is based on macro econometric data and uses a general macro econometric panel research model. The econometric models detailed in the following pages are built on the basis of multiple linear regression, using the methodology of fixed effects models. A Fixed effects model is one that is supposed to be measured without errors. Most often, it is suggested in the literature that the use of fixed-effects models is suggested when the analysis tracks the impact of variables that vary over time.

Thus, the fixed effects model is used to analyze the impact of variables that change over time. Fixed effects explore the relationship between predictor and outcome variables within an entity. Each of these entities (in this paper, the countries included in the panel) included in the model have characteristics, individual features, by which they differ from each other. Moreover, each data set has its own characteristics that may or may not influence the dependent variable. Thus, the models with fixed effects eliminate the effects of those characteristics of the independent variables that do not vary in time, in order to analyze the net effect on the dependent variable. Also, it is rational to use the models with fixed effects if the purpose of the analysis is to measure their influence at the level of the statistical population and not the generalization and at the level of other statistical populations.

Validation of the model parameters and, at the same time, the validation of the regression model is obtained by testing the assumptions of the linear regression model. Hypothesis testing aims to indicate if the model specification is correct, if the chosen variables can properly define the analyzed phenomenon. The overall significance of the set of coefficients (without the free term) can be verified with the F test. The F test is used for the Fixed Effects model. In other words, this test determines whether the relationship between the dependent variable and the independent variables is statistically significant.

4. Results

Thus, to analyze the potential impact of income inequality on the results of the innovation process, several macro econometric models were constructed, using different measures of inequality such as: the ratio of the income share held by the richest 10% in the total population income and the income share held of the poorest 10% in the total population income (D9/D1), the ratio between the middle-class income share in the total population income and the share of income held by the poorest 10% in the total population income (D5/D1), the ratio between the share of incomes held by the richest 10% in the total population income and the share of incomes held by the middle class in the total population income (D9/D5), but also the Gini index or the S8020 indicator.

Table 5. *Correlation between income inequalities and innovation outcome (D9/D1), European countries*

log_pat_pop	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
log_gdp_pc	1.680***	1.366***	1.339***	1.322***	1.331***	1.305***	1.283***	1.734***	2.004***	1.865***	1.956***	1.777***
	(7.99)	(6.05)	(6.07)	(5.99)	(5.83)	(5.01)	(5.82)	(7.61)	(8.87)	(8.44)	(8.82)	(6.56)
log_pop_dens	-1.443	-1.967*	-1.492	-1.381	-1.983**	-3.195***						
	(-1.96)	(-2.48)	(-1.97)	(-1.83)	(-2.64)	(-3.40)						
log_empl_ht	0.234								0.538**	0.522**	0.486*	0.733***
	(1.27)								(2.74)	(2.64)	(2.48)	(3.44)
log_finaid_ed	-0.239***	-0.287***	-0.287***	-0.269***	-0.255***	-0.296***	-0.273***					
	(-5.06)	(-5.71)	(-5.88)	(-5.43)	(-5.45)	(-5.77)	(-5.49)					
log_d9_d1	-0.262*	-0.293*	-0.262*	-0.242	-0.268*	-0.359**	-0.259*	-0.289*	-0.328*	-0.325*	-0.354**	-0.318*
	(-2.10)	(-2.25)	(-2.06)	(-1.89)	(-2.18)	(-2.64)	(-2.02)	(-2.01)	(-2.50)	(-2.46)	(-2.70)	(-2.42)
log_empl_rd		0.634***										
		(3.60)										
log_empl_rd_bus			0.440***	0.461***			0.512***	0.289*				
			(4.43)	(4.63)			(4.68)	(2.48)				
log_empl_rd_pub			0.235				0.225	0.229				
			(1.76)				(1.66)	(1.88)				
log_empl_ht_kis					0.560**							
					(2.75)							
log_empl_ict						0.523**						
						(3.34)						
log_urb_pop							-1.980	-1.819	-1.737	-1.214	-1.005	-2.016
							(-1.33)	(-0.96)	(-1.23)	(-0.85)	(-0.64)	(-1.30)
log_gov_exp_ter								0.393**	0.474***	0.510***	0.479***	0.428**
								(2.62)	(3.47)	(3.69)	(3.45)	(3.08)
log_x_good_ser									0.635**			0.628*
									(2.87)			(2.38)
log_m_good_ser									-0.860**			-1.046**
									(-2.90)			(-3.28)
log_x_good										0.479**	0.397*	
										(2.70)	(2.15)	
log_m_good										-0.424	-0.271	
										(-1.69)	(-1.06)	
log_x_ser											0.277	
											(1.30)	
log_m_ser											-0.610**	
											(-2.66)	
log_tax_rev												0.670***
												(3.61)
log_credit_bus												0.249
												(1.96)
_cons	-6.071	-0.146	-1.681	-1.594	-1.749	5.451	1.152	-6.107	-9.894	-11.86*	-13.00*	-8.952
	(-1.91)	(-0.04)	(-0.50)	(-0.47)	(-0.53)	(1.12)	(0.19)	(-0.74)	(-1.79)	(-2.16)	(-2.08)	(-1.44)
R^2	0.293	0.324	0.350	0.358	0.313	0.366	0.352	0.380	0.400	0.393	0.412	0.372
N	238.000	216.000	217.000	216.000	238.000	206.000	216.000	256.000	280.000	280.000	280.000	263.000

t statistics in parentheses
* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Source: own computation using STATA.

We can see that the parameters obtained for the independent variables are different from zero, which means that the chosen variables really exert an influence on the number of patent applications per million inhabitants. In the first table, for the measurement of income

inequality, the ratio between the share of incomes held by the richest 10% in the total population income and the share of incomes held by the poorest 10% in the total population income (D9/D1) was used.

Thus, in all the econometric models built, the obtained results suggest the existence of a negative relationship, in the opposite direction, between the income inequality and the variable of interest regarding the results of the innovation process. Moreover, the obtained results are statistically validated, due to the value recorded by p-value, which is less than 0.05. An increase of 1% of the income inequality determines the decrease of the results of the innovation process (of the number of patent applications per million inhabitants) by 0.24-0.36%.

Regarding the economic dimension, the sign of the coefficients obtained for the gross domestic product per capita is positive, according to expectations and statistically valid, which means that between this variable and the results of innovation, there is a positive relation, of the same sense, more precisely the growth of this variable determines the growth of the innovation results.

The variables belonging to the demographic dimension, namely, the population density and the weight of the urban population, included in the specifications, have a negative coefficient. The population density records statistically valid results, only in the models in which labor force variables, such as the share of the population employed in the research-development sector, the share of the population employed in knowledge-intensive sectors, or the share of the population employed in the ICT sector (Information and Communication Technology) were also included in the regressions. The coefficients for the share of the urban population were not validated in any built model. Regarding the size of education, the expenditures for education for all education cycles as a share in the total public expenditure have a negative sign of the coefficients, the results being validated in all the models built. In contrast, expenditures for tertiary education as a share of total public expenditures have a positive sign, as expected, the results being validated in all the built specifications; more than that, an increase of 1% of the share of this type of expenses, determines the increase of the results of the innovation process by 0.39-0.51%.

The variables included in the labor force dimension, such as the share of the population engaged in research and development (general and separately in the private environment), the share of the population employed in the knowledge intensive sectors, or the share of the population employed in the ICT sector (Information and Communication Technology) have a sign positive, as expected, which means that an increase in these variables favors the innovation process. Except for the share of the population employed in the R&D sector in the public environment, all other results are statistically validated.

The independent variables that belong to the size of the commercial opening were also considered in the models. Thus, the coefficients of the variables that concern the import of goods and services have a negative sign, and those that concern the export of goods and services have a positive sign. The results are statistically validated.

Last but not least, the credits granted to the private environment, included in the analysis, exert a positive influence on the innovation, but the results are not validated.

If we analyze the coefficient of determination (R-squared), it is observed that between 21-41% of the variation of the dependent variable, it can be explained by the variation of the regressors considered in the econometric models.

The next table illustrates the econometric models built for estimating the effects of income inequalities on the results of the innovation process, using as an independent variable for quantifying inequalities, the ratio between the share of incomes held by the richest 10% in the total population income and the share of incomes held by the middle class in total population income (D9/D5).

Thus, in all the econometric models built, the obtained results reflect the existence of a negative relationship, in the opposite direction, between the income inequality and the innovation results. This time, however, the results obtained are statistically validated only in six of the nine models built (the value recorded by p-value is less than 0.05 and even less than 0.01 in model number 6). The coefficients of the variable of interest by which we quantified the income inequality registered the highest values so far, compared to the other reports used (D9/D1 and D5/D1) in the previous specifications. An increase of 1% of the income inequality determines the decrease of the results of the innovation process (of the number of patent applications per million inhabitants) by 0.39-0.65%.

In addition to the previous indicators considered in the analysis, in the last model of this table, another indicator regarding the income tax was included. The coefficient of this indicator is statistically negative and significant (the registered value of p-value is less than 0.01); thus, a 1% increase in the corporate tax results in a 0.39% decrease in the results of the innovation process.

The sign of the coefficients of the other variables included in the models (reflecting the demographic dimension, of the labor force and of the international trade) maintain their effects on the innovation, results and in the previous tables (they have the same sign, the results being validated from a statistical point of view).

Another variable regarding income inequality, often found in the theoretical and empirical literature, namely Gini index, thus highlighting the effect of available income on innovation outcomes. We used also this index in the study. Regarding the coefficient of determination (R-squared), it was observed that between 32-39% of the variation of the dependent variable (average values compared to the values from the other tables), it can be explained by the variation of the regressors considered in the econometric models. Thus, the highest values of the coefficients of the independent variable regarding the measurement of income inequalities are observed. The sign of these coefficients is kept constant (negative as in all other tables in which various measures of income inequality have been used). The results regarding the effect of the available income on the innovation (Gini index) are statistically validated in all the built specifications. The 1% increase of the income inequality determines the decrease of the innovation results with a value between 0.61 and 0.76%. Therefore, according to the value of R-squared, through the regressors considered in the models, between 51-55% of the variation of the dependent variable can be explained on the basis of them.

Table 6. *Correlation between income inequalities and innovation outcome (D9/D5), European countries*

log_pat_pop	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
log_gdp_pc	1.232***	1.108***	1.070***	1.378***	1.490***	1.105***	1.150***	1.136***	1.212***
	(8.82)	(7.63)	(6.46)	(5.09)	(7.09)	(6.59)	(7.04)	(5.91)	(6.72)
log_pop_dens	-3.255***	-2.869***	-3.048***	-2.132*					
	(-7.78)	(-7.01)	(-6.54)	(-2.18)					
log_empl_rd	0.281*								
	(2.48)								
log_d9_d5	-0.459*	-0.490*	-0.469	-0.388	-0.457	-0.650**	-0.561*	-0.501*	-0.580*
	(-2.05)	(-2.22)	(-1.94)	(-1.19)	(-1.66)	(-2.90)	(-2.54)	(-2.05)	(-2.44)
log_empl_rd_bus		0.247***	0.143*	0.253*	0.364***	0.344***	0.356***	0.338***	0.312***
		(3.76)	(1.99)	(2.01)	(3.62)	(4.69)	(4.94)	(4.09)	(3.89)
log_empl_rd_pub		0.0604	0.0661	0.351*	0.0164	0.0516	0.0358	0.0440	0.0522
		(0.98)	(0.98)	(2.23)	(0.15)	(0.81)	(0.56)	(0.59)	(0.72)
log_nonf_ed_1529			0.148**	0.243**					
			(2.97)	(3.09)					
log_finaid_ed				-0.295***					
				(-5.24)					
log_urb_pop					-4.248***	-3.915***	-3.277***	-4.570***	-3.945***
					(-3.37)	(-4.27)	(-3.43)	(-4.13)	(-4.00)
log_gov_exp_ed					-0.694**				
					(-2.60)				
log_x_good_ser						0.630**		0.673**	0.569**
						(3.30)		(3.09)	(2.85)
log_m_good_ser						-1.122***		-1.155***	-1.077***
						(-4.43)		(-4.20)	(-4.06)
log_x_good							0.237		
							(1.71)		
log_m_good							0.0491		
							(0.25)		
log_x_ser							0.372*		
							(2.21)		
log_m_ser							-0.920***		
							(-5.24)		
log_tax_rev								0.758***	
								(5.15)	
log_credit_bus								0.147	
								(1.69)	
log_tax_inc_pr_capg									-0.387**
									(-2.82)
_cons	6.548**	6.392**	7.155**	0.600	9.318	12.16**	7.194	11.53*	12.42**
	(2.98)	(3.15)	(2.83)	(0.12)	(1.71)	(3.09)	(1.66)	(2.45)	(2.93)
R^2	0.321	0.336	0.347	0.386	0.320	0.315	0.349	0.314	0.327
N	395.000	395.000	368.000	190.000	288.000	395.000	395.000	349.000	369.000

t statistics in parentheses
* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Source: own computation using STATA.

Another indicator regarding the measurement of income inequalities, also often encountered in the empirical specialty literature, namely the gap between the extremes of the income distribution, calculated as a ratio between the income share held by the upper quintile and the first quintile from the bottom of the income distribution (S8020). Thus, this ratio reflects the gap between the income received by the richest 20% of the total population (top quintile) and the income received by the poorest 20% of the total population (lower quintile). The sign of the coefficients of the variable for measuring the income inequality is kept constant (negative as in all the other tables in which various measures of the income inequality were used). The results regarding the effect of the available income on the innovation (S80/S20) are statistically validated in all the built specifications. The 1% increase of the income inequality determines the decrease of the innovation results with a value between 0.47 and 0.69%. Therefore, according to the value of R-squared, through the regressors considered in the models, between 51-56% (values similar to those obtained when the Gini index was used in the regressions) of the variation of the dependent variable can be explained on the basis of them.

5. Conclusion

The results of the estimations obtained in this paper validate the main hypothesis regarding the impact of income inequalities on innovation, showing a negative relation in all the econometric models built, regardless of the measure used for inequality (whether they are

classical measures such as the Gini coefficient or the interdiction reports). Moreover, the results regarding the relationship between these variables are statistically validated. Our findings suggest a strong relationship between income inequalities and innovation intensity, whatever the inequality dimensions, and in particular when we considered the proportion of the total equivalised income received by the population with top decile income (the top highest decile) reported to the median one (D9/D5).

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Romanian insurance market in a difficult situation in case of a severe earthquake

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Abstract. *Romania has a high vulnerability risk and is one of the most exposed countries in terms of earthquakes at global level, Bucharest being one of the most vulnerable cities in the world.*
The current Romanian portfolio of household insurances estimates 1.7 mil. PAD policies, taking into consideration of a 15% potential affected houses might result in a 255.000 potential claims to be assessed. If only relying on the existing resources, claims technicians from the insurance companies and PAID, handling this important number of claims might raise a significant burden for both the insurance companies and the clients.
The actual flow of claims assessing and handling is based on the internal resources of each insurance company, that in case of a major event will not be sufficient and might fail in serve the client's needs.
Changes in legislative framework are leading to new risks which impact directly the claims management.

Keywords: insurance, risk, earthquake, claims management, resources.

JEL Classification: G2.

Earthquake overview

An earthquake results from a sudden displacement of rock along a fault. It accompanies a rapid release of energy in the form of seismic waves, which propagate outward from a focus.

The process begins when rocks that experience stress along faults begin to deform as the strain builds within them. When the stress exceeds the strength of the rock and overcomes the friction that resists the relative movement of opposite sides of the fault, the fault ruptures and releases energy. Some of the energy released dissipates as friction along the fault; the rest is transferred as seismic waves that radiate from the initial point of rupture and cause ground motion at the earth's surface.

Faults are rarely found in isolation; instead, they tend to form zones of related fault traces. Long faults may be segmented, with each segment having an individual rupture history and mechanism. Ruptures during a weak to moderate earthquake are believed to be contained within one segment of a fault, but more powerful earthquakes may manifest themselves along multiple segments. Fault zones vary in depth, width, and orientation. A fault plane can be vertical or sloping in relation to the earth's surface. In sloping faults, the rock volume above the fault plane is known as the hanging wall, and the rock volume below the fault plane is the footwall. One type of earthquake faulting mechanism is dips lip, which can be subclassified as either normal or reverse faulting. Normal faulting occurs when the hanging wall slips down relative to the footwall, resulting in an extension of crustal matter. Reverse faulting occurs when the hanging wall lifts relative to the footwall, which causes a shortening of the crustal material. Strike-slip faults have a nearly vertical surface; their movement is horizontal, parallel to the strike of the fault surface. Oblique-slip faulting is a combination of strike-slip and normal or reverse faulting. While faults may form a visible trace on the earth's surface, some remain buried within the earth. These blind faults represent a significant seismic hazard, as they are often difficult to detect prior to rupture. Hazard assessment of blind faults is challenging and often plagued with uncertainty. Generally, active faults are those which have demonstrated activity during the last 10,000 years, or during the Holocene period. Potentially active faults are those that have demonstrated activity during the last 1.65 million years, or during the Quaternary period.

Plate tectonics

The theory of plate tectonics was developed to explain the evidence for large-scale motion of the earth's continents. There are large plates moving in relation one to another. The largest plates are the Pacific, North American, South American, Eurasian, African, and Australian plates. These lithospheric plates move over the asthenosphere, a hot, viscous layer of weak rock that is continuously moving and transferring heat from the interior to the surface of the earth. The boundaries between plates are where most earthquake and volcanic activity occurs. There are several types of boundaries between neighboring plates. Convergent boundaries occur where two plates move towards one another; if one of these plates sinks, or subducts, beneath the edge of the other plate, a subduction zone is formed.

Figure 1. *Seismic activity may be particularly rampant in subduction, as according to air-worldwide.com*
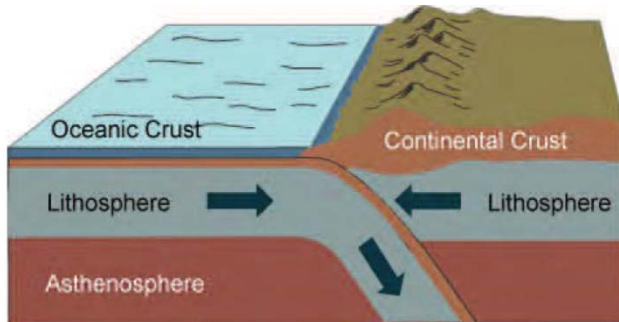
Continental-collision boundaries occur where two low-density plate edges move towards one another; this process may result in crustal rock being thrust upward, which is how linear mountain systems are formed. Divergent boundaries occur where plates move away from one another, which allows for the formation of new crustal material.

Transform boundaries occur where one plate moves past another. Due to massive amounts of friction, however, the plates do not simply glide past each other. Rather, stress builds up in the rocks along the fault until the strain is too great. At that point, the potential energy is released in the form of an earthquake.

While the majority of earthquakes do occur at plate boundaries, intraplate earthquakes can occur along fault zones in the interior of a plate. A large intraplate earthquake usually has a long recurrence time, which makes it difficult to estimate the associated risk.

Seismic waves

Seismic waves transmit tectonic energy through the earth at speeds of up to several miles per second. Seismic waves produce ground motion on the earth's surface that may damage buildings, trees, cars, roads, and other structures. Soil properties, local geological features, and other factors play a role in attenuating or amplifying seismic waves at a given location.

There are several types of seismic waves. Body waves travel through the earth, while surface waves travel along its surface. The two types of body waves that are generated by an earthquake are primary and secondary waves, also known as P and S waves, respectively. P waves are faster and capable of traveling through both solids and liquids. These waves exhibit an alternating compression-dilatation motion in the direction of wave propagation. S waves are slower and travel only through solid material. These waves produce a sideways-shearing motion perpendicular to the direction of wave propagation.

Surface waves, which are responsible for the majority of earthquake damage, include Love waves and Rayleigh waves. Love waves move horizontally, perpendicular to the direction of wave propagation. Rayleigh waves are slow waves that move in an elliptical, or rolling, motion. Note that seismic-wave amplitude, which is the height of an individual wave cycle, or the maximum displacement, decreases with increasing depth in the earth for these

surface waves. The amplitude of a seismic wave is one measure of its destructive potential. In addition to amplitude, there are several ways to mathematically describe wave activity. The wave frequency is the number of wave cycles per second that pass a reference point. A wave's period is the elapsed time, in seconds, between peaks, or the time it takes one complete cycle of the wave to pass a reference point. The wavelength is the distance between repeating units of a propagating wave of a given frequency, at some instant in time.

Measuring earthquake magnitude and intensity

The severity of an earthquake can be measured by the damage it inflicts on structures at the earth's surface or by the energy released at its focus, which is where the rupture originates. Earthquake magnitude characterizes the total energy released by an earthquake, while earthquake intensity refers to the resulting level of ground shaking at a particular location and the observed effects of an earthquake on people, buildings, and other features. While the magnitude of an earthquake is a characteristic of the earthquake as a whole, intensity varies from place to place within a disturbed region.

An earthquake's intensity at different locations can be described semi quantitatively using the Modified Mercalli Intensity (MMI) scale 16, which was developed in its original form in 1902 and is based on observations of shaking severity and its effects at different locations. The MMI at a particular location is based on human judgment and the observed post event damage. Today, ground-motion intensity can be directly measured using strong-motion seismographs. The characteristics of ground motion intensity can be quantified by physical parameters such as peak ground acceleration (PGA) and spectral acceleration (Sa). Shaking intensity at a particular location depends not only on earthquake magnitude, but on the local surface geology and the proximity of the location to the earthquake source.

Magnitude is a measure of an earthquake's size. There are several types of earthquake magnitude, including moment magnitude (MW), Richter magnitude (ML), body-wave magnitude (Mb), and surface-wave magnitude (Ms). Magnitude scales are generally logarithmic in nature; that is, an increase of one point on a magnitude scale represents approximately a ten-fold increase in wave amplitude and a thirtyfold increase in the amount of energy released during the earthquake. AIR models utilize the moment magnitude scale, which is based on seismic moment. The seismic moment is defined as:

$MO = \mu AD$,

where:
μ – the shear modulus of elasticity;
A – the rupture area;
D – the average slip over the rupture area.

The moment magnitude is related to the seismic moment according to:

$MW = (2/3) \log M0 - 6.0$

where M0 is in Nm.

The moment magnitude is considered superior to other magnitude scales because it is based on earthquake source parameters, rather than on a particular type of seismic wave, like the surface-wave or body-wave magnitude scales, or a particular type of instrument, such as the Richter magnitude scale. The type and amplitude of the seismic waves that reach an instrument and are recorded depends on earthquake magnitude, the radiation pattern of seismic waves due to different rupture mechanisms, and the complex structures along the propagation path of the seismic waves that are between the source and seismic stations. Different earthquakes can generate different types of seismic waves. Small earthquakes generate seismic waves with short periods while larger earthquakes can generate seismic waves with long to very long periods.

Most seismic waves will saturate beyond a certain magnitude; that is, wave amplitude will not increase beyond that magnitude. Therefore, magnitude scales based on the amplitude of a particular type of seismic wave will also experience saturation. Moment magnitude does not have such a limitation.

Paleoseismic and geodetic data

The modeling of earthquakes requires historical data. For large earthquakes, the catalog is complete further back in time because such events are more likely to have been observed and documented than smaller events. However, improvements in instrument sensitivity and coverage have led to increased recordings of smaller events. The completeness of a historical catalog is therefore a function of time and magnitude.

Paleoseismology and geodetic data are often used to augment instrumentally recorded earthquake catalogs in order to estimate current seismic hazard. Paleoseismology is the study of the location, timing, and size of prehistoric earthquakes. Prehistoric earthquakes are evidenced by offsets in geologic formations found in exhumed fault zones, signs of rapid uplift or subsidence near coastal areas, laterally offset stream valleys, and liquefaction artifacts, such as sand boils.

The geodetic measurement of fault slip rate is another source of information that is used to supplement historical data. The Global Positioning System (GPS) is now the most widely used technology to measure fault slip rates of crustal deformations in a region. The observed crustal deformation represents elastic strain accumulation in the crust. By calculating the rate at which elastic strain accumulates along a fault or seismic zone, estimates can be made as to how often large earthquakes may occur. Paleoseismic and geodetic data assist in the frequency estimation of large-magnitude earthquakes; for smaller events, the historical earthquake data tends to be more complete. For earthquakes above a certain region-dependent magnitude, geodetic and paleoseismic data become more reliable compared to historical earthquake data.

Figure 2. Completeness of auxiliary and historical record data, based on earthquake source dimension
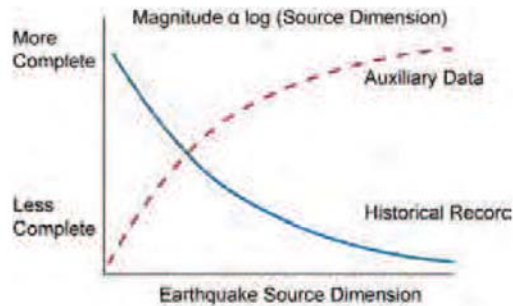
Source: air-worlwide.com

The Gutenberg-Richter relationship

The Gutenberg-Richter relationship expresses the association between magnitude and the earthquake occurrence rate on a fault or in a given area, at or above each magnitude. The relationship can be used to provide a more complete picture of seismicity in regions where historical data is lacking, as it holds over a wide variety of magnitudes and locations.

The Gutenberg-Richter relationship is parameterized by the a-value, which is the logarithm of the earthquake occurrence rate above some reference magnitude, and the b-value, which is the rate at which the logarithm of the cumulative annual frequency decreases as the magnitude increases. Scientists usually truncate this relationship at a limiting magnitude above which the probability of an earthquake's occurrence is zero.

Figure 3. *Sample Gutenberg Richter distribution*
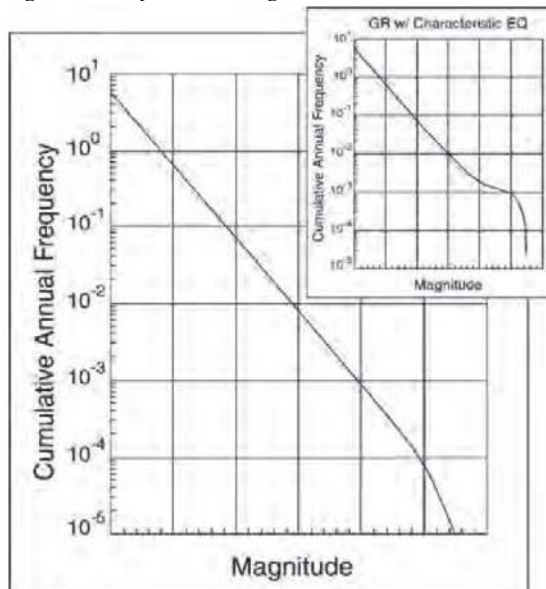
Source: air-worldwide.com

Note that the a-value is the logarithm of the y-intercept, and the b-value represents the slope of the line. The presence of large-magnitude characteristic earthquakes causes the shape of the frequency-magnitude distribution to be a nonlinear curve. Historical seismicity data, paleoseismic data, and geodetic slip-rate data are used to estimate the upper-bound magnitude of the Gutenberg-Richter distribution.

The characteristic-earthquake theory states that active faults tend to generate earthquakes of about the same magnitude at regular time intervals. This concept is used to simulate seismic activity along active faults. In order to model seismicity using the characteristic earthquake method, the earthquake magnitude and return period must be specified. Magnitude can be estimated from historical data, paleoseismological data, and fault length. The return period is estimated from paleoseismological data, fault slip rates, or seismic-moment rates as estimated from fault slip rates.

Earthquake risk in Europe

The hazard

Europe has a long history of damaging earthquakes. Seismic activity in the European region is influenced by the movement of the Eurasian, African, and Arabian plates (Figure 4). The African plate is moving north towards the Eurasian plate at a rate of four to seven mm per year. However, the movement north of the African plate is complicated by the additional and simultaneous movement against the Eurasian plate by three other smaller plates, the Arabian plate and the Anatolian and Aegean microplates. The Arabian plate is moving to the north towards the Eurasian plate and away from the African plate along the Dead Sea transform fault. The movement of the Arabian and African plates is a major source of seismic activity extending from the Azores Islands in the Atlantic Ocean to the Hindu Kush Mountains of Afghanistan.

Figure 4. *Tectonic setting of the European Region*

Source: air-worldwide.com

While earthquakes are widespread throughout Europe, the most destructive events have historically occurred in the Mediterranean countries, particularly Greece, Italy, Portugal, and Turkey.

Romania also experiences frequent earthquakes, articulately in the Vrancea region. While the hazard is highly variable elsewhere in Europe, weak, intra-plate earthquakes may be felt throughout the region. Uncertainty regarding the recurrence of these events, and the potential level of insured losses associated with them, contribute to concern over the earthquake risk in Europe.

Several major earthquakes have taken place in the European region, including the 1356 Basel, Switzerland, earthquake, the 1590 Neulengbach, Austria earthquake, the 1755 Lisbon, Portugal earthquake, the 1939 Erzincan, Turkey earthquake, the 1976 Friuli, Italy earthquake, the 1977 Vrancea, Romania earthquake, the 1992 Roermond, Netherlands earthquake, the 1999 Izmit, Turkey earthquake, the 1999 Düzce, Turkey earthquake, and the 2009 L'Aquila, Italy earthquake. Figure 5 illustrates the historical earthquakes that have taken place in the modeled region since the year 1045.

Figure 5. *Historical earthquakes in the European Region (events > M5) by depth*
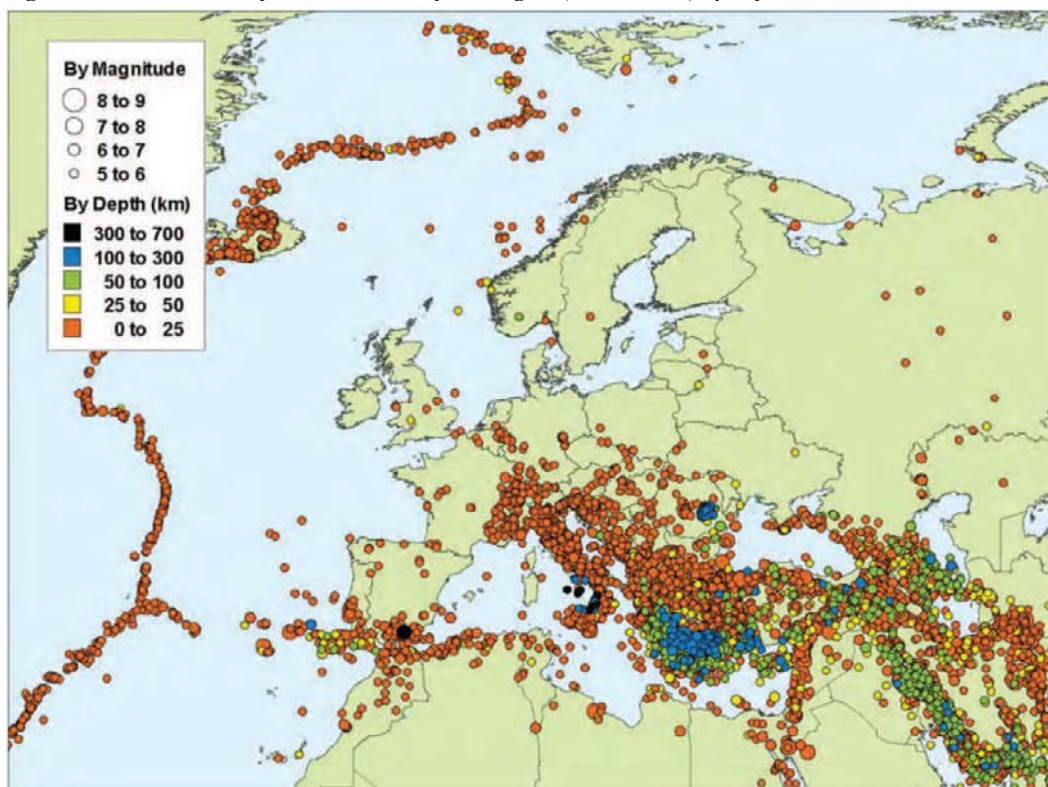
Source: air-worldwide.com

Romania is a very seismically active country, with many earthquakes recorded here annually. The majority of these earthquakes are of magnitude 3.0 and weaker, but more

powerful events have taken place here, particularly in Vrancea County. Significant events that have taken place in Romania include a magnitude 7.9 event in 1802, a magnitude 7.7 event in 1940, a magnitude 7.4 event in 1977, and a magnitude 6.9 event in 1990.

According to historical data, over 17 earthquakes of magnitude 7.0 have occurred in Romania during the last 1,000 years. Most events around Vrancea are subcrustal earthquakes that occur in a subduction zone near the southeast Carpathian Mountains. These events are typically intermediate in depth and occur in a narrow region. Areas northeast and southwest of Vrancea are the most likely to experience damage during an earthquake.

Risk and vulnerability of Romania in case of earthquakes

Romania's vulnerability on earthquakes is mainly due to the main exposed city which is Bucharest.

The situation is critical due to the set of aggravating factors as:
▪ high concentration of old and very old buildings;
▪ very crowded town;
▪ lack of high developed public transport;
▪ lack of a clear plan in case of disasters from authorities;
▪ low education of the population in regards of seismic risk;
▪ lack of financial knowledge and insurance coverage operating.

Figure 6. Risk and vulnerability of Romania in case of earthquakes
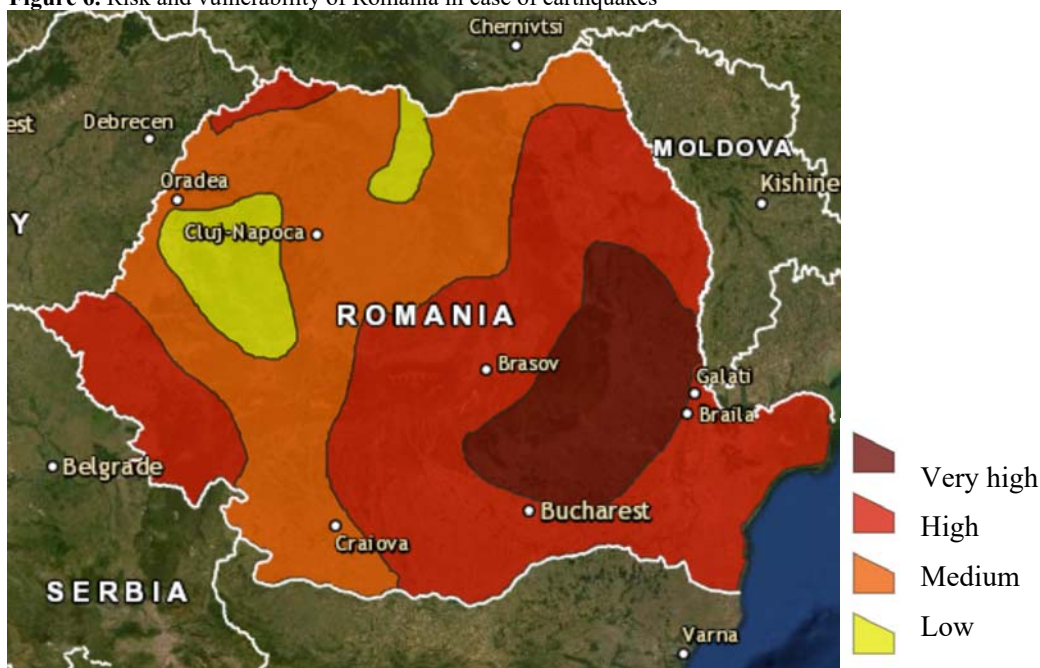
Source: infp.ro

We will not address the risk of vulnerability in case of a major earthquake but we will raise the fact that the Romanian insurance market is not fully ready to react in case of a destructive event similar with the one in 1977.

The existing "construction" of insurance coverage across Romania is as follow:
▪ facultative household insurance held by each insurer with a deductible of pad coverage;
▪ mandatory household insurance via PAID.

Straddling the Romania, Bucharest is Romanian powerhouse. The metropolis generates as specialists estimates, more than 40% of the country's GDP. However, the 2 million people living and working in this city live under constant threat of severe earthquakes. They need no reminding of the risk lurking just several kilometers east, in Vrancea area.

Vrancea area is well known as most "responsible" area for destructive earthquakes in entire Romanian history. This weakness in the earth's crust was responsible for the devastating earthquakes back in 1977. Since then, both the government and the private sector have taken substantial measures to strengthen urban resilience and to increase insurance penetration. That led to the establishment of the Romanian Catastrophe Insurance Pool for homeowners, PAID, which was effectively running starting with 2010.

1. PAID

The Insurance Pool against Natural Disasters (PAID) is an insurance-reinsurance company, with private capital, formed by the association of insurance companies for the conclusion of compulsory home insurance, in accordance with the provisions of Law no. 260/2008.

PAID was established as an insurance company in November 2009, through the joint effort of 12 insurance companies (ABC Insurance, Astra Insurance, Carpatica Asig, Certasig, City Insurance, Credit Europe Insurance, Euroins Romania, Generali, Grawe Romania, Groupama Romania, Platinum Insurance – currently Gothaer and Uniqa Insurance), PAID shareholders.

According to the law, PAID administers the compulsory home insurance system, which covers three basic risks specific to Romania:
▪ earthquake;
▪ floods;
▪ landslides.

The activity of PAID insurance company in Romania PAID started in February 2010, and the first day of issuing compulsory home insurance was on July 15, 2010.

Looking back into history the below table gives a perspective of the risk exposure which exist in Romania in regards to earthquake severity.

Starting from the strongest back in 1802. Vrancea area is the most shaking place in Romania with very severe effects in the capital, Bucharest.

Table 1. *List with earthquakes in Romanian history based on magnitude and depths*

Seismic Zone	Magnitude-moment (Mw)	Depths (Km)	Date of the earthquake	Total no.earthquake (with Mw ≥2.8) in the BIGSEES catalog, in the respective area
Vrancea intermediary	7.9	150	October 26, 1802	3489
	7.5	20	November 10, 1444	
Shabla	7.2	14	March 31, 1901	22
Gorna	7.1	14	June 14,1913	21
Fagaras-Campulung	6.5	10	April 10, 1571	
	6.4	21	January 26,1916	133
	6.4	0.5	February 4, 1739	
Serbia	6.4	0.5	April 8, 1893	220
Crisana-Maramures	6.2	35	July 1, 1829	72
	6	40	August 4, 1444	
Banat	5.6	11	July 12, 1991	93
Dulovo	6	0.2	October 14, 1892	39
Vrancea Crustal	5.9	10	March 1, 1894	246
	5.8	10	October 10, 1879	
Danubius(Danubiana)	5.8	10	October 11, 1879	65
	5.6	30	November 8, 1620	
Transilvania	5.5	10	November 19, 1523	7
Depresiunea Barladului	5.5	10	January 31,1900	52
Shumen	5.4	15	March 7, 1875	11
Dobrogea de Nord	5.1	15	November 31, 1981	191

Bucharest

Given the exposure to catastrophe risks and the increasing asset concentrations in emerging economic centers such as Bucharest, the recommendations made by the several specialists cover a broader redistribution of risk and a wider disaster financing mix, including government use of parametric insurance products. By directly insuring itself against seismic risks, the recommendation says, the government can "reduce its dependency on budget re-allocations and foreign debt financing.

Looking to the public figures published by the ASF (Financial Supervision Authority) the insurance market is struggling to survive, while combined ratio is way above 100% in majority of the line of business, especially to the ones which are the "leaders" as motor insurance MTPL and CASCO.

While in those two most important lines in terms of GWP the market is barely respecting the terms for solving the claims, in the area of property, especially household insurance the resources are more limited and hard to use them in case of a severe event with multiple losses.

There is no telling when the next earthquake will strike. The government and businesses are acutely aware of the threat, and have already done a lot to strengthen the city's resilience to destructive seismic activity.

The municipality concern is obvious as inventorying continuous the buildings with high seismic risk and make the list public on their website.

Nevertheless, for the owners this is raising a big question mark separated in two main areas:
- How they will insure their properties while majority of risk carriers (insurers) are avoiding to take under facultative policies those kind of risks.
- Market value of the apartment is dropping significantly, even for the most well positioned locations mainly from the same reason.

Looking more carefully we can conclude that basically the owners are trapped in not having a possibility to insure neither to sell their properties and as well for significantly repairs on the structure of the building while the cost is sometimes even higher than reconstruction of a new building.

Figure 7. *List of buildings that need significantly repairs (Extras from Bucharest city hall website –* *(www.pmb.ro)*

Nr crt	Adresa	Nr	Sector	An construire	Regim inaltime	Nr etaje	Nr. apart.	Obs 1	Obs.
1	Strada ACADEMIEI	15	1	1890	S+P+3E	3	10		
2	Strada ACADEMIEI	19÷21	1	1935	S+P+Mz+5E	6	0	Hotel Muntenia	Încadrare în clasă de risc seismic în a
3	Strada ALEXANDRU BELDIMAN	1	5	1940	S+P+9E	9	82		
4	Piata ALEXANDRU LAHOVARI	5A	1	1935	P+7E	7	18		
5	Strada ALEXANDRU XENOPOL	3	1	1940	S+P+8E	8	37		
6	Strada ANASTASIE SIMU	6	1	1935	S+P+7E	7	32		
7	Strada ARCULUI	4	2	1932	S+P+7E	7	26		
8	Strada ARMENEASCĂ	17A	2	1932	S+P+3E+Ma	3	11		
9	Strada ARMENEASCĂ	28	2	1935	P+5E+Ma	5	20		
10	Strada AUREL VLAICU	55	2	1940	S+P+4E	4	11		
11	Strada BAIA DE FIER	6	3	1930	S+P+2E+Pod		11		
12	Strada BATIŞTE	5	2	1933	2S+P+10E	2	26		
13	Strada BĂNIEI	1	3	1935	S+P+5E+Ma	6	10		Încadrare în clasă de risc seismic în a 2014
14	Strada BĂRĂTIEI	29	3	1910	S+P+2E+Ma	3	3		
15	Strada BĂRĂTIEI	37	3	1900	S+P+1E+Ma	2	5		
16	Strada BĂRĂTIEI	39	3	1870	S+P+1E	1	2		
17	Strada BĂRĂTIEI	41	3	1885	S+P+1E	2	3		
18	Strada BĂRĂTIEI	42B	3	1920	S+P+2E+Pod		1		
19	Strada BISERICA AMZEI	8	1	1935	P+4E+Ma		20		
20	Strada BISERICA ENEI	14	1	1936	S+P+5E		26		
21	Strada BLĂNARI	2	3	1865	S+P+2E+Ma		0		
22	Strada BLĂNARI	3	3	1883	S+P+Mz+2E+Ma		28		
23	Strada BLĂNARI	8	3	1884	S+P+2E+Ma		0		
24	Strada BLĂNARI	9	3	1880	S+P+2E+Pod		3		
25	Strada BLĂNARI	10	3	1875	S+P+2E		1		
26	Strada BLĂNARI	11	3	1947	S+P+8E		14		
27	Strada BLĂNARI	14	3	1935	P+5E		40	club a	
28	Strada BOCŞA	3	2	1932	P+5E		25		

Table 2. *The buildings with imminent risk of colapsing in Bucharest in case of major earthquake*

Years interval	Number of apartments	Estimated surface in sqm
1850-1920	516	12.593
1921-1963	4615	240.000

Source: Author's own research based on data from www.pmb.ro

Conclusions

The material is supposed to show one of the most important issue, respectively how the resources will be allocated to inspect the claims, as well to handle and pay.

It is more than clear that the above table will show in case of a severe earthquake a total loss to majority of presented apartments with significant number of deaths and injuries.

Moment in day	Time	Peoples in apt	# apt	# people	Sqm
noon	12	0.5	5131	2566	252593
evening	20	1.4	5131	7183	252593
night	24	1.8	5131	9236	252593
morning	8	0.25	5131	1283	252593

Based on an author's own estimation, the highest number of potential losses in terms of injuries and deaths might be if the earthquake will strike in the midnight, respectively 9236 estimated injuries and deaths.

In terms of the material losses and using the hypothesis that all apartments will be totally damaged or significant damage which will require reconstruction the total value of the loss can be estimated based on the following formula:

Sqm × Psqm,

where:
Psqm – price of reconstruction/sqm;
Sqm – total surface affected.

Based on the market estimated reconstruction price of 800 euro/sqm it result a loss of 202.074.400 euro. If those apartments would have only PAD policies it result that the claim value will be 102.620.000 euro.

Based on this simple calculation it result that the coverage that the policyholders might receive it will cover only 50% of the loss. The main issue as well anomaly in terms of the legislation is that the buildings with category of risk 1 are not insurable. This mean that the total estimated loss cannot be covered and this will bring an important pressure on the state budget in the end.

If we suppose that in the case of a severe earthquake the biggest effort from the insurance perspective will be to identify and to inspect the claims, it is obvious that existing resources to assess the claims are far not sufficient.

Starting with the hypothesis that an experienced non motor claim inspector, in normal conditions cannot inspect more than 5 property claims/day, and supposing that all apartments mentioned above are insured there resources needed are far away to be sufficient. The estimated time to inspect all those claims will be approx. 51 days taking into consideration 100 FTE in normal conditions and dedicated only to those 5131 apartments.

Starting from this calculation we can extrapolate to the rest of population of policies to estimate the real number of needed resources in case of a severe earthquake in Romania.

The hypothesis need to take into consideration that number of claims will be actually more, diverse and not only in property, household insurance but as well in other line of business like, motor, general liability, commercial property, health, life and so on.

With this important subject into our attention, the market is urgently in need to find a simple and fast solution to inspect and handle claims properly and in due time.

An automated management system is more than needed and required in actual conditions, and a straight process into an application is more than welcome.

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The green dilemma: climate risk, credit institutions and central banks

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Abstract. *This paper proposes a review of the literature regarding the implications of climate risk for the banking sector, together with a discussion on the policy implications for central banks. The fact that the financial sector will be affected by climate risk, while it should play a role to mitigate it is already acknowledged. However, there is still no clear-cut view on how to assess the transmission channels from climate risk to the financial system and to the real economy. The challenges faced are related to the climate scenario design and translation into macroeconomic and financial factors, the low quality of information on climate risk related indicators and the uncertainties related to climate change scenarios, as well as the time horizon for the impact assessment. While most of the empirical studies focus on the transition risk and its impact on bank exposures, the physical risk is mainly evaluated in respect to the insurance sector.*

Keywords: climate risk, stress testing, macroprudential measures.

JEL Classification: E32, G21, G28.

1. Introduction

Nowadays, there is an increased awareness of the challenges posed by climate change to the financial system and the real economy. This has led, on one hand, to a growing number of initiatives that propose a framework for financial system involvement in environmentally and socially sustainable projects, known as sustainable finance[1]. Sustainable finance aims to support investment projects with a positive impact on the environment and social and governance factors.

On the other hand, research on the impact of climate change on the financial system and real economy is expanding quite rapidly. Batten et al. (2016) discuss the effects climate change can have on central banks' financial stability and monetary policies.

Climate risks can materialize in two forms: (i) physical risks, which are caused by the increased frequency and severity of extreme weather events and can have an impact at firm level, as well as on the entire economy, and (ii) transition risks, related to the consequences for some economic agents in face of a transition towards a low-carbon economy. The latter refer to policy measures aiming to mitigate climate risk and to reduce the cost of climate events (Roncoroni et al., 2020). However, the probability of adopting such policies depends on many economic agents: policy makers, firms, society and also on their risk aversion. This highlights the importance of understanding the strategy at the national level, as well as of the preparedness of the society to withstand such measures. In any case, a transition will lead to reassessment of prices for many financial assets from energy or emission intensive sectors and is always considered in terms of costs implied compared to a no transition scenario. However, the transition can be done in either an orderly or disorderly manner.

According to NFGS (2019b), climate change marks a structural change, that: (i) will have an impact on all economic agents, sectors and geographies; (ii) is surrounded by uncertainty regarding the time frame; (iii) has an irreversible impact and (iv) is conditioned on the nature of actions taken on short term. All these aspects can generate difficulties for the analysis of the relationship between climate change and financial sector and real economy.

From a financial stability perspective, climate financial risk is relevant due to the losses that financial intermediaries can bear given the exposures vulnerable to physical or transition risks. Both regulatory authorities and academia are interested in assessing the impact on the financial system stemming from climate risk and have started to conduct preliminary analysis[2]. Recently, ECB has assessed the euro area financial institutions exposures to transition risk and they observe that these remained rather unchanged between 2015-2019, unlike for the investment and pension funds where a reduction took place. However, the importance for the banking sector is relatively reduced compared to other financial intermediaries, but the lack of granular data is still an impediment for a more in-depth analysis. Additionally, at this point, there is no unanimously accepted methodological approach or clear-cut results on the amplitude of the impact. Bolton et al. (2020) make an extensive review of the implications for central banking and financial stability of what is called the "green swan".

This paper makes a review of the existing literature addressing the methodological approaches of the studies assessing the impact of climate financial risks, the data that is normally used and will conclude with a discussion on the policy implications for central banks.

2. Literature review

The literature on climate risk follows several dimensions. The first question is related to the impact of climate risk on the real economy and economic growth. This further led to the analysis of the climate financial risks and its implications for the financial system. All these are also complemented with the question related to the role the financial system should play in this transition to a low carbon economy. There are already a number of studies analysing whether markets penalise more brown companies compared to the green ones and choose to make a switch in their investment strategy. Under this last avenue falls De Haas and Popov (2019), Alessi et al. (2019). De Haas and Popov (2019) carry out an industry level analysis for 48 countries and find that, all things equal, including technological differences, more equity financed economies tend to have less CO2 emissions, given that stock markets direct their investments towards more carbon efficient companies and facilitate the development of cleaner technologies.

The first question however has not received a clear response. NFGS (2019a) made a review of the impact of both physical and transition risks on the macroeconomy and highlighted that the costs will vary from country to country. In case of physical risks, the range of estimates account the losses in terms of GDP impact, and is very large (from -23% GDP loss until 2100 in a 5-6°C scenario (Burke et al., 2015) to -2% GDP loss for the 1.5°C carried by OECD, 2015). In what regards the transition risks, the uncertainties related to the identification of winners and losers, as well on the government spending of the carbon taxes affects also the results. The impact is still much reduced (between 1% and 5% of GDP until 2050).

The implications of the financial climate risks on the financial system are the focus of the current paper. This topic gained importance for policy makers and is currently on the agenda of supervisory authorities in EU. The European Systemic Risk Board recommended since 2016 the need to quantify the channels through which transition risks will affect the macroeconomy and the financial system (ESRB, 2016). It also highlighted the need for gathering granular data on non-financial firms. The Financial Stability Board's Task Force on Climate-related Financial Disclosures[3] has recommended the use of scenario analysis for assessing the implications of climate-related risks.

2.1. Methodology and data

How is it done? In terms of methodology, assessing the impact of climate related financial risks implies several choices. The first step in every paper was to identify which assets are exposed to climate-related risks. Further on, Monnin (2019) presents the three building blocks that each assessment follows: (1) defining the climate scenarios; (2) estimating the economic and financial impact and (3) translating the impact in financial metrics (such as

credit risk). Each of these steps face some challenges that the existing studies treated in several manners so far. In the first place there is little that historical data on economical, physical or financial variables can tell in terms of climate change impact. The developments are unknown and the intensity as well. As a response to this problem different scenarios that estimate the path of GHG emissions or transition policies are used. Second, credit risk analysis is generally focused on short term impact, while climate financial risks go beyond this horizon. Another issue is concerning data availability. While more granularity can allow a distinction between firms in different economic sectors or even individuals, data shortages lead most of the time to transition risk analysis based on sector-level data. In terms of relevant metrics for climate risks, we see a consensus for using carbon footprint at firms or sector level, for transition risk. However, this is a static figure of the current emissions and does not incorporate the physical risk, the capacity of firms to switch to a low-carbon economy nor their intention or preparedness. The last challenge refers to the translation of the economic impact of climate risks in financial metrics.

One of the first methodologies to account for climate-related transition risk for financial institutions was introduced by Battiston et al. (2017). They compute the first and second round effects stemming from financial actors' (banks, investment funds, insurance and pension funds) equity exposures to all climate-relevant sectors. In particular, for the second round effects they use a network method for the interbank exposures. They use sector-level data for identifying the main economic sectors that are relevant for climate policies. They impose the criteria that the sectors must be among top greenhouse gas (GHG) issuers, while also accounting for the fact that some sectors although are not per se big issuers and relevant for climate policies, they are affected indirectly (such as users of fossil fuels or energy). The sectors that they identify are: fossil fuel, utilities, energy-intensive, transport and housing and a mapping to NACE2 with 4 digits is also proposed. Further on, Roncoroni et al. (2020) extend this approach and propose a contagion model that includes distress contagion (shocks coming from the price cuts of assets in a wide range of climate policy scenarios), but also financial contagion (accounting for the interbank contagion between banks and investment funds). The model accounts for a disorderly transition in case of Mexico and analysis the CPRS (Climate Policy Relevant Sectors) defined by Battiston et al. (2017).

Some of the papers move from a general approach to a more specific one, analysing the implications of some economic sectors for climate change and CO2 emissions. Schotten et al. (2016) focuses on the energy sector and its importance for the Netherlands' economy. The CO_2 emissions is considered to be a function of demand for energy, therefore switching to energy generated in a carbon-neutral method is also one of the targets defined in Europa 2020[4]. The authors dig into the complexity of the relationship between energy prices and energy use, given that energy is behind the production of almost all goods and services. Therefore, the transition to a more energy efficient economy will affect both firms and consumers. However, the direct impact from the carbon tax will depend on firms' dependency on energy and the carbon emission of their production process. The degree of pass through, for both consumers and producers, depends also on the opportunities for substitution (for e.g. affordability and availability of renewable energy). Hebbink et al. (2018) also explain the implications of a carbon tax for non-financial companies: increase

in production costs, decrease of competitiveness and reduction of demand. They make the case of different effects depending on the sector and its direct and indirect emissions and use of energy. While they observe a small impact at aggregate level in terms of costs (1% increase), some sectors seem to be more affected: the manufacture of chemicals, base metals, mining and quarrying, and energy sectors, with an impact on their international competitiveness.

In this avenue, Vermeulen et al. (2018) propose a stress testing exercise using four disruptive transition scenarios and apply it in the case of Netherlands. The scenarios proposed are: (i) a technology scenario; (ii) a policy scenario; (iii) the double shock scenario and (iv) a confidence scenario. These are translated into macroeconomic impacts (using the global macroeconomic model, NiGEM[5]) and then distribute them into 56 economic sectors. In order to identify the relevant sectors, the authors assume that an industry's vulnerability to the energy transition is fueled by its reliance on fossil fuels and its CO2 emissions. Therefore, given the heterogeneity among sectors, they calculate a transition risk vulnerability factor (TVF) for each industry in the economy starting from the CO2 emission and the input-output analysis, in order to identify the sectors that are more sensitive to these scenarios. The transition at sector level (TVF) is calculated by taking into account direct CO2 emissions, but also those embedded in the production process (indirect emissions and energy dependency):

$$TVF_{it} = \frac{\frac{\sum_{i=1}^{n}(a_{j,i} * CO_2\ emissions_i)}{CO_2\ emissions_j}}{CO_2\ emissions\ intensity_{national}}$$

where: $a_{j,i}$ – the share of subsectors (i = 1,n) which sector j interacts with.

The TVFs are defined dependent on the scenario analysed, which implies that for the technological scenario, on top of the "creative destruction effect" that occurs under the standard definition and applies to policy scenario as well, there is also the "substitution effect" for the firms that mine and process fossil fuels.

Another study going more targeted into the energy sector is conducted by Monasterolo et al. (2018) and focuses on two Chinese development banks and their overseas portfolios in energy projects. They built on Battiston et al. (2017) and propose a stress testing exercise that consider two shocks: a policy shock that arrives sometime between the origination of the loan and maturity and a balance sheet shock. The first will impact the market share of each individual project, while the latter is an idiosyncratic shock and depends on borrower's capacity to deliver the project under the climate transition. However, some of the projects will benefit from the policy shock, some will encounter losses. Similar to Roncoroni et al., 2020, the *LIMITS scenarios* are considered.

2.2. Defining scenarios

Monnin (2019) suggests that in defining transition risk scenarios there are a few aspects that should be considered: (1) the level of ambition at national level to limit the emissions and global warming (1.5 or 2 degrees increase[6] or other national initiatives); (2) the speed of transition and (3) the typology of changes. Schotten et al. (2016) highlight the need to

consider the relationship between government and other responsible authorities, and the energy policy when defining the appropriate transition scenario. In terms of speed of transition, it is already acknowledged that a disorderly transition to a low-carbon economy might lead to significant losses for the financial system and the real economy (ESRB, 2016; Vermeulen et al., 2018). These aspects reveal that climate related risks are highly endogenous and, also, very different depending on the scenario that is considered. Adopting a policy measure is in this case a complex decision and the risk of inaction bias can appear.

Findings in the literature show that the strength of the impact of transition risks depends also on the time of implementing climate policies and, also that transition scenarios can not be defined without considering physical risks. Figure 1 synthesises the transmission channels of the climate scenarios. When the emissions continue to grow, the costs of the physical risks grow and if measures are not taken (policy measures) or a technological shock does not appear, then the necessary reaction increases in intensity. This is not the case if an orderly transition appears, but the probability of such event is conditioned on all the considerations mentioned above.

Vermeulen et al. (2018) identify four transition scenarios: a technology shock that will lead to an increase in renewable energy, a policy shock in the form of a carbon tax, a confidence shock implying a postponement of investments and consumption in the view of policy or technological changes and a double shock implying the first two scenarios at the same time. However, in the real economy, the transition scenarios will also lead to changes in the financial markets. Roncoroni et al. (2020) account for these aspects and consider not only the climate policy shocks, but also the link with the market conditions defined via the interbank recovery rate, the asset price volatility and market liquidity.

Figure 1. *Physical versus transition risks*
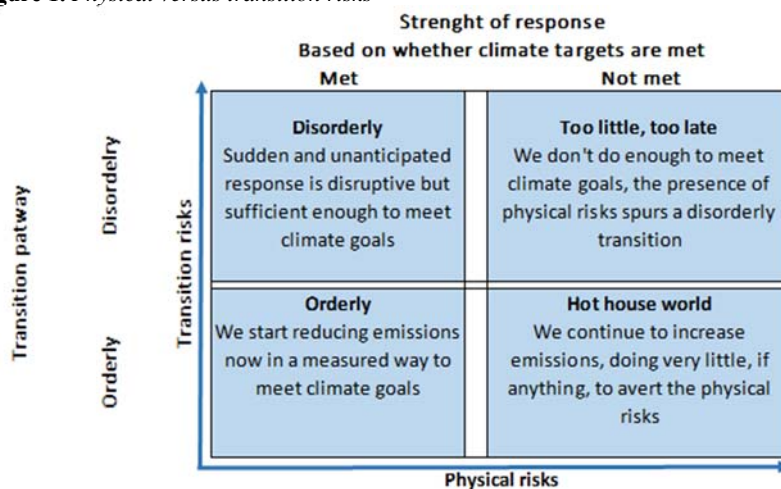
Source: NFGS (2019a).

Introducing a climate policy measure to mitigate the transition risk will be reflected, in the beginning, in companies' production costs, with potential effects on their competitiveness. Additionally, it implies firms' investment costs for adapting to low carbon standards, while

some of their assets can become obsolete (stranded assets or even business plans). The impact of transitions costs on firms' cash flows is thus dependent on how the demand from consumers will change in response to price increases – i.e. the impact on cash flows is a function of the price elasticity that firms face. In practice, the most common used policy action are carbon taxes (direct or indirect), implemented with the aim to penalize the carbon emissions from burning fossil fuels due to their negative externalities on the society as a whole and contributing in this manner to disincentivise consumption and to increase energy efficiency.

Several studies (Roncoroni et al., 2020; Monasterolo et al., 2018) use the sectors market shares trajectories included in LIMITS *(Low climate impact scenarios and the implications of required tight emission control strategies)* database. This provides scenarios for the evolution of the output in different economic sectors under different policy scenarios as computed by the IAMs[7]. The climate shock is in general considered as the deviation of the output under certain scenarios and the BAU *(business as usual).*

2.3. Results

Generally, the results for the financial system are expressed in terms of losses per total assets (for loan exposures) or as the share of losses to total equity. The main takeaway from the recent studies is the fact that climate risk is material and its impact depend both on how the transition will be made, but also on its timing (ESRB, 2016; Vermeulen et al., 2018). Banks do not seem to be the more exposed segment to climate risk; however, the current evaluation framework does not appropriately consider second round effects and still faces some uncertainties. The uncertainties refer not only to the negative aspects, they characterize also the methods for identifying the winners of the climate change. This is particularly due to the lack of data on non-financial disclosure, that should reflect not only the CO2 emissions (more of a backward looking indicator), but also the capacity of firms to adapt to the new alternative sources of energy and to anticipate the policy changes (Banque de France FSR, 2019).

For the stress testing exercise conducted for the banks and investment funds in Mexico (Roncoroni et al., 2020) propose two scenarios (one mild and one adverse) and obtain the following results: for the first scenario, the losses are situated between 1 and 2 percent of total assets, and these grow to 2.5 up 4 percent of total assets under the adverse scenario. When analysing the direct and indirect impact of a climate policy scenario for the first 50 EU listed banks (Battiston et al., 2017) impose an 100% shock in the market capitalization of the firms in climate policy relevant sectors (CPRS), on which bank have equity holdings. This translates in an upper bound limit for the losses, which is acceptable due to the uncertainty related to climate policy scenarios. They find that the contributions coming from second round effects (the network of interbank lending) are important and bring a better understanding on the capacity of this risk to end up in a systemic risk. They also observe that the energy intensive sector has a consistent importance for the banks analysed.

Vermeulen et al. (2018) find that in the case of Dutch banks, the losses range between 1% of total stressed assets (the technology shock scenario) and 3% in the double shock scenario (policy and technology shock). However, these results also incorporate the interest rate

effect, which is substantial given the importance of government bond holdings. Losses on exposures to carbon intensive industries represent between 20 and 50% of total non-interest rate losses (from the confidence shock scenario and double shock scenario respectively). They also provide the impact

on supervisory ratios and observe a decrease in the regulatory capital (CET1) ratio between 1.8 percentage points (technology shock) and 4.3 percentage points for the double shock. The most affected is however the insurers sector, with a decrease of almost 16 percentage points of the solvency ratio under the confidence shock scenario[8].

3. Implications for central banks

The growing discussion on climate change has also brought front and center the question on what role should central banks play when it comes to dealing with this global challenge. Given the already acknowledged effects of climate change on human society, can central banks' responsibilities in this area be limited to monitoring risks and safeguarding financial stability or should they run deeper, by taking into account climate-related risks in their monetary policy framework and market operations decisions?

One consensus that appears to emerge from this debate is related to the financial risks stemming from climate-related risks. According to NFGS (2019a) "It is therefore within the mandates of central banks and supervisors to ensure the financial system is resilient to these risks". Furthermore, a commonly accepted assertion is that central banks by themselves cannot be called to alleviate climate change (Bolton et al., 2020). In this sense, Carney (2015) argues that financial policymakers will not drive the shift towards a low carbon economy and that the policy decisions in this field should stand with the governments. He also stipulates that financial regulators' role should revolve around establishing a framework which ensures an adequate adjustment of the market, through increasing resilience of credit institutions and an efficient financing of the transition to lower emissions. Battiston (2019) states that central banks can contribute by the power

of example and conduct stress testing of their own portfolio (Battiston et al. (2017), Vermeulen et al. (2018), the stress test announced by Bank of England etc.). Another direction in which regulators could walk is raising the awareness on data needs and disclosure of climate related information.

Weidmann (2019) builds on this idea and mentions that central banks can play a role in making the financial system more sustainable, while remaining within their core mandate. In this respect, financial supervisors should quantify the importance of climate risks for the financial system, stemming from both the transition to a low-carbon economy, but also from losses generated by extreme weather events. Moreover, it is also stated that these risks should be part of the supervisory practices of central banks, included when conducting stress-testing exercises. While acknowledging that climate change and climate policy can have monetary policy implications as well, through effects on output, inflation, natural rate of interest and potential growth, he notes that "policy implementation needs to be in line with principle of market neutrality. [...] A monetary policy which pursues explicitly

environmental policy objectives is at risk of being overburdened. And in the long run, the central bank's independence might be called into question."

Batten et al. (2016) discuss the effects climate change can have on central banks' financial stability and monetary policies. They identify two main risks which could impact the stability of the financial system, while also analyzing the transmission channels through which these vulnerabilities can propagate. First, the financial losses generated by physical risks can be quite substantial, occurring either directly as a result of the extreme weather events, but also indirectly through an increase in unemployment, reduction in output as well as decreases in collateral values in the affected areas. This in turn can further adversely translate to the banking sector, via larger losses given default and higher probabilities of default. The second element relates to the transition risks to a low carbon economy, as a sudden tightening in carbon policies can trigger sharp corrections in asset prices, especially in industries that are heavily dependent on fossil fuels, being underlined the need for a predictable and transparent transition policy. In addition, the authors also point out that climate change can have important implications for monetary policy of central banks too, as the two risks mentioned above can influence both potential growth rates, through effects on labor supply, capital accumulation and total factor productivity, but also the volatility of food and energy prices and, therefore, the volatility of inflation.

Likewise, Coeuré (2018) indicate that climate risks' "implications for the conduct of monetary policy could be substantial". They can induce supply-side shocks which might impact medium term inflation expectations, by influencing (i) the central banks' ability to correctly identify the sources of unfavorable economic developments; (ii) the distributions of shocks, as the probability of catastrophic events increases the longer climate risks are not dealt with and (iii) the persistence of shocks. A heightened transition scenario can also lead to positive and persistent supply side shocks which could require action on central banks' part. In the same direction, IMF (2019) points out that climate change will affect monetary policy, through lower productivity and increased uncertainty and volatility of inflation. These potential developments advocate for a revision of the current framework, within the mandate limitations, by incorporating climate risk analytics into the refinancing operations or by using higher haircuts to instruments largely exposed to physical and transition risks.

Moreover, in a recent report, NFGS (2019a) has issued several recommendations for central banks, supervisors, policymakers and financial institutions in order to boost their part in greening the financial system and to improve their climate risk management. The first recommendation requires an integration of climate risks into the financial stability monitoring and micro-supervision. The second stipulates that sustainability factors should be included into own-portfolio management practices, while the third signals the importance of bridging the data gaps, in order to increase disclosure. The fourth recommendation relates to building awareness and intellectual capacity and encouraging technical assistance and knowledge sharing. But is this the only method of intervention or should macroprudential instruments be put to work in order to tackle the climate related risks? D'Orazioa and Popoyan (2019) make the first review of the existing instruments and their potential contribution in this regard.

The discussion about central banks involvement will remain an important issue for the future.

Whether their role may simply resume to framing the debate (Bolton et al., 2020) or it will encompass further actions, central banks will have an active contribution in taking up the threat brought on by climate change.

Notes

[1] In this area we mention the launch of the International Platform on Sustainable Finance in October 2019, as a forum with the ultimate objective to scale up the mobilisation of private capital towards environmentally sustainable investments.
[2] ECB (May 2019), Banque de France FSR (2019), IMF (2019), NBR FSR (December 2019).
[3] The Use of Scenario Analysis in Disclosure of Climate-Related Risks and Opportunities, Technical Supplement, June 2017.
[4] Under the climate change and energy targets defined in Europa 2020 the following goals are assumed: (i) a reduction of greenhouse gas emissions by at least 20% compared to 1990 levels; (ii) an increase to 20% of the share of renewable energy in final energy consumption and (iii) a 20% increase in energy efficiency.
[5] Details on the NiGEM model can be found at https://nimodel.niesr.ac.uk
[6] Corresponding to the objectives of the Paris Agreement.
[7] The sector-level projections were developed by leading academic institutions in the field, and the project was coordinated by the Fondazione Eni Enrico Mattei. More details can be found here: https://tntcat.iiasa.ac.at/LIMITSDB/dsd?Action=htmlpagepage=about.
[8] The solvency ratio is considerably higher compared to the regulated value (174% vs. 100%).

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The interdependence of market returns inside the EU: A study on Romania and Bulgaria

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Abstract. *This paper investigates the question of interdependency of market returns inside the European Union. The existence of a stationary long-run equilibrium between returns inside the EU is being put to the test. A sample of countries from the last three waves of EU accession are being investigated in relationship to more mature EU markets, older EU members, as well as more mature non-EU partners, such as the US. Testing for both long-run and short-run relations allows us to research interdependencies between these markets and build stronger arguments than previously reported inside the EU. The analysis displays a long-run equilibrium between the new and the old EU member states, as well dependencies to the more developed markets of the US. From the research one can conclude that the new members, Romania and Bulgaria, as well as older member states, display in the last 20 years an increasing trend towards European and global integration.*

Keywords: Romania, Bulgaria, market returns, EU.

JEL Classification: F.

Alexandru Vlădoi

Introduction

One of the most important phenomena in the field of Economics, Finance and Management is globalization. Globalization is often explained as the process of increasing international integration, due to the increasing connectivity and interdependence of the world's markets and businesses. Human have, historically, displayed the wish and need to interact over long distances. For hundreds of years the Silk Road was a bridge between Asia, Africa and Europe, connecting these civilizations in a cultural and economical exchange path that benefited both sides of the world. Some scholars state that modern globalization is the direct effect of major technological breakthroughs in telecommunication and transportation. Regardless of when this process has started or how it came about, today's world economies are to some extent connected to each other. Ghemawat (2003) explains that "cross-border integration of markets has increased significantly in the decades since World War II". Following this argument, one can be interested if there exists a higher correlation between economic performances in the last decade. Empirical evidence, as we will read in the chapter to come, suggests that there is at least a geographic risk component attached to markets in today's world. More so, the past few years have shown that there is a risk spill-over effect between markets. A method of addressing this spill-over effect and empirically capturing it, is exploring the stock market return and the interdependency of stock markets. Relevant for both the field of management, by addressing the risk spill-over effect (contagion effect) between countries inside the EU, and for Portfolio Risk Management, by offering inside into the effectiveness of cross boarder diversification, this paper analyzes the interdependency of a number of European stock-markets, particularly in the last twenty years.

The question of market integration is relevant in the context of risk-return and how investments are subjected to the geographic environment. In Investment Theory, Markowitz (1959) explains that in order to minimize Portfolio Risk one has to fully diversify (Levy and Sarnat, 1983).

Optimal portfolio diversification is a core decision inside the field of Investment Management. When deciding about their assets, managers have to consider the degree of diversification that satisfies their expectations. Markowitz (1959) proposed the theory of portfolio diversification. He argues that "effective diversification requires management of the correlation between the asset returns and the liability returns, issues internal to the portfolio (individual holdings volatility), and cross-correlations between the returns" (Markowitz, 1959). Furthermore, the CAPM assumes that the risk-return profile of a portfolio can be optimized. By definition, "an optimal portfolio has the lowest possible level of risk (market risk) given the level of return" (CFA Institute, 2018). A manager of a portfolio can fully diversify against unsystematic risk by buying stocks across different industries. Empirical studies suggest that a Stock Index trades at market risk (or beta). If a manager wants to overcome market risk, therefore further minimizing risk, she has to diversify across different countries (Grubel, 1978). However, if stock markets inside a region are not independent, there is no added value from diversifying.

This paper will use econometric methods to test four separate periods and analyse evidence of cointegration vector in order to determine the existence of a long-run equilibrium. Once

this equilibrium has been determined the focus will shift towards the Eastern European market, and the short-run relationships existing between Romanian, Bulgaria and the rest of the countries under analysis. The last twelve years have been divided into three distinct periods: 2000 as the beginning of the research period, namely before Romania and Bulgaria joined the EU, after the 2007 EU membership, that coincided with the start of the financial crises, and 2013 until today (Dec'19), marking the end of the financial crisis, assuming the return to normal market conditions. Assuming that the findings of this paper show that the analysed markets display cointegration or there exists a co-movement towards a stationary long-run equilibrium, then we can conclude that there also exists a spill-over effect or contagion effect. This effect could be caused by a number of factors such as: volume of trade, flow of capital, or geographic proximity. However, a detailed analysis of volume of trade and flow of capital will not be offered in this paper. We test whether the lead Bulgarian and Romanian stock market indices tend to display stronger linkages between each other, selected other EU markets or with the US market. The exact cause of these relationships is left to future research. The findings can have implications for the effectiveness of policy decisions, particularly "domestic" EU policy, as there are no limitations for European investors to play on any of the EU markets.

Literature

George von Furstenberg and Bang Nam Jeon (1989) researched the deregulation of national markets and the integration of these markets, particularly inside Western Europe. They note that the stock crash of 1987 has contributed to an increase in internationalization of stock-markets. They state that: "the spectacle of nearly simultaneous price collapses around the world in the crash should have led investors to revise their views about how much diversification gain could really be reaped from investing in different national stock markets." These findings suggest that since the crash correlations among national indexes has been higher. In their paper, they observe a significant increasing correlation between opening prices in Tokyo and closing prices in New York. These findings of market correlation could help investors hedge against market interaction. Koch and Koch (1991) provide evidence of "a lag/lead relationship among eight national stock markets". They conclude that "geographic interdependencies have grown over time". Papers have suggested that US stock information can be used to speculate on the future of other markets such as Japan, as shown by Becker, Finnerty, and Gupta (1990); contradicting the market efficiency hypothesis. Gregory Koutmos (1996) shows that there is a strong interaction between the stock markets of the UK, Germany and Italy. By using a multivariate VAR-EGARCH model, he accounts that bad news (compared to good news) in one market has greater impact on other markets, adding his contribution to an adjoin field, namely Prospect Theory. King and Wadhwani (1990), on the other hand, use "a rational expectations model with asymmetric information" to test if "valuation mistakes in one market can be transmitted to other markets", and show that there is supporting evidence for such a case.

Theodore Syriopoulos (2007) focuses on the short- and long-run linkages between "major emerging Central European markets (Poland, Czech Republic, Hungary, Slovakia), and developed markets (Germany, US)". He concludes that the "introduction of the EURO and

the establishment of the EMU have had some convergence effect between the CE and major developed financial markets". Using similar methodology, he concludes that there is a "stationary long-run relationship between the mature markets and the less mature markets". He argues his findings by referring to the small number of institutional investors in the less developed markets, and lack of rigorous analysis.

Svitlana Voronkova (2004) looks at the "equity market integration in Central European emerging markets". She investigates the 1993-2004 period and finds "a long-run relationship between emerging Central European stock markets (the Czech Republic, Hungary, and Poland) and the mature stock markets of Europe (Britain, France, and Germany) as well as the United States". She concludes that "Central European markets have become more integrated with global markets over this period". Christian Jochum, Gebhard Kirchgiissner, and Mariusz Platek (1999) prove that "there is an increasing correlation between East-central European markets (Poland, Hungary, the Czech Republic, and Russia) during times of economic crises (1997-1999)" but, differing from other papers, conclude "no long-run common movement or prediction model".

Gorban et al. (2010) researches the "dynamics of correlation and variance in systems under the load of environmental factors". He argues that, "in times of crisis, and typically even before a crisis, independent of the system analyzed, correlation increases, and, at the same time, volatility (variance) increases too". He notes that: "after the crisis achieves its bottom, it can develop into two directions: recovering (both correlation and variance decreases) or fatal catastrophe (correlation decreases but variance does not)." He observes this effect in a number of subjects including humans, mice, trees and financial time series. In his research he selects 30 highly capitalized companies from the FTSE 100 (Financial Times-Stock Exchange 100 Share Index) representing a diversified portfolio (different economic sectors) during a period of 2 years between 2006 and 2008.

Selected Indices/Methodology

A stock market index is a method of accounting for the measure of a section of a stock market. Many investors use this index as a benchmark, for information purposes or to measure the performance of portfolios. At the same time, an index is also an instrument that can be traded. Some indices are weighted according to market capitalization, while others represent the change in the underlying prices of the stocks it is composed of. By definition an index is a nearly fully diversified product. Some indices are national, while others can incorporate international companies.

For the scope of this paper, we have focused on using indices as a measure of testing for dependence between markets for two reasons: the indices used in Eastern Europe are composed of mostly national companies and, second, they reflect a cross section of the entire stock market. A stock index is a measure that reflects the development of stock prices in a particular market or market segment representative. An index is computed by taking a base point as the starting point. At certain time intervals (usually daily), the following changes are calculated in the indicator, backward-looking and reflect the performance of the stocks in the index again. Indexes are used as a measure of performance for individual

industries, markets, and in some cases even economies. There should be noted a difference between the price index and the performance index, since the former uses only price movements. A list of the individual composition of the indices can be found in the Appendix - Indices Composition. Note that no one company is included in more than one index, with the exception of OMV Romania and Orange Poland, which reflect the local entity.

Indices
BET - Romania
SOFIX - Bulgaria
WIG - Poland
BUX - Hungary
ATX - Austria
DAX - Germany
CAC - France
INDU - USA
UKX - UK FTSE 100

This paper follows a similar methodology to the one used by most other scholars listed in the literature review. More specifically, it approaches the methods presented by Syriopoulos (2007) or Demian (2009), considered the norm in the field. However this approach differs from theirs by the countries used in the study as well as the way data was organized. This paper also investigates the impact of joining the EU for Romania and Bulgaria. At its core, it investigates the cointegration between the Romanian market, the Bulgarian market, the Polish market, the Hungarian market due to supposedly geographic reasons as well as to more developed markets such as the German market, the Austrian market, the French market, the British market, and the more complex American market. We use western European countries and the US to test if there is a connection between them (not to determine if there is a link between developed markets since these relationships have already been investigated by and proven to display a high degree of cointegration by Fratzscher (2001), Westermann (2004), Baele and Ferrando (2005). Therefore, the usefulness and novelty of including other, more developed markets in the analysis would be redundant. The developed markets have been chosen for two reasons: firstly, they are economies with a global impact such as Germany or the US; and secondly, "Austria, Germany or France are some of Central and Eastern Europe's biggest economic partners, measured by volume of imports and exports", as reported by Eurostat (the European Union statistics research body).

This paper is distinctive because we have approached our data from a different perspective. While some papers chose to avoid skewing the results by bringing all prices in a common currency, or creating their own aggregated index, this paper follows a more financial model. This paper uses log return, the continuously compounded return or logarithmic return, also known as force of interest:

$$R\_\log = \ln \left(\frac{V_f}{V_k} \right)$$

Log Return (R_log) is the natural return of the price at the end of period f over the price in period k. Log return is time consistent (or time additive) and offers a common way of

comparing returns between different assets. Another important aspect of log returns is that if these log returns are normally distributed under short periods. Adding normally distributed variables produces an *n*-period *log return* that is, too, normally distributed. However, a criticism of this method is that it does not account for weighted average returns. Weighted log returns are not a linear function of the portfolio-weighted return. For the scope of this paper, Log Return has been chosen because it does indeed bring all returns to a common denominator and allows comparing returns across different countries, since hypothetically we are looking for a correlation, cointegration and relationship between returns.

For each country that is being analyzed the leading stock market index was selected. The analysis uses data offered by Bloomberg on daily returns of these indices between 1/1/2000 and 31/12/2019. Please note that between these periods there are different opening and closing hours for the different stock exchanges as well as different holidays. In order to compensate for these problems we have used the mean value to estimate the return for the missing days, hence generating the missing data. This approach was suggested considering the properties of returns and drawing back on the mean value theorem. However, one set back still exists, namely the difference in time schedule between markets. Inside the EU markets open and close at a maximum delay of 120 minutes, but outside of the EU, namely in the US, the market opens three hour before the European market closes and closes 5 hours later than the last EU market. These restrictions represent a limitation to the research and are addressed by the lag component of the model.

The new EU countries (Romania, Bulgaria) were selected on the basis of their size, geographic proximity, and representativeness of the second to last EU accession wave. Using market index has been the norm in this research as pointed out in the former chapters. The reason why we use index returns in the paper is purely based on their composition. Indices are composed of mostly national companies in less developed markets. They reflect in a weak form of the performance of companies inside that country. By using indices we not only accomplish diversification of portfolios but we also exclude the possibility of having industry sectors correlated, skewing our results. We test three main hypotheses:
- There is an increasing cointegration effect after countries have joined the EU.
- Markets are more linked during periods of economic downturn as opposed to economic upturn.
- Relationships are usually unidirectional from more developed to less developed markets inside the EU.

In order to address the long-run or medium run interdependence of markets inside the EU we first study the cointegration of markets. Market behaviour is analyzed in all four periods and contrasted and compared. A priori expectations are that markets are more interdependent after the EU accession and even more linked during periods of economic downturn, corresponding to prospect theory. This dependency can be identified by an increase in the number of cointegrated vectors. We base our former assumption on the fact the EU accession meant a standardization of monetary and to some extent fiscal policies as discussed by Yang, Kolari et al. (2005) and Yang, Min et al. (2003). The fact that criteria have to be met in order to be granted admission into the EU, opens the idea of a common

macroeconomic policy. Since the stock market often reflects economic conditions, we can conclude that these new policies would have been captured by the return on the stock market. Similar policies can lead to similar possibilities of gain. We assess the interdependencies of these markets by testing for cointegration vectors. The Johanson procedure, as shown by Johanson (1988), is used to identify "stable long-run stationary relationships between integrated variables, and it shows an independent linear combination or multiple combinations of these non-stationary variables achieving stationarity." In other words if there exists at least one long run equilibrium (a vector) these variables do not drift apart from each other, but move together by some long-run equilibrium relationship.

We take a generic VAR[(1)] (p) model:

$$Y_t = v + \mu D_t + P_p Y_{t-p} + \cdots . + P_1 Y_{t-1} + u_t \qquad t = 1, \dots, T$$

where y_t denotes the $m \; x \; 1$ vector of variables included in the VAR for time t and where all other variables are expressed in log. Notice that the $m \; x \; 1$ error vector u_t measures the extent to which y_t cannot be determined exactly as a linear combination of the past values of y with weights given by the constant coefficients v and P_l, $l = 1, \dots, p$. Then the long run Vector Error Correction Model is:

$$\Delta Y_t = v + \mu D_t + P_p Y_{t-p} + R_{p-1} \Delta Y_{t-p+1} + \cdots . + R_1 \Delta Y_{t-1} + u_t \qquad t = 1, \dots, T$$

Where:

$$R_i = P_1 + \cdots + P_i - I, \quad i = 1, \dots, p - 1$$

Once a relationship has been determined, we can then research the causality or direction of this relationship. By employing the Granger causality as a result of the VECM we "reveal the mechanism which ties cointegrated series together in the sense of Granger causality" (Granger, 1987). If two time series x_t and y_t are cointegrated, a linear combination of them must be stationary:

$$Y_t - \beta x_t = u_t$$

where u_t is stationary. If we know that u_t is stationary we can test using the Dickey Fuller test. This two step procedure provides evidence and insight into the lag-lead behaviour between indices returns. In order to test for stochastic non-stationarity the data has to be subjected to the Augmented Dickey Fuller test, the standard unit root test.

In other words we want to test in simple form with unit root drift and deterministic time trend:

$$\nabla y_t = a_0 + a_{1t} + \delta y_{t-1} + u_t$$

In other words we test $\delta = 0$ (where $\delta = \rho - 1$). Since the test is done over the residual term we use the statistic τ that has a specific distribution known as the Dickey–Fuller Table. Once the methodology has been outlined we proceed to test our sample by using EViews 10.0. Notice that we also designed our own testing methods using Excel, but for the sake of simplicity we will restrain from describing these models here and use EViews to run the tests.

The log of the daily return is the foundation of this research. We then proceed to the statistical and econometrical analysis. The plot clearly shows that the sets are stationary, however this is also tested via EVIEWS.
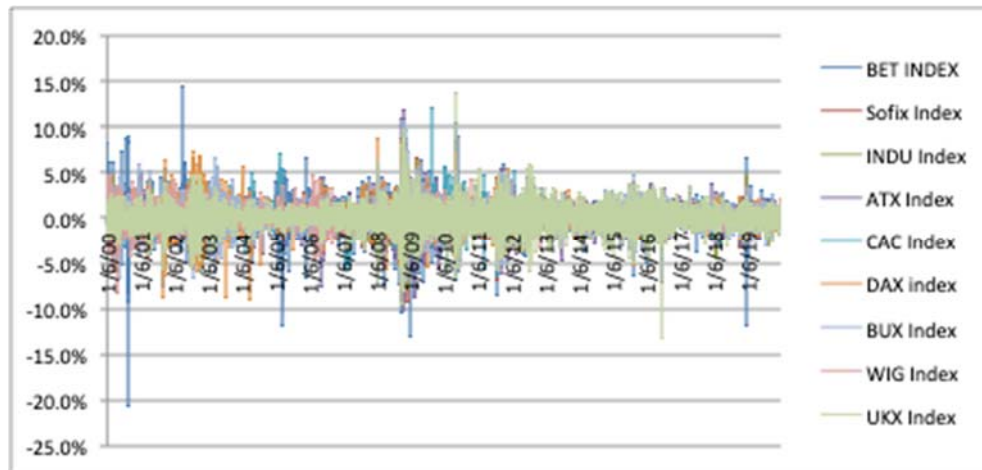
In order to use the Johanson cointegration test and provide useful results we first have to prove that our subsets does not have a unit root, hence log returns have to be stationary. The result for the Augmented Dickey–Fuller test, period 1, is presented in the appendix. The assumption behind the null hypothesis is that the ADF level has to be higher than the T-stat critical value. Since the ADF level in absolute value is higher than the t-statistic, as seen in the Appendix – stationarity, we conclude the null hypothesis is false; the series does not have a unit root at a 5% significant level. We repeat the same procedures for all periods and samples. The Jarque-Bera test[2] indicates rejection of the normality hypothesis. Thus, it can be concluded that all series do not have unit root and are stationary, such that the Johanson procedure can be implemented. We then proceed to test cointegration over the four periods under research.

Johanson Method

Please note that due to space constraints the Appendix – Johanson test, summarizes all three periods, and determines that there are 9 cointegration equations at the .95 level of confidence. We observe that the number of cointegration vectors does not change over time.

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Trace	9	9	9	9	9
Max-Eig	9	9	9	9	9

*Critical values based on MacKinnon-Haug-Michelis (1999)

An initial look at the three periods reveals that the trace statistics are increasing over time. Though we find that there is not an increasing trend in correlation vectors over the 20 year period, there is an increase in trace, suggesting a stronger relationship as seen in the

appendix. Also, the suggested lag moves towards 9 from 7 in the first period, confirming an increasing cointegration.

We observe that even before the EU accession of these states there existed a relationship between these markets, suggesting that the cointegration took place at a prior period. The EU integration and the financial crisis accelerated this process. Notice however, that post-crisis this relationship has continued to increase, suggesting that it is not an effect of the financial crisis, but an effect of the increasing dependency of markets.

All analysis for the Johanson cointegration test, yield the same findings as above. While the number of cointegration vectors has not increased over time, the Max Eigen Statistics suggests a stronger relationship between these markets. Observe that in both cases over the latest period there is a stronger connection than during the previous years; suggesting, but not proving, that the markets continue to increase their strong relationships.

Granger causality

Once we have determined that there is a long-run relationship between these markets we can then proceed to research the Granger causality relationship between these indices. We are researching a short-term spill over effect between these markets. We will proceed to compare every index to each other for the given period. Note that we will only address markets that display a high F-statistic and a probability of over .005. We argue that if one index Granger-causes (Granger, 1987) another index, then there exists a spill over effect between these markets.

In the Appendix – Granger causality there is a summary of all relevant causalities as shown by the Granger test. As we can clearly see there are strong Granger causalities for Romania from more developed countries. This short-term causality has increased over the last periods. During the financial crises, as shown in the appendix, most markets have moved together, triggering a granger-causality, especially from larger markets to smaller markets. This is consistent with previous papers presented in the literature review. Looking more towards the last period, post crisis, where the markets are supposedly acting independently, the most relevant and strongest finding is that the new member state, Romania, displays a high spill-over effect from more developed countries, but in the last period has decoupled from the other markets, with the exception of the ATX (Austria). The relationship to the ATX appears to function in both ways, e.g. ATX granger causes BET and vice versa. This comes as no surprise since the primary partners for Romania are Austrian, German, British and French companies. The Romanian market is therefore, starting with the financial crisis, linked to the US as well as all major European markets in a statistical relevant context.

The apparent statistical relationship of BET causing INDU is however, just the effect of the strong impact that the INDU movement has on BET. We can conclude without any doubt that this relationship is uni-directional. Bulgaria, on the other hand shows a different story.

Figure 1. *Post 2012 short-term causality at 95% C.I.*
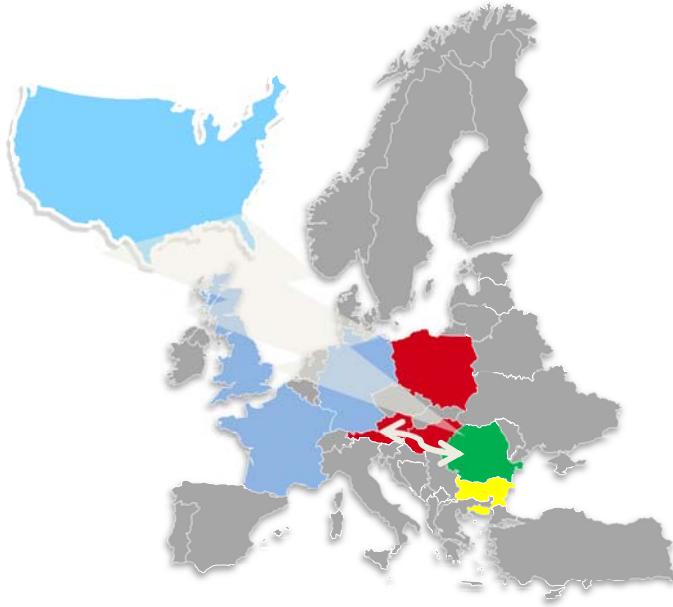
Post financial crisis, SOFIX does not show any statistical relevant causality to any of the markets under review. Between the SOFIX and the BET there is evidence of geographic contagion, however the SOFIX shows low level of statistical evidence for any significant conjecture to be made.

We can also conclude, without any doubt, that in times of crises there a strong causality from larger to smaller indices, i.e. DAX, INDU, CAC and UKX towards ATX, WIG, BUX, SOFIX and BET. We can extrapolate that negative signals, as shown by the economic crisis, influence less capitalized, weaker markets in a causal fashion. We can also hypothesize that no developed market is influenced by either Bulgaria or Romania, and that strong economic developments between Austria and Romania have a contagion effect. However, these are only speculations left as possible research for future papers, in which also the capital flows are analyzed.

Regardless, the Granger causality test shows that we have experienced an increasing short-term causality effect inside the EU inside the crisis. We notice that during the financial crisis the short-term causality is extreme between all markets. Post crisis, the causality remains from developed financial markets towards less developed financial markets, but these have to be analysed on a case by case basis. These findings are important because they do offer answers to the initial hypothesis. These findings support already existing literature on the contagion effect from developed markets to less developed markets as shown by Janakiramanan and Lamba (1998) or Hamao (1990).

Based on the above relationships we can determine a restricted VAR model i.e. VECM model (long-term model). We restrict the model to include BET, ATX, DAX, UKX, CAC,

INDU for the period 2013-2019. We repeat the cointegration test and determine 6 lags. We determine an cointegration equation for the period, of the form:

$$ECT_{t-1} = [Y_{t-1} - \eta_j A_{t-1} - \gamma_j B_{t-1} - \varepsilon_j C_{t-1} - \zeta_j D_{t-1} - \lambda_j E_{t-1} - c$$

in other words:

$$ECT_{t-1} = [1.000 BET_{index\,t-1} - 0.884368\ ATX_{index\,t-1} + 1.279383\ DAX_{index\,t-1}$$
$$- 0.611734\ UKX_{index\,t-1} - 1.328294\ CAC_{index\,t-1}$$
$$+ 0.146638\ INDU\_index_{t-1} - 0.000228$$

Then the long run Vector Error Correction Model (lag 1) is:

$$\Delta BET_{index\,t} = -0.251\ ECT_{t-1} - 0.180\ \Delta ATX_{index\,t-1} + 0.177\ \Delta DAX_{index\,t-1}$$
$$- 0.075\ \Delta UKX_{index\,t-1} - 0.239\ \Delta CAC_{index\,t-1}$$
$$+ 0.190\ \Delta INDU\_index_{t-1} - 0.000$$

For lag model 1-3 please consult the appendix.

Limitations and areas for future research

Though this paper uses econometrically accepted methods of analyzing both long run and short run relationship between series, there are limitations to the methodologies used. The first limitation is regarding the data used. This research would have greatly benefitted from a larger data sample consisting of minute tickers for the indices analyzed. Unfortunately, this kind of data is only for some of the indices available and not for the entire period.

The second limitation one should address is one of the assumptions made in this paper. Please note that at the foundation of this research lays the idea that indices are a performance measure of a given stock exchange. While this is generally valid and consistent with research methodology used in this field one should be aware of the pitfalls to this approach. Indices are updated on a yearly bases and do not capture all the stocks traded on a market. They represent the closest available product to a fully diversified portfolio. However this is a generally accepted method of researching interdependency between markets.

A third limitation is considered the econometric methods used. Though they are widely accepted and used, there have been papers criticizing both the Granger causality as well as the Johanson procedure. For the Granger causality we would like to remind the reader that the causality test does not account for all relevant variables that should determine the causality or that it filters for redundant information. Often, it is the case that relevant variables are omitted and GC results can measure incorrect feedback relations as shown by Lutkepohl (1982). The Johanson procedure too has been found to produce false conclusions that completely unrelated series are cointegrated. Erik Hjalmarsson and Pär Österholm (2007) note that deviations "from the pure unit-root assumption are common" as shown by Elliott (1998). This is a major problem that has been addressed in numerous research studies, generated by the fact that there is no clear way of distinguishing a unit root and close alternatives; hence all results determined by the Johanson method have to be carefully

considered. When performing the normality test and heteroscedasticity test, we could not fully reject the null hypothesis. Therefore, the model needs to be further investigate for the autocorrection, heteroscedasticity and normality.

This paper opens the possibility to future research in this field. Based on the above research, there are several algorithms that can be implemented for trading. Future research might indicate the exact behaviour of the contagion effect between indices and could produce significant returns. More academic research will follow the causality link and produce a solid theory for why these causality relations exist. An interesting research might shed more light on if this contagion effect exists outside of the European Union, in markets such as Macedonia, the Ukraine, Serbia etc. Lastly, this kind of research should be performed over and over, since the increase in data points might shed more light on the contagion effect inside a monetary, fiscal or economic union. This kind of research would be highly relevant to policy makers in tailoring specific policies to contagion problems.

Conclusion

Several studies including this one suggest and demonstrate cointegration inside the European Union. While this study restricts its analysis to Romania and Bulgaria and in particular, Poland, Hungary, France, Austria, Germany, the UK and the US market, there is reason to believe that these long-run equilibrium exist at a more Pan-European level. The data generating process provides graphical evidence of a relationship between these markets. We apply the Johanson procedure to determine cointegration relationships in between these countries. The test for cointegration supports the existence of cointegration vectors between both the EU and the US but also inside the EU, indicating a stationary long-run relationship, consistent with some of the prior literature. Once the existence of such a relationship has been established, we apply the Granger causality test to search for short-run relationships of causality inside the EU, finding significant evidence that suggests a spill-over effect. The paper shows that there is an existent long-run and short-run equilibrium between developed markets and less developed markets, however there is also a relationship between less developed markets and developed markets, especially during periods of economic distress. Analytically speaking, the presence of spill-over effects can be explained on hand of the existing exposure of the EU markets to US capital flows, but also to capital flows and FDI inside the EU, particularly in the case of Eastern Europe and the rest of the countries, as discussed above. International investors, who want to invest in order to diversify in these markets, should be made aware of the implications of this closer international integration for their risk management strategy.

The EU stock markets tend to display short and long-run linkages with both their more mature counterparts (DAX) and outside the EU, (INDU). This may be related to the limitations of less developed markets, in volume trade and capitalization but also to the experience and capabilities of investors present on these markets. It can also be a direct effect of geographic proximity and shared geographic risk. This question is left for future research. The short number of companies listed as well as the presence of few institutional investors can trigger the effects analyzed in the above research, making the findings a direct

result of investor patterns and not of economic fundamentals. Also, the inflow of foreign investors could potentially also trigger an integration effect.

To conclude, the new European countries followed a common path of growth and decline, and were integrated with international markets such as the US, as seen in the last economic crises. Post crisis, Romania remained in this category, while Bulgaria has decoupled from the trend. These findings should be taken serious by policy makers inside the EU, and used to control undesired contagion effects. The presence of long and short run relationships is very important for the effectiveness of EU macroeconomic policies. This could lead to policies that will protect from external shock or, on the other hand, allow EU markets to better coordinate, leading to similar economic conditions in the medium term. These relationships should affect the way assets are evaluated in the context of the EU.

Notes

[1] This section drowns heavily from VAR theory chapter in Maddala, *Econometrics,* 1993.
[2] For more details on the Jarque-Bera statistics, please refer to the Appendix.

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Appendix

Indices Composition

BET - Romania	Sofix - Bulgaria	WIG - Poland	BUX - Hungary
DIGI	Sopharma AD	Alior Bank	4iG
SC Bursa de Valori București S.A.	Neochim AD	Bank Pekao	ANY Security Printing
OMV Petrom S.A.*	Central Cooperative Bank AD	CCA	Appeninn Asset Management
Conpet S.A.	Eurohold Bulgaria AD	CD Projekt	AutoWallis
S.N.T.G.N. Transgaz S.A.	Industrial Holding Bulgaria PLC	Cyfrowy Polsat	BIF
S.N.G.N. Romgaz S.A.	Bulgarian Real Estate Fund REIT	Dino Polska	CIG Pannonia Life Insurance
MedLife S.A.	First Investment Bank AD	Grupa Lotos	Graphisoft Park
SC Fondul Proprietatea SA	Monbat AD	Jastrzębska Spółka Węglowa	Magyar Telekom
S.N. Nuclearelectrica S.A.	M+S Hydraulic AD	KGHM Polska Miedź	MOL Group
Electrica S.A.	Stara Planina Hold AD	LPP	Opus
C.N.T.E.E. Transelectrica	Doverie United Holding PLC	Orange Polska*	OTP Bank
BRD – Groupe Société Générale S.A.	Advance Terrafund REIT	PGE Polska Grupa Energetyczna	PannErgy
Banca Transilvania S.A.	Albena AD	PGNiG	Gedeon Richter
	Chimimport AD	PKN Orlen	Takarék Mortgage Bank Co Plc.
	Sirma Group Holding JSC	PKO BP	Waberer's International
		PZU	
		Play Communication	
		Santander Bank Polska	
		Tauron Polska	
		mBank	

ATX - Austria	DAX - Germany	CAC - France	INDU - USA
Erste Bank	Adidas	Accor	3M
OMV	Allianz	Air Liquide	American Express
Voestalpine	BASF	Airbus	Apple Inc.
Raiffeisen International	Bayer	ArcelorMittal	Boeing
Andritz	Beiersdorf	Atos	Caterpillar Inc.
Lenzing	BMW	AXA	Chevron Corporation
Immofinanz	Continental	BNP Paribas	Cisco Systems
Wienerberger	Covestro	Bouygues	The Coca-Cola Company
BAWAG	Daimler	Capgemini	Dow Inc.
CA Immo	Deutsche Bank	Carrefour	ExxonMobil
Verbund	Deutsche Börse	Crédit Agricole	Goldman Sachs
Austria Technologie & Systemtechnik A	Deutsche Lufthansa	Danone	The Home Depot
Schoeller-Bleckmann Oilfield Equipme	Deutsche Post	Dassault Systèmes	IBM
Uniqa Insurance Group	Deutsche Telekom	Engie	Intel
Vienna Insurance Group	E.ON	Essilor	Johnson & Johnson
Österreichische Post	Fresenius	Hermès	JPMorgan Chase
FACC	Fresenius Medical Care	Kering	McDonald's
Telekom Austria	HeidelbergCement	L'Oréal	Merck & Co.
DO&CO	Henkel	Legrand	Microsoft
S IMMO AG	Infineon Technologies	LVMH	Nike
	Linde	Michelin	Pfizer
	Merck	Orange	Procter & Gamble
	MTU Aero Engines	Pernod Ricard	The Travelers Companies
	Munich Re	PSA	UnitedHealth Group
	RWE	Publicis	United Technologies
	SAP	Renault	Verizon
	Siemens	Safran	Visa Inc.
	Volkswagen Group	Saint-Gobain	Walmart
	Vonovia	Sanofi	Walgreens Boots Alliance
	Wirecard	Schneider Electric	The Walt Disney Company
		Société Générale	
		Sodexo	
		STMicroelectronics	
		TechnipFMC	
		Thales	
		Total	
		Unibail-Rodamco-Westfield	
		Veolia	
		Vinci	
		Vivendi	

UKX - UK FTSE 100	Continued1	Continued2	Continued3
3i	CRH plc	Land Securities	Royal Dutch Shell
Admiral Group	Croda International	Legal & General	RSA Insurance Group
Anglo American plc	DCC plc	Lloyds Banking Group	Sage Group
Antofagasta	Diageo	London Stock Exchange Group	Sainsbury's
Ashtead Group	EasyJet	M&G	Schroders
Associated British Foods	Evraz	Meggitt	Scottish Mortgage Investment
AstraZeneca	Experian	Melrose Industries	Segro
Auto Trader Group	Ferguson plc	Mondi	Severn Trent
Aveva	Flutter Entertainment	Morrisons	Smith & Nephew
Aviva	GlaxoSmithKline	National Grid plc	DS Smith
BAE Systems	Glencore	Next plc	Smiths Group
Barclays	Halma	NMC Health	Smurfit Kappa
Barratt Developments	Hargreaves Lansdown	Ocado	Spirax-Sarco Engineering
Berkeley Group Holdings	HSBC	Pearson plc	SSE plc
BHP	Hikma Pharmaceuticals	Persimmon plc	Standard Chartered
BP	Imperial Brands	Phoenix Group	Standard Life Aberdeen
British American Tobacco	Informa	Polymetal International	St. James's Place plc
British Land	InterContinental Hotels Group	Prudential plc	Taylor Wimpey
BT Group	International Airlines Group	Reckitt Benckiser	Tesco
Bunzl	Intertek	RELX	TUI Group
Burberry	ITV plc	Rentokil Initial	Unilever
Carnival Corporation & plc	JD Sports	Rio Tinto Group	United Utilities
Centrica	Johnson Matthey	Rightmove	Vodafone Group
Coca-Cola HBC	Just Eat	Rolls-Royce Holdings	Whitbread
Compass Group	Kingfisher plc	Royal Bank of Scotland Group	WPP plc

(*) As of December 2019. Note that OMV Romania and Orange Poland are the only two companies included twice

Stationarity

Null Hypothesis: ATX_INDEX has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=32)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-66.25139	0.0000
Test critical values:	1% level	-3.959812	
	5% level	-3.410673	
	10% level	-3.127120	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: BET_INDEX has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=32)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-65.77336	0.0000
Test critical values:	1% level	-3.959812	
	5% level	-3.410673	
	10% level	-3.127120	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: BUX_INDEX has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 3 (Automatic - based on SIC, maxlag=32)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-34.63874	0.0000
Test critical values:	1% level	-3.959813	
	5% level	-3.410674	
	10% level	-3.127120	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: CAC_INDEX has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 4 (Automatic - based on SIC, maxlag=32)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-35.69003	0.0000
Test critical values:	1% level	-3.959813	
	5% level	-3.410674	
	10% level	-3.127120	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: DAX_INDEX has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=32)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-72.74383	0.0001
Test critical values:	1% level	-3.959812	
	5% level	-3.410673	
	10% level	-3.127120	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: INDU_INDEX has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=32)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-55.54072	0.0000
Test critical values:	1% level	-3.959812	
	5% level	-3.410673	
	10% level	-3.127120	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: SOFIX_INDEX has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 10 (Automatic - based on SIC, maxlag=30)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-15.81269	0.0000
Test critical values:	1% level	-3.960129	
	5% level	-3.410829	
	10% level	-3.127212	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: UKX_INDEX has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 4 (Automatic - based on SIC, maxlag=32)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-35.03495	0.0000
Test critical values:	1% level	-3.959813	
	5% level	-3.410674	
	10% level	-3.127120	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: WIG_INDEX has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=32)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-66.59650	0.0000
Test critical values:	1% level	-3.959812	
	5% level	-3.410673	
	10% level	-3.127120	

*MacKinnon (1996) one-sided p-values.

Johanson

Sample: 1/06/2000 12/29/2006
Series: BET_INDEX SOFIX_INDEX WIG_INDEX BUX_INDEX ATX_INDEX
DAX_INDEX UKX_INDEX CAC_INDEX INDU_INDEX
Selected (0.05 level*) Number of Cointegrating Relations by Model

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Trace	9	9	9	9	9
Max-Eig	9	9	9	9	9

*Critical values based on MacKinnon-Haug-Michelis (1999)

Information Criteria by Rank and Model

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or	No Intercept	Intercept	Intercept	Intercept	Intercept
No. of CEs	No Trend	No Trend	No Trend	Trend	Trend
	Log Likelihood by Rank (rows) and Model (columns)				
0	31049.17	31049.17	31049.18	31049.18	31049.23
9	31809.33	31822.54	31822.54	31824.49	31824.49
	Akaike Information Criteria by Rank (rows) and Model (columns)				
0	-59.67707	-59.67707	-59.65956	-59.65956	-59.64213
9	-60.84192	-60.85013*	-60.85013*	-60.8364	-60.8364
	Schwarz Criteria by Rank (rows) and Model (columns)				
0	-57.73117	-57.73117	-57.67042	-57.67042	-57.60975
7	-58.17052	-58.13298*	-58.11948	-58.07423	-58.06074
9	-58.11767	-58.08264	-58.08264	-58.02567	-58.02567

Sample: 1/03/2007 12/31/2012
Series: BET_INDEX SOFIX_INDEX WIG_INDEX BUX_INDEX ATX_INDEX
DAX_INDEX UKX_INDEX CAC_INDEX INDU_INDEX
Selected (0.05 level*) Number of Cointegrating Relations by Model

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Trace	9	9	9	9	9
Max-Eig	9	9	9	9	9

*Critical values based on MacKinnon-Haug-Michelis (1999)

Information Criteria by Rank and Model

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or	No Intercept	Intercept	Intercept	Intercept	Intercept
No. of CEs	No Trend	No Trend	No Trend	Trend	Trend
	Log Likelihood by Rank (rows) and Model (columns)				
0	43340.57	43340.57	43340.58	43340.58	43340.63
9	44643.09	44650.04	44650.04	44651.45	44651.45
	Akaike Information Criteria by Rank (rows) and Model (columns)				
0	-55.47231	-55.47231	-55.4607	-55.4607	-55.44914
9	-56.94585*	-56.9432	-56.9432	-56.9334	-56.9334
	Schwarz Criteria by Rank (rows) and Model (columns)				
0	-54.07398	-54.07398	-54.0313	-54.0313	-53.98866
7	-54.91112	-54.88258	-54.8731	-54.84102	-54.83155
9	-54.98819*	-54.95447	-54.95447	-54.91359	-54.91359

Sample: 1/02/2013 12/31/2019
Series: BET_INDEX SOFIX_INDEX WIG_INDEX BUX_INDEX ATX_INDEX
DAX_INDEX UKX_INDEX CAC_INDEX INDU_INDEX
Selected (0.05 level*) Number of Cointegrating Relations by Model

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Trace	9	9	9	9	9
Max-Eig	9	9	9	9	9

*Critical values based on MacKinnon-Haug-Michelis (1999)

Information Criteria by Rank and Model

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or	No Intercept	Intercept	Intercept	Intercept	Intercept
No. of CEs	No Trend	No Trend	No Trend	Trend	Trend
	Log Likelihood by Rank (rows) and Model (columns)				
0	57385.32	57385.32	57385.33	57385.33	57385.38
9	58721.98	58731.13	58731.13	58734.41	58734.41
	Akaike Information Criteria by Rank (rows) and Model (columns)				
0	-63.13609	-63.13609	-63.12613	-63.12613	-63.11621
9	-64.43766	-64.43781	-64.43781*	-64.43148	-64.43148
	Schwarz Criteria by Rank (rows) and Model (columns)				
0	-61.90239	-61.90239	-61.86502	-61.86502	-61.82768
7	-62.60073	-62.58123	-62.57292	-62.54678	-62.5385
9	-62.71048*	-62.68323	-62.68323	-62.64948	-62.64948

Granger
BET
Lags: 9

Null Hypothesis:	F-Statistic	Prob. 1	F-Statistic2	Prob. 2	F-Statistic3	Prob. 3
SOFIX_INDEX does not Granger Cause BET_INDEX	3.08837	0%	2.7144	0%	1.43394	17%
BET_INDEX does not Granger Cause SOFIX_INDEX	1.67679	9%	4.23021	0%	0.34434	96%
WIG_INDEX does not Granger Cause BET_INDEX	0.76889	65%	7.28811	0%	1.82392	6%
BET_INDEX does not Granger Cause WIG_INDEX	0.68432	72%	1.73763	8%	1.05563	39%
BUX_INDEX does not Granger Cause BET_INDEX	2.28717	2%	6.57017	0%	0.77218	64%
BET_INDEX does not Granger Cause BUX_INDEX	1.25695	26%	1.83556	6%	1.25014	26%
ATX_INDEX does not Granger Cause BET_INDEX	1.87661	5%	10.2353	0%	2.90406	0%
BET_INDEX does not Granger Cause ATX_INDEX	0.82928	59%	2.29746	1%	2.19678	2%
DAX_INDEX does not Granger Cause BET_INDEX	0.60338	80%	7.89078	0%	2.33002	1%
BET_INDEX does not Granger Cause DAX_INDEX	0.81108	61%	0.76032	65%	1.22549	27%
UKX_INDEX does not Granger Cause BET_INDEX	0.37403	95%	7.13032	0%	3.11777	0%
BET_INDEX does not Granger Cause UKX_INDEX	1.10293	36%	1.41463	18%	1.47494	15%
CAC_INDEX does not Granger Cause BET_INDEX	0.65403	75%	7.38014	0%	3.31924	0%
BET_INDEX does not Granger Cause CAC_INDEX	0.6669	74%	1.46527	16%	1.13709	33%
INDU_INDEX does not Granger Cause BET_INDEX	0.40988	93%	20.3113	0%	5.57254	0%
BET_INDEX does not Granger Cause INDU_INDEX	1.44485	16%	1.68997	9%	4.50915	0%

SOFIX

Periods	Period 1		Period 2		Periode 3	
Null Hypothesis:	F-Statistic	Prob. 1	F-Statistic2	Prob. 2	F-Statistic3	Prob. 3
SOFIX_INDEX does not Granger Cause BET_INDEX	3.08837	0%	2.7144	0%	1.43394	17%
BET_INDEX does not Granger Cause SOFIX_INDEX	1.67679	9%	4.23021	0%	0.34434	96%
WIG_INDEX does not Granger Cause SOFIX_INDEX	0.26203	98%	6.14153	0%	1.29444	23%
SOFIX_INDEX does not Granger Cause WIG_INDEX	1.51479	14%	1.91815	5%	0.53981	85%
BUX_INDEX does not Granger Cause SOFIX_INDEX	0.35266	96%	5.7553	0%	0.43266	92%
SOFIX_INDEX does not Granger Cause BUX_INDEX	0.94532	48%	2.48216	1%	0.53918	85%
ATX_INDEX does not Granger Cause SOFIX_INDEX	0.31842	97%	7.24367	0%	1.47424	15%
SOFIX_INDEX does not Granger Cause ATX_INDEX	0.8043	61%	2.46556	1%	1.49729	14%
DAX_INDEX does not Granger Cause SOFIX_INDEX	1.43787	17%	12.4448	0%	1.07316	38%
SOFIX_INDEX does not Granger Cause DAX_INDEX	1.49588	14%	2.41424	1%	1.57916	12%
UKX_INDEX does not Granger Cause SOFIX_INDEX	0.78933	63%	9.51663	0%	1.75812	7%
SOFIX_INDEX does not Granger Cause UKX_INDEX	1.69526	9%	1.76094	7%	1.47479	15%
CAC_INDEX does not Granger Cause SOFIX_INDEX	0.6129	79%	9.8425	0%	1.20046	29%
SOFIX_INDEX does not Granger Cause CAC_INDEX	1.54371	13%	2.03166	3%	1.6835	9%
INDU_INDEX does not Granger Cause SOFIX_INDEX	1.75126	7%	26.308	0%	4.2775	0%
SOFIX_INDEX does not Granger Cause INDU_INDEX	2.47795	1%	3.66165	0%	1.46447	0.1556

VACM

Error Correction:	D(BET_INDEX)	D(ATX_INDEX)	D(DAX_INDEX)	D(UKX_INDEX)	D(CAC_INDEX)	D(INDU_INDEX)
CointEq1	-0.251141 (0.03081) [-8.15250]	0.550791 (0.03708) [14.8555]	0.384453 (0.03851) [9.98432]	0.397688 (0.02892) [13.7503]	0.524035 (0.03715) [14.1063]	0.255494 (0.02918) [8.75689]
D(BET_INDEX(-1))	-0.523106 (0.03240) [-16.1454]	-0.415637 (0.03900) [-10.6586]	-0.321820 (0.04050) [-7.94644]	-0.323467 (0.03042) [-10.6337]	-0.417080 (0.03907) [-10.6747]	-0.083745 (0.03069) [-2.72906]
D(BET_INDEX(-2))	-0.282975 (0.03125) [-9.05420]	-0.228590 (0.03762) [-6.07696]	-0.218449 (0.03907) [-5.59183]	-0.208166 (0.02934) [-7.09429]	-0.268514 (0.03769) [-7.12437]	-0.025906 (0.02960) [-0.87517]
D(BET_INDEX(-3))	-0.190490 (0.02477) [-7.68987]	-0.100681 (0.02981) [-3.37692]	-0.126190 (0.03096) [-4.07545]	-0.120210 (0.02326) [-5.16876]	-0.143415 (0.02987) [-4.80087]	0.009903 (0.02346) [0.42208]
D(ATX_INDEX(-1))	-0.180150 (0.03503) [-5.14243]	-0.361673 (0.04216) [-8.57785]	0.297651 (0.04379) [6.79741]	0.281087 (0.03289) [8.54620]	0.402849 (0.04225) [9.53574]	0.188774 (0.03318) [5.68948]
D(ATX_INDEX(-2))	-0.118615 (0.03619) [-3.27760]	-0.208001 (0.04356) [-4.77539]	0.193347 (0.04524) [4.27422]	0.192566 (0.03398) [5.66753]	0.271428 (0.04364) [6.21941]	0.167879 (0.03428) [4.89788]
D(ATX_INDEX(-3))	-0.125069 (0.02948) [-4.24184]	-0.095848 (0.03549) [-2.70095]	0.099761 (0.03685) [2.70688]	0.089574 (0.02768) [3.23582]	0.138076 (0.03556) [3.88330]	0.070668 (0.02793) [2.53061]
D(DAX_INDEX(-1))	0.176919 (0.05440) [3.25203]	-0.570663 (0.06548) [-8.71539]	-1.214205 (0.06800) [-17.8556]	-0.498500 (0.05108) [-9.75983]	-0.622651 (0.06561) [-9.49079]	-0.291938 (0.05153) [-5.66587]
D(DAX_INDEX(-2))	0.186387 (0.05639) [3.30558]	-0.371311 (0.06786) [-5.47138]	-0.801670 (0.07048) [-11.3744]	-0.314747 (0.05294) [-5.94554]	-0.411302 (0.06800) [-6.04882]	-0.143044 (0.05340) [-2.67854]

D(DAX_INDEX(-3))	0.065521	-0.183739	-0.426512	-0.163299	-0.250614	-0.079915
	(0.04743)	(0.05708)	(0.05928)	(0.04453)	(0.05719)	(0.04492)
	[1.38150]	[-3.21885]	[-7.19459]	[-3.66737]	[-4.38183]	[-1.77909]
D(UKX_INDEX(-1))	-0.074764	0.231630	0.145165	-0.591792	0.243724	0.092123
	(0.04488)	(0.05402)	(0.05610)	(0.04214)	(0.05413)	(0.04251)
	[-1.66577]	[4.28788]	[2.58752]	[-14.0439]	[4.50294]	[2.16712]
D(UKX_INDEX(-2))	-0.024978	0.156474	0.138957	-0.381470	0.201077	0.038384
	(0.04975)	(0.05988)	(0.06219)	(0.04671)	(0.06000)	(0.04712)
	[-0.50204]	[2.61310]	[2.23444]	[-8.16664]	[3.35140]	[0.81458]
D(UKX_INDEX(-3))	0.070830	0.162243	0.121376	-0.113511	0.156399	0.020491
	(0.04221)	(0.05081)	(0.05277)	(0.03963)	(0.05091)	(0.03998)
	[1.67785]	[3.19322]	[2.30021]	[-2.86399]	[3.07218]	[0.51249]
D(CAC_INDEX(-1))	-0.239067	0.597226	0.391453	0.446234	-0.242627	0.297890
	(0.06141)	(0.07392)	(0.07677)	(0.05766)	(0.07406)	(0.05817)
	[-3.89268]	[8.07968]	[5.09930]	[7.73908]	[-3.27601]	[5.12131]
D(CAC_INDEX(-2))	-0.266674	0.364841	0.235426	0.255583	-0.200052	0.136135
	(0.06554)	(0.07888)	(0.08192)	(0.06153)	(0.07903)	(0.06207)
	[-4.06904]	[4.62532]	[2.87387]	[4.15374]	[-2.53123]	[2.19319]
D(CAC_INDEX(-3))	-0.092219	0.141262	0.174317	0.143142	-0.038170	0.049005
	(0.05418)	(0.06521)	(0.06772)	(0.05087)	(0.06534)	(0.05132)
	[-1.70204]	[2.16622]	[2.57391]	[2.81395]	[-0.58418]	[0.95497]
D(INDU_INDEX(-1))	0.190609	0.177355	0.205969	0.220307	0.196698	-0.819629
	(0.02961)	(0.03563)	(0.03701)	(0.02780)	(0.03570)	(0.02804)
	[6.43807]	[4.97715]	[5.56563]	[7.92567]	[5.50919]	[-29.2297]
D(INDU_INDEX(-2))	0.104755	0.076517	0.129319	0.177782	0.138370	-0.604246
	(0.03567)	(0.04293)	(0.04458)	(0.03349)	(0.04301)	(0.03378)
	[2.93689]	[1.78237]	[2.90054]	[5.30882]	[3.21686]	[-17.8864]
D(INDU_INDEX(-3))	0.036369	0.052499	0.060117	0.086161	0.072331	-0.232097
	(0.02981)	(0.03588)	(0.03726)	(0.02799)	(0.03595)	(0.02824)
	[1.21990]	[1.46312]	[1.61324]	[3.07828]	[2.01188]	[-8.21986]
C	-7.03E-06	1.40E-06	4.88E-06	-7.30E-06	3.43E-07	-1.09E-07
	(0.00021)	(0.00026)	(0.00027)	(0.00020)	(0.00026)	(0.00020)
	[-0.03287]	[0.00542]	[0.01825]	[-0.03639]	[0.00133]	[-0.00054]

R-squared	0.394431	0.410749	0.423903	0.444888	0.451448	0.419058
Adj. R-squared	0.387992	0.404484	0.417778	0.438986	0.445615	0.412881
Sum sq. resids	0.147518	0.213694	0.230484	0.130032	0.214531	0.132328
S.E. equation	0.009086	0.010935	0.011357	0.008530	0.010957	0.008605
F-statistic	61.26014	65.56131	69.20568	75.37735	77.40344	67.84407
Log likelihood	5940.830	5605.999	5537.659	6054.824	5602.465	6039.007
Akaike AIC	-6.553216	-6.182622	-6.106983	-6.679385	-6.178711	-6.661879
Schwarz SC	-6.492348	-6.121754	-6.046115	-6.618517	-6.117843	-6.601011
Mean dependent	3.39E-06	3.46E-06	5.97E-06	-9.63E-07	3.39E-06	3.58E-06
S.D. dependent	0.011614	0.014171	0.014884	0.011389	0.014716	0.011231

The role and importance of entrepreneurship education in initial training – key objective of European Union's policies

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Abstract. *In the context of high unemployment rates among the youth, economic crisis and fast economic changes, the European Commission recommends their members to encourage the development of entrepreneurial competences by introducing entrepreneurship education at all levels of initial training. All youth should benefit from minimum one practical entrepreneurial experience before completing the compulsory education cycle. The following research presents the most important findings on the role and importance of entrepreneurship education in the initial training, integrated into all disciplines and adapted to every educational level. The data have been obtained by applying a survey on a representative sample of teachers in pre – university education in the county, teachers who carry out their activity in theoretical, technological and vocational high schools. This has served to outline an overview of the impact of entrepreneurship education, and implicitly the real-life experiences, on the human resource, in terms of professional development, active citizenship, social inclusion and insertion on the work market.*

Keywords: entrepreneurial skills, entrepreneurship education, initial training, professional insertion, labour market.

JEL Classification: M530, J24.

1. Introduction

The potential of the young to launch and develop their own trading and social enterprises is recognized at European level. They become innovative in the regions where they live and carry out their activity. This is actually a confirmation of the experts' statements by which the entrepreneurs are the ones who produce prosperity and economic growth and support the change (Borza et al., 2009: p. 77). The entrepreneurship education is important in terms of shaping a mentality of the young generation, on the one hand, and in relation to ensuring essential knowledge, abilities and attitudes towards developing an entrepreneurship culture in Europe, on the other hand.

2. Relevance and importance of study

One should not mistake entrepreneurship education for economic studies that are strictly focused on business. The objectives of the entrepreneurship education mainly aim at developing creativity, innovation and practical activities of independent or group businesses (Jelescu and Elpujan, 2016: pp. 28-29). At macroeconomic level, the studies indicate that small and innovative businesses significantly contribute to job creation, innovation and economic growth (Van Gelderen, 2008: pp. 538-559). In terms of introducing entrepreneurship education into the teachers' initial training scheme, one may see that over three thirds of the European countries either grant autonomy to training institutions with regard to curriculum or completely lack regulations on development of entrepreneurial skills. In Europe, there are 7 education systems which include entrepreneurship education as a compulsory subject within the framework of some stages of the initial training system, at least for some teachers, and only one country for all future teachers. With reference to lifelong professional training, entrepreneurship education is much more developed. 28 countries have specific courses for teachers who teach certain subjects in schools (EACEA, 2016).

2.1. Materials and methods

The investigative approach on the role of the entrepreneurship education in forming human resources within an organization has used a complex research strategy which combines both quantitative and qualitative research methods. This is the set of methods and techniques used to collect information and the goal towards which they were used.

2.2. The objectives of the study

Objective 1: Identification of the perception of the interviewed on the role of entrepreneurship education in initial training

Objective 2: Correlation of lifelong training programmes with realities of the business environment with a view to developing viable entrepreneurial skills

Objective 3: Improvement of teachers' availability with regard to implementation of entrepreneurship in class, regardless of the subject that they teach

Hypotheses

H1: Development of the entrepreneurial skills is based on forming skills throughout lifelong learning

H2: Experiential learning through specialists provide anchorage ground in the reality of the business environment

H3: Teachers invest in their own formation towards teaching entrepreneurship in class, irrespective of their basic initial education.

2.3. Documentary analysis

Studies were made of reports on entrepreneurship education in the European schools, country reports on entrepreneurship in our country, recommendations of the European Parliament, European Council, National Research, Development and Innovation Strategies, Assessment of needs regarding education and professional training in Romania, guides on entrepreneurship education in European countries.

2.4. Selecting the sample

The sample of teachers from the pre-university education, high school, from Dâmbovița County, involved in the quantitative research, is made of 303 persons of 1,403 in total. The distribution of the questionnaires applied on the teaching staff from the high schools in Dâmbovița County is:

Table 1. *Distribution of questionnaire by types of high schools*

Total	No of questionnaires	Academic high schools	Technology high schools	National high schools	Vocational high schools
1,403	303	62	131	87	23

Source: authors' contribution.

The questionnaires according to types of high schools were distributed by keeping the proportions of the teachers who teach in these organisations.

The analysis of the research sample shows a majority of **female** teachers (75.91%), compared to **male** teachers (24.09%).

The distribution of the sample in line with the **age** criterion, seniority in education and years served within the organisation for the teachers interviewed is presented below:

Table 2. *Sample distribution by age*

	Age	Percent
1	below 30	7.92%
2	31-40	40.92%
3	41-50	33.33%
4	51-60	14.85%
5	over 60	2.97%

Source: authors' contribution.

The analysis of the socio-demographic characteristics of the teachers interviewed indicates respondents between 31 and 40 (40.92% of total); by contrast, the teachers below 30 (2.97%) are represented to the lowest extent; this tendency is the same for all types of high schools under analysis.

Table 3. *Sample distribution by seniority in education*

	Years	Percent
1	below 5	8.58%
2	6-10	13.53%
3	11-20	46.20%
4	over 20	31.68%

Source: authors' contribution.

In terms of seniority in education, the analysis of the sample researched indicates teaching staff with a seniority ranging from 11 to 20 years, to the detriment of the teaching staff with seniority below 5 years (8.58%).

Table 4. *Sample distribution by seniority within the teachers' school organisation*

	Years	Percent
1	below 5	30.36%
2	6-10	28.38%
3	11-20	27.39%
4	over 20	13.86%

Source: authors' contribution.

With regard to the seniority within the organisation where teachers conduct their main activities, one may see that the seniority of most respondents (30.36%) is below 5, compared to the teachers whose seniority within the organisation exceeds 20 years. We may identify the fluctuation of the teaching staff towards organisations which should ensure their personal and professional growth.

A higher weight is represented by the teachers in the urban areas (75.25%), who carry out their activity towards those from the rural areas (24.75%).

Most teachers interviewed have reached a high degree of didactic maturity (first level of qualification – 53.14%, second level of qualification – 21.45%, PhD – 2.97%).

In addition, the selection of the teaching staff took account of the teachers' curricular area, as indicated in the table below:

Table 5. *Distribution of teachers by curricular area*

	Curricular area	Percent
1	Language and Communication	25.74%
2	Mathematics and Sciences	25.74%
3	Human an society	19.80%
4	Arts and sports	8.91%
5	Technologies	19.80%

Source: authors' contribution.

The respondents' analysis in terms of their curricular area proves that the Mathematics and Sciences teachers as well as the Language and Communication teachers are best represented, to the detriment of the arts and sports teachers This is easy to understand if one takes into consideration the high school curriculum, the number of hours allocated by types of high schools, lines of study, qualifications, year of studies.

In relation to the status of the teachers interviewed, tenure teachers have the precedence (83.50%) over the unskilled substitute teachers (0.66%).

Discussion

Participation of teaching staff to lifelong training programmes is most times a personal choice which is mainly based on the need to accrue lifelong training credits (required for the evolution in one's career and for securing one's position within the organization) and less on the need to consciously improve the teaching-learning-assessment process. In many cases, lifelong training programmes are not correlated with various priorities relating to system or objectives to develop schools, whereas the costs are often covered by participating teachers. Over the past 10 years there have been European-funded lifelong training programmes attended by tens of thousands of teaching staff. In addition to accredited programmes, there is a multitude of unaccredited programmes and other activities which may be considered part of one's professional growth. The participation of teachers from pre-university education to such programmes is determined by the development of new skills which should allow adaptation to educational needs curriculum and requirements of the labour market. We summarize the participation of the teachers interviewed to future programmes which pursue development of professional skills in the table below:

Table 6. *Skills of future improvement programmes*

Development of communication and interaction skills	0.81
Skills relating to applying new curriculum	0.77
Capacity to adapt to the specificity of the group of pupils	0.86
Interaction with SEN pupils	0.76
Methodological skills	0.73
Assessment skills	0.86
Psychosocial skills	0.67
Technical and technological skills	0.40
Career Management skills	0.60
Management and coordination skills	0.33
Use of information technologies	0.81
Resource management and administration	0.58
Institutional development skills	0.40
Self-management skills	0.56
Entrepreneurial skills	0.44

Source: authors' contribution following quantitative research.

Figure 1. *Evolution of the score for skills of future training programmes*
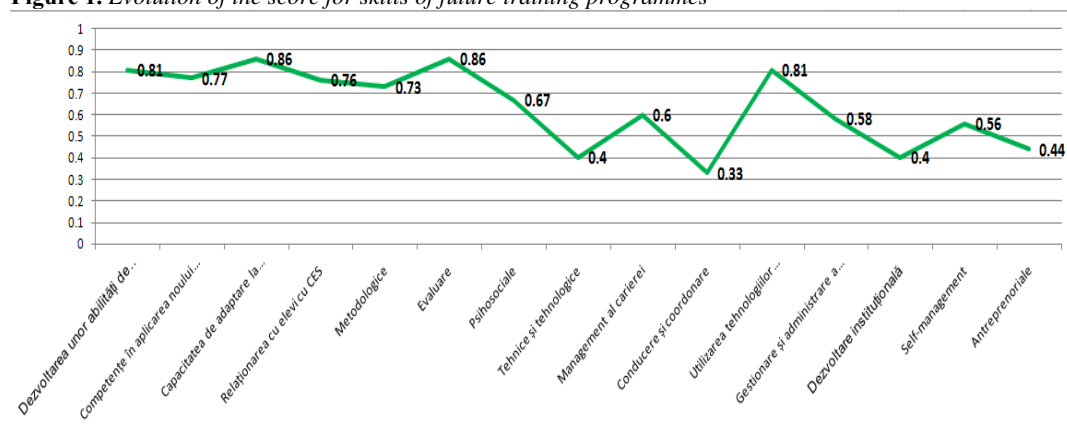
As one may see, the respondents consider important development of skills to interact with SEN pupils, skills to communicate and interact in class, skills to adapt to the specificity of the group of pupils, assessment skills and also skills to use information technologies. This is normal, the generations of pupils are continuously chancing in attitudinal, psychological and emotional terms. The fact that the development of the entrepreneurial skills, within the framework of the future training programmes, does not represent an important option among the teachers is the result of such skills not being included in initial training stages, whereas for lifelong professional training such courses were chosen only in relation to programmes funded from external sources. This fact invalidates H1. The entrepreneurial skills among teachers are developed through lifelong professional training programmes, in particular within the framework of some European Projects and Programmes initiated in this respect.

Teachers play an important part in pupils' life. They guide them toward achieving objectives and forming perceptions. Teachers cannot form pupils with regard to entrepreneurship education if they themselves lack such skills, and the anchoring in the real business environment is an important condition in this respect. The interaction with the external world is a key aspect of the entrepreneurship education (Lackeus, 2013, pp. 374-396). This requires a connection with the business environment and an anchoring in the reality for all levels of education so that pupils may develop skills which should allow them to become both entrepreneurs and intrapreneurs. The experiential learning based on the reality of the business environment is perceived by the teachers as follows:

Table 7. *Experiential learning based on the reality of the business environment*

Experiential learning	Score
Testing in practice and ensuring quality of innovative ideas, projects and materials	1.51
Using instruments, methods and concepts which support development of entrepreneurial skills	1.24
Accumulating knowledge and developing skills within the organization in the business environment	1.23
Experimenting without negative results	1.35

Source: authors' contribution following quantitative research.

Within the framework of teachers' formation, the experiential learning benefits from connections between the educational establishments and the business community. The representatives of the business sector support the learning in the entrepreneurial spirit as experts, supporters, mentors or friends who a critical spirit.

Testing in practice and ensuring quality of the innovative ideas, projects and materials motivate the teachers to develop their own entrepreneurial knowledge, skills and attitudes. H2 – The experiential learning with the specialists' help provides anchoring in the reality of the business environment, is validated. Within the framework of teachers' formation, the entrepreneurship education benefits from connections between the educational establishments and the business community. The representatives of the business sector may support teaching and learning in the entrepreneurial spirit through several methods. There are two main methods by which future teachers may come into contact with the reality of the entrepreneurial world:
- inviting factors concerned with the sector of entrepreneurship to contribute to the initial professional formation;

- organizing visits, as part of the curriculum, to enterprises, social enterprises and NGOs and providing therefore the teaching staff with the opportunity to get accustomed with the entrepreneurial challenges, methods and skills.

The investments of teaching staff interviewed in their own professional, method-related and scientific growth are presented in the table below:

Table 8. *Investments of teaching staff in their own professional formation*

Investments of teaching staff	Score
To invest time in self-improvement	1.17
To attend courses intended to help me improve my methods and courses on teaching didactics	1.01
To attend refresher courses on my speciality	1.14
To attend refresher courses on how to use ICT in the teaching system	0.90
To attend professional retraining courses	0.27
To go on to further studies (master's degree, PhD, etc.)	0.34

Source: authors' contribution following quantitative research.

The fact that the interviewed want to develop professionally, methodically and scientifically is extremely gratifying although we have already mentioned that at present they are the ones to bear the related costs. They recognize the need to improve in their speciality, to invest in their self-improvement and to continue their studies. The table below indicates that the teachers do not pursue development of the entrepreneurial skills within the framework of the future formation programmes, fact which invalidates hypothesis H3. Their priorities are different, particularly due to the fact that they settle the costs for the lifelong professional training to which they participate.

With reference to the entrepreneurship education, lifelong professional training should aim to expand some results of the comprehensive and coherent learning, applied to all levels of education and assessed in a specific manner.

3. Conclusions

Teacher training represents a priority of the reform in education, given that the teaching staff formation system has seen a slower development compared to the other elements of the reform: curriculum and training, assessment and management.

The motivation of the teacher staff interviewed to participate to non-formation education programmes is rendered by their eagerness to grow, to be in line with what is new and competitive in their career, in particular as a result of the increasingly growing needs of the employees. The rapid and profound changes which have occurred over the past years in the educational process impose lifelong training among the teachers, adaptation to what is new and to the change and also to the requirements of the labour market. The intensity of the participation of the teaching staff in Dâmbovița County to lifelong learning programmes is high. The teachers attend compulsory programmes conducted in the public sector and also attractive courses offered by private providers, especially when funded from European sources. The intention to get involved in lifelong training programmes is closely followed by the eagerness to grow, to be recognized as holding a position within the educational establishment, to integrate in a modern and performing education system.

Following the empirical research, one may draw the following conclusions:

1. The teachers' activity is approached not only in the light of a fulfilment of a vocation and some personal qualities but it is also based on the knowledge accrued and the skills developed in a lifelong training process, process based on a rigorous and elaborated professional model.

2. The participation to lifelong training programmes over the past 5 years is satisfactory. There is a high proportion (97) among the teaching staff interviewed (1 program – 8.6%, 2 programmes – 19.1%, 3 programmes – 16.8%, 4 programmes – 18.5%, 5 programmes – 10.6%, over 5 programmes – 23.4%), who participated to minimum one training programme over the past 5 years.

3. In terms of developing entrepreneurial skills within the framework of lifelong training programmes, this sector is not popular among the teachers, the training programmes therefore completed were funded from European resources. The acquisitions of the teaching staff are not transposed in the activity conducted in class due to material resources, level of class, limited time to study the syllabus, constant effort to create learning materials.

4. The integration of the teaching material in the initial formation and lifelong training, for all teachers, regardless of their speciality, is vital to provide pupils with a high quality entrepreneurship education.

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The unexpected price of vices

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Abstract. *The consumer's behavior is often influenced by external factors and often the percentage of influence success is significantly higher than that of failure. However, there are times when decision-making is handled. The research aims to analyze some activities or products, considered socially as challenging vices of addiction and to confirm or disprove whether the consumer himself is manipulated to consume them more often. To do this, the method of case study was used to identify neural reactions in the neocortex of respondents motivating their dependencies. The purpose of the research is to confirm or disprove whether a consumer ends up taking over certain manipulative effects and intensifying them himself to trigger an avalanche of vices on his own body without wanting to stop, thus making a self-manipulation. A set of specific objectives have been developed to achieve: identifying and analyzing an ever-increasing global vice (OS1); identifying the main instruments of manipulation and analyzing how they manage to influence data subjects (OS2); deciphering the neural reactions of persons in direct contact with the acquittal of a vice (OS3); the manipulation behind people addictions (OS4); The following conclusion was concluded as a result of the research: the assignment of manipulation elements in the presentation of harmful products or services, but which can bring mental or hormonal satisfaction, causes a consumer to pay and consume a vice in an increasingly frequent and stressed time.*

Keywords: manipulation, vice, influence, neural flux, gambling.

JEL Classification: M390, M290.

1. Introduction

The greatest advantage that neuromarketing can offer to the marketing sector is that it is a tool itself that helps companies differentiate the pleasures, desires and needs of consumers and, as a priority, to find out what they really buy. The [...] neuromarketing helps companies understand consumer purchasing decisions by observing his cognitive processes (Hammoun, 2013). Numerous social and neuromarketing experiments have collectively pointed out that a person is responsible for his rational actions when the emotional side is not influenced by an external factor. However, the emotional brain seeks actions alone to stimulate it. Therefore, does this contradiction of the human brain not cause him to fall into his own trap of satisfying his pleasures at all costs? If by its evolutionary nature, man is a constructive species that tends towards charity and development, it is simple to see how the balance is balanced by the decisions of the same people to choose destructive activities for himself, by doing them with pleasure, however. It is simple to note that if a person is not influenced by an external factor, they choose to self-manipulate themselves.

There is no doubt that it is not only the professionals of persuasion who know and use these principles. All people use and fall victim to them at the same time as part of their interaction with neighbors, friends, loved ones and family. But the professionals of persuasion have little more at their disposal than normal people do, which only possess a vague and superficial understanding. (Cialdini, 2012). What was unclear for a long time for neuromarketing researchers was to understand the explanations of consumers who were trying to motivate their destructive flaw through constructive or positive claims. Surely it is always possible to see the inconsistency of the claims, but the large percentage of similar responses had always been a motivating factor in seeking explanations of these behaviors. If a vice is an addiction, but an addiction is not necessarily a vice depending on the reactions that have occurred in the social collective, the differential threshold is always generated by the vice itself. The long-term involvement sits on a person in the social vision as a man with a dependence on a vice for which he deserves to be helped/accused.

2. Review of literature

According to Shaoguang (2018), vices create an immediate positive outcome which is the main cause of being extremely attractive to people. Virtues, on the other hand, maximize benefits on a long term, but in terms of immediate gratification, they are less appealing. "A single choice between vices and virtues can be affected by many factors, including environmental ones, which may lead to irrational decision-makings. [...] Vices refer to options that can provide immediate gratification but imply a long-term or delayed harm, whereas virtues refer to options that maximize a long-term benefit but are less appealing in terms of immediate gratification. Choosing a vice is self-indulgent, which means a self-control failure; while choosing a virtue is self-prudent, which means a successful self-control. Choices between a vice and a virtue involve trade-offs between benefits and harms in the short-term or long-term, thereby inducing self-control conflicts" (Shaoguang and Lilyin, 2018).

Civil society could all-timely fall into certain activities that degenerate into repetitiveness and be considered dependencies or vices. From activities in the middle ages where some people were increasingly focusing their attention on an activity to repeat it more and more often and make it as efficient as possible, to the present times where there are many positive or negative attractions. In general perceptions, an activity becomes a defect when it becomes harmful or when it affects the bodily or mental integrity of the person concerned.

The factors by which an activity becomes a vice are well known, but the differential step separating the activity from an activity into a vice is unclear. The blur is present because it is not generally valid. Most people have their own degrees of measurement of the threshold that, at best, consumers can only be segmented by type of activity or vice and the repetitive capacity they can demonstrate. Cassam (2016) took the impact happiness over repetitiveness of vices deeper. From his point of view, if an addiction can have an intellectual motivation, the happiness rises and its significance in the eyes of the person transforms the vice into a virtue.

"It's hard to make the case that wishful thinking shouldn't be classified as an intellectual vice just because it isn't a character trait.

Nevertheless, even if intellectual vices don't have to be character traits I'm going to focus here on intellectual vices that *are* character traits, that is, on what I'll call *intellectual character vices*, or *character vices* for short. Character vices are the most easily recognized intellectual vices, and a core aim of vice epistemology is to investigate their nature, identity, and epistemological significance. This leaves it open that vice epistemology should also have something to say about the nature, identity, and epistemological significance of intellectual vices that aren't intellectual character traits."

One of the most common vices in the world for more than 200 years is tobacco use. "globally, consumers continued to smoke no less than 5.76 billion cigarettes, a figure that does not include cigarettes in duty-free stores or those on the huge international black market. The [...] about 15 billion cigarettes are sold daily – which is 10 million cigarettes per minute. In China, where millions of undeclared smokers believe that cigarettes can heal Parkinson's disease, alleviate symptoms of schizophrenia, increase the effectiveness of brain cells and improve performance at work. More than 300 million people, including 60% of male doctors smoke. With annual sales of 1.8 trillion cigarettes, the Chinese monopoly is responsible for almost a third of all cigarettes smoked around the world today – a significant percentage of the 1.4 billion people who consume tobacco, a figure that, according to World Bank estimates, will increase to about 1.6 billion by 2025 (although China consumes more cigarettes than the US, Russia, Japan and Indonesia together)" (Lindstrom, 2011).

3. Manipulation techniques with external factors

Smoking is, without any doubt, an activity that destroys and kills. Given that the number of British who died from tobacco diseases is twice that of those who died in World War II. In these circumstances, is the reason why people smoke is due to their failure to feed or a

diabolical marketing of cigarette manufacturers? Since placing cigarettes in hidden areas of a store did not reduce their consumption, it is not the placement of the product on the shelf that matters.

In the light of a paradox, in which a product is increasingly purchased as it is increasingly promoted as a health harm, the reasons must be psychologically related. The answer that this research aims to identify is whether there are external factors that active voluntarily or involuntarily the desire to purchase. Martin Lindstrom, Dr. Gemma Calvert (coordinator of the Department of Applied Neuroimaging at Warwick University of England) and Professor Richard Silberstein (CEO of Neuro-Insight in Australia) organized one of the largest exhibitions of neuromarketing in history, attended by 2081 volunteers from 3 continents. The purpose of this experiment was to identify how purchases are made and the reasons why consumers make them. Purchase mode: A classic questionnaire is made in which subjects are investigated to identify how they consider their purchases are made.

The way consumers buy products is extremely important because they can be manipulated to have certain purchasing practices. Reasons to purchase: Volunteers are scanned with IRMf (Functional Magnetic Resonance Imaging) and SST (Steady-state-topography) to analyze neural reactions. Like any product that can be bought, it must produce physical or mental satisfaction. One by one, the volunteers entered a room where they answered standard questions about how they purchase tobacco and especially the impact that the appearance of cigarette packets had or not. Most respondents had common answers, the idea of buying or consuming cigarettes more than normal because of a neuromarketing manipulation scheme was deeply denied. All correspondents motivated smoking due to stress, entourage or rebellion, in absolutely no case was any tobacco-producing firm was blamed to sell an extremely harmful drug.

During the IRMf scan, volunteers were asked to assess their desire to smoke while they were shown images of warnings from cigarette packets from various angles. Because talking during scanning can influence the final results, patients used, as a voting system, what in the language of imaging experiments is called the button box, a console which looks like an accordion.

After the experiment was completed, the results were analyzed and presented by Dr. Gemma Calvert. Final figures can create mixed reactions, but cannot be denied. The warnings on cigarette packets, along with the very explicit pictures of the effects of smoking, had absolutely no inhibition effect of smoking that a smoker would feel in any way, the effect being null. However, the analysis brought an even greater discovery to the researchers. The warnings on the packages that described very precisely and very concisely the dangers to which consumers expose themselves such as lung cancer, heart disease, etc. actually stimulated an area of the brain called Nucleus Accumbens, otherwise known as "the center of desire". This neural area is activated when the body especially wants a very powerful thing like drugs, sex or gambling. When activated, Nucleus Accumbens requires increasing doses to reach satisfaction.

In conclusion, every time a smoker looked at a pack of cigarettes, the warnings were null in importance, leaving the pure desire to smoke that was psychologically transforming a

guilty pleasure, which would be consumed until the pleasure would be satisfied to the end. Huge anti-smoking campaigns have become overnight the manufacturers' marketing tools of killing. Whatever reasons a person invokes when declaring that he has purchased a product, reality is often left in a dark of obscure marketing. Of course, not every type of advertising is evil or built to spur a person to make a purchase they don't need. Any marketer would declare that his motivations are to promote his product or service better than its competitor in the hope that he would be chosen and preferred by consumers. And that's how things usually happen, but not always. Exceptional cases are also the most popular. From the Pepsi campaign (your generation's drink) to a The Voice entertainment show (be the voice!).

Numerous research and many more books have been written to describe and detail how the human mind reacts to methods of manipulation and influence. However, when it comes to advertising campaigns designed to manipulate people and have a large percentage of success, many researchers stop investigating or publishing. Since a company with a global activity has the resources to finance the research of consumer behavior, manipulating advertise is a much more common activity than people understand. For quite a long time, there was a generally valid concept that people are predisposed to manipulation because a huge brand is behind a message which makes it easier for the public to react. If that were the case, then it could not be explained how initially anonymous people have one or more messages that end up going viral locally, nationally or globally. When it comes to a person who gets to make a public message, there may be reactions that change the course of history.

From Martin Luther King to Steve Jobs or to Greta Thunberg. What these people have in common, but also many others, is that a certain speech of theirs had such a strong resounding that huge masses of people started appreciating that message. This effect is a clear example of how people are likely to change or amplify certain thoughts, desires, or needs when a person becomes overnight a symbol of a principle or activity. The reason for which a person turns into such a symbol is due to the collective reaction of people who first heard those words and perceived them as they were their own. It is therefore certain and clear that at any time or type of activity with any kind of person or organization involved, it is the way a message is transmitted that has a manipulative factor on groups of people. The better it is achieved, the more people are attracted to resonate with the content of that message. Words that are used to create an influence either social, civic or commercial often follow a basis of well-defined principles of manipulation. Regardless of the type and purpose of the message, to be able to manipulate a person or group of people, words must be shaped around the pillars of the laws of manipulation.

3.1. Social proof

August 1963. Martin Luther King Jr. would deliver a speech on the steps of the Lincoln Monument in Washington that would define the civil rights movement and leave as a legacy to American citizens. "I have a dream that my four children will one day live in a nation where they will not be judged by the color of their skin, but by the type of their character...". A word, gesture or reaction can be triggered by actions that can produce incredible effects.

Martin Luther King Jr. succeeded as the right man at the right time, creating a movement that will always remain in history.

It is worth mentioning that African-Americans lived a much harder life than Caucasians in central America in the 1950s and 1960s. With an increasing number of voices beginning to manifest themselves stronger about racial equality, only one element of great importance was lacking – the voice. As a doctor, Luther could express a clearly contoured message, thought by most supporters to gather a quarter of a million people in Washington to listen to what would represent one of the greatest speeches of history. "I have a dream" are three words that have translated hundreds of thoughts and thousands of hopes.

For a person to influence a group of people through the principle of social proof, that group of people must end up addressing the public using those formulations or highlighting the social positioning of the person speaking to them, such as moments when people in a church say "Amen" after 2-3 words spoken by the pastor. Examples can be countless, the conclusion is always the same. Social proof can work if one of the following examples is followed: a) highlighting the clarity (the soundtrack laughter in comedy series – the lower the production is qualitative, the greater the laughter causes more amusement for the viewer (Cialdini, Psihologia Persuasiunii, 2014) b) verbal transposition (when a person utters an idea with which a group of people resonates positively, they feel ideologically represented).

3.2. Commitment and consistency

In May 2018, the young and unknown Swedish Greta Thunberg wrote her first essay for the Swedish newspaper Svenska Dagbladet where she won, her paper being declared the best written article between all and it was published. It would become the moment when her face, voice and, above all, her attitude would characterize her as a global personality to make her receive the title "Person of the Year" from Time magazine. When asked how she explains her harsh and ferocious attitude she always talks with, she said it was partly due to her Asperger's syndrome. This disease, hereditary, causes a person to have repetitive behavior, delayed speech, etc. As far as the issues of global climate issues are concerned, many people have spoken out.

From activists, to politicians or cinematic vision, no one has had the overall impact Greta brought to many people's thoughts. In 2016, Leonardo DiCaprio won an Academy Award for The Revenant and in his speech when he received the award, the messages were about protecting the planet and stopping global warming. Although he is a highly acclaimed person worldwide and known to the public for about 20 years, he has not had the success that the young Swedish woman had.

Success, regardless of the domain, is often penciled in commitment and consistency. Greta's method of action, if it was random, was simply brilliant. With organizing the "Friday for the Future" movement, she protested every Friday, while encouraging students to join her. At one point, her Tweeter page announced the 72nd protest in a row.

The moment she introduced herself to the world that she was a victim of climate destruction has led many people to encourage her and, by implication, joined the effort with this commitment that it is time to save the planet. The decisive factor was that Greta continued

her Friday protests, making her publicly expressed supporters continue the journey because the commitment could not be stopped. People are predisposed to what they call self-manipulation. When they make a public commitment, it is very difficult to give it up for social reasons. Supporting an idea consistently will inevitably bring groups of people who support the same cause. The more repeated the message, the more support it increases.

3.3. Rarity and Instant influence

There are 2 rooms left and 7 people are currently checking the current offer. Although now it seems slightly hilarious, this kind of warning promotion has worked and continues to do so now, whether we are talking about booking a hotel room, paying for a plane ticket, etc. Regardless of the type of purchase, it always seems like you may be the last lucky one, although for a week tickets are bought and that room remains available. In fact, this concept was started by aviation companies.

With the opportunity to track the number of hits on the site, the time spent and the buttons pressed, company employees realized that a very large number of people were visiting the site to check how much a flight would cost them in their ideal destination, but were withdrawing at the last minute, missing out on the decisive factor of motivation. Therefore, the method of rarity was introduced, in which consumers were notified that only 2 free tickets remained for a flight and for those who would purchase them within a few days they would receive a discount.

Consumers began purchasing products more often because the last 2 fixed tickets to the desired destination at a reduced price could have meant a dream come true. By realizing the power of this type of advertising, many touristic companies have started to practice such methods, to add a unique feature to a product or service that makes it look like it is a rare moment that it can take advantage of or not. From aviation companies like Tarom to lodging reservation websites like Booking, all product or service providers of these types use this technique to boost sales. This manipulation technique is extremely simple and effective, where ethics are very sensitive topic. However, the European Union has obligated Booking.com to stop their manipulative sales practices effective immediate in 2020 because such practices will always be considered anti-consumer (Brinkmann, 2019)

3.4. Gambling system

"Casinos get more income when they find a method of increasing their house edge, the amount of time on each game and the average bet. If there are no bets or if the players are few, then the handle is less and the profit is less. Looking at the casino as a business model, the overall handle is obtained through a product of the average bet, time spent and capacity use. This explains why most casino games are based more on your average bet and the hours that you have played and less on how much you have won or lost. A casino with about 100 Explodiac slot machines is only profitable if the machines are in use. This is where the capacity of use plays a huge role. The more the machines are used, the more money is obtained." (Montlhy, 2019)

"Slot machines remain the most important money-making part of casinos in the United States. In many states, casinos make between 65% and 80% of their gambling income from

slots. In Las Vegas, the percentage varies from 88% in casinos that cater primarily to locals to 50% on the Las Vegas Strip, where high rollers betting tens of thousands a dollar a hand skews the results in favor of table games. Every day, players put millions of dollars into slot machines.

When casinos look at how a slot machine is performing, the most basic number they look at is the **drop**. That is the money deposited by the player in the machines. Another number you might hear is **handle**, which Ambrose defines as the total amount bet by a player. How can a player bet more money than she puts in? Well, if she puts in $100, wins a $50 jackpot, and keeps on playing until all her money is gone (including that $50 "win"), she has generated a drop of $100 and handle of $150." (Schwartz, 2018)

4. Research methodology. Case study. Gambling and the power of desire.

The purpose of the case study: analysis of methods of thinking of consumers and neural hormonal reactions to identify whether

Specific objectives:

SO1: identifying and analyzing an ever-increasing global vice

SO2: identifying the main instruments of manipulation and analyzing how they manage to influence data subjects

SO3: deciphering the neural reactions of persons in direct contact with the acquittal of a vice

SO4: the manipulation behind people addictions

Research hypotheses:

In line with the specific objectives, the following working hypotheses were elaborated:

I1: Gambling brings satisfaction even without winning

I2: Sensorial effects have no influence over the financial amount which was bet

I3: Gambling creates the effect of auto-manipulating, placing consumers in the position of increasing their own addiction

I4: Gambling commercials have no influence or motivation effect over addicted people

I5: Online gambling is getting bigger and will produce more income than classic casinos

Type of research: qualitative and quantitative

Research methods: questionnaire – based survey, structured interview,

Research tools: structured interview grid, observation sheet, structured questionnaire,

Analysis unit: Consumer Group, consumers of casino & slots, sportive gambling

Recording unit: Consumers with ages between 18 and 45 years old.

Summary: Gambling is present everywhere in the world and is old as trading is present in people life. The online gambling market has reached in 2017 $45.8 billion dollars in revenue. Only in United Kingdom in 2017 the revenue has been estimated at $22.4 billion dollars. It is estimated that by 2024, the online gambling market will reach $94.9 billion dollars in revenue. In Romania, Europe, the gambling market it is estimated that $1 billion dollars per year (Advertising, 2019)

 Some people manage to play for ten hours straight. One of the reasons for why this is common phenomenon is due to the interior architecture of the casino. The main aisle will always lead directly to the main gambling game, either roulette or black jack, while slot machines soured them in a circle and they are also placed against every wall. In order to play in main casinos, is mandatory to go to the cash register to buy tokens in order to play. Therefore, a consumer has a first emotional impact with the main games, the cash register is usually placed close to the middle of the room. These tokes end up being the only currency accepted and are transformed in tips for waitress which bring constant alcohol beverages. Some players are playing so often, that the casino personnel remember their liquor preferences. Without any window or clock on the wall, bad cellphone reception, a casino is the best place to forget about the outside world until all money is lost (Barbulescu, 2011).

5. Analysis and research results interpreting

By using the direct participatory observation, service staff and consumers were analyzed in terms of routines and behavior. The building itself will always be an important factor to monitor, because depending on this detail, consumers spend more time inside. In order to have consistency, the common elements between casinos have been selected so the results would be fair between the actions under direct observation.

The first step in the casino is made on a thick rug, giving a first feeling of an expensive or classy place, where you, as a consumer, are socially put in the situation to know that you will have to spend some money. This first impact is very important psychologically, because is the first trigger to activate the Nucleus Accumbens, where a desire is created and needs to be satisfied.

The inside elegance, perfume smell and continuous noises of winning slot machines creates joy, the brain creating more dopamine and releasing it in the body. The interaction with the staff starts where every customer wishes to end the night, cash register. In order to be able to play slots, a consumer must buy token chips. Buying tokens is not the only activity a person is witnessing, but he also observes huge amounts of money which are automatically perceived as prizes. Some casinos even place cars or other huge prizes inside, not to motivate customers specifically, but to prologue every person's time in the casino as much as possible by encouraging ambition and creating more desire, which needs to be satisfied one way or another.

After the consumer purchases several tokens, he will have a seat at slots, roulette, blackjack or other type of luck game. Soon after that, a waitress will come by and offer a drink on the

house. In big casinos, the glass will never be empty and all drinks will be offered for free. These tokes end up being also tips for waitress which will make consumers to go back to the cash register and purchase more. An interesting reaction was observed regarding customers which played more than one hour.

Logically, the more a person loses he should be more convinced to call it a day. However, as frustration is accumulated, the customers have strange reactions. People playing slots start playing at two, even three machines in the same time. Some explanation can come from the algorithm theory, people saying that playing at 3 machines will create more chances to win, which comes in contradiction with the real slot machines algorithm. Other people which play Black Jack or Roulette, after they lose everything, start negotiating by offering personal items like watches, cars etc. By doing this, some accept to offer a $20,000 dollar watch for $5,000 in the hope of getting back the money they lost. 80% of the time, people end up losing everything they had bet.

Conclusion: Manipulation techniques are present and visible from the casinos and customers angle. Social Proof is present with the customers which manage to win. If no one would win, no one would play, confirming SO2 "identifying the main instruments of manipulation and analyzing how they manage to influence data subjects" is present in terms of influencing its consumers. As slot machines give small and medium amounts back to their customers, many others will come and play for longer periods, spending more. Rarity and Instant Influence is the most obvious of the all. Beautiful waitress which treat big spenders better, constant winning sounds coming from all slot machines alcohol on the house create the perfect environment to make a consumer motivate himself to spend as much as possible. Commitment and consistency, however, is the most delicate. If from the casino part is clear and understandable, it is hard to interpreted it from the consumer point of view. If on a long run, a person loses much more, why is he continuing doing it? For this to be understood, the NLP and Neural investigation is needed so the situation could be explained.

The quantitative research aims to identify a behavioral pattern in obtaining gambling addiction satisfaction. The method is to use a NLP questionnaire, where the research will analyze the "How" people reply and not "what". This research is going to use the constant sum scale which is based on the mechanical step. For this analysis to be created, 30 regular gambling addicts were questioned, and 26 forms could be considered eligible to be processed. The results of the questionnaire reported that 10% out of the 26 forms were female and 90% male, 85% of the respondents are aged between 18 and 35 years old.

The questionnaire has been built as a first research tool for any Meta Programs pattern of language and as a first evaluation of the research hypothesis. In terms of the psychologically pattern of reply, there hasn't been any specific motivational neural system to be identified. In fact, casino advertising isn't the reason for why people choose to go and spend their money. However, most respondents have declared that one of the main reasons for why they decide to go in a casino and spend money is because of their own true desire – to win. This idea of practicing a destructive game with multiple negative effect over all personal parts of life, means that the consumer is trapped in his own perspective of needing

to continue. This first analysis of the questionnaire confirms I1, where a gambler will continue to get satisfaction even loosing, as long as he can still play.

The research continued to analyze the environment effect of the room over a gamblers attitude and mentality. Investigating how the sound and light effects were influencing the consumer in any way, 71% of the respondents declared that their verbosity was increasing when hearing the "winning noises". However, 100% declared that they knew the sounds were fake and no one was winning the big prize. Even so, the noises were making them angrier because while they were playing and losing, they could envision how they could win. Therefore, hypothesis I2 has been invalidated.

Sound effects do have an impact, but an unpredicted one. The analysis last part of research has evaluated the resulted effects of external advertise factor. In presenting several advertises of gambling places or games, 90% of respondents declared that ads don't work and have no influence effect over them. However, routine is the factor considered to be harder to avoid. By having a tradition of going every Friday, for example, it becomes extremely hard to avoid. This surprising response confirmed I3: "Gambling creates the effect of auto-manipulating, placing consumers in the position of increasing their own addiction" were consumers have no reaction towards advertise and confirmed I4: "Gambling commercials have no influence or motivation effect over addicted people". In the situation in which gamblers often go alone in casinos, they don't have an influence effect from friends, rather they do it to themselves. How society evolves and activities become more mediatized in the online, gabling is also shifting. 45% of respondents declared that they play offline and online already. The online trend is rising and it is just a matter of time until it will be the only type of gambling in existence, confirming I5: "Online gambling is getting bigger and will produce more income than classic casinos".

6. Conclusions

C1: The results which were generated from the quantitative analysis presented great insights about the psychology of gambling addicts and the influencing effect of casinos. The connection between emotion reactions and manipulation techniques is visible has been confirmed present both in offline and in online environments.

C2: The conclusions resulted from the in-depth interviews, has set new hypothesis on how gambling affects the human psychic. While talking about their addiction, most respondents presented an increase of anger related to either themselves or to the questions. The defense mechanism was triggered and the neural Amygdala started the process of defending the need of satisfying the gambling addiction. Auto-manipulation into gambling is increasing and, from a financial point of view, is growing into a more profitable addiction than alcohol, in terms of global income.

C3: Conclusions of the case study: Casinos start using more the manipulation techniques, the ones presented in this research and many other. Because of the evolution of online gambling is rising, more ads appear in the online just to create a new environment because, at this moment, the effects produced offline are still making the bigger impact. Around

60% of gamblers acknowledge the dangers of this type of addiction and recommend that people should never even try playing, while they still continue. The continuous proof of auto-manipulation provides a clear perspective over how dangerous manipulation techniques can become.

C4: Manipulation and influence are tools which can be used to help or harm a person or a group of people. As Marketing proves that the world is changing and personal needs of satisfying pleasures are increasing, because lack of personal happiness is world growing phenomenon, top corporate business develop new ways of promoting their products or services. The trend of having a consumer behavior is increasing, which is why manipulation techniques are more present in present times.

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Work culture in Asia.
Case study – The Japanese management model

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Abstract. *Asia is home to some of the fastest growing economies in the world. Despite a challenging global environment, emerging economies, especially South East Asia, have undergone extraordinary developments in recent years. Although Adam Smith (1759) was the first to analyze how norms, beliefs, morality and culture affect economic development, an increase in interest in the role of culture has only recently taken place. Max Weber (1930) used to refer to culture as religiosity and argued that Protestantism played a crucial role in the development of capitalism. Numerous recent studies show that cultural differences and management style matter for long-term development.*

Japanese society is a very hierarchical one. It has very clear hierarchical levels, but the decision is not made from top to bottom, but from bottom to top. It is a collective decision, and this can confuse foreigners. Chinese society is a hierarchical one also, but things are simple there, the decision is made at the top. The Japanese have this contradiction - top management expects those from lower levels to discuss and come up with new ideas, then the best solution is chosen. The Japanese apply different principles from US and European managers and have developed different approaches and policies to tackle problems. These policies, while not the key to the Japanese "economic miracle," are certainly major factors in Japan's economic growth and performance in the last 20 years.

Our paper details the features of the Asian management, particularly that of Japan, in order to provide a possible explanation for the significant growth rates experienced by Japan, as well as to identify potential future growth trends.

Keywords: emerging economies, Macroeconomic Policy, Asian Growth, Economic Development, Japanese labor market, employment, reforms, labor market flexibility.

JEL Classification: E02, E60, F63, E24, J11, J21.

Asia is home to some of the fastest growing economies in the world. Despite a challenging global environment, emerging economies, especially in South East Asia, have undergone extraordinary developments in recent years. Although Adam Smith (1759) was the first to analyze how norms, beliefs, morality and culture affect economic development, an increase in interest in the role of culture has only recently taken place. Max Weber (1930) used to refer to culture as religiosity and argued that Protestantism played a crucial role in the development of capitalism. Numerous recent studies show that cultural differences and management style matter for long-term development (Kapás, 2017). Daniel Daianu (2009) believes values influence individual and corporate behaviour. Knowledge, faith, tradition, morals, regulations guide individual behaviour in all aspects of life, including economy. And the way individuals relate to work underlie economic activities and help mold corporate behaviour in a certain country.

Japanese society is a very hierarchical one. It has very clear hierarchical levels, but the decision is not made from top to bottom, but from bottom to top. It is a collective decision, and this can confuse foreigners. Chinese society is a hierarchical one also, but things are simple there, the decision is made at the top. The Japanese have this contradiction – top management expects lower tiers to discuss and come up with new ideas, then the best solution is chosen (Meyer, 2015). In the USA, decisions are made by top management, people assume their ideas and this is mirrored in the political field as well as the business environment – a single person is the decision maker. In Japan, decisions are made in a group – „we" make decisions, not a single person. The process is slowed down, which is frustrating for many foreigners who work or do business there. This procedure minimalize risks by analizing various opinions, testing and validating different solutions. In this way, when the process reaches top management, all possibilities had been discussed, risks eliminated and opportunities identified.

In an analysis of the different types of management, Richard D. Lewis (2006) shows that Asian management style is opposed to the American one. If decisions are made from the top down, that is management makes the decisions, the Asian way is based on consensus. American managers are assertive, aggressive, action- and goal-oriented; they are confident, intense, optimistic and ready for change. They can work as a team, but also value individual freedom and their main interest is consolidating their own career.
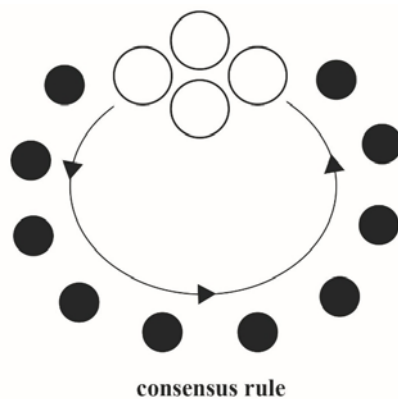
Figure 1. *American management style*

Upper/middle managers make individual decisions
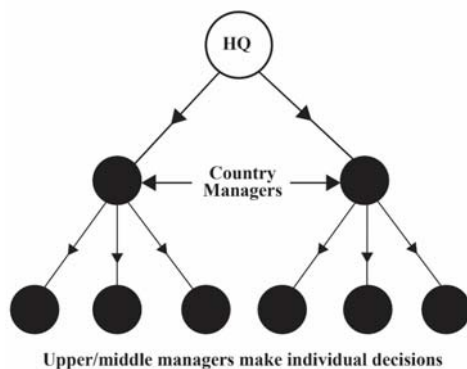
Countries in South-Eastern Asia have a rather Confucian hierarchy, where the group is sacred while leaders are seen as benevolent dictators.

Figure 2. *Asian management style*

consensus rule

Japanese top executives have a great power, in line with the Confucian hierarchy, but they have a limited involvement in the daily aspects of the company's activity.

Figure 3. *Japanese management style*

ringi-sho consensus
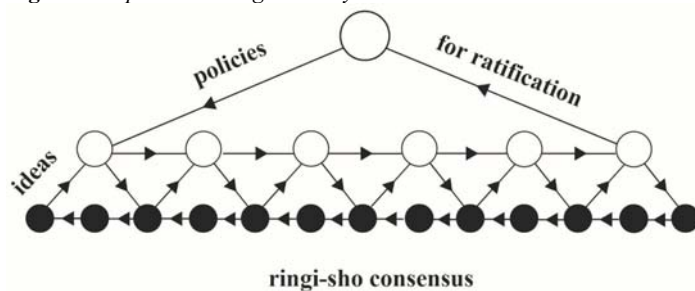
In Japan, top management expects lower tiers workers to discuss and come up with new ideas, then the best idea is chosen. Japan is a group-based society, it has a village mindset. The country was isolated from the rest of the world for a long time, both historically and geographically, so people helped each other and community benefitted from it. This mobilisation of the community is also a new trend, a way to do business anywhere in the world – it is about social entrepreneurship. The Japanese have the tradition to help each other and this can be turned into a business model (Voinea, 2018). For a lot of Japanese people, business is a relationship. In Japanese it is called „en", a word that can be translated by „serendipity". It is a soul connection among people, a part of everyone's karma, a thing that the Japanese cherish. This is also the reason any business meeting is subject to a ritual: business cards are exchanged, small gifts are exchanged, souvenirs are brought from the voyages for colleagues and clients. All these things show a special attention for the development and maintaining of a personal relationship based on trust and politeness. Having a job in Japan is considered a privilege, not a right that you deserve. People are very proud of what they do, even if that means washing floors, cleaning trains or working behind a counter. There is a lot smiling there and a lot of thank you are involved.

Genbaryoku and the passion for one's profession

Focusing on the long-term survival of the organization rather than short-term profit and fast growth, focusing on the field experience (called Genbaryoku) and the passion for one's profession are a few values of the Japanese management style (Voinea, 2018).

Japanese companies focus mainly on the survival of the organization in the long run rather than having short-term profit and quick growth. Typically a Japanese man works for more that 30 years with the same company, from the moment they graduate from the college until retirement. A small number of people change their workplace easily. As a result, companies are a second home for employees. The same thing applies for the board of directors. Most executive managers of the biggest Japanese companies joined the organizations when they graduated form the colleges. Shareholders are very important for them. But equally important are younger colleagues, employees for which they feel responsible and whom they consider family. In order to protect the lives and future of the employees, managers have to make sure the organization will survive, without clinging on the lack of short-term profit. Shareholders can easily withdraw their stocks, but employees are not able to leave the organization that easily, especially seniors. One of the qualities of this way of thinking and managing a business is the fact that it allows continuous investment in R&D, which requires time to provide results. A typical example is the Toray Company, that makes carbon fiber products. Company's carbon fiber is used in Boeing jumbo jets. It is stronger than iron, but much lighter. This project posted losses for 25 years, as all sorts of problems arose in costs, quality and product R&D and also during tests. One cannot compromise in the quality of a product that is meant for airplanes fuselages. But after 25 hard years, Toray managed get over costs problem and is currently one of the biggest world suppliers. Short-term thinking would have made very it difficult for any company to come up with such innovations.

The „work force", the power of field work, or the Genbaryoku, is a characteristic of many Japanese companies. All theory that one learns in school has the role of preparing one for the reality in the field, in the domain where one will work. Experience in this domain, the passion for the profession and the obsession for the quality of one's work are the elements that differentiate a true professional from an amateur. And exactly the same thing can be said about companies. Those that know their merchandise, clients and domain are the companies that can take the test of time and keep their clients happy. This is why the Genbaryoku can not be neglected. Corporate value is not developed only at the management level, but rather „in the field": in research, client interaction, communication and sales. That is the place where the playfield is, and "the power of those in the field", the way employees know how to keep their clients happy and enjoy the chance to do it provided to them by their jobs, are all that matters in order to grow constantly, organically and healthy. One of the reasons Japanese companies are able to design and produce high quality products is that the professionals involved in this process dedicate all their time and abilities to create something remarkable. It is an exceptional pride, a self-respect and a cooperation spirit rooted in the history of many Japanese companies.

But Genbaryoku is not limited to the processing or manufacturing industry. Shinkansen, the Japanese high speed train, is extremely precise in terms of departure and arrival time.

This things are rooted deep in the Japanese people's national specific and it is possible to be learned. For example, Toyota Motor Corp. has successfully expanded its unique production system to the USA and Turkey. Genbaryoku combined with a strong business ethics lead to sustainable organizations and business continuity. These are the things Japanese companies strive to transfer beyond the country's borders.

Decreasing birth rate

But Japan has a problem with the workforce in the context of population aging and the decreasing of the birth rate. There are two resources: inside Japan (women) and outside the country (foreigners). The problem of women and accepting foreigners have to be integrated into the discussion on the lack of workforce. Historically, the Japanese have had an isolationist mentality. They tend to protect themselves from the outside and, before considering immigrants, they think they can solve their own problems. But a new legal framework is currently being prepared for the acceptance of highly qualified foreigners. Critiques claim that Japan only picks the brains. A bigger opening is also related to the language, as the Japanese are not very good English speakers, and Japanese is very difficult for the foreigners to learn.

As for women, data shows that women's occupancy rate reached 66% in 2018, plus 3.6% compared to the previous year, and 12% of women are in management positions, a 3% growth. At the same time, 45% of companies have women executives. Numbers look well, but the problem is that beyond those women who make career progress, most of them work part time. While full time schedule is 40 hours a week or more – the Japanese are famous for overtime – women work only 15 hours a week, for an additional income.

The tax system discourage women from working full time, because there are incentives for those who work part time – they don't pay taxes for incomes under 10.000 dollars, so many women don't go beyond this threshold. But beyond taxation, a change in men's mentality is also needed. Men do a lot of overtime because as they grew up they saw their parents being praised for working hard. These things are deeply rooted in men's mentality. On the other hand, men fear losing their jobs to women, fear their role of providers in the family being taken away and losing faces. They don't know how to demonstrate they are men, so we have to find a way to quench this fear of losing their jobs or family provider statuses.

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Analysis of companies in Romania from the perspective of risk perception and the management needs thereof

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Abstract. *At the level of an enterprise, decisions must be taken in such a way as to ensure the exploitation of opportunities as well as reducing or eliminating risks where possible. Regardless of their field of activity, companies face different risks such as: systematic risks that are difficult to influence and non-systematic risks, where the company can take measures to reduce the negative effects. Both categories of risks must be properly analyzed and dealt with by the companies in which their manifestation is expected. The risks can come from different fields: economic, political, technological, sociological, etc. regardless of the specific activity of the company, risk assessment and modeling is a complex activity that involves a multidisciplinary approach from different branches of science.*

Keywords: risk, gestion, entreprise, threats.

JEL Classification: G32.

1. Introduction

The risk in the activity of an enterprise refers to the probability of not meeting the objectives set in terms of performance (failure to meet quality standards), program (failure to meet the deadline) and cost (exceeding the budget) (Ioniță et al., 2009).

In any field of economic, social or political activity, there is the question of the risk that may arise, having consequences that cannot always be anticipated (Jianu et al., 2019). It follows that in fact we live in a civilization of risk. Risk assessment and modeling is a complex activity that involves multidisciplinary approaches from different branches of science, respectively economic, social or political knowledge (Burlacu and Jiroveanu, 2011).

Any manager must pose the problem of managing the threats, because, otherwise, not reaching their objectives, they would be disqualified, or to take advantage of the opportunities for the benefit of the organization, proving their efficiency (Androniceanu et al., 2017). If uncertainty is an everyday reality, then the reaction to uncertainty must become a permanent concern (Bodislav et al., 2019).

In Romania in the current economic environment, profound transformations are taking place in all fields of activity and the implications are felt in the financial situation of each company to mitigate the general risks that may influence the activity of a company, we must know what are the pressure factors that can appears from the external environment of the company and the weaknesses from the internal environment of the company (Profiroiu et al., 2019).

 The risk can be divided into two categories: the internal risk where the economic agents face the threats that may appear inside the unit and the external risk specific to any enterprise, being influenced by certain factors outside the unit (Litra and Burlacu, 2014). Companies in Romania from all economic sectors face many problems caused by economic instability throughout their life (Costache et al., 2015). From the perspective of the economic environment, it can influence companies both positively through opportunities and negatively through risks and threats (Rădulescu et al., 2018).

2. General risk characteristics

Many of the Romanian managers sometimes analyze the risk and the uncertainty together, finding significant differences, if the risks can be quantified by probability laws and subsequently eliminated, the uncertainties cannot be quantified or eliminated (Burlacu et al., 2019).

2.1. Operating risk

For all the economic sectors in Romania, the companies depend on:
- evolution of demand;
- the supplier market;
- job offer;
- the overall economic evolution.

This dependence determines the exploitation risks whose frequency of occurrence is difficult to identify. The main types of exploitation risk are:

Even though many analysts anticipated this, the emergence of risk and its aftermath could not be avoided (Angheluta et al., 2019). Some companies have managed to adapt to the new economic context, but others have not been able to survive by reducing their activity (Burlacu et al., 2018, 2019). SMEs in industry and services decreased by 41.04%, those in construction by 59.72%, businesses in commerce decreased by 47.13%, and those in tourism and transport decreased by approximately 37.5%.

In order to limit the losses and to survive in the new conditions, the companies made the decision to change the prices (Alpopi et al., 2018). Decreasing profit margin and increasing production costs is also the effect of price fluctuations in the energy and fuel markets.

In the current economic context, any additional wage expenses can have significant negative effects on certain enterprises in our country (Bran et al., 2018). Within the Romanian companies, whether we are talking about SMEs or large companies and regardless of their field of activity, we can assist in increasing the financial expenses due to the registered foreign exchange deficiencies. These differences of course can occur either in the liquidation of the receivables and debts in foreign currency, or in the reassessment of the existing availability in bank accounts and in the house.

The depreciation of the RON can cause the increase of the financial expenditures, this risk is encountered quite frequently in the Romanian companies.

Figure 1. *Currency exchange RON-EURO (ian. 2017-2019; sep. 2017-2019; may 2017-2019)*
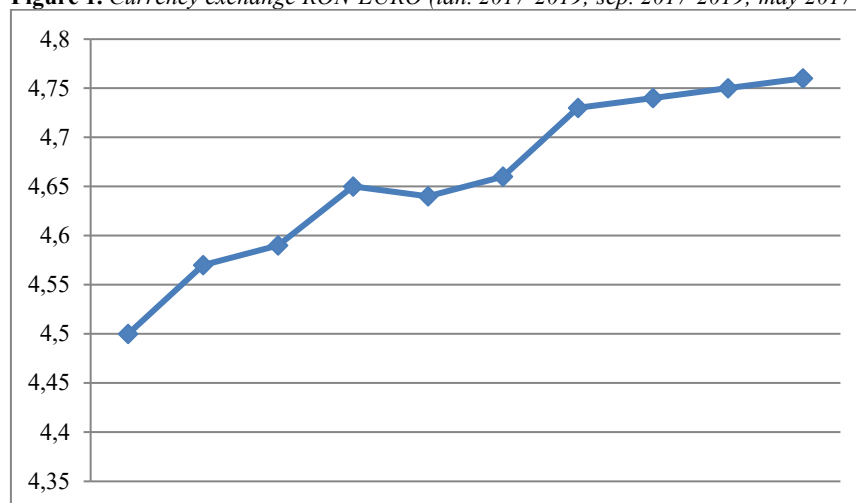
Source: processed after www.cursbnr.ro

If we look at the evolution of the RON in relation to the euro area over the last 3 years, it can be observed that in a relatively short period of several months, significant differences can be difficult to anticipate. In these conditions, the probability of the increase of the financial expenses due to the differences of foreign exchange, at the level of an enterprise is quite high.

The economic risk is therefore the variability of the profit as a result of the change in the level of activity and as a result of the position of the activity of the company with respect to the profitability threshold, more precisely to the deadlock.

From analyzing this type of risk we could conclude that companies with a higher technical endowment are risky because they involve a high volume of fixed costs (maintenance and amortization). These companies can have as their main objective only the increase of the turnover in the opposite direction, a decrease of the turnover is the more unfavorable the higher the fixed expenses.

2.2. Financial risk

The related financial expenses such as interest or commissions cause a greater variability of the net profit and therefore an increase of the financial risk. The financial risk is determined by the variability of the net profit in relation to the turnover. The analysis of this type of risk can be approached similar to that of the economic risk with the consideration of the fixed expenses (interest related to the borrowed capital). The financial risk is divided into: credit risk, market risk and liquidity risk. The financial risk assessment can be done using the elasticity coefficient of the financial profitability.

2.3. Debt risk

The high costs that appear in the production process and not only, make the equity of the Romanian companies insufficient, so the companies have to borrow.

The borrowed capital generates for the enterprise a fixed cost with interest, so the company risks not achieving a sufficient result to cover the cost of the loans. It is necessary to maintain a debt level below 60%. Debt risk can be measured by using liquidity indicators (the ability of businesses to meet short-term debt) and debt rates.

2.4. Risk of insolvency or bankruptcy

This type of risk is closely linked to the other two risks and consists in the inability of the company to cover, at maturity, all the contractual obligations previously committed.

To evaluate the stability of the company and to see what are the possibilities of realizing losses leading to bankruptcy, some indicators are used:

- Equity solvency: the ability of the equity of the company to cover long-term debts, shows the share of equity in total capital.
- General liquidity: the ability of the company to pay short-term obligations.
- Net cash: $TN = FR - NFR$.
- Net situation: the amounts that will be returned by the associates, to the shareholders in case of liquidity.

ONRC mentions that the number of insolvency companies in Romania has increased from the beginning of the year to the present.

Figure 2. *Number of companies that went into insolvency between January and February 2019*

Source: processed after https://www.onrc.ro/index.php/ro/statistici?id=252
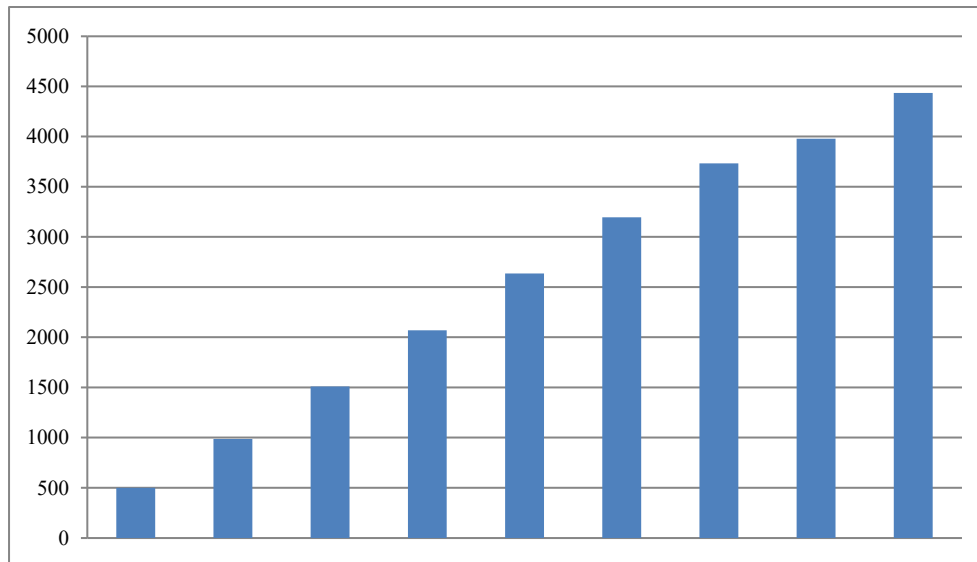
The risk is specific to both the internal and external environment and can occur throughout the life of an enterprise, so developing a risk strategy at the enterprise level is absolutely necessary.

Following another study conducted over a period of 10 years (2008-2018) with companies listed on the Bucharest Stock Exchange, it was found that the main risks faced by companies are price risk, currency risk, interest risk and liquidity risk.

The results showed that 14.7% of the analyzed sample implemented an integrated risk management system. On the other hand, the Romanian companies, accept to use the derivatives to cover against the risks, even if in the analyzed period only 7 out of 63 companies used these instruments.

It has been confirmed that large companies use complex instruments such as swap contracts and commodity options, while smaller companies have used less complex instruments, futures or forward contracts. The results of the study show that the size of the company directly influences the use of derivatives.

3. Risk management and the need to manage these

To properly manage a risk, you must first know what you want to achieve and what you allow yourself to lose or the time frame you want to do so.

All the activities of any enterprise involve risks (financial, strategic, operational, legislative, etc.). Organizations manage the risk by identifying and evaluating it, as well as by establishing the means of internal control.

At the same time, organizations must identify risk reduction measures, the budgetary impact for implementing measures related to accepting, avoiding or transferring risks, as well as setting priorities for allocating the available budget. The unpredictable nature of the economic process or its insufficient knowledge, implies uncertainty and difficulties in the decision-making process. Therefore, there is a need to develop and implement a risk management tool subordinated to the organization's objectives.

Risk management must be subordinated to the objectives that form a complex, coherent and convergent system towards the general objectives, so that the activity levels are mutually supportive. The risk management measures that can be applied by an enterprise take a variety of forms, choosing such a measure depending on the nature of the risk, as well as the resources available to the company at a given time and the purpose pursued. Those responsible can take the following more important measures.

3.1. Risk avoidance

This measure is adopted by a large number of companies in our country and implies the permanent monitoring of economic conditions in certain markets, sectors, activities, etc., thus avoiding to invest in those areas characterized by a high degree of risk. Adopting a policy of avoiding activities characterized by a high degree of risk, without taking into account the business opportunities, is unfavorable for the company, as it loses the opportunity to invest in areas with high efficiency. A significant number of managers are willing to accept high levels of risk, but with the hope of achieving high profits in the short term.

Therefore, businesses resist in business as long as they take risks, provided they identify and manage them effectively, so as not to endanger the survival of the enterprise on the market and to obtain the highest profits.

3.2. Risk insurance

Another risk protection alternative is insurance. The insurance companies accept to insure only the risks of a pure, accidental, accidental nature, the materialization of which cannot be foreseen in advance, both as intensity and moment. In exchange for taking all or part of the risk from the economic agents, the insurance companies request an insurance premium, the value of which is the higher the risk. Economic agents use this technique when they face risks caused by environmental variables that they cannot control or for which the degree of control is very low.

3.3. Restructuring of the activity

It implies the constant concern of the company for the constant monitoring of the environment in which it conducts its business, in order to anticipate events that could damage the environment in which the company evolves. Depending on the nature of the negative phenomena expected to occur, managers can establish measures to restructure and adapt the activity to the new conditions manifested on the market.

One form of implementation of this technique is to choose an appropriate and flexible legal form of organization, such as partnering with another firm and setting up a joint venture,

for the purpose of risk sharing or, when the risk level is very high, licensing others companies, as they do not require very large investments, but can bring significant benefits.1 Also, the risk reduction can be achieved by patenting the products and technologies created by the company and by maintaining a strict control over them, which assures the enterprise in question an important technological advance over the competition.

Using as many suppliers as possible, diversifying the customer and the product list can substantially reduce the risk. The diversification of the product list also allows to reduce the risk of sales, by entering new market segments and thus attracting new categories of customers.

3.4. The need for risk management

Regarding the need for risk management, this implies the need for the company to know the dangers to which it is exposed, dangers that can be covered and quantified. It is certain that in any activity there is a risk, cataloged as the normal and indistinct partner of a business.

Companies in Romania, regardless of the object of activity are exposed to risks, considering that any operation is risky if we do not know how it will occur. Generally, the information available at the moment analyzed and the potential development of future events are taken into account through the economic decision. Risk analysis within an economic entity has a high degree of importance for the management of the company, as it helps to adopt the risk strategy, to warn about the deterioration of the business climate and to impose strategies of intervention in critical situations.

Failure to evaluate the risk within a business can generate a series of threats at the company level such as: incorrect business placement, marketing policy, lack of capital due to too large investments in fixed assets, problems with loans, uncontrolled expansion on a previously untested market, inadequate capitalization determined by the risk of the activity that creates higher dividends and smaller investments and the bureaucracy found in activities with unsatisfactory results.

Conclusion

The risk is "the inability of the company to adapt in time and at the lowest cost, to the variation of environmental conditions" and most of the methods given for the analysis of the risk of bankruptcy are based on a score function based on which it is determined, with an approximation, if the firm will have non-performing economic results in a period immediately following the analysis (at most two years).

The financial risk, as I have observed, depends to a large extent on the financial structure of the company. The more financial structure of the company (debt - equity), the more indebted, the higher the financial risk. The decision of the company regarding the ratio between debt and own funds is set in the policy of short-term debt.

The risk of bankruptcy has been and is in the attention of both managers and the holders of funds. The managers are interested in the smooth running of the production cycle, and the investors are interested in recovering the credits and the related interests.

The existence of risks has led to the launch of all the sectors whose main element regarding the level of competence lies, in fact, in risk management. I believe that progress would not have been achieved if we had avoided the risk. History has shown us that great accomplishments always presuppose substantial risks in one form or another. The willingness to take risks is a common element of all economic agents.

Basically risk avoidance is a very safe path to failure. Instead of avoiding risk (which is impossible) we should develop a more in-depth understanding of how we can turn potentially negative outcomes into opportunities.

Based on studies carried out by specialists, it is considered that the economic agents in Romania are not prepared to face the risks, which refer to the integration in the European Union. The main problems faced by Romanian companies are legislative and technological problems. Legislative because the norms are not fully respected by Romanian entrepreneurs and technologically because they do not adapt to the current technology, using outdated materials that slow down the production. These risks can lead to the removal of Romanian companies from the market by the competitors well adapted to the economic environment.

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Environmental risks in the context of globalization

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Abstract. *The threat of extreme events has become the subject of scientific research only in recent years. This recognition comes at a critical stage of human development in which the world becomes more interdependent and more vulnerable. There are many assumptions that support the increased probability of producing natural phenomena with major impact on society. Specialists in insurance and reinsurance indicates increasingly more decisive climate change resulting from human interference as the main factor of the imbalance causing interference. Globalization makes hazard effects to be felt ever more beyond the directly affected nations. If disaster occurs in developing countries in the international community respond with solidarity and human and material support. If disasters occur in developing countries, the negative effects are felt in the world economy, as evidenced by major financial losses.*
The objective of this paper is to highlight the environmental risks in the context of globalization. The documentary analysis confirmed the opinion of scientists who drew attention to the fact that extreme natural events can have effects and consequences on a global level, of the whole humanity.

Keywords: globalization, risk, environment, hazard.

JEL Classification: O, Q.

Introduction

In the official documents, according to the procedures for assessing the ecological or environmental risk, this risk means the potential impact of human activities on the abiotic flora, fauna and environmental factors (setac.org). On the other hand, in the business environment, environmental risk is defined as the uncertainty or severity of the financial or non-financial impact of an environmental hazard (Bran et al., 2018). Therefore, we consider that the environmental risks can be defined as consequences of some natural or anthropic hazards through which the environment and the ecological systems (plants, animals, crops, settlements, etc.) suffer (Rădulescu et al., 2018).

There are many assumptions that support the increased probability of producing natural phenomena with major impact on society (Burlacu and Jiroveanu, 2009). Insurance and reinsurance specialists are increasingly pointing to climate change resulting from human interference as the main factor of a disturbance-causing imbalance (Dima et al., 2020).

Insurance industry forecasts have been confirmed in recent years (Smolka, 2004). The tsunami wave in Southeast Asia, Hurricane Katrina, the earthquake in Kashmir, and closer to us, the unprecedented floods of 2005 and 2006 are events that confirm these statistics. Hunger in Niger, Mali and Mozambique can be added to the list of natural disasters (Bodislav et al., 2019).

The tsunami wave in Southeast Asia, the earthquake in Kashmir and the floods in Romania highlighted the vulnerability of developing economies, respectively in transition, the number of victims being very high. On the other hand, Hurricane Katrina brought to the attention of the global economic effects of extreme climate phenomena, as well as the greater impact on the poor population. In the foreseeable future we can expect some major events a year with thousands of deaths and considerable material damage.

Fidings

The aspects related to the structure of these hazards are interesting, we consider in this context. Thus, with regard to earthquakes, specialists agree on a very low probability of human interference with this process. The phenomenon of volcanism and earthquakes are caused by plate tectonics being generated by processes that run on time scales for millions of years. So far, there is not enough data recorded to make possible predictions or assessments on the future evolution even locally. But there are some exceptions here as well. These include the situation of the activity of the seismic center in Vrancea, materialized in the earthquakes in Bucharest - the specialists consider that here earthquakes occur with remarkable regularity for such phenomena, the interval between two major earthquakes being appreciated at about 30 years.

Things change when we analyze climate hazards. These occur with a much higher frequency and, as we have seen before, more and more voices support the impact of climate change of anthropogenic origin as the main cause of the increase in the frequency of extreme events. Climate records are able to confirm some of these assumptions.

- *Tropical cyclones*. The number of tropical cyclones category 4 and 5 has doubled since 1960. This may also be the result of non-periodic variability, but global climate models also highlight the favorable influence that constant warming of ocean waters can have in this regard.
- *Storms*. Rising sea and ocean levels are not a flood problem. It is not a silent process, which occurs overnight. Growth is accompanied by strong storms that affect the material values and life of coastal human communities. Experts estimate that events with a frequency of 1/60 years will reach the end of the century as part of normality, as they will occur every two years (Weather, 2006).

Climate is one of the environmental factors with marked variability. Although complex models were formulated, the specialists failed to delineate the anthropogenic influence from the non-periodic variability. A challenge in this regard is the El Nino phenomenon. The phenomenon occurs every three or seven years as a result of excessive warming of the waters of the Pacific Ocean. Its effects are extreme weather events. For example, in 1997 El Nino caused record flooding in Chile, severe drought in Indonesia, heavy rainfall in the U.S., dramatic drop in fish catches in Peru and spectacular growth in Chile. The balance of losses caused by these events reached over 2000 victims, and material damage of over 33 billion dollars.

Figure 1. *Weather disaster losses as % of global GDP (Munich Re) (% of global GDP)*
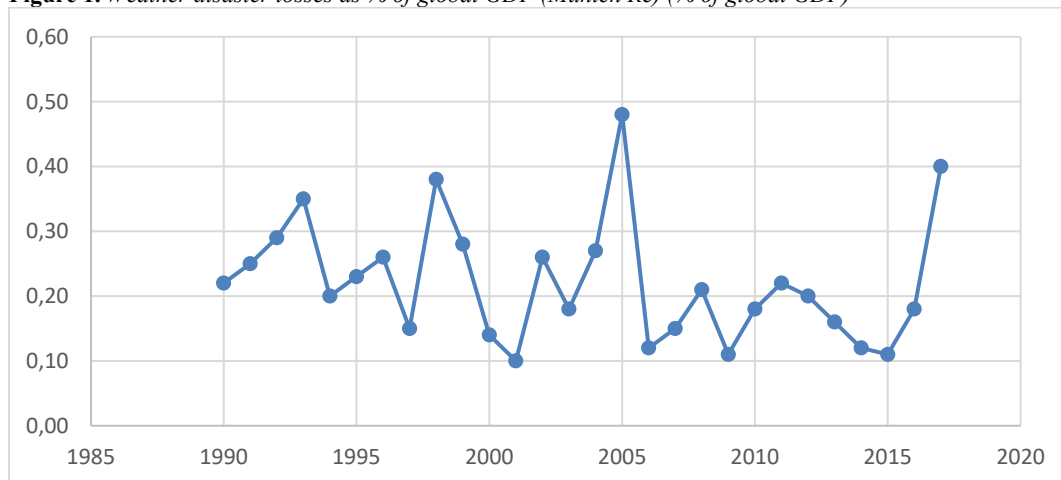
Source: Adaptation according to the data of Pielke (2018).

Analysis of information

Analyzing the information contained in a ranking made by the Disaster Center of the U.S. regarding the events that have caused the greatest material damage, we observe that the floods are in the first place, both in terms of the size of the damage and the incidence of the hazard (the number of events in the top 100 of the hazards).

Greater vulnerability. Another important aspect in addressing the problems related to natural hazards and not only is the vulnerability, respectively the degree of exposure of human lives, respectively the material values to the phenomenon that occurs. Population

growth and urbanization, especially the development of megalopolis in recent decades, environmental degradation and anthropogenic changes are just some of the features of the globalization era (Burlacu et al., 2019).

The population is becoming more and more concentrated in the urban environment (Alpopi et al., 2018). In 2007, for the first time in the history of mankind, more people will live in cities than in rural areas (Burlacu et al., 2018). These changes have exposed communities more to natural hazards. The ranking made by Disaster Center also becomes relevant from this point of view. The value of the damages increased significantly from year to year, the rate of growth being increasing (Jianu et al., 2019).

The most "costly" event was the earthquake in Japan, which in 1995 resulted in material damage of over $ 175 billion. Insurance companies are increasingly alarmed by the increase in risk exposure. A study conducted in 2000 draws attention to the ability of these companies to withstand the pressure of increasing risks and vulnerabilities. Hurricanes, storms and earthquakes are present in the ranking made according to the value of the insured goods (Table 1).

Table 1. *The most expensive natural hazards*

No.	The event	The region	Date	Generated losses (billion dollars)
1.	Hurricane Katrina	US	2005	167,5
2.	Hurricane Harvey	US	2017	130,0
3.	Hurricane Maria	US, Puerto Rico & Rep. Dominican	2017	93,6
4.	Hurricane Sandy	US	2012	73,5
5.	Hurricane Irma	US	2017	52
6.	Hurricane Andrew	US	1992	50
7.	Drought in California	US	1988	44,2
8.	Flooding center of the US (Midwest)	US	1993	37,7
9.	Hurricane Ike	US / Caribbean	2008	36,3
10.	Drought in California	US	2012	33,9

Source: https://www.investopedia.com/financial-edge/0311/the-financial-effects-of-a-natural-disaster.aspx

Insurance companies are increasingly alarmed by the increase in risk exposure. A study conducted in 2000 draws attention to the ability of these companies to withstand the pressure of increasing risks and vulnerability. Hurricanes, storms and earthquakes are present in the ranking made according to the value of the insured goods (Table 1).

Environmental degradation and anthropogenic changes also affect vulnerability (Ioniță et al., 2009). For example, practicing agriculture reduces soil absorption capacity, which exacerbates the effect of flooding, even if the weather processes maintain their intensity. The destruction of mangrove swamps in Sri Lanka has increased the vulnerability of coastal communities to tsunami waves. Deforestation can cause changes in rainfall distribution and infiltration, thus aggravating the destructive potential of flooding (Burlacu et al., 2018). There is evidence that environmental changes in the Himalayan mountain area have increased the amount of debris material and major flooding that has caused over $ 2 million in damage in Bangladesh in 1988, 1991 and 1998. In Cameroon, they developed slopes on the slopes around the cities, slopes that became so unstable, so that every rainy season landslides occur that cause thousands of victims. In 1999, in Venezuela, due to the lack of urban planning, floods made about 30,000 victims in the most modern skyscrapers.

The tsunami wave of December 2004 was considered as an alarm signal. This event affected 11 countries directly and caused losses in more than 50 states, including tourists from northern countries. Hurricane Katrina affected the oil price for several months, but the financial effects were not lasting on a global scale.

Scientists draw attention to the fact that extreme natural events can have effects and consequences on a global level, of the whole of humanity. Extreme events occur with very low frequencies, and possible consequences include: global economic crisis, tens of millions of victims, catastrophic and irreversible destruction of megalopolis, endangered global food reserves, disruption of transport and communications systems, pollution at scale overall. Further, these effects will lead to famine, epidemics, political struggles, the collapse of social order and of national and international organizations, war and even the collapse of civilization.

The impact of natural hazards is increasing and it must be viewed in the context of an increasingly complex, interdependent and vulnerable world. Growth is largely driven by anthropogenic changes and greater vulnerability of communities. However, climate change caused by human interference is considered a possible cause of the increase in the frequency of extreme events.

According to the most complex UNEP report (GEO4), the relationship between population vulnerability and environmental quality is expressed on numerous planes, as follows:
- In the last 30 years there have been significant improvements in the standard of living, but over 1 billion people are poor, having no access to minimal services, thus being vulnerable to environmental and social-economic changes.
- The most vulnerable groups are the poor, indigenous populations, women and children.
- Improving human well-being – in the sense that each individual lives the life they value and has the opportunities to realize their potential – is the key to development;
- Increased life expectancy and individual health expenditures and decreased child mortality were higher in countries where income distribution was more equitable and access to medical treatment was better.
- International trade has helped increase incomes and helped to remove millions of people from poverty, but it has also contributed to differentiating consumption characteristics.
- Conflict, violence and persecution contribute to the dislocation of many civilians who reach economically and ecologically marginal areas.
- Exposure to natural hazards has increased as a result of climate change, mangrove deforestation and population concentration in high frequency areas of hazards.
- Poverty must be tackled globally to reduce vulnerability to environmental and socio-economic changes.
- In order to achieve sustainable development, it is necessary to integrate governance starting at the local level, sectoral programming and for longer periods of time.
- The integration of development, health and environmental policies creates an opportunity, as education and health are key features of human capital.
- Encouraging the social integration of women is also justified from an economic, social and environmental point of view.

- Cooperation on environmental issues creates the necessary pathways for the peace process by promoting the sustainable use of resources and equity in and between countries.
- The official development assistance must be increased to reach 0.7% of GNP.
- The potential of science and technology to contribute to reducing vulnerability is unevenly distributed. The situation can be improved by developing partnerships and increasing investments.

There are strong synergies between improving well-being and reducing vulnerability.

Conclusions

The threat of extreme events has become the subject of scientific research only in recent years. This recognition comes at a critical stage of human development in which the world becomes more interdependent and more vulnerable. Globalization appears as an irreversible process, with cooperation, international agreements and the global community being concepts that are increasingly used. The nations have been involved in collective actions to solve major problems.

This global effort can be exemplified both positively and negatively. The Montreal Protocol for the Protection of the Ozone Layer is considered by the international community, but also by specialists, a success story. On the other hand, the Kyoto Protocol is still a matter of dispute.

The premises of the success are the scientific certainty, the involvement of the developed countries, respectively in transition, and substitutability. The premises of failure – scientific uncertainty, larger dimension, profound economic implications, limited substitutability physically, economically and politically. The main difficulties – high costs, reduction of emissions from large developing countries (China, India), compliance with the precautionary principle.

Globalization makes the effects of chance increasingly felt beyond the borders of directly affected nations. If the disaster occurs in developing countries, the international community responds through solidarity and material and human support. If disasters occur in developed countries, the negative effects are felt at the level of the world economy, materializing in major financial losses.

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Consequences of the structural transformations in the industry on the consumption of material and energy resources. The case of Romania

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Abstract. *Prospects for the evolution of the global world and the impact of economic activities on the environment have become a priority topic at present. There is constant scientific preoccupation for a better measurement of the economic results by taking into consideration the effects of economic growth on the natural environment which provides material and energy resources. Industry is one of the activities that involves significant consumption of these resources and also pollution of the environment. During the last two decades, the Romanian industry has undergone important structural transformations, both as a result of entering into direct competition on the markets, as well as under the influence of new technologies. The paper analyzes structural changes by industrial activities in the period 2000-2018 and highlights their effects on internal consumption of material resources and on pollution.*

Keywords: structural transformations, industry, consumption, energy resources.

JEL Classification: O14, O33, Q56.

1. Introduction

The accelerated technological changes have led to the situation where the time between two industrial revolutions is getting shorter. Thus, the first industrial revolution (1IR) carried out between 1760-1840 was followed by the second revolution (2IR) completed at the beginning of the 20th century. The development of semiconductors, of the personal computers and the Internet in the 1960s became the engine of the third industrial revolution (3IR). New technologies currently coming from different fields – digital production technologies, nanotechnologies, biotechnologies and new materials – lead to what is called the fourth industrial revolution (4IR), which involves opportunities and challenges (Xu et al., 2018). As long as they are adopted in production, they generate advanced manufacturing, respectively smart manufacturing systems.

Adopting technological changes in production involves substantial efforts to adapt the workforce, but also a change in the geographical distribution of production, distribution and value chains (World Economic Forum, 2018). In practice technologies from different generations coexist, while the diffusion of new technologies is uneven between the industrial branches. Recent reports show that the adoption of new technologies requires increasing industrial capabilities especially in manufacturing firms (UNIDO, 2019). The analysis of the link between industrialization and new technologies shows that new technologies enable the production of new goods which leads to the emergence of new industries and increase the production efficiency. Each revolutionary wave in the industry has generated new industries. The fourth industrial revolution can lead to the modernization of all industries, including the traditional ones. In this sense, the EU is aiming at an industrial renaissance in Europe (European Commission, 2014).

In the past, industrial development was valued primarily in terms of the industry's contribution to GDP creation and employment, but also to increased labor productivity. Currently, sustainable development objectives have included the increase of productivity of material resources (including natural resources) in the criteria of appreciation of industrial development. The new technologies can lead to sustainable development, both through the positive effects on the environment, as well as on the employment and on the rational use of material resources. Thus, new technologies are able to shape the industrial development.

Sustainable growth refers to the promotion of a more resource efficient, greener and more competitive economy. This priority led to the headline target *20/20/20* - reducing the greenhouse gas emissions by at least 20%, increasing the percentage of renewable energies to 20% and increasing energy efficiency by 20% (including an increase to 30% of emissions reduction if the conditions are right) but also to the flagship initiatives *Resource efficient Europe* and *An industrial policy for the globalisation era*, to support the development of a sustainable, globally competitive industrial base and to help decouple economic growth from the use of resources.

From a perspective of future development, the European Commission proposed in 2018 a "strategic long-term vision for a prosperous, modern, competitive and climate-neutral EU economy" resulting in the document (European Commission, 2019). Adopted by the

European Council March 2020, the EU Member States are aiming to inspire global climate action by making the EU carbon neutral by 2050. This ambitions target, relies on constant reductions of CO_2 outputs in all sectors, with an accelerated path of the power sector – which should become carbon neutral by 2040.

Central and Eastern European countries go through the catching-up process in relation to the more developed EU countries, which involves business upgrading via integrating digital technology (Trasca et al., 2019), but also changes in the structure of industrial production. For the less advanced countries, the problem of finding solutions to the new systems without experiencing the stages through which developed countries have passed is a real challenge. Important conditions are the dynamics of industrial structures, in connection to the firm capabilities and the economic environment. Structural changes of the industry are also related to the fact that some industries may adopt new technologies to a greater extent than others.

The paper presents the structural changes of the industry in Romania in 2000-2017, in accordance with the availability of comparable data. The analysis focuses on highlighting the growth of the manufacturing industry and the energy industry, in close connection with the evolution of the technological level and the effects on the consumption of material resources.

From the methodological point of view, the industry includes:
1) mining and quarrying;
2) manufacturing industry;
3) production and supply of electricity, gas, steam and air conditioning, water distribution, sanitation, waste management and decontamination activities.

The statistical analysis of the industrial structures is based on data provided by EUROSTAT, UNIDO and the National Institute of Statistics in Romania.

2. Structural changes of the industry in Romania

The Romanian economy underwent a difficult period in the 90', by losing 14% in the GDP, decline described by literature as a demonstration of the marked de-industrialization process (Russu, 2015), in some extent due to the general trend towards tertiarization. The bankruptcy of large industrial enterprises led to more efficient economic entities.

After the difficult period of transition to the market economy in Romania, the start of a more consistent economic growth meant the relaunch of the industrial production (Figure 1). Since 2015, the manufacturing industry has been more dynamic than the electricity, gas, steam and air conditioning industry, the latter having a relative stagnation.

Figure 1. *Industrial production indices in Romania*
(volume index of production, 2015 = 100%)
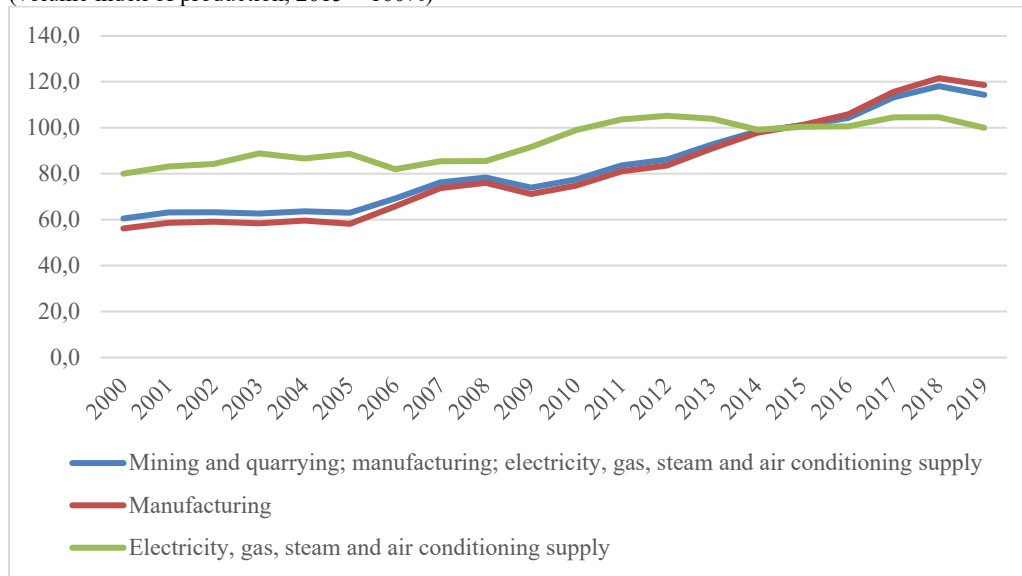
Source: Eurostat, https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sts_inpr_a&lang=en

As the manufacturing industry is a component that can absorb the new technologies to a greater extent, the analysis refers mainly to it. From Figure 2 it can be seen that, after the specific production decline of the first decade of the transition, the share of the manufacturing industry in Romania remained approximately 20-22% of GDP. Exception were the years of economic recession 2010-2011, in which the industry reached a weight of 24%, because it has increased faster than other activities and was the source of the recovery of the Romanian economy.

Figure 2. *Manufacturing value added in Romania compared to European countries (% of GDP)*
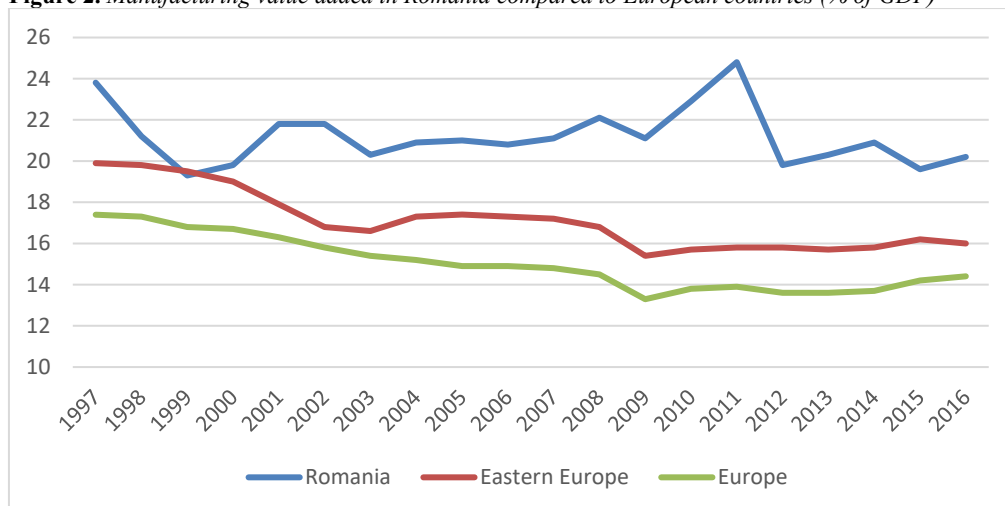
Source: UNIDO, Industrial Analytics platform
https://iap.unido.org/?_ga=2.172684394.839530397.1582707395-925010332.1581007911

The relative constant share of manufacturing industry in GDP in Romania differs from the trends recorded in other European countries, where this indicator reflects a continuous relative reduction of this activity in favor of the services. The average share even in Eastern Europe declined from 19.9% in 1997 to 16% in 2016.

The structural changes of the industry can be analyzed by highlighting the accelerated growth or the decline of industrial activities (Table 1). A difficulty in analyzing the data was generated by the revision of the classification of industrial activities in 2008.

Table 1. *Industrial production changes, 2000-2008 (CAEN Rev.1 classification) and 2010- 2018 (CAEN Rev.2 classification)*

Manufacturing industries with highest growth rate						
Industry Rev.1	Percentage change of industrial production 2008/2000 (Δ%)	Share of industry in total manufac-turing 2008 (%)	Industry Rev.2	Share of industry in total manufac-turing in 2010 (%)	Percentage change of industrial production 2015/2010 (Δ%)	Percentage change of industrial production 2018/2015 (Δ%)
Means of road transport	+ 196.1	5.6	Manufacture of paper and paper products	0.8	+ 78.4	+ 31.1
Rubber and plastic products	+ 94.0	3,0	Manufacture of electrical equipment	2.7	+ 69.6	+ 46.6
Food and beverages	+ 88,3	12.0	Manufacture of computers, electronic and optical products	3.5	+ 60.3	+ 47.8
Manufacturing of construction materials and metal products	+ 62,8	4.1	Manufacture of other non-metallic mineral products	2.8	+ 67.6	+ 14.4
Products tobacco	+ 58.0	1.2	Manufacture of motor vehicles, trailers and semi-trailers	8.9	+ 50.7	+ 48.1
Furniture and other nonclassif. activities	+55.9	1.9	Manufacture of machinery and equipment n.e.c.	2.4	+ 32.2	+ 62.2
Manufacturing industries in decline						
Industry Rev.1	Percentage change of industrial production 2008/2000 (Δ%)	Share of industry in total manufac-turing 2008 (%)	Industry Rev.2	Share of industry in 2010	Percentage change of industrial production 2015/2010 (Δ%)	Percentage change of industrial production 2018/2015 (Δ%)
Clothing articles	- 29.9	2.3	Manufacture of wearing apparel	2.2	- 0.3	-21.1
Radio, TV and communication equipment	- 6.3	0.8	Printing and reproduction of recorded media	0.8	- 12.0	+ 14.0
Textile products	- 4.1	1.0	Tanning and dressing of leather, manufacture of travel and leather goods	1.0	+ 0.6	-10.3
Leather goods and footwear	- 1.6	0.9	-	-	-	-

**Source:** Statistical Yearbook of Romania and own calculations.

The period 2000-2008 was characterized by a continuous increase of industrial activities. According to the UNIDO classification, the most dynamic activities were high tech (means of road transport & other transport), mid tech (rubber and plastic products; construction materials and metal products) and low tech (food and beverages; tobacco, furniture & other). Only a few branches went into decline, especially clothing articles (decline about 30%), as a result of confrontation with Asian competitors.

In the period 2010-2015, after the economic crisis, some high tech and mid tech branches had an accelerated growth, which continued later. The decline of some industries was insignificant and with almost no impact on their share in total manufacturing. There is an important growth of high tech industries (manufacture of electrical equipment; manufacture of computers, electronic and optical products; manufacture of machinery and equipment), mainly due to the flow of foreign investments.

Figure 3 shows the first most important branches in the structure of the manufacturing industry in Romania (7 branches) which together represented in 2016 a share of 72.5%. The same branches reached a share of 68.9% in Germany and 63.2% in Europe. The profile of the Romanian industry indicates structural differences compared to the European average, especially by the continued presence of a significant share of activities such as apparel, leather and footwear and a much lower share of high tech industries capable of incorporating and supporting the diffusion of new technologies in the economy. Thus, still having an industrial basis specific to the changes associated with the second and third industrial revolution, the implementation of the most recent technologies of the fourth revolution within a reasonable term is rather possible only in certain segments of the industries.

These general observations, however, cannot shed light on the type of industrial products manufactured in Romania. These products may belong to a high-tech industrial branch but in fact without incorporating much of the new technology.

Figure 3. *Industry share of total manufacturing, 2016 (%)*

Source: UNIDO, Industrial Analytics platform, https://iap.unido.org/country/ROU
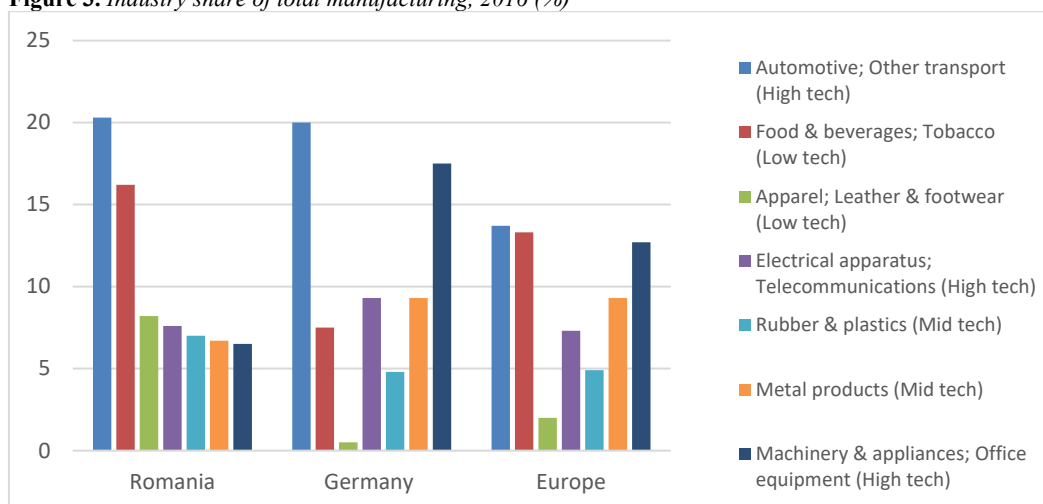
UNIDO calculates the Competitive Industrial Performance Index, which takes into account three main criteria: 1. Capacity to produce and export manufactured goods; 2. Technological deepening and upgrading; 3. World impact. In 2019, the ranking of countries according to this index shows that the top quintile (positions 1-30) comprise almost only industrialized developed countries, the first position being occupied by Germany. Romania is in the upper-middle quintile at position 32, with a slight increase compared to position 33 in 2015 (UNIDO, 2019).

3. Effects of industrial activities on resource consumption and pollution

Romania transposed the Europa 2020 package in the country's legislation, setting national targets, according to the country's economic structure and development, in some areas even more ambitions then the EU ones (24% share of renewable energy in the gross final energy consumption). At present, analyzing the development of the indicators GhG Emissions, Share of renewable energy and Energy efficiency, we notice that Romania reached it's set targets years ago (European Parliament, 2019).

The change in sectorial composition reflected in the consumption of resources next to the results of EU policies with regard to resource efficiency.

Eurostat calculates a series of indicators that can highlight to a certain extent the decoupling of economic growth from material resources, including natural resources, that is, economic growth with a reduced consumption of materials:
▪ Resource productivity.
▪ Energy productivity.
▪ Energy intensity.

A relevant indicator used is domestic material consumption (DMC). The indicator measures as the total amount of material directly used in an economy and covers all solid, gaseous, and liquid materials, except water and air.

Table 2. *Domestic material consumption (DMC) per capita, tonnes per capita*

	2008	2011	2015	2016	2017	2018
Media UE28	16.269s	14.466s	13.176s	13.097s	13.402ps	13.843ps
Romania	22.214	19.043s	22.509s	22.904s	21.196p	21.561ps

S = Eurostat estimate; p = provisional.
Source: EUROSTAT, https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=0&language=en&pcode=t2020_rl110&tableSelection=1

In the last decade, Romania registered a significant decrease of the DMC only in the period 2008-2011, as a result of the production downturn in the economic crisis. However, during the whole period under discussion there is persistent material consumption per capita above the EU28 average. However, starting with 2017-2018, the DMC improved. Certainly this material consumption is not due to industry only and does not include all natural resources, but its reduction during periods of economic growth indicates a certain gap between growth rates in production and natural resource consumption.

The industry accounted in 2016 for 23% of the Romanian primary energy consumption (INS, 2009). However, the most energy intensive industrial sectors don't seem to play

major roles with regard to industrial output. In Romania, the metal industry accounts for 26.9% of the industrial final energy consumption, followed by the production of chemicals and artificial fibers (2016 – 17.6%, 2018 – 18.6%) and the production of mineral construction materials (2016 – 15.9%, 2018 – 17.1%) (INS, IND109A), both two categories accounting for less than 5% added value according to the UNIDO Industrial Analytics Platform.

Since energy constitutes a main resource for national economies, another relevant indicator used to describe the resource efficiency of an economy is its energy intensity – an approximation of energy efficiency. Energy intensity is calculated as units of energy per unit of GDP. Romania is, according to Eurostat, one of the most energy intensive countries of the European Union, but did however manage to reduce its energy intensity by almost 300% since 1995 (557 kgoe/keuro).

Table 3. *Energy Intensity of GDP in chain linked volumes (2010), Kilogram of oil equivalent (KGOE) per thousand euro*

	2008	**2011**	**2015**	**2016**	**2017**	**2018**
European Union – 28 countries	142,17	134,69	123,73	122,00	120,92	117,69
Romania	287,35	279,73	219,70	208,94	205,33	196,89

Source: Eurostat, nrg_ind_ei, https://appsso.eurostat.ec.europa.eu/

When talking about energy intensity and energy efficiency, it is important to analyse the energy balance of a country. In Romania, only 75% of the primary energy consumption is available for the final consumption. Next to the power sector using almost 11%, 15% of the primary energy are lost in transformation and transport and distribution. Further on the three main consumers are the industrial sector, households and the transport sector (INS, 2019).

Many factors influence the resource intensity of an economy. It reflects on the structure of the economy and its cycle, wealth, general standards of living and weather conditions in the area of reference. Given that the tertiary sector (services) has a lower resource footprint, we assume that a high level of tertiarisation of an economy leads to a lower level of resource intensity.

Bertoldi and Mosconi (2020), argue that changes of resource intensity can be traced back to the relative decline of energy intensive manufacturing. Another reduction in the consumption of energy resources can be traced back to the increased use of electricity with respect to oil, coal, gas. Other authors (Malinauskaite et al., 2019) also point out that the policies adopted by the member states have been more effective in the industrial sectors with high energy intensity and a small number of companies.

Looking back, 2018 the industrial sector consumed less than 50% of its final energy consumption 1993. This development was driven especially by strong cuts in the most energy intensive industries – 51% in the metal industry, 36 in the chemical industry and 80% in the production of construction materials. These three industrial sectors accounted for 60% of the industrial consumption 2018 (INS, IND109A).

Since the industrial sector developed differently to the baseline scenario developed by PRIMES energy model 2007, on which Romania set its target regarding energy efficiency for Europe 2020, Romania reached its target several years ago.

Figure 4. *Gross energy consumption in Romania*
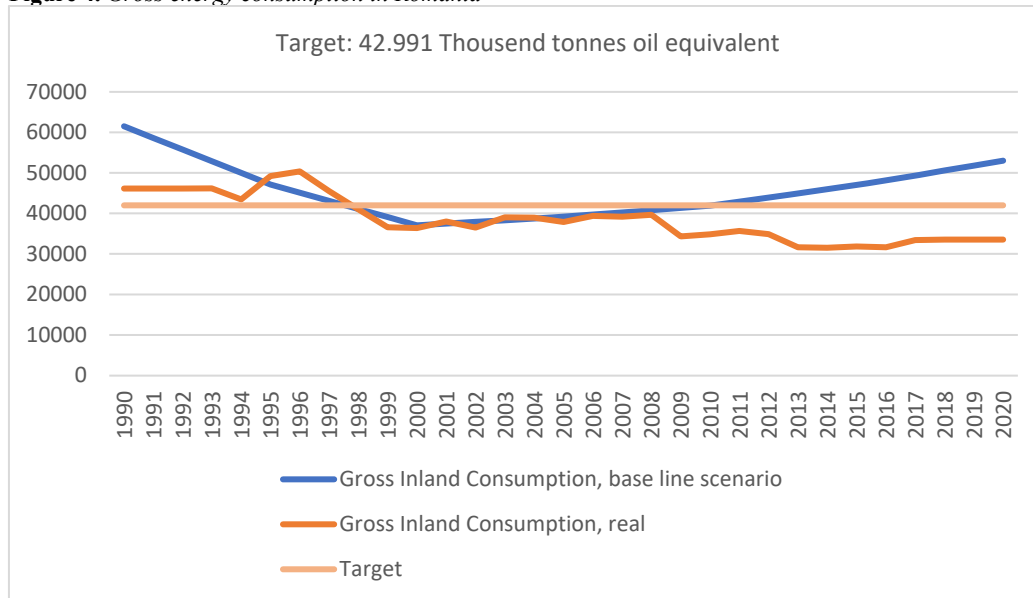
Source: National Institute of Statistics, IND109A, European Commission, 2007.

The pollution generated by industrial activities is actually a consumption of natural resources. A measure of pollution is given by the amount of greenhouse gases in the atmosphere. In Romania, the level of air pollution has had a tendency of continuous reduction during the last two decades (Figure 5).

Figure 5. *Greenhouse gases*, Romania*
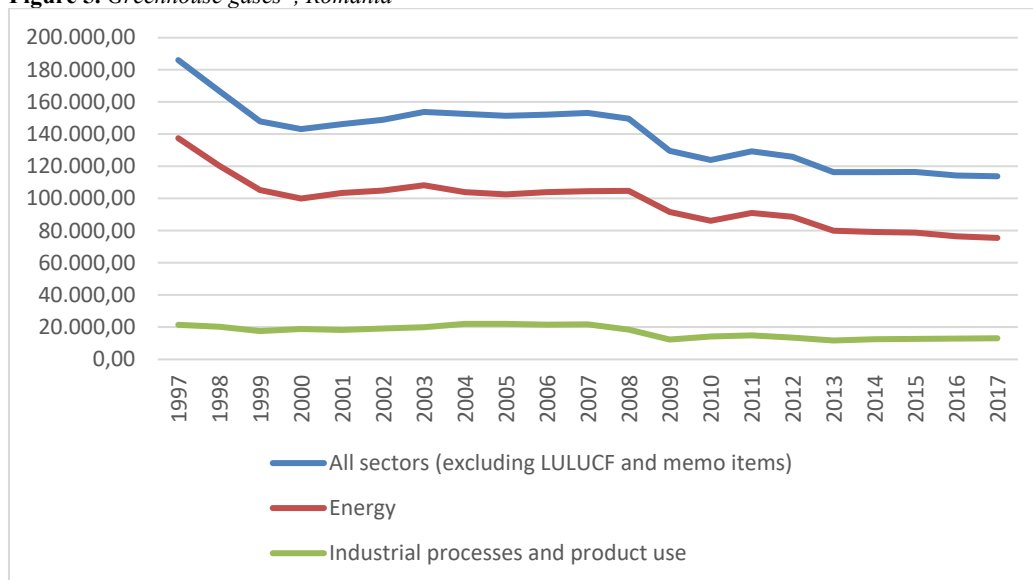
*CO_2, N_2O in CO_2 equivalent, CH_4 in CO_2 equivalent, HFC in CO_2 equivalent, PFC in CO_2 equivalent, SF6 in CO_2 equivalent, NF3 in CO_2 equivalent; LULUCF = land use, land use change and forestry.
Source: Eurostat.

Energy production is the main source of air pollution. The reduction of pollution was firstly due to a rapid industrial decline during the transition period and then to further lower level of the energy and polluting industries compared to the past situation. To the reduction of pollution also contributed the assumed obligations regarding the protection of the environment as a result of Romania's accession to the EU in 2007. In Figure 5 it is observed that after the accession the emissions of greenhouse gases have decreased continuously and Romania has reached the target of the Strategy Europe 2020.

Conclusions

Industry has been a core activity for the last two decades, which has undergone significant changes as a result of constraints imposed by international competition, foreign investment flows through which new technologies have been implemented, by higher demand sophistication, as well as of the restrictions imposed by the EU on environmental protection, etc. The industry was the engine of economic recovery after the crisis of 2008-2009.

The structural changes, especially in the manufacturing industry, were based on increased relative importance of the mid tech and high tech industries. The result of these changes is that the economic growth was no longer based on an increase in the same proportion of material and energy resources. Despite the steady improvement in the Romanian economy's resource efficiency, Romania still displays efficiency levels below the European Union average. Further research should focus on the quantitative form of the causal judgements presented in the article.

Acknowledgements

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Creative economy.
Challenges and opportunities for increasing competitiveness

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Abstract. *In the last decade the creative economy is an emerging concept that suggests a reshape of the world economy according to its challenges and evolution during our turbulent and dynamic times. One of the main reasons considered important for the accelerated evolution of creative economy was the amplified crisis (economic, political, social, moral, environmental) and its complex consequences. If before the economic crisis, technology had been considered as one of the main engines for economic growth and long-run smart, sustainable and inclusive development, now the world economy is more and more oriented towards the holistic, integrated vision of cultural and creative economy. This integrated vision may be applied on the macro, mezzo (on different sectors of activities, called as creative industries and correspondingly on the local/regional level) but also on microeconomics, being a key ingredient for business angels and business champions. Creativity contributes a lot for increasing competitiveness based on a long-run competitive advantage obtained on the macro, mezzo or micro levels.*

Keywords: creative economy, competitiveness, creative industries, creative communities, smart cities.

JEL Classification: Z1, Z19.

Introduction

The effects of the economic crisis of 2008-2010, caused changes regarding the perception of economic growth. Due to the financial speculation that took place during that period, the states and companies that sought to obtain quick profits, in the short term, reached the threshold of economic collapse, through high unemployment rates, for a long time. Economic growth does not always lead to an increase in the standard of living. Even if the main objectives, such as strengthening competitiveness and economic growth, are in the attention of many people, the creation of jobs, the reduction of the unemployed and the increase of wages should not be neglected in the long term. Now due to the unexpected events caused by the world pandemic issues we all have to face the economic crisis is anticipated to be much more amplified. During crisis time, as even the term crisis suggests there is a need not only to be aware about it, but mostly to look for a positive active behaviour looking for opportunities to change something as to better face the crisis. The last edition of *the Global Innovation Report* suggested also that we have to look for a broad mining of innovation opened also to the idea of medical innovation. Concepts such as industry, creative economy, creative communities and creative class, have undergone a strong development, based on the artistic and intellectual exploitation of human & intellectual capital, as part of intangible assets whose role is much amplified under the umbrella of knowledge based society & creative and cultural economy. A new & challenging approach had emerged within the economic research, mostly after 2000, respectively the cultural & creative economy. Facing the challenges ask also for new opportunities increasing competitiveness such as to assure the main prerequisites for a long-run sustainable, smart and inclusive development.

Brief literature review

The term of creative economy seems to be used first by the *Department for Culture, Media and Sport in the United Kingdom,* in 1998. The creative economy is based mostly on creative class talented people, interacting among creative communities & creative industries. Within creative industries there had been developed creative & innovative clusters among which innovative business & business angels assure the potential for job growth and for the intangible assets and mostly intellectual capital use such as to contribute highly to the value added and long-run sustainable competitive advantage. Creative industries are mostly based on creativity and correspondingly on the creative class individual talented people (Higgs et al., 2008). Creative industries include a large number of activities, classified quite different from a country to another. For instance according to *the UK Department of Culture, Media and Sports* there had been selected 13 sectors that can be considered as creative industries: film, arts performing, software, architecture, crafts, interactive software, leisure, advertising, fashion market designer, publishing, art and antiques, music, design, television and radio (Newbigin, 2010). No matter the way these industries are classified they are encouraging a lot of organizational changes, as well as supporting also other economic activities relevant to both public and private economy.

There a lot of other authors who support the modern approaches of the creative economy among which we mention the contribution of Allen Scott (1997), as well as the broader vision regarding the role of innovation for the long-run social and economic development (Lazaretii, 2013).

The interest in studying the creative economy on the regional level and mostly on local communities such as cities is also highlighted by a large number of scientific studies and papers regarding urban development and urban policies designed in order to support creativity and innovation (Landry, 2000; Evans, 2009).

One of the pioneer authors famous for his research dedicated mostly to creative class is Richard Florida, who had highlighted the importance of the creative class, human and intellectual capital for the regional and urban development. Richard Florida illustrated the existence of a strong connection between creative class and cities' development. Another famous author who is considered to coin the term of creative economy is John Howkins publishing a bestseller work entitled "*Creative economy. How can people make money from ideas*" (Howkins, 2001). Howkins considered in his work the case of 15 creative industries, based on which he estimated that in 2000 creative economy represented almost 7% from the world economy.

The creative economy is a cross disciplinary research topic that highlights the importance for competitiveness of all the original opinions mostly within the fields of cultural & creative industries where creative class people can better socialize (Hesmondhalgh, 2002; Flew and Cunningham, 2010). Numerous researchers had also conducted several studies to illustrate the relationship between creativity & innovation and to show how these manifest on the local, regional, territorial (Mommas, 2004; O'Connor, 2010; Branzanti, 2015). These authors have focused mainly on topics such as: creative industries, creative & innovative clusters, regional sciences and economic geography. As we mentioned previously one of the well known and recognized researches in this field is in Richard Florida, President of the *Martin Prosperity Institute* who is widely recognized in North America, as well as in Europe and Asia (Mellander et al., 2013).

In order to track the broader phenomenon, connected with creative economy it is important to look also for the analysis and research studies carried out by UNESCO on a global level, among the auspices of UNESCO' creative cities network including also music, film and advertising considered also as creative industries. The creative industries are also connected to the cultural production as well as the cultural consumption represented usually by symbolic or expressive elements. Some of these elements are connected to the so called traditional cultural industries (Towse, 2003).

The research studies done in the fields of cultural & creative economy are subject to cross and multidisciplinary approaches, having a strong both theoretical and empirical foundations. A significant approach refers to the anticipated effects of the cultural and creative industries for the creation and development of local creative communities and correspondingly of cultural & creative networks (Belussi and Staber, 2011). Some authors highlight also the importance of creative regions (Mc Cann, 2007), and correspondingly of the creative-innovative cluster (Cooke and Lazzeretti, 2008).

Recognizing creative economy as a key ingredient for a paradigm of success and long-run competitiveness is highly presented within some authors contributions who illustrated the role of creativity and innovation for social & economic development (Pratt and Jeffcut, 2009). In the same time we identified that also critics of this paradigm had also emerged. On one hand, creative class can have a critical role as one of the main mechanisms for the urban regeneration (Pratt, 2008). On the other hand, there is are some research studies dedicated to creative cities considering these may lead to some regressive actions for the urban dynamics (Scott, 2014).

Main methodology

The attempt to quantify the dimensions of the creative economy is not an easy one. The difficulties and challenges faced in order to measure creative economy is comparable to the one experienced in the case of the intangible assets. However on the international level, there are many methods used both on the macro, mezzo and micro economics level.

On this paper we will take into account *the Global Innovation Index 2019 (GII 2019) & the European Innovation Scoreboard (EIS)*.

The Global Innovation Index 2019 (GII 2019) published by *the Cornell University*, ISEAD, WIPO in 2019 has a quite suggestive sub-title mostly now: "*Creating Healthy Lives-The Future of Medical Innovation*". It provides a detailed metrics about the innovation performance in the case of 129 countries and economies around the world. It is based on 80 indicators suggesting a broader vision of innovation, generic considered as "*open innovation*" including political environment, education, infrastructures and business sophistication. *The GII 2019* analyzes the medical innovation landscape of the next decade. *The GII 2019* explores the role and dynamics of medical innovation for the expected future of healthcare, by taking into account how technological and non-technological medical innovation may transform the delivery of healthcare worldwide. It illustrates also the potential influence medical innovation may have on the economic growth and development.

The European Innovation Scoreboard (EIS) presents a comparison of innovation and research performance in EU member states. The EIS can help to evaluate the deficient areas in order to make efforts in terms of enhancing the innovative performances.

Main results and discussions

The Global Innovation Report 2019 provides more details collected from leading experts and decision makers belonging to academic, business, and particular country perspectives. Figure 1 illustrates the top three innovation economies by regions.

Figure 1. *The top three innovation economies by regions*

Top 3 innovation economies by region			
NORTHERN AMERICA	**EUROPE**	**NORTHERN AFRICA AND WESTERN ASIA**	**SOUTH EAST ASIA, EAST ASIA, AND OCEANIA**
1. U.S.	1. Switzerland	1. Israel	1. Singapore
2. Canada	2. Sweden ↑	2. Cyprus	2. Republic of Korea
	3. Netherlands ↓	3. United Arab Emirates	3. Hong Kong, China ★

Source: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2019_exec.pdf

Figure 2 illustrates the top three economies by income group.

Figure 2. *The top three economies by income group*

Top 3 innovation economies by income group			
HIGH INCOME	**UPPER-MIDDLE INCOME**	**LOWER-MIDDLE INCOME**	**LOW INCOME**
1. Switzerland	1. China	1. Viet Nam ↑	1. Rwanda ↑
2. Sweden ↑	2. Malaysia	2. Ukraine ↓	2. Senegal ↑
3. U.S. ★	3. Bulgaria	3. Georgia ★	3. Tanzania ↓

Source: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2019_exec.pdf

Focusing on the European level, now we will take a look on *the European Innovation Scoreboard (EIS). EIS* is an annual publication of the European Commission (European Commission, 2019).

The main goal of *the Lisbon & Europe 2020 Strategies* was to design a *sustainable, intelligent and inclusive growth & development* such as to create more jobs, including green jobs. This is achieved through mostly two projects: *Europe 2020* and *Creative Europe (Europe 2020 – A European strategy for smart, sustainable and inclusive growth).*

The Europe 2020 strategy is based on three pillars: *inclusive growth* (promoting a high skilled labour force), *smart growth* (developing an economy based on innovation and knowledge) and *sustainable growth* (promoting an efficient & effective economy).

Inclusive growth & development implies a high rate of employment, based on mostly high skilled labour force as well as combating poverty, social protection. It is essential that the benefits of economic and social growth & development would be distributed among all the regions of the European Union, contributing in this way towards the strengthening of territorial cohesion. Social inclusion means also to provide European citizens with more and better opportunities and access throughout their whole lives. Europe has to act in a responsible way mostly within areas such as combating poverty (before the crisis, over 75 million people were affected by poverty), employment (labour force is declining due to demographic crisis) and skills (over 75 million of persons were dealing with a quite law level of qualifications).

Smart growth & development has as main drivers of future growth innovation and knowledge. In this line, it is essential to improve the quality of the education systems, but also to increase research-development and innovation (R&D&I) performance, ensuring a knowledge transfer within European states in Europe by focusing also on education and training based on the broader vision lifelong learning. Decision makers on the European level consider that Europe will have to act in areas such as Research-Development-Innovation (R&D&I). For a comparative analyze perspective we mention that spending on R&D&I are below 2% of GDP in UE, while in Japan the percentage is 3.4%, and correspondingly in the US is 2.6%.

Sustainable growth & development involves building a sustainable, competitive and resource efficient & effective economy. The European Union will reduce pollution based on low carbon dioxide emissions, pre-care and limitation of environmental degradation and loss of biodiversity for renewable resources. The European Union has to act in areas such as stimulating the increase of competitiveness, based on the reduction of carbon dioxide emissions in the next decade.

The European Union created a special program entitled *"Creative Europe"* according to which the member countries could benefit on 1.46 billion euros allocated for the creative and cultural sectors, between 2014 and 2020. This program was approved in 2013 on 19th of November by *the European Parliament*, adopted on 3rd of December by *the European Council* and entered into force on 1st of January, 2014. This program aims to help the cultural and creative sector to better face the competition within a global and digitalization era, by allowing companies to grow their economic potential, and by this way to create new jobs assuring in the same time a stronger social cohesion as well as a long-run sustainable growth & development. *"Creative Europe"* incudes special investments for 800 films, 2000 cinemas, 2500 cultural artists & professionals and correspondingly for 4500 transaction books.

The European Innovation Scoreboard (EIS) provides a special benchmarking method to rank countries performance on the global level (Figure 3).

**Figure 3.** *Global performance according to the European Innovation Scoreboard 2019*
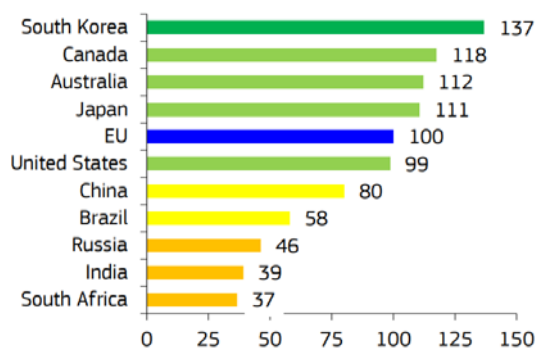
Source: European Innovation Scoreboard 2019.

According to Figure 3, South Korea ranks first in this ranking, followed by Canada, Australia and Japan. Brazil, China and the United States are also below the average value of the European Union (European Commission, 2019).

According to the latest 2019 publication of EIS, both Romania and Bulgaria are the bottoming part of this benchmarking in terms of innovation performance, being considered as modest innovators (Figure 4). Nordic states such as the Netherlands, Denmark, Finland and Sweden, register the highest values and bear the name of innovation leaders.

Figure 4. *Performance of EU Member States innovation system according to the European Innovation Scoreboard 2019*
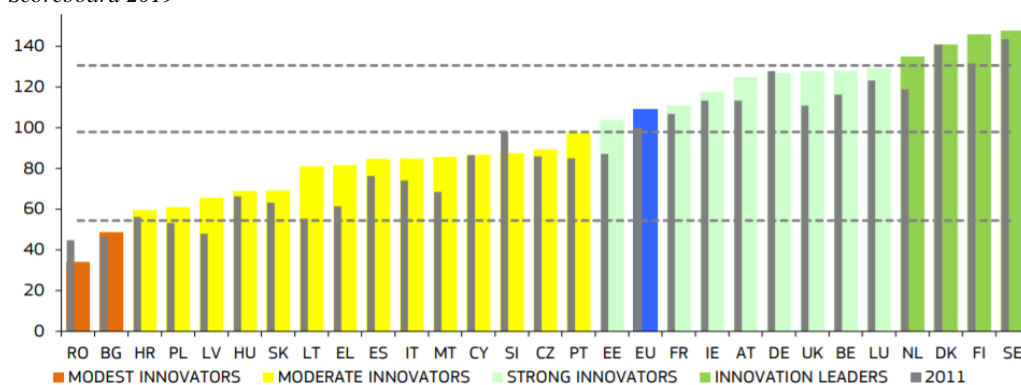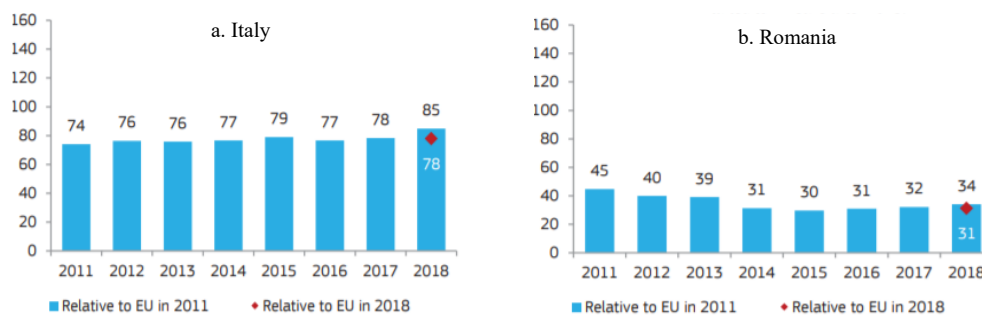

Source: European Innovation Scoreboard 2019.

Figure 4 illustrates also that Italy is included among the moderate category innovators. The most powerful dimensions of innovation in Italy are attractive research, innovations and intellectual assets. A break point in innovations, SMEs in Italy and a high degree of product innovation and innovative process. Finance and resources are the weakest dimensions of innovation. The weakest dimensions of innovation are human resources and firm investments.

Regarding Romanian performance during the period 2011-2015 had experienced a strong decline (Figure 5, panel a, Italy; panel b, Romania). The strongest dimensions in Romanian case are innovations and are represented by the impact of sales and innovations.

Figure 5. *Performance in Italy and Romania according to European Innovation Scoreboard 2019*

Source: European Innovation Scoreboard 2019.

In Romania, intellectual property and entrepreneurship are at a quite low level. During the period 2011-2015, Romania registered a decrease of this indicator, while in Italy the situation is opposite. In this sense, Romania does not fit the states with high innovation performance, being well below the European average.

In order to diminish the gap between Romania and the European average, there are some specific strategies and policies that have to be adopted in order to develop and support business and start-up innovative business mostly within creative industries, which in turn is expected to lead to an increase in the number of workers and new employment and job opportunities.

Main conclusions

At the global level, creative economy is emerging as a new type of economy that can highly contribute to increase competitiveness both on the global, European and national economies levels. Nowadays, based on new benchmarking methods such as *Global Innovation Index* and *the European Innovation Scoreboard* we can better identify which are the most important pillars of competitiveness mostly in the case of innovative countries applying the principles of creative economy.

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Interest rate impact on macroeconomic fiscal risk

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Abstract. *Whether they come from sources that are more or less controllable by the state, fiscal risks refer to additional financing needs during budget execution. This article aims to identify the extent to which a financial risk influences the size of the fiscal risk. More specifically, we will consider the connection between the interest rate in Romania, as an indicator of financial risk, and some indicators that characterize the fiscal risk at macroeconomic level. For an overview, we will use comparisons with other states of the European Union, and the period analyzed is the one after the economic crisis.*

Keywords: fiscal risk, interest rate, public debt, financial risk, Romania.

JEL Classification: H36, E43, E62.

Introduction and literature review

The basic economic principles show not only the limited nature of resources, but also their slower growth compared to the increase in needs. This also represents a challenge for governments, to meet the increasingly complex demands of the population, and demands that their activity be built around resource efficiency. To ensure the premises of a development as close as possible to the population's desire, financing from its own resources is often insufficient, and from the methods of financing the budget deficit, the experience of the states shows that the most suitable one remains the loan.

Therefore, the difficulty of governments is to identify the extent of public debt that the economy can sustain, without burdening current or future generations. The vulnerability and the degree of exposure of the states are the subject of numerous studies, of interest to investors, international financial institutions or political decision-makers. Brixi and Schick (2002) explain macroeconomic fiscal risk as „the source of increased financial requirements that a government could face in the future". Thereby, public debt and its interest rate, as well as the duration of public debt portfolio influence financial requirements of governments and represent fiscal risks.

From this perspective, European Commission compares the Member States of the European Union considering: the government consolidated debt, calculated as debt to GDP ratio; interest rate on government debt showing the ability to borrow at preferential interest rates; the average maturity for the payment of the debt, expressed in years, which illustrates the extension over time of the public debt portfolio and the existence or absence of the refinancing risk, etc.

The interest rate is a financial indicator that measures the cost of borrowing on different markets, but its effects are not limited to banking, but are felt by the entire financial system and the economy as a whole. Depending on the reference interest rate, different interest rates used in financial transactions are calculated, with an impact not only on the parties involved, but also on the economy. In the case of Romania, one means of achieving part of financing needs is the loan from the domestic market, at an interest rate higher than the reference interest rate, in order to attract liquid assets. As the reference interest rate increases, the cost of borrowed capital will be higher, as will the level of public debt. This is a concrete example that shows the influence of the reference interest rate on the fiscal risk.

If the financing is made mainly through international markets, using currencies of international circulation, the fiscal risk will continue to exist, determined in particular by the currency risk (depreciation of the national currency). This is why many researches measure the interdependencies between the interest rate and the exchange rate, in order to determine the right strategy regarding the composition of the public debt portfolio.

Excluding the currency risk included by foreign currency loans, it is obvious that the interest rate with the public debt influences the level of the degree of debt, but that this latter is also determined by: the level of the reference interest rate for the loans on the internal market, the negotiation capacity of the country regarding loans, the strategy regarding the weight of the loans with fixed or variable interest rate, in national currency or currency.

The perception of public debt has undergone slight changes over time. One certainty is that it offers governments the advantage of transmitting fiscal pressure over several generations (Cukierman and Meltzer, 1989). Loans are a means of financing costly projects aimed at improving the standard of living of the population and, as Dornbusch and Fischer (1990) pointed out, a way to finance the budget deficit, along with increasing taxation, reducing budgetary spending, reducing budgetary spending. Maintained at a level consistent with the country specific, public debt is an incentive for economic growth.

However, the economic crisis started at the end of 2007 showed that the size of public debt must be kept within certain limits. Otherwise, exceeding a certain threshold that differs from country to country, the possibility of triggering an economic-financial crisis increases. Moreover, Reinhart and Rogoff (2009) specify that, as the public debt exceeds the reasonable threshold, the negative effects on economic growth will increase exponentially.

Debt to GDP ratio and the value of sovereign debt are closely related to the interest rate, because a higher debt implies and a higher nominal interest rate.

The existence of a positive relation between the evolution of the interest rate and the public debt is confirmed by numerous studies at the level of a state or group of countries, but which also analyzes the impact of other economic indicators, along with the interest rate, such as economic growth, inflation, budget deficit, spending (Drazen, 2000; Imbeau and Petry, 2004; Swaray, 2005). In this regard we also note the Sustainability Report of the European Commission (2020) which states that, in the case of EU countries, the increase of the interest rate and the depreciation of the exchange rate lead to the increase of the degree of indebtedness, while between the evolution of the inflation and the GDP, on the one hand, and the evolution of the degree of indebtedness, on the other hand, an inverse relation is established.

Gamber and Seliski (2019) studied the reverse effect as well, which has the increase of the public debt on the interest rate. Their results show that an increase by one percentage point of the debt ratio will lead to an average increase of 2-3 percentage points of the interest rate, but the size of the impact depends on the fiscal policy underlying the debt increase. If this encourages companies and the population to invest additional private capital or create jobs, the effect will be lower than the average, and if the policy does not stimulate these initiatives, the effect on the interest rate will be more pronounced.

Descriptive analysis and findings

First, we will illustrate the link between the reference interest rate and the interest rate for Romania's public debt in order to illustrate the correlation established between their values. Secondly, as interest rate of public debt influences the public debt value, we will determine its impact to the debt to GDP ratio. Thirdly, we will shortly explain the evolution of remaining maturity of public debt portfolio. Finally, we will present the evolution of Romania's debt to GDP ratio compared to other EU countries whose GDP was close in value to that of Romania at the beginning of the analyzed period. The data used refer to 2010-2018 period and have as source the Ministry of Public Finance of Romania and Eurostat.

Figure 1. *Evolution of reference interest rate and interest rate on public debt in Romania (2010-2018)*
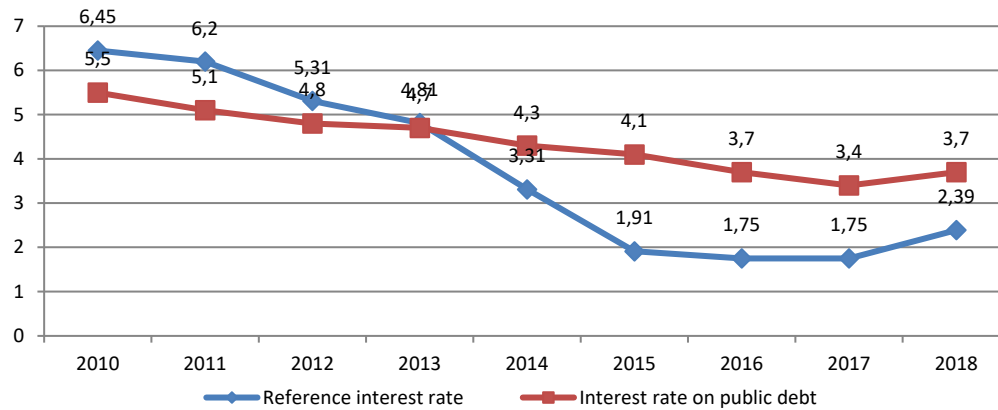
Source: Ministry of Public Finance.

The graph shows that the average interest rate on public debt is in a positive relationship with the reference interest rate. During the period following the crisis, both interest rates decreased, but the decrease in the public debt interest rate was slower. The lowest values were registered in 2017. After that, both rates went up, keeping the same trend, the reference interest rate increasing more alert than the public debt one.

To estimate the coefficients of a linear model that includes the reference interest rate as an independent variable and the interest rate paid for the public debt as a dependent variable, we used their average values for the period 2010-2018 in Romania.

Table 1. *Results of Excel linear regression between reference interest rate and interest rate on public debt*

Regression Statistics					
Multiple R	0.947159293				
R Square	0.897110726				
Adjusted R Square	0.879962514				
Standard Error	0.21013483				
Observations	8				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%
Intercept	3.118033977	0.170125012	18.3279	1.7E-06	2.70175307
X	0.322848275	0.044635959	7.232919	0.0003544	0.213628018

Source: own calculation.

The model obtained by the regression procedure in Excel has the following form:

Y = 3.11 + 0.32 × X, where Y is the dependent variable, namely the interest rate for debt payment, and X is the independent variable - the reference interest rate. We also note that 89% of the variation of the interest rate with the public debt is determined by the variation of the reference interest rate. Considering that for the year 2019 the average interest rate caused by public loans was not made public yet, using the obtained model we can appreciate that its value is approximately 3.91%, calculated at the value of the reference interest rate of 2.5% valid for the year 2019 in Romania.

If we have as reference point the period 2010-2018, as the first graph indicates, the share of Romania's public debt in GDP (34.7%) not only do not exceed the average value of the EU countries (80.4%), but it is considerably lower.

Figure 2. *General government debt in Romania and UE average*
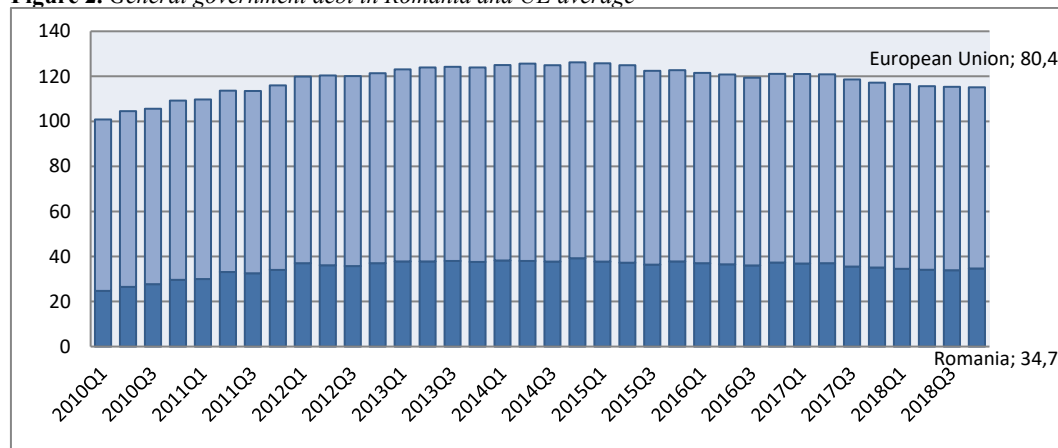
Source: Eurostat.

Furthermore, it also complies with the 60% of GDP limit share required by the Maastricht Treaty and the 40% threshold appreciated suitable not to endanger Romania public finances (Dumitrescu, 2014).The government consolidated debt as percentage of GDP (debt to GDP ratio) is considered as an indicator of fiscal risk when the situation of several states is compared; a lower level of this indicator implies a lower degree of vulnerability.

In order to quantify the impact of the interest rate on Romania's public debt for the period following the economic crisis, we will use the following relation:

$$e_i = d_{t-1} \times \frac{i_t}{(1 + g_t)}$$

e_i represents the interest rate effect on debt to GDP ratio;
d_{t-1} represents the debt to GDP ratio of the previous year;
i_t represents the implicit interest rate on public debt;
g_t represents the nominal growth rate of GDP.

Table 2. *Evolution of interest rate impact on debt to GDP ratio in Romania (2010-2018)*

Year	e_i	d_{t-1}	i_t	g_t
2010	1.24	21.8	5.5	-3.9
2011	1.48	29.6	5.1	2.0
2012	1.59	34.0	4.8	2.1
2013	1.68	37.0	4.7	3.5
2014	1.56	37.6	4.3	3.4
2015	1.54	39.2	4.1	3.9
2016	1.33	37.8	3.7	4.8
2017	1.18	37.3	3.4	7.1
2018	1.24	35.1	3.7	4.4

Source: Eurostat (debt to GDP ratio and growth rate of GDP), Ministry of Public Finance (interest rate on public debt) and own calculation (interest rate effect).

By 2013, the effect of the interest rate on Romania's indebtedness was increasing. Then, against a background of real GDP growth faster than the decrease of the public debt interest rate, the effect would be decreasing from 2013. Between 2010 and 2018 the impact of the interest rate on the dynamics of public debt in GDP is between 1.18% and 1.68%, registering small fluctuations.

Figure 3. *Evolution of average remaining maturity of public debt portfolio*

Average remaining maturity for total debt (years)
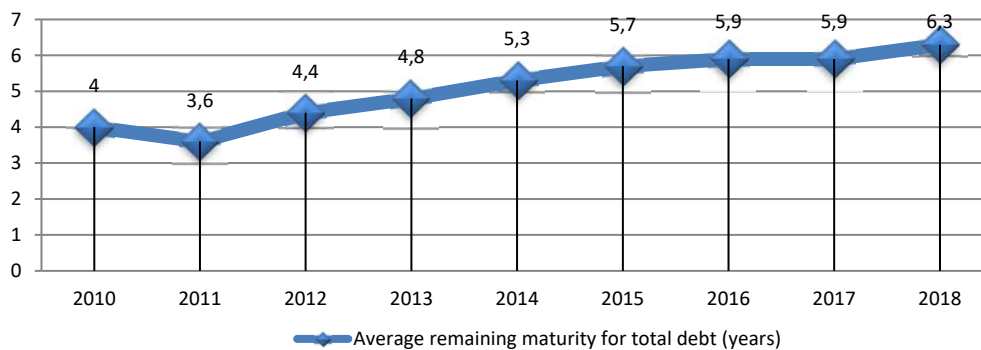
Source: Ministry of Public Finance.

For the analyzed period, the relation between the evolution of the interest rate with public debt and the average maturity of the public debt is an inverse one. This is explained by:

1. Increase of the average number of years until the repayments will take place, in accordance with the strategy of expanding over a longer period of time the country's public debt.
2. Regardless of their form, the long-term loans allowed the negotiation of lower interest rates in recent years.
3. The preference for currency risk to the detriment of refinancing risk and interest rate risk. As a rule, long-term loans are in euro, and their share in debt portfolio is increasing (they include currency risk). At the same time, loans in the national currency have a shorter duration (high refinancing risk) and a higher interest rate level than for euro (interest rate risk).

Figure 4. *Debt to GDP ratio between 2010-2018*
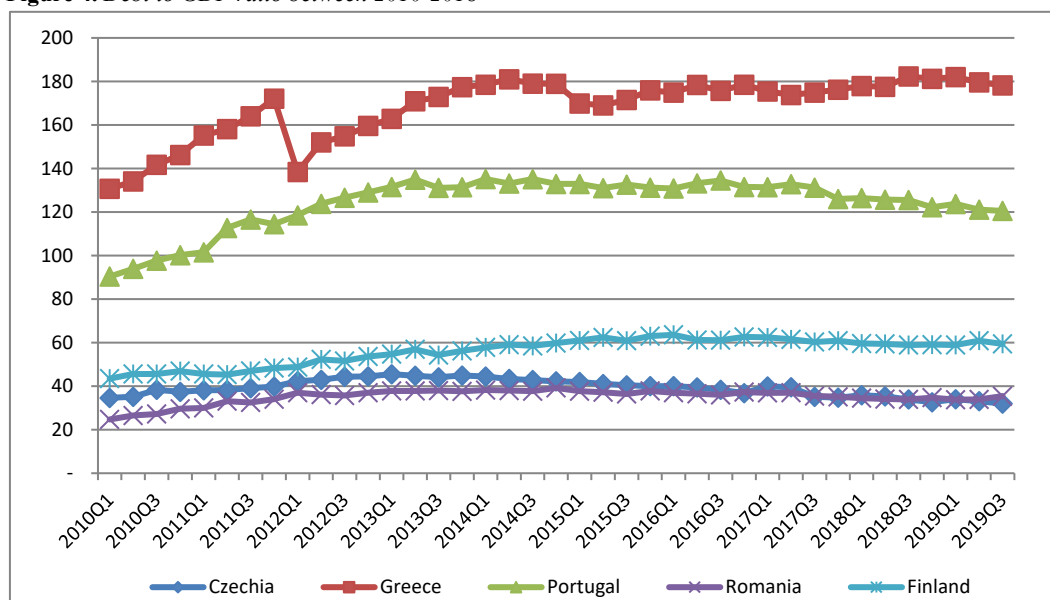
Source: Eurostat.

The preceding graph shows the quarterly evolution of government debt as a percentage of GDP for Romania and four other EU countries, whose GDP in 2010 was close to that of Romania. Except for the case of Greece, whose situation after the economic crisis remains a particular one, we note that during 2010-2019, the indebtedness of Romania and the Czech Republic remained, broadly, constant, while the debt to GDP ratio of Finland has an increasing trend, like the one of Portugal until 2017, the latter exceeding national GDP in value since 2011.

Conclusions

Whereas fiscal risk refer to growing financial requirements for a government, the evolution of governmental consolidated debt, its interest rate and its remaining maturity may represent fiscal risks. Significantly changes in the indicators related to public debt show changes in the degree of vulnerability of a state, the more when several countries indicators are compared.

The analysis of some fiscal risk indicators of Romania for the period 2010-2018 leads to the following conclusions: first of all, the share of public debt in GDP has seen small variations, but has remained well below the 80.4% UE average, implicitly below the threshold accepted by the Maastricht Treaty of 60%. Moreover, the threshold of 40% of GDP (suited to ensuring Romania financial sustainability) being respected, we appreciate that the period 2010-2018 did not include notable vulnerabilities from this point of view and that decisions regarding public debt were in accordance with country specificity.

The effect of the interest rate on the evolution of the debt to GDP ratio for the same period was 1.18-1.68%, with a downward trend, justified by the real GDP growth, faster than the interest rate decrease.

There is a positive relation between the reference interest rate and the public debt interest rate, the latter having a slower decrease, according to the composition of the public debt portfolio (loans in both national and foreign currencies).

The remaining average maturity for the payment of public debt is increasing, showing the implementation of the public debt management strategy, namely the extension of repayments over a longer period and avoiding the refinancing risk.

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