ROMANIAN ECONOMIC AND BUSINESS REVIEW

Statement of Purpose

The *Romanian Economic and Business Review* (ISSN 1842-2497) intends to provide a forum for academic analysis of the economic phenomena and institutions affecting the world economy in general, and Romania, in particular. *REBE* examines a wide variety of phenomena related to economic growth and business development and attempts to publish high quality research focusing on the role of institutions and public policy, within both a national and international context. *REBE* encourages cross-disciplinary research work of Romanian and foreign scholars.

Indexed and/or *Abstracted* in:
EBSCO; EconLit; ProQuest; DOAJ; Index Copernicus; RePec

Author Information

The ROMANIAN ECONOMIC AND BUSINESS REVIEW (REBE) is a refereed journal published four times annually by the Romanian-American University. The editors invite submissions of articles that deal with important issues in economy and business. Papers that focus on specific phenomena and events affecting Romanian economy are particularly encouraged. Because REBE seeks a broad audience, papers should be comprehensible beyond narrow disciplinary bounds.

Manuscripts should not exceed 8,000 words and must conform to the REBE's style requirements, which are guided by The Chicago Manual of Style (14th edition). All submissions must include a cover sheet explaining the scope of the article, and including the authors' names and affiliations, telephone and e-mail address. The text should be single-spaced. References are cited with parentheses using the author/date/page style. *Example*: (Marcus, 2005, p. 74). Authors should use footnotes, not endnotes to add only short comments. Bibliography should include only references cited in the text, in the alphabetical order of authors. An abstract of no more than 200 words should be included.

Submission of a paper implies that the paper will not be submitted for publication to another journal unless rejected by the REBE editor or withdrawn by the author, and that it is an original work. All submissions should be sent to the journal Editor:

Dr. Bogdan Glăvan
Romanian-American University
Bulevardul Expoziţiei nr. 1B
Bucureşti
E-mail: bogdan.n.glavan@gmail.com

Subscription rates:
Institutions - $100/year
Individuals - $30/year

ROMANIAN ECONOMIC AND BUSINESS REVIEW

SUMMER 2016 VOLUME 11 NUMBER 2

PRO UNIVERSITARIA BUCUREŞTI 2016

ISSN 1842 – 2497

ROMANIAN ECONOMIC AND BUSINESS REVIEW

CONTENTS

FISCAL POLICIES – AN INFLUENCING FACTOR IN THE LABOUR MARKET UNDER THE EUROPE 2020 STRATEGY

Maria Cristina STĂNESCU
Dumitru Mihai NEDELESCU
Valentin DIMON

Abstract

Workforce Occupancy in the real economy and implicitly, policies governing this macroeconomic phenomenon, were considered both at a declarative and factual level, as a priority on the agenda of all decision makers both national and European, continuous efforts being made to harmonize employment policies of the Member States in the European Union.

Keywords: Occupancy, strategies, Labour market, Fiscal policies.

JEL Classification: E, E6, E62

1. INTRODUCTION

In a broader sense, the labour market includes a number of issues related to employment, unemployment, quality of work, productivity, earnings and labour cost. This places the labour market among the most important topics to be included in any debate on socio-economic problems and also among European Union policies. Thus, the Europe 2020 Strategy has as the prime indicator the population employment rate. In this regard, the EES (European Employment Strategy) aims to create more and better jobs in the European Union.[1]

Considering these European strategies, each member state must develop its *National Employment Strategy* and *National Action Plan on Employment*, both realistic and strongly harmonized at EU level. Each of the pillars of the national strategy converge with the objectives of the European Employment Strategy and they are adapted to specific situations.

2. EUROPEAN LABOUR MARKET TRENDS

In the European Union there are now serious concerns, both economic and social, related to increasing the employment rate. In this respect, it is considered that there are still large reserves to maintain the population in economic activities for a longer period of time. This would have beneficial effects both in terms of increased production and labour incomes for the population, and in relieving the national and community budgets

[1] Albu L.L., Caraiani P., Iordan M., *Perspectivele pieței muncii din România în contextul Strategiei Europa 2020*, PROIECT *Îmbunătățirea capacității instituționale, de evaluare și formulare de politici macroeconomice în domeniul convergenței economice cu Uniunea Europeană a Comisiei Naționale de Prognoză,* cod SMIS 27153.

of additional expenses on pensions, insurance and social assistance.[2]

In this context, European policymakers have developed the *European Employment Strategy*, a document that covers a number of priority areas on Employment Policy, among which: labour law, equal opportunities, social protection, labour protection, eliminating social exclusion, combating discrimination and creating a functioning social dialogue system to ensure consultation with social partners in decision-making with social and economic impact at both national and European level.

Employment policy at EU level is an integral part of the set of complementary policies that have continuously evolved together with models of socio-economic development.

The European Social Fund is the first that aims to provide support for the realization of social and employment policy. Thus we can see how the evolution of the development of Member States has resulted in the completion of several stages of maturation that culminated with the creation of a model known as the *European Social Model* based on growth and social protection.

The changes that have occurred in the Member States were characterized by an increase in labour demand that affected the general economic interest. Together with amending the monetary system and the oil shock which determined the reduction of activities in different sectors of the European economy, comes into play *The Scandinavian Social Protection Model* for those who lose their jobs as a result of increased long-term unemployment and reduced number of new jobs.

The state's role in the employment policy increases by introducing active measures to encourage those that retain or create jobs in recession periods and by introducing a series of softer measures such as the gradual closure of certain economic sectors due to serious increase in unemployment, particularly in mono- industrial regions.

The 2000 Lisbon European Council set the strategic goal for 2010 - making the EU the most competitive and dynamic knowledge-based economy, providing an increased number of jobs and social cohesion (*growth, stability, cohesion*).

The 2000 Lisbon Strategy aimed to stimulate reforms in the Member States to create new jobs needed in the labour market, through promoting a culture of entrepreneurship and SME development, supported by lifelong learning. [3]

But the situation worsened during the global crisis which has seriously affected EU countries. Thus, it was concluded that in Europe it is necessary to rethink how to address the problem of economic inactivity of the population.

In late 2010, it turned out that the objective of the European Union, moreover ambitious, to ensure active participation in the labour market of 70 % of its citizens could not be achieved. The global crisis that has affected the European economy, followed by the increasing number of unemployed, have moved European Union further

---

[2] Albu L.L., Caraiani P., Iordan M., *Perspectivele pieței muncii din România în contextul Strategiei Europa 2020*, PROIECT *Îmbunătățirea capacității instituționale, de evaluare și formulare de politici macroeconomice în domeniul convergenței economice cu Uniunea Europeană a Comisiei Naționale de Prognoză,* cod SMIS 27153.

[3] Albu L.L., Caraiani P., Iordan M., *Perspectivele pieței muncii din România în contextul Strategiei Europa 2020*, PROIECT *Îmbunătățirea capacității instituționale, de evaluare și formulare de politici macroeconomice în domeniul convergenței economice cu Uniunea Europeană a Comisiei Naționale de Prognoză,* cod SMIS 27153.

away from achieving the imposed Lisbon targets. In addition, not even the goal of building the most competitive and dynamic knowledge-based economy was achieved.

The unsatisfactory dynamics of employment rate in the past decade reflects the problems faced by most European Union states in the field of employment and in ensuring a balance between supply and demand in the labour market. This happened given that, currently, approximately 16 % of Europe's population is at risk of poverty. In this context, the European Union must find ways to redirect these negative trends from the socio-economic field. [4]

According to the *Europe 2020 Strategy*, the ultimate objective is to create more jobs and to provide better living conditions. This strategy aims to ensure smart, sustainable and inclusive growth. Specifically, there are five strategic priorities, which include in the foreground increasing the employment rate of the population by at least 75 %.[5]

As one of the cornerstones of the process of economic development of the European Union, employment growth is also closely linked to other strategic objectives, in particular those regarding education, reducing poverty and social exclusion.

3. ROMANIAN LABOUR MARKET TRENDS

In Romania the process of harmonization of national legislation with the EU acquis materialized in an *Action Plan in the field of employment* accompanied by the *Program to stimulate workforce occupancy and reduce unemployment*, which actually transposes the Resolution 99/312 / EC on guidelines in the field of employment.

The eight major areas of European legislation in the field of employment are transposed into Romanian legislation almost entirely and the harmonization process is continuously pursued.

Employment policies are mainly labour macro-economic policies that focus on flexible labour market, encouraging production, allocation of funds for credit granting at advantageous interest rates or other tax systems to facilitate employment.

The objective of these policies is to increase occupancy of the working population and thus to maintain the unemployment rate at a minimum possible by a number of tools

[4] Ibidem.
[5] Ibidem.

available to public organizations in managing the occupancy of the workforce, to the Government or to the Central Bank. Many of these instruments of employment policies are similar to the instruments of economic policy. This is understandable since promoting economic growth can generate a high level of employment and also since an active and employed population can create real prerequisites for sustainable economic growth.

The package of measures to boost employment must support the people looking for work to strengthen their individual occupancy capacity (information programs and customized career counselling, professional training and fostering individual entrepreneurship) and the legal framework on the unemployment insurance system and employment promotion.

Through the Employment of the Workforce Program, the National Employment Agency implements an integrated set of measures to stimulate employment in accordance with labour market opportunities and requirements of persons seeking a job.

- Increasing the occupancy of workforce and social inclusion;
- Facilitating the transition from unemployment to employment;
- Improving and strengthening the professional skills of persons seeking employment.

	2011	**2012**	**2013**	**2014**	**2015**
Registered unemployment – in thousands of people	461	417	400	385	365
Unemployment rate	5,12%	4,6%	4,4%	4,3%	4%

Source: National Commission for Prognosis

The main objectives of the Employment of the Workforce Program:

- Fighting the effects of unemployment by maintaining a low level of unemployment while continuing restructuring by improving the quality of employment and job security while simultaneously creating opportunities for training adapted to the labour market requirements;
- The social inclusion of vulnerable groups in the labour market by ensuring equal opportunities in the labour market;
- Linking training needs of the workforce to labour market requirements;
- Providing free information and counselling to people looking for a job;
- Stimulating re-employment by granting allowances for the unemployed who get a job before the expiry of unemployment;
- Boosting labour mobility

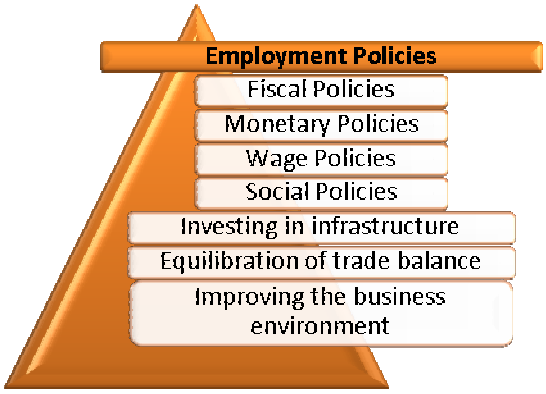
Measures of the Employment of the Workforce:

- organizing training courses for people looking for a job;
- granting free consultancy and assistance to start self-employment or starting a business;
- providing subsidies to employers to hire disadvantaged categories or to people with a more difficult access to the labor market;

	2011	2012	2013	2014	2015
The average gross salary - lei	2.026	2.162	2.285	2.380	2.478
The average net salary - lei	1.478	1.572	1.660	1.727	1.797
Real earnings	0,5%	3,3%	2,6%	1,2%	1,6%
Tax burden on salary income	43,3%	43,5%	43,5%	43,2%	43,2%

Source: National Commission for Prognosis

Thus employment in the real economy will increase or decrease in line with the economic growth rate. Anyway, even if employment policies have an indirect influence, they must be regarded as having the strongest influence on employment.



4. FISCAL POLICIES[6] – AN INFLUENCING FACTOR OF THE EMPLYMENT RATE

Fiscal policy aims at maintaining a high efficiency of financial resources to ensure the effectiveness of Consolidated General Government Budget (CGGB), stimulating economic activity and employment by promoting tax equity and social protection.

Richard Musgrave has identified three inter-related and correlated with the state role functions of tax policy in the economy: allocation, distribution and stabilization.[7]

The Allocation role of *fiscal policy* involves government intervention using taxes to correct market imperfections.

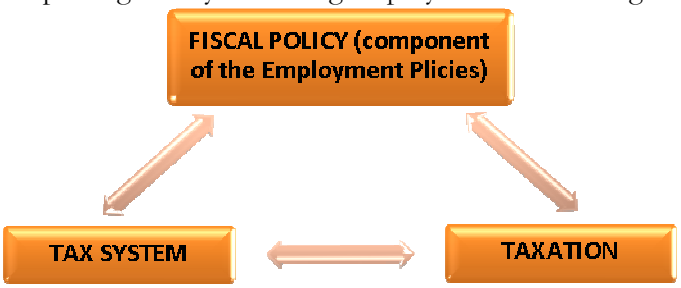
The Distribution role of *fiscal policy* is rooted in the existence of inequalities in income distribution and aims: *efficiency* by encouraging all taxpayers to produce results, equity in payment; *solidarity* to help those in need; economic growth by encouraging the obtaining

[6] *Politica fiscală* presupune ansamblul obiectivelor, măsurilor, tehnicilor şi instrumentelor reglementate juridic privind sistemul fiscal în complexitatea sa (sistemul de impozite şi taxe; mecanismul fiscal şi aparatul fiscal). Moşteanu, N.R., *Fiscalitate*, Editura Universitară, Bucureşti, 2008, pag.517.

[7] Moşteanu, N.R., *Fiscalitate*, Editura Universitară, Bucureşti, 2008, pag. 519, Musgrave, R.A., Musgrave, P.B., *Public finance in theory and practice*, McGrawHill Book, New York, 1984, pag.6-21.

of profit and increase of the Gross Domestic Product (GDP).[8]

The role of fiscal policy to stabilize economic life is dependent on the budgetary policy and the regional development policy, meaning that the state budget, in Romania is scheduled so that over 90 % of all public funds are made up of income from tax on the one hand and on the other hand, some fiscal incentives are taken into account to stimulate underdeveloped regions by increasing employment in these regions.[9]



We believe that the role of fiscal policy is to ensure: social protection, a high level of employment and an enabling a proper environment for sustainable economic growth.

In the context presented, we hold that the main objectives of fiscal policy linked to major employment policies are:

- fiscal resources to increase efficiency by creating a tax system appropriate for the financial policy and the general policy, without affecting the employment of workforce;
- carrying out the redistribution of Gross National Product (GNP), on the basis of equity, thereby facilitating access of the active population to the labour market;
- regulate economic and social processes, based on the objectives of the financial policy and the general policy.

Also, it is preferable that the tax system ensures social equity, but avoid total egalitarianism, which causes negative effects in terms of labour productivity. In relation to these requirements, the distribution of tax burdens must consider the capacity of the various categories of taxpayers, expressed by the amount of revenue they may have and preferably encouraging the efforts to invest, produce and save, as prerequisites of social development.

*

* *

The Fiscal Policy of the European Union is represented by the legislation and the actions of the EU authorities to unitary regulate taxes in the European Union.

The Fiscal Policy is narrowed down to the way the financial resources representing the EU budget are obtained and spent. The multi-criterion substantiation of the contributions of each country to the EU budget is a topical issue.[10]

In a comprehensive sense, *fiscal policy* aims at the actions taken so far *jointly* by the Member States by respecting firmly the unanimity in order to influence SFN, reducing

---

[8] Moşteanu, N.R., *Fiscalitate*, Editura Universitară, Bucureşti, 2008, pag.520.

[9] Ibidem, pag.520.

[10] Tomi A.R., *Aprofundarea armonizării fiscale în Uniunea Europeană - avantaje şi limite*, Romanian Statistical Review nr. 4 / 2011

roughness between them in order to achieve, over time, the goals of the art. 2 of the Treaty and to establish the Single Market, namely its proper operation.[11]

Briefly, the *fiscal system* of the EU with direct influences on the labour market can be analysed on a number of levels: [12]

- the existence of fundamental rules in the fiscal area. The relevant provisions of the Treaty are stipulated in Articles 12, 58, 90, 91, 93, 94, 293;
- establishing rules of fair and accurate fiscal conduct (Code of Conduct), the mandatory exchange of information and mutual assistance in the field by national tax authorities, the Member State's commitment that the fiscal system does not harm EU competitiveness;
- *the joint system* of general application of the VAT (uniform taxation basis, compulsory limitation of rate between minimum and maximum thresholds, abolition of tax frontiers for intra-Community movement of goods and services, generalization of the *destination* principle, actions to reduce fraud and evasion in the field, as agreed by the VIth Directive and the later ones);
- establishing common rules on excise duties (mandatory excise goods, chargeability, mandatory minimum levels of excise duty, exemptions, the suspension regime, exemptions and others);
- actions to harmonize direct taxation through an acceptable compromise between their function as financial *leverage* and source of budget revenues.

	Romania	**EA**	**EU**
Revenues in GDP	34,3%	44,5%	44,0%
Direct taxes in GDP	11,0%	13,1%	13,1%
Indirect taxes in GDP	6,6%	11,7%	12,6%
Social and health insurance contributions in GDP	9,4%	14,4%	12,8%
Budgetary expenditure in GDP	40,8%	50,4%	50,3%

Source: National Commission for Prognosis

*

* *

Romania's *fiscal strategy* aims to boost the economic environment, investment, entrepreneurship and the occupancy of workforce, to boost public sector reforms. Also, the fiscal strategy seeks to establish a new approach to the relationship between the state and the taxpayer, based on transparency and fairness.

Fiscal consolidation measures envisaged by the authorities, during the 2011-2015 periods aimed at a new approach based on fairness and discipline by[13]:

- general reduction of taxation;

[11] Ibidem.
[12] Ibidem.
[13] Ministerul Finanțelor Publice, *Strategia fiscal bugetară pentru perioada 2013-2015 (revised), www.mfinante.ro.*

- broadening the tax base;
- simplifying the tax system;
- increasing budget revenue collection;
- Reducing tax evasion.

	Romania	**EA**	**EU**
The share of direct taxes in total tax revenues	22,6%	30,6%	30,4%
The share of indirect taxes in total tax revenues	45,2%	36,2%	38,6%
The share of social security contributions in total tax revenues	32,2%	33,1%	33,1%

Source: National Commission for Prognosis

At the legislative level, Romania's fiscal strategy is designed to ensure improved collection of budgetary revenue, combating tax evasion, business support and employment growth by:[14]

- amending the legislative framework in order to recover damages arising from tax evasion by tightening administrative sanctions;
- amend fiscal legislation by redefining crimes related to tax evasion and broadening the ANAF assignments regarding the improvement of the fight against this phenomenon;
- strengthen the financial discipline by restraining cash payments and receipts, by decreasing the maximum threshold of cash payments between economic units and restriction of cash payments made by economic units to natural persons;
- amend the legislation regarding the companies[15] by introduction of the obligation of increasing the share capital when registering negative capital, and also by introduction of joint liability of the shareholders/ stock holders/ administrators transferring liability companies;
- amend insolvency legislation[16], by introducing the possibility of carrying out tax inspections after the opening of insolvency proceedings, or by conditioning the declaration of voluntary insolvency by performing a tax inspection;
- Improve and simplify the legislation on rescheduling the payment of budgetary obligations for viable taxpayers who are in temporary financial distress.

Through the *fiscal policy*, with the help of financial leverage, the state can influence economic processes and can correct the economic cycle in order to eliminate economic imbalances. Thus, in periods of overload of the economy, it may take measures to slowdown the growth based on the inflationary phenomenon, and in times of depression or recession, through fiscal or budgetary allocations, leading to economic recovery.[17]

---

[14] Ministerul Finanţelor Publice, *Strategia fiscal bugetară pentru perioada 2013-2015 (revizuită), www.mfinante.ro.*

[15] Legea 31/1990 privind societăţile comerciale cu modificările ulterioare.

[16] Legea 85/2006 privind procedura insolvenţei publicată în Monitorul Oficial, Partea I, nr. 359 din 21 aprilie 2006.

[17] Văcărel, I., (coord.), *Finanţe publice*, Ediţia a VI-a, Editura Didactică şi Pedagogică, Bucureşti, 2007, pag.64.

Also through, public funds are financing different economic objectives and actions, oriented towards the development of economic branches or sub-branches in order to create new jobs.

	Romania
GDP current prices - mil lei	739.141
Budget income in GDP	34,3%
Direct taxation in GDP	11,0%
Corporate tax in GDP	2,4%
Wage tax in GDP	3,8%
Indirect tax in GDP	6,6%
Earnings and health related contributions in GDP	9,4%
Budget expenses in GDP	40,8%
Expenses for active employment measures in GDP	0,02%

Source: National Commission for Prognosis

In Romania, through the fiscal policy and the system of duties and taxes, the following objectives are pursued:

- removing imbalances: economic, monetary, foreign exchange etc., which have accompanied the transition period;
- ensuring macroeconomic stability;
- keeping under control a sustainable deficit of the master budget (to a 3% limit of GDP and its decrease) by creating a system to ensure regular public financial resources;
- ensuring a rational, equitable economic development, providing a balanced national protection of the branches, objectives and activities of interest to the state, but less of interest to economic agents, which is achieved either through redistribution through the tax system, either through budget allocations (eg. infrastructure financing from European funds);
- balanced development of areas, regions and districts of the country, either through tax policy (redistribution of tax revenues due to the State budget by amounts or allowances deducted from taxes due to the state budget to complement public funds of local budgets) or through budgetary policy (transfers, allocations from the state budget to balance local budgets in order to achieve objectives, actions, economic activities of local interest, with national impact (balancing local budgets by completing the necessary resources);
- encouraging production, services and trade in order to achieve a real economic growth (granting tax incentives or simply reducing taxation);
- Encouraging domestic and foreign investments of local and foreign economic units, through stability, consistency, simplicity, predictability in tax legislation.

5. CONCLUSIONS

As a conclusion with regard to fiscal policy as a factor influencing the employment of the workforce, we can say that the present tax system:

- promotes unequal income distribution between rich and poor amongst the active population;
- imposes by law a higher effective marginal tax rate for those with low incomes;
- penalizes work for employees with low wages and stimulates the accumulation of wealth, but not based on taxed work;
- Faces a lack of an effective deductibility regime.

In order to solve these problems that the national fiscal system is facing, the experts suggest:

- the elimination of the flat tax and introduction of a progressive taxation system;
- the reintroduction of the income globalization mechanism as it was until 2005;
- the reduction of social security contributions as a measure to increase the employment of workforce;
- Balancing the relation between labour taxation and wealth, by increasing the tax rate in the case of property taxes.

References:

1. Albu L.L., Caraiani P., Iordan M., *Perspectivele pieței muncii din România în contextul Strategiei Europa 2020*, PROJECT *Îmbunătățirea capacității instituționale, de evaluare și formulare de politici macroeconomice în domeniul convergenței economice cu Uniunea Europeană a Comisiei Naționale de Prognoză,* cod SMIS 27153.

2. Moşteanu, N.R., *Fiscalitate*, Editura Universitară, Bucureşti, 2008.

3. Musgrave, R.A., Musgrave, P.B., *Public finance in theory and practice*, McGrawHill Book, New York, 1984.

4. Tomi A.R., *Aprofundarea armonizării fiscale în Uniunea Europeană - avantaje și limite*, Romanian Statistical Review nr. 4/2011.

5. Văcărel, I., (coord.), *Finanţe publice*, Ediţia a VI-a, Editura Didactică şi Pedagogică, Bucureşti, 2007.

6. Voinea L., *Tratamentul fiscal al veniturilor din muncă*, Bucuresti, 2010, material editat în cadrul proiectului: *Biroul pentru observarea pieței muncii și a calității locurilor de muncă.*

7. Ministerul Finanţelor Publice, *Strategia fiscal bugetară pentru perioada 2013-2015 (revizuită), mfinante.ro.*

8. Legea 31/1990 privind societăţile comerciale cu modificările ulterioare.

9. Legea 85/2006 privind procedura insolvenței publicată în Monitorul Oficial, Partea I, nr. 359 din 21 aprilie 2006.

ELECTRICITY CONSUMPTION & ECONOMIC GROWTH IN BANGLADESH: EVIDENCE FROM TIME-SERIES CAUSALITY APPROACH

Arifuzzaman KHAN[1]
Sandip SARKER[2]
Delowar HOSSAIN[3]

Abstract

This paper attempts to identify the relationship between electricity consumption and economic growth in Bangladesh through co-integration and vector error correction model (VECM) over the period 1982 to 2012. The Johansen co-integration test indicates that there exists a long run association between the variables. The VECM long run causality model indicates that there is a long run causality running from electricity consumption to economic growth in Bangladesh. Similarly in the short run a causal relationship has also been found between the variables as well. Further variance decomposition results say that electricity consumption can explain the major variations in economic growth in Bangladesh. The implication of our findings is that in Bangladesh the increase of electricity consumption is likely to increase our economic growth in the long run. Policymakers in Bangladesh need to pay special attention to utilize our electricity consumption as well as identifying the alternative sources of electricity generation in order to boost our economic growth.

Keywords: Electricity consumption, growth, Bangladesh, cointegration, economy, causality.

JEL Classification: C22, Q43, E10.

1. Introduction:

Electricity is one of the critical factors of today's modern life and it also plays a critical role in economic development. In all economies the demand for electricity has been an upward trend. This demand is motivated by several important factors such as industrialization, extensive urbanization, population growth as well as rising standard of living. In Bangladesh industrial sector as well as agricultural sector plays a critical role in economic growth. This two contributes nearly 67% of the total aggregated output in Bangladesh. According to the Bangladesh power development board nearly 60%of total electricity is consumed by industrial and agricultural sector. Though Bangladesh installed electric generation capacity (10289 MW) in 2014 but only 62% of the population has access to electricity with a per capita availability of 321 kWh per annum. According to the

[1] Central Banker, Email: arif.ku.business@gmail.com.
[2] Independent Researcher, Email: sandip0735@gmail.com.
[3] Banking Professional, Email: delowar.ku@gmail.com.

Bangladesh Power Development Board (BPDB) assessment, peak demand of the electricity will be an upward trend. The peak demand would be about 17,304 MW in FY2020 and 25,199 MW in 2025. In Bangladesh most of the power plants were gas based. But very recently government has adopted to develop coal based power generation strategy to keep pace with the fast growing demand. However we are still running short of fulfilling the demand. At the same time the demand for electricity power had increased in the rural areas in Bangladesh because of significant business activities noticeable there. A large number of small business units had been set up in rural areas in last couple of years with the help of financing by our banking sector as well. Electricity plays a critical role for the growth of those small businesses. Therefore electricity is critical for the economic development in Bangladesh. Several studies has identified the role of electricity consumption towards economic growth. Karg (2014) mentioned that industrial demand for energy is directly proportional to economic growth whereas consumer demand for electricity is directly proportional to economic development. Ferguson et al. (2000) found strong positive correlation between electricity use and wealth creation in 100 developing countries. Moreover they also stressed the need to analyze the causality test to get an idea over whether knowledge of past electricity consumption movements improves forecasts of movements in economic growth or not. The view of Leug and Meisen (2005) was that an increase in electricity consumption by per capita is an indication of social development and economic growth. Further Fu et al. (2014) in their study on energy consumption and economic growth in Brazil and found that energy consumption appears to be real GDP elastic. They also suggested that Brazil should adopt a dual strategy of increasing investment in energy infrastructure in order to avoid having a negative effect on economic growth by reducing energy consumption. Present government has also initiated a long term development strategy "Vision 2041" where the country would like to enter into the era of first world. To accomplish this dream into reality Bangladesh needs to increase its economic growth and develop appropriate policies to sustain that growth. As it is evident that our industrial sector is contributing mostly in our growth which also consumes major portion of electricity production, therefore a causal relationship between electricity consumption and economic growth can extract important policy implication. Therefore the study has attempted to identify the relationship between electricity consumption and economic growth in Bangladesh from a time series modeling.

2. Literature Review:

The study of electricity consumption and economic growth has been an area of interest for a long time. Among the researchers the pioneer in this area was Kraft and Kraft (1987). Jamil and Ahmad (2010) in their study on GDP, electricity price & electricity consumption using cointegration and granger causality test found that growth of GDP is likely to causes energy consumption in Pakistan. At the same time growth in output in commercial, manufacturing and agriculture sectors tends to increase electricity consumption in Pakistan. Aqeel and Butt (2001) worked over per capita GDP & per capita energy consumption using cointegration and error correction model. They found that GDP growth causes energy consumption as well as petroleum consumption in the long run. However Ghosh (2002) found no cointegration between electricity consumption and GDP growth in India. Morimoto and Hope (2004) in their study over Sri Lanka pointed out that current and past

changes in electricity supply have a significant impact on a change in real GDP in Sri Lanka. Saeki and Hossain (2011) in their cross country analysis in south Asia found that there is a unidirectional causality running from economic growth to electricity consumption in India, Nepal and Pakistan, and from electricity consumption to economic growth in Bangladesh. Other than south Asia Asafu-Adjaye (2000) investigated the existence of causal relationship between energy consumption and output in four Asian countries using the co-integration and error-correction. He found a bi-directional causality in case of Thailand and the Philippines. Further, Yuan et al. (2007) explored that electricity consumption and real GDP for China were co-integrated and there was unidirectional Granger causality from electricity consumption to real GDP. Other than Asian countries, Chontanawat et al. (2008) worked on existence of causal relationship between energy economic growth nexus in 30 OECD developed economies and 78 non OECD developing economies. They found that causality running from energy consumption to GDP was more prevalent in the developed OECD economies compare to the developing non OECD economies. Other than cointegration and causality approach Chandran et al. (2010) used autoregressive distributed lag (ARDL) approach to identify the relationship between electricity consumption and real GDP growth in Malaysia. Their conclusion was Malaysia is an energy-dependent country where they found a uni-directional causal flow from electricity consumption to real GDP. In the African perspective Akomolafe and Danladi (2014) in their study on Nigeria to examine the relationship between electric power consumption and economic growth found that Nigeria's growth is highly dependent on electricity consumption. They found a unidirectional causality from electricity consumption to real gross domestic product. Finally from a European perspective we also found a similar result as well. Kargi (2014) in their study over Turkey on electricity consumption and economic growth found a bi directional causality between electricity consumption and economic growth. He also found a long run as well as short run causal relationship between those variables. Lee and Chein (2010) in their study on Canada, Italy and England found that energy saving may hinder growth in those economies. From the above literatures it has been found that there is a strong evidence that a country's economic growth can be accelerated by electricity consumption. In this study we add value to the existing literature by adding results from a developing country's perspective.

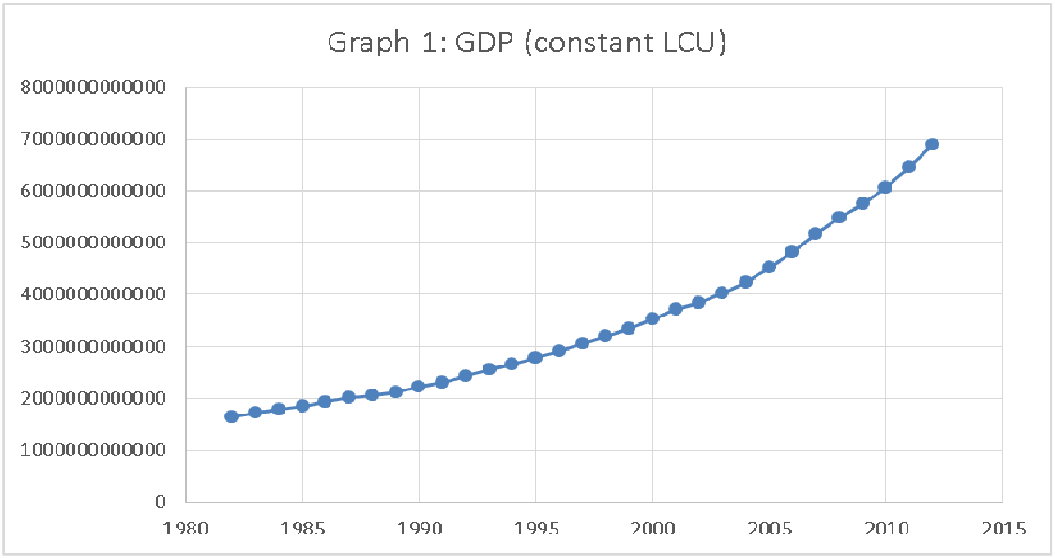
3. Data, Modeling & Methodology:

3.1 Data:

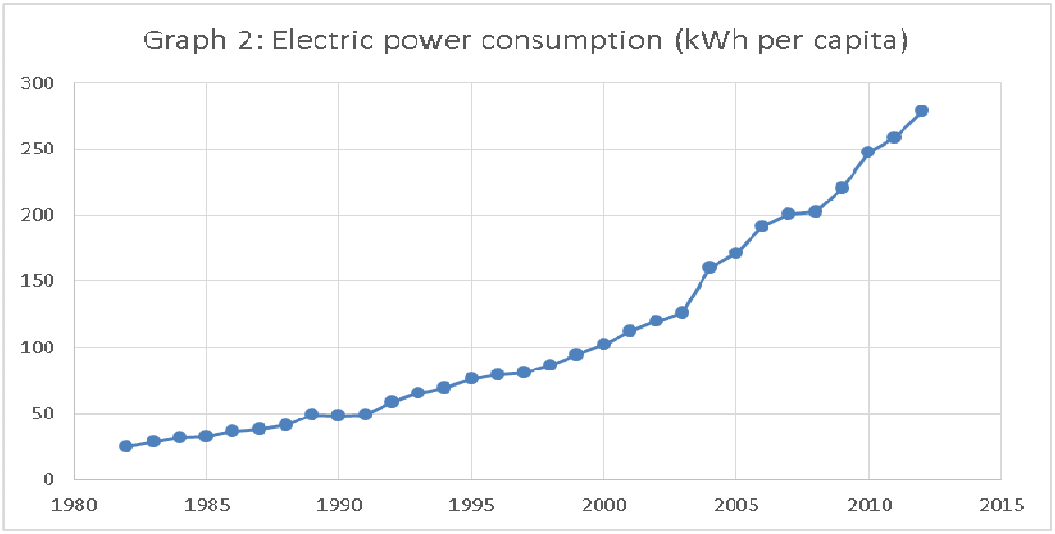
Table 1 presents descriptive statistics for the variables employed in the study. Graph 1 and 2 presents the time series of each of the variables in graphical form. In this study our dependent variable is gross domestic product and independent variable is electricity consumption. Most of the previous studies used GDP as an indicator of economic growth. Here GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products (WDI, 2014). Here our GDP value is in constant local currency. On the other hand electric power consumption is measured by the production of power plants and combined heat and power plants less transmission, distribution, and transformation losses and own use by heat and power plants. Data has been collected from world development indicators of World Bank data sheet from 1990 to 2014.

Table 1: Descriptive Statistics

Variables	Mean	Median	Skewness	Kurtosis
Electric power consumption (kwh per capita)	109	81	0.858431	-0.485806076
GDP (Constant LCU)	3456233180129	3044566000000	0.772504	-0.478204291



Source: World Development Indicator 2014



Source: World Development Indicator 2014

3.2 Econometric Modeling Strategy:

The econometric modeling strategy proceeds in several steps, consistent with previous studies. The unit root test is carried out to check the stationarity of the variables for their non-stationarity. The Augmented Dickey Fuller (ADF) test is then carried out to detect the existence of unit root and as a result of which, some of the variables are found to be non-stationary and thus could not be regressed unless made stationary. The null hypothesis for the ADF unit root test is that the variable has a unit root against the alternative of stationarity. We performed the ADF tests based on the following model:

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \delta_1 \Delta y_{t-1} + \cdots + \delta_{p-1} \Delta y_{t-p+1} + \varepsilon_t, \quad \text{------ (1)}$$

The cointegration test is run to find out possible linear combinations of the variables which could be considered stationary. To test for cointegration we use the maximum likelihood test developed by Johansen and Juselius (1990). We use the AIC to determine lag length. Johansen and Juselius multivariate cointegration equation is given below:

$$\Delta \mathbf{X_t} = \sum \Gamma \mathbf{i}\, \Delta \mathbf{X_{t-i}} + \prod \mathbf{X_{t-1}} + \varepsilon_t \quad \text{---------- (2)}$$

Once the variables are found to be cointegrated, then Vector Error Correction model (VECM) can be employed to identify the long run and short run causality running from our variables. The long-run multivariate model is as follows:

$$\mathbf{Y_t} = \alpha + \beta_1 \mathbf{EC_t} + \mathbf{u_t} \quad \text{---------- (3)}$$

Where $\mathbf{Y_t}$ = GDP (Constant LCU), $\mathbf{EC_t}$ = Electricity Consumption, $\mathbf{u_t}$ = error terms

If there is a long run relationship between the series, shocks will result in disequilibrium in the short-run before the series return to their long-run equilibrium. The short run model corresponding is as follows:

$$\Delta\, \mathbf{GDP_t} = \sum \beta_i\, \Delta\, \mathbf{GDP_{t-i}} + \sum \alpha_i\, \Delta \mathbf{EC_{t-i}} + \varepsilon_t \quad \text{---------- (4)}$$

Where, GDP = Gross Domestic Product (Constant LCU), EC = Electricity Consumption (kWh per capita).

4. Results:

Initially, we opted for ADF test to check the datasets and we observed that the datasets were non-stationary at level. In the level and first difference, we found both the series become non-stationary (Table 2). However in the second difference we found both the series become stationary (Table 2). So it became possible for us to investigate the existence of a long-run relationship within a Johansen cointegration testing framework.

Table 2: Augmented Dickey–Fuller Unit Root Test

Variables	Level	First Difference	Second Difference
	t-statistic	t-statistic	t-statistic
GDP (Constant LCU)	4.132799	-1.814127	-4.739755
Electric Power Consumption (kWh per capita)	0.181022	-5.018289	-5.967596

In Johansen's method, both the Eigen value statistics and Trace statistics can be used to determine whether variables are cointegrated or not. To trace out the presence of cointegration, we could rely on both Trace statistics and Eigen value. From the Trace statistics (table 3); it was found that all variables have been cointegrated at 5% level where the null hypothesis is rejected indicating long-term association between the variables. Further Maximum Eigenvalue statistics indicates that there is at least two cointegrating equation. It indicates that all the variables move together in the long run. We used Akaike information criterion (AIC) to select the number of lag. The rule is lower the AIC better the model. Therefore we have selected lag 2. As all variables are cointegrated, we can run vector error correction model.

Table 3: Johansen Cointegration Test Result

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)		**Trace Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.730227	49.15883	15.49471	0.0000
At most 1 *	0.399819	13.78414	3.841466	0.0002

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	**Eigenvalue**	**Max-Eigen Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.730227	35.37468	14.26460	0.0000
At most 1 *	0.399819	13.78414	3.841466	0.0002

The Granger causality test is done with 2 lag intervals and the result shows that there are unidirectional causal relationships running from electric power consumption to GDP.

Table 4: Result of Granger Causality

Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**
DDGDP does not Granger Cause DDEC	26	1.97390	0.1521
DDEC does not Granger Cause DDGDP		4.65483	0.0133

Table 5 shows the Vector Error Correction Model long run causality result. Here C (1) represents the speed of the adjustments towards long run equilibrium. We see that our C (1) is negative and is also significant which indicates that there is long run causality running from electricity consumption to gross domestic product. Further we can say that electric power consumption has influence on our dependent variable GDP in the long run.

Table 5: VECM Long Run Causality result

	Coefficient	**Std. Error**	**t-Statistic**	**Prob.**
C(1)	-0.192779	0.050388	-3.825876	0.0011
C(2)	-0.827130	0.161782	-5.112626	0.0001
C(3)	-0.620747	0.167361	-3.709025	0.0014
C(4)	-5.95E+09	1.91E+09	-3.119544	0.0054
C(5)	-2.51E+09	9.51E+08	-2.643711	0.0156
C(6)	1.79E+09	5.98E+09	0.298793	0.7682

R-squared	**0.693277**	Mean dependent var	4.46E+08
Adjusted R-squared	0.616597	S.D. dependent var	4.88E+10
S.E. of regression	3.02E+10	Akaike info criterion	51.30185
Sum squared resid	1.83E+22	Schwarz criterion	51.59218
Log likelihood	-660.9240	Hannan-Quinn criter.	51.38545
F-statistic	9.041102	Durbin-Watson stat	1.934149
Prob(F-statistic)	**0.000128**		

Now we want to estimate whether there is any short run causality between our variables. To do this we depend on wald statistics test result. Table 6 shows short run causality result between electricity consumption and gross domestic product in Bangladesh. Result suggests that there is short run causality between electric power consumption and GDP in Bangladesh since chi-square value is less than 5%.

Table 6: Short Run Causality between Electricity consumption and Economic Growth

Test Statistic	**Value**	**df**	**Probability**
F-statistic	4.930185	(2, 20)	0.0182
Chi-square	9.860369	2	**0.0072**

Now we want to examine whether our model where GDP (constant LCU) is the dependent variable has any statistical error or not. Here our value of R^2 is 70% which is good. Our F statistics is also significant which a good sign of our model. Breusch-

Godfrey's LM Test (table 7) indicates that there is no serial-correlation in our model. Further Breusch-Pagan-Godfrey's Heteroskedasticity Test (table 8) indicates that this model does not have Heteroskedasticity problem.

Table 7: Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

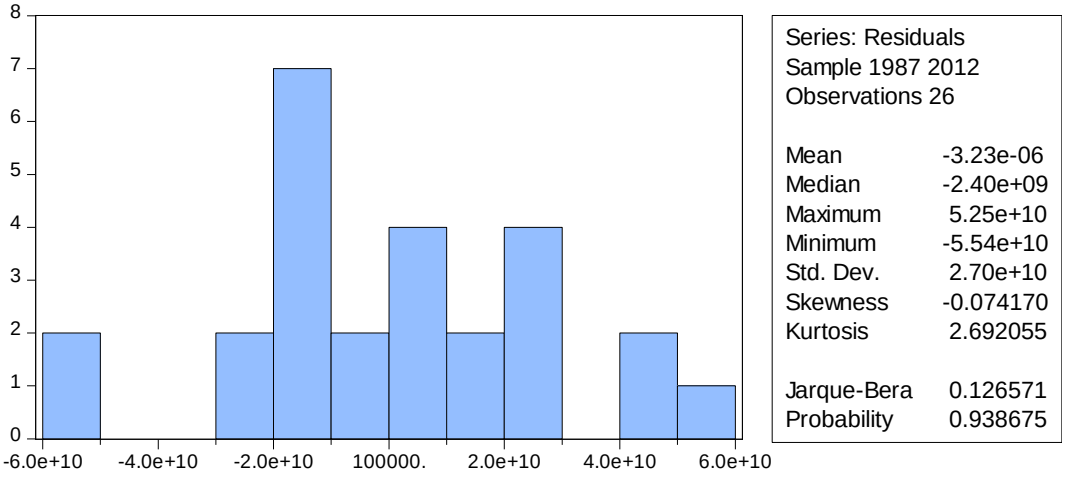
F-statistic	0.250654	Prob. F(2,18)	0.7810
Obs*R-squared	0.704492	Prob. Chi-Square(2)	**0.7031**

Table 8: Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.289822	Prob. F(6,19)	0.9345
Obs*R-squared	2.180066	Prob. Chi-Square(6)	**0.9024**
Scaled explained SS	1.091358	Prob. Chi-Square(6)	0.9819

Moreover residuals our model is found to be normally distributed (Graph 3). Therefore we can conclude that the model we used in this study is fit.



Graph 3: Normality Test

4.1. Result of Variance Decomposition:

As impulse response function does not show the extent of the relationships between variables. Therefore, in order to judge the relative strength of different influences on a given variable, we conducted variance decomposition analysis. Table 9 shows Variance Decomposition of Gross Domestic Product. Here in the short run (year 3) impulses or innovation or shock to GDP accounts for 52.98% variation of the

fluctuation of GDP (own shock). At the same time shock to electricity consumption can cause 47.01% variation to the fluctuation of GDP. On the other hand in the long run (year 10) shock to GDP accounts for 54.48% variation of the fluctuation of GDP (own shock). At the same time shock to electricity consumption can cause 45.51% variation to the fluctuation of GDP. Therefore we can conclude that electric power consumption might explain the major variations along with GDP itself in our proposed model.

Table 9: Result of variance decomposition

Period	Standard Error	GDP	Electricity Consumption
1	3.02E+10	100.0000	0.000000
2	4.34E+10	52.31107	47.68893
3	4.52E+10	52.98793	47.01207
4	5.00E+10	56.53303	43.46697
5	5.27E+10	55.40161	44.59839
6	5.61E+10	54.01167	45.98833
7	5.94E+10	55.10766	44.89234
8	6.18E+10	54.40393	45.59607
9	6.46E+10	54.33268	45.66732
10	6.74E+10	54.48519	45.51481

5. Concluding Remarks:

The study has found long run as well as short run causal relationship between electricity consumption and economic growth in Bangladesh. It is evident that increase in electricity consumption likely to increase our economic growth in Bangladesh. There is no alternative for economic growth than to go for generation of more power for Bangladesh, which is needed especially for transforming into a developed country by 2041. Bangladesh is considered one of the most moving energy growth nations in the world. But more than a third of Bangladesh's 166 million people still have no access to electricity, while the country often is able to produce only some of its 11500 MW electricity generation capacity. Recent survey indicates that extensive load shedding results in severe disruption in the industrial production and other economic activities in Bangladesh. Further power outages result in a loss of industrial output worth $1 billion a year which reduces the GDP growth by about half a percentage point in Bangladesh. To meet up the huge demand of electricity government of Bangladesh plans to set up the 2000 MW Nuclear Power Plant at Rooppur, Pabna district 200 km (120 miles) northwest of the capital Dhaka, by 2018. At the same time renewable energy technology has a huge potential to solve electricity problem in Bangladesh. The energy provided by the sun (solar energy) is many times greater than the current electricity demand. Therefore it is important for the policymakers to set appropriate policies in order to boost our economic growth by using electricity consumption.

References:

Akomolafe. J. K. A. & Danladi. J. (2014) Electricity Consumption and Economic Growth in Nigeria: A Multivariate Investigation. *International Journal of Economics, Finance and Management*, 3 (4), 177-182.

Aqeel, A. & Butt, M. S. (2001) The relationship between energy consumption and economic growth, *Asia Pacific Development Journal*, 8 (2), 101-110.

Asafu-Adjaye, J. (2000) The Relationship between Energy Consumption, Energy Prices and Economic Growth: Time Series Evidence from Asian Developing Countries. *Energy Economics,* 22 (2), 615-625.

BPDB (2015), Bangladesh Power development Board, Available at-http://www.bpdb.gov.bd/bpdb/ Accessed on November, 2015.

Chandran, V. G. R., Madhavan, K. & Sharma, S. (2010) Electricity Consumption–growth Nexus: The case of Malaysia, *Energy Policy*, 38 (1), 606-612.

Chontanawat, J., Hunt, L.C. & Pierse, R. (2008) Does energy consumption cause economic growth? Evidence from a systematic study of over 100 countries. *Journal of Policy Modeling*, 30 (2), 209-220.

Ferguson, R., Wilkinson, W., & Hill, R. (2000) Electricity use and economic development. *Energy Policy*. 28 (13), 923-934.

Ghosh, S. (2002) Electricity consumption and economic growth in India, *Energy Policy*, 30 (2), 125-129.

Jamil, F. & Ahmad, E. (2010). The relationship between electricity consumption, electricity prices and GDP in Pakistan, *Energy Policy*, 38 (10), 6016-6025.

Johansen, S., & Juselius, K. (1990) Maximum likelihood estimation and inference on cointegration, with applications to the demand for money. *Oxford Bulletin of Economics and Statistics,* 52 (2), 169-210.

Karg. B. (2014) Electricity Consumption and Economic Growth: A Long-Term Co-integrated Analysis for Turkey. *International Journal of Economics and Finance*, 6 (4), 285-293.

Kargi. B. (2014) Electricity Consumption and Economic Growth: A Long-Term Co-integrated Analysis for Turkey. International Journal of Economics and Finance, 6 (4), 285-293.

Kraft, J., & Kraft, A., (1978) On the relationship between energy and GNP. *Journal of Energy Development*, 3 (2), 401-403.

Lee, C. C., & Chein, M. S. (2010) Dynamic modelling of energy consumption, capital stock, and real income in G–7 countries. *Energy Economics*, 32 (3), 564-581.

Leung, C. S., & Meisen, P. (2005) How electricity consumption affects social and economic development by comparing low, medium and high human development countries. GENI.

Morimoto, R., & Hope, C. (2004) The impact of electricity supply on economic growth in Sri Lanka. *Energy Economics*, 26 (1), 77-85.

Saeki, C. & Hossain, M. S. (2011) Does Electricity Consumption Panel Granger Cause Economic Growth in South Asia? Evidence from Bangladesh, India, Iran, Nepal, Pakistan and Sri-Lanka. *European Journal of Social Sciences*, 25 (3), 316-328.

The World Bank, World Development Indicators (2014). Country: Bangladesh [bgd_Country_en_excel_v2]. Retrieved from: http://data.worldbank.org/country/bangladesh

Yuan, J., Zhao, C., Yu, S., & Hu, Z. (2007) Electricity Consumption and Economic Growth in China: Co-integration and Co-feature Analysis. *Energy Economics*, 29 (2), 1179-1191.

EFFECT OF CRIME ON POVERTY IN NIGERIA

Adenuga Fabian ADEKOYA
Nor Azam Abdul RAZAK*

Abstract

The link between crime and poverty was considered in this work by controlling for economic growth. That is, the study examined the cointegration of these variables and based on previous work; the issue of causal relationship among these variables were studied. Moreover, the study extends the theory of rational choice to poverty situation in Nigeria by testing the crime-wealth hypothesis in rational choice theory. In testing these hypotheses, the study used data set from 1990 to 2012 and analysed data through the estimation of bounds test; vector error correction model and Granger causality test. Also, for policy making the levels of shocks convergence were determined by variance decomposition test. However, the results showed that there is existence of short-run impact of crime on poverty and a unidirectional causality of crime affecting poverty using the Granger causality which support the crime-wealth hypothesis. In addition, growth played crucial role by impacting on poverty in the short-run and further, a bidirectional relationship was obtained between growth and poverty in the Granger causality. Based on these results, the study suggested that the policy makers should encourage policies that can improve economic growth with the possibility that crime may be reduced in the country and consequently, the reduction of poverty as well..

Keywords: crime, poverty, growth, bounds test approach, vector error correction model and Granger causality.

JEL Classification: K4, O1, O2, O4

1. Introduction

The incidence and severity of poverty are higher among households in Nigeria (Akerele et al., 2012) and a greater percentage of the Nigerian population lives in poverty, despite the huge wealth in the country (Holmes et al., 2012). This is because high poverty income and poor asset distribution, unequal access to basic infrastructure and services like education and health still persist in Nigeria (Holmes et al., 2012). Moreover, in a bid to reduce poverty in Nigeria, the Federal Government in September, 1999 introduced a nine-year universal basic education due to the financial inability of many parents to send their children to school (Umukoro, 2013). In addition, the government provides job for young graduates through the Graduate Internship Scheme (GIS) that was launched in October,

*Adenuga Fabian Adekoya is student of the Department of Economics, Universiti Utara Malaysia, Sintok 06010 Malaysia. adenugaadekoya@gmail.com.
Nor Azam Abdul Razak is Senior Lecturer of the Department of Economics, Universiti Utara Malaysia, Sintok 06010 Malaysia. azam@uum.edu .my

2012 and Subsidy Reinvestment and Empowerment Programme (SURE-P) with a projected allocation of N180bn in 2013 (Okogu, 2013). This amount according to Okogu (2013) was meant for further improved provision of social safety net schemes, maternal and child healthcare, youth development, vocational training and the provision of critical infrastructure. Thus, these steps reflected on the MDGs achievement in 2013 but not adequate because achievement is still below the target (see MDG Report, 2013). That is, the achievement is still below the target because crime remains a threat to budget implementation, achievement of Millennium Development Goals and Vision 20: 2020 in Nigeria (Federal Ministry of Finance Nigeria, 2014).

Moreover, criminal practices in Nigeria and other African nation's affects poverty reduction through diversion of funds meant for poverty alleviation programmes by government representatives (Handley et al., 2009). Also, Umukoro (2013) affirmed that corruption has affected the poverty programmes in Nigeria. For example, the embezzlement of US$250 million by a former governor of Delta state James Ibori was meant for vital public services (Burleigh, 2013 and Dike, 2014). Besides, Costa (2007) asserted that money stole from Nigeria coffers between 1960 and 1999 was estimated to be US$400 billion that should have translated into meaningful public goods like vaccinations for children; hospitals and water treatment facilities; kilometres of roads and hundreds of schools. Thus, the evidence of teenagers and young adults committing crime due to poverty in Nigeria has been challenging (Okei-Odumakin, 2011). Besides, poverty remains a socio-economic problem that may increase criminal risk as rapid urbanisation is taking place in Nigeria (Odumosu, 1999). Thus, there is a need to statistically showcase the extent that crime has affected poverty or how they have causally affected each other in Nigeria.

However, criminal activities in a society are characterised by prolonged poverty (Huang et al., 2004). That is, crime related matters may disrupt the development course (Mehlum et al., 2005) like economic growth (Mauro & Carmeci, 2007). More so, studies have shown relationship exist between crime and poverty. Poveda (2012) established that poverty has a positive influence on violence in Colombia, and poverty measures help in reducing the financial burden on the family because poverty measures had been found to reduce non-violent crime in Brazil (Loureiro et al., 2009). Similarly, in a cross country of 39 Fajnzylber et al., (2002) showed that poverty is significant with crime and came up with the need to estimate poverty alleviation effects of violent crime. Meloni (2014) has proven that welfare spending through Unemployed Heads of Household Programme have contributed to crime reduction in Argentina but, further raised these investment options between policing expenses and relief spending in relation to crime. Also, in respect of the nature between crime and poverty; few studies have focus on how crime and crime-related issues like corruption and violence-conflict have impacted on poverty. For example, McKeown (1948) used the parametric approach to relate criminal activities to poverty; and Gupta et al. (2002) examined the crime of corruption on poverty as Justino and Verwimp (2013) relates violence-conflict with poverty in Rwanda.

Theoretically, the assertion that poverty is positively related to criminal activities has been established by the criminologists (McKeown, 1948). In line with this assertion, Becker (1968) and Ehrlich (1973) have used the economic approach to further establish that poverty of lower income means is significantly associated with crime. Besides, the

economic approach has postulated that crime would make society to incur some social loss since more resources will have to be used in curbing crime (Bourguignon, 1999). Thus, loss of resources would reduce the implementation of developmental programmes that could assist in reducing the poverty income in the society. That is, the position is that an increase in crime rate in the society would led to more disproportionate in income which encourage more poverty income in the society. In view of the economic approach to crime by Becker (1968) and Ehrlich (1973), the crime effects on how crime has led to poverty has been greatly overlooked or neglected. This neglect has provided scanty literature on how crime has contributed to poverty in the society.

Similarly, the work of Huang, Laing and Wang (2004) came up with the dynamic equilibrium approach to establish relation between crime and poverty. The dynamic equilibrium approach was necessitated by the geographical area that is concentrated with more crime activities. This concentrated environment was noted to have features of low educated workforce, low chances of employment and prolonged poverty. To this, changes in the rate of crime assist in limiting the important development for labour market in terms of decrease in income for the young unskilled workers and reduction in the rate of unemployment. This important development for labour market showed a connection of a priori for the fact that individual may decide to either or not engage in criminal activities on the basis of time allocation. Meanwhile, the engagement in criminal activities would make income gains of high human capital workers to be stolen and further create fear in them. This fear would not enable them to participate in the labour market and by this; the anticipated yield to formal employment would be reduced. That is, crime imposed an indirect tax on educated workers by depleting the value of their schooling but, they noted that interference provided by the authorities may reduce the imposed indirect tax by crime on educated workers. Also, their low involvement in labour market would not encourage firms' business operation thereby causing low productivity which would discourage the firms from setting up their business in such society. In this regard, the effect of low firm participation in society would lessen the number of formal employment that would be provided in such community which may encourage poverty income. Thus, the occurrence of high crime would not only correlate with existence of high poverty but also, increase poverty in a society.

Hence, the consideration of crime affecting poverty is seen as a novel idea using crime-poverty data set in Nigeria. This is because this study would be the first to empirically establish that crime affect poverty based on the theoretical idea of crime-wealth hypothesis in the rational choice theory. In addition, the study would aid the policy makers in the country on policy formulation and direction in curbing crime, promoting economic growth and consequently reduced poverty. However, to explain how crime has impacted on poverty in Nigeria, this study consider these two questions. What is the extent of crime affecting poverty in Nigeria? Again, does causal effect exist in this relation of crime and poverty?

2. Methodology

2.1. Data sources and description.

This study tested for cointegration and the Granger causality in the link between crime and poverty using economic growth as policy to reduce poverty in Nigeria. Thus,

the study sourced data from the World Bank (2014) for the real growth of per capita income and also, poverty using the percentage of population that have access to water from 1990 to 2012. Besides, the used of the percentage of population that have access to water as proxy for poverty was based on United Nations (2007) where this proxy was listed as one of the indicators to measure poverty for sustainable development. In addition, yearly data for poverty in Nigeria was not available and due to this data problem on poverty; the study limit the coverage period to 23 years from 1990 to 2012 and also following the work of Farooq, Shahbaz, Arouri and Teulon (2013) that face similar data problem on corruption and consequently used the same coverage time from 1987 to 2009. However, data on crime was obtained from various reports of the National Bureau of Statistic and the Nigeria Police. The variability of the data and their definition are presented in Table 1.

Table no.1: Descriptive statistics and definition of variables

Variables	Observations	Mean	Std. Dev.	Minimum	Maximum	Definition
POVW	23	55.365	5.684	45.600	64.000	Percentage of Population having access to water as proxy for poverty
CR	23	159.116	80.831	59.765	304.831	Crime recorded per 100,000per population
GRPC	23	28.027	30.417	-5.498	113.847	Real GDP per capita growth

2.2. Model specification

To embark on this work, this study estimated the poverty model in equation 1 in order to examine the effect of crime on poverty and see the impact of growth on poverty. Thus, the poverty model estimated is presented in equation 1 based on Adams and Pages (2005) and Gupta, Pattillo and Wagh (2009). Moreover, in the poverty model β_1 is the crime elasticity of poverty and it is expected to be negative for the percentage of population having access to water to be reduced which indirectly would increase poverty. Meanwhile, β_2 is the growth elasticity of poverty and it is expected to be positive for the percentage of population having access to water to be increased which indirectly would reduce poverty. In addition, previous studies have recognised endogeneity existence between corruption and poverty (Gupta, 2002); therefore, this work would consider the causal link between crime and poverty following Nayaran and Smyth (2004) and Detotto and Pulina (2012). Thus, the following causality model were specified as presented in equation 1 to 3. In the causality model below, crime and poverty variables were logged ($\ln$) while real growth rate per capita was differenced (δ). Moreover, ε_t , φ_t and σ_t are the error terms for each of the model while π_1, π_2 and π_3 are constants. Also, each of the variable was in turn regressed on other variables time to show the characteristics of causality.

$$ln(POVW_t) = \pi_1 + \beta_1 \ln(CR_t) + \beta_2 \delta(GRPC_t) + \varepsilon_t \ldots\ldots\ldots [1]$$
$$ln(CR_t) = \pi_2 + \beta_3 \ln(POVW_t) + \beta_4 \delta(GRPC_t) + \varphi_t \ldots\ldots\ldots [2]$$
$$\delta(GRPC_t) = \pi_3 + \beta_5 \ln(POVW_t) + \beta_6 \ln(CR_t) + \sigma_t \ldots\ldots\ldots [3]$$

2.3. Test of stationarity

In view of the problem of non-stationarity that time series data often suffer from, this study overcomes this problem by putting those variables into test of stationarity of the Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) tests. These unit root tests gave the study a confidence that the result obtained were not spurious. That is, non-stationary data were made stationary at integration order of I(0) and I(1). However, the results show that this study is having a mixture of I(0) and I(1) series data as highlighted in Table 2. In view of this, this called for the use of the autoregressive distributed-lag model (ARDL) as proposed by Pesaran, Smith & Shin (2001).

Table 2: Result of the Unit Roots Test

variables	Augmented Dickey-Fuller (ADF)				Phillip-Perron (PP)				decisions
	I(0)	I(0)	I(1)	I(1)	I(0)	I(0)	I(1)	I(1)	
	α	α and t	α	α and t	α	α and t	α	α and t	
POVW	-6.997***	0.104	-0.148	-7.397***	-32.184***	-1.021	-1341	-22.318***	I(0)
CR	-1.512	-2.298	-6.380***	-6.286***	-1.613	-2.320	-6.380***	-6.142***	I(1)
GRPC	-5.020***	-4.960***	-7.371***	-3.819**	-5.116***	-5.194***	-18.389***	-19.040***	I(0)

NOTE: the figures reported are t-ratio that possessed the p-values of MacKinnon (1996) one-sided at various level of significant. The level of significant was asterisked (*) at 10%; (**) at 5% and (***) at 1%.

2.4. Bouds Test Approach

The bound test approach required that equation 1 to 3 be transformed into autoregressive distributed-lag as indicated in equation 4 to 6. This transformation helps the study to affirm the existence of cointegration as submitted by Engle and Granger (1987) that variables in a model must move together theoretically.

$$\Delta \ln(POVW)_t = \pi_1 + \beta_1 \ln(POVW_{t-1}) + \beta_2 \ln(CR_{t-1}) + \beta_3 \delta(GRPC_{t-1}) + \sum_{i=1}^{p} \alpha_1 \Delta \ln(POVW_{t-i}) + \sum_{i=0}^{p} \alpha_2 \Delta CR_{t-i} + \sum_{i=0}^{p} \alpha_3 \Delta \delta(GRPC_{t-i}) + \varepsilon_t \quad \ldots\ldots\ldots (4)$$

$$\Delta \ln(CR)_t = \pi_2 + \beta_1 \ln(POVW_{t-1}) + \beta_2 \ln(CR_{t-1}) + \beta_3 \delta(GRPC_{t-1}) + \sum_{i=1}^{p} \alpha_1 \Delta \ln(POVW_{t-i}) + \sum_{i=0}^{p} \alpha_2 \Delta CR_{t-i} + \sum_{i=0}^{p} \alpha_3 \Delta \delta(GRPC_{t-i}) + \varphi_t \quad \ldots\ldots\ldots (5)$$

$$\Delta \delta(GRPC)_t = \pi_3 + \beta_1 \ln(POVW_{t-1}) + \beta_2 \ln(CR_{t-1}) + \beta_3 \delta(GRPC_{t-1}) + \sum_{i=1}^{p} \alpha_1 \Delta \ln(POVW_{t-i}) + \sum_{i=0}^{p} \alpha_2 \Delta CR_{t-i} + \sum_{i=0}^{p} \alpha_3 \Delta \delta(GRPC_{t-i}) + \sigma_t \quad \ldots\ldots\ldots (6)$$

Based on Pesaran *et al.*, (2001) cointegration test should be carried out with lag selection for the model. That is, appropriate lag must be determined to ascertain the choice of the model for analysis. This selection of lag criteria helps to reduce the

problem of autocorrelation in the residual (Shyh-Wei, 2009). Thus, this study specified the models based on the Akaike Information Criterion with lag 3 for dependent variables and likewise, lag 3 was selected for the regressors. In view of this lag selection, the model used for each independent variable is presented in Table 3. Moreover, each of the models was run using restricted intercept and no trend based on case II of the ARDL of Pesaran *et al.,* (2001). Thus, the bound test was used to ascertain the presence of cointegration in the long-run using the F-test statistic. That is, the joint significance of F-statistic tested the coefficients at one period of lag as shown in equation 4-6. Also, the null hypothesis is that $H_0 : \beta_1 = \beta_2 = \beta_3 = 0$ (implies no cointegration hypothesis) and the alternative is $H_1 : \beta_1 \neq \beta_2 \neq \beta_3 \neq 0$ where at least one of the $\beta_1 \ to \ \beta_3 \neq 0$ (implies cointegration).

The long-run relationship main criteria is that the F statistic test value must not below or in between the I(0) and I(1) bounds but must be above I(0) and I(1). Here, the study reject the null hypothesis that no cointegration exist at the appropriate level of significance. Moreover, the result of the bound test as presented in Table 4 showed that all the models were cointegrated at 5%.

Table 3: Summary of the selected lagged criteria

Dependent variable	LogL	AIC*	BIC	HQ	Adj. R-sq	Specification
LOG(POVW)	122.328	-11.929	-11.481	-11.853	0.999	ARDL(3, 3, 0)
LOG(CR)	-14.976	-1.050	-0.801	-1.008	0.933	ARDL(2, 0, 0)
D(GRPC)	-88.354	10.353	10.850	10.437	0.407	ARDL(3, 1, 3)

Table 4: Bounds test for the existence of cointegration

Dependent variable	F-statistic	Critical Value at various levels of significance				
		5% at I(0)	5% at I(1)	10% at I(0)	10% at I(1)	k
$LOG(POVW) = f(\log(cr)\ \delta(grpc)$	9.151	3.1	3.87**	2.63	3.35	2
$LOG(CR) = f(\log(povw)\ \delta(grpc)$	4.183					
$D(GRPC) = f(\log(povw)\ \log(cr)$	6.557					

Note: the ** indicate the bound test for each model was significant to show if there is cointegration or not among the dependent variable and the regressors.

2.5. Granger causality test

The long-run Vector Error Correction (VEC) model was highlighted in equation 7 while equations 8-10 indicate the short-run Granger causality which show that error correction term were inserted in the short-run of the bounds test. This is in line with the convention in the literature that in determining the Granger causality in both long-run and short-run; Engle and Granger (1987) suggested the inclusion of error correction term to Vector Autoregressive (VAR) model in order to determine the cointegration. Also, variables to be included in the model must be integrated at order of one. However, the use of VEC model in this work is due to the cointegration at 5% using the bound test

approach in spite of variables employed were in mixed integration order of zero and one.

Moreover, Halicioglu (2012) employed the use of VEC in determining the long-run for the relation between crime and real income per capita as highlighted in equation 7. Also, in VEC models, each of the dependent variables is regressed against its previous values of such variable and similarly, for other variables in the multivariate models. The Wald Test was used to obtain the selection of optimal lag for the probability length in all the VEC models. The Wald Test showed the joint determination of a common lag criteria for the models at lag 2. The ECT_{t-1} indicated the cointegration of disequilibrium in each VEC model and it determines the presence of long-run Granger causality (Halicioglu, 2012). Thus, the presence of cointegration does not necessarily mean a temporal causality but it is only suggesting that at least a causal direction exist (Nayaran & Smyth, 2004). Hence, the result of the long-run and short-run Granger causality test is highlighted in Table 7.

$$(1-L)\begin{bmatrix} POVW_t \\ CR_t \\ GRPC_t \end{bmatrix} = \begin{bmatrix} \varphi_1 \\ \varphi_2 \\ \varphi_3 \end{bmatrix} + \sum_{i=1}^{p}(1-L)\begin{bmatrix} \theta_{11i} \dots\dots \theta_{11i} \\ \theta_{21i} \dots\dots \theta_{22i} \\ \theta_{31i} \dots\dots \theta_{33i} \end{bmatrix}\begin{bmatrix} POVW_{t-1} \\ CR_{t-1} \\ GRPC_{t-1} \end{bmatrix} + \begin{bmatrix} \partial_1 \\ \partial_2 \\ \partial_3 \end{bmatrix}[ECT_{t-1}] + \begin{bmatrix} \omega_1 \\ \omega_2 \\ \omega_3 \end{bmatrix} \quad \dots(7)$$

$$\Delta \ln(POVW)_t = \pi_1 + \beta_1 \ln(POVW_{t-1}) + \beta_2 \ln(CR_{t-1}) + \beta_3 \delta(GRPC_{t-1}) + \sum_{i=1}^{p} \alpha_1 \Delta \ln(POVW_{t-i}) + \sum_{i=0}^{p} \alpha_2 \Delta CR_{t-i} + \sum_{i=0}^{p} \alpha_3 \Delta \delta(GRPC_{t-i}) + \theta_{POVW} ECT_{t-1} + \varepsilon_t \dots\dots\dots (8)$$

$$\Delta \ln(CR)_t = \pi_2 + \beta_1 \ln(POVW_{t-1}) + \beta_2 \ln(CR_{t-1}) + \beta_3 \delta(GRPC_{t-1}) + \sum_{i=1}^{p} \alpha_1 \Delta \ln(POVW_{t-i}) + \sum_{i=0}^{p} \alpha_2 \Delta CR_{t-i} + \sum_{i=0}^{p} \alpha_3 \Delta \delta(GRPC_{t-i}) + \theta_{CR} ECT_{t-1} + \varepsilon_t \dots\dots\dots (9)$$

$$\Delta \delta(GRPC)_t = \pi_3 + \beta_1 \ln(POVW_{t-1}) + \beta_2 \ln(CR_{t-1}) + \beta_3 \delta(GRPC_{t-1}) + \sum_{i=1}^{p} \alpha_1 \Delta \ln(POVW_{t-i}) + \sum_{i=0}^{p} \alpha_2 \Delta CR_{t-i} + \sum_{i=0}^{p} \alpha_3 \Delta \delta(GRPC_{t-i}) + \theta_{GRPC} ECT_{t-1} + \varepsilon_t \dots\dots\dots (10)$$

2.6. Diagnostic Test

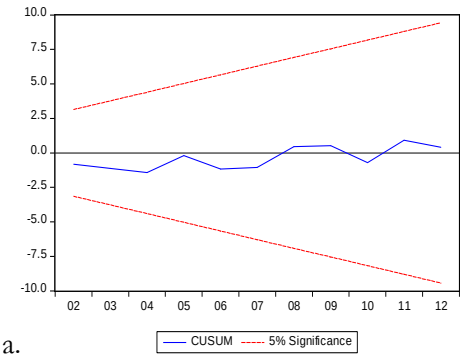
To show the robustness of the result for the cointegration, the estimates of the ARDL were diagnosed as presented in Table 5 with the normality test; functional test; serial correlation test; heteroscedasticity test and stability tests. The results of the normality test of Jarque-Bera indicated that Model 1 and Model 3 passed the test and with the excess of the Kurtosis in Model 2; the study was certained that model 2 also passed the normality test in line with Saridakis (2011). Besides, all the models passed the tests of LM of Breusch-Godfrey of serial correlation, the Breusch-Pagan-Godfrey Heteroskedasticity and the Ramsey RESET Test of functional form at 5% level of significance using both the F-statistic and Observed R^2 probabilities values and the t-statistics for the functional form test. Moreover, to ensure that the parameters were not varied for all coefficients and variances of the disturbance terms in the models especially in long-run relationship (Pesaran & Pesaran, 2009), this study carried out the test of stability of cumulative sum and cumulative sum of squares. Thus, the results of cumulative sum and cumulative sum of squares were highlighted in Figure 1 to 3 and it

provided that all the three models passed the stability tests at 5% level of significance with the exception of cumulative sum of squares for crime model in Model 2.

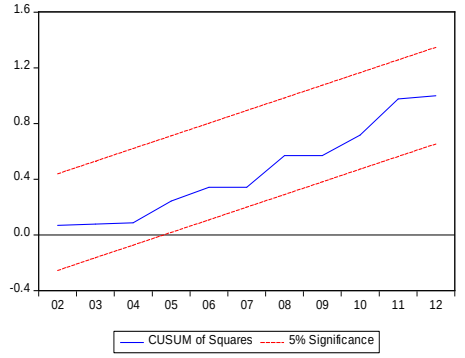
Table 5: Diagnostic test for the ARDL Cointegration

		Model 1	Model 2	Model 3
Jarque-Bera		1.180 *(0.554)*	10.699 *(0.004)*	1.480 *(0.476)*
Kurtosis		1.851	5.969	1.716
Ramsey's RESSET Test	t-statistic	1.115 (10) *(0.290)*	1.495 (15) *(0.155)*	0.508 (8) *(0.624)*
	F-statistic	1.245(1, 10) *(0.290)*	2.235 (1, 15) *(0.155)*	0.258 (1,8) *(0.624)*
LM Test	F-statistic	0.862 (2, 9) *(0.454)*	0.326 (2,14) *(0.726)*	0.087 (2, 7) *(0.917)*
	Obs*R^2	3.216 (2) *(0.200)*	0.936 (2) *(0.626)*	0.464 (2) *(0.792)*
BPG Test	F-statistic	0.481 (8,11) *(0.845)*	1.473 (4,16) *(0.256)*	0.404 (9, 9) *(0.903)*
	Obs*R^2	5.183 (12) *(0.737)*	5.653 (4) *(0.226)*	5.468 (9) *(0.791)*

Note: All p-values are in parenthesis and italic with three decimals.

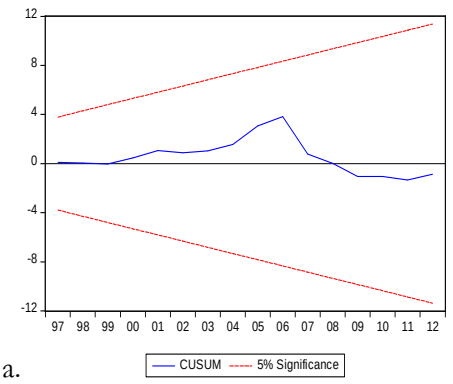


a.

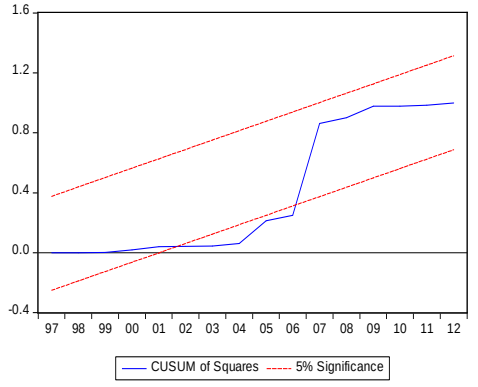


b.

Figure 1: Stability test for model 1.

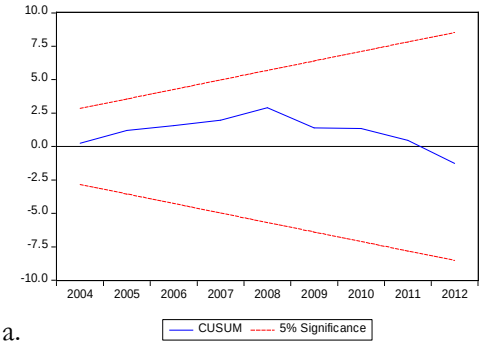


a.

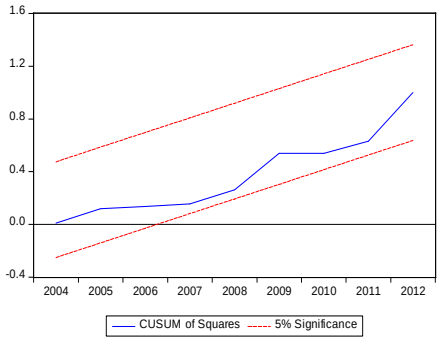


b.

Figure 2: Stability test for model 2



a.



b.

Figure 4: Stability test for model 3

2.7. Results

This study tested the effect of crime on poverty through growth policy by using Model 1 and 4 in order to see whether these variables moved together. Also, the result of the bounds test showed that there is co-integration at 5% level of significance (see Table 4). Due to this joint significance of these variables, the study in turn looks at the long-run and short-run of the coefficients as presented in Table 6. In the long-run, the variable of interest which is crime was not significant in determining poverty. But in the short-run, the study obtained a significant effect at 10%; that is, crime is still relevant in determining the level of poverty in Nigeria. In addition, a 10% increase in crime rate would reduce the percentage of population that have access to water by 2%. This means that when the percentage of population that have access to water is reduced by 2%, poverty would be increased. Thus, an increase in crime rate would positively increases the level of poverty. To this, Gupta *et al.* (2002) affirmed that corruption increased the level of poverty and by this, people were denied good developmental programmes in society. More so, when the means of income was destroyed in the previous years, family tends to suffer loss of income which encourage poverty; that is, the act of violence affects household income where family would be subjected to poverty (Justino & Verwimp, 2013).

However, growth and growth policy have shown no significant long-run impact on poverty in Nigeria. Growth over the years in Nigeria has been revolving between 5% and 7% in the last 10 years but, the standard of living is gradually worsen on yearly basis. Notwithstanding, the short-run result indicated that growth affect poverty at 5% in the preceding two years poverty took place with low coefficient; the low coefficient was also noted by Aigbokhan (2008).

Table 6: Estimates of the poverty model in the long-run and short-run relationship using ARDL Model

Long-run Variables			**Short-run Variables**		
LOG(CR)	-0.001	(-0.032)	DLOG(POVW(-1))	-0.833***	(-4.901)
D(GRPC)	-0.000	(-1.064)		-0.454*	(-
			DLOG(POVW(-2))	2.069)	
Constant	4.493	(125.085)	DLOG(CR)	-0.001*	(-

	1.889)	
DLOG(CR(-1))	0.000	(0.275)
DLOG(CR(-2))	0.002*	(2.175)
D(GRPC, 2)	-0.000**	(-3.004)
CointEq(-1)	-0.073***	(-7.047)

NOTE: the figures reported are t-statistics in parenthesis and coefficients indicating various level of significant with asterisked (*) at 10%; (**) at 5% and (***) at 1%.

Moreover, the Granger causality test of long-run and short-run results were presented in Table 7. In the long-run, the results of ECT_{t-1} for the poverty and growth models were negatively significant at 5%. These two models showed that there were changes of disequilibrium in the co-integration of long-run relationship while the crime model was not co-integrated. Moreover, in the poverty function the presence of Granger causality ran interactively from crime and growth to poverty. Likewise, the Granger causality ran interactively in growth function from crime and poverty to growth and with no such occurrence of interactive of poverty and growth in the crime function. In addition, the ECT_{t-1} coefficients are fairly moderate with -1.987 for poverty and -2.615 for growth and with these figures, it showed that the shock convergence is fairly good. Hence, the results of the poverty function lend supports the crime-wealth hypothesis in rational choice theory.

However, the short-run analysis revealed that imbalance took place in the poverty function, changes happened through crime and growth. That is, crime significantly Granger-causes poverty at 1%; likewise, growth Granger-causes poverty at 10%. In a similar way, poverty Granger-causes growth at 1% when considering the growth function but, crime did not Granger-causes growth. Besides, crime was not Granger-causes neither by poverty nor growth. Meanwhile, it is worthy to note here that a bi-directional causality was obtained in the relation of poverty and growth but, there is neutrality between crime and growth. Also, this study was able to come up with unidirectional Granger causality in the link between crime and poverty. Nevertheless, the short-run causality especially on the variable of interest supported the crime-wealth hypothesis.

Table 7: Long-run and short-run of Granger causality Test

Dependent variable	**F − statistic (probability)**			ECT_{t-1} $(t-statistic)$
	$\Delta log(povw)$	$\Delta log(cr)$	$\Delta\delta(grpc)$	
$\Delta LOG(POVW)$	-	1.115 (0.572)	9.975***(0.006)	-1.987**
$\Delta LOG(CR)$	11.651***(0.003)	-	0.196 (0.906)	-0.646
$\Delta D(GRPC)$	5.507* (0.063)	0.257 (0.879)	-	-2.615**

Note: t-statistic and p-value were presented in the table and the p-values are in parenthesis and were significant at 10% (*); 5% (**) and 1% (***).

The variance decomposition of poverty showed the level of shocks that come from poverty and through other variables in the poverty model. Firstly, on the self-shocks of poverty in the short-run at period 2 and 3 stood at 84.62% and 68.44% while in the

long-run it decreases to 59.05%. Secondly, crime caused the level of shocks of 13.42% and 24.82% in the short-run for poverty at the period of 2 and 3 but this shock later increased to 31.02% in the tenth year. Thirdly, growth produced less shocks in both the short-run and long-run when compared with crime in the same period; that is, the shock produced by growth on poverty was 1.95% in period 2 which increased to 6.72% in period 3; this later increase to 9.92% in period 10 in the long-run. Lastly, the extent of variability of shocks in the poverty model is more in the long-run when compared to the short-run. That is, the shocks increased in terms of variability from 0.001% and 0.0016% in both period 2 and 3 to 0.006% in period 10.

Table 8: Variance Decomposition of POVW

Period	S.E.	LOG(POVW)	LOG(CR)	D(GRPC)
1	0.000774	100.0000	0.000000	0.000000
2	0.001021	84.62637	13.42127	1.952359
3	0.001681	68.44896	24.82435	6.726697
4	0.002162	64.53721	27.00962	8.453171
5	0.002845	66.94899	25.19019	7.860817
6	0.003435	63.48869	27.96379	8.547519
7	0.004183	61.38421	29.46998	9.145814
8	0.004851	60.10010	30.24082	9.659084
9	0.005601	60.16228	30.18579	9.651932
10	0.006312	59.05351	31.02464	9.921856

Cholesky Ordering: LOG(POVW) LOG(CR) D(GRPC)

3. Conclusion

In this work, attempts were made in examining the effect of crime rate on poverty while controlling for economic growth. The idea of controlling for economic growth is that when policies were formulated to promote growth; such policies must be capable of enhancing the citizens' income based and good access to infrastructure. Consequently, the poverty rates would reduce and standard of living would improve among in the country. But, this is not the case in Nigeria in spite of better formulation policies on growth with meaningful resources used to execute those policies and programmes. This is because the transmission of growth policies to reduce poverty in the country was not made possible due to one reason or the other. Particularly, this impossibility was due to criminal activities of corruption, theft, unlawful possession of property, murder, armed robbery, forgery and fraud, and many more. Moreover, in the result of this study it was observed that crime affect poverty at 10% level of significance in the short-run which translate that citizens were denied through criminal activities, the accessibilities to good infrastructure and better standard of living. For example, crime of corruption has grossly made the social protection on development inadequate in Nigeria (Umukoro, 2013). Also, illegal wealth were made possible in the country through unnecessary concessions on import and licences; over inflation of contract and political bribery (JICA, 2011). Moreover, 83 micro financial institutions were listed for bankruptcy due to fraudulent practices (Aborisade,

2014). That is, the higher rate of insider abuse and fraud were found to militate against micro financial institutions' activities in Nigeria (Moghalu, 2010).

However, the direction of the result in the short-run and the Granger causality showed that crime encourages poverty to increase in the country. Thus, the work suggested that government should ensure adequate and prompt prosecution of criminals in order to enhance the status of institutions and their performance in the country. That is, performance of institutions would ensure that growth policies are well monitored and executed which shall provide more comfort to the citizens in the country. In addition, growth policies should not be politicised so that the real people in need of the programmes would benefit immensely from it and not the other way round. Thus, while the government is commended for the previous growth efforts in the country, it worthy to mention here that the adoption of these suggestions would enhance future implementation of growth policies in the country.

References

Aborisade, S. (March 5, 2014).CBN approves liquidation of 83 Microfinance Banks –NDIC. *Punch*

Aigbokhan, B., E., (2008). Growth, Inequality and Poverty in Nigeria. ACGS/MPAMS Discussion Paper No.3. Prepared for United Nations Economic Commission for Africa (UNECA) Addis Ababa, Ethiopia.

Akerele, D. et al, (2012). Socioeconomic determinants of poverty among urban households in South-West Nigeria. International Journal of Social Economics, Vol. 39 (3): 168-181.

Becker, G. S. (1968). Crime and punishment: An economic approach. *Journal of Political Economy*.

Bourguignon, F. (1999). Crime as a social cost of poverty and inequality: a review focusing on developing countries. *Desarrolloy Sociedad*

Burleigh, M. (August, 8 2013). A country so corrupt it would be better to burn our aid money. The Daily Mail. http://www.dailymail.co.uk/debate/article-2387359/Nigeria

Central Bank of Nigeria, (2012). Central Bank of Nigeria Statistical Bullentin. vol. 23. Federal Republic of Nigeria.

Costa, A. M. (November, 13 2007). Anti-Corruption Climate Change: it started in Nigeria. A speech by UNODC Executive Director at the 6th National Seminar on Economic Crime Abuja,

Detotto, C., & Pulina, M. (2012). Does more crime mean fewer jobs and less economic growth? European Journal of Law and Economics, 36(1), 183–207.

Ehrlich I. (1973). Participation in Illegitimate Activities: A Theoretical and Empirical Investigation. *The Journal of Political Economy*. Vol. 81(3) 521-565

Engle, R. F., & Granger, C. W. J. (1987). Co-Integration and error correction: representation, estimation, and testing. *Econometrica*, vol. 55 (2), 251-276.

Fajnzylber, P.,Lederman, D & Loayza, N. (2002). Inequality and Violent Crime. Journal of Law and Economics, vol XLV.

Farooq, A., Shahbaz, M., Arouri, M., & Teulon, F., (2013). Does corruption impede economic growth in Pakistan? Economic Modelling, vol 35, 622-633.

Federal Ministry of Finance, Nigeria (FMFN) (2014). Challenges of budget 2013

implementation in budget 2014 -"A Budget for Jobs and Inclusive Growth".

Gupta, S., Davoodi, H., & Alonso-Terme, R. (2002). Does corruption affect income inequality and poverty? Econ. Gov. (2002) 3: 23–45.

Halicioglu, F., (2012),"Temporal causality and the dynamics of crime in Turkey", International Journal of Social Economics, Vol. 39 Iss 9 pp. 704 – 720.

Handley, G. et al., (2009). Poverty and Poverty Reduction in Sub-Saharan Africa: An Overview of Key Issues. Working Paper 299. Overseas Development Institute, London.

Holmes, R. et al., (2012).Social Protection in Nigeria: Mapping Programmes and Their Effectiveness'. ODI/UNICEF Nigeria.

Huang, C-C. Laing D. and Wang P. (2004). Crime and Poverty: A Search-Theoretic Approach. International Economic Review, Vol. 45 (3):909-938

Japan International Cooperation Agency (JICA) (2011). Annual Report. http://www.jica.go.jp/english/ publications/reports/annual/

Justino, P., & Verwimp, P. (2013). Poverty dynamics, violent conflict, and convergence in Rwanda. Review of Income and Wealth, vol. 59 (1) 66-90.

Loureiro, P. R. a., Mendonça, M. J. C. De, Moreira, T. B. S., & Sachsida, A. (2009). Crime, economic conditions, social interactions and family heritage. International Review of Law and Economics, 29(3), 202–209. doi:10.1016.

McKeown, J. E. (1948). Poverty, race and crime. Journal of Criminal Law and Criminology (1931-1951), vol. 39 (4), 480-484.

Mehlum, H. et al., (2005). Crime induced poverty traps. Journal of Development Economics 77: 325– 340.

Millennium Development Goals Report (2013). Federal Republic of Nigeria.

Moghalu, K. C. (2010). On the status of microfinance banks in Nigeria. Press conference by the Deputy Governor, financial system stability (FSS), Central Bank of Nigeria. www.cenbank.org/out/2010/pressrelease.

National Bureau of Statistics, (2012). Social Statistics in Nigeria. Federal Republic of Nigeria.

Narayan, P. K., and Smyth, R., (2004). Crime rates, male youth unemployment and real income in Australia: evidence from Granger causality tests. *Applied Economics*, 36, 2079–2095.

Odumosu, O. F. (1999). Social costs of poverty. The case of crime in Nigeria. Journal of Social Development Africa. 14(2):71-85.

Okei-Odumakin J, (June 26, 2011). Most violent crimes committed in Nigeria are by young adults. *Vanguard.*

Okogu, B. (March, 7 2013). A Public Presentation of the FGN 2013 Budget Fiscal Consolidation with Inclusive Growth.

Pesaran, B., & Pesaran, M., H., (2009). Time series econometrics using microfit 5.0. Oxford University Press, Oxford.

Pesaran, M. H., Shin, Y., Smith, R. J., (2001).Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics* 16, 289–326.

Poveda, A. C. (2012). Violence and economic development in Colombian cities : A dynamic panel data analysis. *Journal of international development*, 827(February), 809–827.

Saridakis, G., 2011. Violent crime and incentives in the long-run: evidence from England and Wales. *Journal of Applied Statistics* 38 (4) 647–660.

Shyh-Wei Chen (2009). Investigating causality among unemployment, income and

crime in Taiwan: evidence from the bounds test approach, *Journal of Chinese Economic and Business Studies*, 7:1, 115-125.

Umukoro, N. (2013). Poverty and Social Protection in Nigeria. Journal of Developing Societies, 29(3), 305–322.

United Nations, (2007). Indicators of sustainable development: guidelines and methodology. Third edition. Economic and social affairs.

World Bank, (2014). World Bank Indicator for Development. http://data.worldbank.org/data-catalog/world development-indicator.

IMPACT OF THE SHARING ECONOMY ON THE LABOR MARKET

Florin BONCIU[1]

Abstract

Taking into account its size and diversity of forms of manifestation the sharing economy represents a flexible type of economic interactions that capitalize on the internet based platforms, large scale use of smartphones and availability of partially used resources. The paper analyzes the characteristics of the sharing economy as an economic mechanism as well as its current and future impact on the labor market. Starting from the fact that currently about 119 million people in North America are more or less involved in sharing economy activities and given that estimates indicate that by 2020 about 40% of the workforce in the same geographical area will be represent by contingent/temporary jobs the author estimate that in developed countries, especially in urban areas, sharing economy will be a sort of new normal in the labor market. The paper also stresses the complementary role of the sharing economy in relation to traditional economic activities.

Keywords: sharing economy, gig economy, contingent workforce, labor market,

JEL classification: E22, E26, J24, J62

The concept and characteristics of sharing economy

After the onset of the economic crisis in 2008/2009 a new type of economic interaction emerged and expanded substantially, initially on the Western coast of United States and then disseminated quite rapidly in many developed countries, particularly in urban areas. This new type of interaction has been called by very different names(collaborative consumption, access economy, peer-to-peer economy, on-demand economy), among which a frequent used one is that of ***"sharing economy"***.

The proof that this name has notoriety can be sustained by the fact that in 2015 Oxford Dictionaries online short listed it for "word of the year". The proposed definition of the concept has been the following: ***"An economic system in which assets or services are shared between private individuals, either for free or for a fee, typically by means of the internet (Oxford Dictionaries online, 2015).***

Therefore the sharing economy represents a type of economic activity in which individuals satisfy their needs by occasional collaboration or transactions instead of interacting with companies that provide on a regular basis goods or services. The needs that are satisfied in this way can be very diverse, from the use of toys to fashion clothes, from web or industrial design to transport services or accommodation, from

[1] *Florin Bonciu is university professor at the Romanian American University in Bucharest and senior researcher at Institute for World Economy Bucharest.*

crowdfunding to crowdsourcing. The key elements in the above descriptions are:

- the fact that the actors of this type of economic relations are ***individuals***;
- and the fact that these collaborations or transactions are ***occasional***.

It is exactly because of these two characteristics that the use of the "sharing economy" concept is very often replaced (particularly in the USA) by the concept of "gig economy" which is basically a freelance economy (WhatIs.com, 2016) using contingent (that is temporary) workers [2] (Intuit 2020 Report, 2010). For natives of American English a gig job is by definition occasional and temporary, which on the positive side is carrying promises of innovation and entrepreneurship but, on the negative side, implies risks related to the stability and work conditions of this type of jobs (Sundararajan, 2015). The emergence of these type of activities has had a substantial determination in the crisis period when a large number of people did not have a job or even if they had their income was not enough in relation to basic or existing needs. It is our perception that in the near future this trend towards using contingent/temporary workers will expand based on collaborative networks similar but not identical with crowdsourcing.

Anyway, besides the determination generated by the economic crisis, there are also determinants related to the consumption based society existing in developed countries as well as to the numerous interaction and interconnection possibilities offered by the internet, social networks and the large use of smartphones. According to some research the concept of economic interactions based on collaborative consumption dates from 1978 but what is new today is the scale of the socio-economic phenomenon as well as the intrinsic implication of technology represented by internet, social networks and mobile communication (Newcomer, E., 2015).

In this context the sharing economy represents a new economic model based on **"access to"** instead of **"ownership of"** material or human resources such as time, space, abilities or characteristics that satisfy certain needs. Within this economic model the types of interaction can be diverse: for profit, barter, cooperation or even non-profit. One of the main ideas on which this economic model relies is that people are willing to rent or to share on a temporary basis goods or services they own and which are not used at capacity. This willingness is directly proportional with the need of income sources those people are confronted with.

The mechanism of sharing economy

In order to understand the mechanism of the sharing economy one can start from a description of the interaction between the participants. In this context sharing economy allow people that own a car, a house, a bicycle, a digital camera or any other good they do not use full time to share it with other users for a fee, on an occasional basis.

An important component of the mechanism is represented by the fact that the internet based platform that allows the transactions has a review and rating system that is able to provide both parties with a satisfactory level of trust. At the same time this review and rating system penalizes quite severely the providers or clients that have an incorrect behavior to the extent that they are rejected from further transactions. And as these internet based platforms are open for interaction globally such rejection is also

[2] Emergent Research & Intuit, Inc.: Intuit 2020 Report, 2010, pag. 20

global in scope. At least in principle this strong feedback should determine both providers and clients to behave properly.

In its essence the economic mechanism of the sharing economy is based on **three components**:

– **The ownership of something** of interest that the owner is willing to share with other users, occasionally and for a limited period of time;

– **The possibility of the owner/provider to inform** on a local or even global scale by use of internet about his/her willingness to share the use of a product or service;

– **The availability of a reviewing mechanism** for both the person willing to share something (the provider) and the person interested to use the shared product (the user).

The analysis of the above mechanism highlights the fact that the sharing economy does not include companies or individuals that sell something or provide a service on a regular basis. Such companies or individuals belong to the traditional economic sectors.

Anyway, there is a certain mobility between the sharing economy and the traditional economic activities, particularly from the first to the second. One can easily imagine a situation in which an individual provides car transport services on an occasional basis using Uber or a similar platform. That person can have a totally different job (such as a salesperson, an architect or a software programmer) or can be without a job or having a part time job. The moment in which such an individual decides to provide car transport services as a full time activity he or she exits the sharing economy and enters the traditional type of economic activity.

These clarifications are important as a lot of people include in the sharing economy individual entrepreneurs that carry on activities on a permanent basis. The same lack of clarification determined certain authors to reject the idea that the sharing economy is a new type of economic activity or that it is not about sharing (Eckhardt, G., Bardhi, F., 2015) or to try to clarify themselves the scope and content of this concept (Pikell, J., 2016).

The economic potential of sharing economy

One of the fundamental premises of the sharing economy is that if people share information on the availability of goods and services, the value of these goods and services increases for companies, individuals and the whole community. The mentioned increase is a direct result of the increase in the use of the respective goods and services.

It was estimated that in the world there are assets evaluated at 5.35 trillion US $ (that is almost 7 % of global nominal GDP in 2014) that are under utilized, non-utilized or idle and which can be traded, exchanged or shared (Matofska, B., 2015, p.5). The introduction of these assets in the sharing economy can generate numerous ***multiplicatory effects*** because the increase in the time of usage is accompanied by an increase in the consumption of energy, spare parts, consumer goods, a.s.o. At the same time, the revenues obtained by the owners of the assets that put them to occasional use by means of the sharing economy will lead to an equivalent increase of consumption that means more sales for other goods and services, more jobs and finally an increase of GDP.

Based on the experience recorded internationally between 2009 and 2016 the economic potential of the sharing economy is so significant because it is characterized by

a very high dynamics. The experience up to now indicate a very fast dissemination of sharing economy practices and this statement can be substantiated by a number of examples.

Before getting into the details about the examples some clarifications are necessary. In the sharing economy there are very often three categories of participants:

- The owners of assets that are offered on an occasional basis;
- The clients that buy temporary access to goods or services;
- The internet based platforms that connect the providers (owners) with the clients.

A key clarification is that when we read about major players in the sharing economy we read in fact about these ***facilitating platforms*** that make the transactions possible but that are not the actual providers of goods and services. This distinction is very important as these facilitators have a full time job and therefore they make the sharing economy possible but they are not part of it.

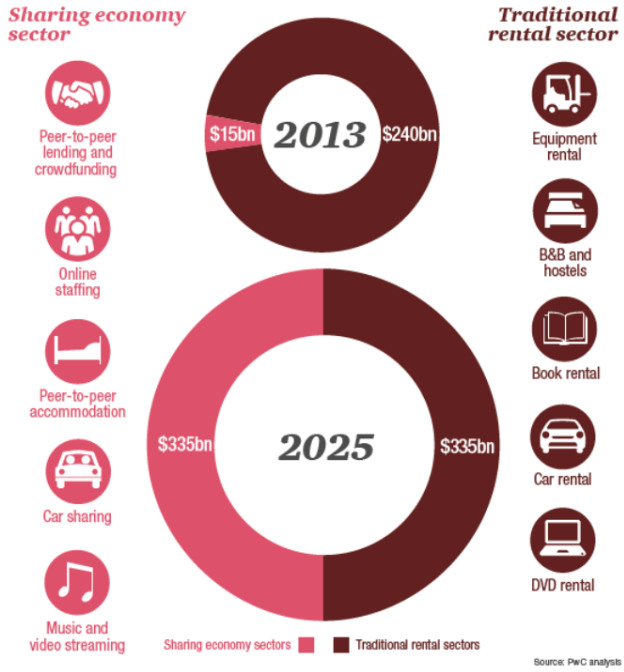
The first example has in view ***Uber company*** which is from many points of view the epitome of the sharing economy. The company has started in March 2009 as a taxi transport alternative in San Francisco Bay area and reached in 2015 a global presence (operating in 250 cities) and a market valuation (in May 2015) of about 50 billion US$, that is more than 80 % of companies listed in Standard & Poor's Top 500, many of which are 20 – 50 years old. Such a dynamic evolution meant that Uber doubled its revenue each 12 months.

Another significant example is **Airbnb** which operates in the business of accommodation services. The company was founded in August 2008 in San Francisco, present in 2015 in over 34,000 cities from 190 countries and was valued in June 2015 at 25 billion US $.

In order to understand the size of these operations enough is to say that Airbnb had in 2015 more than 425,000 guests per night (155 million annually), that is 22 % more than Hilton chain of hotels.

An in depth survey on the potential of the sharing economy that was carried out by PriceWaterhouseCoopers pointed out that between by 2025 the most important activities included in the sharing economy will generate at the global level the same revenue as the similar activities belonging to the traditional sector (PriceWaterhouseCoopers, 2014). This evolution is reflected in Figure 1.

Figure 1. The growth potential of sharing economy in comparison with traditional activities



Source: PriceWaterhouseCoopers, The Sharing Economy: How Will it Disrupt Your Business ?, August 2014, p.4

The data mentioned in Figure 1 points out to the fact that the share of the sharing economy in the total volume of transactions from the activities considered is going to increase from 5.88% in 2013 to 50 % in 2025, that is a 8.5 times increase in 12 years. Regarding the mentioned figures one can add that they can be considered as conservative because in fact the number and types of activities included in the sharing economy are considerably greater.

Another interesting observation related to the economic potential of the sharing economy is that on a logical basis one can consider that this type of economy is not affected by the slow growth of the world economy, on the contrary it may thrive as traditional type of economic activities remain to be characterized by a slow growth. Such a logical deduction is based on the fact that the sharing economy is at the same time complementary to traditional economic activities, represents a flexible quick solution for shortage of revenues periods and make use of existing assets.

Impact of the sharing economy on the labor market

In the vast majority of cases the references to the sharing economy have in view either descriptive aspects or the market value of the biggest operators of platforms (such as Uber or Airbnb). In the present paper we are trying to evaluate the impact of the sharing economy on the labor market by taking into account the number of participants in some of the major markets. The data available is partial and incomplete but in our opinion it is enough for determining the size of the impact (significant, average or

insignificant) as well as the current trends.

According to a study made in 2015 by Princeton University, Uber had more than 160,000 active U.S. drivers in December 2014 (Hall, J. and Krueger, A., 2015). That figure nearly multiplied by 2 the supply of short-term transportation, even without counting the drivers of other companies similar to Uber such as Lyft or Sidecar. Even more interesting, in September 2015 the number of active drivers in the US was of 327,000 that is more than double the figure for December 2014 (Carson, 2015).

Similarly with car transport, for the hotel industry, Airbnb that facilitates accommodation services includes over a million properties in nearly 200 countries, surpassing the capacity of major hoteliers like Hilton Worldwide, which had in 2014 about 215,000 rooms in 74 countries (PriceWaterhouseCoopers, 2015). As the sharing economy refers to occasional activities one can consider that over a million people rented temporarily they properties.

At a smaller scale TaskRabbit, a platform that put in contact people willing to do tasks for those that do not have time or the possibility to do them by themselves counted by mid 2015 a number of 30,000 providers of occasional services in 19 U.S. cities.

A more comprehensive image of the overall participation to the sharing economy in the US is given by the fact that in 2015 about 7 % of the population acted as providers and 19 % of the total adult population participated in sharing economy transactions.

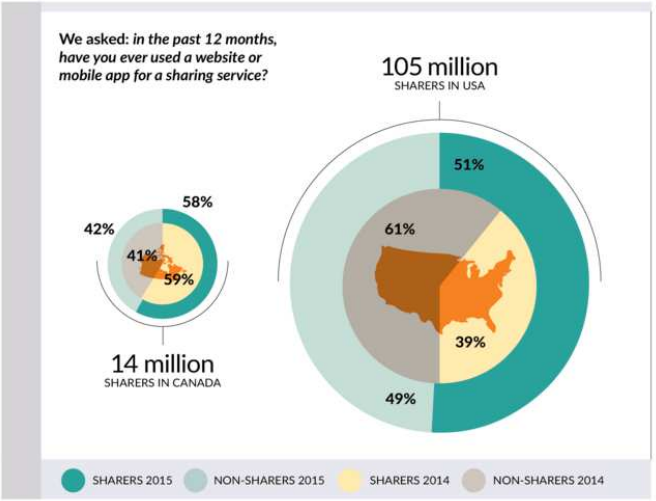
A survey carried out in the US provided proof that the participation to sharing economy transactions has been popular with internet users. The percentage of internet users that participated in a sharing economy transaction as providers or users increased from 39 % in 2014 to 51 % in 2015 (Vision Critical, 2015).

If one considers North America as a whole the data about participation to the sharing economy is quite impressive as in 2015 about 119 million people accessed sharing economy services by means of an internet based platform.

Anyway the activities that can be classified as belonging to the sharing economy are not limited to North America, even if they are more studied there. A survey carried out in 2015 by consulting company Deloitte in Switzerland found that 55 % of respondents were willing to participate in the sharing economy in the next 12 months (Deloitte, 2015).

At the level of the European Union a very comprehensive study has been published in early 2015 assessing both the potential of sharing economy and the various limits that prevent its capitalization (Goudin, P. 2016).

Figure 2. About 119 million people in North America have participated in the sharing economy in 2015



Source: Owyang, J. & Samuel A.: The New Rules of the Collaborative Economy, Crowd Companies, 2015, p.14

Conclusions

The sharing economy which was made possible by a combination of technologies (among which the internet, social networks and internet based platforms as well as the large use of smartphones) emerged as a major socio-economic phenomenon around 2008/2009 and is growing much faster than other economic sectors. According to some studies between 2013 and 2025 at a global level the revenues generated by activities belonging to the sharing economy will increase by about 8.5 times.

The possibility to share reviews and ratings for both providers of goods and services and clients significantly boosted the attraction of these new type of activities as it provided the much needed confidence necessary for the economic transaction. The fact that these reviews and ratings are available world wide contributed further to this confidence between participants.

This high growth rate can be explained partially by the consequences of the economic crisis that left many people without a job or with insufficient revenues but this explanation can be complemented with the existence of a large pool of assets which are under utilized or not utilized.

Based on the existing international data and empirical evidence young people are particularly attracted by this type of economic activity because it provides a flexible response to market needs and allows flexible, part-time jobs. At the same time, such activities allow for building experience for future more permanent jobs.

The current impact of the sharing economy on the labor market can be described at the same time as ***significant and flexible***. It is ***significant*** because in 2015 in North America about 120 million people participated as providers or clients in the sharing market. By 2020 about 40 % of the US workforce may be represented by contingent/temporary ones (Emergent Research and Intuit, Inc., 2010). We can expect a

figure of at least 50 % of North American level in Western Europe and the rise of a new middle class in developing countries, particularly in Asia-Pacific area (estimated at 3 billion till 2030) may bring even more people to the sharing economy. It is ***flexible*** because it refers to people with very different professional backgrounds and refers at the same time to occasional activities that can complement full or part time jobs or may represent a life line during hard times of unemployment.

While we appreciate that the sharing economy will not replace business as usual we consider that it will be an important complement to it. New platforms, new methods of payment and certain clarifications regarding safety rules, insurance aspects or taxation will definitely help the sharing economy to overpass the inherent difficulties of the beginning and to consolidate as an important and permanent option in the labor market of the 21st century.

At the same time the impact of the sharing economy on the labor market can be amplified by the fact that humankind as a whole is more and more aware that the linear growth of consumption is unsustainable and if we want to improve our living standard without depleting all resources in a very short time we have to identify new ways for obtaining more benefits with the same amount or even less resources. In this context the sharing economy is not a panacea but it may significantly contribute to a progress in the level of well being without a proportional increase in the consumption of resources.

References:

Carson, Biz (2015): Why there's a good chance your Uber driver is new, October 24, at page http://www.businessinsider.com/uber-doubles-its-drivers-in-2015-2015-10

Eckhardt, G., Bardhi, F., 2015: The Sharing Economy Isn't About Sharing at All, Harvard Business review, 28 January, 2015

Goudin, P., 2016: The Cost on Non-Europe in the Sharing Economy, European Parliamentary Research Service, January 2016, pag. 19 - 21

Hall, J., Krueger, A., 2015: An Analysis of the Labor Market for Uber's Driver-Partners in the United States, Working Paper #587 Princeton University Industrial Relations Section January 2015, pag. 14

Matofska, Benita: What We Know About Sharing Economy, Compare & Share, March, 2015, p.5

Newcomer, E., 2015: The Sharing Economy: Friend or Foe?, Bloomberg Brief – Sharing Economy, June 15, 2015, pag. 2

Owyang, J. & Samuel A.: The New Rules of the Collaborative Economy, Crowd Companies, 2015, p.14

Pikell, J., 2016: Top Myths of the Sharing Economy, 13 January, 2016, The Huffington Post

Sundararajan, Arun, 2015: The 'gig economy' is coming. What will it mean for work?, The Guardian, 26 July, 2015.

Deloitte, 2015: The Sharing Economy: Share and make Money – How Switzerland Compare, 2015, pag. 8

Definition gig economy, 2016: http://whatis.techtarget.com/definition/gig-economy

Emergent Research & Intuit, Inc.: Intuit 2020 Report, 2010, pag. 20-21

Oxford Dictionaries, 2015: http://blog.oxforddictionaries.com/2015/11/word-of-the-year-2015-shortlist/

PriceWaterhouseCoopers, 2014: The Sharing Economy, Consumer Intelligence Series, April 2014, pag. 14

PriceWaterhouseCoopers, 2014: The Sharing Economy: How Will it Disrupt Your Business ?, August 2014, p.4

Vision Critical, (2015): The New Rules of the Collaborative Economy, October 5, www.emarketer.com

STOCK MARKET DEVELOPMENT, LIBERALIZATION AND FINANCIAL DEVELOPMENT IN THE SELECTED SUB-SAHARAN AFRICAN COUNTRIES

Wakilat BALOGUN
Jauhari. DAHALAN
Sallahuddin. HASSAN*

Abstract

The paper examines the long run impact of financial development and the stock market liberalization on stock market development for seven selected sub-Saharan African countries using panel dataset that spans 1990 to 2013. The study employs dynamic heterogeneous panel data analysis by using the technique of Pooled Mean Group (PMG). Results show that on average liberalizing the stock markets in the seven selected SSA countries will have positive long run effect on the economies of these countries. The long run impact of financial development on stock market development is also positive and significant. As such policy design should be tailored towards strategizing financial sector in such a way that would strengthen both the stock market and the banking sector unit of the entire financial market.

Keywords: Financial development, pooled mean group, liberalization, Sub-Saharan African.

JEL Classification: G14, G15, G18

1. Introduction

The financial sector is the nerve-center of any economy owing to the essential functions being performed by this sector. The two units of financial sector which are the banking and the stock market units complement each other in promoting growth (Levine & Zervos, 1998). In spite of the importance of finance to economic development, there has not been much impact of the stock market segment to the real sector in the Sub-Saharan African (henceforth SSA) region (Kagochi, Al-Naseer & Kebede 2013). The financial markets of most of the SSA (aside South Africa) are grossly underdeveloped. This may stem out of the fact that the economies of these countries are small and underdeveloped. It has been pointed out that the nature of the financial system of an economy depends on the size and the level of economic development of that nation. Some

* *Wakilat Balogun is at the School of Communication & Liberal Studies, Lagos State Polytechnic, Ikorodu, Lagos, Nigeria. Email: wakbal70@gmail.com.*
Prof. Dr. Jauhari. Dahalan, is at the Universiti Utara Malaysia, School of Economics Finance & Banking. Email: djauhari@uum.edu.my.
Assoc. Prof. Dr. Sallahuddin. Hassan is at the Universiti Utara Malaysia, School of Economics Finance & Banking. Email: din636@uum.edu.my.

of the stock markets are small and illiquid as evident by the analysis of Standley (2010). In this analysis, SSA stock markets performance rated low among the developing countries. The analysis uses the two of the indices of measuring stock market which are stock market capitalization and turnover ratio. In 2008, the average indices for market capitalization scaled by Gross Domestic Product (GDP) for SSA region are 41.5 percent; Latin America & Caribbean (LAC) is 91 percent and South Asian is 1249 percent. The average turnover ratio for the same period shows SSA region on the low 10.4 percent as against LAC of 14.1 percent and South Asia of 72.6 percent. The SSA banking sectors performances are also not impressive during the same period. The banking sectors are not well placed to improve the depth of the financial sectors. This is buttressed by such indicators of financial development as credit to the private sector scaled by GDP and deposit money bank asset as a percentage of GDP. The average for credit to the private sector as a percentage of GDP for 2008 for SSA region is 20.9 percent; LAC is 46.0 and South Asia is 40.2 percent. The average value of deposit money bank asset for the same period for SSA is 23.3 percent LAC is 50.6 percent and South Asia is 45.3 (Standley, 2010).

The pictures portray by these statistics indicate that both stock market development and financial development of the SSA are low. This might have predicated the neo-liberalists (McKinnon, 1973; Shaw, 1973) recommendation of the deregulations of the financial sectors. Liberalization of the stock market is part of liberalization efforts. Stock market liberalization is expected to promote both domestic and foreign participation in the stock market thereby boosting the development of the market. Also part of the liberalization effort is the deregulation of both the interest rate and the banking sector reform. Interest rate liberalization is expected to allow the rate to be market determined so that the market is allowed to dictate the costs and direction of funds for efficient resource allocation. Banking sector deregulation allows foreign participation which encourages competition and leads to improved service delivery on the part of the domestic banks. The end result is to make for a deep financial sector thereby promoting vibrant financial development. Notwithstanding the liberalization of the stock market of the region of SSA, the development of the sector as evaluated from such indices as market capitalization as percentage of GDP, turnover ratio, market concentration do not justify the liberalization efforts. Two issues are being addressed in this paper: first is that one and half decades after liberalizing the stock markets, the long term impacts of the liberalized stock markets on the development of the stock market are yet to be felt in the SSA countries; the second issue is the effect of financial development on stock market development. Financial development from this perspective is measured as domestic credit to the private sector as a percentage of GDP. The paper is structured as follows. We begin with discussion on the concept of stock market development and financial development in Section two. Section three discusses the trends in stock market growth in the SSA countries. Section four is on the review of literature. Section five is on theoretical framework, data and methodology. Results and interpretations are presented in Section six while Section seven concludes.

Theoretical link between the liberalization of stock market and financial development is such that stock market liberalization attracts more investors to the domestic economy. Increased investors participation encourages investment in riskier projects since investors now shift from low risk to riskier and more profitable projects.

Thus the ability of a financial system to provide the avenue for risk diversification among other financial intermediating functions translates to financial development (Levine, 2005). Stock market contributes immensely to the growth of the real sector through its influence on the manufacturing sector of the advanced economies. Corroborating this point, Mankiw (2010) portends that if there is a lull in the stock market of any economy, then it is a sign that economic crisis is looming around the corner. The channels of transmission between liberalization of stock market and development of the market implies that liberalization leads to increase in foreign participation in domestic exchange and to a large extent increase the market size in terms of high rate of capitalization. Liberalization also improves the liquidity of the market with respect to value traded. Liquidity refers to the speed with which investors can convert assets to cash. Moreover, market concentration is discouraged through diffuse ownership of shares that results from liberalizing the stock market. High level of liquidity which implies greater volume of shares traded leads to diverse ownership of shares and hence reduces market concentration. The improvement in these indices of evaluating stock market development is the consequence of stock market liberalization.

2. Concept of Stock market development and Financial Development

Stock market development is a broad concept that consists of the stock market indices that measures the size, liquidity, market concentration, volatility, institutions and the impacts of stock market on the real sector of the economy (El-Wassal, 2013). Market size is measured by market capitalization which is number of listed securities scaled by GDP. While large market may be an attribute of a developed stock market it should be active in the context of trading in the market. Large but inactive market in terms of low volume of trading indicates poor level of liquidity. Large size should be complemented with market liquidity for the exchange to be categorized as a developed stock market. There are two measures of liquidity: stock value traded as a ratio of GDP and stock value traded scaled by market capitalization which is turnover ratio. Stock value traded shows the extent of trading regarding the whole economy while turnover indicates trading in relation to the stock market. Liquidity of stock is the avenue by which investors can easily and cheaply dispose of their shares whenever they wish (Arestis, Demetriades & Luintel, 2001). Stock market concentration is the degree to which the large firms are in control of shares that is the percentage of market capitalization own by the largest ten firms. Volatility is the changes in stock return, studies use the twelve month rolling standard deviation estimates of market returns. Volatility of stock may be desirable because it reveals changing values of firms among economic fundamentals for a better resource allocation. Excessive stock price changes is however not healthy for a better developed stock market. This is due to the fact that investors demand higher risk premium when stock prices are highly volatile thereby increasing the cost of capital and thus reducing investment level (Demirguc-Kunt & Levine, 1996; El-Wassal, 2013). Small stock market with high volume of trading exhibits low market capitalization but high liquidity ratio. Another feature of stock market development is that the transaction cost must be low, high costs of transactions discourage investors from investing in the stock market. Institutional factors are the supervisory and regulatory framework that strengthened the effectiveness of stock markets. Institutional factors include the

regulatory framework, the supervision of the regulatory framework and the enforcement of such supervision. They are part of the facilities that established investors' confidence in the stock markets (Pagano, 1993; Prasad, Rogoff, Wei & Kose, 2003; Singh, 1997).

Concept of Financial Development

Financial development is the situation where financial markets reduce the enforcements, information and transaction costs in its bid to allocate capital (Levine, 2005). The extent to which the financial markets are efficiently implementing the finance function is referred to as financial development. Financial development exists where the financial markets are able to reduce transaction, information and enforcement costs. It can also be explained in form of the ease with which firms can access external funds. It is measured in the speed with which investors are adequately rewarded for their investments. All these depend on the structures, institutions, transaction costs and competition that are governing the financial system (Rajan & Zingales, 2001). Financial system that exists to build up investors' confidence on the safety of their funds translates to a financially developed economy. The financial intermediaries mediate between the users of funds and the sources of these funds. The access to investment funds provided by the financial intermediaries paves way for technological innovation on the part of the entrepreneur (Schumpeter, 1912). This makes it easy for the entrepreneur to carry out his entrepreneurial ability without hindrance based on the availability of finance provided by the intermediaries. Furthermore, there is empirical evidence that lend support to the fact that financial development is able to predict the future level of economic growth (Levine & Zervos, 1998).

The functional method of analyzing financial development is stressed by Levine (1997). The paper explains the different functions of finance by which a financially developed market can be evaluated. While these functions remain the same among countries, the qualities of the services coupled with the institutions that govern the services are different among nations. This explains the reason why some countries have better developed financial development and are able to grow faster than others. The existence of financial intermediaries stems out of the need for acquisition of information, reduction in transaction costs to facilitate the investment process. Another function is that the intermediaries acquire information on the availability of high risk and high return projects that facilitates better allocation of resources. Risk reduction is also specified as a function of financial system. One of the common types of risk is liquidity risk. Liquidity risk measures the ease with which assets are exchanged for cash at reasonable prices. Through stock market liquidity avenue is provided for investors that wants to exchange his investment into liquid cash thereby making investment in the stock market more viable. The liquidity risk that is being taken care of by finance is the mechanism through which a developed stock market is linked to strong financial development and vice versa. A highly liquid stock exchange is an indication of a well-developed financial system. In the same manner financial development as measured in domestic credit to the private sector provides the means by which investors can borrow in order to invest in the stock markets.

In sum the ability of financial markets to perform such functions as diffusion and management of risk; means of transaction of goods and services; mobilization of savings; provision of information about investment opportunities and monitoring these

investments in an economy is an indication that financial sector is developed (Levine, 2005). For the purpose of the present study, financial development is measured in domestic credit to the private sector scaled by GDP. This follows the approach of Baltagi, Demetriades and Law (2009) that use this measure in examining the influence of financial liberalization and trade on financial development in some industrial and developing countries.

3. Trends in Stock Markets growth in SSA region

The development of stock markets in the SSA region is dated back to the 90s when the stock exchanges of these economies were established. During this period, with the exception of South Africa, the stock markets of the SSA region did not make much economic impacts on their economies in comparison to the other regions of the world (Kagochi, *et al*., 2013; Yartey & Adjasi, 2007; Yartey, 2008). Statistics reveal that some of the indicators of market development for SSA countries are poor even among the other countries on the same level of development. Indicators of market capitalization scaled by GDP and number of listed companies between 2005 and 2012 show a decrease in market capitalization for all the regions of the world. However, the intensity of the fall in SSA region was much more pronounced than the other regions of the world. The picture is brought to the limelight in Table 1.

Table 1
Changes in Market Capitalization as a % of GDP and Number of Listed Companies

Region	**2005**	**2012**
Panel A Changes in Market Capitalization as a % of GDP		
Europe & Central Asia	28.2	26.3
Middle East & North Africa	27.2	25.6
South Asia	58.2	59.3
Sub-Saharan Africa	124.7	65.3
Panel B Number of listed companies		
Europe & Central Asia	3931	5311
Middle East & North Africa	6180	2455
South Asia	6050	6496
Sub-Saharan Africa	911	923

Source: *World Development Indicators, 2015*

The same low trend is applicable to turnover ratio and market concentration. Market concentration is high in most SSA countries. Evidence of thick concentration is found in such places like Ghana and Abidjan. From 1995 to 2000 the Ashanti goldfields controlled 90% of the entire market capitalization of Ghana. Also only five companies are in control of 75% of market transactions in Abidjan (Allen, Otchere & Senbet, 2011).

In spite of the foregoing analysis SSA stock markets have performed outstandingly well in the years 2000s. Stock markets in the region grow by 300 per cent during early

2000s (Kagochi *et al.,* 2013). Furthermore in an exploratory analysis of African stock markets Allen *et al.* (2011) analyzed the opportunities for African stock market in the face of world challenges. The authors computed risk-adjusted returns to evaluate the investment opportunities for African exchanges considering the fact that Africa is a high risk environment. The computation was done using the Sharpe ratio that measures mean return using volatility. Average risk-adjusted return computed for the period was 25 per cent for African stock markets indicating high investment opportunities for the region.

4. Review of Literature

There are different researches on the impact of stock markets on growth the literature on the effects of liberalizing the stock markets on the development of stock markets itself is however sparse. Kagochi *et al.* (2013) examined the influence that stock market (financial development) has over economic growth for group of seven SSA countries using a panel data analysis that spans from 1991 to 2007. Market capitalization was the only variable that was significant among the other indices of measuring stock market. Adjasi and Biekpe (2006) analyzed the relationship between market development and growth in fourteen African countries in panel data estimation. The authors find a positive relationship between stock market and growth. Demirguc-Kunt and Levine (1996) in deriving a wider conceptual interpretation of stock market development collated data on different indicators of market for 44 developing countries from 1986 to 1993 and compare the results among countries. The conclusion from the paper is that there are great cross-country differences for individual indicator for each country.

El-Wassal (2005) in its investigationof 40 emerging countries for the period 1980 to 2000 examines the relationship between the development of the market as proxy by market capitalization and other explanatory variables of growth, stock market liquidity, financial liberalization and country risk. The result shows that all the explanatory variables are significant except the country risk. Levine and Zervos (1998a) in analyzing data for 47 countries found that the two indices of financial development (both market liquidity and banking sector development) are positively correlated with existing and future rates of growth. Bekaert & Harvey (2000) examined the effects of liberalizing the stock markets on the cost of capital in some emerging economies. The results indicate that liberalization has positive effect on the cost of capital. Henry (2000) investigates the effects of stock market liberalization on investment level for 11 developing countries. Findings show evidence of increased investment level in nine out of 11 developing countries investigated one year after liberalization. Arestis, Demetriades & Luintel (2001) using time series approach investigates the relationship between economic growth and stock market development. The paper uses quarterly data from 1973-1997 with the major variables of interest being output, banking system, and stock market system for five industrial countries. Findings indicate that bank-based system of financial development contributes more to long-term growth than the stock-market based system.

Solarin and Dahalan (2014) employing GMM approach for a panel of selected African countries for the period 1990-2009 examined the relationship between financial development and growth. Findings show that the stock market liquidity has a positive significant relationship with growth unlike the banking indices. Ahmed (2010) examines the relationship between financial development, financial liberalization and growth using

panel data and time series for the period 1976-2005 for 15 SSA countries. Findings indicate the existence of long-run relationship between financial development and growth. From the analysis there is however a weak evidence to back-up the notion that financial liberalization have direct influence on growth. Looking at the foregoing analysis of the review studies, it can be seen that study that investigates the long run effect of stock market liberalization on stock market development in the SSA region is sparse.

5 Theoretical Framework, Data and Methodology

Based on the previous discussion on the concept of stock market development, the study adopts the existing stock market model of Calderon-Rossell (1990) modified by Yartey (2008) to form the analytical model for the present research. The stock market development model is thus derived using Calderon-Rossell (1990) modified by Yartey (2008):

$$S_{it} = \alpha_i + \theta S_{it-1} + \partial M_{it} + \beta L_{it} + \varepsilon_{it} \quad (1)$$

In the existing equation (1) of Yartey (2008), S_{it} is the market capitalization α_i is the country specific fixed effect M_{it} are the macroeconomic variables of GDP per capita, credit to the private sector, gross domestic investment as a percentage of GDP, stock market value traded as percentage of GDP and macroeconomic stability proxy by inflation and real interest rate. The L_{it} represent the indices of institutional quality like political risk, corruption, law and order while the error term is ε_{it}.

Stock market development is determined by economic growth, market liquidity, banking sector development, institutional quality (El-Wassal, 2005; Yartey, 2008). In Yartey (2008) model, stock market development as proxy by market capitalization is the dependent variable while the other variables of economic growth, turnover ratio which is a proxy for market liquidity, banking sector development, macroeconomic stability and institutional quality are all the independent variables. For the present analysis however while adopting the existing model, it would be modified with stock market liberalization and financial development as a main explanatory variables to take care of the objective. Thus the analytical model for the present study is specified:

$$Mktcap_{it} = \alpha_i + \omega_1 Stoklib_{it} + \omega_2 DCPS_{it} + \omega_3 USTB_{it} + \omega_4 RGDP_{it} + \varepsilon_{it} \quad (2)$$

Here *i* represents the countries to be investigated on *i*=1, 2…..*N, t* is the time period which is *t=1, 2….T.* $Mktcap_{it}$ measures stock market development, which is the dependent variable in the model. The variable is represented by market capitalization scaled by GDP. *Stoklib* is the stock market liberalization index. *DCPS* is the total credit to the private sector as a percentage of GDP. $RGDP$ is the real Gross domestic product at (2005) constant prices. *USTB* is the foreign interest rate proxy by six months' US Treasury bill rates.

Data

Considering the fact that liberalization started in the 1990s in the SSA region, the effect of liberalization will be observed from 1990 to 2013. The data is obtained from the World development indicators 2015. The index of stock liberalization is computed using the chronology of Kaminsky and Schmukler (2008) (henceforth K-S). The different

dates of liberalization of stock markets by the individual countries are obtainable from the International Monetary Fund's Annual Report on Exchange Arrangements and Exchange Restrictions IMF (AREAR). Following the chronology of K-S, values are assigned based on the policy of the country whether liberalizing or restricting. Value of "1" means the country is restricting foreign participation in the stock markets,"2" indicates that there is partial liberalization and "3" means that there is full liberalization.. The essence of computing this index is to show the intensity of liberalization of stock market.

Methodology

The paper employs dynamic heterogeneous panel analysis by using the Pooled Mean Group (PMG) of Pesaran, Shin & Smith (1999). The Mean Group assumes unrestricted coefficients among panel members. It estimates individual regression for each unit and computes the averages of the country specific that would represent the entire group. In this case different intercepts, slopes and short run variances among the panel are assumed. The traditional fixed effects, which is the dynamic fixed effect allows that the slopes, error correction and the long run coefficients to be same among the group while freeing only the intercepts to be different among countries. PMG technique takes a middle position between the two by allowing the intercepts, error correction and slopes to be different while restricting the long run coefficients to be same among the individual panel member. In situation where the slopes, short run variances and long run coefficients are different among group, then MG estimator would be efficient. However where the long run coefficients are similar within countries, in that case PMG estimator would be appropriate. The applicability of common long run assumption is relevant to the present study's analysis of seven selected SSA economies where they all are developing countries being on the same level of economic development. Also it is almost implausible to assume common value for speed of adjustment among the countries. Individual countries within the region cannot attain equilibrium of their explanatory variables with the dependent variables after the shock at the same time. In essence it is not realistic for different countries to get back to equilibrium at the same time after the shock.

Recent empirical researches show that the PMG have been employed by different authors. Blackburne and Frank (2007) use this technique to estimate consumption through income and inflation in 24 OECD countries from 1960 – 1993. Bassanini and Scarpetta (2001) investigated the effect of human capital development on growth in a panel of 21 OECD countries over a period of 1971-1998 using the MG and PMG techniques. The unrestricted specification for the ARDL system of equations for $t = 1,2, \dots, T$, time period and $i = 1, 2, \dots, N$ countries for the dependent variable *Y* is:

$$Y_{it} = \sum_{j=1}^{p} \beta_{ij} y_{i,t-j} + \sum_{j=i}^{q} \vartheta'_{ij} X_{i,t-j} + \alpha_i + \varepsilon_{it} \qquad (3)$$

where $X_{i,t-j}$ is the (k x1) vector of explanatory variable for group i and α_i is the fixed effect $y_{i,t-j}$ is the lagged dependent variable β_{ij} represents the scalar coefficient of the lagged value of the dependent variable, also ϑ'_{ij} shows the vector coefficient of the lagged value of the explanatory variable. The model can be re-parameterized as a Vector Error

Correction Method (VECM) system:

$$\Delta y_{it} = \theta_i (Y_{i,t-1} - \omega'_i X_{i,t-1}) + \sum_{j=1}^{p-1} \beta'_{ij} \Delta Y_{i,t-j} + \sum_{j=1}^{q-1} \theta'_{ij} \Delta X_{i,t-j} + \alpha_i + \varepsilon_{it} \quad (4)$$

ω_i measures the long run coefficient while θ_i takes care of the error correction mechanism. The technique of PMG main interest is on both the short run adjustment mechanism and the long run coefficient. The restriction of similar long run coefficient among the group is of relevance to the present study considering the fact that the seven selected SSA countries have common characteristics as developing countries on the same level of economic development.

The long run stock market development model is thus:

$$Mktcap_{it} = \omega_{0i} + \omega_{1i} Stoklib_{it} + \omega_{2i} DCPS_{it} + \omega_{3i} USTB_{it} + \omega_{4i} RGDP_{it} + \varepsilon_{it} \quad (5)$$

The method of PMG allows common long run coefficient among the group and this is justified for the present study on the basis that the countries in this analysis have the same categorization of the same level of economic development since they are all developing countries according to World Bank.

If the variables in (5) are *I*(1) and are cointegrated then the error term for all *i* s are stationary that is *1*(0). The ARDL panel model of (2) is thus:

$$Mktcap_{it} = \alpha_i + \partial_{10i} Stoklib_{it} + \partial_{11i} Stoklib_{i,t-1} + \partial_{20i} DCPS_{it} + \partial_{21i} DCPS_{i,t-1} + \partial_{30i} USTB_{it} + \partial_{31i} USTB_{i,t-1} + \partial_{40i} RGDP_{it} + \partial_{41i} RGDP_{i,t-1} + \varphi_i Mktcap_{t-1} + \varepsilon_{it} \quad (6)$$

Reparameterizing Equation (6) into error correction specification gives:

$$\Delta Mktcap_{it} = \theta_i (Mktcap_{i,t-1} - \omega_{0i} - \omega_{1i} Stoklib_{it} - \omega_{2i} DCPS_{it} - \omega_{3i} USTB_{it} - \omega_{4i} RGDP_{it}) - \partial_{11i} \Delta Stoklib_{it} - \partial_{21i} \Delta DCPS_{it} - \partial_{31i} \Delta USTB_{it} - \partial_{41i} \Delta RGDP_{it} + \varepsilon_{it} \quad (7)$$

where:

$$\omega_{0i} = \frac{\alpha_i}{1-\varphi_i}, \quad \omega_{1i} = \frac{\partial_{10i}+\partial_{11i}}{1-\varphi_i}, \quad \omega_{2i} = \frac{\partial_{20i}+\partial_{21i}}{1-\varphi_i}, \quad \omega_{3i} = \frac{\partial_{30i}+\partial_{31i}}{1-\varphi_i}$$

$$\omega_{4i} = \frac{\partial_{40i}+\partial_{41i}}{1-\varphi_i}, \qquad \theta_i = -(1-\varphi_i).$$

In order to establish that there is long run relationship between the dependent variable of stock market development and the explanatory variables, and then the speed of adjustment must not be zero that is $\theta_i \neq 0$. In essence the error correction method must be negative and significant in order to validate the result of PMG.

6. Empirical Results and Interpretation

The results in Table 2 show the estimates results using the three technique techniques of PMG and DFE. The approach in this study is to estimate using the three techniques. The results as presented in Table 2 would indicate whether heterogeneity of all the coefficients is appropriate in which case MG estimator would be efficient or homogeneity should be allowed in the case of DFE. The third choice is the middle position where homogeneity of only the long run coefficient is assumed while the intercepts, slopes and error correction are allowed to be different which shows that PMG estimator is efficient. The theoretical expectation is that for foreign interest rate the result is expected to be significant and negative. This would be conforming to the theoretical expectation on determinants of foreign capital flows that low interest rate among other factors is responsible for foreigners investing in the stock markets of developing countries. Results of stock market liberalization, domestic credit to the private sector, real GDP are all expected to be significant and positive. And finally the adjustment mechanism is expected to be significant and negative.

Table 2

Estimated MG, PMG and DFE Results of the Stock Market Development Model

Dep. Var. lMktcap	**DFE**	**MG**	**PMG**
Variables	**Coeff.**	**Coeff.**	**Coeff.**
lStoklib	-18.98	-7.27	6.56**
	(-1.05)	(-1.20)	(2.55)
ldcps	-55.13*	-60.41*	2.58***
	(-1.75)	(-1.91)	(2.63)
lustb	-4.09	2.94	3.62***
	(-0.57)	(0.42)	(3.73)
lrgdp	56.01	95.47*	3.47*
	(1.13)	(1.75)	(1.70)
Cons.	-5.51	-21.43**	-13.98*
	(-0.93)	(-2.35)	(-1.89)
Short-run (ec)	-0.01***	-0.03***	-0.04***
	(-3.27)	(-3.74)	(-5.46)

Values in parentheses are t-statistics, *** and ** are one and five percent significant levels respectively * is significant at ten percent

Interpretation of Results

The three estimates results as presented in Table 2 indicate that PMG estimator is more efficient since all the explanatory variables of interest are highly significant. PMG estimator reveals that on average liberalizing the stock market of the seven selected SSA economies will increase the development of the stock markets of these countries in the long run. Increasing the index of stock market liberalization by one percent would lead to 656 percent increase in the level of stock market development in the long run for the selected SSA nations. The result is in conformity with apriori expectation. It is also in tandem with Henry (2000) who investigated the effects of stock market liberalization on investment in sample of 12 emerging economies. Furthermore the level of financial

development as measured in domestic credit to the private is also positive with one per cent level of significant. It indicates that increasing the level of domestic credit to the private sector by one per cent would increase the development of the stock markets of the selected seven by 258 percent in the long run. Moreover results of economic growth as measured in real GDP is also positive and significant. One per cent increase in real GDP would enhance the development of the stock markets by 347 percent in the long run. Foreign interest rate as measured in United States' treasury bill (USTB) is significant but with the wrong sign. The result states that increasing the rate of interest rate of the industrial countries will increase the stock market of the seven selected SSA nations in the long run. The result falls short of theoretical expectation on foreign capital inflow which posits negative relationship between capital inflow and foreign interest rates.

Results on the adjustment mechanism are significant and appropriately signed for all the three techniques. The PMG estimator indicates that 4 percent of the distortion from long run equilibrium would be restored within one year. For MG estimator it is 3 percent and DFE indicates 1 percent. The advantage of the PMG estimator is that different adjustment mechanism is allowed for individual countries in the group. The estimates result of individual countries results using PMG estimator with different error correction method is presented in Table 3.

Table 3
Individual Countries Estimates Results

Dep.Var lMktcap	BTSW	CIV	GHA	KEN	MART	NIG	SAF
Variables	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
lStokil	-0.27*	0.13	0.09	-0.11	0.06	0.19	0.05
	(-1.92)	(0.92)	(0.19)	(-0.50)	(0.32)	(0.76)	(0.22)
lDCPS	0.25	0.41	-0.77	-1.62**	0.33	0.44*	-0.38
	(0.76)	(1.14)	(-0.92)	(--1.99	(0.42)	(1.83)	(-0.52)
lustb	-0.24**	0.21**	0.27	0.13	0.01	0.23*	-0.03
	(-2.55)	(2.32)	(0.98)	(0.83)	(0.14)	(1.83)	(-0.19)
lrgdp	1.80*	1.29	-10.1	-2.85	-1.88	-0.38	5.55
	(1.68)	(1.11)	(-1.49)	(-0.73)	(-0.58)	(-0.32)	(1.55)
Cons	-13.9	-0.76	-3.05	-0.75	-3.96	-11.9	-1.24
	(-1.89)	(-0.46)	(-0.69)	(-0.21)	(-1.53)	(-1.77)	(-1.26)
Short-run	-	-0.00	-0.01	-0.00	-0.01***	-0.03**	-0.00***
(ec)	0.04***	(-0.54)	(-0.91)	(-0.28)	(-2.90)	(-2.80)	(-2.95)
	(-5.46)						

Values in parentheses are t-statistics, *** and ** are one and five percent significant levels respectively * is significant at ten percent

NOTE: BTSW=Botswana; CIV=Cote d'Ivoire; GHA=Ghana; KEN=Kenya; MART=Mauritius; NIG=Nigeria; SAF=South Africa.

Results of individual countries as presented in Table 3 indicate that in three of those

countries: Cote d'Ivoire, Ghana and Kenya, there are no long run relationships between the stock market liberalization and stock market developments. This is because for those countries, the ECT terms are not significant. Assuming 50 percent of the distortion in long run equilibrium would be restored within the year, the different time that it takes each countries to attain equilibrium between the dependent variable and the explanatory variables are thus: Botswana takes 16 years and nine months for stock market liberalization to equilibrate with stock market development after the shock; for Nigeria it takes 22 years and for Mauritius it takes longer time of over 60 years.

7. Conclusion

The result reveals that on average, liberalizing the stock market would increase the development of the stock market in the long run for the selected SSA economies. It is in tandem with Bekaert and Harvey (2000) and Henry (2000) and is also conforming to theoretical expectation. Result of economic growth and financial development proxy as measured in domestic credit to the private sector also conform to theory. On average it can be concluded that liberalizing the stock market of the seven selected SSA nations will enhance the development of the stock market. In addition to this improvement in financial development that arises out of liberalization will improve the development of the stock market in the long run for these countries. Result of foreign interest rate is however contrary to theoretical expectation. The implication of the results on positive foreign interest rate is that other factors that are driving foreigners to invest in the domestic stock markets like market size and return on investment are more overbearing than the increase in foreign interest rate. Also as corroborated by Kagochi *et al.* (2013) and Allen *et al.* (2011) the return on investment in SSA stock market is above 100 per cent. This high return on investment may be the driving force behind investors' interests in the SSA region stock markets rather than the level of interest rate in their respective countries. Based on the findings it is recommended that the respective policy makers in the selected seven SSA should design appropriate financial sector policies that would enhance both the banks and stock market contribution to development, they should also make effort to open up their stock markets to attract more foreign investors as this goes a long way to strengthened the stock markets. The conclusion on adjustment mechanism reveals that PMG takes a shorter time among the three approaches to attain equilibrium of the independent variable with the dependent variable after the shock. This is followed by the MG and the DFE is the last to get back tolog run equilibrium

REFERENCES

Adjasi C. & Biekpe N. (2006). Stock market development and economic growth: The case of selected African countries. *African development Review, 18(1)*,144-161.

Ahmed, A. D. (2010). Financial liberalization, financial development and growth linkages in Sub-Saharan African countries: An empirical investigation. *Studies in Economics and Finance*, *27*(4), 314-339.

Allen, F., Otchere, I., & Senbet, L. W. (2011). African financial systems: A review. *Review of Development Finance*, *1*(2), 79-113.

Arestis, P., Demetriades, P. O., & Luintel, K. B. (2001). Financial development and economic growth: the role of stock markets. *Journal of Money, Credit and Banking*, 16-41.

Baltagi, B. H., Demetriades, P. O., & Law, S. H. (2009). Financial development and openness: Evidence from panel data. *Journal of Development Economics*, *89*(2), 285-296.

Bassanini, A., & Scarpetta, S. (2001). Does human capital matter for growth in OECD countries? Evidence from pooled mean-group estimates. Economics Department working paper 282.

Blackburne, E. F., & Frank, M. W. (2007). Estimation of nonstationary heterogeneous panels. *Stata Journal*, *7*(2), 197.

Calderon-Rossell, J.R. (1990), 'The Structure and Evolution of World Stock Markets', in S. Ghon Rhee and Rosita P. Chang (eds), *Pacific Basin Capital Market Research Proceedings of the first Annual Pacific Basin Conference*, Tapei, China, 13-15 March 1989.

Demirgüç-Kunt, A., & Levine, R. (1996). Stock market development and financial Intermediaries: stylized facts. *The world Bank Economic Review*, *10(2)*, 291-321.

El-Wassal, K. A. (2005). Understanding the growth in emerging stock markets. *Journal of Emerging Market Finance*, *4*(3), 227-261.

El Wassal, K. A. (2013). The development of stock markets: in search of a theory. *International Journal of Economics and Financial Issues*, *3*(3), 606-624.

Henry, P. B. (2000). Stock market liberalization, economic reform and emerging market equity prices. *Journal of Finance, 55(2)*, 529-564.

International country risk guide. Political Risk Services group. 2015

International Monetary Fund, various years. Annual Report on Exchange Arrangements and Exchange Restrictions, various issues, Washington, D.C.

Kagochi, M. J., Al Nasser, O. M. & Kebede, E. (2013). Does financial development hold the key to economic growth?: The case of sub-Saharan Africa. *The Journal of Developing Areas, 47(2),* 61-79.

Kaminsky, G. L., & Schmukler, S. L. (2008). Short-run pain, long-run gain: Financial liberalization and stock market cycles*. *Review of Finance*, *12*(2), 253-292.

Levine, R. (1997). Financial development and economic growth: views and agenda. *Journal of Economic Literature*, *35*(2), 688-726.

Levine, R. & Zervos, S. (1998). Stock markets, banks and economic growth. *The American Economic Review, 88(3)*, 537-558.

Levine, R. (2005). Finance and growth: theory and evidence. *Handbook of economic growth*, *1*, 865-934.

Mankiw, G. N., (2011). *Macroeconomics,* 7ed., Worth Publishers, New York.

McKinnon, R. I. (1973). *Money and capital in economic development*. Washington, DC. (USA): The Brookings Institution.

Pagano, M. (1993). The flotation of companies on the stock market: A coordination failure model. *European Economic Review*, *37*(5), 1101-1125.

Pesaran, M. H., & Smith, R. (1995). Estimating long-run relationships from dynamic heterogeneous panels. *Journal of Econometrics*, *68*(1), 79-113.

Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, *94*(446), 621-634.

Prasad, E., Rogoff, K., Wei, S. J., & Kose, M. A. (2003). Effects of financial globalisation on developing countries: Some empirical evidence. *Economic and Political Weekly*, 4319-4330.

Rajan, R. G., & Zingales, L. (2003). The great reversals: the politics of financial development in the twentieth century. *Journal of Financial Economics*, *69*(1), 5-50.

Schumpeter, J. A. (1912). *The theory of Economic Development: An Inquiry into Profits, Capital Credit, Interest and the Business Cycle*. Cambridge: Harvard University Press.

Singh, A. (1997). Financial liberalisation, stockmarkets and economic development*. *The Economic Journal*, *107*(442), 771-782.

Shaw, E. S. (1973). *Financial deepening in economic development*. New York (USA): Oxford University Press.

Solarin, A. S. & Dahalan, J. B. (2014). Financial development and economic growth in selected African countries: Any role for stock markets? *Economia Internazionale/International Economics 68,(1)*, 151-179.

Standley, S. (2010). What Are the Determinants of Financial Market Development in Sub-Saharan Africa?. *Africa's financial markets, Issue*, (5), 17-19.

World Bank (2013) *World Development Indicators* http://databank.worldbank.org/data/views/variablesSelection/selectvariables.aspx?source=world-development-indicators.

Yartey, C. A. & Adjasi, C. K. (2007). Stock market development in sub-Saharan Africa: Critical issues and challenges. *IMF Working Paper*, WP/07/209,

Yartey, C. A. (2008). The determinants of stock market development in emerging economies: is South Africa different?. *IMF Working Papers*, 1-31.

JOB GENERATION PROFILE EVALUATION FOR ROMANIA USING SHAPLEY METHOD

Speranţa PIRCIOG [1]
Cristina LINCARU [2]

Abstract

Romania is an emergent country with relative high rates of growth but still with low quality of life. The strong connection between quality of life and quality of work especially for poor –"as the poor derive most of their income/consumption from work: as employees, as the self-employed, or in subsistence activities" (WBM JoGGs, p.2) request an answer regarding the research question: "In what extent in Romania growth generates employment and good earning opportunities?" In this article we intend to analyse the profile of job generation applying Job Generation and Growth Decomposition Tool, provided by The World Bank (WBM JoGG's). The Shapley decomposition will be applied by 10 NACE Rev. 2 structure (1 digit) in view to catch the economic growth effect over the sectoral structure and the employment generation. The main conclusion of this article is that in the last 2 years is becoming visible the positive contribution to employment of the sectors 'Professional, scientific and technical activity..." next to "Wholesale and retail trade, transport, etc..." and "Information and communication", fact that confirm the tendency of structural positive change of economy.

Keywords: Employment, Aggregate Labor Productivity, Multisector Growth Models

Rezumat

*România este o economie emergentă c**are înregistrează** rate relativ ridicate de creştere **economică**, dar **având** încă o calitate scăzută a vieţii. **Legătura puternică** între calitatea vieţii şi calitatea **ocupării prezentă** în special pentru săraci - **"pentru** cei săraci **venitul/sursa pentru consum principal este cel din muncă obţinut**: în calitate de angajaţi, lucrătorii independenţi, sau în activităţi de subzistenţă" (WBM JoGGs, p.2) să solicite un răspuns cu privire la întrebarea de cercetare: "în ce măsură, în România creştere**a economică** generează locuri de muncă şi oportunităţi de câştig **decente**?". În acest articol ne propunem să analizăm profilul de generare de locuri de muncă aplicare**a Metodologiei Bancii Mondiale** (WBM **JoGGs**) **Generarea de L**ocuri de **M**uncă şi Instrumentul de **D**escompunere **a Creşterii**. **Am aplicat** Descompunerea Shapley **la nivel de** 10 **sectoare de activitatea CAEN** Rev. 2 (1 **digit**), în scopul de a surprinde efectul **creşterii economice** asupra structurii sectoriale şi **a** gener**ării de** locuri de muncă.*

---

[1] *Dr., Director Ştiinţific al INCSMPS. INCSMPS - National Research Institute for Labour and Social Protection, Povernei st. 6-8, ucharest, Romania, pirciog@incsmps.ro*
[2] *Dr. INCSMPS - National Research Institute for Labour and Social Protection, Povernei st. 6-8, Bucharest, Romania , cristina.lincaru@yahoo.de*

Concluzia principală a acestui articol este ***reprezentată de*** *faptul că, în ultimii 2 ani, devine vizibilă contribuţia pozitivă în* ***ocupare a sectoarelor: "****Activitate profesională, ştiinţifică şi tehnică ... "* ***alături de "****Comerţ cu ridicata şi cu amănuntul, transport etc ... "* *şi* ***se "Tehnologia informaţiei IT"****, fapt care confirmă tendinţa de* ***modific****are structurală pozitivă a economiei.*

Cuvinte-cheie: ocupare, productivitatea agregată a muncii, modele de creştere multisectorială

Cod JEL (disponibil la www.aea.web): **E24, J21, O41, O47**
Cod REL (disponibil pe www.asociatiaeconomistilor.ro): 18B, **18E, 12I**

1. Introduction

Romania is an emergent country with relative high rates of growth but still with low quality of life. The strong connection between quality of life and quality of work especially for poor – "as the poor derive most of their income/consumption from work: as employees, as the self-employed, or in subsistence activities" (WBM JoGGs, p.2) request an answer regarding the research question: "In what extent in Romania growth generates employment and good earning opportunities?".

Regarding the characterization of the economic framework and of the economic perspectives, the following conclusions have been reached in relation to "economic growth and to the growth potential"(1) of Romanian's economy stated that "before the crisis, Romania recorded high GDP growth rates, which turned out to be unsustainable in view of emerging imbalances and also the crisis had a large and lasting impact on the Romanian economy" ({COM(2015) 85 final}p.4)

A sustainable economic growth – in the sense of an economic growth followed by the jobs creation could be analysed applying the Shapley decomposition method. The decomposition methods help us give an answer to some crucial questions, institutional investigated by World Bank, like: to what extent does labour income drive poverty reduction, and how can it be measured?(2)

Solow in 1957 (3) applied decomposition to quantify the contribution of labour and other factors to growth. Fortin et.al. (2010, p2.) emphasis that decompositions are useful for "quantifying the contribution of various factors to a difference or change in outcomes in an accounting sense, they may not necessarily deepen our understanding of the mechanisms underlying the relationship between factors and outcomes." Shorrocs (1999) (5) suggested that the Shapley decomposition methodology is "a general method of assessing the contributions of a set of factors which together account for the observed value of some aggregate statistic. The proposed solution involves calculating the marginal impact of each of the factors as they are eliminated in succession, and then averaging these marginal effects over all the possible elimination sequences. The resulting formula is formally identical to the Shapley value in cooperative game theory, and has therefore been referred to as the Shapley decomposition." Shorrocs (1999, p. 29)

The case of development countries in view to understand the relationship between the growth and employment was studied by Ajakaike et.al. (2015) for Nigeria. Albu et.al.

(2012) emphasis the need to improve the macroeconomic evaluation institutional capacity in the field of economic convergence. Fields (2004) conclude that the multisector models, employment and wages in each sector of the economy are determined by labour market conditions in all sectors of the economy (p.34).

In this article we start from (Fields, 2004, p.36) remark that "Sound labour market policies require sound labour market models" consolidate perspective by Martins et.al. (2013, p.17) that points that "the type of growth matters for employment creation (e.g., employment intensity of growth), the quality of jobs created, and who can access these improved opportunities".

2. Research Question

Based on the JoGGs -Job Generation and Growth Decomposition Tool, provided by The World Bank (5)(6) we have in this article the research question:

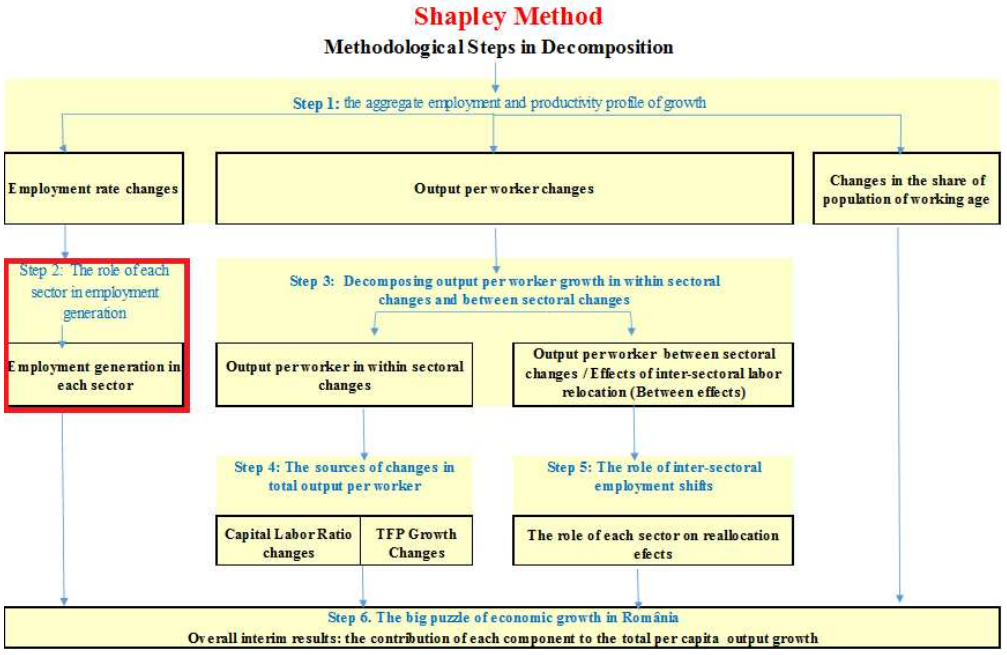
„How is growth reflected in the sectoral pattern of growth and employment generation?"

Our research objective represents the 2nd Step (Figure 1) from the Shapley Method of decomposition applied in Joggs. We analyse the contribution of each of the 10 sectors by NACE activities to total change in employment (including also the percent contribution of the sectrs to total employment rate growth) and to change in percapita value added (as well as the percent contribution to growth in total percapita output).

3. Models, Variables and data

Model of "Sectoral Pattern of Growth and its Employment and Productivity Intensity" obtained by applying the methodology of the World Bank: "Job Generation and Growth Decomposition tool - JoGGs". JoGGs methodology is used to decompose changes in GDP applying the Shapley decomposition method by the components: employment (regardless the status in employment), productivity and labour force, in circumstances of ignoring the international mobility of labour. (Figure 1)

Figure 1. Methodological Steps in Decomposition – Shapley Metod



Source: WB JoGss, p.6

There was resulted in different growth profiles made by Romania in the last almost 2 decades (1997-2014) time spin with breakdowns in the following periods given by the GDP variation calculated at Real prices in 2010 Euro: 1997-2008 (crises point initiation effect), 2008-2009 (maximum effect of crises) and 2009-2014 time intervals; the joining in EU: 2007-2012 and 2012-2014 (short term perspective).

In view to identify the economic sectors that contributed to employment generation and to total per capita growth we shall apply the Step 2 of Shapley decomposing tool JoGGs based on the following equation:

$$\Delta e = \Delta e = \sum_{i=1}^{s} \Delta e_i \quad (1)$$

Where:

$$\Delta e = \Delta \frac{E_i}{A} \quad (2)$$

A - total working age population;

i - sector of economic activity;

Ei - employment in sector i;

e - Employment rate = E/A - is the share of working age population (i.e. the labor force) employed

Δe= the change in employment in sector i as a share of total working age population;

Contribution of each sector to change in per capita value added = (Δei/Δe)*ë/100 (3)

Percent of total change in per capita value added = $(\Delta ei/\Delta e)*(ë/\Delta y)*100$ (4)

Where:

$ë=\Delta e/\ \Delta y[1/2(\omega t=1+\ \omega t=2)*a]$ captures the contribution of changes in the employment rate e (as opposed to changes in total employment, E) to growth in GDP per capita y (as opposed to growth in total GDP, Y), while there is no change in a;

$\omega=Y/E$ is total output per worker;

$a = A/N$ is the labor force as a fraction of total population – activity rate;

$y=Y/N$ income per capita (output per capita)

$ë\ *\Delta y$ - the amount of growth consistent with a scenario in which output per worker ω, and the share of population of working age a, had remained 'unchanged';

N – total population

Y – GDP, Yi GAV by sector NACE i

Input data provided by EUROSTAT: total population, active population by working age,

Employment, GAVi (Gross Added value) by sector I NACE

3. Results and discussions

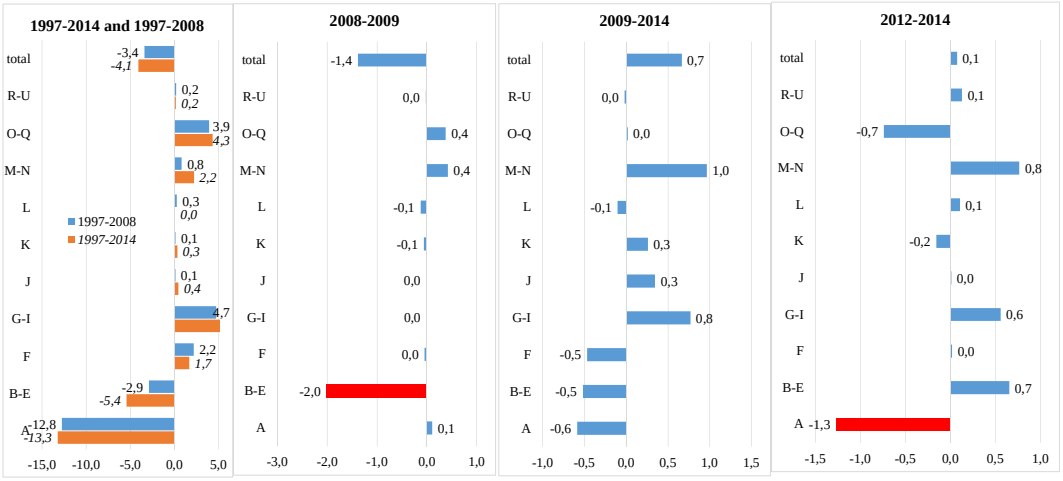
3.1. Contribution to change in total employment rate (percent points)

In Figure 2 is presented the contribution of sectors to total changes in employment rate as results of the growth employment decomposition by sectors, expressed in pp.

During full period 1997-2014 the employment rate growth was -4.1%. Agriculture with -13.3pp and industry with -5.4pp are responsible for most of the decrease, while Wholesale and retail with 5.5pp, Public Administration with 4.3pp and Construction with 1.7pp gives the main positive contribution to employment growth. (Figure 2)

Agriculture suffered the most important restructuring process in both terms size and percentage changes, closely followed by industry. Employment in agriculture decreased powerfully from 4.7 mil person in 1997 to 2.5 mil persons in 2014 with a growth rate of -46.2% and in industry (without construction) decreased also strongly from 2.9 mil person in 1997 to 1.8 mil persons in 2014 with a growth rate of -37.4%. At the begging of this period almost 66% from working age population was employed in agriculture (with a share of 41% from labour force) and industry (with a share of 25% from labour force), at the end of the this share decreased at 47% (respectively with a share of 27% from labour force in agriculture and 20% from labour force in industry). The share of working age employed in agriculture.

Figure 2. The contribution to change in total employment rate (percent points) Percent contribution of the sector to total employment rate growth during



Source: Calculated by authors following the steps in JoGGs, Eurostat data.

registered an negative growth of -32.6% compared to growth in Industry of -21.5%, also negative but lower in absolute terms.

Wholesale and retail increases its employment from 1.5 mil person in 1997 to 1.7 mil persons in 2014 with a growth rate of 13.5%. In terms of working age employed in this sector it is visible an increase from 13% in 1997 to 18% in 2014 with a growth rate of 42.2%. Public Administration increases its employment from 0.8 mil person in 1997 to 1 mil persons in 2014 with a growth rate of 28.8%. In terms of the share of employed persons in working age population for this sector it is visible an increase from 7% in 1997 to 11% in 2014 with a growth rate of 61.4%.

3.2. Percent contribution of the sector to total employment rate growth (Δei/Δe)

In terms of percent contribution of the sector to total employment rate growth to total employment rate growth during 1997-2014 the highest contribution in total growth rate of employment (of -4,1pp) is coming from agriculture (with negative contribution in employment growth -13,3pp) with 321.7%, from industry (with negative contribution in employment growth -5,4pp) with 131.7%, and with negative changes of employment rates at sector level in report with negative changes at national level in all other sectors:

Wholesale and retail (with positive contribution in employment growth with 5,5pp) with -133%, Public administration (with positive contribution in employment growth with 4,3pp) with -104.5%, Professional, scientific and technical activities (with positive contribution in employment growth with 2,2pp) -53%, Construction (with positive contribution in employment growth with 1,7pp) with -40%.

3.3. Contribution of employment changes to overall change in output (GDP) per capita

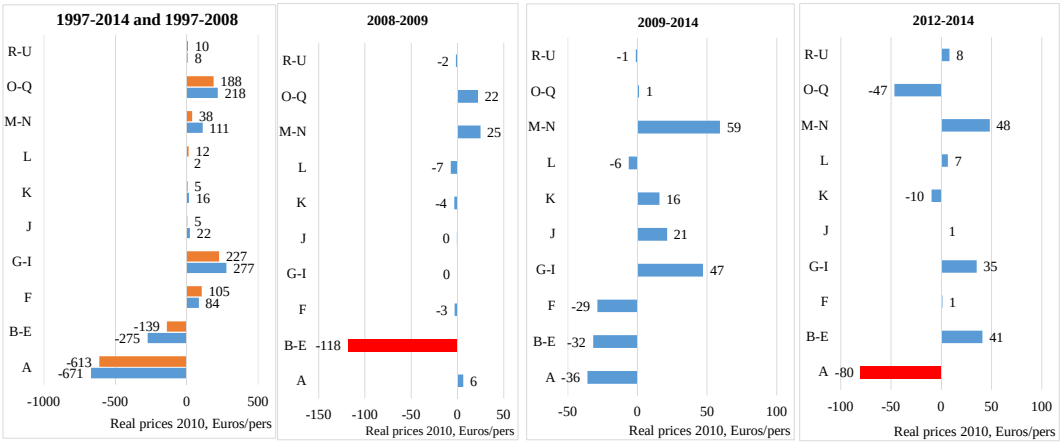
The Figure 3, show the contribution of sectoral employment changes to growth in total per capita output.

Applying JoGGs methodology (combining the Step 1 and Step 2) it is visible that for entire period 1997-2014 of the -208 Euros 2010/person capita output, is the result of negative contribution of the primary sectors: agriculture with -671 Euros 2010/person and industry with -275 Euros 2010/person. The sectors with positive contribution in growth were: GI Wholesale and retail with 277 Euros 2010/person, O-Q Public Administration with 218 Euros 2010/person, M-N, Professional, scientific and technical activities 111 Euros 2010/person and F Construction with 84 Euros 2010/person (all other 4 sectors were with very small contribution less than 22 Euros 2010/person). (See Figure 3)

The contribution of the agriculture sector, can be interpreted as the growth which would have resulted in the counterfactual scenario in which the share of working age population, total output per worker, and employment in all sectors other than agriculture had remained unchanged, but employment in agriculture had negative grown with -13,3pp as observed in Tabel 1 & Figure 2. If this had been the case, total per capita output would have decreased by -671 Euros 2010/person.

As presented before, for the period 1997-2008 the pattern is the same with the difference in the level of the contributions. Respectively, the -163 Euros 2010/person of capita output, is the result of negative contribution of the primary sectors: agriculture with -613 Euros 2010/person and industry with -1395 Euros 2010/person. The sectors with positive contribution in growth were: GI Wholesale and retail with 227 Euros 2010/person, O-Q Public Administration with 188 Euros 2010/person, M-N Professional, scientific and technical activities 38 Euros 2010/person and F Construction with 105 Euros 2010/person (all other 4)

Figure3. The contribution of sectoral employment changes to growth in total per capita output (Real prices 2010, Euros/pers.), during



Source: Calculated by authors following the steps in JoGGs, Eurostat data; sectors were with very small contribution less than 22 Euros 2010/person).

The pattern during the crises time 2008-2009 indicates that the decrease with -1,4 pp of the employment rate is corresponding a total change in per capita value added of -81 Euros 2010/person. The highest negative contribution of this period is given by Industry with a sectoral employment change which have a negative contribution to total per capita output of -118 Euros 2010/person, explaining an -2 pp contribution of industry to total employment rate growth during 2008-2009. The positive contribution (but not enough) was realized by sectors O-Q Public Administration with 22 Euros 2010/person and M-N Professional, scientific and technical activities 25 Euros 2010/person, these sectors contribution to employment rate was of 0,4pp.

During the period 2009-2014 is realised 41 Euros 2010/person a total positive change in per capita value added corresponding to an increase of employment rate with 0,7pp. In this period only the services sectors provide an positive contribution of sectoral employment changes to growth in total changes in per capita output of 59 Euros 2010/person by the sector M-N, 47 Euros 2010/person by the sector G-I and with 21 Euros 2010/person by the sector J. The primary sectors each at its turn, realized a negative contribution of sectoral employment changes to growth in total changes in per capita output of -36 Euros 2010/person by the sector A Agriculture, -32 Euros 2010/person by the sector B-E Industry and with -29 Euros 2010/person by the sector F Constructions.

During the period 2012-2014 is realised 5 Euros 2010/person a total positive change in per capita value added corresponding to an increase of employment rate with 0,1pp. In this period sectors that provide an positive contribution of sectoral employment changes to growth in total changes per capita output were: of 48 Euros 2010/person by the sector M-N, 35 Euros 2010/person by the sector G-I and with 41 Euros 2010/person by the sector B-E– Industry. Also there are 3 main sectors that realized a negative contribution of sectoral employment changes to growth in total changes in per capita output of -80 Euros 2010/person by the sector Agriculture, -47 Euros 2010/person by the sector O-Q Public administration and with -10 Euros 2010/person and by the sector K Financial and insurance activities

4. Conclusions

Romania's economy illustrate in the last two decades a tendency of structural change from primary and secondary sectors employment toward tertiary sectors. 'Professional, scientific and technical activity...'' next to "Wholesale and retail trade, transport, etc..." and "Information and communication ..." are the tree sectors that realises, regardless the analysed period and sub period of time, a positive contribution to a total change in employment rate and also a positive contribution in change per capita value added. The case of public administration is distinct. This sector is one of the main employers in the economy that provided a "shelter" during the crises time but in a short time released labour force indicating an increasing the balance between public and business sector.

This new structure of economy more oriented towards knowledge and information indicates a qualitative improvement tendency especially since Romania joins EU. Even if in the transition period (with the exception of the crises period) the Romanian economy registered the positive changes in terms of GPD and GDP per capita in both real and current terms the labour contribution was negative. The positive contribution to employment of the before mentioned sectors (science, it and wholesale…) confirm the structural positive change of economy. This process if it will be well managed could

improve the growth model of Romanian economy in a more inclusive and smart manner.

Acknowledgements/Mulţumiri

This work was supported by a grant of the the National Nucleus Research Program based on the Research Contract no.42 420 127 N / 2009 Additional Act No. 3/2015 ANCS.

Note

(1) WORKING DOCUMENT OF THE COMMISSION SERVICES, Romania's Country Report for the Year 2015, including a detailed account in relation to the prevention and correction of macroeconomic imbalances, {COM(2015) 85 final, p.4}

(2) http://www.worldbank.org/en/topic/poverty/brief/understanding-changes-in-welfare

(3) Solow, R., Technical Change and the Aggregate Production Function, Review of Economics and Statistics, 39: 312-320, 1957.

(4) Shorrocks, A. F., Decomposition Procedures for Distributional Analysis: A United Framework Based on the Shapley Value, University of Essex, Department of Economics, mimeo,1999.

(5) ***, Job Generation and Growth Decomposition Tool, Understanding the Sectoral Pattern of Growth and its Employment and Productivity Intensity – Reference Manual and User's Guide ,Version 1.0, 2011, http://siteresources.worldbank.org/INTEMPSHAGRO/Resources/JoGGs_Decomposition_Tool_UsersGuide.pdf

(6) ***, Guide to Growth, Employment and Productivity Analysis, http://siteresources.worldbank.org/INTEMPSHAGRO/Resources/2743772-1239047170644/Guide_to_Growth_Employment_and_Productivity_Analysis.pdf

REFERENCES

Ajakaiye, O., Jerome, T., A., Nabena, D., Alaba, O.A., (2015), Understanding the relationship between growth and employment in Nigeria, United Nations University, UNU-Wider, Development Policy Research Unit, Africa Growth Initiative at Brookings, WIDER Working Paper 2015/124, 2015.

Albu, L.L., Caraiani, P., Iordan, M., (2012), Perspectivele pieţei muncii din România în contextul Strategiei Europa 2020, PROIECT Îmbunătăţirea capacităţii instituţionale, de evaluare şi formulare de politici macroeconomice în domeniul convergenţei economice cu Uniunea Europeană a Comisiei Naţionale de Prognoză, cod SMIS 27153 BENEFICIAR Comisia Naţională de Prognoză.

Fields, G. (2004). A guide to multisector labor market models. Retrieved [insert date], from Cornell University, School of Industrial and Labor Relations site: http://digitalcommons.ilr.cornell.edu/workingpapers/86/, cites Kuznets, Simon (1955). "Economic Growth and Income Inequality," American Economic Review 45: 1-28, and Lewis, W. Arthur (1954). "Economic Development with Unlimited Supplies of Labour," Manchester School, 22: 139-191.

Fortin, N., Lemieux,T., Firpo, S, (2010), Decomposition Methods in Economics, NBER Working Paper No. 16045, June 2010, http://faculty.arts.ubc.ca/nfortin/w16045.pdf

Martins, P.& Rodriguez Takeuchi, L., (2013), Employment in a post 2015 framework. Propposal for monitoring indicators, Working Paper, August 2013, Sahping policy for development, odi.org.

Shorrocks, A. F., (1999), Decomposition Procedures for Distributional Analysis: A United Framework Based on the Shapley Value, University of Essex, Department of Economics, mimeo,1999.

Solow, R., (1957), Technical Change and the Aggregate Production Function, Review of Economics and Statistics, 39: 312-320, 1957;

EUROPEAN COMMISSION, (2015), DOCUMENT DE LUCRU AL SERVICIILOR COMISIEI, Raportul de țară al României pentru 2015, Inclusiv un bilanț aprofundat privind prevenirea și corectarea dezechilibrelor macroeconomice, {COM(2015) 85 final} / WORKING DOCUMENT OF THE COMMISSION SERVICES, Romania's Country Report for the Year 2015, including a detailed account in relation to the prevention and correction of macroeconomic imbalances, {COM(2015) 85 final, p.4};

EUROSTAT, (2015), GDP and main components (output, expenditure and income) [nama_10_gdp]

EUROSTAT, (2015), Unemployment rates by sex, age and nationality (%) [lfsa_urgan], Eurostat, Last update: 19-11-2015, http://appsso.eurostat.ec.europa.eu/nui/show.do, downloaded on 21.11.2015

EUROSTAT, (2015), In-work at-risk-of-poverty rate by age and sex (source: SILC) [ilc_iw01], Extracted on 05.08.15, Source of data Eurostat;

ILO, (2010), Trends Econometric Models: A Review of the Methodology, ILO EMPLOYMENT TRENDS UNIT, January 19, 2010; http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_elm/---trends/documents/publication/wcms_120382.pdf

IMF, (2015), IMF Country Report No. 15/79 ROMANIA 2015 ARTICLE IV CONSULTATION—STAFF REPORT; PRESS RELEASE; AND STATEMENT BY THE EXECUTIVE DIRECTOR FOR ROMANIA, downloadable from http://www.imf.org/external/pubs/ft/scr/2015/cr1579.pdf;

WORLD BANK, (2011), Job Generation and Growth Decomposition Tool Understanding the Sectoral Pattern of Growth and its Employment and Productivity Intensity Reference Manual and User's Guide ,Version 1.0, http://siteresources.worldbank.org/INTEMPSHAGRO/Resources/JoGGs_Decomposition_Tool_UsersGuide.pdf;

WORLD BANK, Guide to Growth, Employment and Productivity Analysis, http://siteresources.worldbank.org/INTEMPSHAGRO/Resources/2743772-1239047170644/Guide_to_Growth_Employment_and_Productivity_Analysis.pdf

http://ec.europa.eu/commission/2014-2019/cretu/announcements/creating-jobs-and-improving-quality-life-romanian-regions-eu-adopts-investment-package-worth-eu82_en

http://ec.europa.eu/europe2020/pdf/csr2015/cr2015_romania_en.pdf, COM(2015) 85 final

http://ec.europa.eu/priorities/jobs-growth-investment/index_en.htm

http://www.worldbank.org/en/topic/poverty/brief/understanding-changes-in-welfare

THE IMPLEMENTATION OF THE LEADER APPROACH IN ROMANIA

Ec. drd. Raluca PARJOLEANU[1]

Abstract

Due to its specificity, the LEADER approach can generate a balanced development of micro-regions. The fact that the local population is involved in the development of the areas in which they operate develops the local governance and contributes to the dynamic development supported by a local development strategy designed, implemented and managed locally by LAG representatives.

Keywords: local initiatives, LEADER, LAG, "bottom up" approach

JEL Classification: Q18, R58

Introduction

Introduced at European Union level through the Bulletin of the European Communities, Supplement 4/88 – The Future of rural society. Commission communication transmitted to the Council and to the European Parliament on 29 July 1988, the LEADER approach ("Liaison Entre Actions de Développement de l'Economie Rurale") involves using 7 principles for local development: designing a local development strategy focused on area, a "bottom up" approach, the establishment of a Public-Private Partnership called Local Action Group (LAG), encouraging innovation, development of integrated and multi-sectoral actions, networking and co-operation.

The beginning of the LEADER approach in Romania

The Council Regulation (EC) No 1698/2005 of 20 September 2005 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) stipulated that national rural development programs, must include Axis 4 LEADER to support local development strategies.

This fact was a major challenge for all Member States and particularly for Romania, as admitted by the Managing Authority of the program.[2] As a new Member State, Romania has faced a series of problems since:

1. Institutions and agencies involved in the management and implementation of the LEADER approach lacked relevant experience,

2. The degree of awareness of local communities about the potential of the LEADER approach was low, only a few partnerships had the potential of future local action groups.

[1] *raluca_parjoleanu@yahoo.com, Valahia University of Targoviste.*

[2] http://www.madr.ro/axa-leader/leader-2007-2013/legislatie-axa-leader.html taken on 01.12.2015, at 20.00

The implementation of LEADER in Romania was to be introduced "step by step" over several years since drafting local development strategies was a challenging and time consuming task.

The concept of the LEADER approach was promoted in Romania in the documents approving the 2007-2013National Development Plan[3], which represents the strategic planning and multiannual financial programming document, developed by a broad partnership that guides and stimulates the socio-economic development of Romania in accordance with EU Cohesion Policy.

It specified[4] that the LEADER Community Initiative "*aims to mobilize all actors from the rural areas in designing and implementing local development strategies for the conservation of rural and cultural heritage, the development of the economic environment and the improvement the organizational skills of local communities. In this context it becomes necessary to create public-private partnerships for implementing development strategies, but also to exchange and disseminate information, to encourage the formation of local organizations and to help them stimulate the activities of local communities and the participation of local communities in initiatives aimed at their development. The encouragement of the creation and testing of new approaches to integrated and sustainable development of rural areas as part of the program will open the way to utilise unused reserves of civic actions, will contribute to a rapid development of these areas. The implementation of the measures planned under this program will help improve spatial development and rural infrastructure, including resources related to the economic, social and cultural areas. This sub-priority will aim at stimulating local initiatives that will boost the capacity of rural communities to develop business initiatives based on partnership and projects for the protection of local cultural and natural heritage. It will also encourage and support involvement of local communities in the process of drafting and promoting the documentations of spatial and urban planning. Thus, this type of local initiatives will meet exactly the requirements and needs of local actors in a particular rural area. In this way, the "bottom-up" approach will allow each representative of rural areas, together with the community, to benefit from the knowledge necessary to carry out various activities of common interest. These strategic elements will be implemented by the LAGs (Local Action Groups).*"

Subsequently, the theme was taken up in the National Strategic Plan for Rural Development 2007-2013 (NSP) and the National Rural Development Programme 2007-2013 (NRDP).

The National Strategic Plan for Rural Development 2007-2013 (NSP) specifies for Axis 4 LEADER[5]:

Objective: Implementation of a pilot LEADER program.

Sub-objectives: LEADER implementation through a bottom-up approach at local level to implement the rural development program.

Measures Objectives:

- Improving the competitiveness of agriculture and forestry sector by supporting restructuring, development and innovation
- Using natural and cultural resources in a rational and balanced way through the

[3] Planului Naţional de Dezvoltare 2007-2013[3] approved in december 2005 (page 325, Section 5.3.4 *Promovarea iniţiativelor locale de tip LEADER*)

[4] Planului Naţional de Dezvoltare 2007-2013 approved in december 2005 (page 325, Section 5.3.4 *Promovarea iniţiativelor locale de tip LEADER*)

[5] Planul Naţional Strategic pentru Dezvoltare Rurală 2007-2013 (PNS), page 51

use of agricultural good practices and the increase of the importance and value of community interest areas selected as Natura 2000 sites

- Improving the quality of life in rural areas and encouraging economic activity
- Increasing the added value of local products by facilitating access to markets for small production units.

According to article 54 of the Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005, each Member State shall establish a national rural network, which groups the organisations and administrations involved in rural development. The operation of the National Network for Rural Development was funded through the Technical Assistance component of the National Rural Development Program, according to art. 66 (3) of Council Regulation (EC) no.1698/2005.

Taking into account the main strategic guidelines set by Romania with regard to rural development for the period 2007 - 2013 and strengthening these guidelines through facilitating their learning and understanding by the rural actors, the National Network for Rural Development has the overall objective to enlist the energy of all actors in the rural development process and promote an effective flow of information, exchange of ideas and best practices and cooperation, bringing together all the organizations and institutions that are involved in rural development in order to:

- Creating an economy based on agricultural and forestry holdings that must undertake modernization;
- Development of an agriculture that promotes biodiversity and environment conservation;
- Improving the quality of life and economic development in rural areas;
- Improving local governance in order to create and implement local development strategies.[6]

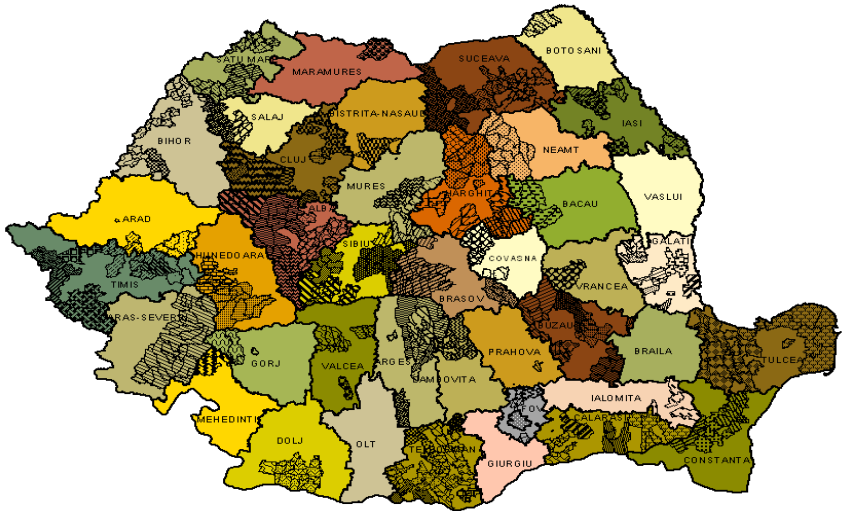
The National Network for Rural Development was recommended to be first created through the Leader program because it is the best starting point due to the existence of a network of NGOs active in local development and to be extended afterwards to other rural development issues. Thus, the first beneficiaries of the network would be the local action groups.[7]

Although in the 2000-2006 programming period, Romania did not implement Leader actions, a number of development initiatives were identified at country level, such as Local Initiative Groups (LIG), Micro-regions and other LEADER-like partnerships. These were partnerships between non-governmental organizations (NGOs), local public administration, church, school, medical and dental offices, micro-regions, etc. Some LIGs have reached an organizational maturity and were transformed into Community Associations with legal personality, while others have dissolved after achieving their objective. In 2006, the Ministry of Agriculture and Rural Development selected a total of 120 representatives of sub-regional territories (areas), with a population between 10,000 and 100,000, territories which covered

[6] Programul Naţional de Dezvoltare Rurală 2007-2013, VIIIth version, march 2012, page 486
[7] Planul Naţional Strategic pentru Dezvoltare Rurală 2007-2013 (PNS), page 69

37 counties out of 42, in pursuit of LEADER structures and activities. These representatives have been appointed by informal partnerships between public, private and civil society, in order to be trained on the following topics: building partnerships, diagnostic analysis, local development strategy, the action plan of the territory, animation activities, monitoring and evaluation of the Action Plan, all these actions being necessary to prepare the Leader axis implementation in Romania.[8]

Map of the territories selected for the training of representatives of public-private partnerships (LEADER)



Source: 2007-2013 National Rural Development Programme, VIIIth version, march 2012, page 532

The evaluation study "*Methods for and Success of Mainstreaming Leader Innovations and Approach into Rural Development Programmes*"[9] (April 2004), conducted by ÖIR-Managementdienste GmbH, contracted by DG Agri defines the concepts of "strategic vertical / top down mainstreaming" and "mainstreaming on demand". The study noted the need for a critical mass of key players among senior administration and political actors interested in introducing the LEADER approach and able to formulate and implement a comprehensive approach. The study called it "strategic vertical mainstreaming" because it starts from the top of the hierarchy and is translated down and spread to other authorities. Integration can also be induced from the bottom up through political lobbying of local and regional stakeholders, who convey a demand of the people and local institutions: "mainstreaming on demand" appears after previous successful experiences with LEADER approaches, which should be intensified based on local people.

LEADER Axis in the National Program for Rural Development 2007-2013

National Rural Development Programme 2007-2013 stated that because in Romania there is a lack of experience in connection with the Leader Axis, 120 local experts were selected to be trained. In selecting LAGs by the MA, the responsibility of

[8] Programul Naţional de Dezvoltare Rurală 2007-2013, VIIIth version, march 2012, page 56
[9] http://ec.europa.eu/agriculture/eval/reports/leader/full.pdf taken on 02.12.2015, at 10.00

project selection will be given to them and the eligibility checking, approval, implementation of payments the responsibility of the Payment Agency for Rural Development and Fisheries (APDRP).

Thus, in Romania, the LEADER axis during the 2007-2013 period included the following measures:

4.1 Implementation of local development strategies:

411 Increasing the competitiveness of agriculture and forestry

412 Improving the environment and the countryside

413 Quality of life and diversification of the rural economy

4.21 Implementing cooperation projects

4.31 Operation of Local Action Groups, skills acquisition and animation

431.1. Establishing public-private partnerships

431.2. Operation of Local Action Groups, skills acquisition and animation

Romania's priority in the 2007-2009 period was the implementation of Measure 431.1 on establishing public-private partnerships (potential LAGs) with a set of clearly oriented objectives:

1. Effective introduction of the LEADER "bottom up" planning approach and development through a gradual process of training (learning by doing) and interconnection.

2. Preparation for the expansion of LEADER in the next programming period.

The 431.1 sub-measure was implemented in 3 successive phases as follows:

- Phase 1 - This phase raising awareness of local actors about the LEADER approach was done through information and training sessions regarding the National Rural Development Programme, local development, Axis 4 LEADER, examples of concrete actions in rural areas;
- Phase 2 - In this phase the training of representatives of potential LAGs was done regarding local development strategies (diagnose analysis and SWOT analysis, strategy development, program actions, partnership formation, etc.);
- Phase 3 - In this stage financial support was provided for the preparation of local development plans for LAG selection, based on projects designed by the partnerships concerned. These had to include the objectives, the duration of planned actions, the strategy and budget for the preparation of the strategy and local development plans for the selection of LAGs. The final product of this project had to be the local development plan for the selection of LAGs.

Public-Private Partnerships established as LAGs had to cover a territory of the eligible area for the implementation of the Leader axis, mainly the rural area, defined by the Romanian legislation, plus a number of 206 small towns (not exceeding 20,000 inhabitants). At the same time, the urban population could not exceed 25% of the total number of inhabitants in a LAG.

The number of people that should have been covered by LAGs amounted to about 11.7 million., of which about 2 million from the small town and the area eligible for LEADER axis implementation was 227,000 km² (207,000 km² of rural areas defined according to the national definition, plus approximately 20,000 km² urban area owned by towns with up to 20,000 inhabitants).

The maximum amount that could be requested by a potential Local Action Group was 2,850,000 Euro.

The selection criteria for the local development strategies were[10]:

Criteria regarding the territory – Priority selection was given to:

✓ Territories with a population between 30,000 and 70,000;

✓ Territories with a population density below 75 inh. /Km^2;

✓ Territories include areas poor / disadvantaged Natura 2000 areas with high natural value (HNV) areas affected by industrial restructuring;

✓ Territories include portions of different counties.

Criteria regarding the partnership - Priority in selection has been granted to the following groups:

✓ Ethnic minority groups;

✓ Groups with a balanced representation of young people;

✓ Groups with a balanced representation of women;

✓ Groups that include representatives of agricultural organizations / groups of producers

✓ Forestry sector representatives, representatives from the economic / environmental organizations, etc.;

✓ Groups in which private partners and civil society represent more than 65% of all partners.

Criteria regarding the strategy - The quality of the following items was considered in the selection process:

✓ initial situation assessment and analysis of needs and potential of the area (diagnostic analysis and SWOT analysis);

✓ objectives for implementing the local development plan; (set in correlation with the diagnosis and SWOT analysis/ clear and measurable);

✓ actions / methods proposed to achieve the objectives;

✓ complementarity with other development programs;

✓ LAG criteria used for selection of projects;

✓ administrative procedures, rules and detailed audit trail;

✓ assessment procedures - Monitoring development strategies;

✓ effective local partners consultation in developing the strategy

✓ effective informing of potential beneficiaries about the LAG activities.

Criteria related to the strategy components - Priority in selection has been granted to the following strategies:

✓ strategies including innovative actions;

✓ strategies including cooperative actions;

✓ strategies combining several axes of the NRDP objectives;

✓ strategies addressing semi-subsistence farmers (diversification or development);

✓ strategies targeting young people;

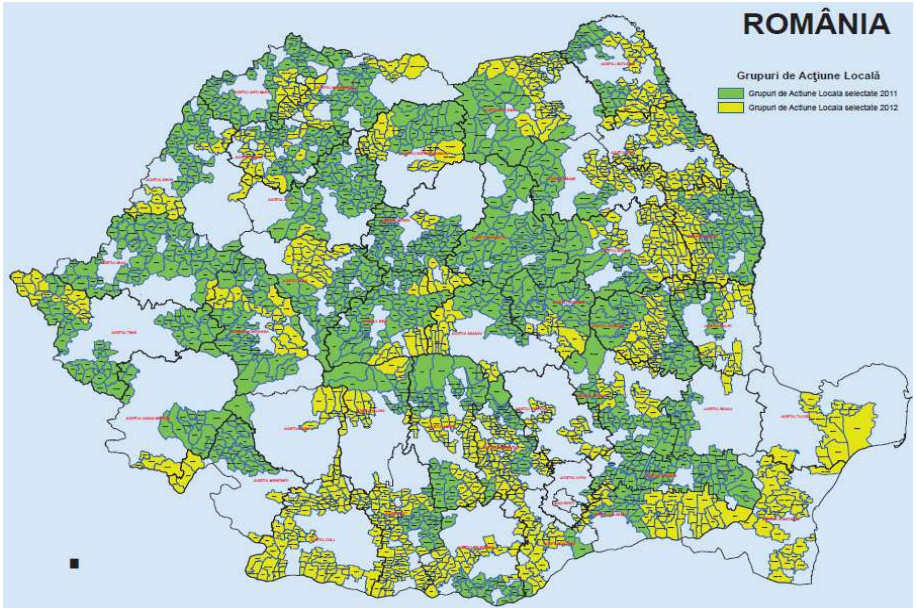
✓ strategies integrating environmental issues;

✓ strategies aimed at facilitating the implementation of those measures that will address the NRDP beneficiaries: producer groups, associations, partnerships, other associative forms recognized by national law.

---

[10] Ghidul solicitantului pentru participarea la selecția grupurilor de acțiune locală, martie 2012

The first selection session of LAGs in Romania took place in the period 01.09-29.10.2010. There were selected and financed a number of 82 local action groups. The second session of the LAG selection took place during 01.03-02.05.2012. There were selected and financed a number of 81 local action groups. By the end of 2012, only 87 LAGs had signed the grant contracts under the sub-measure *431.2 Operation of Local Action Groups, skills acquisition and animation*, totaling € 44,465,611, thus being able to start conducting the activities for the implementation of their strategies. The 163 LAGs brought up to their micro-regions until November 2015 a total funding of € 385,762,868, according to available official data. [11] After completing the selection of local development strategies, the territory covered by the LAGs was approx. 14,398 km² (comprising 1,805 villages and 79 town under 20,000 inhabitants), attended by 58% of the LEADER eligible population and representing about 63% of the LEADER eligible territory) [12].



Source: http://www.madr.ro/docs/dezvoltare-rurala/Axa_LEADER/harta-gal-romania-update-2013.pdf taken on 24.10.2015, 17.00

Local development strategies implemented few atypical measures (non-specific to the National Programme for Rural Development), the financing contracted by LAGs' beneficiaries being mostly on measures specific to Axis 1 and 3 of the National Rural Development Programme. This was mainly due to the fact that LAGs have had short periods available to implement their strategies, but also due to repeated changes of procedures manual for implementing the strategies, made by MA NRDP and the Rural Investment Funding Agency. Another problem that local action groups faced in the selection and evaluation of projects, was the introduction and evolution of the concept

[11] According to the information letter sent by the Managing Authority on my request for information
[12] Programul National de Dezvoltare Rurala 2014-2020, page 62

of "creating artificial conditions" for financing. Identifying these artificial conditions led to the rejection of some of their beneficiaries' projects.

The Council Regulation (EC, EURATOM) No 2988/95 of 18 December 1995 on the protection of the European Communities financial interests stipulates in article 4, (3): „Acts which are established to have as their purpose the obtaining of an advantage contrary to the objectives of the Community law applicable in the case by artificially creating the conditions required for obtaining that advantage shall result, as the case shall be, either in failure to obtain the advantage or in its withdrawal." This condition was acquired in subsequent regulations.

Thus, firstly the following filter for the identification of artificial conditions was introduced[13]:

1. *The same title of the project identified in two or more proposals?*
2. *The same head office is found in two or more proposals?*
3. *The same site of the project (village) is found in two or more proposals?*
4. *The same legal representative of the project is found in two or more proposals?*
5. *The same project consultant is found in two or more proposals?*

Accumulation of three positive responses, would have resulted in the project's dismissal. Rejection of projects under artificial conditions caused a large number of complaints from the potential beneficiaries. Subsequently, the Rural Investment Funding Agency (RIFA) published in November 2015 the "Guidelines for the prevention of irregularities creating artificial conditions in accessing funds granted by the NRDP 2014-2020".

LAGs selected in the first session had some difficulties in identifying the amounts of money required for starting the implementation of their activities, staffing and to cover operating costs. This problem has found its solution in granting an advance for the LAG activities, starting with 2013, the amount being secured by a promissory note issued personally by the legal representative of each LAG.

In Romania, although almost all local development strategies of LAGs included co-operation actions, inexperience and reluctance of the Rural Investment Funding Agency (in the absence of very precise criteria of defining this type of projects) and the MA NRDP towards financing cooperation projects, but also the lack of experience of local action groups, led to an extremely low implementation degree of cooperation activities in the 2007-2013 programming period. Also a factor that led in the same direction was the economic crisis, which severely limited financial capacity of the national and European partners to carry out such projects.

Innovation is also one of the main features of LEADER. However, in Romania, the lack of experience of LAGs, RIFA and MA NRDP made innovation to be found in a very low measure in the projects selected in local development strategies.

LEADER in the 2014-2020 National Rural Development Programme

In accordance with the Council Regulation 1303/2013[14], Article 33 - Community-

[13] Formular E 3.1 - Fişa de verificare a criteriilor de eligibilitate, specifica masurii 312 din PNDR 2007-2013

[14] REGULATION (EU) No 1303/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions

led local development strategies:

"1. A community-led local development strategy shall contain at least the following elements:

(a) the definition of the area and population covered by the strategy;

(b) an analysis of the development needs and potential of the area, including an analysis of strengths, weaknesses, opportunities and threats;

(c) a description of the strategy and its objectives, a description of the integrated and innovative features of the strategy and a hierarchy of objectives, including measurable targets for outputs or results. In relation to results, targets may be expressed in quantitative or qualitative terms. The strategy shall be consistent with the relevant programmes of all the ESI Funds concerned that are involved;

(d) a description of the community involvement process in the development of the strategy;

(e) an action plan demonstrating how objectives are translated into actions;

(f) a description of the management and monitoring arrangements of the strategy, demonstrating the capacity of the local action group to implement the strategy and a description of specific arrangements for evaluation;

(g) the financial plan for the strategy, including the planned allocation from each of the ESI Funds concerned.

2. Member States shall define criteria for the selection of community-led local development strategies.

3. Community-led local development strategies shall be selected by a committee set up for that purpose by the managing authority or authorities responsible and approved by the managing authority or authorities responsible."

In accordance with the same Council Regulation 1303/2013[15], Article 34 - Local action groups:

„*1. Local action groups shall design and implement the community-led local development strategies. […]*

3. The tasks of local action groups shall include the following:

(a) building the capacity of local actors to develop and implement operations including fostering their project management capabilities;

(b) drawing up a non-discriminatory and transparent selection procedure and objective criteria for the selection of operations, which avoid conflicts of interest, ensure that at least 50 % of the votes in selection decisions are cast by partners which are not public authorities, and allow selection by written procedure;

(c) ensuring coherence with the community-led local development strategy when selecting operations, by prioritising those operations according to their contribution to meeting that strategy's objectives and targets;

(d) preparing and publishing calls for proposals or an ongoing project submission procedure, including defining selection criteria;

(e) receiving and assessing applications for support;

(f) selecting operations and fixing the amount of support and, where relevant, presenting the proposals to the body responsible for final verification of eligibility before approval;

---

on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006

[15] REGULATION (EU) No 1303/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006

(g) monitoring the implementation of the community-led local development strategy and the operations supported and carrying out specific evaluation activities linked to that strategy."

For the 2014-2020 programming period, the Leader approach has been introduced in the National Rural Development Programme by Measure 19 "LEADER local development", which includes the following sub-measures[16]:

- *19.1 – Preparatory support for the local development strategies.*

The purpose of investments in this sub-measure is to support local public-private partnerships in designing their local development strategy.

- *19.2 - Support for the implementation of actions within the local development strategy.* The strategies developed will present types of actions that are found in specific categories of eligible actions in the NRDP and / or innovative actions. The Local Action Group through the Project Selection Committee will select the projects it will fund.
- *19.3. Preparation and implementation of cooperation activities of the Local Action Group.* This sub-measure will fund the transnational cooperation projects (between Romania and other EU Member States and inter-territorial cooperation (within the territory of Romania) among Local Action Groups.
- *19.4. Support for operating expenses and animation. The* sub-measure aims to reimburse the operating expenses based on the performance of the LAG in the implementation of the strategy.

Putting into practice of the Measure 19 "LEADER Local Development" started through the call for proposals for funding under sub-measure 19.1 in the period 25 March - 5 June 2015. According to the evaluation report[17] of this first call for proposals there were submitted 175 eligible projects, 1 ineligible project, and 4 projects were withdrawn. The total public value of eligible projects was 2,376,835.85 EUR, and the total public value of projects submitted: 2,380,302.89 EUR. Grant support intensity for this sub-measure is 100% and the budget available was 2,400,000 Euro. Eligible projects are in the contracting process. Support for technical assistance will be provided in accordance with the Regulation no.1303 / 2013, up to a maximum of 20,000 Euro for LDS (local development strategy) submitted by a Partnership as follows:[18]

- Expenditure on animation will be a maximum of 10,000 EUR given in proportion to the number of inhabitants covered by the Local Development Strategy (maximum 100,000 inhabitants). Therefore, the financial allocation will be 0,1euro / capita;
- Expenses related to the development of the strategy will be in the maximum amount of 10,000 EUR, regardless of the size of territory and population covered by LDS.

In order to be eligible, the local development strategy must be developed based on a bottom-up approach. LEADER activities can and should meet the different types of eligible activities of the rural development program, including those pertaining to social inclusion and poverty reduction. The types of investments that are not financed by traditional measures of the NRDP 2014-2020, will bridge the gaps between rural and

---

[16] http://www.madr.ro/docs/dezvoltare-rurala/programare-2014-2020/dezbatere/fise-masuri/Fisa_masurii_Leader_draft_v3.pdf , taken on 05.12.2015, at 12.00

[17] www.apdrp.ro taken on 12.12.2015, at 16.00

[18] Ghidul Solicitantului pentru Accesarea Submăsurii 19.1 "Sprijin Pregătitor pentru Elaborarea Strategiilor de Dezvoltare Locală", page 5

urban areas while preserving local identity and stimulating the clotting of local interests. Local Action Groups will elaborate their strategy according to the needs identified in the diagnostic analysis of their own areas, but also based on the key priorities identified in the 2014 – 2020 NRDP.

Conclusions

Due to its specificity, the LEADER approach can generate a balanced development of micro-regions. The fact that the local population is involved in the development of the areas in which they operate develops the local governance and contributes to the dynamic development supported by a local development strategy designed, implemented and managed locally by LAG representatives.

LEADER is an important approach for Romania in the struggle for economic and social imbalances and disparities between urban and rural areas. The experience gained so far reflects a capacity for development that does not entirely respond to local needs, particularly in terms of collaboration between public and private partners, therefore the strategic approach should be encouraged and developed.

In the short period of implementation of local development strategies and operation of LAGs selected in the 2007-2014 programming period, it was shown that on the basis of its specificity, the LEADER approach can contribute to balanced regional development and can accelerate their structural progress. The involvement of local actors in the development of the areas in which they operate, will contribute to local development and will lead to a dynamic development, based on a local development strategy designed, implemented and managed by representatives of the LAGs.[19]

LEADER is an important tool for rural development for Romania, given that the current basic services do not meet the needs of the local population, nor the social conditions, which can be seen in the poor economic development of the areas.

Given the specific needs of local communities and their endogenous potential, it is relevant to continue to use this tool for bottom up rural development for the promotion of initiatives and development activities by local communities, in an integrated and innovative, but also balanced manner, in order to accelerate the structural development of these communities.

Also, the management capacity of local governance needs to be strengthened in order to inform stakeholders and stimulate rural areas to get involved to a greater extent in the process of developing their own micro-region.

Innovation remains key to LEADER, and in the 2014-2020 period, the support for a wide range of innovative actions, identified on the principle of the bottom up approach, based on community needs, will be revived and strengthened. Therefore, Measure 19 "LEADER local development" will encourage the promotion of innovative projects in the local development strategies, with particular emphasis on identifying innovative solutions tailored to local needs.

The Cooperation component will generate added value in the micro-regions, particularly through the involvement of local people and representatives of various economic sectors. For the Romanian LAGs, cooperation will represent an important

[19] Programul National de Dezvoltare Rurala 2014-2020

opportunity to have direct contact with examples of best practices in other EU Member States and to connect and integrate into the European LEADER community. Therefore, LEADER is not simply a funding source, but rather constitutes the best form of stimulating local and regional development of the LEADER areas.

BIBLIOGRAPHY:

1. Ghidul solicitantului pentru participarea la selecţia grupurilor de acţiune locală, march 2012;

2. Ghidul Solicitantului pentru Accesarea Submăsurii 19.1 "Sprijin Pregătitor pentru Elaborarea Strategiilor de Dezvoltare Locală";

3. Planului Naţional de Dezvoltare 2007-2013;

4. Planul Naţional Strategic pentru Dezvoltare Rurală 2007-2013 (PNS);

5. Programul Naţional de Dezvoltare Rurală 2007-2013, versiunea a VIII-a, martie 2012;

6. Programul Naţional de Dezvoltare Rurală 2014-2020;

7. REGULATION (EU) No 1303/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006

8. Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005;

9. „*Methods for and Success of Mainstreaming Leader Innovations and Approach into Rural Development Programmes*" evaluation study, (2004), designed by ÖIR-Managementdienste GmbH, contracted by DG Agri, available online at http://ec.europa.eu/agriculture/eval/reports/leader/full.pdf ;

10. Rural Investment Funding Agency website: www.apdrp.ro ;

11. Managing Authority for the National Rural Development Programme website: www.madr.ro

COMPARATIVE ANALYSES ON YOUTHS' EMPLOYMENT AND UNEMPLOYMENT IN ROMANIA AND THE EUROPEAN UNION DURING THE POST-CRISIS PERIOD

Mariana BĂLAN[1]

Abstract

In the current conjecture the youths are faced with the emergence of uncertainty feelings regarding their own chances to have a "promising" debut on the labour market. The world crisis, the social reality with which all societies are faced brought again to the forefront the idea of the youths' vulnerability in the labour market.

During the period 2008-2014 the number of youths employed in the labour market within the European Union decreased by over 7.5 million which corresponds to a diminishment of the employment rate by 4.3 percentage points.

In some developing societies and even in some developed ones, the impact that the crisis had on the youths is felt especially under the form of unemployment and of a social "hazard" that is associated with inactivity on short-term. The issue of youths' inactivity for a longer period of time is considered as a major risk that leads to estrangement from labour market; several studies have indicated that the transition from school to work during times of economic recession can leave its fingerprint on the youth generation affected by this economic decline.

With respect to youths' employment on the labour market, the period 2008-2014 is characterized by increases in the weight of those employed part-time or on a temporary basis and this with a higher frequency than in the case of other segments of working-age individuals. The youths with lower education are also the most vulnerable: they have more difficulty in finding a job, have most trouble in maintaining the hobs for which they are, or not the position owners.

The present paper presents a brief comparative analysis of the developments on the youths' labour market from Romania and other member-states in the period 2008-2014.

Keywords: youths' employment, youths' unemployment, education level, labour market imbalances

Rezumat

În conjuctura actuală, tinerii se confruntă cu apariţia unui sentiment de nesiguranţă cu privire la propriile lor şanse de a debuta „cu bine" pe piaţa muncii. Criza mondială, realitatea socială cu care se confruntă toate societăţile a readus în prim plan ideea fragilităţii tinerilor pe piaţa muncii.

În perioada 2008-2014, numărul tinerilor încadraţi pe piaţa muncii în Uniunea Europeană a scăzut cu peste 7,5 milioane, ceea ce corespunde unei reduceri a ratei de ocupare de 4,3 puncte procentuale.

[1] Univ.Prof.PhD, Scientific research I – degree. Institute for Economic Forecasting-NIER, Romanian Academy, 13 Calea 13 Septembrie Street, Bucharest, E-mail: dr.mariana.balan@gmail.com

În unele societăți în curs de dezvoltare, și chiar unele societăți dezvoltate, impactul pe care l-a avut criza asupra tinerilor este resimțit în special sub forma șomajului și a unui „hazard" social care este asociat cu o inactivitate pe termen scurt. Problema inactivității tinerilor pe o perioadă mai mare de timp este considerată a fi un risc major de îndepărtare de piața muncii, numeroase studii arătând că tranziția de la școală la muncă într-o perioadă de recesiune economică își poate pune amprenta asupra generației de tineri afectați de acest declin economic.

În ceea ce privește ocuparea tinerilor pe piața muncii, perioada 2008-2014 se caracterizează prin creșterea ponderii celor angajați part-time sau temporar și, aceasta, cu o frecvență mai mare decât în rândul altor segmente de persoane apte de muncă. Tinerii cu studii inferioare au fost și sunt cei mai vulnerabili: și-au găsit mai greu un loc de muncă, au avut cele mai mari dificultăți în păstrarea locurilor de muncă pentru care sunt sau titulari.

Lucrarea prezintă o succintă analiză comparativă a evoluției pieței muncii tinerilor din România și alte state membre în perioada 2008-2014.

Cuvinte-cheie: ocuparea tinerilor, şomajul tinerilor, nivel de instruire, dezechilibre ale pieţei muncii

Cod JEL: **E24, J21, J22, J23, J64**
Cod REL: **10G, 12A, 12B, 12I, 12Z, 20Z**

1. Introduction

The employed population on the European labour market is to its majority an adult one, as the representation of youths is below 35% from total employed population. The number of youths employed on the labour market diminished during this period by 4.3 percentage points. An important factor for the diminishing employment rate among youths with ages between 15 and 29 years was the recent economic crisis.

In the year 2014, the unemployment among youths was very high (22.2%). In this context, attaining the Europe 2020 Strategy objective regarding labour force employment (75% for the population with ages between 20 and 64 years of age) requires the adoption/improvement of measures for increasing the insertion degree of youths on the labour force market.

The unemployment rate among youths is twice as high as compared with the rate for the entire active population (9% in the year 2014). The decrease in the number of permanent jobs during the crisis affected disproportionately the youths as they were overrepresented in the category of temporary contracts. Also, the difficulties on the labour market existing already before the economic recession were intensified during the crisis and post-crisis period with a negative impact also on the youths with ages between 25 and 29 years of age who have higher education and still find it more difficult to obtain a job corresponding to their skills.

In the context of an increasingly higher level of unemployment, the youths have increasingly more difficulties in finding a job and many of them might decide to extend their period of inactivity on the labour market or resume their studies. This could represent an investment for the future provided that the adequate competences are gained. Nevertheless, the reality is that many of these youths are not involved either in employment, studies or training, and they are those representing the NEET group.

The NEET rate (weight of youth who are neither in education, training or in the labour market in total youth population) is a relatively new indicator but which received during the last two decades an increasingly higher importance both in the approaches of international organisations regarding youths' labour market and in the mass-media.

In the European Union the number of youths under 30 years of age who are not in employment, education or vocational training increased to almost 14 million individuals (or 15.3% in the year 2014). In this context, the challenge faced by the governments of the EU-28 countries is very high. The increase in the insertion degree of youths on the labour market, but also their social integration turned into permanent concerns of the member-states' policy. For decreasing the intensity of these phenomena, these have initiated or adopted a series of measures.

The current developments with respect to youths' employment on the labour market, but also social evolutions represent at European and national level major challenges. The directives regarding labour force employment elaborated by the Council of Europe (Council Decision 2010/707/EU) pursue to ensure a stable political orientation for the member-states so as to meet this complex context in view of achieving the objectives of the Europe 2020 Strategy.

The issues faced by the youths in the labour market have significant direct consequences from an economic, social and even cultural perspective not only for them, but also for their families and the communities (local, national and international) they live in. The most important effects of their inactivity are: economic risks related to the present and future perspectives on medium- and long-term (career development, future pension rights, etc.); social: poverty risk, the exclusion and self-exclusion risk, of disengagement at individual level expressed by their incapacity to play an active role within the community they belong to, as well as for the development of the society as such.

The high level of unemployment level among youths and of the NEET rate leads to diminished chances of employment of the individuals in general, but also to diminishing opportunities of economic development both at national and global level.

The present paper intends to analyse, in the framework of these general aspects, the current issues of the youths' labour market within a national and European context.

2. Youths' employment and unemployment on the Romanian labour market and in the European Union

While unemployment is the most pressing challenge for the youths, the employment rates decreased for the last years. In Q1 of the year 2015, the youths' employment rate for those between15-24 years of age was of 32.4%, on increase by 0.3 pp against the year 2013, when the lowest level ever recorded was reached within the EU, corresponding to the 18.8 million youths in this age group. The employment rate of those with ages between 25 and 64 years of age underwent a more modest decline during the same period, from 72% in the year 2008 to 71.4% in the year 2014.

Due to the economic crisis, between 2008 and 2014, the employment rate among youths from Europe decreased by almost 5pp, from 37.3% to 32.4%, while youths' employment diminished by approximately four million individuals.

Regarding **youths' employment**, in the first quarter of the year 2015, between the EU member-states there are large differences (Table 1).

The youths are much more involved in the labour force market in countries such as the Netherlands (59.5%), Denmark (54.5%), Austria (50.7%), Great Britain (48.7%) and Germany (46.3%). In turn, the youths' employment rate is under 20% for Bulgaria (19.8%), Croatia (17.5%), Spain (16.5%), Italy (14.2%), and Greece (12.9%).

Table 1. Employment indicators for the age group 15-24 years and 25-64 years, Q1-2015

(%)

	Employment rate		Part-time employment		Temporary employment	
	15-24 years	25-64 years	15-24 years	25-64 years	15-24 years	25-64 years
EU-28	32,2	71,3	32,7	18,6	42,5	10,8
Belgium	24,2	70,3	28,7	24,6	35,8	7,0
Bulgaria	19,8	68,3	7,9	2,0	11,3	3,2
Czech Republic	28,0	76,9	10,7	5,0	30,3	7,9
Denmark	54,5	77,5	67,9	17,9	21,6	5,4
Germany	46,3	78,9	23,5	27,2	53,3	8,1
Estonia	33,9	76,6	19,2	8,0	15,2	1,8
Ireland	27,1	69,6	44,7	20,5	31,1	6,4
Greece	12,9	55,8	24,2	9,3	30,1	9,8
Spain	16,5	63,2	39,7	15,1	67,5	21,5
France	27,0	71,3	25,7	17,9	56,7	11,9
Croatia	17,5	61,4	13,8	5,2	56,0	15,7
Italy	14,2	62,9	32,0	17,6	55,3	11,1
Cyprus	25,5	69,8	26,1	12,9	29,7	16,1
Latvia	34,0	73,2	7,8	5,9	8,0	2,8
Lithuania	26,4	75,5	11,3	7,7	7,8	1,4
Luxemburg	28,2	74,0	30,1	17,5	40,1	6,5
Hungary	23,9	70,2	6,8	6,1	21,8	9,1
Malta	46,6	65,9	18,8	13,5	12,7	5,6
The Netherlands	59,5	76,8	80,7	44,7	54,5	14,3
Austria	50,7	74,3	24,9	28,1	35,2	4,7
Poland	25,1	69,3	15,0	6,5	72,4	24,3
Portugal	21,9	70,7	23,0	9,5	65,0	18,3
Romania	***23,0***	***66,3***	***18,8***	***8,4***	***5,7***	***1,1***
Slovenia	26,0	70,0	38,6	8,0	65,2	13,1
Slovakia	23,5	69,9	13,0	5,7	28,3	8,6
Finland	36,0	74,0	47,4	11,3	33,7	11,1
Sweden	40,0	82,3	53,1	21,7	52,1	10,8
Great Britain	48,7	77,8	38,2	23,5	15,3	4,6

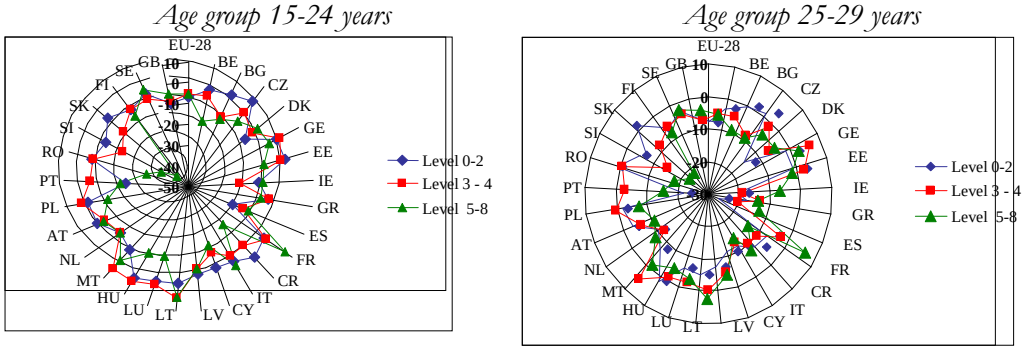
Data source: Eurostat statistics, (online data code: [lfsq_ergaed], [lfsq_etpga], [lfsq_eppga])

In the year 2014, the employment rate of youths with ages between 15 and 24 years of age at the EU-28 level was of 32.4%, on decrease by 4.8 pp against the year 2007, and for the age segment 25 to 29 years of age it diminished by 4.1 percentage points.

For the vast majority of member-states, the youths' employment rate for those with ages between 15 and 24 years of age was higher for men, save for Ireland, Denmark, the Netherlands, Finland, Sweden, Cyprus and Malta. For the age group 15 to 29 years of age, only in Cyprus the women employment rate was higher than the one for men.

The decline of youths' labour force employment was shown both for individuals with a low education and skills' level and for those with higher education. In some member-states (Denmark, Ireland, Greece, Spain and Portugal) the job losses for youths were mostly exclusively among those with low and medium education and training, while in others (Bulgaria, Czech R., Estonia, Cyprus, Romania, Slovenia and Slovakia), youths labour force employment among those with higher education was more marked, while in France the employment rate of the youths with higher education increased for both age groups (Figure 1).

Figure 1. Percentage changes in the numbers of youths employed in the period 2007-2014, on educational levels

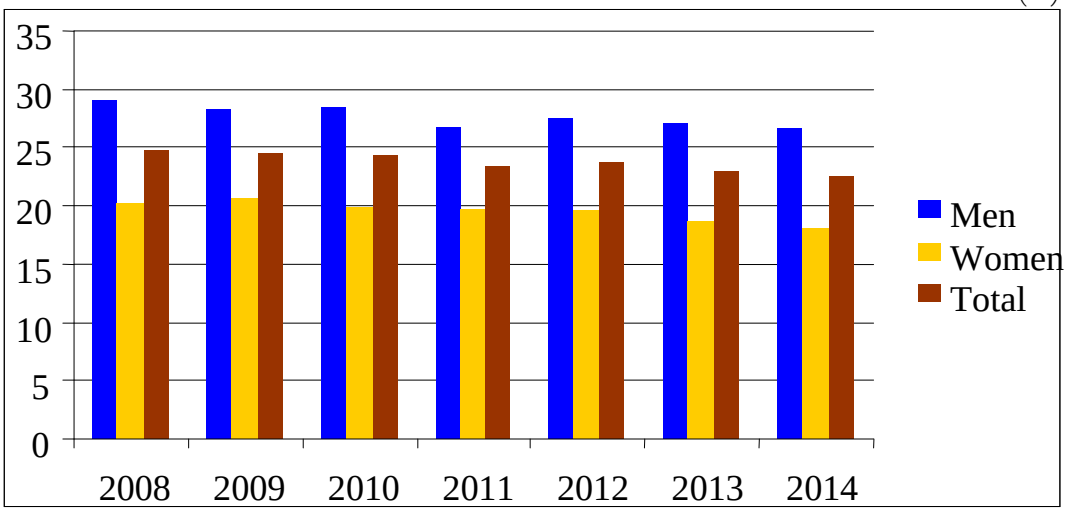


Data source: Eurostat statistics, (online data code: [yth_empl_010])

Also in Romania the employment rate of the youths with ages between 15 and 24 years of age diminished during the last years, so that in the year 2014 it reached 22.5% (by 1.3 pp less than in the year 2008 and by 0.4 pp less against the year 2013) (Figure 2). The economic recession had as effect also the diminishment of the employment rate on genders, and in Romania this process was more marked than the EU-28 average. Thus, in the year 2008, the gap between the employment rate for young men and the one for young women was of 8.9 pp in Romania, against 5.8 pp in EU-28, and of respectively 8.6 pp against 3.7 pp in the year 2014.

Figure 2. Evolution of the youths' employment rate (15-24 years) in Romania

(%)



Data source: Eurostat statistics, (online data code: [lfsi_emp_a])

For many youths who have temporary or part-time jobs, this period can be seen as an important stage towards permanent labour force employment. Nevertheless, temporary contracts limit the financial and personal autonomy of the youths. Moreover, under the conditions in which the period of temporary contract repeatedly fails to turn into permanent contractual labour relationships, this period contributes to a certain extent to the phenomenon of discouraging the youths who might abandon searching for permanent employment, the implications being significant at individual, family and community level.

In the years preceding the crisis, the share of youths who were employed in temporary jobs increased significantly in Europe. Even if after the year 2008 the European economies entered into recession, still the share of youths. The increase was particularly high in countries such as Slovakia (by 15.6 pp), Czech R. (by 13.5 pp), Spain (by 13.4 pp) and Italy (by 11.4 pp), the share of youths employed in temporary jobs, as opposed to permanent jobs being a lot higher in the year 2014 than in the year 2007, in almost all member-states (save for Denmark, Germany and Austria, where diminishments by 3.5 pp, 1.5 pp and, respectively 0.5 pp were recorded). The ascending trend was maintained also in Q1 2015 when 42.5% from the employed youths (with ages between 15 and 24 years) had temporary contracts in the EU-28, compared with 10.8% among those with ages between 25 and 64 years. In countries such as Poland, Spain, Slovenia and Portugal, the level of temporary employment among youths with ages between 15 and 24 years in Q1 2015 is much above the European average (over 60%) (Table 1).

Labour force employment in the part-time system is less attractive for the age segment 15 to 24 years, the average of the employment rate at EU-28 level being of 32.7% in Q1 2015 (Table 1). On the other hand, the gap between the labour force employment rate with part-time among young workers and elderly ones is not as wide as in the case of temporary contracts: 14.4 pp against 31.7 pp. The employment of young labour force in the part-time system gained much field in countries such as the

Netherlands, Denmark, Sweden, Finland and Ireland where over 40% of the employees are active on the labour market in this system (Table 1).

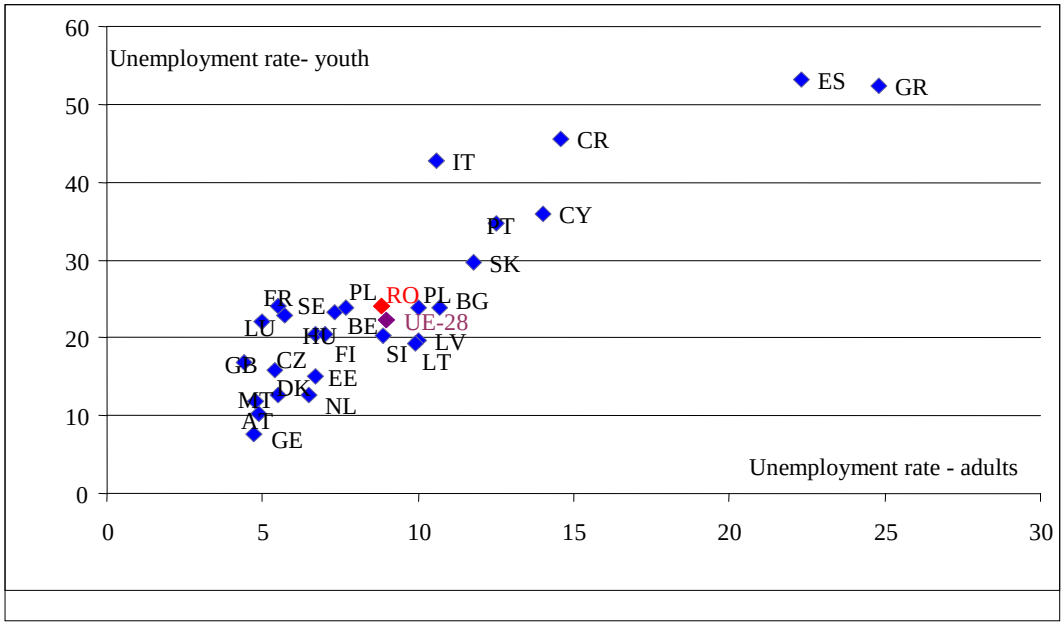
The lack of length of service, the specifics of the company's human capital, the experience in the labour market of the youths, the higher probability of working within the company for a determined period of time, and other forms of employment under precarious conditions are but few of the factors leading to an increase in the numbers of unemployed among youths.

Under such circumstances, the transition from school to labour market tends to turn into a chain of intermittent episodes of training, education, compulsory military or civil service, or of voluntary service, of other temporary activities, often in an institutional framework characterised most times by fixed dates of entry which are outside the market and which don't take into account the demands of the labour market. Under these circumstances, the youths gain much too less experience in searching for a job and don't develop a clear image about the job and/or incomes that would satisfy them. To these is added also the fact that in some countries the youths have less resources than elderly workers, and in others they have a strong financial attachment to the family, which makes them less mobile in searching for a job.

The unemployment rate for the age segment under 25 years at EU-28 level was of 22.2% in the year 2014, on increase by 6.6 pp against the year 2007, but on slight decrease (-1.4 percentage points) against the year 2013. For the age group 15-29 years, the unemployment rate increased in the period 2007-2014 by 5.5 pp, and its diminishment in 2014 against the preceding year was of only 1%. Also in Romania, in the year 2014 the unemployment rate among youths with ages between 15-24 years was of 24.0%, and for the age group 25-29 years of 10.5%, on increase by 5.4 pp, respectively 3.8 pp against the year 2007. On age groups, the unemployment among young women was higher for the age group 15 to 24 years, the increase in the year 2014 against 2007 being for this segment of young women of 6.4 pp (against 4.4 pp for the age segment 25 to 29 years).

In most member-states also in 2014 the unemployment rate among youths continued to increase, as they were faced with extremely high rates of unemployment. If adults registered an unemployment rate of 9% in 2014, the youths were facing an unemployment rate of 22.2% (Figure 3). This means that the ratio between the youths' unemployment rate and the one of adults is of 2.47 in EU-28. The ratio was almost 4 times or even higher in a series of countries: especially in Great Britain (3.84), Sweden (4.02), Italy (4.03), Romania (4.63), and Luxemburg (4.4) (Figure 3). The value of this ratio in Romania places the country on the second position among the member-states (after Luxemburg).

Figure 3. Unemployment rate in EU-28 countries, in the year 2014, (%)



Data source: Eurostat statistics, (online data code: [lfsa_urgan])

In other countries, the value of this ratio is under 2: Germany (1.64), Lithuania and the Netherlands (1.95) and Latvia (1.96). The unemployment rate among youths recorded large differences between countries: under 10% in Germany (7.7%), Austria (10.3%), Denmark (12.6%), Estonia (15%), or exceeded 40%: Italy (42.7%), Croatia (45.5%), Greece (52.4%), and Spain (53.2%) (Figure 3). Also in the year 2014, in EU-28, the unemployment rate among young women was slightly lower than for young men (in average by 1.4 pp).

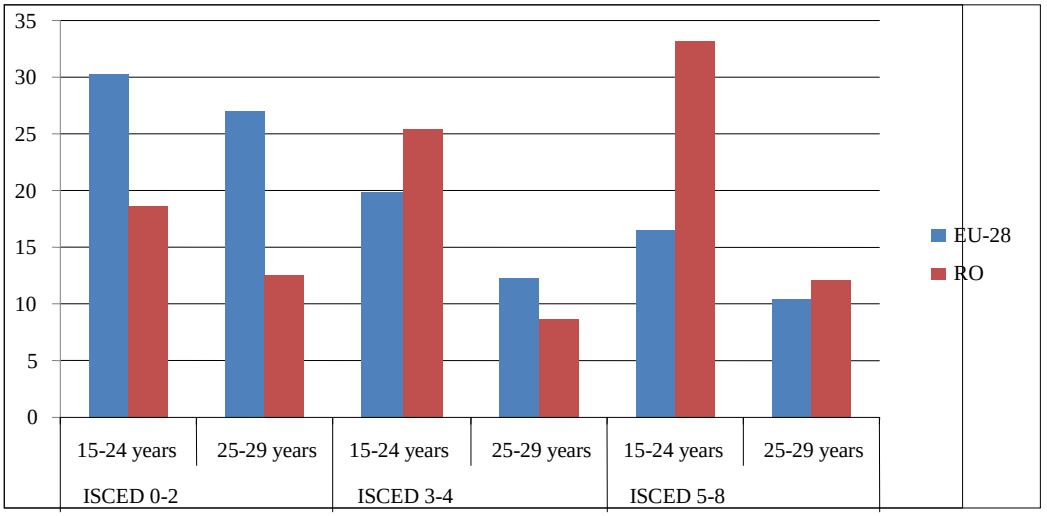
The persistence of uncertain and fragile economic conditions, including on the labour market in many countries triggered an unprecedented increase in the duration of unemployment. In the year 2014, 49.5% out of the unemployed were classified as in long-term unemployment, the highest value being recorded in Greece (73.5%), Slovakia (70.2%), Italy (61.4%) and Bulgaria (60.4%). In Romania, the weight of long-term unemployment in total unemployed was of 41.1%. By contrast, long-term unemployment was lower than 25% only in Sweden (18.9%) and Finland (22.4%), countries that have tradition in adopting active labour market policies that aim to decrease long-term unemployment.

The average of the long-term unemployment rate among youths (15 to 29 years of age) in the EU-28 was of 6.9% in most member-states, as these recorded some slight decreases against the preceding year. The long-term unemployment rate among youths continued to increase in Greece (29.4%), Italy (18.5%). In Romania, the long-term unemployment rate among youths was of 6%, on decrease by 0.7 pp against the preceding year.

Youths' unemployment depends also on their training level. For the age group 15-24 years of age, in general, the highest unemployment is recorded among youths with only

pre-school, primary and lower-secondary education (levels 0-2). The exceptions are Greece and Cyprus, where the unemployment rate among youths with average education (levels 3 - 4) was by approximately 2.9 pp higher, respectively 3.3 pp, than the one recorded for youths with pre-school, primary and lower-secondary education (levels 0-2). In Slovenia and Slovakia, is highlighted a higher number of unemployed with higher education against the numbers of unemployed with average education. Romania is the only country where there are significant differences between the weight of young unemployed with higher education and those with average education from level 0 to level 2, or the levels 3 and 4 (Figure 4). For the age group 25-29 years, in the year 2014, in the majority of countries the weight of unemployed with higher education is smaller than the one of the unemployed with ISCED levels 0-2 or 3-4. In Italy, Romania, Slovenia, Denmark, Cyprus and Croatia also for this age segment of youths, the unemployment among those with higher education is higher than the one of those with average education.

Figure 4. The unemployment rate on educational levels in Romania and EU-28, in the year 2014, (%)



Data source: Eurostat statistics, (online data code: [yth_empl_90])

According to the statistics of the National Employment Agency, by the end of the year 2014, 78184 youths under the age of 25 years were recorded and 39024 youths with ages between 25 and 29 years of age. From among these, 5933, respectively 5611 individuals had higher education, against 33733 and 26796 with primary, lower-secondary and vocational education. The weight of youths in long-term unemployment was, by the end of 2014 of 14.77%.

3. Conclusions

After the outbreak of the economic-financial crisis, almost all member-states registered a considerable increase of the unemployment rate among youths which in the year 2014, at European level, reached the value of 22.2%. In some countries, such as

Greece and Spain, the unemployment rate among youths increased to over 50%. The only notable exceptions in this general trend are Austria and Germany, countries where there is a strong dual education system (in a company existing the combination between apprenticeship and vocational training) that aims all youths and which succeeded to maintain a low level of the unemployment rate for this age category also during the crisis. To this form of education were added also provisions of social nature and of labour legislation to various additional types of social contributions that encourage and even make necessary the direct and active involvement of young unemployed in identifying jobs depending on their skills and competencies.

In the recent recession, unemployment affected all youths irrespective of their training level. Even if there is wide consensus with respect to the higher degree of insertion for youths with higher education level on the labour market, against those with lower education levels, still in some countries the current crisis seems to contradict this consensus. Unemployment among youths increased dramatically even among higher education graduates, under the conditions in which the employment perspectives on labour market were considerably diminished.

Even if after the year 2008 European economies entered into recession and wide scale losses of jobs, still the share of youths employed with temporary contracts continued to record slight increases. The increase was particularly high in countries such as Slovakia (by 15.6 pp), Czech Republic (by 13.5 pp), Spain (by 13.4 pp) and Italy (by 11.4 pp), and the share of youths employed in temporary jobs, by contrast to those in permanent jobs was higher in 2014 than in 2007, in almost all member-states (save for Denmark, Germany and Austria where diminishments were registered by 3.5 pp, 1.5 pp, respectively 0.5 pp).

The employment of labour force in the part-time system is less attractive for the age segment 15-24 years, the average employment rate at EU-28 level in Q1 2015 being of 32.7%. On the other hand, the gap in labour force employment rate average for part-time between young employees and elderly is not as high as in the case of temporary contracts: 14.4 pp against 31.7 pp. But, in the Netherlands, Denmark, Sweden, Finland and Ireland the youths labour force employment in the part-time system gained in importance, over 40% of the youths being employed in this system.

The unemployment rate among youths affected differently the youths on age groups. Thus, the average of the unemployment rate at EU-28 level was of 22.2% in 2014 for the age group 15-24 years, (on increase by 6.6 pp against 2007, but on slight decrease, by 1.4 pp against 2013) and of 13.6% for the age segment 25-29 years (which increased by 4.9 pp in the period 2007-2014, and its diminishment in 2014 against the preceding year was of only 1%).

Also in Romania, in 2014, the unemployment rate among youths with ages between 15 to 24 years of age was of 24% and for the age group 25-29 years of age of 10.5%, on increase by 5.4 pp, respectively 3.8 pp against the year 2007. Differentiations of the unemployment rate were shown also between young men and young women: the unemployment among young women was higher for the age group 15 to 24 years, the increase in 2014 against 2007 being of 6.4 pp (against 4.4 pp for the age segment 25 to 29 years).

In the year 2014, the percentage of youths that were not professionally employed, nor in education within the EU-28 varied from 6.4% for the age group 15 to 19 years, to 20.3% for youths with ages between 25 and 29 years. This percentage varies significantly

from one member-state to the other, on each age category. In Romania, 24.6% from the youths with ages between 25 and 29 years were included into the NEET category. The emergence, size and structure of the NEET category are generated by a series of social, economic, personal and family factors.

References

Anuarul Statistic al României, 2007-2014, Institutul Naţional de Statistică;

Baza de date online-TEMPO online, Institutul Naţional de Statistică, www.insse.ro;

Benedikt F.C., Osborne M. A. (2013). *The Future of Employment: How susceptible are jobs to computerization*?, http://www.oxfordmartin.ox.ac.uk;

Caitlin F., Mark J. B. & Christine E. K. (2012). *Parent resources during adolescence: effects on education and careers in young adulthood*, Journal of Youth Studies, DOI: 10.1080 /13676261.2012.704989, To link to this article: http://dx.doi.org/;

Comisia Europeană, Propunere privind revizuirea normelor UE privind recunoaşterea calificărilor profesionale (COM (2011) 883 final din 20 decembrie 2011), www.ec.europa.eu;

Council Decision 2010/707/EU of 21 October 2012, *On guidelines for the employment policies of the Member States*, http://eur-lex.europa.eu;

Eurofound (2011), *Young people and NEETs in Europe: First findings*, Eurofound, Dublin, http://www.eurofound.europa.eu/publications;

Eurofound (2012), *Evaluation of the effectiveness of policy measures implemented by Member States to increase the employability and to promote a higher employment participation of young people in Europe,* Eurofound, Dublin, http://www.eurofound.europa.eu;

Eurofound (2015), *Young people and 'NEETs'*, http://www.eurofound.europa.eu/young-people-and-neets-1;

Europa 2020 - A strategy for smart, sustainable and inclusive growth, http://eur-lex.europa.eu

European Commission (2012), *Commission staff working document accompanying the document Proposal for a Council recommendation on establishing a Youth Guarantee*, SWD(2012) 409 final, Brussels, www.europa.eu;

Giovanni S. F. B., Marelli E. şi Signorelli M. (2013). *Young People in Crisis: NEETs and Unemployed in EU Regions,* Paper to be presented at: 53rd ERSA Congress 27-31 August 2013 - Palermo, Italy, http://www-sre.wu.ac.at;

Global Employment Trends 2014: Risk of a jobless recovery? / International Labour Office. Geneva: ILO, 2014, www.ilo.org;

*Promoting better labour market outcomes for youth***,** Organisation for Economic Co-operation and Development International Labour Organization, august 2014, Report on youth employment and apprenticeships prepared for the G20 Labour and Employment Ministerial Meeting Melbourne, Australia, 10-11 September 2014, www.oecd.org/g20;

Salvatore L. (2013). *The situation of Young NEETs in Europe: characteristics, costs and policy responses*, Eurofound, 2013, www.oireachtas.ie;

Schmillen A. & Umkehrer M. (2013). *The Scars of Youth — Effects of Early-Career Unemployment on Future Unemployment Experience*, IAB Discussion Paper Articles on labour market issues, 6/2013, www.iab.de;

Statistici Eurostat,www.eu.europe.eu;

Strategia Națională în domeniul politicii de tineret pentru perioada 2015 – 2020, www.unicef.ro;

World employment and social outlook: Trends 2015 / International Labour Office. – Geneva: ILO, 2015;

Young people and NEETs in Europe: European Foundation for the Improvement of Living and Working Conditions, TJ-32-11-956-EN-C, www.eurofound.europa.eu,

Youth on the Move, An initiative to unleash the potential of young people to achieve smart, sustainable and inclusive growth in the European Union, European Union, 2010, www.europa.eu/youthonthemove;

Youth Opportunities Initiative, Communication From The Commission To The European Parliament, The Council, The EuropeanEconomic And Social Committee And The Committee Of The Regions**,** Brussels, 20.12.2011, COM(2011) 933 final, www. ec.europa.eu/social;

ECONOMIC COMPETITIVENESS IN THE REGIONAL AND GLOBAL CONTEXT

Ion PÂRȚACHI[1]
Eugeniu GÂRLĂ[2]

Abstract

In present time Global Competitiveness Index (GCI) includes factors of both macro and micro level and, since 2005 World Economic Forum uses this index to measure competitiveness. However, each country or economic system has particularities of their economic development, so different countries differ in their set of indicators. In making decisions, the most important is the composition of competitiveness rankings, often countries are being ranked as compared to a certain standard. In this study, the authors come up with a new approach embodied in the unique concept of evaluation of competitiveness and economic convergence. They also propose a new formula of calculation, where traditional indicators of competitiveness are taken into account simultaneously with parameters related to convergence, expressed by the distance of the development parameters of the entity from the given standard.

Keywords: competitiveness, security, financial stability, econometric models, stochastic models, optimization models.

Rezumat

Global Competitiveness Index (GCI), ICG - Indicele Competitivității Globale include acum factori atât la nivel micro precum și macro și, începând cu anul 2005 World Economic Forum utilizează acest indice la măsurarea competitivității. Dar fiecare țară sau sistem economic are anumite particularități privind dezvoltarea economică, deci, diferite țări se deosebesc prin setul de indicatorii caracterizanți. De menționat, că în procesul de luare a deciziilor, în primul rând de alcătuire a clasamentului competitivității, cel mai des partajarea țărilor se face prin compararea cu un anumit etalon. În prezentul studiu autorii vin cu o abordare nouă concretizată în concept unic de evaluare a competitivității și convergenței economice, se propune, de asemenea, o nouă formulă de calcul, în care alături de indicatorii tradiționali ai competitivității figurează concomitent și parametrii legați de convergență, exprimați prin distanța parametrilor de dezvoltare ai entității de la etalonul dat.

Cuvinte-cheie: Competitivitate, securitate, Stabilitate financiara, modele econometrice, modele stohastice,modele de optimizare.

JEL: C02,C63,E27,E32

[1] Ph.D. *ASEM, Chisinau, Republic of Moldova,ipartachi@ase.md.*
[2] Ph.D. ASEM, Chisinau, Republic of Moldova,*stiinta@ase.md.*

1. Introduction

The modern economies of the highest level, primarily the knowledge-based ones, the development strategies that accompany them presuppose the existence of a nucleus which constitutes, for instance, the "engine of convergence" in the EU, "innovation" in China, etc. For the Republic of Moldova, the authors propose to use as a nucleus the *Optimal Economic Growth Model (Optimal Economic Growth Model - PG*), composed of five main blocks: *Human Development Index, Inflationary Phenomenon Prediction, Competitiveness Assessment, Development through Convergence, and Economic Security*, adding the genuine reform and the economic mechanisms specific to the completion of the transition phase. The development strategy of an entity in the globalization era is inextricably linked to the evaluation of its effectiveness, most often carried out by means of competitiveness. However, each country or economic system is particular through its economic development, so the various countries are distinguished by the relevant economic indicators. Based on these considerations, we argue the necessity to elaborate and describe an appropriate competitiveness evaluation methodology, as well as the need for new methods and models for competitiveness assessment. Presently, there is not a univocal position on this topic, even if some methodologies, methods and models are supported by the best known international financial structures, while others remain only formulated on the pages of scientific journals.

On indicators. The indicator is a quantitative characterization of the properties of an object as well as the socioeconomic process, a measure qualitatively defined as a result of the measuring or performing calculations. The indicator represents a measure with a single quantitative value, but with multiple qualitative characteristics. The economic category, which is composed of one or more indicators, reflects one of the basic components of the economic relations. Along with defining the structures, the economic categories establish links among themselves as well as with other simple indicators. Thus, a set of categories (the institutional system, the infrastructure, the macroeconomic stability, health and primary education, the higher education, the goods market, the efficiency, the labor market, the financial market, the level of technological readiness, the market size, and the conditions for business innovation) determines the structure of competitiveness. Moreover, the structure represents an invariant of the economic system and the characterizing indicators constitute a subset of all the possible logically interrelated indicators.

The set of indicators by Sala-i-Martin. In the field of competitiveness, firstly Porter, and later Sala-i-Martin proposed a set of indicators which are very well fitted together, well-structured and hierarchically organized, with a detailed description of the links between them. The Global Competitiveness Index (GCI) includes factors both at micro and macro and is used to measure the competitiveness.

The aggregation of indicators. In the process of calculations it is often proceeded from aggregation. It is desirable however, that the indicators, whatever they are, to be subjected only to mathematical operations, without having to perform any stage of aggregation. Or, it is known that any aggregation approximates the original data and never, even theoretically, expresses their primary essence and only provides an approximate description of the economic situation, furthermore the substantial decrease in the number of the admissible variables and restrictions diminishes much the essence of the base indicators.

The existing methods solve this methodological difficulty only partially, thus in order to avoid slipping too much into the field of the permissible values in the aggregation process, the restrictive formulas which use the weighted average of the economic indicators have been proposed, for example the formulas by R. Yager are most commonly used when analyzing the competitiveness (General Competitiveness Index - GCI). This score is calculated separately based on three factors: essential, of efficiency, innovational, each group being limited by the above factors as a share in the stage of the economic development of the country, respectively being based mainly on production as such, production efficiency or innovation. The Republic of Moldova, for example, has an importance of the determinant factors of competitiveness given by the limit-coefficients (in%):

$$60_{\text{production}}+35_{\text{efficiency}}+5_{\text{innovation}}=100_{\text{total}}.$$

Thus: $GCI_{moldova}$, devided by 100 shows:

$$GCI_{moldova} = 0.6*Basic_{moldova} + 0.35*Effciency_{moldova} + 0.05*Innovation_{moldova},$$

Basic, Efficiency, Innovation meaning the numeric value for the weighted average of the groups of production, efficiency and innovation indicators at the level of national economy. The formulas for the 12 pillars of competitiveness are analogically deducted. Specifically, for each series of the above factors, it is calculated as follows: production (25% + 25% + 25% + 25% = 100%); efficiency (17% + 17% + 17% + 17% + 17% + 17% ≈ 100%); innovation (50% + 50% = 100%). In the process of establishing these coefficients, initially the influence of the pillars on the economy is investigated, then the percentage of economic sectors in the national GDP is calculated, and for the evaluation of the final GCI: the GDP, GDP per capita, population, and market size are taken into account. This methodology generates much subjectivity, the procedure of determining the robustness of indicators being regarded as a difficult problem.

2. A new approach based on the distance from the standard

In the field of the comparative analysis of the economic research, most often the comparison with a benchmark is made, after which the homogeneity, the degree of closeness / removal from the standard, etc. is calculated. In terms of mathematics, the comparison with the standard is carried out through the use of the norm. There are various definitions of the norm $\|x\|$ of a vector x, of these the norm defined as the sum of the squares of the components x_1, …, x_n is the most appropriate to the problem addressed by the survey, due to the continuity of the respective function together with its derivatives, as well as various methods and models, however, the model proposed by Krugman is closest to the approach proposed by the authors.

3. The Solving Model (PG)

1) The mathematical formula (C) for competitiveness rankings:

$$C=\frac{\sum_{l=1}^{L} k_l * (\frac{x_l}{x_{l0}} - 1)^2 * 100\%}{L},$$

here L is the number of indicators, however in the above mentioned studies a country with a lower C will be placed. Using the described formula, the national competitiveness for the years of 2012-2013 was calculated (NC), the initial data is taken from WEF sources. We used as the benchmark the indicators of value of the best placed country (Switzerland) according to the World Economic Forum.

2) The PG Model [Gârlă, 2012, p. 71] itself is an optimization one, with the objective function *min f(x),* called Sustainable Competitiveness Index – SCI

$$min\ f(x) = \| x - x^0 \|^2.$$

In the optimization process, the indicators of the vector *x*, or some of them will be connected by linear and nonlinear dependencies g_k, which in their general form show: the restrictions in the form of equality

$$g_k(x) = 0, \quad k = \overline{1,m},$$

are equivalent to the dependencies related to the relationship between different indicators;

the restrictions in the form of inequality are of the type

$$0 \le x_i \le a_i, \quad i = \overline{1,n},$$

here a_i is the up / down limit of the indicator *i*, and it is equivalent to the introduction of its variation intervals.

Table 1 (**Anex** 1) shows how, by using the method described for each country, the optimal vector of Sustainable Competitiveness Index – SCI can be calculated for the 12 pillars for the years of 2012-2013; it is marked with green and compared with the real index of the same period marked with red. These calculations are based on the assumption that the value SCI does not change rapidly over time, i.e. the sustainable competitiveness of the entity coincides with the real one, taken from the WEF sources [Report, 2013, pp. 70-89], however, the value of the pillars can be optimized, in a particular sense, by measuring the minimum distance from the preset standard, which actually corresponds to a better distribution of the weight of pillars to the evaluation of the economic performance of the given entity. Moreover, given that the medium to long term sustainable competitiveness is always constrained by the social and environmental limitations, and that in its evolution, SCI reflects more the economic potential of the entity than the situation at the moment, this method can be used in predicting the economic developments in countries in the near or more distant perspective, ranging the numerical value of SCI and thus obtaining different development scenarios.

Bibliographic references:

1.Gârlă E.,(2012). *Nonlinear optimization with special restrictions for comparative research in economics*, Self-reference of PhD thesis in economics, AESM, Chişinău, p. 159

2.The Global Competitiveness Report. (2013.World Economic Forum, Geneva, Switzerland

Anex 1 - Table 1 Optimality

□ - real, □ -optimal

: Country:	Ind.1 :	Ind.2 :	Ind.3 :	Ind.4 :	Ind.5 :	Ind.6 :	Ind.7 :	Ind.8 :	Ind.9 :	Ind.10 :	Ind.11 :	Ind.12:
Switzerland	5,75	6,22	6,38	6,54	5,9	5,26	5,9	5,3	6,02	4,52	5,79	5,78
	5,6675	6,0975	6,2575	6,3275	5,7775	5,1975	5,3975	5,4475	5,8875	6,5275	5,3975	5,3775
Netherlands	5,72	6,18	5,2	6,6	5,79	5,29	4,99	4,96	5,98	5,11	5,63	5,31
	5,450833	5,880833	6,040833	6,110833	5,560833	4,980833	5,180833	5,230833	5,670833	6,310833	5,180833	5,160833
Singapore	6,07	6,5	6,06	6,73	5,93	5,6	5,8	5,85	6,1	4,61	5,14	5,39
	5,7025	6,1325	6,2925	6,3625	5,8125	5,2325	5,4325	5,4825	5,9225	6,5625	5,4325	5,4125
Sweden	5,73	5,69	6,16	6,46	5,75	5,14	4,81	5,29	6,29	4,62	5,56	5,56
	5,475833	5,905833	6,065833	6,135833	5,585833	5,005833	5,205833	5,255833	5,695833	6,335833	5,205833	5,185833
Finland	6,03	5,58	5,7	6,82	6,18	5,05	5	5,5	5,92	4,18	5	4,91
	5,376667	5,806667	5,966667	6,036667	5,486667	4,906667	5,106667	5,156667	5,596667	6,236667	5,106667	5,086667
Austria	5,04	5,8	5,35	6,32	5,48	4,91	4,69	4,65	5,7	4,62	5,52	5,07
	5,15	5,58	5,74	5,81	5,26	4,68	4,88	4,93	5,37	6,01	4,88	4,86
Taiwan	5	5,72	5,51	6,45	6,68	5,26	4,84	4,98	5,44	5,24	5,18	4,99
	5,335	5,765	5,925	5,995	5,445	4,865	5,065	5,115	5,555	6,195	5,065	5,045
Zealand	6,06	5,18	4,75	6,63	5,66	5,35	5,19	5,48	5,47	3,82	5,78	4,43
	5,204167	5,634167	5,794167	5,864167	5,314167	4,734167	4,934167	4,984167	5,424167	6,064167	4,934167	4,914167
Norway	5,66	5,19	6,6	6,34	5,61	4,79	4,98	5,42	5,78	4,31	5,05	4,96
	5,278333	5,708333	5,868333	5,938333	5,388333	4,808333	5,008333	5,058333	5,498333	6,138333	5,008333	4,988333
Britain	5,41	6,22	4,01	6,39	5,57	5,09	5,42	5,16	6	5,78	5,48	5,17
	5,3625	5,7925	5,9525	6,0225	5,4725	4,8925	5,0925	5,1425	5,5825	6,2225	5,0925	5,0725
Australia	5,27	5,7	5,57	6,46	5,64	4,87	4,6	5,35	5,61	5,1	4,61	4,51
	5,161667	5,591667	5,751667	5,821667	5,271667	4,691667	4,891667	4,941667	5,381667	6,021667	4,891667	4,871667
Katar	5,77	5,12	6,66	6,29	4,94	5,24	5,01	5,12	5,28	4,01	5,33	4,71
	5,1775	5,6075	5,7675	5,8375	5,2875	4,7075	4,9075	4,9575	5,3975	6,0375	4,9075	4,8875
Eau	5,5	6,12	6,41	6,08	4,9	5,31	5,24	4,74	5,05	4,41	5,1	4,18
	5,140833	5,570833	5,730833	5,800833	5,250833	4,670833	4,870833	4,920833	5,360833	6,000833	4,870833	4,850833
Luxembourg	5,6	5,84	6,18	6,2	4,74	5,32	4,65	5,21	6,21	3,07	4,96	4,82
	5,120833	5,550833	5,710833	5,780833	5,230833	4,650833	4,850833	4,900833	5,340833	5,980833	4,850833	4,830833
Malaysia	4,94	5,09	5,34	6,16	4,83	5,16	4,82	5,44	4,31	4,78	5,02	4,38
	4,91	5,34	5,5	5,57	5,02	4,44	4,64	4,69	5,13	5,77	4,64	4,62
Ireland	5,22	5,34	3,44	6,46	5,3	5,24	5	3,6	5,82	4,13	5,1	5,57
	4,905833	5,335833	5,495833	5,565833	5,015833	4,435833	4,635833	4,685833	5,125833	5,765833	4,635833	4,615833

Hong Kong	5,53	6,72	6,07	6,24	5,26	5,44	5,65	5,89	6,16	4,82	3,74	3,61
	5,315	5,745	5,905	5,975	5,425	4,845	5,045	5,095	5,535	6,175	5,045	5,025
Saudi Arabia	5,35	5,23	6,55	5,82	4,79	5,12	4,47	4,88	4,91	4,85	4,91	4,03
	4,963333	5,393333	5,553333	5,623333	5,073333	4,493333	4,693333	4,743333	5,183333	5,823333	4,693333	4,673333
Israel	4,75	4,89	4,72	6,04	5,07	4,51	4,61	5,03	5,23	4,3	4,75	3,73
	4,69	5,12	5,28	5,35	4,8	4,22	4,42	4,47	4,91	5,55	4,42	4,4
Czech	3,67	4,81	5,19	5,87	4,87	4,53	4,32	4,25	5,06	4,51	5,41	5,08
	4,685	5,115	5,275	5,345	4,795	4,215	4,415	4,465	4,905	5,545	4,415	4,395
US	4,59	5,81	3,97	6,11	5,72	4,88	5,37	5,07	5,84	6,93	5,34	5,5
	5,315	5,745	5,905	5,975	5,425	4,845	5,045	5,095	5,535	6,175	5,045	5,025
Tajikistan	3,96	2,66	3,82	5,43	3,86	4,04	4,55	3,35	2,97	2,57	3,71	3,22
	3,565833	3,995833	4,155833	4,225833	3,675833	3,095833	3,295833	3,345833	3,785833	4,425833	3,295833	3,275833
Puerto Rico	4,61	4,18	5,04	5,61	5,19	4,86	4,6	4,69	4,7	3,6	4,92	4,35
	4,583333	5,013333	5,173333	5,243333	4,693333	4,113333	4,313333	4,363333	4,803333	5,443333	4,313333	4,293333
Denmark	5,4	5,74	5,4	6,19	5,59	5,03	5,22	4,69	6,19	4,22	3,8	2,69
	4,900833	5,330833	5,490833	5,560833	5,010833	4,430833	4,630833	4,680833	5,120833	5,760833	4,630833	4,610833
Chile	4,97	4,62	6,15	5,64	4,72	4,74	4,68	4,73	4,48	4,44	4,25	3,85
	4,66	5,09	5,25	5,32	4,77	4,19	4,39	4,44	4,88	5,52	4,39	4,37
Canada	5,52	5,84	4,9	6,58	5,57	5,12	5,45	5,28	5,6	5,45	3,34	2,68
	4,998333	5,428333	5,588333	5,658333	5,108333	4,528333	4,728333	4,778333	5,218333	5,858333	4,728333	4,708333
Belgium	5	5,68	4,66	6,75	5,81	5,12	4,54	4,68	5,57	4,81	3,23	3,01
	4,7925	5,2225	5,3825	5,4525	4,9025	4,3225	4,5225	4,5725	5,0125	5,6525	4,5225	4,5025
Japan	5,13	5,92	3,67	6,6	5,28	4,98	4,89	4,63	5,7	6,13	4,16	3,32
	4,921667	5,351667	5,511667	5,581667	5,031667	4,451667	4,651667	4,701667	5,141667	5,781667	4,651667	4,631667
Bahrain	5,13	5,19	5,5	6,07	4,93	5,1	4,89	4,99	4,72	2,86	4,34	3,13
	4,625	5,055	5,215	5,285	4,735	4,155	4,355	4,405	4,845	5,485	4,355	4,335
Germany	5,31	6,36	5,48	6,3	5,8	4,92	4,51	4,66	5,71	6,02	3,57	2,96
	5,020833	5,450833	5,610833	5,680833	5,130833	4,550833	4,750833	4,800833	5,240833	5,880833	4,750833	4,730833
Spain	4,25	5,92	4,17	6,09	5,02	4,37	3,98	3,9	5,29	5,45	4,51	3,77
	4,614167	5,044167	5,204167	5,274167	4,724167	4,144167	4,344167	4,394167	4,834167	5,474167	4,344167	4,324167
Oman	5,29	5,04	6,56	5,88	4,33	4,86	4,66	4,74	4,26	3,55	4,38	3,44
	4,636667	5,066667	5,226667	5,296667	4,746667	4,166667	4,366667	4,416667	4,856667	5,496667	4,366667	4,346667
Portugal	4,28	5,5	3,87	6,19	5,98	4,31	3,8	3,71	5,27	4,34	4,17	3,86
	4,494167	4,924167	5,084167	5,154167	4,604167	4,024167	4,224167	4,274167	4,714167	5,354167	4,224167	4,204167
Cyprus	4,59	4,8	3,86	6,5	4,98	4,68	4,57	4,56	4,85	2,81	4,45	3,81
	4,425833	4,855833	5,015833	5,085833	4,535833	3,955833	4,155833	4,205833	4,645833	5,285833	4,155833	4,135833

Lithuania	4,01	4,74	4,57	6,05	5,15	4,36	4,41	3,86	5	3,53	4,16	3,51
	4,333333	4,763333	4,923333	4,993333	4,443333	3,8635	4,063333	4,113333	4,553333	5,193333	4,063333	4,043333
Korea	3,98	5,92	6,25	6,49	5,52	4,75	4,35	4,06	5,7	5,6	3,88	2,84
	4,8325	5,2625	5,4225	5,4925	4,9425	4,3625	4,5625	4,6125	5,0525	5,6925	4,5625	4,5425
Slovenia	4,05	4,91	4,94	6,29	5,2	4,42	4,15	3,29	4,96	3,46	4,18	3,85
	4,3625	4,7925	4,9525	5,0225	4,4725	3,8925	4,0925	4,1425	4,5825	5,2225	4,0925	4,0725
Island	5,09	5,39	3,73	6,58	5,6	4,47	5,1	3,74	5,99	2,36	4,31	3,56
	4,5475	4,9775	5,1375	5,2075	4,6575	4,0775	4,2775	4,3275	4,7675	5,4075	4,2775	4,2575
Panama	3,92	4,82	4,88	5,7	4,22	4,59	4,17	4,88	4,87	3,42	4,21	3,46
	4,315833	4,745833	4,905833	4,975833	4,425833	3,845833	4,045833	4,095833	4,535833	5,175833	4,045833	4,025833
Hungary	3,7	3,39	5,15	5,89	4,67	4,28	4,27	4,05	4,43	4,25	4,71	4,68
	4,343333	4,773333	4,933333	5,003333	4,453333	3,873333	4,073333	4,123333	4,563333	5,203333	4,073333	4,053333
Malta	4,61	4,91	4,6	6,34	4,93	4,62	4,14	5,11	5,59	2,38	4,27	3,43
	4,465	4,895	5,055	5,125	4,575	3,995	4,195	4,245	4,685	5,325	4,195	4,175
Poland	4,11	3,89	4,6	6,03	4,92	4,39	4,48	4,59	4,66	5,12	4,06	3,25
	4,395833	4,825833	4,985833	5,055833	4,505833	3,925833	4,125833	4,175833	4,615833	5,255833	4,125833	4,105833
Estonia	4,94	4,72	6,01	6,21	5,17	4,73	5,11	4,51	5,29	2,98	3,18	2,73
	4,519167	4,949167	5,109167	5,179167	4,629167	4,049167	4,249167	4,299167	4,739167	5,379167	4,249167	4,229167
Georgia	4	4,35	4,4	5,79	3,82	4,18	4,67	3,79	3,71	2,87	5,71	5,42
	4,28	4,71	4,87	4,94	4,39	3,81	4,01	4,06	4,5	5,14	4,01	3,99
Barbados	5,06	5,58	3,32	6,41	5,38	4,29	4,75	4,66	5,14	1,97	4,39	3,56
	4,43	4,86	5,02	5,09	4,54	3,96	4,16	4,21	4,65	5,29	4,16	4,14
Turkey	3,98	4,38	4,86	5,78	4,15	4,55	3,79	4,46	4,29	5,28	4,25	3,33
	4,3125	4,7425	4,9025	4,9725	4,4225	3,8425	4,0425	4,0925	4,5325	5,1725	4,0425	4,0225
France	4,83	6,28	4,64	6,31	5,14	4,47	4,41	4,73	5,72	5,76	2,93	2,35
	4,685	5,115	5,275	5,345	4,795	4,215	4,415	4,465	4,905	5,545	4,415	4,395
Thailand	3,82	4,62	5,55	5,56	4,35	4,56	4,32	4,46	3,56	5,04	4,25	3,19
	4,3275	4,7575	4,9175	4,9875	4,4375	3,8575	4,0575	4,1075	4,5475	5,1875	4,0575	4,0375
Latvia	4,01	4,11	5,06	5,99	4,78	4,42	4,78	4,4	4,73	3,11	4,14	2,68
	4,238333	4,668333	4,828333	4,898333	4,348333	3,768333	3,968333	4,018333	4,458333	5,098333	3,968333	3,948333
South Africa	4,42	4,13	4,67	3,93	3,98	4,68	3,94	5,72	4,01	4,85	4,38	3,55
	4,2425	4,6725	4,8325	4,9025	4,3525	3,7725	3,9725	4,0225	4,4625	5,1025	3,9725	3,9525
Mauritius	4,59	4,32	4,41	5,85	4,29	4,8	4,38	4,65	3,98	2,74	4,3	2,95
	4,159167	4,589167	4,749167	4,819167	4,269167	3,689167	3,889167	3,939167	4,379167	5,019167	3,889167	3,869167
Brazil	3,78	4	4,73	5,43	4,27	3,94	4,39	4,45	4,43	5,63	3,97	3,31
	4,248333	4,678333	4,838333	4,908333	4,358333	3,778333	3,978333	4,028333	4,468333	5,108333	3,978333	3,958333

Croatia	3,52	4,65	4,75	5,81	4,47	3,85	4	3,79	4,36	3,57	4,18	3,36
	4,08	4,51	4,67	4,74	4,19	3,61	3,81	3,86	4,3	4,94	3,81	3,79
Kazahstan	3,96	4,05	6,07	5,37	4,37	4,24	4,18	3,49	4,2	4,14	3,96	3,41
	4,174167	4,604167	4,764167	4,834167	4,284167	3,704167	3,904167	3,954167	4,394167	5,034167	3,904167	3,884167
Uruguay	4,63	4,4	4,72	5,9	4,67	4,38	3,49	3,81	4,44	3,21	3,73	3,18
	4,100833	4,530833	4,690833	4,760833	4,210833	3,630833	3,830833	3,880833	4,320833	4,960833	3,830833	3,810833
Jamaica	3,62	3,59	3,89	5,19	4,12	4,19	4,32	4,3	3,8	2,86	5,8	5,54
	4,155833	4,585833	4,745833	4,815833	4,265833	3,685833	3,885833	3,935833	4,375833	5,015833	3,885833	3,865833
Ukraine	3,13	4,1	4,4	5,78	4,7	3,82	4,44	4,52	4,6	4,6	3,7	3,16
	4,133333	4,563333	4,723333	4,793333	4,243333	3,663333	3,863333	3,913333	4,353333	4,993333	3,863333	3,843333
Italia	3,56	5,19	4,23	6,27	4,73	4,29	3,72	3,57	4,71	5,63	3,82	3
	4,280833	4,710833	4,870833	4,940833	4,390833	3,810833	4,010833	4,060833	4,500833	5,140833	4,010833	3,990833
Mexico	3,59	4,03	5,21	5,71	4,11	4,2	4,01	4,15	3,8	5,58	4,26	3,33
	4,219167	4,649167	4,809167	4,879167	4,329167	3,749167	3,949167	3,999167	4,439167	5,079167	3,949167	3,929167
Slovakia	3,44	3,23	4,87	6,03	4,5	4,37	4,2	4,45	4,46	4	4,02	2,98
	4,1	4,53	4,69	4,76	4,21	3,63	3,83	3,88	4,32	4,96	3,83	3,81
Columbia	3,38	3,44	5,34	5,45	4,37	3,98	4,17	4,1	3,62	4,65	4,46	3,61
	4,101667	4,531667	4,691667	4,761667	4,211667	3,631667	3,831667	3,881667	4,321667	4,961667	3,831667	3,811667
Sri Lanka	4,24	4,13	3,66	5,99	4,06	4,33	3,66	4,46	3,45	3,79	4,6	3,32
	4,028333	4,458333	4,618333	4,688333	4,138333	3,558333	3,758333	3,808333	4,248333	4,888333	3,758333	3,738333
Iran	3,93	4,03	4,83	5,97	4,1	4	3,18	3,35	3,08	5,16	5,09	4,66
	4,169167	4,599167	4,759167	4,829167	4,279167	3,699167	3,899167	3,949167	4,389167	5,029167	3,899167	3,879167
Azerbaijan	3,98	3,94	6,05	5,08	3,91	4,31	4,08	3,73	4,04	3,51	3,91	3,45
	4,053333	4,483333	4,643333	4,713333	4,163333	3,583333	3,783333	3,833333	4,273333	4,913333	3,783333	3,763333
Jordan	4,5	4,17	3,94	5,84	4,49	4,5	4,02	4,11	3,82	3,23	3,58	2,92
	3,980833	4,410833	4,570833	4,640833	4,090833	3,510833	3,710833	3,760833	4,200833	4,840833	3,710833	3,690833
Costa Rica	4,13	3,8	4,68	5,82	4,78	4,3	4,51	3,67	4,45	3,35	3,28	2,71
	4,010833	4,440833	4,600833	4,670833	4,120833	3,540833	3,740833	3,790833	4,230833	4,870833	3,740833	3,720833
China	4,22	4,46	6,22	6,11	4,32	4,31	4,6	4,31	3,5	6,82	3,98	3,17
	4,555833	4,985833	5,145833	5,215833	4,665833	4,085833	4,285833	4,335833	4,775833	5,415833	4,285833	4,265833
Indonesia	3,86	3,75	5,68	5,69	4,17	4,29	3,87	4,07	3,56	5,27	3,68	3,25
	4,149167	4,579167	4,739167	4,809167	4,259167	3,679167	3,879167	3,929167	4,369167	5,009167	3,879167	3,859167
Brunei	4,86	4,2	7	6,16	4,4	4,22	5,07	4,27	3,95	2,39	3,62	2,98
	4,314167	4,744167	4,904167	4,974167	4,424167	3,844167	4,044167	4,094167	4,534167	5,174167	4,044167	4,024167
Morocco	4,12	4,14	4,62	5,53	3,58	4,27	3,84	4,12	3,71	4,11	3,8	2,95

	3,953333	4,383333	4,543333	4,613333	4,063333	3,483333	3,683333	3,733333	4,173333	4,813333	3,683333	3,663333
Philippines	3,57	3,19	5,33	5,31	4,3	4,17	4,01	4,25	3,65	4,26	4,23	2,97
	3,990833	4,420833	4,580833	4,650833	4,100833	3,520833	3,720833	3,770833	4,210833	4,850833	3,720833	3,700833
Botswana	4,82	3,58	4,52	4,6	3,74	4,2	4,46	4,39	3,17	2,94	4,51	3,42
	3,916667	4,346667	4,506667	4,576667	4,026667	3,446667	3,646667	3,696667	4,136667	4,776667	3,646667	3,626667
Montenegro	4,38	4,06	3,85	5,65	4,63	4,42	4,14	4,49	4,15	2,08	3,83	3,31
	3,97	4,4	4,56	4,63	4,08	3,5	3,7	3,75	4,19	4,83	3,7	3,68
India	3,91	3,6	4,25	5,27	3,97	4,21	4,24	4,9	3,36	6,36	4,3	3,61
	4,219167	4,649167	4,809167	4,879167	4,329167	3,749167	3,949167	3,999167	4,439167	5,079167	3,949167	3,929167
Peru	3,44	3,51	5,95	5,38	4,05	4,37	4,56	4,46	3,57	4,4	3,94	2,69
	4,080833	4,510833	4,670833	4,740833	4,190833	3,610833	3,810833	3,860833	4,300833	4,940833	3,810833	3,790833
Bulgaria	3,39	3,79	5,42	5,92	4,31	4,17	4,54	3,97	4,3	3,82	3,01	2,87
	4,013333	4,443333	4,603333	4,673333	4,123333	3,543333	3,743333	3,793333	4,233333	4,873333	3,743333	3,723333
Vietnam	6,31	3,34	4,16	5,77	3,69	4,13	4,51	3,85	3,33	4,63	3,57	3,07
	4,084167	4,514167	4,674167	4,744167	4,194167	3,614167	3,814167	3,864167	4,304167	4,944167	3,814167	3,794167
Trinidad	3,59	4,3	6,09	5,85	4,2	3,92	3,97	4,17	4,06	2,8	3,76	2,9
	4,021667	4,451667	4,611667	4,681667	4,131667	3,551667	3,751667	3,801667	4,241667	4,881667	3,751667	3,731667
Kenya	3,43	3,09	3,39	4,58	3,59	4,1	4,62	4,74	3,27	3,52	4,99	4,94
	3,909167	4,339167	4,499167	4,569167	4,019167	3,439167	3,639167	3,689167	4,129167	4,769167	3,639167	3,619167
Russia	3,09	5,52	5,8	5,75	4,59	3,62	4,23	3,19	4,13	5,76	3,31	3,01
	4,220833	4,650833	4,810833	4,880833	4,330833	3,750833	3,950833	4,000833	4,440833	5,080833	3,950833	3,930833
Romania	3,33	3,22	4,83	5,51	4,36	3,86	4,01	3,98	4,09	4,41	3,47	2,92
	3,886667	4,316667	4,476667	4,546667	3,996667	3,416667	3,616667	3,666667	4,106667	4,746667	3,616667	3,596667
Honduras	3,32	3,12	4,53	5,34	3,43	4,1	3,52	4,43	3,34	3,16	5,09	4,37
	3,866667	4,296667	4,456667	4,526667	3,976667	3,396667	3,596667	3,646667	4,086667	4,726667	3,596667	3,576667
Armenia	3,9	3,71	4,5	5,53	4,22	4,22	4,72	3,97	3,4	2,62	3,7	2,89
	3,835833	4,265833	4,425833	4,495833	3,945833	3,365833	3,565833	3,615833	4,055833	4,695833	3,565833	3,545833
Macedonia	3,8	3,65	5,04	5,59	4,04	4,28	4,13	3,97	3,81	2,85	3,44	2,83
	3,84	4,27	4,43	4,5	3,95	3,37	3,57	3,62	4,06	4,7	3,57	3,55
Kuwait	4,2	4,38	6,58	5,66	4,01	4,14	4,08	4	3,77	3,88	3,18	2,08
	4,050833	4,480833	4,640833	4,710833	4,160833	3,580833	3,780833	3,830833	4,270833	4,910833	3,780833	3,760833
Salvador	3,02	3,93	4,18	5,38	3,45	4,21	3,86	3,95	3,26	3,23	4,2	3,93
	3,770833	4,200833	4,360833	4,430833	3,880833	3,300833	3,500833	3,550833	3,990833	4,630833	3,500833	3,480833
Seychelles	4,25	4,71	4,55	5,95	4,98	4,27	4,54	3,79	3,88	1,38	3,74	2,98
	3,9725	4,4025	4,5625	4,6325	4,0825	3,5025	3,7025	3,7525	4,1925	4,8325	3,7025	3,6825

Bosnia	3,64	3,44	4,31	5,93	4,18	3,92	4,08	3,41	3,84	3,07	3,66	3,13
	3,771667	4,201667	4,361667	4,431667	3,881667	3,301667	3,501667	3,551667	3,991667	4,631667	3,501667	3,481667
Ruanda	5,2	3,22	4,56	5,27	3,21	4,54	5,1	4,44	3,04	2,28	3,91	3,4
	3,901667	4,331667	4,491667	4,561667	4,011667	3,431667	3,631667	3,681667	4,121667	4,761667	3,631667	3,611667
Greece	3,37	4,7	2,42	6,04	4,74	3,92	3,56	3,13	4,54	4,38	4,15	2,98
	3,881667	4,311667	4,471667	4,541667	3,991667	3,411667	3,611667	3,661667	4,101667	4,741667	3,611667	3,591667
Ecuador	3,16	3,51	5,3	5,73	3,84	3,7	3,49	3,58	3,59	3,9	3,77	2,84
	3,755	4,185	4,345	4,415	3,865	3,285	3,485	3,535	3,975	4,615	3,485	3,465
Guatemala	3,25	3,79	4,56	5,34	3,52	4,29	4,16	4,48	3,52	3,54	3,03	2,62
	3,729167	4,159167	4,319167	4,389167	3,839167	3,259167	3,459167	3,509167	3,949167	4,589167	3,459167	3,439167
Namibia	4,19	4,18	4,5	4,44	3,14	4,16	4,33	4,44	3,23	2,57	3,57	2,93
	3,694167	4,124167	4,284167	4,354167	3,804167	3,224167	3,424167	3,474167	3,914167	4,554167	3,424167	3,404167
Serbia	3,16	3,78	3,91	5,73	3,97	3,57	4,04	3,68	4,1	3,64	3,11	2,81
	3,679167	4,109167	4,269167	4,339167	3,789167	3,209167	3,409167	3,459167	3,899167	4,539167	3,409167	3,389167
Cameroon	3,4	2,51	4,79	4,49	3,25	4,15	4,48	3,64	2,73	3,18	4,84	4,64
	3,729167	4,159167	4,319167	4,389167	3,839167	3,259167	3,459167	3,509167	3,949167	4,589167	3,459167	3,439167
albania	3,65	3,48	4,27	5,56	4,11	4,33	4,4	3,38	3,69	2,89	3,59	2,63
	3,719167	4,149167	4,309167	4,379167	3,829167	3,249167	3,449167	3,499167	3,939167	4,579167	3,449167	3,429167
Dominican Republic	3,21	3,02	4,17	5,13	3,69	3,97	4	3,74	3,64	3,66	3,67	2,96
	3,625833	4,055833	4,215833	4,285833	3,735833	3,155833	3,355833	3,405833	3,845833	4,485833	3,355833	3,335833
Mongolia	3,34	2,83	4,89	5,6	3,99	4,97	4,69	3,33	3,82	2,6	3,3	2,93
	3,745	4,175	4,335	4,405	3,855	3,275	3,475	3,525	3,965	4,605	3,475	3,455
Ghana	3,82	2,87	4,07	4,65	3,4	4,2	4,08	4,21	3,13	3,57	3,74	3
	3,615833	4,045833	4,205833	4,275833	3,725833	3,145833	3,345833	3,395833	3,835833	4,475833	3,345833	3,325833
Argentina	2,85	3,58	4,3	5,82	4,59	3,18	3,29	3,18	3,85	4,94	3,72	2,98
	3,744167	4,174167	4,334167	4,404167	3,854167	3,274167	3,474167	3,524167	3,964167	4,604167	3,474167	3,454167
Egypt	3,56	6,61	3,12	5,35	3,32	3,76	3,06	3,67	3,43	4,77	3,79	2,54
	3,8025	4,2325	4,3925	4,4625	3,9125	3,332 5	3,5325	3,5825	4,0225	4,6625	3,5325	3,5125
Ethiopia	3,83	2,65	3,92	4,56	2,67	3,79	4,18	3,24	2,48	3,64	5,49	5,75
	3,7375	4,1675	4,3275	4,3975	3,8475	3,267 5	3,4675	3,5175	3,9575	4,5975	3,4675	3,4475
Moldova	3,38	3,46	4,35	5,44	3,96	3,98	4,26	3,65	3,91	2,51	3,3	2,4
	3,604167	4,034167	4,194167	4,264167	3,714167	3,134167	3,334167	3,384167	3,824167	4,464167	3,334167	3,314167
Zambia	4,09	2,85	4,65	4,11	3,07	4,53	3,97	4,42	2,96	2,71	3,84	3,3
	3,595833	4,025833	4,185833	4,255833	3,705833	3,125833	3,325833	3,375833	3,815833	4,455833	3,325833	3,305833
Gabon	3,94	2,71	6,25	4,11	3,05	3,73	4,43	3,62	3,53	2,74	4,09	3,38

	3,685833	4,115833	4,275833	4,345833	3,795833	3,215833	3,415833	3,465833	3,905833	4,545833	3,415833	3,395833
Senegal	3,6	2,51	4,37	4,23	3,23	4,2	4,27	3,89	3,37	2,83	3,89	3,39
	3,535833	3,965833	4,125833	4,195833	3,645833	3,065833	3,265833	3,315833	3,755833	4,395833	3,265833	3,245833
Nigeria	3,33	2,28	5,25	3,2	3,31	4,16	4,5	4,07	3,08	4,63	3,96	3,1
	3,626667	4,056667	4,216667	4,286667	3,736667	3,156667	3,356667	3,406667	3,846667	4,486667	3,356667	3,336667
Lebanon	3,22	2,46	3,32	6,18	4,7	4,57	4	4,1	3,39	3,59	2,68	2,44
	3,608333	4,038333	4,198333	4,268333	3,718333	3,138333	3,338333	3,388333	3,828333	4,468333	3,338333	3,318333
Bolivia	3,31	2,95	5,02	5,32	3,83	3,4	3,58	3,33	2,73	3,25	3,48	3,09
	3,495	3,925	4,085	4,155	3,605	3,025	3,225	3,275	3,715	4,355	3,225	3,205
Cambodia	3,84	3,08	4,39	2,25	3,32	4,42	4,78	4,11	3,28	3,15	3,52	3,09
	3,49	3,92	4,08	4,15	3,6	3,02	3,22	3,27	3,71	4,35	3,22	3,2
Paraguay	3	2,54	5,19	5,03	3,32	4,17	3,92	3,89	3,15	3,11	3,51	2,43
	3,4925	3,9225	4,0825	4,1525	3,6025	3,0225	3,2225	3,2725	3,7125	4,3525	3,2225	3,2025
Pakistan	3,34	2,73	3,06	4,52	2,99	4,02	3,65	4,04	2,9	4,67	3,82	3,11
	3,458333	3,888333	4,048333	4,118333	3,568333	2,988333	3,188333	3,238333	3,678333	4,318333	3,188333	3,168333
Surinam	3,59	3,74	4,32	5,52	3,57	3,7	4,1	3,6	3,19	1,74	3,41	2,62
	3,479167	3,909167	4,069167	4,139167	3,589167	3,009167	3,209167	3,259167	3,699167	4,339167	3,209167	3,189167
Tanzania	3,62	2,27	4,12	4,6	2,71	3,89	4,55	3,87	2,77	3,5	3,51	3,12
	3,431667	3,861667	4,021667	4,091667	3,541667	2,961667	3,161667	3,211667	3,651667	4,291667	3,161667	3,141667
Nicaragua	3,34	2,97	4,24	5,43	3,32	3,79	3,98	3,48	2,95	2,76	3,39	2,71
	3,4175	3,8475	4,0075	4,0775	3,5275	2,9475	3,1475	3,1975	3,6375	4,2775	3,1475	3,1275
Liberia	4,31	2,77	4,51	5,1	3,3	4,54	4,45	4,03	2,62	1,24	3,99	3,34
	3,570833	4,000833	4,160833	4,230833	3,680833	3,100833	3,300833	3,350833	3,790833	4,430833	3,300833	3,280833
Gambia	4,67	3,61	3,58	4,17	3,77	4,1	4,72	4,07	3,13	1,42	3,4	2,6
	3,490833	3,920833	4,080833	4,150833	3,600833	3,020833	3,220833	3,270833	3,710833	4,350833	3,220833	3,200833
Kyrgyzstan	2,92	2,59	3,41	5,18	3,66	3,78	4,36	3,42	2,63	2,58	3,89	3,25
	3,36	3,79	3,95	4,02	3,47	2,89	3,09	3,14	3,58	4,22	3,09	3,07
Benin	3,51	2,56	4,57	4,68	3,07	3,66	4,4	3,55	2,75	2,45	3,55	3,01
	3,3675	3,7975	3,9575	4,0275	3,4775	2,8975	3,0975	3,1475	3,5875	4,2275	3,0975	3,0775
Bangladesh	3,2	2,22	4,24	5,2	2,88	4,1	3,91	3,74	2,74	4,36	3,5	2,47
	3,434167	3,864167	4,024167	4,094167	3,544167	2,964167	3,164167	3,214167	3,654167	4,294167	3,164167	3,144167
Uganda	3,49	2,27	3,83	4,35	2,86	3,15	4,83	4,14	2,93	3,22	3,52	3,02
	3,355	3,785	3,945	4,015	3,465	2,885	3,085	3,135	3,575	4,215	3,085	3,065
Libya	3,69	3,56	4,6	4,4	3,56	3,45	3,46	2,68	3,11	2,86	3,35	2,5
	3,3225	3,7525	3,9125	3,9825	3,4325	2,8525	3,0525	3,1025	3,5425	4,1825	3,0525	3,0325
Guyana	3,5	2,91	4,04	5,29	3,97	4,17	4,23	3,87	3,39	2,03	2,77	2,05

	3,405833	3,835833	3,995833	4,065833	3,515833	2,935833	3,135833	3,185833	3,625833	4,265833	3,135833	3,115833
Kotdivuar	3,16	3,1	3,48	3,4	2,11	3,78	4,38	3,65	3,32	3,05	3,66	3,12
	3,238333	3,668333	3,828333	3,898333	3,348333	2,768333	2,968333	3,018333	3,458333	4,098333	2,968333	2,948333
Mali	3,31	2,96	4,59	3,36	2,77	3,87	3,89	3,53	2,9	2,57	3,22	2,99
	3,2175	3,6475	3,8075	3,8775	3,3275	2,7475	2,9475	2,9975	3,4375	4,0775	2,9475	2,9275
Cabo Verde	4,07	2,8	3,8	5,66	3,65	3,93	3,73	3,37	3,43	1,25	3,04	2,74
	3,343333	3,773333	3,933333	4,003333	3,453333	2,873333	3,073333	3,123333	3,563333	4,203333	3,073333	3,053333
Malawi	3,82	2,19	3,3	4,3	2,81	3,86	4,58	4	2,54	2,41	3,38	2,94
	3,231667	3,661667	3,821667	3,891667	3,341667	2,761667	2,961667	3,011667	3,451667	4,091667	2,961667	2,941667
Venezuela	2,36	2,64	3,66	5,49	4,24	2,78	2,88	3,11	3,25	4,5	3,11	2,44
	3,259167	3,689167	3,849167	3,919167	3,369167	2,789167	2,989167	3,039167	3,479167	4,119167	2,989167	2,969167
Nepal	3,26	1,81	4,85	4,69	2,84	3,78	3,75	3,81	2,63	2,98	3,21	2,42
	3,223333	3,653333	3,813333	3,883333	3,333333	2,753333	2,953333	3,003333	3,443333	4,083333	2,953333	2,933333
Swaziland	3,61	3,17	3,6	3,57	2,95	3,92	3,87	3,92	2,69	2	3,26	2,33
	3,128333	3,558333	3,718333	3,788333	3,238333	2,658333	2,858333	2,908333	3,348333	3,988333	2,858333	2,838333
Madagascar	2,94	2,13	4,33	4,68	2,67	3,84	4,5	2,88	2,54	2,66	3,28	2,88
	3,165	3,595	3,755	3,825	3,275	2,695	2,895	2,945	3,385	4,025	2,895	2,875
Zimbabwe	3,5	2,4	3,77	4,47	3,14	3,63	3,4	3,6	2,83	1,9	3,21	2,59
	3,090833	3,520833	3,680833	3,750833	3,200833	2,620833	2,820833	2,870833	3,310833	3,950833	2,820833	2,800833
Mozambique	3,35	2,36	3,66	3,52	2,39	3,77	3,72	3,09	2,8	2,86	3,14	2,63
	2,995	3,425	3,585	3,655	3,105	2,525	2,725	2,775	3,215	3,855	2,725	2,705
Mauritania	3,29	2,82	4,4	3,88	2,23	3,58	3,6	3,04	2,75	2,07	3,35	2,68
	3,028333	3,458333	3,618333	3,688333	3,138333	2,558333	2,758333	2,808333	3,248333	3,888333	2,758333	2,738333
Algeria	2,66	3,16	5,71	5,37	3,38	2,99	2,79	2,39	2,59	4,34	2,54	2,09
	3,221667	3,651667	3,811667	3,881667	3,331667	2,751667	2,951667	3,001667	3,441667	4,081667	2,951667	2,931667
Burkina Faso	3,66	2,18	4,48	3,48	2,5	3,8	4,42	3,43	2,52	2,64	2,67	2,17
	3,05	3,48	3,64	3,71	3,16	2,58	2,78	2,83	3,27	3,91	2,78	2,76
Ciad	2,73	1,89	5,12	2,85	2,34	3,08	4,12	3,01	2,23	2,7	4,24	3,5
	3,038333	3,468333	3,628333	3,698333	3,148333	2,568333	2,768333	2,818333	3,258333	3,898333	2,768333	2,748333
Lesotho	3,3	2,5	3,93	3,54	2,65	3,97	3,92	3,36	2,53	1,86	3,11	2,33
	3,068333	3,498333	3,658333	3,728333	3,178333	2,598333	2,798333	2,848333	3,288333	3,928333	2,798333	2,778333
Guinea	3,18	1,86	2,63	3,52	2,6	3,71	4,49	3,07	2,45	2,37	3,97	3,11
	2,9675	3,3975	3,5575	3,6275	3,0775	2,4975	2,6975	2,7475	3,1875	3,8275	2,6975	2,6775
Timore	3,45	2,27	5,29	4,09	2,75	2,69	4,29	2,68	2,62	1,8	3,05	2,41
	3,003333	3,433333	3,593333	3,663333	3,113333	2,533333	2,733333	2,783333	3,223333	3,863333	2,733333	2,713333

Source: *Authors*

A THREE-DIMENSIONAL APPROACH ON THE RICARDIAN EQUIVALENCE IN ROMANIA

Daniel Ştefan BELINGHER[1]

Abstract

This paper follows the validity of the Ricardian Equivalence Hypothesis in Romania for the period 2004 – 2013. In order to test this hypothesis, there has been used a Vector Error Correction Model, with three variables: households' consumption, real GDP and budgetary revenues. The frequency of the data used is quarterly. The role of this model is to test the reaction of the households in case of occurrence of a shock in the budgetary revenues (the shock represents an increase in taxation). The results show the fact that the Ricardian Equivalence is not confirmed as being a valid theory for the Romanian economy.

Keywords: consumption, ricardian equivalence, budgetary revenues.

Rezumat

Această lucrare testează validitatea ipotezei de echivalență ricardiană pentru economia României, în intervalul cuprins între 2004 și 2013. Pentru testarea acestei ipoteze, am recurs la folosirea unui model de tipul vector de corecție a erorilor, în care am au fost incluse trei variabile: consumul gospodăriilor, PIB-ul real și veniturile bugetare. Frecvența datelor folosite este trimestrială. Rolul modelului este acesta de a testa reacția consumului gospodăriilor în momentul apariției unui șoc pozitiv la nivelul veniturile bugetare (acest șoc reprezintă o simulare a creșterii taxelor). Rezultatele indică faptul că echivalența ricardiană nu poate fi confirmată drept o teorie validă pentru economia românească.

Cuvinte-cheie: consum, echivalența ricardiană, veniturile bugetare.

Cod JEL: E21, E62, C53.
Cod REL : 8I, 8K, 10H.

1. Introduction

During the last years, on the background of the economic crisis, there were questions, both among the practitioners and among the researchers in economy. These questions were related to the modality in which the monetary and the fiscal policies should be decided and implemented by the decision makers in the field of macro policies. Questions were also related to the way in which the real economy could answer to these stimuli. The ideas contained in this paper have – as a starting point – the neoclassical economic theory, whose main exponent was Robert Barro, given his

[1] *PhD, Research Assistant. Institute for Economic Forecasting, Romanian Academy; daniel.belingher@gmail.com.*

writings on the Ricardian Equivalence. In the economic literature, especially in the one related to the fiscal policies, we can still find a wide controversy and debate on deficits and Ricardian equivalence topic.

The origins of the Ricardian Equivalence Hypothesis are set back in the 19th century, in David Ricardo's *Principles of Political Economy of Taxation* (1817). Ricardo asked himself which way is better to finance a war: through a new government debt or through a new temporary tax. His answer was that the debt is nothing else than postponed taxes, so the both ways are producing the same result. At the end of the 20th century, the Nobel Laureate Robert Barro (1974), asked himself a similar question, but in a manner more adapted to the modern economy: "the government bonds might be considered net wealth or not?" Two years after, Buchanan (1976) involves in his paper the same dilemma: "is the public debt equivalent with taxation?" He observes the similarities between Ricardo's writings and Barro's paper and proposes that this model should be entitled "Ricardian Equivalence".

The main objective of this paper is to test the existence of the Barro-Ricardo Equivalence for the Romanian economy, through a VEC model, which includes three variables. The next section will present a brief insight in the literature review, by focusing the main papers in the field, which targeted the Ricardian Equivalence Hypothesis for the Romanian Economy. The third section of this paper consists in a short description of the data and methodology. Section 4 contains the model's estimates and in the fifth section, one can find the conclusions and further developments of the model.

2. Literature review

There are several authors who made tests in order to confirm or not the Ricardian equivalence at the level of the Romanian economy. Most of these authors tested the equivalence as connected to another research. Therefore, Dumitru (2008) made an analysis on current account deficits in the states new members of European Union. For his analysis, he made the estimations based on a group of panel data, through two methods found in the specialty literature, the connections between the current account and its determinants.

The fact that the fiscal deficit has the power to influence the current account deficit by up to 30% (and on long term the percentage could be even higher), indicates the absence of the Ricardian Equivalence. In the same time, for Romania, the results obtained by Dumitru (2009) showed that for the period between 1998 and 2008 the current account deficit was excessive. The elements identified as main determinants for the structural current account deficit are the reduced income per capita and the high rate of investments (existent before the start of the crisis). In addition, Dumitru (2009) considers the current account deficit as being perfectly justified, taking into consideration that the discussion is about a country in transition – Romania. In the same time, excessive deficits of current accounts were found as well in other states invited to join EU.

In another paper, where there the savings and the main factors determining it, have been analysed in a panel of countries, with focus on Romania, Dumitru & al. (2011) denied the idea of the complete Ricardian Equivalence. Their conclusion occurs because of the econometric estimations they made: an increase by 1% (as percent of GDP) of the budget deficit generates an increase of 0.2% of the private savings. Since the elasticity is smaller

than 1, the rejection of the complete equivalence is validated. According to the same results, the fiscal consolidation leads to an increase of the total internal savings (public and private), because the increase of public savings resulted through reducing the budget deficit it is only to a small extend compensated by a decrease of the private savings.

In order to test the effect of the fiscal policy in Romania, Ianici (2009) used the model proposed by Barro and Sala-i-Martin (1995). In the introduction of his paper, he uses the logical cracks of the Barro-Ricardo equivalence in order to explain why the equivalence does not represent a viable effect of the daily economic reality.

Mesea (2012) chose to test the effect of the Governmental deficit on the economic growth. The author took into consideration three possible scenarios regarding the deficit, with the following estimations: if the deficit coefficient has the "+" sign, then the economy reacts positively when such a deficit appears, confirming thus Keynes' theory. If the same coefficient is negative, then the economy behaves according to the neoclassic theory. Finally, if the coefficient is "0", then the hypothesis of the neutral Ricardian Equivalence of deficits will be confirmed.

Belingher and Moroianu (2015) have suggested another regression model, which tests the existence of the Ricardian Equivalence. They used a function of the aggregate consumption, according to the ones described by the literature. The analysed period is between 2004 and 2012, while the data have a quarterly frequency. The estimations of the coefficients, mainly of that for Governmental spending, do not confirm the hypothesis of the equivalence for the Romanian economy.

3. Methodology

The following presented model has the role to test the answer of the household consumption to the potential budgetary shocks that could occur. The modality in which consumption answers to the budgetary challenges represents a current theme in the Romanian economy (e.g. the increase of general VAT in 2010 and decrease of VAT for food products in 2015). The starting point in building this model was the paper of Giorgioni and Holden (2003). In this paper, the two economists tested - through various Vector Error Correction Models (VECMs) - the way of functioning of the economies of many countries: either Ricardian or Keynesian or according to the EFC model *(Expansionary Fiscal Contraction)*, with the support of impulse-response functions (*impulse:* budgetary incomes/budgetary expenditures – *response:* private consumption).

The used variables in specifying the basic model of the two authors are the following:

- The logarithm of the **real GDP**;
- The logarithm of the **real private consumption**;
- The logarithm of the **real budgetary expenditures**;
- The logarithm of the **real budgetary revenues**;
- The logarithm of the **actual stock market index**.

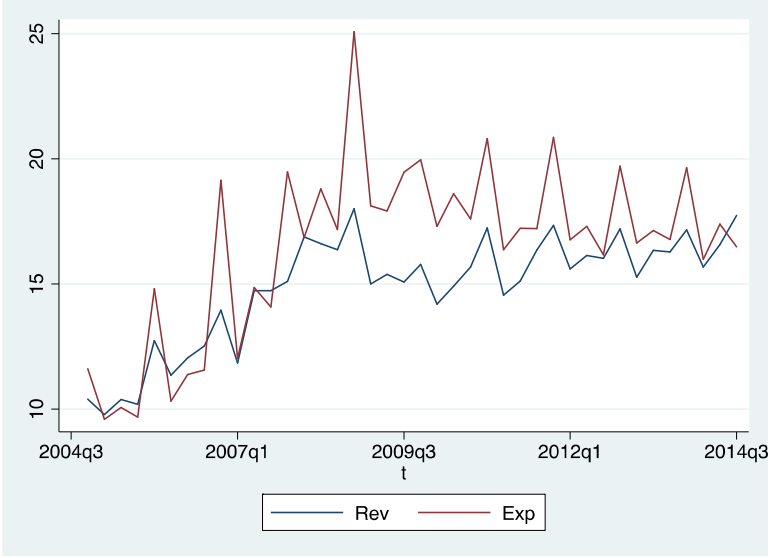
According to the related methodology, the data have been tested for stationarity, and cointegration, with the support of the adequate tests. The data included in the VECM, used for the analysis of the Romanian economy were the following:

- **Household consumption,** source the National Institute of statistics, according to ESSA 2010, denominated in million lei current prices, seasonally adjusted;

- **Gross Domestic Product,** source the National Institute of statistics, according to ESSA 2010, denominated in million lei current prices, seasonally adjusted;
- **Budgetary Revenue**, source Economist Intelligence Unit, denominated in billion lei current prices, seasonally unadjusted;
- **Budgetary expenditures,** source Economist Intelligence Unit, denominated in billion lei current prices, seasonally unadjusted;

Subsequently, all the series have been transformed in billion lei and in natural logarithms. Time series taken from EIU have been also seasonally adjusted. The analysed period is between 2004:4 and 2014:3 (40 observations), while the frequency of data is quarterly based. The seasonal component of the last two time series (those taken from EIU), can be noticed by in fig. no.1:

Fig. 1: *Budgetary expenditures vs. Budgetary Revenues (seasonally unadjusted series)*



Source of the processed data: EIU (2015)

Giorgioni and Holden (2003) used in building their model the stock exchange index, but this was not found relevant for the Romanian economy, after running the preliminary tests. Also, another reason for reducing the model is that the advent of new information directly affects affects asset prices (Călin, 2015). Further, in order to simplify the writing, the above-described acronyms will be used (**lnHHC**, **lnRGDP**, **lnRev**, **lnExp)**.

According to the literature, starting from a VAR model's equation, then a VECM model can be re-write according to equation no. 1:

$$y_t = c + \Pi A_1 y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i y_{t-1} + e_t \quad (1)$$

, where $\Pi = \sum_{j=1}^{j=p} A_j - I_k$ and $\Gamma_i = -\sum_{j=i+1}^{j=p} A_j$.

If all variables in y_t are *I(1)*, then the matrix Π has rank $r \geq 0$ and $r < k$, where *r* is the number of linearly independent cointegrating vectors. If the variables are cointegrated, the vector autoregressive in first differences becomes misspecified as it excludes the error correction term (Baum, 2013). According to Simionescu (2013), if r=0, the Π matrix becomes null and there is no relationship on long-run (VAR in differences model) and if r=p, the variables are stationary.

4. The estimations of the model

In the first model, for analysis has been included all those four variables, previously mentioned, in the third section. According to the decision test of the optimum number of lags, it has been chosen a four lags model. Johansen test of cointegration run by Stata indicates the fact that there is only one cointegration relationship at the level of those four time series. In the following, this model will not be too detailed, as it did not offer conclusive results for the analysis made. For the first equation, the one regarding the household consumption, errors' correction coefficient turned to be positive, therefore the model was not sustainable. According to Burke and Hunter (2005), the models with only one cointegration equation have to have a negative coefficient of errors' correction. Below it can be seen the graphical representation of the results previously discussed:

***Table no. 1**: The positive coefficient of errors' correction, related to the first model which has been run*

	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
D_lnHHC						
_ce1						
L1.	.1467629	.1225341	1.20	0.231	-.0933995	.3869253

Source: own estimations

Subsequently, based on a re-evaluation of the situation, we decided to exclude the budgetary expenditures from the model, even if these represented one of the variables of real interest for the current research. Further, simulations will be made concerning the answer of the consume when there are tax increases (increases of the Governmental revenues). According to the work methodology for estimating VEC model, after removing the problem-making variable, we did a new run of the test regarding the optimum number of lags that should be used. It came out that the optimum number of lags is also four, as in the previous model, as per the below table:

***Table no.** 2: Selection criteria of the optimum number of lags*

Selection-order criteria
Sample: **2005q4 – 2014q3** Number of obs = **36**

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	201.538				3.3e-09	-11.0299	-10.9838	-10.8979
1	275.727	148.38	9	0.000	8.7e-11	-14.6515	-14.4673	-14.1237*
2	288.564	25.674	9	0.002	7.1e-11	-14.8647	-14.5423*	-13.941
3	299.164	21.2	9	0.012	6.7e-11*	-14.9536	-14.493	-13.634
4	309.004	19.679*	9	0.020	6.8e-11	-15.0002*	-14.4015	-13.2847

Endogenous: lnHHC lnRGDP lnRev
Exogenous: _cons

Source: own estimations

The next step that was to check time series cointegration. The results revealed the fact that there was one cointegration equation (the option without trend and constant has been used), as the value of *trace statistic* is smaller than the critical value (the value marked by asterisk). The used series were not converted to a stationary form, due to the cointegration test, as well as the VECM need non-stationary series. Johansen test, according to the methodology described by the scientific literature, is presented in the table no. 3:

***Table no. 3**: Johansen test for implementing VECM model*

Johansen tests for cointegration
Trend: none Number of obs = **36**
Sample: **2005q4 – 2014q3** Lags = **4**

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	27	292.38786	.	32.2937	24.31
1	32	303.61671	0.46411	9.8359*	12.53
2	35	307.86719	0.21033	1.3350	3.84
3	36	308.53468	0.03640		

Source: own estimations

The model has the role to test the effect of the increase of taxation on household consumption: ***if there is a decrease of consumption when the taxes are raised, then the population reacts in a Keynesian mode, but if the taxes rise does not influence the household consumption, then the population reacts in a Ricardian manner***.

The estimations of VECM model revealed that there is one long-term equilibrium relationship between the three endogenous variables. Below is presented the first part of VECM model, i.e. the equation of the ***lnHHC*** variable:

***Table no. 4**: Vector Error Correction Model for identification of the Barro Ricardo equivalence at the level of the Romanian economy (short term)*

Vector error-correction model

Sample: 2005q4 - 2014q3		No. of obs	= 36
		AIC	= -15.08982
Log likelihood = 303.6167		HQIC	= -14.59854
Det(Sigma_ml) = 9.49e-12		SBIC	= -13.68224

Equation	Parms	RMSE	R-sq	chi2	P>chi2
D_lnHHC	10	.01254	0.7933	99.79929	0.0000
D_lnRev	10	.046156	0.6545	49.24249	0.0000
D_lnRGDP	10	.011099	0.7094	63.47006	0.0000

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
D_lnHHC						
_ce1						
L1.	-.0679829	.0201486	-3.37	0.001	-.1074735	-.0284923
lnHHC						
LD.	.5555659	.162538	3.42	0.001	.2369972	.8741345
L2D.	.3924946	.2101517	1.87	0.062	-.0193953	.8043844
L3D.	.3788862	.220307	1.72	0.085	-.0529077	.8106801
lnRev						
LD.	-.0249777	.0513965	-0.49	0.627	-.125713	.0757577
L2D.	.0336562	.051562	0.65	0.514	-.0674036	.1347159
L3D.	-.0959761	.0513611	-1.87	0.062	-.1966419	.0046898
lnRGDP						
LD.	-.1914039	.2587307	-0.74	0.459	-.6985068	.3156991
L2D.	-.5754118	.2533229	-2.27	0.023	-1.071916	-.078908
L3D.	-.376078	.2155634	-1.74	0.081	-.7985745	.0464185

Source: own estimations

The first part of the equation *lnHHC* revealed that the value on short term of errors' correction coefficient is almost equal with -0,068 and is significant from the statistical point of view, according to *P-statistic* (0,001). This coefficient shows that about 7% of the imbalance is corrected from one quarter to another. Therefore, it was possible to move to the long term modelling. Taking into consideration the fact that a VECM model reveals analysis results on both short term (in this case – four quarters) and on long-term, below will be presented the long-term results and the equilibrium equation.

***Table no. 5**: Vector Error Correction Model for identification of the Barro-Ricardo equivalence, at the level of the Romanian economy (long term)*

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	2	18324.01	0.0000

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_ce1						
lnHHC	1	.	.	.	.	.
lnRev	.9786386	.3402576	2.88	0.004	.3117461	1.645531
lnRGDP	-1.75666	.2699549	-6.51	0.000	-2.285761	-1.227558

Source: own estimations

It can be observed that also on long term the value of the errors' correction coefficient is significant, according to *P-statistic*. The equilibrium equation of the above presented model can be re-written as:

$$lnHHC - 0{,}979\ lnREV - 1{,}757\ lnRGDP \quad (2)$$

Further, we have tested the model for serial autocorrelation (with the support of Lagrange multiplier, up to the eight lag) and for stability. These tests confirmed that the model has been correctly specified, it is stable and that there was no serial autocorrelation and the model could generate stationary series for forecast. In the same time, the test for errors' distribution and its result denied that the errors had a normal distribution. As a result, for this issue two possible causes have been identified: the analysed time sample was quite small; also, the Romanian economy was young, with not so many years in transition, which led to quite quickly changes of the structure of the economic variables and further – to changes of the properties of the data.

Normally, if the model is stable, the cointegration equation *(ce)* should be stationary. The results of the Dickey-Fuller and Phillips-Peron (MacKinnon approx. p-value = 0.0162) confirmed the fact that the new generated series *ce* is a stationary one.

The last stage in building the model is related to the implementation of the impulse response function (IRF). It has been used an orthogonalized IRF. The second graph is a larger-scale representation of the first graph, from the third line. Here the impulse was applied to the *lnRev* variable (Governmental revenues), while the response was offered by the variable *lnHHC* (household consumption). Therefore, in this study we are mainly and particularly interested by the second graph.

***Fig. 3**: Impulse-response function of the VEC Model*

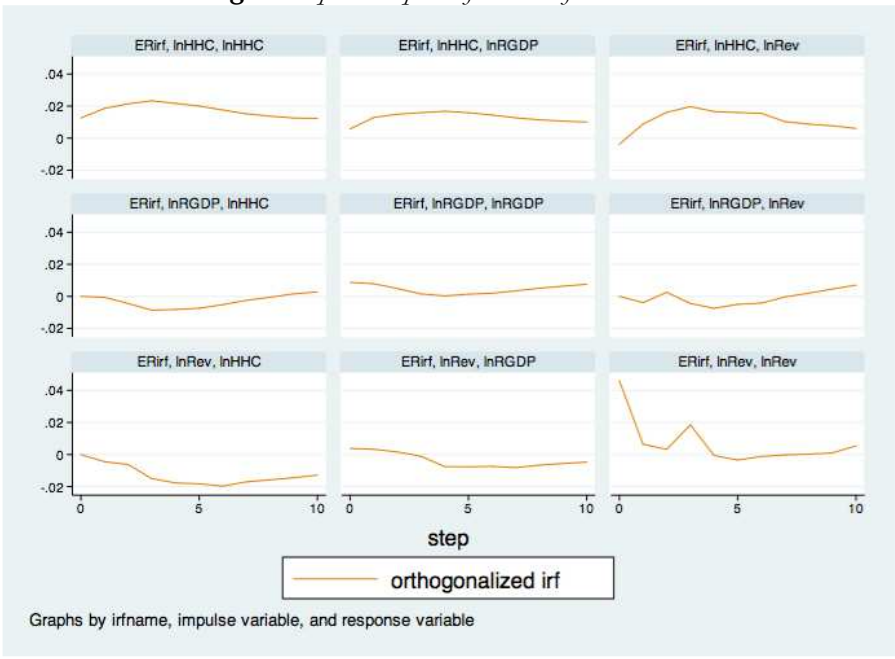
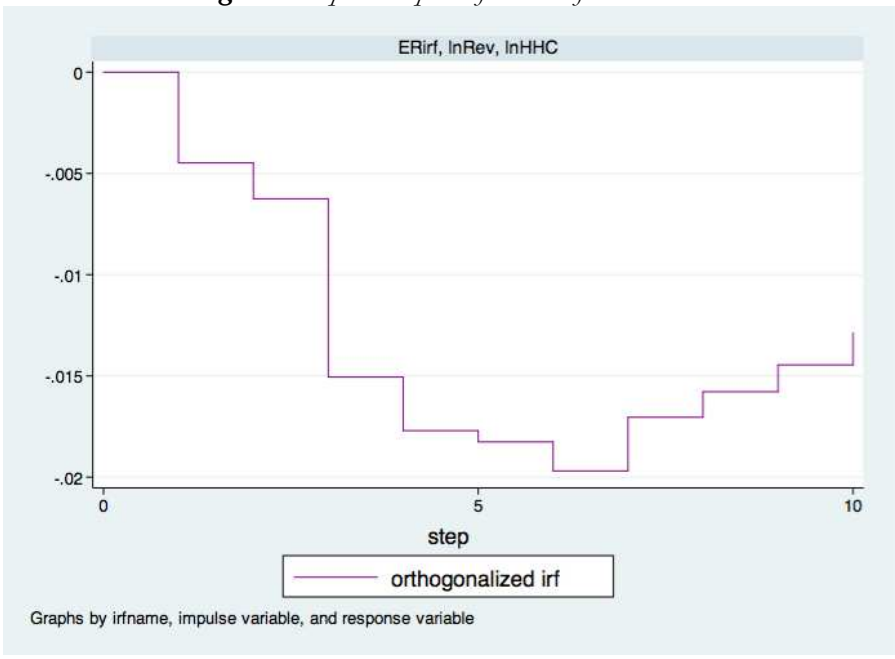


***Fig. 3.1**: Impulse-response function of the VEC Model*



Source: own estimation

It can be observed that when a shock appears at the level of the governmental revenues (for instance, an increase of the level of taxation), as a response occurs a decrease

of the household consumption. The measurement unit used for the model estimations is represented by the natural logarithms in billion lei. The minimum point of this event is in the 6th quarter from the event, while 0.2 of the logarithm represents about 1.22 (in this case – billion lei). After the 6th quarter, the household consumption tends to return to the initial level, while at the end, after a longer period (which couldn't be exactly identified due to the small sample of observations), the shock is totally assimilated.

For the period between 1930 and 1976 and using a study realised for the US economy, based on a regression model, Kormendi (1983) discovered that an increase of the taxation does not affect the consume. The results are in accordance with the Ricardian equivalence. In the model described at the beginning of this section, Giorgioni and Holden (2003), started from the following working hypothesis: if in the moment of a shock at the level of budgetary revenues and taxation the consume decreases, then the consumers will behave in a Keynesian manner. According to the studied bibliography for this research paper, and mainly according to the papers of the two previously mentioned authors, it can be said that the VEC model, calibrated for the Romanian economy, denies the hypothesis of the Ricardian equivalence.

5. Concluding remarks

This paper consisted in a three-dimensional approach, through a VECM, of the Ricardian Equivalence Hypothesis for the Romanian Economy. It was calibrated Giorgioni and Holden's (2003) model, where our used variables were: the real GDP, budgetary revenues and households' consumption. The model discussed in this paper it revealed the fact the Ricardian Equivalence cannot be considered a valid economic theory related to the national economy. The Romanian economy reacts in a Keynesian manner, as the simulation of the impulse-response function shows: when a taxation positive shock occurs, the result is going to be a decrease in the households' consumption. The shock is absorbed after a period of more than 6 quarters.

The main factors identified as potential reasons for which the Ricardian Equivalence does not hold in Romania are: the logical cracks in this economic theory (an infinite time horizon, perfect capital markets and uncertainty regarding the future taxation and incomes), a poor economic education of the Romanian consumers and the way that the taxes are applied and perceived – Gustave le Bon, in 1895, explained the way in which taxes are decided by the policy-makers and accepted by the consumers – it can be chosen an unfair tax, if it is the best masked, by the deciders (Belingher, 2015).

As further developments of this model, there is going to be considered a larger data sample, when more observations are going to be available and also, other variables are going to be tested, in order to obtain a better accuracy of the simulations.

REFERENCES

Barro, R.J.,(1974) Are Government Bonds Net Wealth? *Journal of Political Economy, 82(6), pp.1095–1115. http://dash.harvard.edu/bitstream/handle/1/3451399/Barro_AreGovernment.pdf.*

Barro,R.J.,(1996). *Reflections on the Ricardian Equivalence*, http://www.nber.org/papers/w5502.pdf.

Barro, R.J., (1989). The Ricardian Approach to Budget Deficits. *Journal of Economic Perspectives*, 3(2), pp.37–54.

Barro, R.J. & Sala-i-Martin, X., (1995). *Economic Growth*, New York: McGraw-Hill.

Baum, C.F., (2013). VAR, SVAR and VECM models.

Belingher, D. & Moroianu, N., (2015). Empirical evidence on the Ricardian equivalence in Romania. *Theoretical and Applied Economics*, XXII(2), pp.163–170.

Burke, S.P. & Hunter J., (2005). Modelling Non-Stationary Time Series. *Economics and Finance collection 2005. Palgrave Macmillan.*

Călin, A.C., (2015). The impact of trade announcements on financial markets. An event study analysis. *The Romanian Journal of Economic Forecasting,* Issue 2, pp. 81-91.

Dumitru, I.,(2009). *An assessment of the current account sustainability in Romania*, Munchen.

Dumitru, I., Mircea, R. & Jianu, I., (2011). *Savings in Romania - developments and fundamentals*, Disponibil la: http://mpra.ub.uni-muenchen.de/29027/1/MPRA_paper_29027.pdf.

Giorgioni Gianluigi & Holden, K., (2003). Ricardian Equivalence, Expansionary Fiscal Contraction and the Stock Market: a VECM approach. *Applied Economics*, 35(12), pp.1435–1443.

Hakes, D. & McCormick, K., (1996). Did Smith Address Ricardian Equivalence Before Ricardo? *Eastern Economic Journal*, 22(1). Disponibil la: http://college.holycross.edu/RePEc/eej/Archive/Volume22/V22N1P57_61.pdf.

Ianici, N., (1995). The Impact of Taxation on Economic Growth. *Timisoara Journal of Economics*, 2(4), pp.181–190. Disponibil la: https://ideas.repec.org/a/wun/journl/tjev02y2009i4(8)a03.html.

Kormendi, R.,(1983). Government Debt, Government Spending, and Private Sector Behavior. *The American Economic Review*, 73(5), pp.994–1010.

Ricardo, D., (1993). Principii ale economiei politici şi impunerii. In *Opere alese, vol. I*. Chişinău: Editura Universitas.

Simionescu, M., (2013). The Assessment Of Parameter Uncertainty In A Vector Error Correction Model For Romania. *Romanian Journal of Economics*, 37(2), pp.124–134.

BUSINESS CYCLES – ELECTORAL CYCLES. THE INFLUENCE OF THE ECONOMY ON VOTE INTENTION IN LOCAL ELECTIONS IN ROMANIA

Bogdan-Lucian DOSPINESCU[*]

Abstract

A basic assumption of the political business cycles theory is that voters will evaluate the results of the economic policies of the parties in power, in order to decide who to vote for. A possible point of interest is to test the relationship between economic variables at the county level – unemployment, average wage – and the vote in the local elections, in each county. The theoretical framework in this case contains two fundamental perspectives: the first is around the theory of political business cycles developed by William Nordhaus; the second is closely linked with voting behavior theory.

We have formulated two hypotheses, continuing the work of Dorin Jula in "Economic impact of political cycles - the relevance of European experiences for Romania" (Jula, 2001), for the next three electoral cycles: 2004, 2008 and 2012. The first hypothesis is that there is a negative correlation between the vote for the party (parties) in power and the unemployment rate; and a positive correlation between the vote for the party (parties) in opposition and unemployment rate, respectively. The second hypothesis is that the voters use an ideological approach, meaning that those faced with unemployment and from the poorest counties will tend to vote for the leftist parties.

The first hypothesis was not confirmed for all electoral cycles. However, in the election where the economy was the dominant theme (local elections in 2012), there is a strong correlation in the logic proposed by it. The second hypothesis is verified; there is a correlation between the unemployment rate in counties and the vote for the leftist party, with PSD getting more votes in counties with higher unemployment rate. However, when introducing other possible explaining variables in the model, most notable a variable to account for regional vote – the impact of the unemployment variable decreases and a significant part of the variance in the model is attributable to the "region" variable.

Keywords: business cycles, local elections in Romania, unemployment, voting behavior

JEL Classification: D72
REL Classification: 5J

Rezumat

O ipoteză de bază din teoria ciclurilor politice este că votanții folosesc rezultatele economice ale partidelor aflate la putere ca unul din principalele criterii în votul pe care îl dau. O restrângere posibilă pentru a testa această ipoteză generală este analiza relației dintre indicatorii economici – cel mai important dintre ei, șomajul - la nivel județean și votul pentru partidele aflate la putere. Cadrul teoretic necesar pentru a evalua o astfel de

[*] *PhD, institution: Romanian Academy SCOSAAR, email address: bogdanlucian.dospinescu@gmail.com.*

ipoteză conține două perspective fundamentale: una economică, în jurul teoriei dezvoltate de William Nordhaus „political business cycles"; cealaltă politică, cu privire la comportamentul de vot.

Am formulat două ipoteze de lucru, în logica celor pe care dl. Dorin Jula le introduce în lucrarea „Economic impact of political cycles – the relevance of european experiences for Romania" (Jula, 2001), dar pentru ciclurile electorale 2004, 2008 și 2012. ***Prima ipoteză -*** *există o corelație negativă între votul pentru partidul (partidele) aflat(e) la guvernare și rata șomajului; respectiv o corelație pozitivă între votul pentru forțele politice din opoziție și rata șomajului.* ***A doua ipoteză -*** *electoratul judecă ideologic, iar voturile celor care se confruntă cu problema șomajului se vor duce spre partidele de stânga.*

În urma testării ipotezelor de lucru, prima ipoteza nu s-a confirmat pentru toate ciclurile electorale, dar în alegerile unde tema economică a fost dominantă (localele din 2012), există o corelație mai puternică, în sensul indicat de aceasta. A doua ipoteză, este verificată; electoratul confruntat cu problema șomajului se va îndrepta „ideologic" cu precădere către partidul de stânga, PSD, dat fiind discursul ideologic de stânga privind statul asistențial și crearea de locuri de muncă. Prin introducerea în model a unor variabile suplimentare – cea mai importantă dintre ele, votul regional – impactul variabilelor economice scade semnificativ, o mare parte din variația din model fiind atribuibilă variabilei regiune.

Cuvinte-cheie: cicluri economice, alegeri locale în România, şomaj, comportament vot

Cod JEL: D72
Cod REL: 5J

1. Introduction – theoretical framework

In the classical political business cycles theory, proposed by William Nordhaus, the parties are handling the economy following some indicators important for the public perception of the Government's results: such as inflation or unemployment. Their aim is to get positive results, especially in the electoral years, and in the process winning elections (Nordhaus, 1989). There are variations to this basic assumption, depending on the model proposed: opportunist or partisan, but they don't change the causal link between the economic results and the voting process (Jula, 2001, p.7). In the traditional opportunistic model, we expect an economic expansion period, starting with one year before the elections: the GDP has a positive growth; unemployment is decreasing and an economic contraction after the elections. In the partisan model the left wing parties will target unemployment, in order to talk with their voters in the "labor class", while the right wing parties will target inflation in order to communicate with the entrepreneurs and the business community. The theoretical approach in this case is one that puts ideology at the forefront, with the right wing parties advocating for a lesser role of the state, while the left is asking for a bigger role, where the state has the role of creating jobs. In both cases, the political business theory states that voters are very mindful of the economic results and they will reward success and punish failure.

The political business cycles theory should be connected with the political science theories. Since we are talking about influencing voting behavior, it is clear that the answers cannot come only from the economic theories. We must therefore take into account the theoretical perspectives on how voters construct their perceptions of parties and leaders as

they assess their activity and messages. I would start with one of the earliest and most influential studies on voting behavior, the socio-ethnographic research conducted by Paul Lazarsfeld in one community, Erie, Ohio, during the 1940 presidential campaign (Lazarsfeld, Berelson, Gaudet 1944). The study is relevant today because it raises key issues: how the voting behavior is rooted in religion, in community values (especially in smaller communities) and in the cultural aspects that influence the media model. Even today, when the social structure and especially the media presence in our lives have changed significantly compared to 1940, the idea that the behavior of voters is influenced by their membership in a particular group / community / culture should be taken into account. These factors explain citizens' voting decisions, as part of a group / community. Consequently, the state of economy has not a direct influence, but mediated by socio-demographic, cultural variables or political attitudes. In Romania, for instance, we can talk about a historic low vote for PSD in Transilvania region, irrespective of their leaders and policies proposed or put into practice (will develop more later in the paper).

Next, it is important to refer to two directions of research: the rational choice perspective and the research developed by Larry Bartels, among others, who challenge the rational vote perspective. The basic assumption of the rational choice theory is that voters and political parties and their leaders behave rationally and predictably. Anthony Downs underlines that "parties formulate policies in order to win elections, rather than win elections in order to formulate policies" (Downs 1957, p.28). This makes them predictable as they have the same objective and use the same tools. Not only the parties, but voters will, in most cases, act knowingly as consumers, basing their decisions on the information they have: the results of the leaders in power or the public positions and proposals advanced by them on various topics of public interest (Popkin, 1991) or, in the case of parliamentary elections, the lawmakers' voting record (Fiorina, 1981). In his book "The rational voter", Samuel L. Popkin, captures the essence of the rational approach, stating his belief that the more we understand the voters and their reasoning, the better we can explain the way campaigns are run and how they matter in strengthening democracy (Popkin, 1991, 7). He states that even if the voters do not have enough information, for lack of time or other resources, they will use "information shortcuts" to reach a valid and rational conclusion (Popkin, 1991, 44). One of the most important benefits to using this perspective is that it presents a clear mechanism of the voting process. This perspective offers a framework for the correlation between the economic variables and the vote variable.

This firm belief in the rational voter has been challenged in recent years, particularly as a result of what Larry Bartels called "failure of the causal models to answer fundamental questions about the voting behavior" (Bartels 2008, 28). In this respect, Bartels points out that sometimes the perception the electorate has about the economic reality is stronger than the reality itself, meaning that voters search and often find "ideology loaded" reasons to explain an economic reality and their vote. In "Unequal Democracy: The Political Economy of The New Gilded Age", Larry Bartels raises an important question: why sometimes citizens vote against their interest (seen from a rational prspective)? Bartels was referring, among others, to the working class in some states in the US who vote for the right wing (conservative) candidates (Bartels, 2008). Another approach which indirectly questions the rational voter model is provided by the studies of negative campaigns and

their emotional impact (Ansolabhere, Iyegnar, Simon, Valentino, 1994) or the effects of the same negative campaigns at the local level (Kahn, Kennedy, 1999). Other studies use an anthropological perspective to study presidential election and present them as "socio-dramas"; the aim of these socio-dramas is to legitimize the process of ascending to power (McLeod, 1999). Consequently, the rational choice perspective cannot include "the wealth of events and issues found in social life" and therefore require an approach tailored more closely keeping in mind the cultural background and the psychology of the voter (Archer, Tritter, 2000, 34). The conclusion is not that the analysis based on the rational choice perspective must be put aside, but rather complemented (MacDonald, 2003). We must take into account this perspective when judging the way that economic variables influence the vote and take into account that the process described in the political business cycle theory is not such straightforward.

2. Formulating the working hypotheses; the variables and the model used

The two hypotheses that we are going to test in this paper are similar to those tested by Dorin Jula in "The economic impact of political cycles - the relevance of European experiences for Romania" (Jula, 2001), when he studied the local elections in 1992, 1996 and 2000 . In this paper, we will analyze the following election cycles corresponding to the 2004, 2008 and 2012 local elections.

The first hypothesis: there is a negative correlation between the vote for the party (parties) in power and unemployment; and a positive correlation between the vote for the party (parties) in opposition and unemployment.

This assumption follows the traditional approach to political business cycle in the sense that the electorate believes the government is responsible for the economy and will penalize or encourage the parties in power, depending on the economic results. Consequently, these parties will get more votes in counties where unemployment is lower and the opposition will "benefit" from a higher electoral support in counties where unemployment is higher. I added a second model, using the difference in the level of unemployment in the last two years (not just the level in the electoral year), on the assumption that the evolution could have a higher impact on the voters.

The second hypothesis: the voters use an ideological lens and the electorate from the counties with higher unemployment, will vote in larger numbers for the leftist parties (in our case, with PSD).

It is a hypothesis congruent with the partisan political business cycle model where left wing parties are focusing their policies on lowering unemployment and increasing income, while right-wing parties focus more on inflation; and the electorate will choose based on the fact that they support polices which benefits them. To test this hypothesis we used an econometric model where the dependent variable is the vote for the parties and the independent variables are unemployment and a dummy variable for the ethnic vote.

I have added three variables to the model proposed. Firstly, I added a dummy variable that captures the regional vote. Historically, PSD has weaker support in the West part of Romania Transilvania, Banat and Maramures, and I added a dummy variable to account for this variance. Secondly, I added a variable that includes the impact of labor migration abroad, especially after 2002-2003; necessary because in this way we can exclude the assumption that lower unemployment is explained by migration.

Thirdly, I added a variable that contains the average wage - expressed as the percentage difference from the last two years within an electoral cycle – in order to see the impact of other economic variables besides unemployment.

I have used the following econometric models:

$PSD_{it} = a_0 + a_1\ RSJ_{it} + a_2\ PVJ_{it} + a_3\ MJ_{it} + a_4 VM_{it} + a_5\ VT_{it} + e_t$

$PD_{it} = b_0 + b_1\ RSJ_{it} + b_2\ PVJ_{it} + b_3\ MJ_{it} + b_4 VM_{it} + b_5\ VT_{it} + v_t$

$PNL_{it} = c_0 + c_1\ RSJ_{it} + c_2\ PVJ_{it} + c_3\ MJ_{it} + c_4 VM_{it} + c_5\ VT_{it} + w_t$

The variables we have in the models are:

PSD_{it} , PD_{it} si PNL_{it} - vote (expressed in percentage) for the party in each county i (from 1 to 42) and in the electoral year t (t = 2004, 2008); not 2012, because PSD, PD and PNL did not run separately (but in indifferent alliances) in 2012 local elections;

RSJ_{it} – the unemployment rate at county level i, and in the electoral year t.

PVJ_{it} – the percentage of gains in the average wage, at county level i, and in the electoral year t.

MJ_i – the migration by county, according with the date from the 2011 census; expressed in number of migrants per county, i;

VM – a dummy variable which takes the value 1 for counties with high percentage of Hungarian population (over 30%): Covasna, Harghita, Mureş şi Satu Mare, and 0 for other counties;

VT – a dummy variable which takes the value 0 for counties in Transilvania, Maramures and Banat (the west part of the country) – 16 counties in total, and 1 for the other counties;

a_1 , a_2, a_3 , a_4, a_5 ; b_1 , b_2, b_3 , b_4, b_5 ; c_1 , c_2, c_3 , c_4, c_5 are the parameters for the three models;

e_t, v_t, w_t - error terms that are not auto-correlated; and they follow a normal distribution (their sum is close to zero).

The expected sign for the regression coefficients are: a_1 , a_3 , a_5 > 0, a_4, $a_2 < 0$; b_1 , b_3 , b_5 < 0, $b_4 < 0$, $b_2 > 0$; c_1 , c_3 , c_5 < 0, $c_4 < 0$, $c_2 > 0$. The sign of coefficients a1, b1, c1 reflects the fact that I expect in counties with higher unemployment the vote intention for the left wing parties (PSD) to increase and decrease for the right wing parties (PNL and PD), respectively.

The sign of coefficients a2, b2 , c2 reflects the fact that I expect in counties where there is a greater increase in revenue to have a decrease in the vote intention for PSD and an increase for PNL and PD, respectively. Again, these assumptions reflect the partisan model of political business cycle theory.

3. Testing the hypotheses

First hypothesis. Tables 1 and 2 summarize the results for the first hypothesis. The most important conclusion is that we don't have the expected negative correlation between the unemployment rate and the vote for the parties in power. However, we have a negative correlation between unemployment and the vote in the elections where economy/ economic crisis was the top issue (2012); but overall, the correlation coefficients are quite low, which indicates a weak relationship.

Table 1. The correlation coefficients between unemployment rates by county and vote intention (%) for political parties or coalitions

Electoral year	**Parties/coalition in power**	**Parties/ coalition in opposition**
2004	.169 (PSD)	-.241 (PNL+PD+PUR+PRM+UDMR)
2008	-.03 (PNL+UDMR)	.007 (PSD+PDL+PC+PRM+PNG)
2012	-.014 (PDL+UNPR+UDMR)	0.71 (USL+ PP-DD)

* **Source for the data:** The National Institute of Statistics and The Permanent Electoral Authority

Tabel 2. The correlation coefficients between the difference of unemployment rates (year of elections - year prior to elections) by county and vote intention (%) for political parties or coalitions

Electoral year	**Parties/coaliton in power**	**Parties/ coalition in opposition**
2004	-.045 (PSD)	.147(PNL+PD+PUR+PRM+UDMR)
2008	.077 (PNL+UDMR)	-.052 (PSD+PDL+PC+PRM+PNG)
2012	-.176 (PDL+UNPR+UDMR)	.233 (USL+ PP-DD)

* **Source for the data:** The National Institute of Statistics and The Permanent Electoral Authority

Comparing these results with the analysis carried out for the 1992-2000 electoral cycles done by Dorin Jula (when correlations were correct only in one election year from three), we see greater consistency, as the correlations were in the direction expected in two of the three election years . In terms of consistency with the theoretical framework, in the elections where economy was a strong issue – the 2012 elections, the correlation coefficients are higher.

However, we must point out that, overall, the correlation coefficients are quite low and are not statistically significant. Only in the second table, where the unemployment was expressed as a difference, we have statistical significance on a one-way t test for the coefficients in the 2012 electoral year; when Romania was coming after a devastating economic crisis, with the probability of wrongly rejecting the null hypothesis at p=0,07.

In analyzing the correlation coefficients, two additional conclusions are in order. Firstly, the use of the difference in unemployment produces more consistent results, which is in line with the supposition that voters follow the evolution of the economy in the months/years before the elections. If they feel the economy is getting better, they

will support more the party in power. Secondly, it is necessary to take into account the political reality on the ground in order to explain what could otherwise seem as a result contrary to the theoretical framework. In 2008, one has to take into account the fact that PNL has governed with the „silent" support of PSD (thus PSD was perceived to influence the economy, even if they weren't in Government). Moreover, 2008 elections came after a very strong period of economic growth resulting in very low unemployment rates across the country, in all counties. Thus, we had low variance to begin with, and this certainly played a role in the low value of the correlation coefficient. In conclusion, it is clear that we need to take into account additional variables in order to test the link between the economy and the vote.

Second hypothesis. *Tables 3 and 4 summarize the results for the second hypothesis*

Table 3. Results of the econometric model for the partisan cycle – with the variables from the initial model (proposed by Dorin Jula). 2004, 2008 (the standard error is in parenthesis)

N- 84	**PSD**	**PNL**	**PD**
Constant	26.553 *(2.509)*	20.954 *(1.674)*	32.543 *(2.557)*
RSJ	.839 *(.388) (.034)*	-.220 *(.259) (.399)*	-1.679 *(.396) (.000)*
VM	-17.813 *(3.154) (.001)*	-10.084 *(2.105) (.000)*	-15.564 *(3.215) (.000)*
R^2 ajusted	.305	.204	.307
F-statistic	19.220 *(.000)*	11.6077 *(.000)*	19.374 *(.000)*
Durbin-Watson coefficient	2.219	2.054	1.183

* **Source for the data:** The National Institute of Statistics and The Permanent Electoral Authority

Table 4. The results of the econometric model for the partisan cycle – with the added variables. 2004 and 2008 (the standard error is in parenthesis)

N- 84	**PSD**	**PNL**	**PD**
Constant	21.894 *(4.944)*	20.856 *(4.373)*	42.320 *(6.611)*
RSJ	.411 *(.303) (.178)*	-.280 *(.268) (.299)*	-1.664 *(.405) (.000)*
PVJ	-.065 *(.191) (.736)*	aprox. 0	-.399 *(.255) (.121)*
MJ	aprox. 0	aprox. 0	aprox. 0
VM	-9.280 *(2.697) (.001)*	-9.414 *(2.385) (.000)*	-15.790 *(3.606) (.000)*

VT	12.764 *(1.658) (.000)*	1.481 *(1.467) (.316)*	-.867 *(2.218) (.697)*
R^2 ajusted	.596	.186	.306
F-statistic	25.467 *(.000)*	4.799 *(.001)*	8.323 *(.000)*
Durbin-Watson coefficient	2.250	2.068	1.195

* **Source for the data:** The National Institute of Statistics and The Permanent Electoral Authority

The three models are statistically significant, the probability to wrongly reject the null hypothesis is lower than 0.001.

In both cases (presented table 3 and table 4) the second hypothesis is verified. We see that the coefficient sign for unemployment is positive for PSD and negative for PDL and PNL. In other words, voters facing the problem of unemployment will vote "ideologically", meaning more will vote for PSD:

The a1 = .839 is positive and the probability of rejecting the null hypothesis error is less than 0.05.

The b1 = -1.679 is negative, PD is perceived as the main right-wing party and the probability of rejecting the null hypothesis error is less than 0.001 .

Also, as assumed by the model the ethnic dummy variable coefficients are negative, in all cases the probability of incorrectly rejecting the null hypothesis is less than 0.001.

The Durbin Watson coefficient (autocorrelation test on errors) is close to 2 at the model with PSD as dependent variable, and above 1 (1,183), for the other two.

The issue that we must take into account is that the model explains only a third of the R^2 variance, so we should look to add variables that will increase the explanatory power of the model. By adding the variables presented when stating the second hypothesis, we increase the R^2, almost doubling it in the case of the model with PSD as the dependent variables. Again, all the models are statistically significant, the probability to wrongly reject the null hypothesis is lower than 0.001.

There are some conclusions to point out for the model with the added variables:

Firstly, the voting dummy variable for historical regions (VT) offers a much greater explanatory power to the model, R^2 increasing to .596; so it explains almost 60% of the variance in the vote for PSD. The coefficient for this variable is positive a5 = 12,764, and the probability of incorrectly rejecting the null hypothesis is smaller than 0.001. The sign indicates that in Transilvania (Maramures and Banat) – where the unemployment is lower - the vote for PSD is historically lower (partially for cultural reasons). Consequently, there is an interaction between the two explanatory variables – unemployment and region -; and we see the coefficient for the unemployment variable dropping from .839 to .411. In other words, while the "ideological" explanation still stands, it is clear that almost half of the impact of the unemployment variable is actually attributable to the region dummy variable. Furthermore, we see that in the case of the other two parties, we don't have such a clear regional vote, and in this case adding the other dependent variables doesn't produce significant changes.

Secondly, the migration variable has a very low impact in the three econometric models, which can be explained also by the fact that the counties who reported the highest number of migrants still rank among the highest in unemployment. *Thirdly*, the second "economic" variable: the percentage of revenue growth has an impact far below expectations and the a2, b2 and c2 coefficients are not statistically significant.

4. Conclusions

The starting point for this paper was to define the theoretical framework for the hypotheses: the theory of political business cycle, rooted in the rational choice school of thinking and the voting behavior studies, where the rational perspective lives besides a different approach, around the ideas of voters perceptions, cultural values and emotions.

Testing both hypotheses revealed a much weaker than expected relationship between economic variables and the vote in local elections. Both economic variables: average wage and unemployment weren't strong predictors of the vote; unemployment predicting better the vote than average wage. We did find a stronger correlation between the vote and the unemployment in 2012, in an election where economy was the salient issue, coming after a hard hitting economic crisis, with exceptional measures taken by the PD Government, like cutting 25% of the public wages.

The findings suggest the explanations for voting behavior are not unidirectional focused on economics. Voters focus also on arguments related to cultural aspects and the values from the groups they are part of, or on other topics on the agenda (for example, the theme of anti-corruption). Consequently, we propose to develop the research from this paper adding variables that can play a significant role, raising the power of prediction for the model. For Romania, a variable that could have a high prediction power for 2016 elections could be corruption, namely analyzing the influence of corruption scandals on the vote for the parties of the presidents of the county councils who were targeted by penal investigations.

5. Bibliography

Ansolabehere S, Iyengar S, Simon A, Valentino N. (1994). Does attack advertising demobilize the electorate? Am. Polit. Sci. Rev. 88: 829-838

Archer Scotford Margaret, Tritter Jonathan. (2000). Rational Choice Theory: resisting colonization. Psychology Press

Larry Bartels. (2005*). Economic Inequality and Political Representation*. Princeton University Press.

Larry Bartels. (2008). The study of electoral behaviour. The Oxford Handbook of American Elections and Political Behaviour

Petre Caraiani. (2008). *Teorii şi modele ale ciclurilor economice. Aplicaţii pe cazul României.* Editura Universitara. Bucuresti

Anthony Downs (1957). *An economic theory of democracy*. New York: Harper & Bros

Fiorina, Morris. (1981). Retrospective voting in American National Elections. New Haven: Yale University Press

Dorin Jula. (July, 2001).*Impact of political cycles – the relevance of European experiences for Romania*. Universite Pantheon-Sorbonne. Paris, France.

Kahn KF, Kenney P. (1999). Do negative campaigns mobilize or suppress turnout? Clarifying the relationship between negativity and participation. Am. Polit. Sci. Rev. 93

Lazarsfeld Paul, Berelson Bernard, Gaudet Hazel. (1948). The people's choice: how the voter makes up his mind in a presidential campaign. New York: Columbia Univ. Press

Muriel Dal-Pont Legrand, Herald Hagermann. (2007). *Business Cycles in Juglar and Schumpeter, The History of Economic Thought*, vol. 49, No. 1, sursa: http://jshet.net/old/annals/het47-50/4901/legrandandhagemann4901.pdf

Robert Lucas (1976), *Understanding business cycles*, Paper prepared for the Kiel Conference on Growth without Inflation, June 22-23.

Robert Lucas (november 1980), *Methods and problems in business cycles theory*, Journal of Money, Credit and Banking, vol. 12, No. 4

MacDonald, Paul. *Useful fiction or Miracle maker: The competing epistemological foundations of Rational Choice theory*. American Political Science Review. Vol. 97, No. 4, pp. 551-565

Popkin, Samuel L. (1991). The reasoning voter. Communication and persuasion in presidential campaigns. Chicago. University of Chicago Press

The Royal Swedish Academy of Sciences (2004). *Finn Kydland and Edward Prescott's 30. Contribution to Dynamic Macroeconomics: The Time Consistency of Economic Policy and the Driving Forces Behind Business Cycles.*

*** INSSE – www.insse.ro

*** Autoritatea Electorală Permanentă - http://www.roaep.ro/istoric/

A CHANGING LABOUR MARKET – ECONOMIC RECOVERY AND JOBS

Cornelia DUMITRU[1]

Abstract

At European level, the labour market is faced with the same factors of change as the ones at global level: massive technology implementation has allowed for replacing especially middle-skilled jobs with automations, robots and mechanizations. Thus, an ascending trend is registered in the increase of the polarisation degree on labour market.

The existence of three simultaneous generations on the labour market for whom the adjustment to its changes is slowed down as result of austerity measures, diminished opportunities of training within organisations (at least during the period of the crisis), and the changes of perspective and of operating within organisations which is noticeable increasingly more in the post-crisis period. Lifelong learning is gains new values and is more frequently accompanied by the new concept of "agile learning".

Competitiveness, innovativeness, and performance will depend in this context on the way in which policies, actions and measures on the labour market addressing the labour force will succeed in providing solutions for adjusting the labour force to change and the new requirements from the perspective of competencies, skills, and knowledge.

The paper presents a brief review of the post-crisis trends on the EU-28 labour market, with emphasis on the New Member States and in particular with respect to Romania considering the needs of achieving the national and European goals of economic growth and social development.

Keywords: labour market, economic growth, jobs' polarisation, competencies, policies

Rezumat

La nivel european, piața muncii se confruntă cu aceeași factori ai schimbării ca cei remarcați la nivel mondial: implementarea masivă a tehnologiilor a permis înlocuirea mai ales a ocupațiilor cu nivel mediu de pregătire cu automatizări, robotizări și mecanizări. Astfel, se remarcă o tendință în creștere a gradului de polarizare a pieței muncii.

Existența a trei generații simultane pe piața muncii pentru care adaptarea la schimbare a fost îngreunată ca rezultat al măsurilor de austeritate, a oportunităților reduse de instruire în cadrul organizațiilor în care-și desfășurau activitatea (cel puțin pe perioada crizei), precum și a schimbărilor de perspectivă și de derulare a operațiunilor în cadrul organizațiilor, fapt care s-a intensificat în perioada de postcriză. Învățarea pe tot parcursul vieții capătă noi valențe și este tot mai des accompaniată de conceptual de "învățare agilă".

[1] *Scientific Researcher. Institute of National Economy, Romanian Academy, cornelia.dumitru@gmail.com.*

Competitivitatea, inovativitatea şi performanţa vor depinde în acest context de modul în care politicile, acţiunile şi măsurile de pe piaţa muncii adresate forţei de muncă vor reuşi în asigurarea soluţiilor pentru adaptarea acestei forţe de muncă la schimbare şi la noile cerinţe din perspective competenţelor, calificărilor şi cunoştinţelor.

Lucrarea prezintă o scurtă analiză a tendinţelor post-criză de pe piaţa muncii din UE-28, punând un accent deosebit pe Noile State Membre şi în special pe România, având în vedere necesităţile de atingere a obiectivelor naţionale şi europene de creştere economică şi dezvoltare socială.

Cuvinte-cheie: piaţa muncii, creştere economică, polarizarea ocupaţiilor, competenţe, politici

Cod JEL: **F64, F66, I25, J21, J24, O14**
Cod REL: **12A, 12I, 12A, 12Z, 18Z, 20F**

1. Digitalization and computerization as impact factors in changing the labour market

Up to the middle of the 20th century, the labour market was defined in terms of demand and supply of labour force, in the ones related to education and training, to human resources' productivity, and those of human capital's competitiveness. Thus, it could be estimated that there was a certain correlation between technological progress, productivity increase and the training levels of labour force.

The baby-boom of the sixties and seventies ensured the labour resources for all industrial sectors, for services and agriculture, with reasonable levels of unemployment and without registering any worrying signs about diminishing replacement rates on the labour market, or about considerable deficits on fields and sectors. Also, the educational offer met to its largest extent the foreseeable and predictable demand for labour on short- and medium term.

Yet, by the end of the eighties and beginning of the nineties and up to now a paradigmatic change took place on the labour market regarding three determinant relationships: demand and supply, competitiveness, education/training and adjustment to the change of the human capital. The change was already implied by the implementation of increased requirements with respect to education (higher education targets of the European agendas and the Bologna process), and regarding vocational training (implementation and marked promotion of the requirement of lifelong learning) and was accompanied and dominated by evolutions that completely change the picture of economic predictability on fields and sectors. This change, to its vast majority, is due to the intense implementation of automation, robotics and digitalization and to the increasing importance given to those fields and sectors that became known as "knowledge-intensive".

In the present paper, considering the vastness of the topic, we shall limit the references to the countries of Central and Eastern Europe, from a comparative perspective to the countries from Western Europe and, more specifically, we shall focus on some selected countries from among the member-states of the European Union.

Between these two categories of countries – developed and developing ones of the EU – the divergence seems to increase and turn more significant, and the determinant

factors for these increasing differences of the last period are, as opposed to other stages, triggered to a larger extent by the influences exercised by the increasing digitalization degree and access to high-tech at national and individual level; on the available capacities for investments in the fields which configure themselves now to shape the industry and services of the future, but also health, education and culture, on the possibilities of generating incomes especially by increased valuation of innovations, of research-development outcomes directly in enterprises for obtaining superior manufacturing and products, including vocational and professional expert training that meet the increased demand for flexibility. We wish to emphasize that at a level requiring more in-depth empirical but also mathematic-statistical analyses, these influences are, in their turn, shaped by complex sets of information, combined with the tradition, culture and way in which the institutions of these countries have managed to adjust to the changes triggered by technology, innovation and the development of the specific "knowledge-intensive" sector.

Moreover, another essential component is the current existence of three simultaneous generations on the labour market that find the beginnings of their active life and on the labour market in three distinct stages: (i) the baby-boomers generation that is approaching the retirement age and whose expectations in identifying a job on the labour market that meets both expectations and their skills are increasingly more restrictive ; (ii) the transition generation for whom the automation process, respectively the growing complexity of all economic sectors was during their entry on the labour market or, at most, during the mid-term of their active life and on the labour market / that is, this generation was the one 'forced' to ongoing adjustment and to learning 'on the go' the requirements of continuing more different contexts and in continuing change of the workplaces and, finally, (iii) the present generation of youths who grew up while the new technologies registered leaping progresses and who are now in the transition from school to labour market. The highest difficulties are encountered by this last generation who are faced, leaving aside the lack of experience, with two types of challenges since the beginning of the crisis, and even now in the post-crisis period: the challenge of overqualification which often forces them to get employment under their level of education or training, and the one of mismatch between the acquired skills and competences and the actual job requirements.

The policies on the labour market must address these three broad generational categories, and the objective of the Europe 2020 Strategy (75% employment) might not be reached, in the context of fragile economic growth and uncertain economic recovery which is based more on increasing the automation, robot-use and digitalization of manufacturing processes and systems, and less on the valuation of human resources.

2. The European context and Romania's particularities

Currently, economic growth is still uncertain as it is influenced by two types of associated complex phenomena: (i) maintaining the austerity imperatives while the financial-banking system continues to dominate by imposed restrictions the decisions in all other economic sectors; (ii) the increased appetite of public and private enterprises, irrespective of size and activity sector to maximise profits and diminish costs, preferably by quickly putting to good use the newest 'edge' technologies, automations and robots.

From these two phenomena, the one with maximum impact on the human capital and on the generations who are at the age of their active life and who are also

(potentially) in the labour market is the increased appetite of implementing swiftly and at a high rate the newest technologies for maximising profits and diminishing labour costs.

The last years were marked by the emergence of several types of disruptive businesses, and the use of new manufacturing types such as the 3D technology which meets several important objectives of the last decade: allows for delivering the customer according to the requirements right in its proximity, provides also the fingerprint of product localisation and uniqueness, and also meets the needs and demands of complexity management. Thus, this technology shall allow for exclusive or 'unique series' thus anticipating a trend that shall soon become, perhaps, the norm in certain select fields. A concrete example in this respect is the company Shapeways – a Philips Electronics company spinoff which created a market for users: these can choose their own design, materials and generate their own product by means of 3D equipment. Thereafter, the company takes over the manufacturing of the individualised product and the shipping to the customer. Moreover, as a sign of the success of this initiative, the company recently expanded to a decentralised manufacturing network model, by opening a factory of the future in Long Island, New York. This Factory has the capacity to manufacture 3 to 5 million products per year with the aid of about 50 3D printers.

Even though still a manufacturing niche, the 3D technology market proves thus that its applications cover a wide range that can be used by various fields and actual expansion possibilities from health to automotive industry. Just the same, completely automated manufacturing processes, in the absence of the human factor and performed by robots (examples could be the well-known high-tech Phillips razors, manufactured by means of a system built by Adept Technology, or the robots of the automated equipment supplier FANUC which in their turn are assembled by other robots without the need of human intervention during the actual manufacturing process)[2].

Thus, it can be noticed that the main dissociation which constitutes a risk factor at European and national level is the one between the requirements of a changing economy as result of the processes triggering the 4th industrial revolution and the actual mitigation capacities by which assurance could be provided that this type of economic growth shall not turn into a higher threat for the labour force and its employment chances.

The answer needs to be identified and approached on three essential levels:

i) institutionally – by reconfiguring the institutions so as to ensure the agreement between the imperatives of economic growth and the social ones that were for a long time neglected in favour of pursuing the economic goals;

ii) the public-private cooperation level for identifying measures, actions and innovative methods for stimulating labour demand and managing the complex economic context which is continuously changing;

iii) expanding the collaboration between the public and private sector and the educational and vocational/professional training system for encouraging measures and actions of skilling – re-skilling – specialisation and professionalization and this especially because part of the reasons for skills' mismatch is found in the occupations, professions and specialisations that imply the complete valuation of STEM competences, of cognitive

[2] https://www.atkearney.com/paper/-/asset_publisher/dVxv4Hz2h8bS/content/new-manufacturing-technologies/10192

and creative capacities in fields that are shaped now and which shall determine the future as result of the technological progresses based on 3D, artificial intelligence, nanotechnologies, biotechnologies and on the internet of things in industries and services.

The current situation brings back to the forefront the Keynesian idea about the relationship between technological progress and job creation proven also by the study from 2013[3], which reconfirmed the main trends regarding employment. In this study, Osborne and Frey (2013) drew attention to the fact that several jobs vanished during the crisis and their (re)creation is improbable as result of the intensive implementation of automated solutions – even if not as radical as the ones mentioned above – at the level of companies. The authors concluded that there are such risks for about 47% from total occupations in the US[4], and the European think-tank from Brugess calculated that these risks vary between 47% for Sweden and Great Britain, and that the probability increases to up to 62% in the case of Romania with respect to occupations[5].

This observation is confirmed, to a certain extent, if we consider the evolution of occupations in Romania, and in particular of the occupations in the knowledge-intensive industries and services. Thus, the percentage of professionals in technology and knowledge-intensive sectors at national level increased from 10.1% in 2008 (NACE Rev. 2) in Romania to 13.5% in 2014, yet the gap remains considerable considering the rapid development of employment in the United Kingdom from 14.3% (2008) to 24.5% (2014), that is above the EU-28 average employment of 18.6%. The employment for this category of professionals was constant in all selected countries, but UK had the steepest increase (see Table 1). Another observation that can be made, is that among the selected countries, similarities can be noticed in the developments recorded by the New Member-States and the former member-states of convergence and cohesion (Spain, Portugal, Greece).

Table 1. Professionals' employment in technology and knowledge-intensive sectors at national level, by type of occupation 2008-2014, (NACE Rev.2) in %

Country	2008	2009	2010	2011	2012	2013	2014
European Union (28 countries)	13.8	14.3	14.6	17.8	18.1	18.4	18.6
Bulgaria	12.3	12.7	13.0	15.5	15.3	15.6	16.6
Czech Republic	11.0	11.6	10.4	12.6	13.8	14.5	15.0
Germany	14.4	14.9	15.2	17.4	16.7	16.7	16.9
Greece	14.8	14.8	15.3	17.7	18.7	19.5	18.8
Spain	12.9	13.9	14.5	16.3	17.1	17.6	17.5

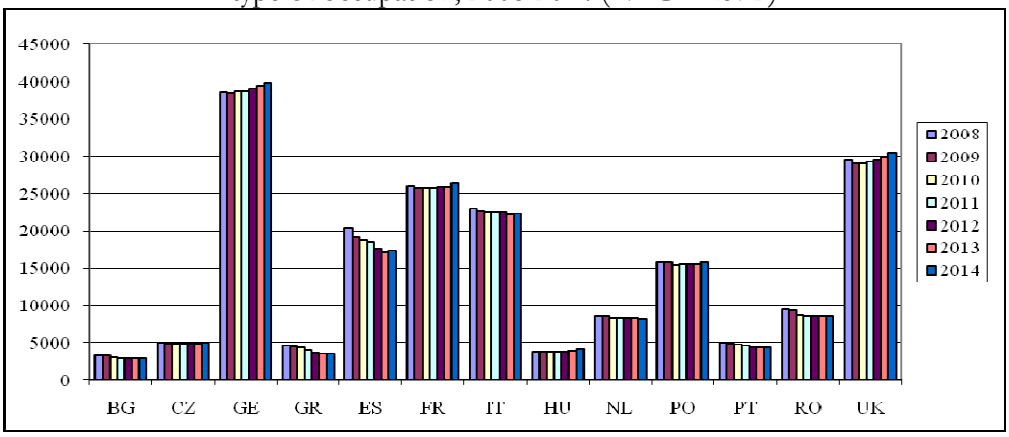
[3] Frey, Carl Benedikt, Osborne, Michael A. (2013). The Future of Employment: How susceptible are jobs to computerization?,
http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf
[4] ibidem
[5] http://bruegel.org/2014/07/the-computerisation-of-european-jobs/

France	13.6	13.8	14.1	16.6	17.2	17.1	16.7
Italy	10.4	10.3	10.0	13.3	13.7	14.2	14.3
Hungary	13.9	14.7	15.0	15.9	16.3	16.2	15.5
Netherlands	19.6	19.8	19.9	22.6	22.9	23.9	24.4
Poland	15.0	15.9	16.5	17.1	18.0	18.4	18.8
Portugal	9.1	9.6	10.1	14.4	15.2	15.6	17.0
Romania	10.1	10.3	10.7	13.8	13.4	13.0	13.5
United Kingdom	14.3	14.8	15.2	24.1	23.9	24.4	24.5

Source: Eurostat data, htec_emp_nisco2

The above image becomes even more worrying, if we consider the overall employment in technology and knowledge-intensive sectors for the entire period 2008-2014 by occupations (NACE Rev.2). It shows that one major reason for the increasing discrepancies between the New Member States (NMS), the former member-states of convergence and cohesion and the Old Member-States can be found in the developments in these sectors that shall register the highest increases also in the future (see Fig. 1).

Fig. 1 Employment in technology and knowledge-sectors at the national level, by type of occupation, 2008-2014 (NACE Rev.2)



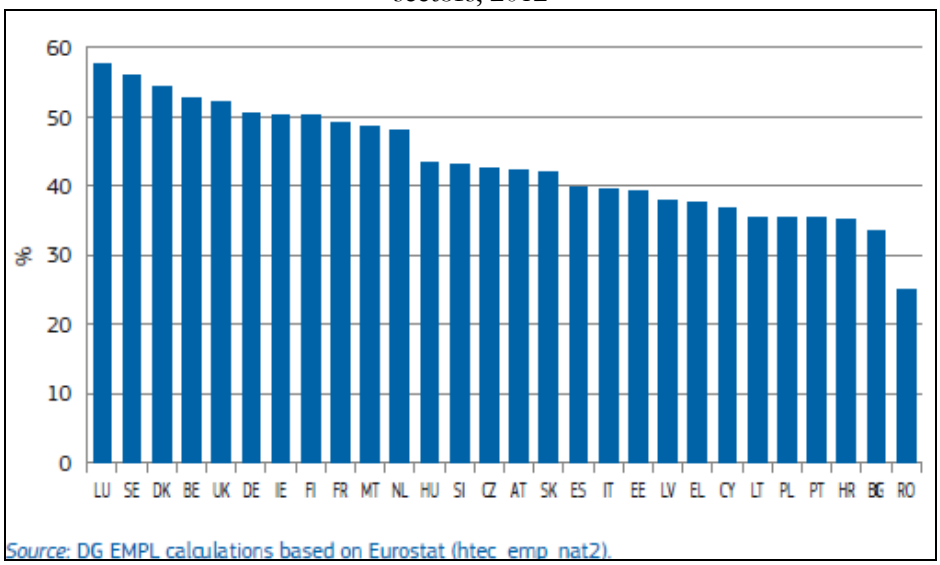
Data source: Eurostat data, htec_emp_nisco2

Employment and making full use of the potential provided by the knowledge-intensive sectors in EU-28 and Romania shall become even more relevant in the following years, as the time horizon 2020 represents a true challenge in this context, in particular for the former convergence and cohesion member-states and the New Member States (NMS).

The percentage of employment in knowledge-intensive industries and services reflects the almost complete reorientation of European and world economies on one hand, and on the other opens new dimensions regarding internal competitiveness between the member-states of the European Union. In this respect, we mention the situation corresponding to the year 2012, when Romania was placed, unfortunately, on the last position with respect to employment in such fields, with a percentage of under

30% in total employment, whereas the same percentage was of over 50% for the developed economies of the EU-28.

Fig. 2 Employment percentage in knowledge-intensive manufacturing and services sectors, 2012



In the period preceding the crisis, over 30 million new jobs were created. Yet, by the end of 2008 almost 6 million of them vanished, and unemployment continued to register 2 digit figures, the peak being a rate of 11% of EU-27(28) unemployment up to the year 2013. Unemployment continued to generate severe effects, the last statistical data for the months of August 2015 indicating a seasonally adjusted unemployment rate of 11%, on relative decrease against 11.5% in August 2014 for the Euro area. As a whole, at EU-28 level, the unemployment rate was of 9.5% in August 2015, relatively stable as compared with July 2014 and on a decreasing trend against 10.1% in August 2014[6].

The trends regarding unemployment are increasingly more comparable with the gap referred to between Northern and Western Member-States and the ones of Central, Eastern and Southern Europe, with the lowest unemployment rates recorded in Germany (4,5%), the Czech Republic (5.0%) and Malta (5.1%), and the highest in Greece (25.2% in June 2015) and Spain (22.2%) for the same period[7], whereas in the NMS the highest long-term unemployment rates were registered in Croatia where from an unemployment rate of 6% in 2007 before the outbreak of the crisis, the unemployment reached 10.1% in 2014 for the age group from 15 to 74 years of age. Romania succeeded to maintain long-term unemployment at relatively reasonable levels, where from 3.2% (2007) it decreased to 2.8% for the age group 15 to 74 years in 2014.

Despite maintaining low levels of long-term unemployment, the situation is not encouraging and the explanations can be found, in our opinion, one hand in the failures

[6] c.europa.eu/eurostat/statistics-explained/index.php/Unemployment_statistics#Main_statistical_findings
[7] According to Eurostat statistics.

recorded by Romania on several issues: firstly in delayed reform processes, and lacking monitoring and evaluations before initiating a new 'reform in reform' such as in the case of the education system; the delay in putting to good use the vocational training, retraining and improvement opportunities for the existing labour force partly because of the still predominant use of mostly passive social protection measures, instead of the active measures on the labour market, and on the other hand to the unpredictability of the business environment associated with strict and rigid regulations on the labour market that do not encourage either the business environment nor the individuals to be more involved in such projects and programmes.

A risk derived from the above-mentioned is the loss of the competitive advantage in Romania: if up to now it was alleged that there is the attractiveness of the cheap and well-skilled labour force, as of the 2000s this attractiveness decreased constantly.

The increase in the labour costs is an additional factor of discouragement in the context in which the 'reform in reform' of the educational system generated and continues to generate delays of curricula adjustment at all levels to the new trends of the economy and society.

A fact is certain: the current trends of development for the industrial and services' sectors shall generate jobs and in complex occupations and professions, cross- and inter-disciplinary, dominated by the use of high- and medium-high-tech. Yet, the essential condition for achieving new and better jobs according to these developments is the extended and institutionally regulated collaboration between public and private institutional stakeholders on one hand, and on the other hand of these stakeholders with the educational systems and the social ones in order to provide some guarantees for retaking a sustainable, intelligent, and 'green' economic growth at EU-28 level.

This finding is supported also by the outcomes of the first pan-European CEDEFOP Survey[8] which, among others, mentions that the majority of new jobs, professions and trades shall be increasingly more acquired on the job, which implies also the need for more investments – as these were much diminished during the crisis period – in fostering, developing and diversifying knowledge and skills.

Thus, a new concept which is recently more often associated with lifelong learning becomes important, respectively 'agile learning'[9], which represents an additional chance in the tenuous adjustment of the labour force to the changes in industry, services and in the economy and society as a whole.

Even the expectations of the active population in the labour market confirm this approach: 47% of the adult individuals active in the labour market of EU-28 were witness and continued to be active while the technologies they used changed at a fast pace, and they assume that also in the future they will have to deal with this type of

[8] http://www.cedefop.europa.eu/en/news-and-press/press-and-media/press-releases/europe-needs-better-jobs-better-matched-skills-cedefop

[9] By agile learning (as a first tentative definition) is understood the capacity of adjusting skills, competences and abilities acquired within an organisation, or based on a certain type of education/vocational training and which were employed in a certain job to other, various, different and flexible contexts, in different fields of specialisation than the previous one in which learning took place with respect to competences, skills and knowledge.

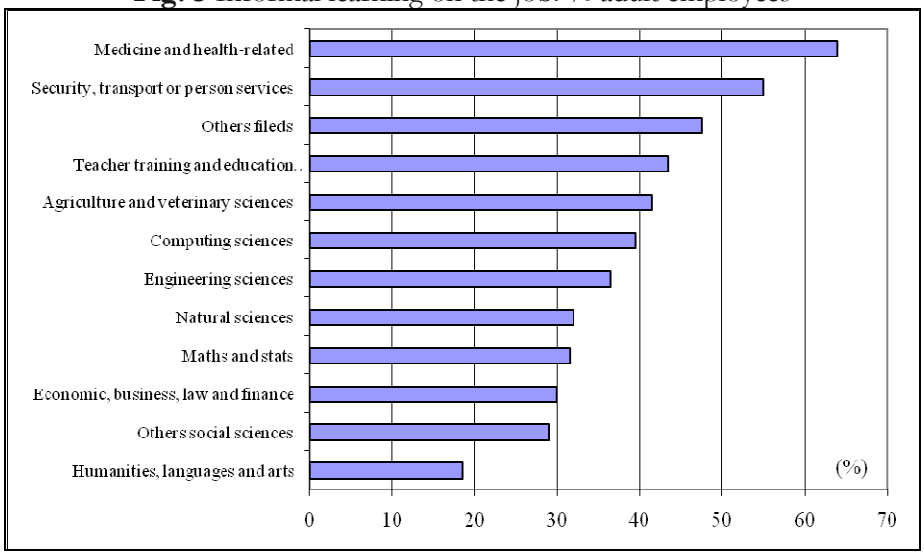
process; moreover, 21% of these individuals believe that many of their competences and skills shall become obsolete in the following five years. Noteworthy and an indicative is also that the majority of those interviewed were professionals and technicians in ITC and financial sectors, including manufacturing and services[10].

If we link agile learning to expectations expressed in this survey, we find that one of the main issues determined at European level by the differing educational systems, but also by the institutional culture regarding education and learning is the one about the options of each member-state for encouraging to a wider or lesser extent learning on the job and, implicitly, for encouraging in the future agile learning.

Additional attention should be given to the concerns about the wide differences on fields and sectors about the interrelationships between formal and informal learning.

Thus, one of the most restrictive fields with respect to informal learning is represented by humane sciences, languages and arts, followed by other social sciences, whereas informal education on the job is mostly representative for security, transports, person services, health and health care related services (see Fig. 3).

Fig. 3 Informal learning on the job. % adult employees



Data source: Cedefop, European Skills and Jobs (ESJ) Survey, 2014

In Romania, the dual education system is still in an incipient stage as measures are necessary to encourage its development, along with increasing the emphasis on active labour market measures, and curb down the present tendency of putting to good use mostly passive social protection measures.

Moreover, the education system, the business sector, the manufacturing and services' sectors should strengthen their collaboration for promoting research-development and innovation at national level considering the existence of a worrying gap

[10]http://www.cedefop.europa.eu/en/news-and-press/press-and-media/press-releases/europe-needs-better-jobs-better-matched-skills-cedefop

in this respect between Romania and EU developed countries, but also between Romania and some of the NMS.

Encouraging alternative educational paths, with the possibility of transiting and promoting from one system to the other, as well as encouraging employers to support lifelong learning, and skilling/re-skilling courses could contribute to avoid increasing the disjunction regarding the economic development on the main axes as configured by the industrial and services' sectors between Romania and its main competitors from Central and Eastern Europe.

Also, such an approach would have as effect also the increase of productivity and of the value added of products' and services' at national and European level.

Identifying methods and ways of recognising competences, knowledge and skills acquired informally on the job, as well as promoting agile learning on the job would provide for increased chances of employment for those seeking a job, for maintaining a well-trained and skilled labour force, with constantly updated knowledge and competences.

Informal learning on the job, combined with developing essential skills and competences for agile learning will allow on one hand for increasing employment opportunities at individual level and, on the other hand, it represents one of the factors contributing to increasing productivity at national level, regional and local level. The reasons is that the informal environment allows for improving competences by ensuring improvement of the already gained competences, and also acquisition of either complementary or completely different new ones, which are useful in the respective context and can be applied further in diversified other contexts.

Romania is faced with multiple risks, of socio-demographic nature, respectively rapid population ageing, youths' migration which is also a massive brain-drain; risks generated by the educational system due to postponed, delayed or partial reforms which impeded the design of curricula in accordance with the current demands of an increasingly more competitive and constantly changing labour market; risks generated by the industrial and services' sectors in particular with respect to high-tech and medium-tech competitiveness.

3. Instead of conclusions

The labour market was and continues to be affected by rapid changes in: (i) the economic environment (changes in the nature of jobs, of job requirements, increasing complexity, change of organisational structures for mitigating the demands of the new industrial development stage); (ii) in the used technologies (internet, automation, digitalisation, artificial intelligence, nanotechnologies, biotechnologies, etc); (iii) social change with increasing representativeness of the middle-class (in particular in the developing countries of the EU-28); (iv) swift urbanisation; (v) the demographic change, that is ageing population – the common trait of both developed and developing countries of the EU-28. All these developments, combined, have as outcome a change in the social perceptions and expectations of the current generations, as the economic framework changes also, along with the concepts regarding standards of living, the quality of life, all influenced by the facilities provided with respect to having access to and making use of high-tech products and services, inclusively for health, and finally by redefining, thus, the work-life balance.

The jobs lost during the crisis period will never be recovered based on the premises created by the programming exercise 2000-2010. At the same time, the technological progress along with the implementation of innovation which from an institutional viewpoint were not very well managed considering the agreement and relationships with other relevant institutions and the impact on the labour market and the human capital risk to increase divergence and discrepancies with respect to wages, investments, competitiveness, etc. on medium- and long-term.

In order to attenuate divergence at European level, all member-states would require measures of economic and social policy directed towards:

i) redesigning the educational system but by avoiding reform in reform methods, or successive reforms that do not allow for evaluations of the outcomes up to the time of the new reform, or for better and closer coordination and collaboration with the main systems and subsystems of the business environment, including main stakeholders and companies in industry and services;

ii) evaluating and recalibrating the structure of national economies for identifying main competitive advantages based on selective country, region etc., specialisations;

iii) reconfiguring social systems for increasing their flexibility and for their better and swifter adjustment to changes in the economic environment;

iv) evaluating and updating contractual forms in the field of labour legislation which currently characterise the labour market, in fact, this could be actually the first important step, if more in-depth analyses are made not only regarding demographic trends, but also the decisive changes characterising the generations born after 1990: many youths tend to maximise their opportunities by punctual cooperation with companies, start-ups, even if they are not the entrepreneurs setting these companies up, or by collaborating with other types of companies and innovative organisations and abandoning the consecrated success models of the past such as, for instance, employment with multinational companies and corporations.

This approach is more than necessary in the current stage of uncertainty and difficult creation/generation of new jobs, and the supply of punctual activities, for a determined period of time, and other such formulas of activity begin to exceed not only in volume, but also as practical achievement the traditional evaluation formulas according to the classification by temporary labour contract, determined period labour contract, part-time contract, etc.

Future generations begin to perceive these contractual conditions as a new and full of challenges framework for their personal and professional development, which allows them to particularise and individualise their career path and maximise incomes during the entire active lifetime.

Yet, this type of economic behaviour includes also risks for the social insurance systems, for the national fiscal systems and even for the individual in question, if not accordingly managed.

This is precisely the type of challenges that must be answered to by the European institutions and institutional frameworks in the next period. Therefore, a fresh approach is necessary with respect to institutions and their filtering based on certain criteria that would answer to a corresponding set of questions: are these strong, stable institutions for which the improvement could generate better outcomes? Or they are institutions and institutional

frameworks created to mitigate punctually some certain circumstances and states-of-affairs? As an example, there could be instances in which an institution could become useless or even counterproductive. The answer to these questions by taking into account the current stage of industry and economy change allows for establishing their economic and relevance and importance, but more importantly, for their correct framing into a new socio-economic context triggered by the knowledge society and economy that will change decisively also the labour market in the following ten to twenty years.

REFERENCES

Alfonso Arpaia and Gilles Mourre **(2009):** Institutions and Performance in European Labour Markets – Taking a Fresh Look at Evidence, Directorate General for Economic and Financial Affairs, Economic Papers 391,European Commission, November, 2009

Boeri, Tito**:** Institutional Rerforms in European Labour Markets

http://eml.berkeley.edu/~cle/secnf/boeri.pdf

Frey, Carl Benedikt, Osborne, Michael A. (2013). The Future of Employment: How susceptible are jobs to computerization?,

http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

Scharpf, Fritz (2002): "The European Social Model: Coping with the Challenges of Diversity", *Journal of Common Market Studies* Vol 40, No 4 (2002), p. 665.

Schiliro, Daniele **(**2012): Knowledge-based economies and the institutional environment, DESMas „V.Pareto", Universita degli studi di Messina, November 2012,

http://mpra.ub.uni-muenchen.de/37138/ MPRA Paper No. 37138, posted 6. March

Vidovic, H.(2013): Labour Market Developments and Social Welfare, Wiener Institut für Internationale Wirtschaftsvergleiche Research Reports, 392.

https://www.atkearney.com/paper/-/asset_publisher/dVxv4Hz2h8bS/content/new- manufacturing-technologies/10192

http://www.cedefop.europa.eu/en/news-and-press/press-and-media/press-releases/europe-needs- better-jobs-better-matched-skills-cedefop

A CAUTIONARY TALE FOR DIGITAL AGE TRANSITIONING: THE IMPEDING POLARIZATION EFFECTS

Raluca Ioana IORGULESCU[1]
John M. POLIMENI[2]

Abstract

Jobs are susceptible to computerization depending on the tasks involved. The existing literature documents the impact of computerization on labor market outcomes in highly developed countries and it also raises awareness about the future of IT-saturated societies based on the experience of advanced countries.

In 1966, Michael Polanyi observed that "We can know more than we can tell... The skill of a driver cannot be replaced by a thorough schooling in the theory of the motorcar..." and almost fifty years later David Autor explains how the IT revolution is a cause for an accelerated labor market polarization (a simultaneous increase of jobs requiring high-education and offering a high wage and of jobs requiring low-education and paying a low-wage) as an expression of Polanyi's paradox.

This paper will present, assuming an intensifying IT revolution globally, an overview of the concepts and the empirical results that warn about the possibility that an IT-bounded Romanian labor market where Polanyi's paradox and the productivity paradox are at work could increase inequality through digital divide, job polarization and wage polarization.

Keywords: Polanyi's paradox, productivity paradox, labor market polarization, digital divide, digital age, Romania

JEL Classification: J23, J24, O14, O33

1. Introduction

The knowledge society announces itself as the next stage of country level socio-economic organization and it is critically influenced (for the good or for the bad, the future will decide …) by the leveling effect of globalization. The most developed countries are already experiencing a structural change, while the rest of the world might follow them sooner or later. It should be mentioned the case of former centrally planned economies which transitioned (and some are still transitioning), after the fall of the Berlin Wall, to open-market systems. These countries (especially if they became or will become members of the European Union) have to undergo, simultaneously, a double structural change (cascade transition).

Each country, because of institutional variety, has its own specificity and increasing computerization could influence it in a different way since certain jobs are at risk more than

[1] *Senior Researcher. Institute for Economic Forecasting–NIER, Romanian Academy, Bucharest, Romania,raluca_i@lycos.com.*
[2] *Associate Professor. Economics at Albany College of Pharmacy and Health Sciences, USA.*

others. Frey and Osborne (2013, 44) examine how the advancement of robotics "is likely to change the nature of work across industries and occupations" and implement a novel methodology to assess the susceptibility to computerization for more than seven hundred occupations in the United States. This study is not singular; the impact of computerization on labor market outcomes in highly developed countries is documented in the literature (Autor, Katz, and Kearney, 2006 and 2008; Goos and Manning, 2007; Autor and Dorn, 2013; Goos, Manning, and Salomons, 2014). The downside of this experience should be a warning signal for societies with a fast pace of IT catching-up or moving in this direction especially since The Global Information Technology Report 2014 finds that "The digital divide between developed and developing countries is widening as emerging nations, despite large investments in ICT, are failing to reap the same big economic and social benefits from technology as their more developed cousins" (Bilbao-Osorio et al., 2014).

McMullin and her collaborators (2007, 308) accurately point out that any person with a lack of technological skills is exposed to be excluded from various aspects of life including employment. Unfortunately, in this way the advancement of the IT revolution breeds a *digital divide* among the citizens of one country (nationally) or among countries (globally) and it seems to be one of the most recent causes for increasing inequality. If in a world of digital economies, Moriset and Malecki (2007, 2009) emphasize the paradox of local ecosystems as 'double-edged' geography.

In 1987, Robert Solow, the well-known Nobel laureate in economics, noticed: "You can see the computer age everywhere but in the productivity statistics"; following his remark, the unfulfilled expectations for a spectacular productivity growth after the huge investment in information technology was labeled the *productivity paradox*. Today, around the world, there is an ongoing debate (Liu et al., 2014; Acemoglu et al., 2014; Mithas and Lucas, 2014; Chen and Xie, 2014; De Serres et al., 2014) over the causes and the measurement of this effect for different countries while the research on the link between informatization and economic growth is polarized between "the digital divide" and "the world is flat" (Sun et al., 2014).

Increasing labor market polarization (the simultaneous increase of jobs requiring high-education and offering a high wage and jobs requiring low-education and paying a low-wage) in developed countries undergoing a structural change, caused by the advancement of the IT revolution, is an expression of *Polanyi's paradox* (Autor, 2014). The discussion about this paradox, also known as 'the problem of Tacit Knowledge', started, half century ago, with Michael Polanyi's remark: "We can know more than we can tell... The skill of a driver cannot be replaced by a thorough schooling in the theory of the motorcar" (1966) and it blends today, conceptually, with the debate about the prospects for artificial intelligence.

In the case of an IT-intensifying society, socioeconomic polarization and inequality could increase through three channels: human capital digital divide, job polarization and wage polarization. This paper sketches a digital age labor market subjected to Polanyi's paradox and productivity paradox, it introduces the concepts, gives some information for highly developed countries and cautions with respect to countries subjected to cascade transitions.

The rest of the paper is organized as follows: Section 2 introduces the IT productivity paradox. Section 3 presents more details about the labor market polarization effects of an IT-economy while Section 4 introduces the case of cascade transitions. Section 5 concludes.

2. The IT revolution and the productivity paradox

Autor (2014, 3) reminds us that Keynes, in his essay 'Economic Possibilities for our Grandchildren' (1930), foresaw that in a century's time, "we may be able to perform all the operations of agriculture, mining, and manufacture with a quarter of the human effort to which we have been accustomed" but he was optimistic that, despite the short-term new disease called technological unemployment, in a century a fifteen-hour workweek and a high standard of living would be the norm. Meanwhile, according to Autor's calculations, in the U.S. "The share of information processing equipment and software in private, non-residential investment rose from approximately 8 percent to more than 30 percent between 1950 and 2012, with the largest leap occurring between 1990 and 2000".

The productivity paradox was analysed and popularized in the seminal paper by Brynjolfsson (1993) "The productivity paradox of information technology" for the case of the United States. It showed how over twenty years, between 1970 and 1990, delivered computing-power increased by more than two orders of magnitude while productivity for the same period seemed to have stagnated. Brynjolfsson reviewed a vast literature aimed at explaining the productivity paradox and he concluded that methodological and measurement deficiencies of IT productivity are as much to blame as the mismanagement by developers and users of IT. Actually, four categories of explanations were delimitated: measurement of outputs and inputs, lags due to learning and adjustment, redistribution and dissipation of profits and, last but not least, mismanagement of information and technology.

A historical look at the evolution of the digital technology and at the measurement of the associated productivity growth was provided by Paul A. David (2000). It is of interest to mention some of his findings since the dotcom bubble (IT bubble) started roughly in 1997 and burst in 2001. He also warns about the IT revolution and the subsequent labor market impact and measurement difficulties associated with this type of structural change of the economy:

The development and exploitation of digital information, like previous profound historical transformations based upon new "general purpose engines," turns out to entail a complicated techno-economic regime transition whose success is contingent upon the coordination and completion of many complementary changes in methods of production, work modes, business organization, and supporting institutional infrastructures. Transformations of that sort, however, involve not only the obsolescence of skills, capital assets and business models; typically they are marked also by the accelerated rate of appearance of new goods and products. For a time, then, the latter developments are of a sort that will seriously challenge the ability of inherited statistical indicators to track and measure the performance of the economy which is undergoing significant and unprecedented structural changes. (David 2000, 56)

A decade ago, Warren Bennis, the man who invented the study of corporate leadership, was reported saying that even if over the past 25 years the IT Revolution has increased productivity by almost 70 percent in the United States, instead of technology becoming a time-saver "everybody... is working harder and longer" (Mandel et al., 2005). This is another facet of the productivity paradox emphasized even more by Bob Moulesong, who wrote in 2013 about corporate America; he makes the point that "despite years of cutting corporate bloat, managers are a much bigger share of the workforce than they were 15 years ago".

The fact that globalization and the Internet, despite offering a host of new opportunities, do augment the intensity of competition and entail a lot more work is supported using the results of a McKinsey survey covering more than 7,800 managers from

all over the world. Even more, one quarter of large companies' executives say "their communications – voice mail, e-mail, and meetings – are nearly or completely unmanageable" and "40 percent of executives spend a full day per week on communications that are not valuable" (Moulesong, 2013). Decades ago, Nicholas Georgescu-Roegen warned about the action of the entropy law for societies evolving towards increasing complexity and implicitly bureaucracy. When it comes to corporate 'bureaucracy' "No matter how many layers of management were supposed to be taken out in the great restructuring, there always seem to be more people on the e-mail distribution lists" (Moulesong, 2013).

3. The emerging labor market in the digital age: polarization effects

Workers skilled in using new information and communications technologies (ICT) are more efficient and in developed countries automation already replaced many unskilled manual jobs. Job polarization due to computerization is explained mainly based on two hypotheses: skill-biased technological change or the increased demand for more educated workers (SBTC) and routine-biased technological change or the preference for replacing labor in routine tasks (RBTC).

Technology-related wage inequality increased abruptly in the US and UK starting in the 1980s and after a few years it spread across the OECD. In the last quarter of a century, developed countries increasingly encountered polarized labour markets (they lost many jobs from to the central part of the wage distribution while were created jobs at the lower and higher ends of it). Goos et al. (2014) show that between 1993 and 2010 job polarization across advanced economies in Western Europe became pervasive and their model explains it based on RBTC and offshoring (their results show RBTC to be the most important cause).

Given the extensive research on impact of ICT on labor market polarization in the United States, it is imperative to recall the 2009 warning given by Susan Crawford, President Obama's special assistant for technology and innovation at the time: "we are creating two Americas where the wealthy have access…. while others are left on a bike path, unable to join in the social and economic benefits that the internet brings" (Crow 2014, 2).

In the aftermath of the Great Recession shock, the McKinsey Global Institute discussion paper 'Help wanted: The future of work in advanced economies' (Manyika et al., 2012) highlighted the long-term issues affecting jobs and employment in advanced economies and warned that "labor market institutions and policies have not kept up with the changes in business practices and technology that are defining what kinds of jobs will be created and where they will be located. As a result, simply restoring robust aggregate demand may not be enough to bring back pre-recession employment levels and will not prepare the workforce for the new jobs of the next two decades."

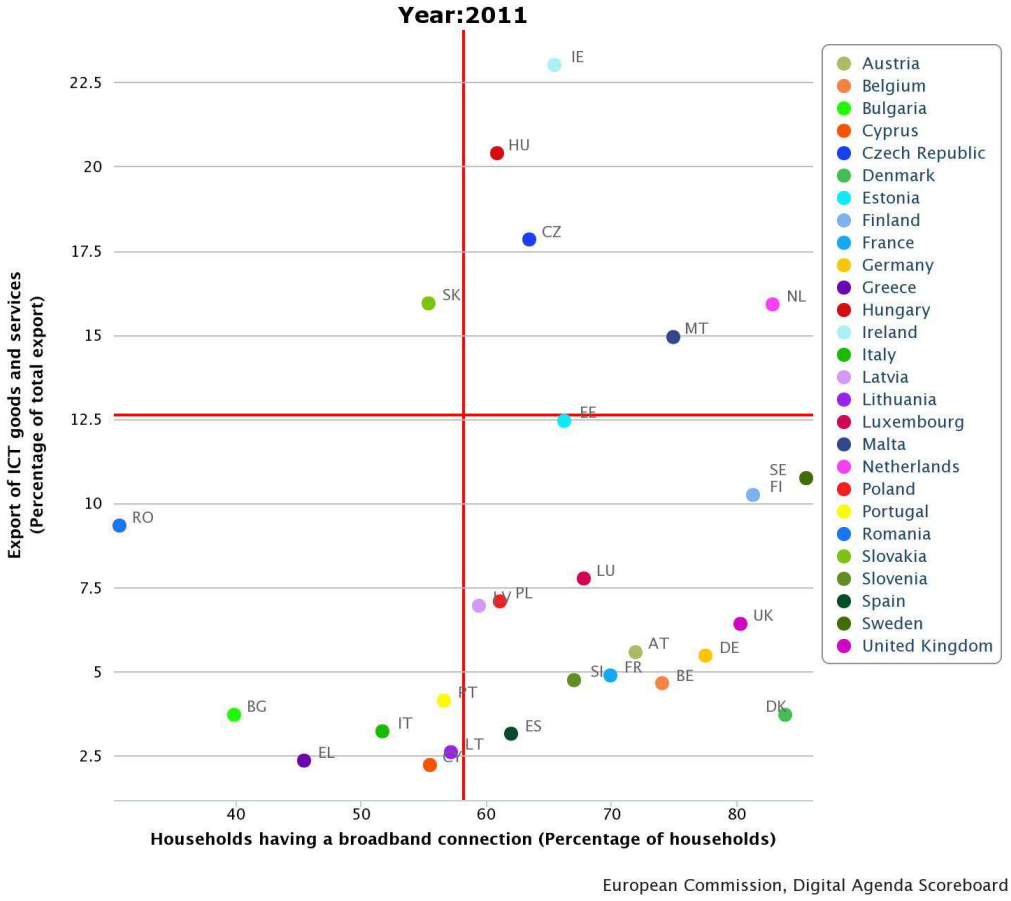
Recently, a poll of the most important U.S. mainstream academic economists was conducted by the Chicago Initiative on Global Markets on the impact of technology on employment and earnings. The poll results suggest that many of the leading economists in the U.S. have "accepted—at least tentatively—the proposition that a decade of technological advancement has made the median worker no better off and possibly worse off" (Autor, 2014).

4. Signaling cascade transitions

If attention is turned to countries that aim to emulate the digital age model of development, it is of interest to focus on the European Union due to its unique mix of

countries in different stages of development (transitional, less advanced and advanced) striving for convergence as a functional entity. The Digital Economy and Society Index (DESI) "is a composite index developed by the European Commission (DG Connect) to assess the development of EU countries towards a digital economy and society. It aggregates a set of relevant indicators structured around 5 dimensions: Connectivity, Human Capital, Use of Internet, Integration of Digital Technology and Digital Public Services"; DESI scores range from 0 (worst performance) to 1 (best performance). Based on DESI, European Union countries are organized in clusters with the 2015 low-performance cluster including Bulgaria, Cyprus, Greece, Croatia, Hungary, Italy, Poland, Romania, Slovenia and Slovakia. Of these ten Member States, seven are former transitional countries (except for Cyprus, Greece and Italy) and they joined the EU in three waves: Hungary, Poland, Slovenia and Slovakia in 2004, Romania and Bulgaria in 2007 and Croatia in 2008.

FIGURE 1 ICT EXPORTS VERSUS HOUSEHOLDS WITH BROADBAND CONNECTION FOR EU COUNTRIES (%, 2011)

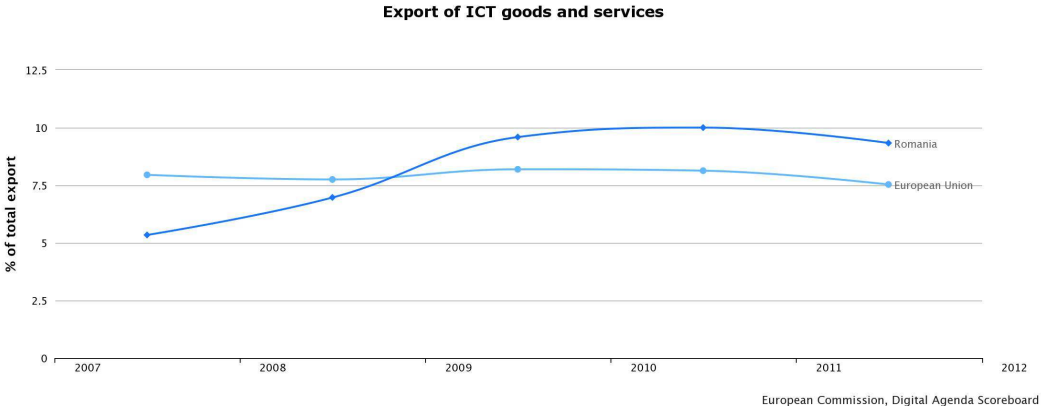


Source: European Commission, Digital Agenda Scoreboard

The case of Romania is one of interest since the country is emerging as a preferred IT offshoring location for companies including Oracle, Microsoft, IBM, and Vodafone, despite its overall severe digital gap (Figure 1).

Between 2007 and 2010, the share of Romanian ICT services in total exports was above the EU average (Figure 2).

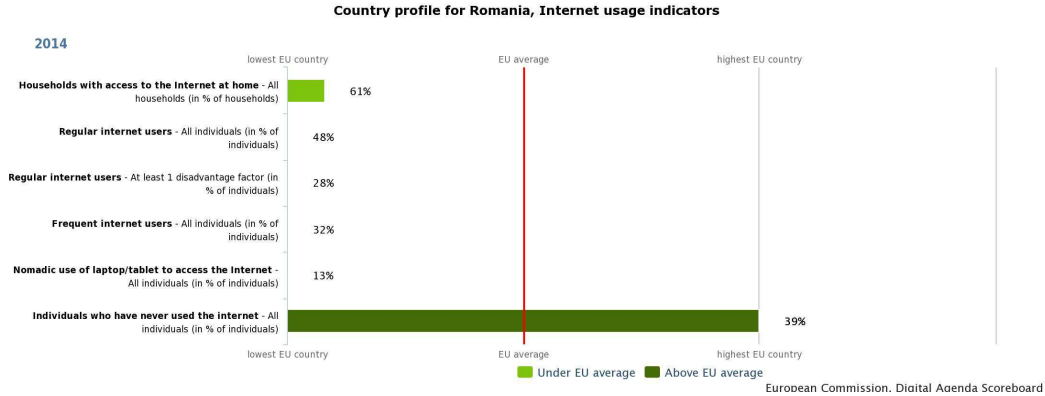
FIGURE 2 ICT EXPORTS FOR ROMANIA VERSUS EU AVERAGE (2007-2011)



Source: European Commission, Digital Agenda Scoreboard, Romania

Romania has the lowest percentage of regular Internet users in the EU; it is not a surprise since 39% of its total population has never used the Internet (while the average for EU is 18%).

FIGURE 3 INTERNET USAGE INDICATORS FOR ROMANIA VERSUS EU AVERAGE (2014)

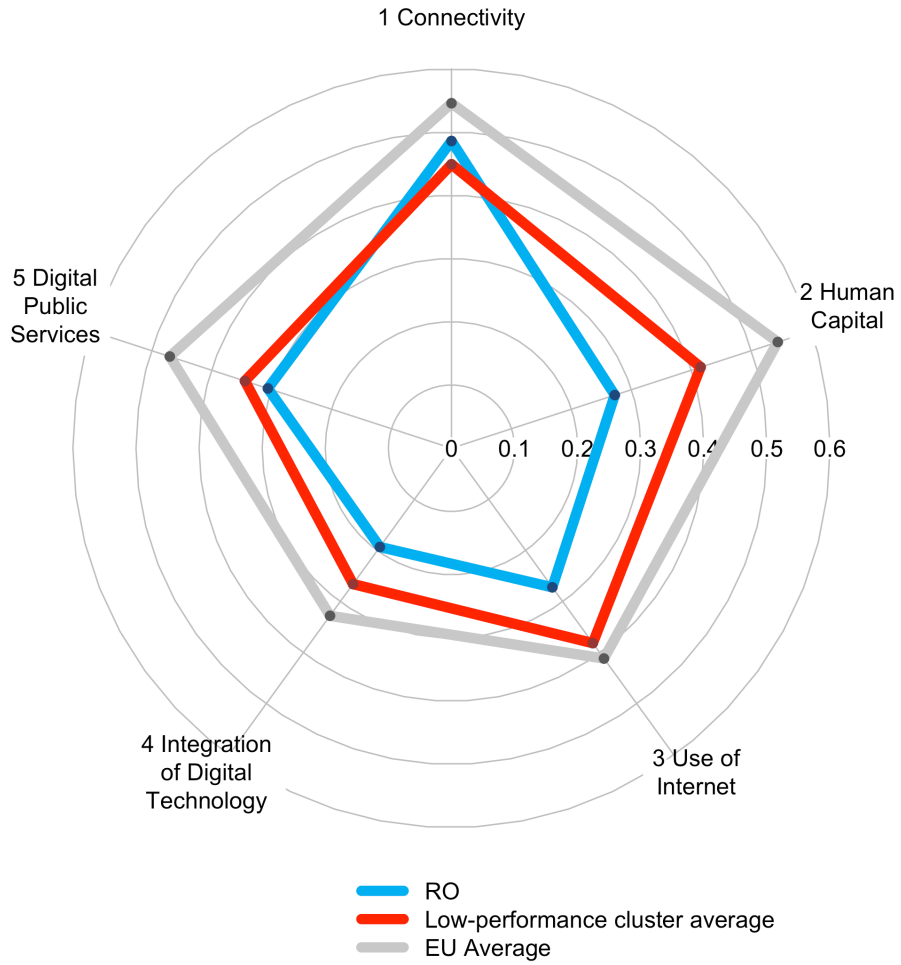


Source: European Commission, Digital Agenda Scoreboard, Romania

According to the EU Digital Agenda country profile (Figure 3), Romania has an overall DESI score of 0.31 ranking 28 out of the 28 EU Member States. Relative to 2013, Romania improved 5% in terms of Connectivity, as more people subscribe to fast broadband networks (59% in comparison to 54%– Romania ranks second for this indicator). Regarding

the development of a Romanian digital economy, there are some barriers: low levels of digital skills (only 20% of population with basic digital skills and the lowest share of ICT specialists - 1.3%- in the workforce of all EU countries) and trust (only 7.7% of internet users use online banking and only 17% shop online - the lowest of all EU countries).

FIGURE 4 THE FIVE DIMENSIONS OF DESI FOR ROMANIA, LOW-PERFORMANCE CLUSTER AND EU28 AVERAGES (2014)



Source: European Commission, Digital Agenda Scoreboard, Romania

Even from these few data, it is easy to infer that the process of converting Romanian society to become part of the EU digital society would encompass a multitude of drastic changes on various aspects such as economic, societal, culture, education, health care and last but not least institutions. A rigorous analysis of these impacts is beyond the purpose of this paper but the warning signal can be raised: the subsequent shocks might be very hard (if not impossible...) to absorb since the impeding polarization and increasing inequality will be superimposed on a society already very poor according

to EU standards; in 2013, more than 40% of the population was at risk of poverty or social exclusion.

5. Conclusion

Digital society seems to be the dream world of the future… but this dream might turn to be a nightmare for countries striving to achieve it blindly emulating developed economies. This is especially true for ex-centrally planned economies in Central and Eastern Europe which would be subjected to a cascade transition with no time to build safety nets.

This paper has examined the labor market polarization and increasing inequality effects (Polanyi paradox, productivity paradox, digital divide, job and wage polarization) associated with the evolution of developed countries towards a digital stage. It presents the case of cascade transitions to draw attention to the difficulties to be faced by the newer Member States striving to achieve the digital society goal set by the European Union. Further work will offer a more detailed picture of these impacts and the policy options to mitigate them.

Acknowledgement

This paper presents some results of the study *"The interconnection between econometric modeling of poverty and flow-fund modeling"* part of the 2015 research program of the Institute for Economic Forecasting-NIER, Romanian Academy.

REFERENCES

Acemoglu, D., Dorn, D., Hanson, G. H., and Price, B. 2014. "Return of the Solow paradox? IT, productivity, and employment in US manufacturing". *NBER Working Paper* 19837. Available at http://www.nber.org/papers/w19837 (Accessed 3/24/2015).

Autor, D. 2014. "Polanyi's Paradox and the Shape of Employment Growth". *NBER Working Paper* 20485. Available at http://www.nber.org/papers/w20485 (Accessed 3/24/2015).

Autor, D.H., Katz, L. F., and Kearney, M. S. 2006. "The Polarization of the U.S. Labor Market". *American Economic Review Papers and Proceedings*, 96(2): 189-194.

Autor, D.H., Katz, L. F., and Kearney, M. S. 2008. "Trends in U.S. Wage Inequality: Revising the Revisionists". *Review of Economics and Statistics* 90(2): 300-323.

Autor, David H., and Dorn, D. 2013. "The Growth of Low Skill Service Jobs and the Polarization of the US Labor Market". *American Economic Review* 103(5): 1553-1597.

Bilbao-Osorio, B., Dutta, S., and Lanvin, B. (Eds.). 2014. *The Global Information Technology Report 2014 - Rewards and Risks of Big Data.* World Economic Forum and INSEAD, SRO-Kundig, Geneva.

Brynjolfsson, E. 1993. "The productivity paradox of information technology". *Communications of the ACM* 36(12): 66-77.

Chen, S., and Xie, Z. 2014. "Is China's e-governance sustainable? Testing Solow IT productivity paradox in China's context". *Technological Forecasting and Social Change* 96: 51-61.

Chicago Initiative on Global Market. 2014. IGM Forum poll date February 25, 2014, available at http://www.igmchicago.org/igm-economic-experts-panel/poll-results?SurveyID=SV_eKbRnXZWx3jSRBb (Accessed 3/24/2015)

Crow, D. 2014. "Digital divide exacerbates US inequality". *Financial Times*, October 28.

David, P. A. 2000. "Understanding digital technology's evolution and the path of measured productivity growth: present and future in the mirror of the past". In Erik Brynjolfsson, Brian Kahin eds. *Understanding the digital economy: data, tools, and research.* Cambridge, MA: MIT, pp. 49-96.

De Serres, A., Yashiro, N., and Boulhol, H. 2014. "An international perspective on the New Zealand productivity paradox". *New Zealand Productivity Commission Working Paper 2014*, 1.

European Commission. DG CONNECT. Digital Agenda Scoreboard. Available at http://ec.europa.eu/digital-agenda/en/digital-agenda-scoreboard (Accessed 5/5/2015).

Frey, C., Osborne, M. 2013. *The future of employment: how susceptible are jobs to computerization?*, unpublished manuscript, University of Oxford: Oxford Martin School.

Goos, Maarten, Alan Manning, and Anna Salomons. 2014. "Explaining Job Polarization: Routine-Biased Technological Change and Offshoring". *American Economic Review* 104(8): 2509–2526.

Goos, Maarten, and Alan Manning. 2007. "Lousy and Lovely Jobs: The Rising Polarization of Work in Britain". *Review of Economics and Statistics* 89(1): 118–133.

Keynes, J. M. 1933. "The economic possibilities for our grandchildren". In *Essays in persuasion*. New York: Macmillan, pp. 358-373. (Original work published 1930)

Liu, T. K., Chen, J. R., Huang, C. J., and Yang, C. H. 2014. "Revisiting the productivity paradox: A semiparametric smooth coefficient approach based on evidence from Taiwan". *Technological Forecasting and Social Change* 81: 300-308.

Malecki, E. J., and Moriset, B. 2007. "The paradox of a "double-edged" geography: local ecosystems of the digital economy". In *The Digital Economy: Business Organization, Production Processes and Regional Developments*. New York, NY: Routledge, pp. 174-198.

Mandel, M., Hamm, S., Matlack, C., Farrell, C., and Palmer, A. T. 2005. "The real reasons you're working so hard". *Business Week* 3953(October 3): 60-67.

Manyika, J., Lund, S., Auguste, B., and Ramaswami, S. 2012. Help wanted: The future of work in advanced economies (discussion paper). Washington, DC: McKinsey Global Institute.

McMullin, J.A., Duerden Comeau, T., and Jovic, E. 2007. "Generational affinities and discourses of differences: a case study of highly skilled information technology workers". *The British Journal of Sociology* 58(2): 297-316.

Mithas, S., and Lucas, H. C. (2014). "Information Technology and Firm Value: Productivity Paradox, Profitability Paradox, and New Frontiers". In Heikki Topi and Allen Tucker eds. *Computing Handbook volume 2: Information Systems and Information Technology Third edition,* Boca Raton: CRC Press, pp. 72-1.

Moriset, B., and Malecki, E. J. 2009. "Organization versus space: The paradoxical geographies of the digital economy". *Geography Compass* 3(1): 256-274.

Moulesong, B. 2013. "Productivity paradox". *The Times of Northwest Indiana*, June 30. Available at http://www.nwitimes.com/business/jobs-and-employment/productivity-paradox/article_7b55c8c0-a259-5820-8ac5-5b49199753aa.html (Accessed 5/5/2015).

Polanyi, Michael. 1966. *The Tacit Dimension*. New York: Doubleday.

Solow, R. 1987. "We'd better watch out". *New York Times Book Review*, July 12, page 36.

Sun, C., Jiao, H., and Ren, Y. 2014. "Regional Informatization and Economic Growth in Japan: An Empirical Study Based on Spatial Econometric Analysis". *Sustainability* 6(10): 7121-7141.

ECONOMIC AND SOCIAL IMPACT OF THE YOUNG ENTREPRENEURS PROGRAM IN ROMANIA

Daniela MITRAN*

Abstract

In accordance with the Entrepreneurship 2020 Action Plan, in recent years in Romania there were implemented a series of measures with the aim of creating an environment that is conducive to business development and entrepreneurial education among young people especially.

This paper *focuses on the economic and social impacts of the Program for the stimulation of establishing and developing micro enterprises by young entrepreneurs (SRL-D) . The Program aims to stimulate and support the development of new firms (start-ups) by* facilitating access *to* funding *for* young *entrepreneurs. In addition to grants awarded to firms set up by* young *entrepreneurs, a range of other facilities designed to encourage young people to start up a business is also offered. In the period under review there were founded over 17.000 of Limited Liability Companies-debutante (SRL-D), of which 30% have been enrolled in the Program and 15% have received funding and facilities.* The creation of over 8,800 new jobs within the *SRL-*Ds registered in the program has insured the *coverage of fiscal facilities granted and has reduced the* government spending for unemployment. *In order to increase the economic and social impact of the Program, it is necessary to improve it by increasing the funds allocated and to simplify the mechanism for granting funds and* guaranteeing credit.

Keywords: entrepreneurship, SRL-D, grants, fiscal facilities

Rezumat

In concordanţă cu viziunea europeană de dezvoltare economică, adoptată în 2011 prin Entrepreneurship 2020 Action Plan, în România au fost implementate o serie de măsuri menite să creeze un climat propice de afaceri şi să conducă, în special în rândul tinerilor, la dezvoltarea educaţiei antreprenoriale. Lucrarea analizează impactul economic şi social al derulării, « Programului pentru stimularea înfiinţării şi dezvoltării microintreprinderilor de către întreprinzătorii tineri » . Acest program urmăreşte stimularea şi sprijinirea tinerilor în deschiderea unei afaceri prin facilitarea accesului la sursele de finanţare. Alături de ajutoarele financiare nerambursabile, acordate firmelor înfiinţate de antreprenorii debutanţi şi garantarea creditelor, sunt oferite şi o serie de alte facilităţi fiscale menite să încurajeze tinerii să înceapă o afacere pe cont propiu.

In perioada analizată au fost infiintate peste 17.000 de Societăţi cu Răspundere Limitată-debutant (SRL-D), din care 30% s-au inscris in Program, iar 15% au beneficiat de finanţarea si facilităţile oferite de acesta.

Crearea a peste 8.800 de locuri noi de muncă, în cadrul SRL-D înscrise în Program, a asigurat compensarea, în mare masură, a facilităţilor fiscale acordate şi a condus la scăderea cheltuielilor cu

* *PhD, Associate Professor "Athenauem" University, Bucharest, danielamitran@yahoo.com*

ajurorul de şomaj. În vederea creşterii impactul economic şi social al programului este necesară îmbunătăţirea acestuia prin creşterea volumului fondurilor alocate şi simplificarea mecanismului de acordare a fondurilor nerambursabile şi garantare a creditelor.

Cuvinte-cheie: antreprenoriat, SRL, finanţare nerambursabilă, facilităţi fiscale

Cod JEL : **L26, E62, G18**
Cod REL: 18F, 11 E, 8K

1. Introduction

The guidelines of the Small Business Act (SBA) have been implemented in Romania through the Law for the encouragement of small and medium sized businesses creation and development, approved in 2014. The expected results of this law are the significant growth of active small and medium businesses, including start-ups and spin-offs, the development of existing businesses, and the creation of jobs, as well as the easing of access to financial resources through a variety of national programs aimed at funding small and medium businesses. The national programs have had multiple objectives and target groups.

These programs have sought to:

- stimulate the founding and development of micro-enterprises by young entrepreneurs;
- develop entrepreneurial abilities among the youth and give them easier access to financing;
- develop and modernize the way in which goods and services are commercialized;
- encourage the creation and development of business and technology incubators;
- develop entrepreneurial culture among women managers working in the small and medium business sector.

In the 2011 – 2013 period, a total fund of 233.943.000 lei was allocated towards funding seven national programs aimed at promoting the start-up and development of small and medium businesses, with the total amount paid out in the end being 161.533.983 lei.

The following article wishes to analyze the economic and social impact of the Program for the stimulation of establishing and developing micro enterprises by young entrepreneurs (SRL-D).

2. The legislative framework for the operation of the Program for the stimulation of establishing and developing micro enterprises by young entrepreneurs (SRL-D)

The Program was launched 4 years ago through Government Emergency Ordinance No.6 /2011, and it was aimed at young people aged 18 to 35 with no former entrepreneurial experience.

The program aimed at new entrepreneurs is a true necessity because of the small number of young people who start businesses in our country and the high rate of unemployment among the youth. Young people often blame the lack of financial resources and entrepreneurial knowledge as the main obstacles to starting up their own businesses.

The law guarantees a series of facilities for start-ups by new entrepreneurs:

- non-reimbursable financial allowances representing as much as 50%, but not more than 10.000 Euros (or the equivalent in lei), of the total value of eligible business plan expenses;

- exemption from the payment of social security contributions for up to four employees on permanent contracts, up to the level of the previous year's national gross average salary;

- a state guarantee for up to 80% of credits contracted to finance the business plan, up to a maximum threshold of 80.000 Euros or the RON equivalent.

SRL-Ds are also exempt from payment of registration fees at the trade registry

In order to register a new business as an SRL-D, the new entrepreneur must fulfill the following conditions:

- The enterprise may have a single shareholder or up to 5 associates, all of whom must be no older than 35 at the date of its incorporation in the trade registry.
- The business must be a microenterprise, as defined under Law 346/2004.
- The owners/associates must be setting up a limited liability company for the first time, and must not be shareholders/associates/members of another company in the European Economic Area.
- The enterprise may have a maximum of 5 groups of activities as defined in its CAEN Code (Romanian official classification of companies' activities).

Certain activities are excluded, such as financial and insurance intermediation, real estate transactions, gambling activities and some others.

- The enterprise must have at least two employees on permanent work contracts at the time it receives the facilities.
- The enterprise must reinvest at least 50% of the profit derived from the previous fiscal year on an annual basis

Law nr. 97/2014 eliminated the age limit for entrepreneurs who wish to start their first business.

Starting with the 31st of December 2014, SRL-s belonging to new entrepreneurs (SRL-Ds) that were founded in 2011 have lost their right to privileges given by the Government Emergency Ordinance No.6 /2011 on incentives granted to young Entrepreneurs who set - up and develop small enterprises.

The Program for the stimulation of establishing and developing micro enterprises by young entrepreneurs (Government Emergency Ordinance No.6 /2011) has been held up as a standard of good practices at an European level, has been adopted in similar forms by other states, and has been included in the framework document of the largest organization of young entrepreneurs - Young Entrepreneurs of the European Union – JEUNE ("European Economic Eco system").

3. The economic and social impact of the SRL-D Program

Since the Program's debut in 2001, youth interest in the facilities offered has been high. In the program's first year, over 4000 LLC-Ds were founded. Starting with 2012, over 6000 SRL-Ds have been registered each year, with 24706 SRL-D registered as of November 2015. The evolution of the number of SRL-Ds registered at the National Trade Register is shown in table no. 1.

Table 1. The evolution of the number of SRL- Ds

Nr.	Date	Total number of SRL- Ds
1	30 June 2012	5.341
2	30 January 2013	6.860
3	31 December 2013	10.777
4	31 December 2014	17.019
5	30 November 2015	24.706

Source: National Trade Register office statistics

At the same time, there is a constant increase in the percentage of newly founded SRL- Ds to regular SRLs (from 6% in 2013 to 14% in 2015).

The youth's interest in the program has been constant from 2011 to 2015. The performance of SRL- Ds registered through the Program in the 2011 – 2014 period is represented in table nr. 2.

Table 2. SRL-D results

Year	Nr. of SRL- Ds registered	Accepted applications		Signed contracts		Paid applications		
		Nr.	%	Nr.	% Of admissions	Nr.	% Of those admitted	% of those registered
2011	1256	626	49.84	410	65,49	370	59,10	29,45
2012	1332	922	69,21	735	79,71	581	63,01	46,61
2013	1176	575	48,89	539	93,73	440	76,52	37,41
2014	1231	565	45,89	415	73,45	415*	73,45	33,71
Total	4995	2688	53,81	2099	78,08	1806	67,18	36,15

Source: Own calculation based on data from ONRC

* The numbers for 2014 represent signed contracts. Payments are still being made through to 31.12.2015.

- From the presented data we can observe a relatively low level of competition, and the fact that over 20% of the accepted applications never get to sign the contracts and even fewer actually get paid.
- In 2015, due to delays and modifications made to the program, interest in the program has decreased.
- Out of 580 submitted applications, 262 were admitted and 165 contracts were signed, thus making the funds absorption rate in 2015 smaller than 35%.

The main changes to the program in 2015 that led to the lowest rate of absorption are:

- the business plan's time frame has been reduced from a year to 30 days;

- some eligible expenses can't be implemented in such a short time frame, and a new entrepreneur needs a much larger period to launch his business. The Program is no longer destined for people with no business experience;

- the non reimbursable 10.000 Euros financing is offered as a reimbursement, the beneficiary having to first make the expenses, then get reimbursed from the state budget ;

- in order to have his business plan approved, the beneficiary must prove he has the entire requested sum plus the co-financing part and the VAT (which is considered a non eligible expense) ;

- the employees' salaries may no longer be reimbursed, since the period has been reduced to 30 days.

The situation regarding the program's implementation in the 2011 – 2014 period is presented in table 3:

Table 3. SRL-D Program implementation in 2011-2014

Year	Number or registerd SRL- Ds	The turnover of SRL- Ds registered in the program -lei-	Total profit of registered SRL-Ds -lei-	Jobs Created by the Program	Total jobs created by the SRL- Ds
2011	1256	149.775.145	11.019.062	3217	13069
2012	1332	107.922.033	11.764.236	2583	4070
2013	1176	134.469.815	8.327.877	2187	4000
2014**	1231	56.000.000	3.500.000	830	6400
Total	4995	448.166.993	34.611.175	8869	27539

Source: AIPPIMM statistics

* The numbers for 2014 represent signed contracts. Payments are still being made through to 31.12.2015.

** Estimated dates

From 2010 to 2020, the Program seeks to offer non reimbursable financing for at least 1.100 SRL- Ds per year in the 2010-2012 period, and at least 550 SRL- Ds in the 2013 – 2020 period. (HG nr. 186/2013).

The authorities consider that the SRL- Ds program had the most impact compared to all the other programs. They cite the 8800 new jobs financed by the program, which represent approximately half of the total number of jobs created by all the other similar programs put together over the last 6 years.

However, the program is still far from reaching its objectives and efficiently using its funds.

Over 45% of the SRL- Ds that apply to the program only promise to create 2 new jobs, and the real situation regarding the creation and continuation of these jobs is not exactly known. The level of reinvested profit is lower than the one foreseen (a minimum of 50%) and a significant number of SRL- Ds have recorded losses.

The program's delayed funding over the past 2 years has led to important changes in its implementation which reflect negatively on its results.

The level of absorption of funds allocated from the state budget for the SRL- Ds Program has never surpassed 60% and is estimated to fall below 35% in 2015. In the 2011 – 2013 period we can consider that these funds have been insufficiently used, since funding for the projects has been approved based on the order in which the projects were submitted, as opposed to the scores accorded to the business plans. However, the selection criteria and the scoring for the business plans aren't totally conclusive and do not guarantee an objective selection for the SRL- Ds applying to the program.

The necessary procedures for accessing and implementing the programs are relatively cumbersome, which leads to less funding for the SRL- Ds and the need to bring in specialty consultants (with a part of the consulting costs being reimbursed by the program).

The results obtained by the SRL- Ds which received financing through the program haven't always been consistent with the estimates made when the financing was requested.

In some cases, the times needed to implement the projects haven't been properly correlated with the nature of the SRL- Ds work, and this has led to the SRL- Ds failing to access the needed funds. In this way, the overall efficiency of the program has decreased, with some SRL- Ds not accessing all the requested funding and the program ultimately supporting a smaller number of beneficiaries than those who had initially signed funding contracts.

A significant number of projects were failed to be implemented due to them not obtaining the necessary co-financing credits from the banks.

The lack of a clear yearly schedule for the program stops the entrepreneurs for creating a realistic and well established business plan.

The program has failed to provide the needed conditions for country-wide access, given how most of the projects which received funding came from the north-west and Bucuresti-Ilfov regions.

During 2011 – 2013, the programs for sustaining and developing small and medium sized businesses failed to provide the necessary conditions for balanced growth in all the sectors of the economy, since most of the funding went to businesses operating in the commerce and services sectors, to the detriment of those in the industrial sectors. Monitoring for the program has been lacking and has failed to evaluate the program's real impact on the economic growth of the small and medium sized business sector.

4. Conclusions

Numerous national programs were created to support the growth of the small and medium sized business sector, allowing young entrepreneurs to choose the best options for starting their businesses. The difficulty in choice comes from the multitude of sources, the extreme fragmentation of financing for the small and medium business sector, and the frequent changes to the ways and conditions under which the non-reimbursable funds are accessed. The program for young entrepreneurs started off as a good initiative, only to fail in 2015.

From the start of the project and up to 2015, over 24.000 SRL- Ds have been registered with the Trade Registry, of which 5575 (24,1%) applied for non-reimbursable funding. Out of all the SRL- Ds that registered, only 8,5% received funding from the

program.

Evaluating the degree to which the funds allocated by the programs have been used is impossible, since the payments are only tracked at a program-wide level, and not analytically.

The lack of performance indicators in the financing contracts makes evaluating the efficiency of public funds usage difficult from the cost benefit perspective and t makes the overall program impact on the activity of small and medium businesses hard to judge.

The financing program must be reanalyzed and adapted to the real needs of small and medium businesses. An increase in funding for the program is necessary for obtaining significant economic results, and the ways in which funding is accessed and implemented must be simplified and improved.

Starting funding for the program at the beginning of the year and ensuring a constant stream of applications would be particularly useful to entrepreneurs who wish to created realistic business plans. At the same time, money unused by some beneficiaries could be rapidly redistributed.

In order to increase the efficiency of fund usage, the Program could provide inexperienced entrepreneurs with courses and free consulting for the creation and implementation of business plans.

The program needs to stimulate the creation of more micro-enterprises working in research and development, in order to encourage innovation and the initiation of new projects in this field.

References

Ferrando, A and Griesshaber, N (2011): "Financing obstacles among euro area firms, who suffers the most?" ECB Working Paper No 1293.

Kaya , O (2014): SME financing in the euro area New solutions to an old problem, Deutsche Bank Research"

Robb, AM and Robinson, DT (2012): "The capital structure decisions of new firms", *Review of Financial Studies*, Vol 1(1), 1–27.

Suciu C, Gaga, L. Efficiency of SMEs in Romania post crisis a clustering analysis , SEA –A Practical Aplication of Science, Volume II, Issue 2 (4)/2014

Banerjee, R (2014) :SMEs, financial constraints and growth BIS Working Papers No 475,

***EUROPEAN COMMISSION Annual Report on European SMEs 2013/2014 – APartial and Fragile Recovery, Final Report -July 2014,SME Performance Review 2013/2014

http://www.otimmc.ro/resurse/impact-programe-nationale-2009-2014.pdf

www.curteadeconturi.ro/Publicatii/Sinteza_RAP_DIMMMAT.pdf

Legea 62/2014 pentru modificarea si completarea Legii nr. 346/2004 privind http://www.onrc.ro/index.php/ro/statistici?id=240

THE IMPACT OF CAREER EDUCATIONAL INEQUALITIES OF THE PROFESSIONAL PATH OF THE YOUNG

Gabriela NEAGU[1]

Abstract

One of the main objectives of massificasion of education systems at all levels is to allow categories of the population as well access to education and making sure in this way opportunities as large professional integration. So far most education systems, including the Romanian, can support that important progress has been made toward achieving this objective. The massification education or quantitative democratization, masks but a big failure: certain specializations, profiles are still inaccessible one of the categories of the population. If individuals' knowledge shall be transmitted in different period of education, then skills, abilities with which they will enter the labor market will be very different. Inequalities in knowledge maintained the manner in which it is organized the education system shall be converted into actual inequalities professional career. In this article we propose to analyze to what extent inequalities educational career influences the professional carees of young people. From a theoretical point of view theme to offer will be reviewed from the new approach of sociology and in the economy. From the point of view empirical we will use statistical data from institutions specializing in collection and processing of such data - OCDE - but the data resulting from the qualitative research carried out in 2015 among young people aged 17-35 years.

Keywords: quantitative democratization, labor market, inequalities professional path

Rezumat

Articolul de faţă prezintă rezultatele unei cercetări calitative desfăşurate în intervalul ianuarie-octombrie 2015 şi care a avut ca principal obiectiv analiza relaţiei dintre inegalităţile de carieră educaţională generate atât de sistemul de învăţământ cât şi de elemente exterioare acestuia (mediul socio-economic, familial şi cultural de proveniență al elevilor, de exemplu) asupra inegalităţilor de carieră profesională. Este un fapt demonstrat acela că, peroane de aceeaşi vârstră, de acelaşi sex, care au acelaşi nivel de educaţie ocupă poziţii diferite în ierahia socio-profesională. Premisa de la care am plecat în analiza datelor este aceea că, parcursul socio-profesional al unei persoane se decide cu mult înainte ca acesta să fi luat contact cu piaţa muncii. Am constatat astfel, că părinţii cu nivel înalt de educaţie, cu ocupaţii intelectuale, cu o situaţie economică favorabilă îşi încurajează copiii să urmeze instituţii de învăţământ secundar de prestigiu şi specializări care, din punctul lor de vedere, le asigură copiilor lor cele mai mari şanse de a fi admişi în instituţii de învăţământ superior foarte bine cotate din ţară sau din afara ţării. Prin modul în care categoriile sociale favorizate din România se raportează la educaţie şi valorifică în avantajul lor caracteristicile sistemului de învăţământ (structură, mod de organizare) îşi

[1] *Ph.D,Scientific Researcher III. Research Institute for Quality of Life, Romanian Academy, gabi.neagu@iccv.ro.*

asigură pentru ei și pentru copiii lor cele mai bune trasee socio-profesionale confirmând teoria inegalităților eficient menținute.

Cuvinte-cheie: democratizare cantitativă, piaţa muncii, inegalităţi de parcurs profesional

Cod JEL I2
Cod REL 4D

1. Introduction

In the context of current economic education is one of determinants access and success in the labor market: a level as well as higher education do you ensure entry in the competition for the award of a place of employment, while no education or a low level you positioned under the category of person excluded or at risk of socio-professional exclusion. Under these circumstances it is easy to understand the increase in demand for high-level education in the past few years, especially among young people. Beyond the statistical data, no matter how favorable would have it, there are a series of questions which he still looking for answer: Is the education system in Romania one accessible at all levels for all categories of the population? A diploma testify to the completion of a level of education tall increases the likelihood of a person to enter the competition for employment, but it is a question which of them closer to the success? What are the criteria according to which a person decide the path educational must follow to have more chances of success in the labor market?

In this work of the aim is to answer some of the questions launched. The hypothesis from which we leave is that, the position that a person in charge in the employment hierarchy is to be decided a long time before he has to have been in contact with labor market. Whether it is about how to organize the of the educational system (specializations, profiles), whether it's about the special characteristics of socio-economic, family, cultural etc. of person is a certainty that the people to have the same level of education do not have the same positions in the socio-professional hierarchy. The objective which we proposed is to determine to what extent inequalities school path go to inequalities professional path. Analysis that we will undertake is based on both quantitative data and qualitative data, results in a research carried out in the period January to October 2015.

2. Theoretical and methodological framework

Up at the beginning of the 80 's, most of the studies on inequalities in education within her focused on the relationship between social origin of students and success or failure of their school. Conclusion which has been reached is this students from origin socio-economic, family, cultural less-favored have fewer chances to succeed from the point of view education and socio-professional, either because they or their parents over estimate costs with education and understate benefits with this (*theory of the rational choice*, Boudon, 1973), either as a result of major differences between culture appeared in school through the content of education and the specific environment in which they originate

students (*social reproduction theory's*, Bourdieu & Passeron, 1964 apud Mahler). Despite a reduction in socio-economic inequalities between the different categories of the population, a progressive extension of the duration of compulsory education, to increase the quality of education etc., inequalities of access and success in education of children belonging to environment socio-economic and family different do not have been reduced. Maintenance of this type of inequality can be explained only by the difference between the quantity of financial resources held by the population or by the existence or non-existence of certain abilities, skills possessed for learning. A part of sociologists, psychologists and economists have focused attention on what is going on inside of the educational system, at the school and even at the level of class of students.

The education system has always been organised on levels of education, specializations, and profiles. This is in fact the - in his opinion C. Baudelot, R. Establet and L. Althusser for France and S. Bowles and H. Gintis for US (La lutte contre l'échec scolaire...1994:4; Hatos, 2006:68) - an important source of limiting access and success in education for a significant part of the population. As separate specialisations and the content of education to which they are exposed students are different, as well as educational objectives pursued. Thus, both Althusser - a representative *of theory capitalist relations of work* - as well as economists Bowles and Gintis - the representatives *of theory correspondence* - are of the opinion that students who attends specializations considered less prestigious (professional schools, for example) shall be submitted to a content less complex or more distant at academic as transmitted in upper secondary level. In the case the specialisation less prestigious it is considered that the focus should fall on the training at the class of practical skills, implementation while in the case of prestigious specialisations the content is transmitted in which emphasis is placed on the critical thinking, creativity, ability, skills for making the decision. (Lutte contre l'échec scolaire...1994: 4). Detailed studies on this situation has shown that, at the level of several education systems differences manifest inside schools and, sometimes, they are more prominent than those at the level of the educational system as a whole. (Bressoux, 1995 apud Duru-Bellat:2003:11)

The responsibility at school, a class of students to developments in educational and subsequently the socio-professional students had been in the centre of one of the best-known movements - *School effectiveness research* (SER). (Dumay, 2004; Duru-Bellat,2003). The reperesentatives *SER* are of the opinion that components, such as the technical equipment of the institution of education, the relationship between school and family, teaching characteristics, the relationship between teachers, between the teachers and students, of the organization of the lessons etc. (Dumay, 2004; Duru-Bellat,2003) are determinants of access to and success in education and in the life of students. Furthermore, the conclusions of studies carried out so far have pointed out that the impact of school and class on access and success in education of students is much higher in the countries in the process of development as Romania, than in the developed countries, so that, in less developed countries "school context is more important than family factors especially that first variability is stronger than variability of the second" (Heyneman, 1986 apud Duru-Bellat, 2003:9).

By masifications of education at all levels its - a process known as *quantitative democratization* (Prost, 1986 apud Merle,2000:15) - is the aim of reducing inequality and

educational career. It was considered that by extending its compulsory education, the increase in the number of places in secondary schools and, subsequently, and in higher education, the eliminate of tests/exams to the transition from one level by education to another, the population will be much more motivated to continue school for a longer period. The results obtained are so far from those expected.

Quantitative democratization of education has not meant the equalising from the point of view of socio-economic of the individuals so that those so favored from the point of view of socio-economic leverages to a greater extent opening system - especially for high level of education - than disadvantaged categories (*theory inequality maintained at maximum,* Raftery et Hout,1993). Other sociologists are of the opinion that, as long as the system will be organized into specializations or profiles, social categories members favored will strengthen its monopoly on prestigious schools and masifications effects will be more limited (*theory inequality maintained efficiently,* Lucas, 2001).

The education system in Romania has known several waves of masifications of greater or lesser intensity, both during the communist regime and after changing political and economic regime but this process has been carried out in accordance with the conditions of maintaining structures organized by specializations, wrapping transition from one level to the other exams for admission etc. Before 1990 and after, disparities between different categories of the population were maintained at very high, reducing positive effects which they may have a quantitative democratization of the educational system..

3.Objective and analysed data

The subject we want to analyze this will make it possible, from the methodological point of view, both a quantitative approach and qualitative approach. By quantitative data with high degree of generalization obtained from authorised institutions in collection and processing of data statistical - OECD, for example - we will highlight the impact of school characteristics inequalities of his career educational and identification determination of an association between type of institution and socio-demographic characteristics of students who attends. Quantitative data will be supplemented with those obtained by the achievement of a qualitative research in the period January to October 2015 (focus-group with the students of last year of high school and the semi-structured interview with young people aged between 18-35 years who have left the school system and are integration professional). The qualitative analysis of the data we will get a picture on the relation between school and the labor market from the perspective of those who have not had contact with economic system but they are getting ready for this step and a picture from the point of view of those who are already integrate professional. As highlight and on other occasions "combining qualitative and quantitative research contributes, on the one hand to a description much more subtle processes (...) studied and, on the other hand, the analysis existing relations between observed and measurement processes as exactly as possible the product obtained (...) as for example, performance, attitudes, behavior students." (Bissonnette et all. 2005:94).

Group of students participating in focus-group (16 students aged between 17 and 18 years of age) has a high degree of uniformity in relation to socio-demographic characteristics (all the students come from environments socio-economic, family, cultural favored, follows the same profile - mathematics-informatics, they have very good

educational performance and attends the best high school in Bacau - National College "Gheorghe Vrânceanu").

The other target group - 20 young people who were surveyed on the basis of an interview with a guide semi-structured - are characterised by a higher degree of differentiation: they come from different cities, have attended educational institutions of top but also in the category for positioned in the second half of their classification, there followed different specializations at the level of both the secondary education as well as from the top-level, belonging to both socio-economic environments, family, cultural as high as well of the least-favored. Participation in focus-group were optional for secondary school students - agreement has been requested manager of school, this has informed students about the possibility for them to express their opinion with regard to problematic dealt with in research. The selection young people who have completed studies and integrated professional has been carried out by the method "snowball" or the "chain sampling". This method is based on a simple rule: respondents recommendts other respondents as possible research subjects. Although it relies on the subjective choices of respondents, sample selection is not carried out randomly, but on the basis of accurate, consistent criteria. The criteria used for the selection of the respondents are set by a researcher in agreement with the research objectives and hypotheses.

To verify to what extent we are carried out at the level of the education system with our situations to maintain effective inequalities have the choice of a school institutions of prestige and a profile of the top. National College "Gheorghe Vrânceanu" is best quoted secondary education institution from Bacau. Position held is supported by educational performance from the students: the largest number of students in the county qualified to national and international competitions, the average amount of admission in high school regardless of profile (natural sciences, mathematics-informatics, social sciences) is more than 9 - students with the highest average (more than 9,50) are to your profile mathematics-informatics - succes rate of 100 %, with an average to take the high school graduation exam is over 8 to all those.

An important element in the assessment of educational performance of the institution he represents and the rate of transition from the secondary to the university level: over 15% of the students (data from the 2013-2014 School District Bacau) have been admitted to Universities from EU states (Germany, UK, France etc.) and the others are to be found in universities in the Romania. Highlighting the existence or not of existing inequalities work career due to type of school followed by the fill in data, with views of young people who have integrated professional and have completed at least an average level of education (secondary level) but have attended educational institutions different that prestige, profile, specialisation.

4. Study limitations

The fact that the analysis will be carried out in this article is based on qualitative data do not allow us extrapolation of results at the level of the total population or at the level of some segments of the population. Also, high degree of homogeneity of the population of students participating in research - a uniformity in socio-economic family, cultural, educational environments etc. - can lead to errors in the perception on the situation at the level of the educational system but also the one related to the labor

market in Romania.The methodology used for identifying young people integrate only allows an estimate of professional features a network of populations- the population investigated - but not an estimate of the entire population characteristics integrate young professional. Also, one of disadvantages method for the selection of respondents is and that makes inclusion in the sample only of persons with with multiple relations, but leaves aside those who are "isolated".

5. Results

In this article we focus first on the level of secondary education (ISCED 3- 4) that consider him to have the most impact of the routing educational and socio-professional of a person. Primary schools (ISCED 0-2) are levels that, in modern society, are frequented by all the population of school-age and are part of the life compulsory education while attendance at upper level of education (ISCED 5-6) has always been at the option of population. Also, the level of secondary education (ISCED 3- 4) reflect, on the one hand, the degree of accessibility of education at the level of a country, so that life is compulsory education and transition from one level to another is carried out through the support of tests/exams and on the other hand, path to access to the top, is "measure" quality of education pre-university. In Romania, the high school graduation degree to allow people to join the competition for the award of a place in higher education, while professional level is most often the path for labor market.

As in many other countries and in Romania many institutions of school education (ISCED 0-4) can be distinguished from the other by school results obtained, in terms of the inherent characteristics teaching, by the conditions of learning etc. and which, as a rule, are monopolised by the categories of the population favored. If at the primary and secondary education authorities have imposed on some of those measures, which would lead to an increase in school population diversity (an obligation to join the child at the school closest to your home, for example) on the secondary level is difficult to intervene with such measures.

Difficulty is greater access to this level is conditional on the results of school students: students are assigned to secondary level based on the results obtained from the tests of capacity and the average for the last 4 years of schools. According to the data PISA (*Program for International Student Assessement*) - almost half of change in performance students are influenced by differences between schools - 46,8% - but also of those which manifest themselves within the same schools - 44,2%. (PISA, 2009:187) Thus, the transition from level education at lower secondary shall be carried out on the background of differences of educational performance, over time, tend to accentuate.

It is not only the resultats school, but also options students and parents on the institution of secondary education are importans for educational path of young. The choice of the most appropriate educational institutions requires system to become familiar with the features, the ability to predict trends in the labor market etc.

The results of research carried out under the coordination of The Ministry of Education and Research shows that there is a significant difference between the level of education of the pupils' parents in the rural areas as compared to those in urban areas: education average of a family in urban areas reach 12,1 years of study (a higher education level high school) and 9,7 years of study in the case of rural family.(Novak et all. 2015) A

low level of education has the effect that not only the devaluation of education as a source of successful occupational and social, but also difficulties in understanding the mechanism of operation of the system of education. It is clear that students who come from families in which parents have a level as well as higher education will receive a support in defining educational options.

One of the first topics debated in conversation with secondary school students of affected means by which they have chosen to learn the education institution. Students participating in focus-group have confirmed that his parents had a decisive role in the choice of secondary education institution:

"*Very serious teachers ... Vrânceau..it's a way of life.*" (student woman, 18 years old)

"*It's got most of them olympic.*" (student woman, 18 years old)

"*It's insisted on the idea of performance in any field ... performance that vision of the future."* (student woman, 18 years old)

"*Is not necessarily a problem of training, but also the flexibility of options.*"(student man, 18 years old)

"*If a teacher noticed certain qualities, skills distinguished from a student come with more opportunities for it*" (student woman, 18 years old)

"*Many parents when orient their children to a high school shall be taken and after environments* (environments for the admission in high school and at a certain profil)... *and media is much less there* (it is about profiles socio-human)"(student man, 17 years old)

As already mentioned, students parents participants to research have a high level of education which means a high capacity of assessment and evaluation of teaching institutions after clear criteria and consider long-term objectives. Analysis of the data research reflects the fact that, the options expressed by students and their parents for this high school have been based on the presitge criteria primarily, based on historical performance of educational institution.

These opinions expressed by students who are now in the last year of the high school and that remember competition, interest shown by teachers, in a safe manner shall be circulated and outside their high school and, as they and their parents have been taken into account, and generations that will follow will take account of them. The impact is all the more great as students declare that these expectations for that institution chosen have been satisfied: "*I have been exceeded expectations in the sense that I participated in competitions...we are in competition with students from high school but also within the class motivated ... and thanks to teachers who have managed to make me I shall like subtle or even to certain subjects that I didn't like in classes V-VIII'* (student man, 18 years of age old)

Students were referred to the fact that the age of 14-15 years (the one to which completes the qualification) is not the most appropriate for them to take decisions so important and that the talks with the parents are decisive:

"*We have to get away from the base ... that is my mother and father and they told me to choose mate-info because I open more opportunities*" (student woman, 17 years old)

"*For example, I have intended to follow a socio-human profile, but my mother tells me I choose the real for that gives me more opportunities and indeed now I haven't changed and the option.. I don't want to follow Polytechnic Institute and I am well aware that if I were to socio-human.*" (student man, 18 years old)

It is clear that, the decision related to the institution of secondary education and the profile followed with a view to long-term objectives: higher education. Drawing up plans

in the medium and long term is part of how to think and act on these students: "*I have noticed that in our days you've think long before to what you want for that time passes very quickly, and you can't make plans on the last hundred meters, because they do not have time to prepare you for what to do about it*" (student woman, 18 years old).

This way of thinking is evoked and in the literature which demonstrates that, the population which he can make plans in the medium term and long-term objectives which include schooling of children is part of favored groups from the point of view of socio-economic. Social categories favored from the point of view of socio-economic have at its disposal the financial resources necessary support of long-term objectives and the level of education high help them understand the importance in investing these resources in the education their children. In this case, the correlation between educational performance levels they students, the type of school attended and the profile socio-economic, cultural and family of their indicate the existence of disparities effectively maintained: social class top planned to keep the positions held by the guideline their children to educational institutions and specializations best rated.

While in high school work three specializations: mathematics-informatics, sciences natural and the socio-human profile, the best students, evaluate environments after admission in high school are to be found in the profile mathematics-informatics. In the same way as in other country, and in the case at hand, most students belonging to medium socio-economic, family favored opt for scientific sectors - usually mathematics-physics, mathematics-informatics. Specialists' conclusion is that this orientation of children of intellectual occupations by scientific sectors can be explained only through the school results (Landrier & Nakhili, 2010:24) A survey carried out in Portugal has come to the conclusion that graduates of informatics and engineering and found them in the shortest possible time a job by comparison with other specializations graduates. (Gaio Alves, 2005:38). It is also an effect of process technology accelerated to the level of all fields of activity. Parents who have a high level of education, occupations intellectual positioned at the top of the hierarchy socio-professional are current with these developments socio-economic and orient their children to specializations in the future. In the case of the investigation we have identified our more of the reasons which have been the basis of the choice of this specializations: "*I and artistic skills and I thought about high school of art but it wasn't a high school that I fail to ensure that the future...so I chose a high school and profile that gives me real chances to more universities...may choose and artistic profile but may choose something also..*" (student woman, 17 years old) In other words, attendance at this profile open more opportunities to continue studies at higher level.

The discussion relating to school plans long-term started with the question relating to their intention to continue their studies but first remark made by students was saying that "*it would be more appropriate question how many of us will want to continue their studies on the profile followed in high school*" (student woman,18 years old) I have found that students participating in research have very clearly defined options related to the high level of education: in a 100% they will continue their studies in educational institutions from UK, Germany etc. or in the institutions of higher education in Romania of the category of those which are considered the top. And as regards specializations toward which will orient the situation is already known: medicine, law, international relations, architecture. Analysis of these data allow us two relevant remark: on the one hand the choice of

educational institutions both of the secondary-level and top-level is part of a *social logic* as a called Duru-Bellat - "elections shall be entered a state chooses pedagogical logic when reflect relationships pupils with certain disciplines and entered in a social logic and may be treated as a real strategies, when affects access to the best classes or in the best educational institutions".(Duru-Bellat & all,1997 apud Landrier & Nakhili,2010:26).

In the analysis of the data our research shows that students have been concerned to ensure that greater opportunities successful school and professional and less or not at all interested in the suitability of passions, their passions and the profile followed in high school. On the other hand, if we think about the pupils' parents and occupations options related their specializations from the top-level we can see that we are dealing with a transmission inter-gerations of status. Admission to higher education institutions is strongly linked to the environment of origin as shown by the data of research carried out over the last years: 27,3% of students in Romania have parents who have completed higher education compared to just under 2% of those whose parents have no more than grammar school, 6,1% have parents with professional school and 2,3% parents who have not completed high school. (Paunescu at all, 2011:22).

Influence of socio-family of origin is also reflected by analysis of the data resulting from interviews with young people integrate already from a professional view point.

"*I think it would be a small ... so it was natural for that in our family, with both parents with a higher education..* " (a woman, 34 years old, an economist)

"*All the time I did not know that I don't stop after completion studies high school. Both parents are graduates of higher education*' (man, 35 years old, the research analyst)

One of the questions put up for discussion in the interviews carried out with young people integrate professional affected the process of transition from the grammar school level to the secondary level. All the young men interviewed claimed they had been obtained good results and very good to the tests of capacity or - those aged over 30 years - to the admission test. The difference between "good" and "very good" in tests has been translated into a high school attendance at mid level school one of the prestigious school. That differences in performance tend to place special emphasis on time is supported by young people participants responses to this research: those who have obtained very good results in high school time, they have got the same type of results and in faculty. The motivation was different for each of them, but most of the respondents have associated educational performance with responsibility, the desire to your motivation to do well in what they are doing. Analysis of the data research supported the idea that the educational institution's prestige, quality education, attract prestige and quality: regardless of age on respondents, both women and men who have claimed that they have attended an institution of secondary education (high school) reputation ("high school of top") and were part of a class of students quoted as being the best of the institution concerned and continued studies in higher education immediately after high school graduation.

"*There has been no time to think that I am not going continue their studies after high school. I have found that it will be best for my future, to go as far as it will go with studies*" (woman, 30 years old, an economist)

Most of them, not only that they have continued studies, but have opted for higher education establishments rated as being very good: universities with tradition, single

college with specializations at national level. Both groups surveyed - students and young people integrate professional - have indicated before all the reputation of higher education institution on which it intends to attend or who have attended it.

Under the conditions masification education system in Romania of higher education, young people are becoming more aware of the fact that the value in the success school diploma professional related less to the level of education on which it certifies and increasingly institution prestige, the specialisation followed. (Draelants & Artoisenet, 2011:4)

Supporters of the *theory of the signal* for example, (Arrow & Turow apud Nauze-Fichet et Tomasini, 2002:4) are of the opinion that not only diploma level of education completed by a person shall be taken into account by potential employers when assessing candidates for a job, but also the institution which has managed (released) that diploma. The employer does not know which are powers held by a candidate but school results obtained by it may give clues about the level of involvement, commitment with which addresses objectives and responsibilities assigned to it. In Romania, after 1990, an expansion of the educational system has been one important that meant, including private development of education (especially at higher level). A quarter of a century has proved but a period insufficient for new educational institutions to win people's confidence, especially the favored from the point of view of socio-economic, family, cultural etc. Furthermore, public institutions of higher education with long tradition in the landscape Romanian educational process will withstand masification. Although the school-age population is declining and obtaining baccalaureate has become a problem for a significant proportion of young people in Romania, many of these institutions of higher learning, still maintain the admission contest while the competition for employment is high. I have also noted that the trajectory educational and professional on respondents who have attended an institution of prestige is one linear - studies secondary education, higher education and employment in less than 1 month after completing full school. The trajectory young people who have attended an institution of secondary education be considered as being of medium level regardless of the fact that they were part of a class quoted as being very good, it has proved to be in several cases one fragmented (secondary-level education, entry into the labor market or return to the system after a period longer or shorter time, or attendance at certain institutions of higher education in parallel with the carrying out of a professional activity etc.) Respondents who have attended a high school of average level but were part of the best class of the institution or of a class of the same level as the high school have chosen universities as a function of the ease with which to carry out admission, were directed to schools post-secondary education or have taken into account the distance between home and school or have entered immediately after graduation on the labor market. This means that at the level of the educational system in Romania - in this case we refer strictly to the secondary education - "*the school effect*" has a greater impact of the route educational and socio-professional of the population than "*the class effect*".

4. Conclusions

The results of the analysis of the data obtained by qualitative research confirm what has been demonstrated and other occasions by means of the quantitatively research type

(Hatos, 2012; Voicu&Vasile, 2010): inequalities at the level of the educational system shall be transferred and socio-professional level. Attendance at a secondary education institutions of prestige, membership of a class in which performance is a "way of life" determine the students belief that social and professional success is possible, and, most of them both, and getting. At the level of a system of education prestige not teaching institutions and their educational success is a problem, but also the fact that access to such institutions shall be conditional on students belong to a certain category of socio-professional.

References

Alves, M.G.(2005). *Perspective éducative sur l'insertion professionnelle des diplômés de l'enseignement supérieur,* Formation Professionnelle nr. 34 Revue Europenne

http://www.cedefop.europa.eu/files/etv/Upload/Information_resources/Bookshop/409/34_fr_alvs.pdf.

Bissonnette, S., Richard, M., Gauthier C.(2005). *Interventions pédagogiques efficaces et réussite scolaire des élèves provenant de milieux défavorisée,* în Revue française de pédagogie, nr.150, janvier-février-mars, p. 87-141

inrp.fr/publications/edition-electornique/revue-francaise-de-edagogie/INRP_RF150_7.pdf;

Bourdieu, P., Passeron, J.C. (1964). *Învăţământ şi reproducţie socială*, în Fred Mahler (1975),(coord.) „Sociologia educaţiei şi învăţământului. Antologie de texte contemporane de peste hotare , Bucureşti, Editura Didactică şi Pedagogică;

Boudon, R. (1973). *L'inégalités de chances. La mobilité sociale dans la sociétés industrielles,* Paris, Hachette;

Dumay X. (2004). *Effet établissement: effet de composition et/ou effet des pratiques managériales et pédagogiques? Un état du debat,* în Cahier de Recherche du GIRSEF, nr.34, novembre, 2004, pp .1-29, www.i6doc.com/fr/livre;

Duru-Bellat, M. (2003). *Les apprentissages des eleves dans leurs context: les effets de la composition de l'environement scolaire*, în Carrefours de l'education, nr.16, pp. 182-206*,* www. DOI: 10.3917/cdle016*;*

Draelants, H., Artoisenet, J. (2011). *Le rôle de l'établissement d'enseignement secondaire dans la construction des aspirations d'études supérieures* ,Les Cahiers de recherche du Girsef n° 84 pp.1-40 https://www.uclouvain.be/.../cahier_84_draelant

Hatos, A. (2006). *Sociologia Educaţiei,* Iaşi, Editura Polirom;

Hatos, A.(2012). *Evoluţia inegalităţilor educaţionale în România:tranziţiile educaţionale ale celor născuţi până în 1985,* Sociologie Românească, Volumul X, Nr. 1,pp.36-64

Landrier, S., Nakhili,N.(2010). *Comment l'orientation contribue aux inégalités de parcours scolaires en France,* Formation emploi [En ligne], 109 | janvier-mars 2010, mis en ligne le 01 mars 2012, consulté le 02 janvier 2014, pp.23-36, http://formationemploi.revues.org/2734

Lucas, S.R. (2001). *Effectivley Maintained Inequality:Education Transitions,Track Mobility and Social Backgroung Effects.* American journal of sociology, 106,6, pp.1642-1690

Merle, P. (2000). *Le concept de démocratisation de l'institution scolaire: une typologie et sa mise à l'épreuve.* In: Population, 55e année, n°1, 2000 pp. 15-50.

http://www.persee.fr/web/revues/home/prescript/article/pop_0032-

4663_2000_num_55_1_7096

Nauze-Fichet, E., Tomasini, M., (2002). *Diplôme et insertion sur le marché du travail:approches socioprofessionnelle et salariale du déclassement* Revue ÉCONOMIE ET STATISTIQUE N° 354,

http://www.persee.fr/web/revues/home/prescript/article/estat_03361454_2002_num_354_1_7 383

Novak, C., Stroie, D.C., Vlăduţ, Z., Nicula, F.I.,Jidveian, O. (2015). *Raport naţional privind starea calităţii în unităţile de învăţământ preuniversitar public din mediul rural.* ARACIP, http://www.edu.ro/index.php/articles/c5

Păunescu,M., Vlăsceanu, L., Miroiu, A. (2011).*Calitatea învăţământului superior din România:o analiză instituţională a tentinţelor actuale*, Editura Polirom, Iaşi

Raftery, A.E. & Hout, M. (1993). *Maximally maintained inequality:Expansion, reform and opportunity in Irish education,* 1921-75, Sociologie of Education, 66, 1,pp 41-63

Voicu, B. Vasile, M.(2010). *Rural-urban, Inequalities and Expansion of Tretiary Education in Romania,* Journal of Social Reserch &Policy, 1, 1, pp. 5-24

****La lutte contre l'échec scolaire: un défi pour la construction européenne*, Part II, 1994 www.euridyce.org

*** Résultats du PISA 2009: *Surmonter le milieu social. L'égalité des chances et l'équite du randament de l'apprentissage.* Vol II., http://www.oecd.org/dataoecd/11/40/44455820.pdf

DETERMINANTS OF FDI IN THE NEW EU MEMBER STATES

Oana Cristina POPOVICI[1]

Abstract

The paper analyses the location attractiveness of the new EU member states for foreign investors. Our aim is to identify the main factors shaped by the public policies that underlie the FDI stocks in these countries. Based on the literature, these factors are grouped into four pillars: the quality of institutions, the quality of the labour market, the tax burden and the quality of the infrastructure. Their impact on FDI is tested using a fixed effects panel data approach in the ten new EU member states in Central and Eastern Europe. Each of the four pillars is built on the variables already identified in the literature as FDI determinants. The empirical analysis is applied in two stages: in the first stage, we established the variables that are significant for FDI for each of the four pillars. In the second stage, we built an econometric model based on the variables previously find as significant for FDI.

We conclude that the market dimension, expressed as the volume of GDP, the unit labour cost, the development of the infrastructure and the level of macroeconomic stability given by the dimension of the public debt are the main determinants explaining the distribution of FDI in the new EU member states. Therefore, the main attraction to investors was the dimension of the country, as an exponent of the consumption market, and the cheap labour. The motivation of the investors in this region is market and resources seeking. The shift towards efficiency-seeking FDI can be signalled by the significance among relevant factors, according to the empirical results, of the variable related to the development of the telecommunication infrastructure.

Keywords: FDI, panel data analysis, labour market, institutions' quality,

Rezumat

Lucrarea analizează atractivitatea noilor state membre ale UE pentru investitorii străini din punct de vedere al avantajelor de localizare. Scopul este de a identifica principalii factori determinanţi pentru ISD aflaţi sub influenţa politicilor publice, care stau la baza distribuţiei stocurilor de ISD în aceste ţări. Pe baza literaturii de specialitate, am divizat aceşti factori în patru piloni: calitatea instituţiilor, calitatea pieţei muncii, povara fiscală şi calitatea infrastructurii. Impactul asupra ISD este studiat utilizând analiza prin date panel cu efecte fixe în cele 10 noi state membre ale UE din Europa Centrală şi de Est. Fiecare dintre cei patru piloni este construit pe baza variabilelor deja identificate în literatura de specialitate ca fiind determinanţi ai ISD. Analiza empirică este aplicată în două etape: în prima etapă am identificat variabilele semnificative pentru fiecare pilon în parte. În a doua etapă am construit modelul econometric final pe baza variabilelor care s-au dovedit semnificative anterior pentru atragerea ISD.

Am ajuns la concluzia că principalii determinanţi care explică distribuţia ISD în regiune sunt dimensiunea pieţei, exprimată prin nivelul PIB, costurile unitare cu forţa de muncă, dezvoltarea infrastructurii

[1] *PhD, Scientific Researcher. Institute for Economic Forecasting, Romanian Academy; popovici.oana@yahoo.com.*

și gradul de stabilitate macroeconomică, exprimat de dimensiunea datoriei publice. Prin urmare, principala atracție pentru investitori a constituit-o dimensiunea pieței, ca exponent al capacității de consum, și forța de muncă ieftină. Motivația investitorilor în această regiune este căutarea de piețe și de resurse ieftine. Trecerea spre ISD în căutare de eficiență poate fi semnalată prin includerea între variabilele semnificative, pe baza analizei empirice, a variabilei care ține de gradul de dezvoltare al infrastructurii de telecomunicații.

Cuvinte-cheie: ISD, date panel, piața muncii, calitatea instituțiilor, infrastructură

Cod JEL: C23, F23, P35, O52
Cod REL: 10G, 10F, 18F

1. Introduction

The influence of public policy on FDI determinants can be placed among the theories of international investment that point to the existence of several advantages in the area were the investors decide to locate. In the literature, the cheap labour, the endowment with natural resources, a wide marketplace or lower taxation are the most frequently mentioned types of such advantages. Botello and Davila (2015) point that, among the investment decision of a company that determine the international investment flow, the role of the government policies is equally important, as governments can create attractive factors for investments in strategic sectors.

Bellak et al. (2008) consider that the public policy instruments already became usual in attracting FDI. Now, the only thing that must become clear is the domain that should be influenced in order to offer the best response in terms of FDI inflows. In this respect, the paper analyses the location attractiveness of the new EU member states for foreign investors. Our aim is to identify the main factors shaped by the public policies that underlie the FDI stocks in these countries.

The paper is structured as follows: section 2 provides some insights in the literature of FDI determinants. In section 3, we offer a thoroughly presentation of the empirical model and we explain the results. The last section summarizes the conclusions.

2. Literature review

The role of public policies in attracting FDI is especially interesting for the ex-transition countries in Central and Eastern Europe. For Mateev and Tsekov (2012), one of the major differences between the Eastern European region and the Western EU countries in attracting FDI is due to the quality of institutions. The argument is available if we consider that, after the fall of the communism, these countries needed to shape their institutions according to the market economy. Such an extensive process included, inevitably, profound transformations on the labour market, on the efficiency of the public institutions and on improving the business environment. Later, this process was improved by the obligations accepted in order to obtain the EU membership. In this respect, Goodspeed et al. (2009) suggested that public policy makers in developing countries should take into consideration the improvement of the governance institutions and the public infrastructure. These measures would increase their countries' efficiency in attracting FDI.

For Berkoz and Turk (2005), there are traditional and environmental factors that determine the choice of the investment's location. In the category of traditional factors are included the market potential, the labour costs or economic growth and also the government policies. The environmental category includes the political, legal and infrastructure factors. In describing the policy variables, Bellak et al. (2008) relate to the corporate taxes, the public research and development expenditure, the information and communication infrastructure, the institutional environment related to FDI and the labour market, as regards the skill level of workers and the labour costs.

A brief literature review on the factors shaped by public policies that are able to intervene in the choice of the foreign investment' location is presented in Paul et al. (2014). The paper covers, broadly, the results for the studies focused on the transition and developing economies and emphasize four pillars that are influenced by public policies: the quality of institutions, the development of infrastructure, the labour market and the tax burden.

These factors proved to be determinants of FDI, according to the literature, but their impact is frequently depending on the investigated period or group of countries. For example, Popovici (2015a) uses a fixed effects panel data for establishing the difference between FDI determinants in the field of the labour market, the telecommunications infrastructure and the quality of institutions during 1994 until 2003 (the transition period) and during 2004 until 2013 (the years that were characterized by the EU adhesion process and the economic crisis). While the quality of institutions and the commercial openness represented the main interest of investors in the first period, the mobile infrastructure and cheap labour force are the FDI determinants in the last period. The analysis is provided for the 11 newest EU member states. In an earlier research on investigating the labour market determinants for FDI, Popovici (2015b) establishes that the unqualified labour force is the main interest for investors in the Eastern European countries, as compared to the Western ones, were the cheap labour force is desired, because it is already endowed with a certain degree of education.

An older approach on the subject of the impact of public policies on FDI was described in Paul et al (2014) and Popovici and Calin (2012). The first paper employs the TOPSIS method in order to establish the attractiveness degree for FDI in CEE countries in two years - 2007 and 2010 and establishes that, under the assumed hypotheses, Estonia is the most attractive country for FDI. The second one computes a public policy index for assessing the relation in the public policies attractiveness and the inward FDI in some countries in Eastern and Central Europe. The conclusion points that economies with better public policies in infrastructure, institutions' quality, labour market and taxation are more attractive for FDI. In contrast to the present research, the mentioned studies already consider that the selected variables are public policy determinants for FDI.

3. Methodology

Due to a low number of observations for each country, we employed the panel data methodology for identifying the FDI determinants. Panel data is seen in the literature as more suitable than the analysis of time series or cross-section data series, as it offers a larger source of information and provides more complex observations on the behaviour's patterns of economic agents (Baltagi, 2005; Hsiao, 2006; Bruderl, 2005).

Hsiao (2006) certifies the widespread use of panel data model where the effects of explanatory variables are invariant both in time and at cross level, but the effects of omitted variables can be decomposed into individual, period or cross-section and period effects. The general equation for panel data is presented below:

$$Y_{it} = \alpha + \beta_{it} X_{it}^{'} + \delta_{it} + \gamma_{it} + \varepsilon_{it}$$

where Y_{it} is the dependent variable, X_{it}' is the *k*-dimensional vector of regressors, ε_{it} is the error term with an average of 0 and constant variance for N cross-sections (i=1, 2, …, N) for each period t, where t = 1, 2, .., T. The free term is the parameter *a*, constant for either specification, while δ_{it} and γ_{it} are the specific effects, fixed or random, corresponding to the cross-sections or to the time period. In our analysis, we will employ the fixed-effects panel model, as a consequence of some lack in the data.

The empirical analysis is carried out using ten countries (N=10), during nine years (T=9). The stocks of FDI are the dependent variable, while the independent variables are grouped in the X_{it} vector according to the four pillars already mentioned.

We apply the panel data methodology in two phases: in the first phase, the equations are estimated for each of the four pillars in order to identify the significant factors for FDI in each domain. In the second phase, the final equation is estimated, taking into account the significant variables identified in the first step, to which we add the control variables. We employed a similar two-steps procedure in Popovici (2015a) due to methodological constraints as regards the number of the dependent variables. Still, as compared to the already mentioned paper, in the present one we focus on a shorter period and we better develop the pillars taken into account (for example, the infrastructure pillar also contains variables describing the road, rail and electricity infrastructure, the tax burden pillar is added).

3.1 Data

The explanatory variables were chosen as proxies of the four public policy pillars identified in the literature, based on the FDI theories that distinguish between horizontal and vertical FDI and for explaining the motivations of investors in choosing the location of the investment. The dependent variable is expressed by the FDI stocks in each country in the CEE region during 2003-2011. Data are provided by UNCTAD and were transformed for being expressed in Euros. The independent variables are grouped into the four pillars expressing a domain of intervention for public policies, as follows: the quality of institutions, the labour market, the fiscal burden and the infrastructure. We also used the GDP and the GDP per capita as control variables. The variables are presented in Table 1.

TABLE 1. THE DEFINITION AND SOURCES OF VARIABLES

Name	The variable and the unit of measurement	Data source
Independent variables		
I. Quality of institutions		
DAT	Public debt, % of GDP	Eurostat
BUG	Budgetary deficit, % of GDP	Eurostat
COR	Control of corruption, standard normal units ranging from -2.5 to 2.5	World Bank

GVF	Government effectiveness, standard normal units ranging from -2.5 to 2.5	World Bank
RLW	Rule of law, standard normal units ranging from -2.5 to 2.5	World Bank
RGQ	Regulatory quality, standard normal units ranging from -2.5 to 2.5	World Bank
POL	Political stability and absence of violence, standard normal units ranging from -2.5 to 2.5	World Bank
II. Labour market		
RULC	Real unit labour cost (euro), expressed as annual growth	Ameco
LAB	Nominal compensation per employee, euro	Ameco
ITR	Implicit tax rate on labour, %	Eurostat
PR	Labour productivity, euro per hour worked	Eurostat
SCH	The percentage of persons who completed the secondary stage of education, %	World Bank
RS	Unemployment rate, %	Eurostat
III. Tax burden		
EATR	Effective average tax rate, %	European Commission
STAT	Statutory tax rate, %	KPMG, European Commission
TVA	Value added tax%	KPMG, European Commission
IV. Infrastructure		
MOB	Number of people who have subscriptions to mobile phone services per 100 inhabitants	World Bank
NET	Number of people with access to the internet network of 100 inhabitants	World Bank
RR	The length of motorways, other roads and railways, compound as the average number of kilometres of motorways, other roads and railways that are found per thousand km sq.	Eurostat
ROADF	The annual road freight transport, millions of tonnes/km	Eurostat
RWG	The annual rail freight transport, millions of tonnes/km	
AIR	Air traffic, the number of commercial and passengers flights	Eurostat
ELC	Electrical capacity, MW	Eurostat

Source: author's computations

3.2 The first phase

In the first step, we identified the FDI determinants for each of the four public policy pillars. For stationarity reasons, we employed logarithm or first level series. The equations were estimated using cross-section fixed-effects (CS), period fixed effects (PE) and cross-section and period fixed-effect (CS-PE). In the first specification (CS), the intercept is varying across the countries; we found that the power of explanation for this model is quite low compared to the other two specifications, where the group of countries became increasingly less homogeneous, allowing the variation of the coefficients and of the intercept. The results obtained in this step are presented in Annex 1.

3.3 The second phase

For this phase, we employed only the significant variables provided by the results of the first phase. The CS specification proved to be, each time, less efficient in explaining the dependent variable, therefore we will drop it from our analysis. The significant variables for the PE specification are presented in Table 2 below:

Table 2. The significant variables for each pillar

	PE	**CS-PE**
Quality of institutions	DAT	DAT, GVF
Labour market	RULC, ITR, RS	RULC
Tax burden	EATR/STAT	
Infrastructure	MOB, ROADF, ELC	MOB, ROADF, ELC

Source: author's computations

The equation built in this phase will be estimated starting with these variables, to which we add the control variables.

3.4 Results

For the PE specification, we estimated six equations: in the first one (model 1), we included the GDP level (GDP), the public debt (DAT), the real unit labour costs, the mobile telecommunications infrastructure (MOB), the statutory rate of taxation (STAT), the GDP per capita (GDP); in the second model (model 2) we changed the statutory tax rate with the effective average taxation rate (EATR), and then we successively added the other variables for computing the rest of the models: the annual road freight transport (ROADF - model 3), the unemployment rate (RS - model 4), the electricity infrastructure (ELC - model 5) and the implicit tax rate on labour (ITR - model 6).

The first model is the most suitable for explaining the FDI stocks in the new EU member states, according to the value of adjusted R^2. Any other variable added (in the models from 3 to 6) brings no improvement to the initial model and penalizes it, according to the values of $\overline{R^2}$. The Durbin Watson value, close to 2, confirms the lack of correlation among variables and the quality of the models.

The significant variables are GDP, DAT, RULC and MOB, each of them having the expected signs. The dimension of the market, expressed by the GDP, is among the main factors that attract investors in this region. The macroeconomic stability also influences the location decision, proving that investors prefer a safe and financially stable environment, whose

indebtedness should not raise problems. The level of public debt is significant and has a negative impact on FDI. The labour costs (RULC) continues to be an essential determinant for investors in the CEE region, with the highest impact on FDI, according to the coefficients. The investors are following countries with low labour costs compared to the productivity.

TABLE 3. THE RESULTS OF THE PE SPECIFICATION

		(1)	(2)	(3)	(4)	(5)	(6)
GDP	Coefficient	0,592**	0,597**	0,293	0,588**	0,594**	0,520**
	t-Statistic	2,595	2,602	1,205	2,557	2,592	2,173
DAT	Coefficient	-0,210**	-0,198**	-0,044	-0,207**	-0,204**	-0,209**
	t-Statistic	-2,468	-2,315	-0,473	-2,405	-2,365	-2,396
RULC	Coefficient	-0,595***	-0,524	-0,198	-0,602***	-0,616***	-0,699***
	t-Statistic	-1,839	-1,622	-0,573	-1,843	-1,885	-1,870
MOB	Coefficient	0,276**	0,313**	0,146	0,271***	0,271**	0,238
	t-Statistic	2,036	2,419	0,946	1,969	1,989	1,658
GDPC	Coefficient	-0,536	-0,473	0,149	-0,601	-0,562	-0,640
	t-Statistic	-1,376	-1,217	0,351	-1,340	-1,427	-1,523
STAT	Coefficient	-0,003		-0,002	-0,003	-0,003	-0,003
	t-Statistic	-1,103		-0,874	-1,130	-1,072	-1,093
EATR	Coefficient		-0,078				
	t-Statistic		-0,771				
ROADF	Coefficient			0,084			
	t-Statistic			0,869			
RS	Coefficient				-0,024		
	t-Statistic				-0,298		
ELC	Coefficient					-0,089	
	t-Statistic					-0,606	
ITR	Coefficient						-0,376
	t-Statistic						-1,414
C	Coefficient	0,132*	0,064*	0,097	0,137**	0,132**	0,140*
	t-Statistic	2,038	2,749	1,511	2,026	2,033	2,093
$\overline{R^2}$		68,5%	68,3%	64,5%	68,14%	68,26%	67,42%
Akaike criterion		-1,854	-1,846	-1,963	-1,833	-1,837	-1,829
Log Likelihood		98,427	98,059	91,576	98,481	98,650	95,571
SE of regression		0,089	0,089	0,083	0,089	0,089	0,089
Durbin Watson		1,927	1,961	1,965	1,931	1,913	1,925

Note: * indicates statistical significance at 1%, ** at 5% and *** at 10%

Source: author's computations

The more developed the mobile telecommunications infrastructure (MOB), the more attractive for foreign investors. This result is interesting for our analysis as the variable for infrastructure continues to be significant for FDI when the variables for the fiscal burden are introduced (the models 1 and 2), which are not significant. This outcome suggests that the investors are willing to pay taxes as long as the infrastructure enables to conduct their activities. The introduction of the STAT variable instead of EATR in our equation seems to provide a better model for explaining FDI, according to adjusted R^2 and the Akaike information criterion. Still, in both cases, the variables expressing the tax burden are not significant for explaining FDI, although they have the expected sign. Also, GDPC is not a significant variable, but this result is explicable due to the fact that GDPC is a broad variable, that captures issues starting with the quality of institutions to the level of wages. As DAT and RULC are already significant, the insignificant impact of GDPC is understandable.

In the third model we include ROADF; the model has the lowest power in explaining the stock of FDI in the CEE region. Although we obtain the expected sign for ROADF, its impact is not significant. Also, for the rest of the models, as the remaining significant variables are introduced, we do not find any change in the variables already set as significant for FDI, but none of the new introduced variables are significant for FDI. The negative sign obtained for the unemployment rate (RS) confirms that FDI are market-seeking markets and investors are interested in customers with high possibility to purchase. For ITR, we obtain the expected sign, but the variable has no impact on FDI. For ELC we keep to have a negative sign, contrary to the one expected, but this divergence may result from a missing variable which encompasses the qualitative side of the electricity infrastructure.

We proceeded in the same manner for the CS-PE specification. We estimated four regressions, starting with the model with the model that explains the best the dependent variable. The first model (1) includes GDP, DAT, RULC, MOB and GVF and we added ROADF (model 2), ELC (model 3) and GDPC (model 4).

The first model is the most suitable for explaining the distribution of FDI in the CEE countries (see Table 4). This time, only GDP and RULC are significant; none of the two variables used for the quality of institutions are determinants for FDI. The quality of institutions and the development of infrastructure are not significant for FDI once both the coefficients and the intercept vary by country. As the rest of the variables are introduced, the explanatory power of the model decreases and the variables are insignificant. We consider that the interpretation of the results in this case is similar with the one for the PE case.

TABLE 4. THE RESULTS OF THE CS-PE SPECIFICATION

		(1)	(2)	(3)	(4)
GDP	Coefficient	0,505**	0,202	0,503**	0,532**
	t-Statistic	2,049	0,761	2,020	2,132
DAT	Coefficient	-0,111	-0,079	-0,110	-0,160
	t-Statistic	-1,319	-0,912	-1,295	-1,527
RULC	Coefficient	-0,580***	-0,163	-0,585***	-0,553
	t-Statistic	-1,721	-0,424	-1,710	-1,625

MOB	Coefficient	0,200	0,186	0,199	0,212
	t-Statistic	1,335	1,170	1,318	1,403
GVF	Coefficient	0,143	0,191	0,142	0,155
	t-Statistic	1,166	1,345	1,150	1,251
ROADF	Coefficient		0,116		
	t-Statistic		1,031		
ELC	Coefficient			-0,017	
	t-Statistic			-0,112	
GDPC	Coefficient				-0,342
	t-Statistic				-0,789
C	Coefficient	0,064*	0,059*	0,064*	0,075*
	t-Statistic	2,530	2,305	2,509	5,583
$\overline{R^2}$		69,7%	63,32%	69,3%	69,57%
Akaike criterion		-1,828	-1,863	-1,806	-1,815
Log Likelihood		105,273	95,711	105,282	105,696
SE of regression		0,087	0,084	0,088	0,087
Durbin Watson		2,028	2,137	2,023	2,097

Note: * indicates statistical significance at 1%, ** at 5% and *** at 10%

Source: author's computations

4. Conclusions

The present research contributes to the literature by enriching the results so far with the impact of public policies on FDI in the CEE countries in a period with important political and economical events for the development of these economies. Our methodological approach is appropriate, meaning that we first establish the soundness of each pillar, by identifying the significant variables, and then we test these variables within the broad framework, where the control variables are also included.

For the 10 new EU member states, the dimension of the market, expressed by the GDP level, the low labour costs, the development of mobile telecommunications infrastructure and the macroeconomic stability given by the size of the public debt are the main FDI determinants during 2003-2011. Therefore, in this period, the investors were mainly motivated by the advantage of these countries as consumer markets and providers of cheap labour force. The motivation of investors remained that of market and resource seeking. The shift towards efficiency-seeking FDI can be signalled by the significance of the variable expressing the development of mobile infrastructure in explaining FDI flows.

REFERENCES

Baltagi, B. (2005). *Econometric Analysis of Panel Data*, 3rd ed. Hoboken, N.J.: John Wiley

Bellak, C., Leibrecht, M., Stehrer, R. (2010). The role of public policy in closing FDI gaps: An empirical analysis, *The Vienna Institute for International Economic Studies, Working Paper 48*.

Berkoz, L., Turk, S. S. (2005). Factors influencing the Choice of FDI Locations in Turkey, *ERSA conference papers*, 8, pp. 434-455

Botello and Davila (2015). The new determinant creation theory: a way to attract new foreign direct investment flows, *International Journal of Business and Economic Development,* Vol. 3, No. 1, pp.96-109.

Bruderl, J. (2005). Panel Data Analysis, *Working Paper*, University of Mannheim, pp. 1-22.

Goodspeed T., Martinez-Vazquez J., Zhang L. (2009). Public Policies and FDI Location: Differences between Developing and Developed Countries, *International Studies Program Working Paper*, GDU paper No 0910.

Hsiao, C. (2006). Panel Data Analysis, Advantages and Challenges, *Working Paper* 06.49, Institute of Economic Policy Research, University of South Carolina, pp. 1-33.

Mateev, M. I., Tsekov, I. (2012). Do Central and Eastern European Countries Posses FDI Advantages to More Developed Western Countries?, available at SSRN: http://ssrn.com/abstract=2139361 or http://dx.doi.org/10.2139/ssrn.2139361.

Paul, A., Popovici, O. C., Calin, A. C. (2014). The attractiveness of Central and Eastern European countries for FDI. A public policy approach using the TOPSIS method, *Transylvanian Review of Administrative Sciences*, No. 42 E, pp. 156-180.

Popovici, O. C. (2015a). Assessing FDI determinants in CEE countries during and after transition, *The Annals of the University of Oradea*, vol. XXIV, Issue 1, pp. 113-122.

Popovici, O. C. (2015b). Assessing the impact of the labour market determinants in attracting FDI, *Journal of Academic Research in Economics*, No. 7(1), pp. 59-72.

Popovici, O. C. Calin, A. C. (2012). Attractiveness of Public Policies for FDI in Central and Eastern European Countries, *The Annals of the University of Oradea. Economic Sciences*, Vol. XXI, No. 1, 2012, pp. 61-67.

AMECO database, http://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm.

European Commission, *Taxation trends in the European Union*, various editions.

Eurostat database, http://ec.europa.eu/eurostat/data/database.

KPMG Corporate tax rates, available at http://www.kpmg.com/global/en/services/tax/tax-tools-and-resources/pages/corporate-tax-rates-table.aspx.

UNCTAD FDI database, http://unctad.org/en/Pages/Statistics.aspx.

WDI World Development Indicators, World Bank, http://data.worldbank.org/data-catalog/world-development-indicators.

WGI Worldwide Governance Indicators, World Bank, http://info.worldbank.org/governance/wgi/index.aspx#home.

THE NEED TO USE INNOVATIVE TOOLS OF LEARNING IN ORDER TO GAIN RAPID AND UPDATED KNOWLEDGE AND SKILLS REQUIRED ON THE LABOUR MARKET

Cătălin POPESCU[1]
Marius BULEARCĂ[2]

Abstract

The labour market has become global and very competitive in terms of requirements for jobs' applicants. Although there are many cases which seeks a compatibility of national education systems and the use of converged educational systems, capable of providing a similar set of knowledge and skills for future employees which to provide equal opportunities for employment, only in certain situations this it was obtained. The idea of an unpredictable dynamic on requirements and knowledge required to the candidates on the labour market confirms the necessity of integration in school, at various levels of training, of innovative learning tools that facilitate the transfer of knowledge and to acquire new skills which fully correspond to the needs expressed by employers. Such an approach is intended that, on the one hand, to generate motivation among applicants and, on the other hand to overcome the lack of practical experience of the candidates. These innovative tools palette is quite large: Enterprises' piloting, management simulations, simulated enterprise, business incubators and business games.

Keywords: innovative tools, knowledge, skills, employment, educational systems

Rezumat

Piaţa forţei de muncă a devenit globală şi foarte competitivă sub aspectul cerinţelor aplicate solicitanţilor de locuri de muncă. Deşi există nenumărate cazuri prin care se încearcă o compatibilizare a sistemelor educaţionale naţionale şi utilizarea unor sisteme educaţionale convergente, capabile să furnizeze un acelaşi set de cunoştinţe şi abilităţi pentru viitorii angajaţi prin care să se ofere oportunităţi egale de angajare, doar în anumite situaţii acest lucru s-a obţinut. In ideea unei dinamici imprevizibile privind cerinţe şi cunoştinţe solicitate candidaţilor de pe piaţa forţei de muncă se confirmă necesitatea integrării în şcoală, la diverse nivele de instruire, a unor instrumente inovative de învăţare care să faciliteze transferul de cunoştinţe şi să permită dobândirea de noi abilităţi care să corespundă pe deplin nevoilor exprimate de angajatori. O astfel de abordare are rolul ca, pe de o parte, să genereze motivare în rândul solicitanţilor, iar pe de altă parte să suplinească lipsa unei experienţe practice a candidaţilor. Paleta acestor instrumente inovative este destul de largă: pilotarea întreprinderilor, simulări manageriale, întreprinderi simulate, incubatoare de afaceri, jocuri de afaceri.

Cuvinte-cheie: instrumente inovative, cunoştinţe, abilităţi, angajare, sisteme educaţionale

Cod JEL : I21, I23, I25, J21, J23, J24, J80, O30, O35
Cod REL: 4B,4C,10G, 12B, 12E, 12G

[1] *Prof. univ. dr. Oil and Gas University of Ploiesti, Ploiesti; cpopescu@upg-ploiesti.ro.*
[2] *Dr. ec. Centre for Industry and Services' Economics, Romanian Academy, Bucharest; mariusbulearca@yahoo.com.*

1. Introduction

Human resources are a fundamental component of the economic potential of any society. Work resources are the main source of economic growth and social development.

Nationally, any program of social and economic development must take into account the scientific knowledge of human resources in order to use them more rational. Currently is manifesting information society model. This model is running based on: science development, reform of training programs to achieve changes in professional structure and implicit in occupations code, extension of computerization' degree of the national economy, demand segmentation etc.

Economic development relies on human resources development, subject to raising living standards, life expectancy and social education level. In connection with the efficient use of labor rule the government proposes different economic policies. The State should support increasing the employability of the workforce. Therefore, the State has the responsibility for public policies in order to stimulate the creation of new jobs.

Starting from the objectives formulated by the European Council in March 2005, namely: "Europe must renew the basis of its competitiveness economic to increase its growth potential and productivity and strengthen social cohesion, putting greater emphasis on knowledge, innovation and optimization of human capital ", each country is obliged to resort to concrete measures by which to generate knowledge and skills updated to every person who is trying to find a job.

Within these measures could be considered many options such as: upgrading initial and continuous education, capacity development of human resources in education, increasing participation in continuing vocational training, promoting active employment measures for persons looking for a job, increased integration labor market of the vulnerable groups, promotion of innovative methods etc.

In the particular case of Romania many of these solutions must be implemented in order to eliminate some existing weaknesses and that are manifesting for some time:

- low levels of educational offers' adjustment to workforce demand and training network providers of professional training underdeveloped;
- relatively high dropout and early school leaving;
- insufficient development of the National Qualifications Framework and work skills mismatch;
- lack of internal systems of quality assurance and management in education;
- low levels of adult participation in continuous professional training and lack of continuous training offers tailored to the needs of adults in the initial education system;
- insufficient involvement of social partners in specific human resource development programs;
- limited entrepreneurial culture and low mobility in the labour market;
- high unemployment and especially of the long-term youth unemployment;
- low integration in the labour market and low participation in education of persons belonging to vulnerable groups;
- an objective correlation between labour markets requirements and the labour offer.

2. Significant demographic aspects for Romania

Changing population status in time generates pressure on other components of a company: economic, educational etc., requiring the creation and implementation of social programs, demographic etc. In addition, the number and especially the quality of labour resources determine the economic and social activities' size. The concept of human resources at the level of spaces actually makes the connection between the number and demographic structure of individuals who make up a community and their level of competence (knowledge, skills, abilities etc.).

Human potential shows a heterogeneous distribution in Romania. It shows a link between levels of development and size of labour resources, without there being still an identity of their territorial distribution as shown in Table 1.

Table 1. Active population by development region

thousands persons

Year / Development region	2009	2010	2011	2012	2013	2014
North-West	1240,6	1226,7	1209,7	1241,9	1239,2	1232,4
Center	1107,2	1089,3	1071,8	1109,4	1110,6	1086,7
North-East	1322,2	1309,5	1266	1302,9	1289	1263,1
South-East	1104,1	1082,8	1050,7	1080,5	1076	1059,6
Bucuresti-Ilfov	1250,4	1244,1	1248,9	1264,1	1282,2	1278,6
South Muntenia	1280,3	1265,9	1234,7	1270,4	1263,6	1236,3
South-West Oltenia	933,7	917,4	898,2	923,7	911,1	886,7
West	881,6	862,6	846,5	870,5	871,2	866,6

Source: Statistical Yearbook of Romania, http://statistici.insse.ro, accessed 14.01.2016

Looking at the figures it can be said that the whole country and in most geographic areas, labour resources are found mostly in urban areas.

On the other hand analyzing the employment levels of workforce development regions can be seen a reduction (table 2). This reduction did not affect the major urban centres, especially Bucharest, Cluj and Constanţa.

Table 2. Occupied population by development region

thousands persons

Year / Development region	2009	2010	2011	2012	2013	2014
North-West	1156,5	1153,7	1156,7	1187,2	1188	1186,4
Center	1001,8	1001,8	1006,8	1040,7	1040,8	1026,4
North-East	1208,2	1207,2	1192,8	1224,7	1203,7	1180,2
South-East	1011,1	994,9	986,2	1011	1003,9	986,8

Bucuresti-Ilfov	1220,3	1214,8	1224,5	1239	1256,9	1254,3
South Muntenia	1159,9	1154,8	1154,5	1182,6	1168,8	1146,5
South-West Oltenia	836,1	832,8	828,9	848	832	813,8
West	816,8	811,3	815,1	836,4	836,5	837,3

Source: Statistical Yearbook of Romania, http://statistici.insse.ro, accessed 14.01.2016

On the European labour market, Romania has some advantages in terms of quality-cost relationship. In Romania there is a significant potential workforce younger than in the EU countries, while skill level is compatible with most of these countries in many fields.

For Romania, in the category of regional development policies that help combating unemployment growth are taken into account the following actions:

- modernization of infrastructure;
- development of rural areas;
- stimulate the development of small and medium enterprises, which have a vital role in the development of human resources at the local level.

This last line of action can be supported by developing entrepreneurial skills to the people that are unemployed, especially youth.

Regionally, employment rates above the national average are registered in less developed regions: North-East, South-West and South Muntenia caused by high rates of employment in agriculture (Table 3). In the case of Bucharest-Ilfov region the values are above the national average, due to much higher labour supply and more diversified. In order to give people more opportunities to get a job is compulsory to find practical solutions to complete the knowledge gained in the formal education and use creative possibilities to improve their qualifications, abilities and/or competences.

Table 3. Employment rate by development region compared with national level

%

Year / Development region	2009	2010	2011	2012	2013	2014
Romania	*52,1*	*51,1*	*50,2*	*50,9*	*50,7*	*51,1*
North-West	51,1	51,2	51,2	52,9	53	53,6
Center	47,2	44,9	43,7	44,3	44,6	44,8
North-East	57,7	55,0	56,3	57	57,2	57,6
South-East	48,8	47,8	46,4	46,9	45,8	44,8
Bucuresti-Ilfov	53,7	53,8	54,2	53,6	52,6	53,8
South Muntenia	52	51,2	47,1	48,5	49,8	50,5
South-West Oltenia	54,6	53,1	53,5	53,8	51,4	52,8
West	49,9	48,7	48,6	48,6	48,7	49,1

Source: Statistical Yearbook of Romania, http://statistici.insse.ro, accessed 14.01.2016

3. Educational systems

Although apparently is attempted to create a compatibility and an uniformity of the structure of education systems across Europe (e.g. the Bologna system or imposing an International Standard Classification of Education called ISCED), each country is trying to adapt the educational offer to the evolution of markets workforce with the purpose of acquiring additional and updated knowledge and skills so that people trained to be able to find a job easier and faster.

An extensive global survey conducted by Organisation for Economic Co-operation and Development (OECD) show that Romania has the worst education system in the European Union. According to the study, Romanian education suffers from lack of radical reforms, especially funding and investment in the system. Asian countries that began much later than us, but they were better organized, nowadays they be found on the first places in the rankings on education. Thus, this study shows that in 1960 Singapore recorded the highest illiteracy and primary education became mandatory only in 2000. Currently Singapore has reached one of the highest literacy rates in Asia: 95%. The explanation for this result is given by the value of massive investment in education, infrastructure, and a careful selection of teachers and educators.

In this study, the most advanced country in terms of education is Finland. Thus, even teachers who teach at the elementary school must have a master's degree. Besides competent teachers, Finns have developed educational programs competitive and are not very strict with the national curriculum - this can be changed at municipality or school, according to the needs that exist in the community.

On the other hand, until 2020, Finland will give up dividing the school curriculum in classical subjects, such as history or mathematics, and will move to the interdisciplinary theme or of complex phenomena.

Another example to follow is Japan, which ranks in the top two. Equally concerned are teachers and Japan. Japanese teachers undertook a duty, which is to create *model citizens*. The entire Japanese society and culture is known for its values, honor, responsibility, honesty. They learn from the earliest years of life, and at the school all of these are strengthened. Japanese students and pupils make their own cleaning in schools, dining and actively participate in all activities, from educational to administrative. Japan wants in turn to implement a major reform in education, one which they called a "change manly". This involves the study in schools of main disciplines, really important for the further development of students': Business mathematics (basic operations and use of computers in business), reading (binding a book read weekly), civics (rule of law, citizenship, ethics, respect for the rules of coexistence, tolerance, altruism and respect for ecology), computer science (office programs, internet, social networks and online business) and, not least, four languages, for each of them alphabet, culture and religion.

Also, the British educational system focuses on developing children's creativity, the formation and expression of their views - as opposed Romanian schools that still promotes teaching and memorizing lessons dictation. At the British and to the other developed countries in this regard, the theory never comes to be stored, but is always put into practice. Students learn from examples and can see immediately during the lesson, how they use information received from school later.

South Korea appears in the international charts with a good education system. This country focus on exams and curriculum is structured in such a way as to meet the strict requirements of national examinations. Interesting is that exams are considered very important events in the society at national level. There are special days set clear, when the exams are given.

Equally important is education in China, where education is monitored and regularly evaluated. The topics are important and students are treated carefully, family - all members participate in education to children and devotes much of his time to this end. Teachers seek to develop the capabilities of students, rather than force them to accumulate a lot of information theory. They strive pretty much to engage and stimulate students to so that they do not ever get bored in class. In this way, education in China began to appear in the international charts and analyzes, such as those made by Pearson - although there are some persons who point out that the reform was done in Shanghai, not across the country. Anyway, the fact is that invested heavily in infrastructure, many schools have been rehabilitated, renovated and equipped to the highest standards. Teachers in China have to be very well prepared - those who teach primary school must necessarily be university graduates and from middle up, all teachers must have an additional professional qualification. Many of them have master degrees and every teacher should do about 240 hours of training over a period of five years.

In the Swedish school pupils are given only scores since sixth grade and until the college time, virtually there are no exams. Homework is lacking in the sense that children should study more than 30 minutes per week per discipline. Schools are funded from the local budget and are free. Teachers have great freedom in the classroom, "juggling" with the program; and students can choose the school where they study. However, the Swedish system is not considered very powerful, because students are too relaxed and not get great results in international tests.

4. Innovative tools of learning

To create a direct link with the labour market and employers' requirements, educational systems try to be adapted under way, in order to promote innovative learning tools. Lately in many countries, including Romania, have widely promoted the concept of simulated enterprise (especially in universities) and the concept of practice firms – so called "*firme de exercitiu*" (especially in secondary education). Also there are many other tools that could help to get knowledge and new skills: the concept of driven' enterprise, business game, management simulation. By using these tools, people are trained in a specific way that offers additional and updated knowledge and skills. In many cases existing educational systems are outdated and there is a need to find means of procedures' replacement or additional training. In many cases is necessary for a practical approach in creating and offering specialized training in order to adapt the learning process to the labour markets requirements and to the employers' demands.

4.1. Simulated enterprise

Simulated enterprise (1) is an interactive method of learning for entrepreneurship, a modern concept of integration and application of interdisciplinary knowledge, an approach to teaching and learning that ensures conditions for testing and deepens

practical skills acquired by pupils / students in vocational training.

A more pragmatic definition of simulated company is "simulated enterprise can be defined as a practical training tool that uses the information process procedures and identical means used in real companies, except money and products which are simulated."

The operational purpose of these simulated enterprises (Ciuca, Pîrciog et.al 2013, pp.103-117) can be described on two levels:

- Faster integration of employees into a real enterprise;
- Fluency instruction-production relationship.

The fundamental objective of the company is to develop entrepreneurship simulated by some concrete actions:

- familiarize students with the specific activities of a real company;
- simulation of economic processes and operations specific to real business environment;
- development of entrepreneurial skills and attitudes necessary for a dynamic entrepreneur: creativity, critical thinking, problem solving, decision making, responsibility' assuming, teamwork, initiative, perseverance, self-organization and self-evaluation of individual resources, flexibility;
- improvement of business language.

From this fundamental objective are generated some specific objectives that are addressed through the creation and functioning simulated enterprises (Ciuca, Pîrciog et.al 2013, pp.103-117):

- facilitate the transition of graduates from school education to working life;
- entrepreneurship of pupils / students;
- entrepreneurship adults through continuous training vocational programs.

Simulated enterprise intends to create tangible results:

- increasing the rate of graduates entering on the labour market;
- reduction of the intake at work;
- better adaptability to change jobs;
- initiative and risk-taking.

Also, by specific infrastructure of simulated enterprises can be generated other benefits for society and business:

- ensuring proper means for practical training of students in a simulated enterprise;
- consultancy for the development of small and medium enterprises;
- formation of a group of specialists able to manage a real business (training of trainers);

4.2. Driven' enterprise

A productive enterprise shows a particular system that has a number of components, which represents sub-systems of the enterprise system. To function properly, a company with all the subsystems contained therein, must ensure a proper piloting of these subsystems.

The driven' company (Bărbulescu, 2000, pp.21-29) means a set of activities performed by the company' management to achieve the mission of enterprise by using strategies and objectives clearly defined, to ensure the provision of activities of different beneficiaries in terms of quantity, quality, at certain terms stipulated in the contract,

activities that take place in competition with the activities of other companies.

Driven' Enterprise (Bărbulescu, 2000, pp.21-29) is performed on a pilot model adopted by each company based on the specificities which they perform now. Based on this pilot model is adopt a driven system of enterprise activity.

Driven system represents a concrete and evolving set of procedures used by the company to achieve the required performance conditions, procedures aimed to carry out actions that form a unit or a whole, which are subject to achieve the same purpose and obtaining the same results.

4.3. Enterprise' games

Enterprise' games are undertaking simulation models that include more participants engaged in a process of decision-making simulating a situation of genuine competition. A number of teams are organized as an oligopoly, each team trying to maximize their own profit through a sequence of decisions in areas such as: production, inventory, investments, marketing, maintenance, research or funding.

The concept of the business game is reflected as the driving game (game management) or business game, customizing them by name through the scope of applicability.

Enterprise' game (Dobre, Mustata et.al, 1996) is a dynamic simulation exercise of some decisions, took in a competitive situation and has the following objectives:

- to demonstrate what it means to create a situation in which game participants observe what is happening, thus gaining a deeper understanding than if, for instance, someone simply explained them;
- to distribute, i.e. to promote an exchange of knowledge within the group of participants in the game, so things known by one of them may become common to all;
- to examine, which means puts the participants to the game in a position to observe the decision-making behaviour of other partners;
- stimulate thinking, which means to use the game as an intellectual exercise, in the hope of growth ability of participants to play in solving specific problems;
- evaluate some of the skills and abilities of participants in the game;
- build a team, which mean to increase the cooperation effects of a group;

Enterprise' games (Dobre, Mustata et.al, 1996) offers a number of advantages, such as:

- help users to study a wide variety of decision-making situations;
- allow the possibility for participants to get experience in the simulated field;
- represents a tool in the hands of managers, which provides a more solid basis on which they could take decisions;
- it could be tested hypotheses about the nature of the decisions to be taken, is evaluated the effectiveness of decisions and is identified their likely effects;
- the games played on the computers give the possibility to a multiple replay of them by a multi scenario simulation;

On the other hand we have to be aware about the limits of enterprise' games:

- developing a game takes time and a heavy workload;
- designers do not have sufficient quantitative methods that allow them to quantify the influence of all the factors that concur in a given situation;

- complex enterprise' games performed on the computer require sometimes powerful computing configurations, up to computer networks with distributed resources;

- enterprise' games results are not 100% sure; is possible to obtain some wrong outcome; the only way to validate them is to compare them with the results generated by real events.

5. Conclusions

The need to use innovative tools of learning is proved by the fact of poor and difficult integrating of young people into the labour market, and in this respect, authorities' mission being hampered by poor training and lack of specific graduate skills.

Related to the formal content of existing educational systems all over the world the findings of this paper want to show the quality and importance of integrating these methods in a consistent and compulsory framework of the educational systems.

To achieve this, any country, including Romania, have to analyze and adapt the curricula by including disciplines that could promote these tools that are focused on practical issues and on improving participants' experience.

Note

(1) www.intreprinderesimulata.ro

REFERENCES

Bărbulescu, C. (2000). *Pilotajul performant al întreprinderii*, Editura Economică, București, pp.21-29

Ciucă, V., Pîrciog, S. et.al. (2013). *Study on the impact of innovative measures on the youth insertion and mobility on the labour market at European level.* Ed. INCSMPS, București

Constantin, L.D.(2002).*Resursele umane în Romania. Mobilitatea teritorială,* Editura ASE, București

Dobre, I., Mustata, F., Stoica, M. (1996). *Simularea proceselor economice,* Editura Inforec., București.

Pidd, M.(2002). *Computer Simulation in Management Science*, John Wiley &Sons, 4thed

***(2015). Education at a Glance 2015. OECD Indicators. http://www.oecd-ilibrary.org/education/education-at-a-glance_19991487, accessed 11.01.2016

***(2006). *The European Union and Sustainable Development: Internal and External Dimensions*, VUBPRESS, Brussels

*** (2015). Statistical Yearbook of Romania, http://statistici.insse.ro, accessed 14.01.2016

ROMANIAN EMPLOYMENT DINAMIC ON DEVELOPMENT0 INSIDE REGION

Brînduşa-Mihaela RADU[1]
Dalina-Maria ANDREI[2]

Abstract

In the context of economic transition, the labor market in Romania has undergone significant changes in the volume and structure of the main indicators of labor. After 1990, the decrease of inhabitants in Romania, due to the negative natural growth and massive emigration, resulted in the reduction of the active population and employment in all eight development regions in Romania.

The paper analyzes the phenomenon of labor employment in regional profile. In essence, two issues were here followed: public participation in economic and social regional developments and employment structure. There were also highlighted the differences and development gaps between regions of Romania in the use of labor in order to identify conclusions that can improve regional development policies and to enhance effective action to fill the available labor resources.

It is this way that the paper highlighted the huge gaps between Bucharest-Ilfov region and other regions of the country in terms of employment structure by economic activities, the region aroud the Capital City keeping in context the smallest share of the population employed in agriculture.

Keywords : labor market, employed population, regional gaps.

Rezumat

În contextul procesului de tranziţie economică, piaţa muncii din România a suferit transformări semnificative sub aspectul volumului şi structurii principalilor indicatori ai forţei de muncă. După anul 1990, scăderea numărului de locuitori ai României, ca urmare a sporului natural negativ şi a emigrărilor masive, a avut drept rezultat reducerea populaţiei active şi a populaţiei ocupate în toate cele opt regiuni de dezvoltare din România.

Lucrarea analizează fenomenele de ocupare a forţei de muncă în profil regional. În esenţă, au fost urmărite două probleme: participarea populaţiei regiunilor la activităţile economice şi sociale şi evoluţiile şi structurile populaţiei ocupate. De asemenea, au fost evidenţiate deosebirile şi decalajele dintre regiunile de dezvoltare ale României în privinţa utilizării forţei de muncă, în vederea depistării unor concluzii care pot duce la îmbunătăţirea politicilor de dezvoltare regională şi de intensificare a unor acţiuni eficiente pentru ocuparea resurselor de muncă disponibile.

[1] Ph.D. and researcher. Economic Forecasting Institute of the Romanian Academy of Sciences, Calea 13 Septembrie, nr. 13; e-mail: bmradu@yahoo.com.

[2] Ph.D and researcher of the 3rd degree. Economic Forecasting Institute of the Romanian Academy of Sciences, Calea 13 Septembrie, nr. 13; e-mail: dalinaandrei@yahoo.com.

Lucrarea a evidenţiat decalaje imense între regiunea Bucureşti-Ilfov şi celelalte regiuni ale României în ceea ce priveşte structura populaţiei ocupate pe activităţi ale economiei naţionale, această regiune având şi cea mai mică pondere a populaţiei ocupate în agricultură.

Cuvinte-cheie: piaţa muncii, populaţie ocupată, decalaje regionale.

Cod JEL: J01, J43, J80
Cod REL: 12G, 12I, 16F

1. Introduction

The economic restructuring process succeeded to re-direct an important part of the old unemployed people of cities towards rural areas, but this for embracing a just subsistence agriculture. So, the high rural population here existent and resulted, face to the large amount of arable land as available succeeds in their turn to make the agriculture predominant at least in the regional view and especially in the southern part of the country. There are, besides the increasing number of agricultural people, crumbled farmland resulted from the property reform and low agricultural technology assimilated that equally resulted into a significant productivity diminishing. And concomitantly to agricultural development in particular, regional economic structure and distribution of activities continuously adapted to realities like: natural resources availability, their local processing traditions, facilities of available technology and capital, price system and market mechanism, as also locally specific.

Last year, Romania was by far the top European Union member country regarding the percentage of agricultural farmers in total active population, i.e. the top decreasing order in this regard within EU28 was: Romania (25.4%), followed by Greece (13.0%) and Poland (11.2%).

It is general remark that the education level currently becomes increasingly important for the evolving structure of employed population, as previously a progress providing factor for the whole nation. When considering the same EU28 scale in 2014 for the education level of labour of 15-64 years old, the medium one was predominant, as 49%, that further meaning by sexes 50.3% for males and 47.3% for females in their separate totals. So that the higher education level came on the second position as such with 32.7%, that further meaning 29.8% for males and 36.2% for females, and lastly the low education level was the third with 18.3%, that meaning 19.9% for males and 16.5% for females.

As correspondingly in Romania, the National Institute of Statistics' (NIS) data equally show a predominant medium education level of labour, for 60.8% of males and 54.6% of females, followed by the higher education for 16.7% of employed males and for 22.3% of employed females.

2. Employed population's regional distribution in Romania

In the 2008 year end the civil employed people in Romania were as high as 8,474 thousands, then in the 2013 year end they were 8,530 thousands, meaning a 216.4 thousands decreasealong Five-Year. Table 1 shows the employed people's structure on inside developing regions.

Table 1 Employed people, by Romania's developing regions in 2008 and 2013

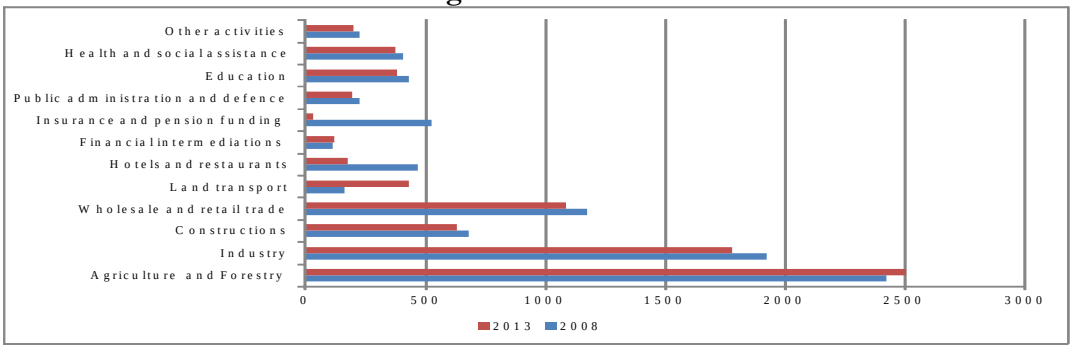
(% of total)

Developing region	2008	2013
North-West	13.6	13.9
Center	12.0	12.2
North-East	14.3	14.1
South-East	12.1	11.8
South	13.7	13.7
Bucharest & Ilfov	14.6	14.7
South- West	9.9	9.8
West	9.8	9.8

Data source: *Romania's Yearbook* 2009-2014 of the NIS

Not too much structural change in the regional labour's distribution in Romania during these five years to be noticed. But now seeing on the economic sectors, the same employed people's structure appears like in Figure 1, that recalls the above introductory idea about significance of agriculture and forestry in this respect, and this at the national scale viewed.

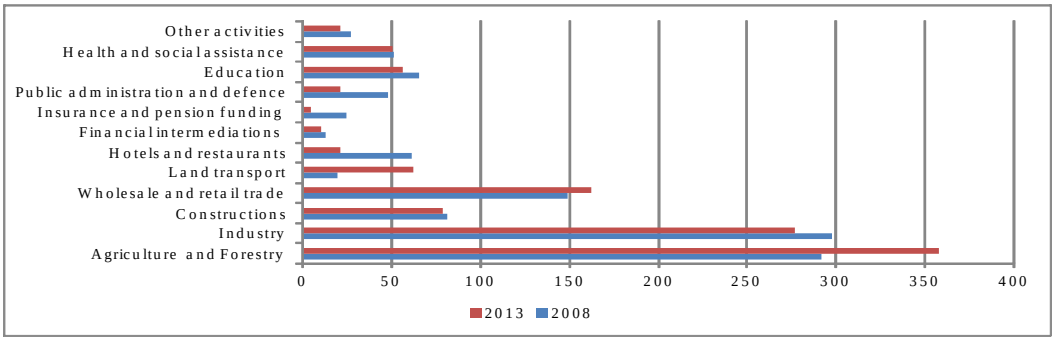
Figure 1. Employed people, by economic sectors in Romania during the 2008-2013 interval



Data source: *Romania's Yearbook* 2009-2014 of the NIS

In the 2008 year end, the North-West region's civil population employed was as high as 1,187.9 thousands and in the 2013 year end 1,188, namely a relatively constant number, but that is the lonely regional case; though, a case in which the activity structure of population significantly changed, as concomitantly (see in Figure 2).

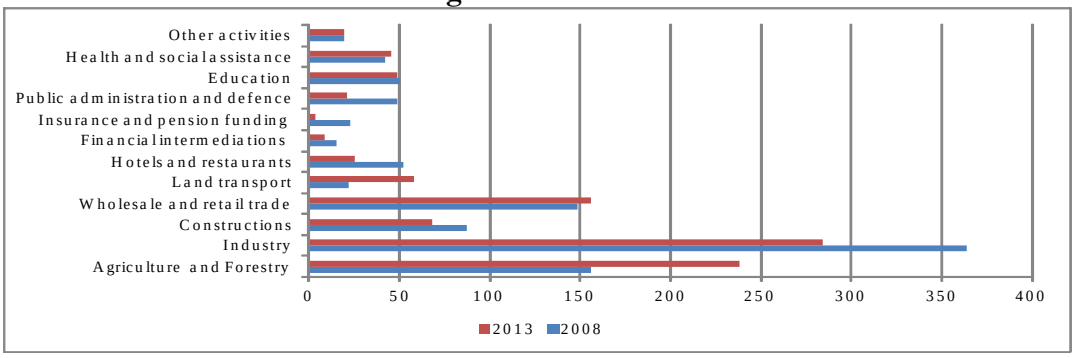
Figure 2: Employed people by economic sectors in the Noth-West region during the 2008-2013 interval



Data source: *Romania's Yearbook* 2009-2014 of the NIS

In the Center region, in the 2008 year end the civil population employed accounted 1,046.5 thousands and in the 2013 year end 1,040.8 thousands, whereas the activity structure of this can be seen in Figure 3. This region is an example of the industry predominance, in this regard, agriculture coming on the next position for people employed and this in the aftermath of an important growth of these years.

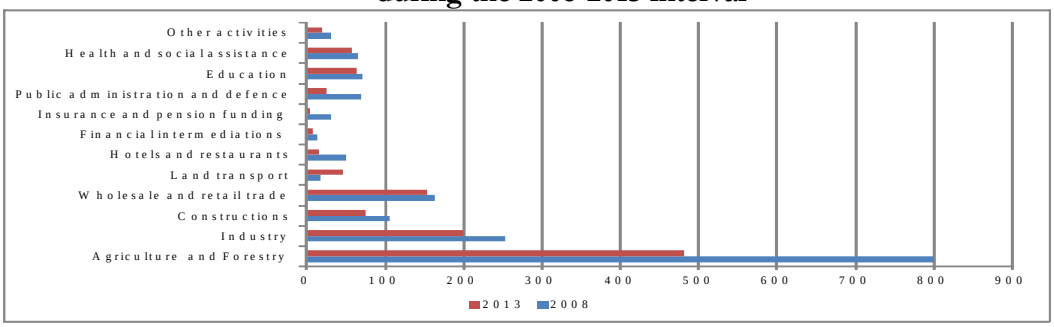
Figure 3. Employed people by economic sectors in the Center region during the 2008-2013 interval



Data source: *Romania's Yearbook* 2009-2014 of the NIS

Now in the North-East region, in the 2008 year end the civil population employed was 1,248.9 thousands and in the 2013 year end 1,203.7 thousands; the same populations were distributed on activity structure as in Figure 4. In this case, agriculture was predominant even in a significant declining trend.

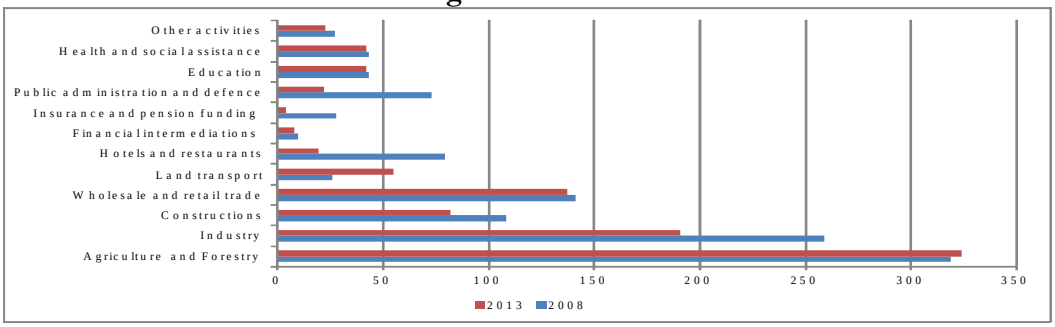
Figure 4. Employed people by economic sectors in the North-East region during the 2008-2013 interval



Data source: *Romania's Yearbook* 2009-2014 of the NIS

In the South-East region, in the 2008 year end the civil population employed was 1,057.6 thusands and in the 2013 year end 1,003.9 thousands and the activity structure of population was in the same years as in Figure 5. Here, the industrial popultion dramatically loweered along this period.

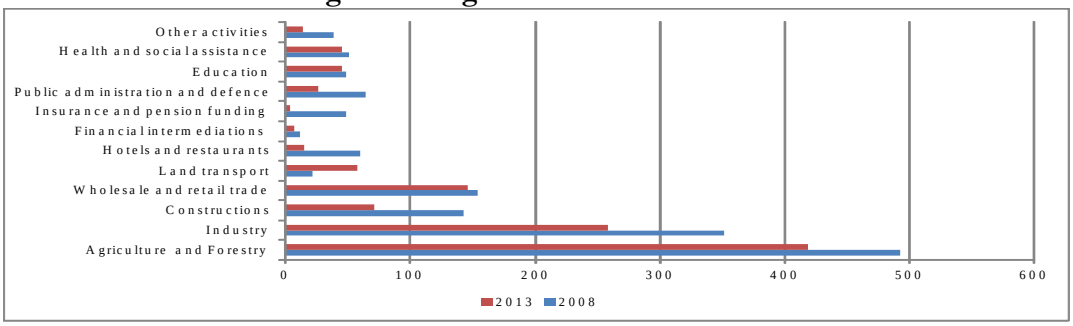
Figure 5. Employed people by economic sectors in the South-East region during the 2008-2013 interval



Data source: *Romania's Yearbook* 2009-2014 of the NIS

In the South (Muntenia) region, in the 2008 year end the civil population employed was 1,201.0 thousands and in the 2013 year end 1,168.8 thousands and the activity structure was distributing the same popualtion as shown in Figure 6. Here both industry and agriculture were losing employment and agriculture was staying as majority during these five years.

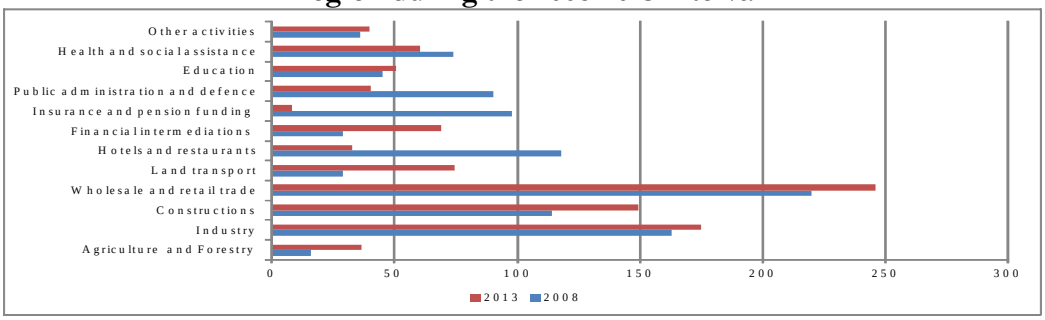
Figure 6. Employed people by economic sectors in the South-Muntenia region during the 2008-2013 interval



Data source: *Romania's Yearbook* 2009-2014 of the NIS

In the Bucharest & Ilfov region,in the 2008 year end, the civil population employed was 1,281.7 thousands and in the 2013 yer end 1,256.9 thousands and the activity structure of population was like in Figure 7 along the same period. This is a rather atypical region at the national scale, namely it is the lonely one with the services activity dominant.

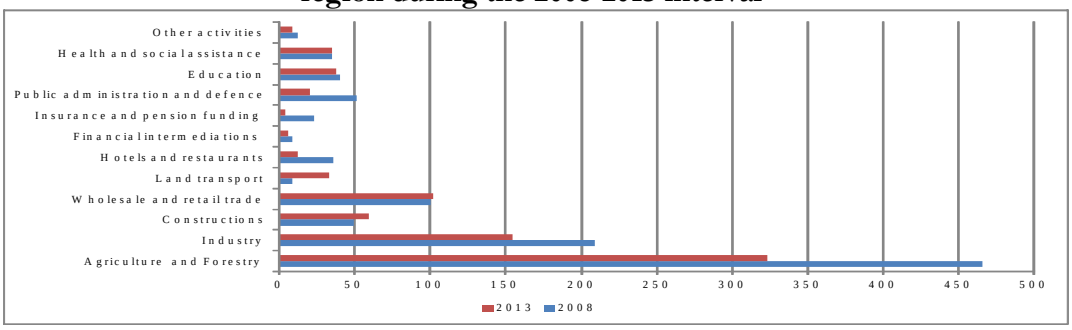
Figure 7. Employed people by economic sectors in the Bucharest&Ilfov region during the 2008-2013 interval



Data source: *Romania's Yearbook* 2009-2014 of the NIS

In the South-West Oltenia region, in the 2008 year end the civil population employed was 867.0 thousands and in the 2013 year end 832.0 thousands. The activity structure employed people distribution was so like in Figure 8. This is another region of dominant agriculture, despite this sector losing enough people employed.

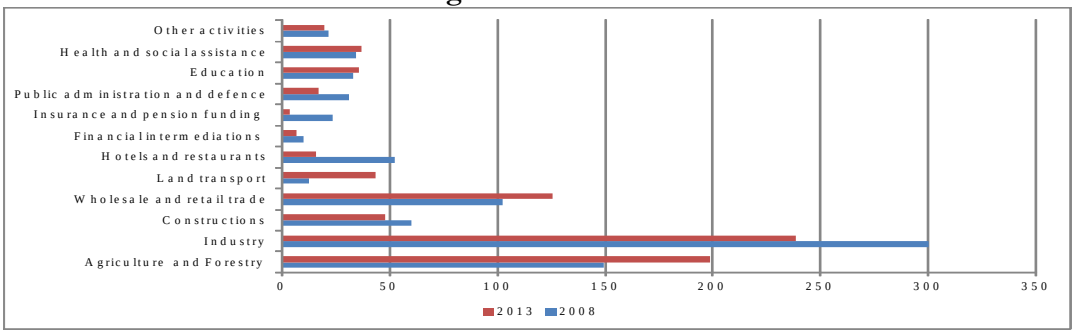
Figure 8. Employed people by economic sectors in the South-West Oltenia region during the 2008-2013 interval



Data source: *Romania's Yearbook* 2009-2014 of the NIS

In the West region, in the 2008 year end the civil population employed was 856.4 thousands and in the 2013 year end 832.0 thousands and its activity structure was as shown in Figure 9. The West region is the third one in the decreasing order in which agriculture doesn't hold the majority of its employed population. Despite this, the agricultural population is here significantly increasing along this period.

Figure 9. Employed people by economic sectors in the West region during the 2008-2013 interval



Data source: *Romania's Yearbook* 2009-2014 of the NIS

Then, there is a list of conclusions of the above analysis:

- it is about an overall 216.4 thousands decrease of population employed in all Romania's economic sectors;
- contrary to this, it is a slight growth to be noticed in the North-West region, namely of 0.1 thousands;
- and overall again the other regions accounted an absolute decreasing of people employed: South-East -53.7 thousands, North-East -45.2 thousands, South-West -35.0 thousands, South -32.2 thousands, Bucharest-Ilfov -24.8 thousands, West -19.8 thousands, Center -5.7 thousands;
- only three regions, of the total of eight, in which people employed in agriculture aren't majority of total people employed;

- the Bucharest&Ilfov region is atypical nation-wide, i.e. trade is the highest in employed people structure, followed by industry and constructions.

It is to see the total employed people of Romania diminishing at both the national scale and in rural areas. Overall, in 2013 the employment rate of the 15-64 years old people was 59.5%, namely 4.7% lower than the European average. As for the rural areas, the employment rate diminishing for the same age group was diminishing from 61.6% in 2008 to 60.7% in 2013.

As for people employed's dynamic on activity sectors in the 2008-2013 inteval, analysis indicates significant decreases as such for the primary and secondary sectors: -2.6% in agriculture, -4.4% in industry and constructions face to an increase of 14.5% in the tertiary sector. As geographically, significant disparities persist for pretty minimal numbers as such for either industry and/or tertiary sector in some rural localities, or agriculture up to 80% of people employed.

Employment seen from professional status results for 2013 as high as 89% self employed and contributing family workers in rural areas. These workers hold 42.6% of the total employed people in rural areas, but unfortunately this aspect plays for the subsistence agriculture rather than for any entreprenourial spirit. As seen from residence areas, it is to be noticed that the employment rate in rural areas in 2013 was 51.5%, namely 1.5% higher than in urban areas. But this isn't for more favourable employment opportunities, on the contrary.

BIBLIOGRAPHY

Romania's Statistical Yearbook (2015): Labour in Romania. Employment and unemployment. Data series recalculated on RPL 2002 basis.

National Developing Plan: 2007-2013

Plan of Regional Development. North-East: 2007-2013, elaborated by the North-East Regional Development Agency

Regional Operational Programme: 2007-2013

Simona Vonica Radutiu: *Comparative Analysis of the Labour Market in Romania, EU and EU candidate countries*

Joint Assessment Paper, a common document of evaluating employment policies in Romania

Statistics of AJOFM

THE SMES IN THE CONTEXT OF CURRENT MARKET LABOUR

Mălina Lucia TURCUȚ [1]

Abstract

The SMEs are regarded as a very significant part of an economy. Their role and the challenges they face during their activity are drawing the attention of the economists all around the world. In the body of this paper we will outline the problem they have with the labor force, a problem that has persisted in the last year and it is getting deeper and deeper. Solutions can be found both inside the company and in the economical policies.

Keywords: SMEs, labor force, unemployment

Rezumat

IMM-urile sunt considerate a fi o parte foarte importantă a unei economii. Rolul lor și provocările cu care se confruntă în activitatea lor atrag atenţia economiştilor din întreaga lume. În corpul acestei lucrări va fi subliniată problema pe care o au cu forța de muncă, o problemă care persistă în ultimul an și devine tot mai apăsătoare. Soluțiile pot fi găsite atât în interiorul companiei cât și în politicile economice.

Cuvinte-cheie: IMM-uri, forţă de muncă, şomaj

Cod JEL: D20, J21, J23
Cod REL: 12I, 12D

1. Introduction

The SME sector, an essential component of the economy, ensures economic growth, innovation and prosperity, when their work is not negatively influenced by external or internal factors. What it is understood by SMEs is "the category of Micro, Small and Medium Enterprises (SMEs) made up of enterprises that employ fewer than 250 people and have a net annual turnover of up to 50 million euro and / or hold total assets of up to 43 million Euros" (Excerpt from Article 2 of the annex of Recommendation 361/2003 / EC) according to the acquis communautaire.

2. Conceptual restrictions

Considering that the main criteria according to which the SMEs are classified are: the number of employees, the turnover and the value of total assets, it is difficult to assume that there will be a general quantitative definition corresponding to small and medium enterprises that will satisfy all the characteristics of a SME, given the degree of development of various

[1] *Ph.D Student. University of Oradea, malinaturcut@gmail.com.*

economies worldwide. Instead, it is preferable to use a qualitative definition that could create the premises for the harmonization and comparability of financial reporting for SMEs (even if, at national level, quantitative criteria for classifying the SMEs could be used for statistical purposes, in order to fit into different programs, for gaining access to certain funds or for various other reasons) (Maria-Mădălina Buculescu, 2013)

As for the definition of small and medium enterprises, there were more than 50 different definitions in the mid 1970s (Auciello 1975, p. 24). Overall, the SMEs are currently considered companies whose characteristics meet certain criteria and do not exceed certain quantitative limits.

The diversity and scale of the characteristics of SMEs, political strategies and economic conditions are factors that hinder the existence of a common and generally accepted definition of SMEs (OECD, 2004). Therefore, while in some countries a type of entity can be classified as medium enterprise, in others it can be considered a large one, and therefore it cannot be classified as small or medium enterprise.

However, the existing definitions provided by the European Commission, World Bank, OECD or by other institutions or organizations in order to be applied at the level of several economies, have pursued the increase in the comparability and internationalization of the SMEs definition and the creation of new opportunities related especially to the access of SMEs to new market niches, to technology, know-how, access to capital, labour, new markets for services and products (OECD, 2005).

Table 1. Definitions of small and medium enterprises

	Micro-enterprises	**Small enterprises**	**Medium enterprises**
European Commission	1. Fewer than 10 employees; 2. Turnover < 2 million Euros 3. Total assets < 2 million Euros	1. Fewer than 50 employees; 2. Turnover < 10 million Euros 3. Total assets < 10 million Euros	1. Fewer than 250 employees; 2. Turnover < 50 million Euros 3. Total assets < 43 million Euros
World Bank	1. Fewer than 10 employees; 2. Turnover < 100.00 dollars 3. Total assets < 10.000 dollars	1. Fewer than 50 employees; 2. Turnover < 3 million dollars 3. Total assets < 3 million dollars	1. Fewer than 300 employees; 2. Turnover < 15 million dollars 3. Total assets < 15 million dollars
OECD	a. Between 1-4 employees (micro-enterprises) b. Between 5-19 employees (very small businesses)	Between 20-99 employees	Between 100-500 employees

Source: Recommendation nr. 2003/361/CE, World Bank definition, Organisation for Economic Cooperation and Development (OECD) definition, Fitch (2006).

But even within a single economy there may be several institutions and bodies that define SMEs differently: statistical institutes, banks, government agencies and others (Kushnir, 2010). Therefore, a study undertaken by Kushnir (2010) revealed that there were more definitions to classify the SMEs in 26 economies out of 120 surveyed.

The existence of different definitions can be due to the fact that there are many criteria that can be considered when defining an SME, such as turnover, number of employees, capital, independent enterprise, profit, assets, the value of imports and exports, etc. However, as it can be seen from the table above, there are several criteria that were considered to be more appropriate and were used primarily in the definition of SMEs, which are: number of employees, turnover and total value asset. Nevertheless, higher values for the classification of SMEs have been set in some economies in comparison with other economies, even if the assignment criteria are the same. (Maria-Mădălina Buculescu, 2013)

3. SMEs Demographics

There are nearly 21 million SMEs at EU level, representing over 98% of all enterprises. For the year 2012 it was estimated that the share of staff employed in SMEs was around 67% (over 87 million people employed) of all employees (ECORYS, 2012). Considering the role of SMEs as the main source for the creation and supply of labour, for generating over 50% of GDP for many economies, as a source of revenue to the state budget and so on, it is obvious that SMEs play an essential role in the growth and development of the European Union. (Maria-Mădălina Buculescu, 2013)

There are 426,295 SMEs active in the financial economy of Romania, the lowest density of SMEs in UE28, these having 2.71 million employees. Thus, Romania holds the 8th position in the European Union in terms of its share of total employment in SMEs. Moreover, the added value achieved by SMEs is 25.8 billion Euros. In our country there are 21.3 small and medium sized firms per thousand inhabitants, the EU average being 42.7 firms. The highest densities are recorded in the Czech Republic with 95.9 SMEs per thousand inhabitants, Portugal (73.5 SMEs / 1,000 inhabitants), Malta (73 SMEs / 1,000 inhabitants) and Slovakia (70.2 SMEs / 1,000 inhabitants). There are strong economies of the European Union where the density of SMEs is very high. It is the case of Great Britain, with only 27.2 SMEs / 1,000 inhabitants and Germany with 27.7 inhabitants /1.000 SMEs. High density values of SMEs can be found both in the new Member States of the EU that are economically less developed and in traditional market economies, such as Spain (48.1), Italy (62.6), and Sweden (70.2). The critical state of SMEs in Romania was deepened by the accumulation of new development gaps generated by the global crisis. In 2013 there were 15.5% fewer SMEs compared to 2008, the number of employees in SMEs was 6.6% lower compared to 2008 and the added value achieved by SMEs was reduced by 16.6% compared to 2008. During this time, most Member States recovered their losses, and the average values for the number of SMEs and the added value were above the 2008 level, the number of jobs remained 2.6% lower". Of the total of SMEs, the share of micro-enterprises in Romania is 88% lower than the average of 92% in UE28, while small enterprise class is more consistent than in the EU, 10.4% in comparison to 6.4%. As a field, trade prevails for the SMEs in Romania, with a share of almost 40% of all firms, while the EU average is 28%. In light of the new policy for European industry revival, another positive aspect of public sector

is outlined, Romania having many SMEs in manufacturing industry, their share exceeding the average value for the UE28 (a share of 11.9% in comparison to 9.6% in the EU). Also, Romania is among the few European countries with notable achievements in terms of exceeding the pre-crisis indicators of industrial production in general and the second in Europe (after the Czech Republic) in the share of industry in creating added value. The nearly 51,000 SMEs active in the industry, accounting for 9% of the total number of companies, contribute to total added value in a proportion of 24.5%. (According to a survey carried out by Post Privatisation Foundation in 2015)

4. Difficulties in the activity of SMEs

The business environment continues to be unstable due to the lower recorded number of new business initiatives, along with other economic agents exiting the market. Start-up registrations fell by 19.6% in the first 10 months of 2014 as compared to the previous year. The annual number of new business registrations has declined steadily since its peak of 144, 239 in 2008, with a slight recovery in 2011 and with 124,816 new companies registered in 2013. The low number of new registrations means fewer jobs. In the EU, 85% of the jobs created post-crisis were provided by start-ups (Post Privatisation Foundation, 2015).

Table 2. Differentiation based on the difficulties created by the age of SMEs

	2006	**2007**	**2008**	**2009**	**2010**	**2011**
Number of active SMEs	459.972	498.014	532.688	517.870	468.561	467.883
Large enterprises	1.840	1.843	1.837	1.571	1.519	1.519
Total	461.812	499.857	534.525	519.441	470.080	469.402
Share of staff employed in SMEs	63,2%	64,9%	65,8%	66,3%	65,9%	65,8%
Share of staff employed in large enterprises	36,8%	35,1%	34,2%	33,7%	34,1%	34,2%
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Source: National Council of Private Small and Medium Enterprises in Romania

Following the studies conducted, the authors of the yearbook White Charter of SMEs published in 2015, established the difficulties faced by SMEs depending on their age, as presented in the following table:

Table 3. Difficulties in activities of SMEs

Nr. crt.	Difficulties in the current activities of SMEs	Age of SMEs			
		0-5 years	5-10 years	10-15 years	Over15 years
1	Decrease of the domestic demand	57,93%	62,01%	56,44%	59,84%
2	Bureaucracy	59,65%	56,52%	51,11%	52,19%
3	Excessive taxation	59,37%	51,95%	54,67%	52,73%
4	Inflation	44,67%	46,00%	48,89%	48,09%
5	Excessive controls	44,67%	46,68%	46,22%	43,17%
6	Corruption	31,99%	39,36%	41,78%	37,43%
7	Unfair competition	35,45%	36,61%	36,89%	39,89%

8	Difficult access to credits	19,02%	22,43%	23,56%	22,95%
9	Competition from imported products	21,61%	17,16%	18,67%	19,67%
10	Hiring, training and retaining staff	20,17%	17,85%	21,78%	18,03%
11	The relative instability of the national currency	13,26%	14,65%	22,22%	17,76%
12	The poor quality of infrastructure	14,12%	14,87%	14,22%	16,94%
13	Increased salary costs	16,14%	12,81%	15,11%	13,66%
14	High costs of credits	13,26%	12,36%	13,78%	16,39%
15	Delays in collecting bills from private firms	12,97%	11,9%	12,44%	12,57%
16	Obtaining necessary advice and training for the firm	4,61%	6,64%	6,22%	7,10%
17	The drop in export demand	7,78%	4,81%	8,89%	4,37%
18	Non-payment of bills by state institutions	2,59%	6,18%	7,11%	7,10%
19	Knowledge and adoption of the acquis communautaire	3,17%	4,58%	5,33%	4,10%

Source: White Charter of SMEs, 2015

Looking at the table above, it is noted that, although SMEs have an important role in creating jobs in an economy, on average 20% of them face problems in hiring, training and retaining staff. Entrepreneurs have repeatedly emphasized in the national press this year that they are forced to restrict their activity although their recruitment is carried out continuously because they have no one to hire. Their alternatives are either to seek labour from other counties or to seek foreign employment.

The problem of labour is increasing in a period of economic recovery from the crisis, in the incessant fight against the hostile economic environment in our country. But this problem has been persisting for several years. In September 2015, the unemployment rate in Romania was 4.89% (source ANOFM), a value that does not generate anti-inflationary pressures. What should we do in the counties where the unemployment rate is below 4% (the level at which most economists would agree that there is a balance between the unemployment rate and inflation rate)? The difficulty to recruit and select staff is enhanced for the entrepreneurs operating in the area. The reason is easy to understand. NAIRU is the unemployment rate which does not generate inflationary pressures. If the unemployment rate falls below 4%, the National Bank interferes by increasing inflation. This measure is taken only when the national unemployment rate falls below the threshold level. Taking for example the unemployment rate in September 2015, it was 1.44 % in Timis County, 3.63% in Satu Mare, 1.92% in Bucharest, 1.3%, in Ilfov County, 2.27% in Cluj County, 3.6%, in Bihor County, 2.34% in Arad, and 3.8% in Brasov. (source ANOFM)

People also speak, at international level, about the existence of an unemployment rate given that virtually all those who are able and willing to work are employed. How could one get here? In Romania, migration is one of the causes, supported by the far too low wages and unemployment benefits which are close to the value of the minimum wage. The decrease in the number of institutions that train workers with average skills as well as the disparity between the supply and demand of jobs in the labour market have deepened this problem of SMEs.

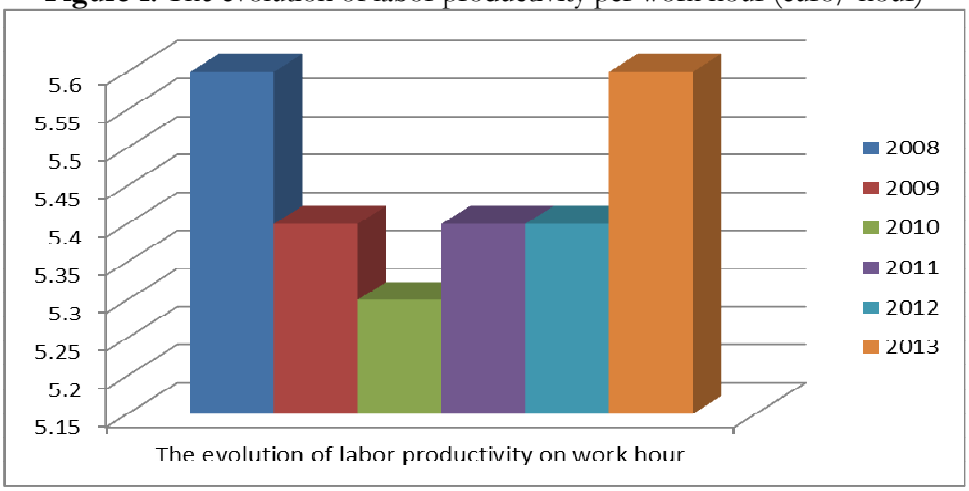
The reduced mobility of employees will create a serious problem for the entrepreneurs who are willing to recruit staff from other counties with a higher

unemployment rate. It will be even more difficult to attract people from abroad given the fact that the wage level will not change. What is it to be done under these circumstances? State intervention in stimulating employment programs is working towards reducing the wage costs over a period of time, but the desired effect can be achieved only if this reduction of salary expenses is reflected in increasing staff salaries.

The downward trend in birth and mortality (death rate sensibly exceeding the birth rate) resulted in a negative natural growth rate of -3.6 people per 1000 inhabitants in 2012, higher than the previous year (-2.8% in 2011). The gap between negative natural growth was maintained by residence. The age structure of the population has the characteristic of a demographic aging process caused mainly by declining birth rates. This new factor influences the recruitment of entrepreneurs, both at the level of the SMEs and of the large companies.

We currently rank among the worst in the European Union taking into account labor productivity per hour. In the year 2013 we held the last but one place, with 5.6 euro / h having an advantage only before Bulgaria of all EU member states.

Figure 1. The evolution of labor productivity per work hour (euro/ hour)



Source: Eurostat

Analyzing the situation presented in the table above, it follows that although labor productivity determined as ratio between the recorded turnover and the number of employees of the company, returned in 2013 to the value achieved in 2008, we are still the last in Europe in this regard. The entrepreneurs situation is delicate in this situation. They have to keep their employees, even if they do not meet the job requirements, they face low labour productivity and business expansion is a challenge considering the above.

Conclusions:

The important role of SMEs in the economy is undeniable. One pays considerable attention to solutions to finance them, to create favourable legal environment, to support them through various national projects. However, monetary policy measures aimed at maintaining balance in the economy are not always taken at the right time for all regions or industries.

"This work was supported by the project " Interdisciplinary excellence in doctoral scientific research in Romania - EXCELLENTIA" co-funded from the European Social Fund through the Development of Human Resources Operational Programme 2007-2013, contract no. POSDRU/187/1.5/S/155425."

Note:

1. www.cnipmmr.ro
2. www.insse.ro
3. www.postprivatizare.ro
4. www.bnr.ro

BIBLIOGRAPHY

World Bank Policy Research Working Paper, No. 3127

CNIPMMR (2012). "Strategia Consiliului Naţional al Întreprinderilor Mici şi Mijlocii din Romania 2012-2016"

European Commission (2011). "Study on Accounting Requirements for SMEs", Final Report submitted by Cna Interpreta

European Commission (2003). "Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises"

European Commission (2003). "Recommendation 2003/361/EC: SME Definition" European Commission (2005). "SME definition, User guide and model declaration"

ECORYS (2012). "EU SMEs in 2012: at the crossroads, Annual report on small and medium sized enterprises in the EU, 2011/12", Rotterdam, September

Fitch, B. (2006). Directorate general for external policies of the Union Directorate, "The Role of Small and Medium Enterprises in Developing Country", Enterplan, Parlamentul European

Gibson, T., van der Vart, H.J. (2008). "Defining SMEs: A less imperfect way of defining Small and Medium Enterprises in Developing Countries", Brookings Global Economy and Development, September

Hauser, SBS Expert Meeting (2005). "Towards better Structural Business and SME Statistics",

Maria- Mădălina Buculescu (2013). „Procesul de armonizare în definirea întreprinderilor mici şi mijlocii. Argumente pentru o definire cantitativă versus o definire calitativă,", Economie teoretică şi aplicată, vol XX, No.9(586), pp 91-103

OECD, Statistics Directorate, "A qualitative definition of SME", Institute für Mittelstandsforschung, Bonn

OECD (2005). "SME and Entrepreneurship Outlook"

Ordinul Ministrului Finanţelor Publice nr. 3055/2009 (OMFP 3055/2009)

Osteryoung, J.S. and Newman, D. (1993). "What is a Small Business?", The Journal of Small Business Finance, 2(3), pp 219-231

Tiron, T.A., Mutiu, A. (2008), "Pro and contra opinions regarding a SME accounting standard", Annales Universitatis Apulensis Series Oeconomica, EconPaper

THE EFFECTS OF LABOR MARKET NEWS ON INTERNATIONAL FINANCIAL MARKETS

Adrian Cantemir CĂLIN[1]
Radu LUPU[2]

Abstract

The dynamics of financial markets tends to be influenced by the launch of news. This new information generates a series of effects that ripple through the markets on all kinds of levels. In this paper we consider a series of announcements specific to the labor market and aim to test their potential impact on a basket of financial assets. We employ three volatility models and observe the fact that labor market announcements induce solid reverberations on a large set of financial assets.

Keywords: labour market, volatility, event study

Rezumat

Dinamica pieţelor financiare tinde să fie influenţată de lansarea de ştiri. Această nouă cantitate de informaţie generează o serie de efecte care se propagă în piaţă într-o multitudine de aspecte. În prezenta lucrare sunt observate o serie de anunţuri specifice pieţei muncii cu scopul de a testa impactul acestora asupra unui coş de active financiare. Folosind trei modele de volatilitate observăm faptul că anunţurile ce ţin de piaţa muncii induc reverberaţii semnificative asupra unui set important de active.

Cuvinte-cheie: piaţa muncii, volatilitate, studiu de eveniment

JEL CODES: J01, J64, G14, G15,
REL CODES: 12A, 11B

1. Introduction

Financial literature has shown that information has a complex impact on the dynamics of financial markets. This is a normal conclusion, given the fact that the efficient market hypothesis stipulates that financial markets incorporate the existing level of information available. In this context, a strong and fast growing body of academic attention has been oriented to the study of the effects generated by news. This literature germinates according to some from the study of Cutler et al (1989) and considers various areas of the financial environment. Fleming and Remolona (1999), Anderson et al. (2002), Simpson et al. (2005), Vega (2006), Engelberg et al (2008), Swanson and Williams (2014), just to mention a few, represent relevant contributions to a the prolific block of

[1] *PhD, Senior Researcher. Institute for Economic Forecasting, Romanian Academy; cantemircalin@ipe.ro.*
[2] *PhD, Senior Researcher. Institute for Economic Forecasting, Romanian Academy.*

research that considers the effects of macroeconomic news on financial data.

Despite this abundance of studies that consider news related to macroeconomic fundamentals, less attention has been given to the impact of news specific to labor market variables.

This paper contributes to the existing literature by aiming to determine if a large set of labor market announcements impact the volatility of a selection of financial assets that is grouped in three main categories: currencies, commodities, and indices. We use an event study approach which incorporates three volatility models in order to obtain abnormal variances and provide a procedure that reports the results as a volatility index. We find that the studied announcements have a powerful impact on the dynamics of the volatility of the considered assets.

The reminder of this paper is organized in the following way: section II reviews the literature on the impact of news on financial markets. Section III describes the data used and our methodological setup. Section IV discusses the results obtained and section V concludes.

2. Literature review

As previously stated, the financial literature has demonstrated that news in the form of macroeconomic announcements have a solid impact on assets prices and volatilities. In addition to this, it has been shown that it is possible to methodologically isolate this impact through quantitative instruments. These facts led to the arrival of an abundant literature that seeks to determine the nature of the above suggested impact.

Ederington and Lee (1993) focus on short-run volatility in an approach that is highly relevant to the present study. Using 5-minute frequencies for series of returns for USD – DEM and USD – JPY and announcements regarding elements such as: GNP, trade deficit, employment, PPI, the authors document on abnormal volatility patterns.

Andersen et al (2007) concentrate on the reaction of the stock, bond and currency markets belonging to three states (U.K., US and Germany) to American macroeconomic news. The authors discover that information generates conditional mean jumps. Moreover, the results show the fact that equity markets exhibit different behaviors to news according to the phase of the business cycle.

Arezki et al (2011) test the spillover effects that derive from news regarding sovereign ratings for European Markets. The result demonstrate such spillover effects across countries and markets. In addition to this, the study observes that the effects depend on variables such as: type of announcement, country for which a downgrade is issued and rating agency that releases the information. Other similar contributions in this direction can be traced to Gande and Parsley (2005) or Ferreira and Gama (2007).

Lillo et al (2014) study trading behavior in relation to a series of endogenous and exogenous factors. As exogenous factors they use news articles and a variable that describes the sentiment of the analysis deriving from the news. The authors determine through a VAR approach that the stream of news of the previous day affects trading patterns and activity.

Lupu and Călin (2014 a, b) discuss the impact of quantitative easing announcements issued by the Bank of Japan and Bank of England on CDSs and respectively currency pairs. Both studies detect a clear influence generated by the news about unconventional monetary policy.

Garcia - Herrero et al (2015) study the way in which Brazilian financial markets react to actions specific to monetary policy, considering both the dynamics of the policy rate and the communications of the central bank. They find that futures interest rate reflect both considered elements and that the communications of the central bank have a high impact in future rates and reduce volatility. Călin (2015 c) also explores the impact of monetary policy news by investigating the influence of Federal Reserve's tapering actions on the US real estate market. The results indicate cases of abnormal variance resulting from the tapering announcements, but all together a limited influence.

Gilbert et al (2015) observe that certain announcements generate a higher influence on asset prices than others. In this context, the authors try to estimate the intrinsic value of an announcement through nowcasting methodologies. They notice that for the 1998 – 2013 interval a large proportion of the impact of announcements on the bond futures market can be linked to differences in intrinsic value.

Omranea and Hafner (2015) exploit the connection between exchange rate volatility and macroeconomic variables. Using an impulse response analysis, the authors decompose the effects of macroeconomic news on the currency market and determine the existence of a direct effect and an indirect volatility spillover.

As stated above, the literature that focuses on the effects of labor market news on financial market is not as abundant. Studies like McQueen and Roley (1993), Fleming and Remolona (1999) or Kim et al (2014) investigate the relationship between financial elements and several macroeconomic fundamentals including also specifications for labor market announcements.

In an early work, Krueger (1996) tries to detect if the bond market responds to surprise announcements that derive from the availability of better and revised data. The author concludes that prices are clearly influenced by the unemployment news.

Krueger and Forson (2003) observe that the dynamics of labor market data has a solid effect on the yields of 30 year Treasury bonds and bills. The authors argue that a surprise increase of 200000 jobs is connected to an increase that ranges from 4 to 8 basis points for long term bond yields.

Boyd et al (2005) study the stock market's feedback in relation to unemployment news. The authors observe that a negative announcement about unemployment has either a positive or negative effect on stocks depending on the phase of the economic cycle.

3. Data and methodology

Our modeling approach relies on two large data blocks: closing prices for financial assets and dates on which labor market news was launched.

For the first type of data we focused on 114 financial assets that can be divided into three main categories: currency pairs, indices and commodities. A full list of these assets is provided in Appendix 1. Our data set is observed at a five-minute frequency and the investigation period ranges from October 2014 to February 2015.

In addition to this we are using a list of dates on which news related to the labor market have been launched. These announcements dates correspond to 13 categories of events that describe the nature of the announcement made on a specific date. Among these, the most representative are: *Jobseekers Net Change, Hourly Wages YoY, Unemployment Rate, Formal Job Creation Total, Labor Cash Earnings YoY, or Non-Farm Payrolls QoQ*.

The data are representative for a series of 13 countries, namely: Brazil, Canada, France, Grece, Italy, Japan, Mexico, Norway, New Zeeland, South Africa, Singapore, Sweden, and the US.

The methodology builds on the setup put forward by Călin (2015) and relies on an event study approach[3]. In a similar way to the above mentioned work, we are using three volatility models. We thus also employ RiskMetrics but after this point rely on the estimations of the A-PARCH and NAGARCH models.

The Asymmetric Power ARCH model was introd originates from the work of Ding et al (1993) and has the following parametric form:

$$y_t = \mu + a_t$$

$$a_t = \sigma_t \epsilon_t$$

$$\sigma_t^{\delta} = \omega + \sum_{i=1}^{m} \beta_i \sigma_{t-i}^{\delta} + \sum_{j=1}^{s} \alpha_j \left(|a_{t-j}| - \gamma_j a_{t-j}\right)^{\delta}$$

where:

$$\omega > 0, \delta \geq 0$$

$$\beta_i \geq 0$$

$$\alpha_j \geq 0$$

$$-1 < \gamma_j < 1$$

The non-linear asymmetric GARCH (NGARCH) was introduced by Engle and Ng (1993) and relies on the following formulation:

$$\sigma_{t+1}^2 = \omega + \alpha R_t^2 + \beta' \sigma_t^2 - 2\alpha\delta z_t \sigma_t^2$$

Where

$$\beta' \equiv \beta + \alpha\delta^2 > \beta' for\ \alpha > 0$$

Given the fact that we are using intra-day data we must formulate an adjustment for common volatility dynamics as observed for example in Călin (2015 b). Therefore, before runing the event study procedure, we apply the procedure of Boudt, Croux and Laurent (2011) in order to compensate for periodicity.

In the event study approach we exploit the nature of our input data and focus on twelve 5 minute intervals that follow the launch of a certain event. In this time frame of one hour we observe the number of abnormal returns computed by our methodology. On these values we build a volatility index that captures the response of a specific financial asset to the labor market related announcement.

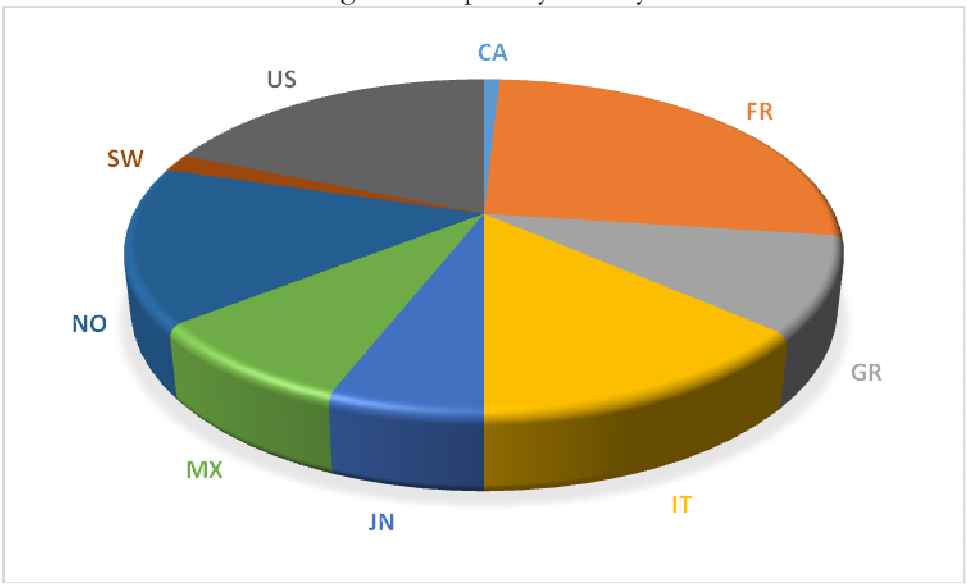
[3] For a full description of the typical event study setup see for example Albu et al (2014a).

4. Results:

After the computations described in the above section we obtain 848 cases in which we investigate the impact of a certain event on a certain financial asset. Out of this total number of event studies, we observe significant values for the volatility index in 119 cases.

Firstly, we notice the fact that the labor market announcements of nine out of the 13) countries (Canada, France, Greece, Italy, Japan, Mexico, Norway, Sweden and the US) generate abnormal returns. Figure 1 shows the number of assets for which we detected significant values for the volatility index divided by country.

Figure 1: Impact by country



Source: Authors' calculation

The results for the case of Canada show that the announcement about the level of the *labor productivity* generated abnormal volatilities for the S&P/TSX 60 Index Standard Futures. The impact in this case is however one of the weakest reported in this investigation.

For France we detect a much larger activity. News about *jobseekers net change* and *non-farm payrolls* determine abnormal volatilities in 79 cases. We observe that these two categories of events have a strong influence on the currency market. For example, the results indicate abnormal volatilities in 30% of the studied intervals for the EUR – CNY currency pair with reference to the announcement of the dynamics of the French *non-farm payrolls QoQ* event. Similar effects are observed for EUR-ILS, EUR-ZAR.

In addition to this, a relevant influence is observed for the Generic EUR France government bills and bonds, and mild impacts are detected on EUSA 10 and EUSA 5.

The announcements on *unemployment rate* represent the only events that trigger abnormal dynamics for Greece. The largest effects are observed again for the currency market, with strong impacts for the EUR – ILS, EUR – INR, and EUR – NOK currency pairs. Greek unemployment announcements also determine abnormal

volatilities for other financial assets such as STOXX Europe 600 Index (SXXP Index) or Athens Stock Exchange General Index.

Only the announcement regarding the *quarterly unemployment rate* launched on 29.08.2014 succeeds in creating abnormal volatilities in the case of Italy. Similarly to the previous cases, the highest values for the volatility index are found for currencies, high responses being observed for: EUR – CNY, EUR – RBL, EUR – CNH and EUR – ZAR. For example, we notice abnormal returns for the last currency pair in almost half of the number of intervals in the established time frame.

Besides this, the volatility index has significant but lower values for a series of indices among which we mention: SXXP Index, Euro Stoxx 50 Index (SX5E), FTSEMIB Index (which consists of the 40 most liquid stocks listed on the Italian stock market), and the VG1 Index (Euro STOXX 50 Futures).

In the case of Japan, we observe that the announcements made in the fall of 2014 regarding the *labor Cash Earnings YoY* generated several cases of abnormal volatilities. The impact measured by the volatility index is observed for two financial assets: the KRW – JPY currency pair and the TPX Index (Tokyo Stock Price Index).

Despite the tendencies observed for the other countries, for Mexico we find significant values of the volatility index only for indices. The only category of events that generates effects is the *formal job creation total*. The highest value for the volatility index was found for the MEXBOL Index, also known as the Mexican IPC index or *Indice de Precios y Cotizaciones* in the original form. We also detect an important value of the volatility index for the ISA Index.

Two types of Norwegian labor market-related announcements generate abnormal volatilities and both characterize the evolution of the local unemployment rate. We thus observe high values of the volatility index for currency pairs that relate the Norwegian Krone with important currencies such as the USD or the EUR. In addition to this, the results show significant effects on two indices: OBX Index (Oslo Stock Exchange index) and the OSEAX Index (Oslo All-Share Index).

For Sweden, we identify only two events with significant results, both concerning the *unemployment rate trend*. They generate a minor impact in terms of abnormal volatilities for the QC1 Index (Stockholm 30 Futures**).**

The last state included in our analysis is the US, and in this case we found the largest number of assets that exhibit abnormal volatilities due to labor market news. These volatilities are caused by two announcements about the dynamics of the employment cost index. The largest values for the volatility index are found for the following currency pairs: USD – TRY, USD – BRL, USD – NOK, USD – PLN, USD – RUB, USD – SEK, and USD – HUF.

We also observe relevant abnormal volatility scores for the USGG30YR Index (Generic United states government bond index) and CCMP Index (NASDAQ Composite Index).

5. Conclusions:

In this paper we tried to observe if a large set of announcements regarding several variables of the labor market generates influences on the international financial markets in the form of an abnormal quantity of volatility.

We found that the investigated announcements lead to abnormal volatilities in a substantial number of cases and we tried to quantify this influence through a volatility index. We observe that in general, the most relevant impact is on the currency market, for almost every announcement with significant values for the volatility index.

In addition to this, the vast majority of labor market-related announcements tend to generate significant abnormal volatilities for the stock market index of the country in which it was issued.

Acknowledgements:

This work has been conducted under the research program "Models for the estimation and simulation of economic dynamics on medium and long term. Applications for the EU", Institute of Economic Forecasting, Romanian Academy

References:

Albu L. L., Lupu R., Calin A. C., Popovici O. C. (2014 a). Estimating the Impact of Quantitative Easing on Credit Risk through an ARMA-GARCH Model. *Romanian Journal of Economic Forecasting*, Issue 3, pp. 39-50.

Andersen, T. G., Bollerslev, T., Diebold, F. X., Vega, C. (2007). Real-time price discovery in global stock, bond and foreign exchange markets. *Journal of International Economics*, 73, pp.251-277.

Andersen, T.G., Bollerslev, T., Diebold, F. X., Vega, C. (2002) Micro Effects of Macro Announcements: Real-Time Price Discovery in Foreign Exchange. *NBER working paper no*, 8959

Boudt, K., Croux, C., Laurent, S. (2011). Robust Estimation of Intraweek Periodicity in Volatility and Jump Detection. *Journal of Empirical Finance*; Volume 18, Issue 2, pp. 353 – 367

Călin A. C. (2015 b). The impact of trade announcements on financial markets. an event study analysis. *The Romanian Journal of Economic Forecasting*, Issue 2, pp. 81-91

Călin A.C. (2015 a). Eloquence is The Key – the Impact of Monetary Policy Speeches on Exchange Rate Volatility. *The Romanian Economic Journal*, Issue 56, pp. 3 – 18

Ding, Z., Granger, C. W. J., Engle, R. F. (1993). A long memory property of stock market returns and a new model. *Journal of Empirical Finance*, 1: pp. 83–108.

Ederington, L. H. Lee, J. H. (2001). Intraday Volatility in Interest-Rate and Foreign-Exchange Markets: ARCH, Announcement, and Seasonality Effects. *Journal of Futures Markets*, 21(6), pp. 517-52

Engelberg, J., Reed, A. V., Ringgenberg, M. C. (2008). How are shorts informed? short sellers, news, and information processing. *Journal of Financial Economics,* Volume 105, Issue 2, August 2012, pp. 260–278

Fleming, M.J., Remolona E. M., (1999). What Moves the Bond Market. *Journal of Portfolio Management*, Vol. 25, pp. 28–38.

Garcia-Herrero A., Girardin E., Dos Santos E. (2015). Follow what I do, and also what I say: monetary policy impact on Brazil's financial markets. *BBVA Working Paper*

Gilbert, T., Scotti, C., Strasser, G., Vega, C. (2015). Is the Intrinsic Value of Macroeconomic News Announcements Related to Their Asset Price Impact? *Boston College Working Papers in Economics* number 874.

Kim S.J., McKenzie M.D., Faff R.W., (2004) Macroeconomic News Announcements and the Role of Expectations: Evidence for US Bond, Stock and Foreign Exchange Markets. *Journal of Multinational Financial Management*, Vol. 14, No. 4, pp. 217-232

Krueger A. B., Forson K.N. (2003) Do Markets Respond More to More Reliable Labor Market Data? A Test of Market Rationality. *Journal of the European Economic Association*, Volume 1, Issue 4, pp. 931–957

Krueger, A.B. (1996). Do Markets respond More to More Reliable Labor Market Data? A Test of Market Rationality. *NBER Working Paper* 5769.

Lupu R., Calin A.C, (2014 a). To QE or not to QE. The Japanese Experience. *Hyperion Economic Journal*, Vol 2. Issue 2**.** pp. 3-10

Lupu R., Calin A.C, (2014 b). Co-movements of Regime Shifts in GBP currency pairs around BOE Quantitative Easing Announcements. *Financial Studies,* Volume 18, issue 3, pp. 89 – 101

McQueen, G., Roley, V.V. (1993). Stock Prices, News, and Business Condition*, Review of Financial Studies 6*, pp. 683-707.

Simpson M.W., Ramchander S., Chaudhry M., (2005). The impact of macroeconomic surprises on spot and forward foreign exchange markets. *Journal of International Money and Finance*, Volume 24, Issue 5, pp. 693–718

Swanson, E. T., Williams, J. C. (2014). Measuring the effect of the zero lower bound on medium and longer-term interest rates. *American Economic Review*, Vol. 104 No. 10, 3154-3185

Vega, C. (2006). Stock price reaction to public and private information. *Journal of Financial Economics*, 82, 103-133.

Călin A.C. (2015). The Effects of the Federal Reserve's Tapering Announcement on the US Real Estate Market. *Financial studies*, Volume 19, issue 3, 2015, pp. 79-90

Omranea W. B., Hafner C., (2015). Macroeconomic news surprises and volatility spillover in foreign exchange markets. Empirical Economics, Volume 48, Issue 2, pp 577-607

Arezki R., Candelon B. Sy A. (2011). Sovereign rating news and financial markets spillovers: Evidence from the European debt crisis. *CESifo working paper*: Monetary Policy and International Finance, No. 3411

Gande, A., Parsley, D. C.(2005). News Spillovers in the Sovereign Debt Market. *Journal of Financial Economics*, vol. 75(3), pp. 691-734

Ferreira, M.A., Gama, P.M., (2007). Does sovereign debt ratings news spill over to international stock markets? *Journal of Banking & Finance,* 31, pp. 3162–3182

Apendix 1

GFRN10 Index	CAC Index	EURCNY Curncy
EUSA10 Curncy	SBF120 Index	EURJPY Curncy
EUSA5 Curncy	VG1 Index	EURNZD Curncy
OAT1 Comdty	VGA Index	EURBRL Curncy
OATA Comdty	CF1 Index	EURCAD Curncy
SXXP Index	EURAUD Curncy	EURGBP Curncy
SX5E Index	EURCNH Curncy	EURILS Curncy

EURINR Curncy
EURMXN Curncy
EURNOK Curncy
EURPLN Curncy
EURRUB Curncy
EURSEK Curncy
EURTRY Curncy
EURUSD Curncy
EURZAR Curncy
GBTPGR10 Index
BTS1 Comdty
IK1 Comdty
IKA Comdty
FTSEMIB Index
SGDJPY Curncy
USDSGD Curncy
USDNOK Curncy
GNOR10YR Index
NKSW10 Curncy
OBX Index
OSEAX Index
USDBRL Curncy
IBOV Index
KRWJPY Curncy
USDJPY Curncy
GJGB10 Index
TPX Index
NZDUSD Curncy
USDCNH Curncy
USDCNY Curncy
USDKRW Curncy
BBDXY Curncy
DX1 Curncy
DXA Curncy
DXY Curncy
USDCAD Curncy
USDCHF Curncy
USDHUF Curncy
USDILS Curncy
USDINR Curncy
USDMXN Curncy
USDPLN Curncy
USDRUB Curncy
USDSEK Curncy
USDTRY Curncy
USDZAR Curncy
INT1 Curncy
INTA Curncy
KU1 Curncy
USGG10YR Index
USGG30YR Index
USSW10 Curncy
USSW2 Curncy
USSW30 Curncy
FV1 Comdty
FVA Comdty
WN1 Comdty
WNA Comdty
CCMP Index
NDX Index
SPX Index
RAY Index
RTY Index
INDU Index
DJA Index
ND1 Index
NDA Index
RTA1 Index
RTAA Index
GNZGB10 Index
GNZGB5 Index
GCAN10YR Index
CN1 Comdty
CNA Comdty
SPTSX Index
SPTSX60 Index
PT1 Index
PTA Index
ASE Index
FTASE Index
TOP40 Index
AI1 Index
AIA Index
GMXN10YR Index
MEXBOL Index
MEXBOLD Index
IS1 Index
ISA Index
GSGB10YR Index
GSGB5YR Index
OMX Index
SAX Index
QC1 Index

ACCESS TO THE ITALIAN LABOUR MARKET OF MOLDOVAN YOUNG PEOPLE OF THE SECOND GENERATION OF IMMIGRANTS

Ecaterina DELEU[1]

Abstract

The difficulties of accessing at the Italian labor market of second generation Moldavian migrants is the aim of this research study. Young Moldovan immigrants, raised and trained in the Italian institutions, are facing more problems in their attempts to gain access to the labor market of the host country. Our objective aims at highlighting the real situation, risk factors, the results of the policies implemented. We present the results of a research study conducted between February and July 2015 in partnership with the Moldovan Embassy in Rome. Were surveyed 100 young Moldovan migrants aged 18-23 years who are in Italy. Generally, the opinions expressed by young people on the chances of finding a job in Italy according to their professional training, equal opportunities to accede to the labor market, their intentions to return to Moldova, or to change the migration country coincided with the views of international experts and Moldovan migrants who have children born in Italy or children born in Moldova. The qualitative research was complemented by a quantitative study: statistical data completes the problematic context in which young Moldovans (professionally trained in Italy) attempts to integrate, to be actively involved in the social life of the host country. They try to overcome the condition of the domestic worker, reserved to their parents and face labor demand reduced to low skills occupations.

Keywords: second generation, young migrants, labour market, social inclusion, integration policies.

Rezumat

Obiectivul cercetării noastre vizează dificultăţile pe care le întâlnesc tinerii migranţi moldoveni, crescuţi şi formaţi în instituţiile italiene, în încercările lor de a accede pe piaţa muncii din Italia. Studiul de cercetare are drept scop reliefarea situaţiei reale, a factorilor de risc, a rezultatelor implementării politicilor. Prezentăm rezultatele unui studiu de cercetare realizat în perioada februarie-iulie 2015 în parteneriat cu Ambasada Republicii Moldova la Roma, cu 100 de tineri migranţi moldoveni de 18-23 ani care se află în Italia. În mare parte, opiniile exprimate de ei privind şansele de a-şi găsi un loc de muncă în Italia conform pregătirii lor profesionale, oportunităţile egale de accedere pe piaţa muncii, intenţiile de a reveni în Republica Moldova sau de a schimba ţara de migraţie au coincis cu cele expuse în interviurile realizate cu experţi internaţionali şi cu migranţi moldoveni care au copii născuţi în Italia sau copii născuţi în Republica Moldova. Cercetarea calitativă a fost completată de cea cantitativă: tabloul statistic întregeşte cadrul problematic în contextul căruia tinerii migranţi din generaţiile secunde (formaţi profesional în Italia) încearcă să se integreze/implice activ în viaţa socială din ţara-gazdă. Ei

[1] *PhD student, Institute of Juridical and Political Researches of the Academy of Sciences of Moldova. ©Deleu Ecaterina, ecaterina.deleu@yahoo.it.*

încearcă să depăşească condiţia de lucrător casnic, rezervată părinţilor lor şi refuză cererea de forţă de muncă redusă la profesii low skills.

Cuvinte-cheie: generaţii secunde, tineri migranţi, piaţa muncii, incluziune socială, politici de integrare.

JEL: J Labor and Demographic Economics
Code REL: 10G International mobility of the labour. Migration.

1. Introduction

The issue of integrating second generation immigrants is on the agenda of many countries. Globally, growth is not only the population involved in migration processes, but also the number of persons born outside the host country (OECD, 2015, p.11).

The concept of *second generation* appeared in the beginning of the XX in USA, the first theoretical terms were used by the Chicago School of Sociology. Further it was taken by European scientists and in the post-war period the second generation theories were already spread globally. In 1995-2000 debates were held on this topic in Europe, and mainly in France, Germany etc., countries where even today is registered an influx of immigrants. These countries have gained more experience as a result of confrontation with numerous problems on immigration and social adaptation of second generation immigrants. Even nowadays the process of adaptation is not complet and it remains as well difficult and complex one, being fed with new provocations and tendences.

Generally, scientists consider children of immigrants born in destination country representatives of second generation (Ambrosini, 2011, p. 25). So we mean children with at least one parent migrant, who were born, grown up and educated in the host country. They are considered *migrants without migration* because they have not personal migration experience.

In broad sense, this category includes children aged up to 14 years old, who was born and started school in the origin country but later were forced to join their parents to settle abroad. In this case experts mention about *minor migrants* or *involuntary migrants* (Falteri, Giacalone, 2011, p.9). According to the decimal conceptual framework used by Ruben G. Rumbaut, we are able to talk about three important categories: *Generation 1.5* – those who started the process of socialisation and went to primary schools in their original countries and went on in the host country; *Generation 1.25*- those who migrate at the age of 13-17 years old, *Generation 1.75* - those wo migrate at the preschool age of 0-5 years.

Another classification is divided into following: minor born in Italy, minor reunited with their families, unaccompanied minors, refugee minors, minors adopted internationally and children of mixed families **(**Ambrosini**,** 2004, p.5-6**).**

Republic of Moldova registered in 90s first waves of emigration towards European Union. Aspects of the situation of Moldovan migrants of second generations were approached tangentially. Phenomenon of *second generation* is considered to be a new dimension of migration processes that targets citizens of the Republic of Moldova.

2. Impact of the *brain waste* phenomenon and effects of low skill jobs for Moldovan migrants

The **brain waste** phenomenon represents unused/misuse of professional competences gained by migrant before he/she arrived to the destination country. This takes place when the labour market is not able "to absorb" the migrants according to their professional qualifications. The discussion is about migrants who were imposed to accept low skills professions, fact that imply the loss of the human capital, economy costs as well as dream/hope ruin of a migrant. Some economy characteristics had a major impact on situation of Moldovan migrants.

1. Economy crisis determined worsening quality of labor supply in Italy – the offer of qualified personal was reduced.

2. Italian economy is different from other countries' world economies which are oriented to attract qualified people, as there was not imposed the necessity in qualified staff. This fact proves how reduced is demand for highly qualified in the government that is not centred on innovation. In Italy there were a high demand for low skills professions (Comunità moldava in Italia, 2014, p.53).

3. There is an attested phenomenon of **brain waste** in relation to migrant workers. Italian officials state that there exists an asymmetry between duties migrants exercise and level of professional education that usually exceeds specific employment needs. In the field of household services and assistance, the immigrant population has a substitutive function by guaranteeing continuity of traditional system of welfare, mostly concentrated on family rather than public services (Mercato del Lavoro degli immigrati, 2014, p.52).

3. Particularities of Italian labour market employment by young migrants from the Republic of Moldova

In Italy, at January 1, 2015, there were 147.388 people coming from Moldova, with resident permits (IDOS, 2015, p.439). Of them, 34.5% are young people up to 30 years. Among those 118 thousand of Moldovan migrants that are registered on the italian labour market, 85 thousand (71,7%) are working in public services, social services and personal services. About 17 thousand (14%) work in industry filed and 6 thousand (6%) - in agriculture. According to the Ministry of Labour and Social Policies, each fourth Moldovan employee is housework. The share of Moldovan citizens employed in Italian families is 10.8%, between migrant communities.

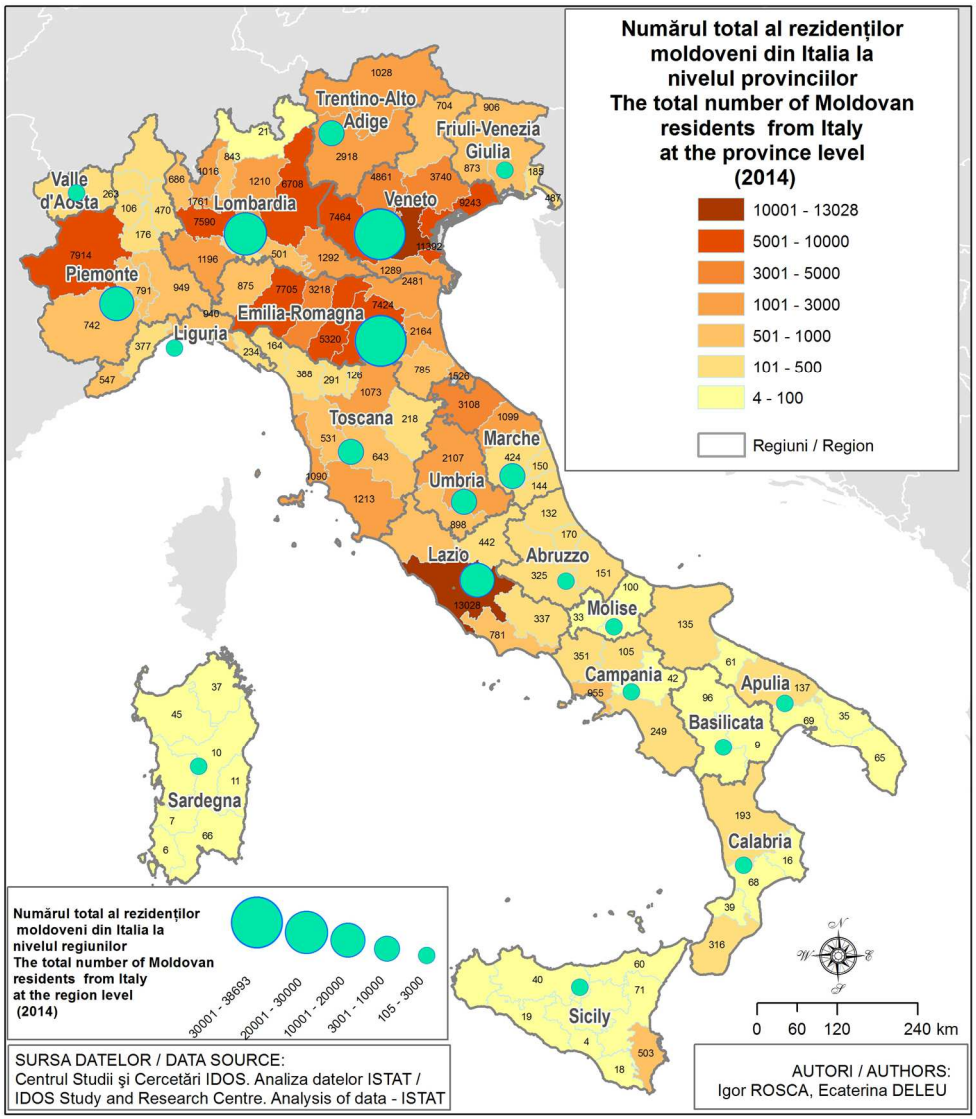
In Italy are registered 32 thousand of young people aged between 15-29 years old who are originally from Moldova. Of them, 30% are not employed, not engaged in formation or educational process, thus being considered young people NEET (*Not in Employment, Education and Training*). Half of Moldovan young people are unemployed - 23.2 % are not employed because of their family situation or health problems, 16,7 % are looking for new opportunities and 11,6 % - are disillusioned of the previous experience and took a break.

International experts have noticed also that immigrants with a higher level of education are losing qualification and professional competence as a result of their employment mainly in unskilled jobs. Only a very small percentage of migrants obtain a job according to their professional training. Others are forced to accept unfavorable social status. This fact amplifies the dramatic situation of people with a high degree of skill, left to work abroad.

Migration is considered one of the main causes of change society in countries of origin and host countries. At the same time, there is a close connection between migration and labor field. The dominant tendency in case of Moldovan migrants is migration determined by search of workplace. Considering this fact, national experts emphasize the necessity to study migration processes and their consequences as "extremely important factor for evaluating development prospects of Moldova" (Moraru, 2011, p.7-9).

4. Social integration policy of young Moldovan migrants in Italy

Fig.1



We conducted a research study to note the main characteristics of integration in Italy of Moldovan young people. In research which took place in February – July 2015 in partnership with Embassy of the Republic of Moldova in Rome, were surveyed 100 young Moldovan migrants aged 18-23 years old who lived in Italy at that moment of time.

The study aimed at assessing the employment opportunities of the labor market in Italy and in Moldova, the assurance of equal opportunities in employment. An important objective was to evaluate the intentions of returning to Moldova (identification of varieties of possible issues that a person may confront while returning back to his original country), to remain in Italy, transfer to another country etc. Young Moldovans are reticent regarding the chance to find a job according to their professional training. When asked if they have equal opportunities in employment, compared with their Italian colleagues, many of them said they are not sure of this. Some young people have heard about discrimination against immigrants. Some respondents were personally confronted with this problem.

Regarding the chances of finding a job in Italy in accordance with their professional training, 20% of respondents told they have small probabilities. Many of them have indicated great chances. More than 60% of respondents said they have reduced chance of finding a job in Moldova. In their opinion, this is one of the main problems that would face when returning in home country.

Many respondents intend to remain for long or forever in Italy (65%). However, it is large number who are tempted to emigrate to another country, more than 23%. Very few want to return to Moldova, only 7%-8%. The number of people decided do not return to Moldova is much higher. When asked what should realize the Moldovan government to attract young migrants, the respondents mentioned several options: to provide jobs and higher salaries, to support young migrants through programs and concrete projects, to reduce bureaucracy and corruption.

To underline some distinctive moments we will refer at two respondents. One of respondents is 22 years old. She has been living with her family in Turin (Torino) for 10 years. Earlier, for a period of five years she has lived with his grandparents in Moldova, because the parents were gone abroad (she was then 7 years old). Now she is a student at the Faculty of Economy of Turin. In the first months, she has faced in Italy with several problems: the knowledge of Italian language, the integration/adaptation in a new school, in society, acceptance of the fact that it was far from grandparents and other relatives in Moldova, difficulties of socialization with peers. It should be noted here the fact that lots of respondents who had been living in Italy for a period of time longer then 3-4 years told that they have confronted with discrimination in first months. She have reduced chances to find in Italy a job in accordance with professional training. At the same time, she considers it impossible to find a job in Moldova. She had applied to become an Italian citizen, having been living for 10 years permanently in Italy and has intention to emigrate after receiving citizenship and graduation.

The second respondent, aged 19 years old, also had been living in Italy for 10 years. She is a student at the Polytechnic University of Turin and considers that she has big chances to find a job, précising that 90% of graduates are employed in their first year after university. She affirmed that she had no chances to be employed in Moldova.

Conclusions

When we are talking about Moldovan migrants in Italy, it is necessary to note the impact of ***brain waste*** *phenomenon and the effects of labour demand reduced at low skills professions. These two problems had been mentioned at the official level in Italy. One of the consequences is the segmentation of the labour market. The migrant workers are mostly oriented towards specific sectors and professions. The employment of immigrants, including those from Moldova, is mostly oriented for the dependent jobs, mostly unqualified jobs, migrants being employed with schedule less convenient and for long hours.*

This phenomenon has a direct impact on the second generation immigrants, who had been grown up and educated in Italian institutions. They are less eager to accept the subordinate integration, as it happened with their parents. This impact is more accentuated in social inclusion because in most cases the hopes of young migrants are higher than the reality they face with. The delay of their accession to the labor market largely determines the delay of their inclusion in society of the country of migration. As a consequence, it increased the temptation to change the country of migration in search of better living conditions. Those who decide to remain in Italy for long, try to open their business (and their number is growing in last years).

The main risk factors are: the migration experience (increases the risk of accepting low skills occupations), gender (women have a higher risk), health problems/disabilities, level of education etc. In all circumstances, the highest level of education of people is an important factor - in the case of immigrants, young people NEET etc. Level of education presupposes a bigger level of flexibility in adaptation to specific conditions at the labour market. Experts warned us that human capital stock can degrade under the influence of poverty and can enter in a vicious circle, generator of permanent poverty. To break the vicious circle is not enough the individual effort (Moraru, 2010, p.53).

In conclusion, we emphasise the need for development and implementation of new integration policies that take into account the specificities of this population.

Notes

Indicators of Immigrant Integration 2015. Settling In. Paris: OECD Publishing, 2015, p.344

(2) Ambrosini, M. (2011) Sociologia delle migrazioni (seconda edizione), Editura Il Mulino, Bologna, 335 p.

(3) Falteri, P., Giacalone, F. (2011) Migranti involontari: Giovani stranieri tra percorsi urbani e aule scolastiche. Editura Morlacchi, Perugia, 399 p.

(4) Ambrosini, M., Molina, S. (2004) Seconde generazioni: Un'introduzione al futuro dell'immigrazione in Italia. Fondazione Agnelli, Torino, 184 p.

(5) Direzione Generale dell'Immigrazione e delle Politiche di Integrazione, Ministero del Lavoro e delle Politiche Sociali. (2014) La comunità moldava in Italia: Rapporto annuale sulla presenza degli immigrati, Roma, 109 p.

(6) Direzione Generale Immigrazione e delle Politiche di Integrazione, Ministero del Lavoro e delle Politiche Sociali. (2014) Quarto rapporto annuale sul mercato del lavoro degli immigrati, 173 p.

http://www.lavoro.gov.it/Notizie/Documents/IV%20Rapporto%20annuale%20 MdL%20immigrati%202014.pdf

(7) IDOS (2015), Dossier Statistico Immigrazione, Roma, 479 p.

(8) Moraru, V. ,coord. (2011) Brain Drain. Cazul Republicii Moldova, Chişinău, 260 p.

(9) Moraru, V., coord. (2010). Republica Moldova: provocările migrației. (AŞM, Institutul Integrare Europeană și Științe Politice) Editura Știința, Chişinău, 147 p.

REFERENCES

Stănică Simona. (2011) Apariţia şi evoluţia fenomenului Brain Drain. În: Revista Română de Sociologie", serie nouă, anul XXII, nr. 3–4, Bucureşti, pp. 339–360.

http://www.revistadesociologie.ro/pdf-uri/nr3-4-2011/09-SStanila.pdf

Moşneaga, V., Moraru, V., Rusnac, G., Ţurcan, V. (2011) Faţetele unui proces. Migraţia forţei de muncă din Republica Moldova în Italia, Seria Migraţia: probleme şi oportunităţi, Chişinău, Editerra Prim, 263 p.

Campani, G., Salimbeni, O. (2006). La fortezza e i ragazzini: la situazione dei minori stranieri in Europa. Politiche migratorie. Milano, Editura Franco Angeli, 177 p.

Immigrazione: Percorsi di regolarità in Italia (2013), Roma, Edizioni IDOS, 101 p.

Moraru, V., Mosneaga, V. (2010) Italia: noi paradigme migraţionale. În: Moldoscopie (Probleme de analiză politică), N 4, pp. 113-123.

Bertozzi, R. (2005) Le politiche sociali per i minori non accompagnati: pratiche e modelli locali in Italia, Milano, Editura Franco Angeli, 265 p.

UNICEF (2012) Facce d'Italia: condizione e prospettive dei minorenni di origine straniera, Roma, 40 p.

https://www.unicef.it/Allegati/facceditalia.pdf

Bridging the Gap. (1999) New opportunities for 16-18 year olds not in education, employment or training. Social Exclusion Unit, Londra, 122 p.

Calabrese, S., Manieri, M., Mondauto, L. (2013) Le determinanti del NEET status, Roma, 36 p.

Agnoli, M.S. (2014) Generazioni sospese: Percorsi di ricerca sui giovani NEET, Milano, Editura Franco Angeli, 350 p.

Gracey, S., Kelly, S. (2010) Changing the NEET mindset: Achiving more effective transitions between education and work, Centre for Innovation in Learning, Londra, 67 p.

THE INVESTMENT DETERMINANTS FOR UNITED KINGDOM COMPANIES

Mihaela SIMIONESCU[1]

Abstract

The objective of this research is to determine some factors that affect the investment in United Kingdom companies. For investment, the capital expenditure was used as proxy. For a sample of 2865 companies from London during 2005-2013, the determinants of investment were obtained using some regression models. The following groups of explanatory variables were identified: 1) sales, book to market ratio, cash flow, leverage and cash to assest, 2) sales and book to market ratio, 3) sales, 4) leverage. The investment depended on sales and book to market ratio during the crisis (2008-2013). In this period, sales and market to book have a positive impact on investment changes while during 2005-2013 only book to market had a positive impact on investment.

Keywords: investment, capital expenditure, book to market ratio, sales

JEL Classification: G11, C51, C53
REL Classification: 11D, 10B, 10G

Rezumat

Obiectivul cercetării este de a determina factorii care influenţează investiţiile în companiile din Anglia. Pentru investiţii, s-au folosit cheltuielile de capital ca variabilă proxy. Pentru un eşantion de 2865 firme londoneze în perioada 2005-2013, determinanţii investiţiilor au fost obţinuţi folosind modele de regresie, rezultând următoarele grupuri de variabile explicative: 1) vânzări, book to market ratio (raportul dintre valoarea de piaţă şi valoarea contabilă), fluxul de numerar, efectul de levier şi numerar activ; 2) vânzări şi book to market ratio; 3) vânzări; 4) efectul de levier. Investiţiile au depins în perioada crizei (2008-2013) de vânzări şi rezerva de piaţă. În această perioadă, vânzările şi raportul dintre valoarea de contabilă şi valoarea de piaţă au avut un impact pozitiv asupra investiţiilor, în timp ce în perioada 2005-2013 doar variabila book to market ratio a influenţat pozitiv investiţiile.

Cuvinte-cheie: investitţii, cheltuieli de capital, book to market, vânzări

Cod JEL: G11, C51, C53
Cod REL: 11D, 10B, 10G

[1]*Ph.d, Scientific research III-degree. Institutul de Prognoză Economică al Academiei Române, Bucureşti; mihaela_mb1@yahoo.com.*

1. Introduction

Corporate finance theory mostly relies on the assumption that market is imperfect. According to Modigliani and Miller (1958), if the market is perfect and there is no tax, then the cost difference will disappear. Imperfect market and information asymmetry raises the cost of external finance because of underdeveloped financial and legal system (Islam R., 2006, pp. 45-67). As most of the time capital market is imperfect firms could face financial constraint in case of their investment and limited access to finance force them to depend on their internal cash flow. With an improvement in the financial market and better allocation of easier access to external fund would help to enhance the investment scenario and growth prospect. Fazzari, Hubbard and Peterson, Henceforth (1988), Gilchrist and Himmelberg (1995) and Hubbard (1998) studies suggest that small firms have more limited access to external finance than large business firms. A higher investment - cash flow sensitivity has been traditionally taken as evidence of more severe financing constraints (Fazzari, Hubbard and Peterson, 1998, pp. 141-206).

However, on the other hand, Kaplan and Zingales (1997) challenged the findings of FHP (1988) and found the opposite that less financially constrained firms had higher investment cash flow sensitivity. Allayannis and Mozumdar (2004) have exhibited that the empirical results in KZ (1997) are mainly caused by financially distressed firms. It is generally thought that asymmetric information between insiders and outsiders about the firm's growth opportunities may drive a wedge between the cost of internal and external financing; hence, for firms lacking sufficient internal funds to finance investment, expenditures are adversely affected (Myers, 1977; Myers and Majluf, 1984). So, higher is the firm's internal wealth, smaller is the impact of external finance on investment. Iona, Leonida and Ozkan (2006) conducted a research and found that the Degree of Financial Constraints (DFC) is a factor to the Investment Cash Flow Sensitivity; however, it is not the only factor affecting this. To recognize the true, extent of a firm's Financial Constraint is very difficult due to the firm's incentive not to reveal such information which may have serious consequences to the firm value, and this is important which leads to having a joint hypothesis. In this writing, I want to find out the relationship between investment and other variables related to financial constraints and microeconomic aspects. I intend to use a large sample from 2005 to 2013 and then a subsample corresponding to crisis period (2008-2013) to figure out the crisis consequences on the relationship between investment and other variables.

2. Methodology

The sensitivity to cash flows of a firm's investment is one of the major unresolved problem of the corporate finance. The sensitivity might be generated by a firm's financing constraints (fact which show the existence of imperfections in the capital markets), by problems of the agency, or by the non-problematic factors. Previous papers did not succeed in disentangling the causal relationships because the variables like cash flows, company's financing constraints and investment are endogenous.

The modifications in economic and business conditions place constraints on managers and small-business owners. The globalization implies that the economic problems of a certain region or country can spread quickly to the other world regions. A recent example is the recession that started in 2008 in the United States and that affected the businesses everywhere. The successful firms plan for these constraints and immediately

learnt how to adapt fast to these changes. The financial constraints refer to high interest rate, inflation and to inadequate access to the venture capital. In order to solve the adverse changes in the financial conditions the small businesses have to construct contingencies into their cash flow budgets. The startups must not rely on venture capital funding for the business plans or bank loans, especially not in the first few months. The Inflation could determine labor costs and increased raw material, these aspects affecting the profitability. The high interest rates suppose higher interest payments, fact that affect the company's ability to pay its dividends or its plans for growth.

I want to find out the true answer first hand, whether Investment is affected by some economic variables determined by firms financial constraints or by firm size. Some regression models will be estimated for two periods 2005-2013 and 2008-2013. The variables' values are registered for more than 2000 firms from United Kingdom. Actually, I will work with panel data and I will define a Pool object which is characteristic to this tye of data. I will check more types of models (cross-section model, fixed-effect model, random-effect model) and in the end I will select the best type of model for my data. The panel data approach solves the problem of a low set of data. The data existence in both the time and cross sectional dimensions, there are new challenges regarding the inference opportunities and the estimation process. In general, we expect to have heteroscedasticity across the cross sections and the autocorrelation problem over time. The observations availability over time allows the estimation of error covariances across the cross sections. Therefore the spatial autocorrelation be encountered. Eviews solves these problems and it has options for estimation with pooled data. The pool object includes these data with two dimensions: spatial and temporal dimension.

Chen (2015) started from a standard investment model:

$$(\frac{I}{K})_{it} = \beta_1 x Q_{it} + \beta_2 x (\frac{CF}{K})_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

where i- firm and t- time, I- investment, k- firm's capital stock, as commonly, proxied by the firms total assets, Q- Tobin's Q, CF- cash flow, β_1, β_2 – parameters, μ_i- individual effect and λ_t - year fixed effects and ε_{it} -white noise disturbance term.

However, I am conditioned by my data base to use other variables in my model. My dependent variable is represented by capital expenditure which is a proxy for investment (INV). The regessors are: book to market- BTM, cashflow- CASHFLOW, cash to asset- CASH-TO-ASSET, leverage-LEVERAGE and sales- SALES.

In finance, the investment supposes creating or buying an asset and you expect the capital appreciation, profit or dividends, rents, interest earnings or these returns combination. Almost all types of investment supposes a form of risk like investment in property, equities, and even fixed interest securities that are also affected by inflation risk. The project investors have to identify and solve these risks regarding their investment. The proxy for investment in this paper is capital expenditure.

Capital expenditures are those expenditures that alter the business future. The capital expenditure is incurred at the moment when the business spends money but not in order to add value to a fixed asset or to buy other fixed assets.

Cash Flow supposes that the money moves into or out of a project, business, or financial product.Cash flow is calculated as (income before taxes + depreciation) /total asset.

Market to book is the ratio used to determine a company's value by making the comparison of the book value with the market value. The book value is determined by considering the company's historical cost, or its accounting value. The market value is computed in the stock market by the market capitalization.

The leverage is a method used to multiply the gains and losses. Usually, it implies buying more of an asset by using the borrowed funds, considering that an asset income or asset price appreciation will be higher compared to the borrowing cost. In most cases it implies the risk that borrowing costs will be higher compared to the assest income or the asset value will fall, generating incurred losses.

A sale represents a commodity exchange for a service or money in return for money or it means the fact of selling something.

3. The Investment in UK companies

The data used refers to 2865 firms from the United Kingdom from a period of 2005 to 2013and from a period of 2008 to 2013. The data sources are the Datastream, Bloomberg and Wharton Research Data Service.

The description of the data series for the following variables is made: capital expenditure- a proxy for investment- INV , book to market- BTM, cash-flow-CASHFLOW, cash to asset-CASHTOASSET, leverage-LEVERAGE and sales- SALES.

Table 1. Descriptive statistics

	INV	BTM	CASHFLOW	CASHTOASSET	LEVERAGE	SALES
Mean	0.060094	0.779304	0.167217	0.032063	0.388093	418483.3
Median	0.062492	0.787005	0.172555	0.035155	0.371371	420350.0
Maximum	0.069660	0.899516	0.187196	0.043735	0.522673	461700.0
Minimum	0.046969	0.631946	0.128661	0.012729	0.304520	377200.0
Std. Dev.	0.008581	0.086443	0.020737	0.011013	0.080247	27203.94
Skewness	-0.360632	-0.334173	-0.761562	-0.618387	0.457421	0.036320
Kurtosis	1.503623	2.095268	2.291855	1.989191	1.752934	2.045681
Jarque-Bera	1976.396	906.2191	2020.812	1827.399	1713.347	656.0857
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	1033.011	13396.23	2874.465	551.1626	6671.313	7.19E+09
Sum Sq. Dev.	1.265744	128.4416	7.391640	2.084790	110.6900	1.27E+13
Observations	17190	17190	17190	17190	17190	17190
Cross sections	2865	2865	2865	2865	2865	2865

Source: author's calculations

The median and the mean have very close values for all the variables. Excepting leverage and sales, the data series for the other variables are negatively skewed. Moreover,

all the distributions are platykurtic. All the data sets do not follow a normal distribution, according to Jarque-Bera test, even if we have a large number of observations.

Simple and multiple regressions are run to explain the investment. However, the problem of multicolliniarity is checked for explanatory variables and the matrix of correlation shows that there are not significant correlations between these variables.

Table 2. Matrix of correlation for explanatory variables

C	SALES	BTM	CASHFLOW	LEVERAGE	CASHTOASSET
2.16E-23	5.22E-29	-2.87E-23	-1.82E-22	-2.74E-23	6.25E-22
5.22E-29	5.50E-34	-2.20E-28	-1.19E-27	-1.67E-28	4.76E-27
-2.87E-23	-2.20E-28	9.28E-23	5.03E-22	7.14E-23	-1.98E-21
-1.82E-22	-1.19E-27	5.03E-22	2.89E-21	4.10E-22	-1.10E-20
-2.74E-23	-1.67E-28	7.14E-23	4.10E-22	5.90E-23	-1.56E-21
6.25E-22	4.76E-27	-1.98E-21	-1.10E-20	-1.56E-21	4.31E-20

Source: author's calculations

The dependent variable is represented by investment, for which capital expenditure is used as proxy. The independent variables are: book to market, cash flow, cash to asset, leverage and sales which are proxy for firm dimension.

First of all, the stationary character is checked using unit root tests. According to Levin-Lin-Chu test, there are not commom unit roots for all variables.

Table 3. Unit root tests

INV, BTM, CASHFLOW, CASHTOASSET			Cross-	
Method	Statistic	Prob.**	sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.37942	0.0087	4	27
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-0.51646	0.3028	4	27
ADF - Fisher Chi-square	11.6036	0.1698	4	27
PP - Fisher Chi-square	4.19191	0.8394	4	29
** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.				
INV, LEVERAGE, SALES			Cross-	
Method	Statistic	Prob.**	sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.35198	0.0093	3	20
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-0.03119	0.4876	3	20

ADF - Fisher Chi-square	6.32118	0.3882	3	20
PP - Fisher Chi-square	2.90013	0.8213	3	21
** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.				

Source: author's calculations

More regressions were run, but only some of them were valid. From the first output of EViews, the following conclusions can be drawn:

- There is a positive correlation between investment and sales, respectively cash to asset;
- There is a negative correlation between investment and book to market, leverage respectively cash flow;

99% of the variation in investment is explained by the exogenous variables. In the case of 5 explanatory variables and for a very large set of data the critical values of Durbin-Watson are around 1.9. DW statistic is quite far from 2, so we suspect the errors serial correlation.

Table 4. The investment depending on sales, market to book, cash flow, leverage and cash to assest

Dependent Variable: INV				
Method: Pooled Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.107818	4.64E-12	2.32E+10	0.0000
SALES	7.16E-07	2.35E-17	3.05E+10	0.0000
BTM	-0.186453	9.64E-12	-1.94E+10	0.0000
CASHFLOW	-1.976611	5.38E-11	-3.68E+10	0.0000
LEVERAGE	-0.225506	7.68E-12	-2.93E+10	0.0000
CASHTOASSET	6.730380	2.08E-10	3.24E+10	0.0000
R-squared	0.990000	Mean dependent var		0.060094
Adjusted R-squared	0.990000	S.D. dependent var		0.008581
S.E. of regression	7.79E-12	Akaike info criterion		-48.31869
Sum squared resid	1.04E-18	Schwarz criterion		-48.31598
Log likelihood	415305.1	Hannan-Quinn criter.		-48.31780
F-statistic	4.17E+21	Durbin-Watson stat		3.433701
Prob(F-statistic)	0.000000			

Source: author's calculations

The coefficients of the regression that links investment by book to market and sales are statistically significant for a level of significance of 5%. The DW statistic for the next regression is almost 2 and the errors are not serial correlated. There is a positive correlation between book to market and investment and a negative and low one between investment and sales. This indirect correlation between sales and investment, contrary to

economic theory might be explained by the economic crisis started in 2008/2009. 68.93% of the variation in investment is explained by book to market and sales.

Table 5. The investment depending on sales and market to book

Dependent Variable: INV				
Method: Pooled Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.015521	0.001042	14.89320	0.0000
SALES	-3.38E-08	1.73E-09	-19.56733	0.0000
BTM	0.075324	0.000543	138.7323	0.0000
R-squared	0.689379	Mean dependent var		0.060094
Adjusted R-squared	0.689343	S.D. dependent var		0.008581
S.E. of regression	0.004783	Akaike info criterion		-7.847380
Sum squared resid	0.393166	Schwarz criterion		-7.846027
Log likelihood	67451.23	Hannan-Quinn criter.		-7.846934
F-statistic	19072.08	Durbin-Watson stat		1.927476
Prob(F-statistic)	0.000000			

Source: author's calculations

The coefficients of the regression between investment and cash flow are statistically significant for a level of significance of 5%. The DW statistic for the next regression is almost 2 and the errors are not serial correlated. There is a positive correlation between cash flow and investment. Only 10.69% of the variation in investment is explained by cash flow.

Table 6. The investment depending on cash flow

Dependent Variable: INV				
Method: Pooled Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.037477	0.000503	74.56182	0.0000
CASHFLOW	0.135251	0.002983	45.34014	0.0000
R-squared	0.106826	Mean dependent var		0.060094
Adjusted R-squared	0.106774	S.D. dependent var		0.008581
S.E. of regression	0.008110	Akaike info criterion		-6.791287
Sum squared resid	1.130529	Schwarz criterion		-6.790385
Log likelihood	58373.12	Hannan-Quinn criter.		-6.790990
F-statistic	2055.728	Durbin-Watson stat		2.123003
Prob(F-statistic)	0.000000			

Source: author's calculations

The coefficients of the regression between investment and leverage are statistically significant for a level of significance of 5%. The DW statistic for the next regression is around 2 and the errors are not serial correlated. There is a positive correlation between leverage and investment. Only 15.65% of the variation in investment is explained by leverage.

Table 7. The investment depending on leverage

Dependent Variable: INV				
Method: Pooled Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.043676	0.000297	147.1182	0.0000
LEVERAGE	0.042305	0.000749	56.47311	0.0000
R-squared	0.156509	Mean dependent var		0.060094
Adjusted R-squared	0.156460	S.D. dependent var		0.008581
S.E. of regression	0.007881	Akaike info criterion		-6.848519
Sum squared resid	1.067644	Schwarz criterion		-6.847617
Log likelihood	58865.02	Hannan-Quinn criter.		-6.848222
F-statistic	3189.213	Durbin-Watson stat		2.357370
Prob(F-statistic)	0.000000			

Source: author's calculations

I redid the regressions for a smaller sample that covers the crisis period (2008-2013). In this period, sales and book to market have a positive impact on investment changes while for the large sample only book to market had a positive impact. It is very interesting, but this behavior might be explained by the fact that the continuation of the crisis was not anticipated and a slow increase in sales determined the firms to make more investment changes.

Table 8. The investment depending on sales and market to book during 2008-2013

Dependent Variable: INV				
Method: Pooled Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.246941	5.87E-14	-4.21E+12	0.0000
MTB	0.159581	3.30E-14	4.84E+12	0.0000
SALES	4.28E-07	8.65E-20	4.94E+12	0.0000
R-squared	0.9900000	Mean dependent var		0.052242
Adjusted R-squared	0.9900000	S.D. dependent var		0.004723
S.E. of regression	8.58E-14	Akaike info criterion		-57.33554
Sum squared resid	6.32E-23	Schwarz criterion		-57.33308
Log likelihood	246402.5	Hannan-Quinn criter.		-57.33470

F-statistic	1.30E+25	Durbin-Watson stat		1.936475
Prob(F-statistic)	0.000000			

Source: author's calculations

However, a number of other factors also affect investment expenditures: interest rate, expectations, prices or technology.

4. Conclusions

All in all, during 2005-2013 for the 2865 firms from UK, the investment sensitivity is affected by: book to market and firm dimension approximated by sales, but also by leverage, respectively cash flow. For a smaller period that corresponds to the crisis period (2008-2013), sales and book to market have a positive impact on investment changes while for the large sample only book to market had a positive impact. This behavior might be explained by the fact that during the crisis the investment sensitivity is higher, the people being more cautious.

REFERENCES

Allayannis, G., Muzumdar A. (2004).The Impact of Negative Cash Flow and Influential Observations on Investment-Cash Flow Sensitivity Estimates. *Journal of Banking and Finance,* Vol. 28, No. 5, pp.901-930.

Chen, W. (2015). Cross-Country Income Differences Revisited: Accounting for the Role of Intangible Capital.

Fazzari S., Hubbard G., Peterson B. (1988). Investment and Finance Reconsidered. *Brookings Papers on Economic Activity*, Vol. 1, pp. 141-206.

Gilchrist, S., Himmelberg, C. (1995). Evidence on the Role of Cash Flow for Investment. *Journal of Monetary Economics,*

Hubbard, G. (1998). Capital Market Imperfections and Investment. *Journal of Economic Literature,* No. w5996.

Islam, R. Md. (2006). Corporate Investment and Cash Flow Sensitivity in Bangladesh: Evidence from Firm Level Panel Data. *North South Business Review,* Volume 1, No. 1, pp. 45-67.

Iona, A., Leonida, L. and Ozkan, A. (2006). On the Relationship between the Investment –Cash Flow Sensitivity and the degree of Financing Constraints, *University of Exter Department of Economics Discussion Paper Series*, No. 609, pp. 4-56.

Kaplan, S., Zingales L. (1997). Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints?. *Quarterly Journal of Economics,* 2006, pp. 169-215.

Modigliani, F., Miller, M. (1958).The Cost of Capital, Corporation Finance and the Theory of Investment. *American Economic Review,* pp. 261-297.

Myres, S.C. (1977). Determinants of Corporate Borrowings, *Journal of Financial Economics,* Vol. 5, No. 2, pp. 147-175.

Myres, S.C., Majluf, N.S. (1984). Corporate Financing and Investment Decisions when Firms have information that investors do not have, *Journal of Financial Economics,* Vol. 13, No. 2, pp. 187-221.

THE USE OF MARKOV CHAINS IN FORECASTING EMPLOYED POPULATION PERCENTAGE

Mihaela SAVU[1]
Delia TESELIOS[2]

Abstract

Within the Europe Strategy 2020 has been established that one of the target indicators to be represented by employment rate. The target proposed by Romania seems difficult to achieve, but in the present paper we forecast the share of employed population in the Romanian economy, in order to seize the activities in economy with growth potential, since in the last four years the number of employed people experienced a fluctuating trend. Markov chains allow predicting the employment share on the main economic activities. Calculations made for 2015 show increases in the share of employment in industry, trade and health.

Keywords: Markov chains theory, labor market, employed population, employment rate

Rezumat

În Strategia Europa 2020 s-a stabilit ca unul dintre indicatorii țintă să fie reprezentat de către rata de ocupare. Ținta propusă de România pare greu de atins, dar în lucrarea de față prezivionăm ponderea populației ocupate la nivelul economiei românești, pentru a sesiza activitățile din economie cu potențial de creștere, deoarece în ultimii patru ani numărul persoanelor ocupate a cunoscut o evoluție fluctuantă. Lanțurile Markov permit previzionarea ponderii populației ocupate pe principalele activități ale economiei. Calculele realizate pentru anul 2015 arată creșteri ale ponderii populației ocupate în industrie, comerț și sănătate.

Cuvinte-cheie: teoria lanțurilor Markov, piața muncii, populație ocupată, rată de ocupare

JEL Code: C1, J2
REL Code: 8C, 10B

1. Introduction

Employment is simultaneous a factor and a target for sustainable development. Efficient use of labor resources implies full employment, considering the requirements arising from the organic relationship between labor market and other specific markets in an economy. (Ciucur et al, 2010, p. 108)

[1] *PhD Associate Professor. "Constantin Brancoveanu" University, Pitești, Calea Bascov Street, nr. 2A; ioneci_mihaela@yahoo.com.*
[2] *PhD Lecturer. "Constantin Brancoveanu" University, Pitești, Calea Bascov Street, nr. 2A; delia_teselios@yahoo.com.*

People are a vital resource for all organizations, a resource that determines their survival, development and success. Investing in people is the best way to ensure the survival of an organization or to ensure its competitiveness and future. (Costa et al, 2010, p. 257)

In this context, where the investment in human capital is a mandatory requirement for sustaining an economy, the European Union has set a growth strategy that has as time horizon the year 2020. In a period of significant change, the European Union aims to become a smart, sustainable and convenient for inclusion economy. Specifically, the European Union has set five major goals (employment, innovation, education, social inclusion and environment/ energy) to be met by 2020. Member States have adopted their own national targets in these areas. (1)

In this paper we planned to pay attention to the first target set out in this strategy - employment. At the level of the European Union it has been established that the employment rate to reach 75% in 2020, while our country has proposed a rate of 70. Over the last years the employment rate showed a hesitant increase both as European average and at the level of our country. The employment rate in the EU was that of 68.4% in 2012, has remained at the same level the next year, and in 2014 was that of 69.2%. In our country, the employment rate was 64.8% in 2012, fell almost indistinguishably to 64.7% in 2013 and the year 2014 was that of 65.7%. (2)

Employment rate by sex criterion, differ essentially as follows:

- The EU employment rate among men was 75% and among women was 63.5% in 2014
- In Romania the employment rate among men was 74% and among women was 57.3% in the same year. (3)

The average rate of employment among persons of higher education graduates was 82.1% in the EU and 82.5% in Romania in 2014. Thus, we notice how education creates opportunities in finding a job.

The dynamics of this indicator in recent years in the Romanian economy, entitles us to doubt the possibility of achieving the objective in 2020. No one excludes the transformation of the economy of our country so that the employment rate to reach the proposed target, but based on past developments we want to look at areas where there may be increases in employment. In this process, we aimed to analyze the evolution of employment in the main activities of national economy in the past four years and to predict the share of employment in the main activities of Romanian economy in 2015.

Thus, the occupation as complex finality does not imply an evaluation at the end of an economic cycle or calendar year, it is determined ex-ante and ex-post. (Ciucur et al, 2010, p. 110)

2. Evolution of employment in Romania

According to the methodology called "The balance of labor" the civil employed population includes all the persons who work for an income and whose work is usually done in one of the activities of the national economy, being defined as an economic or social activity, based on a work contract or a free-lance activity (self-employed) in order to get income such as salary, in kind payment, etc. In determining the indicator - civil employed population - are not military personnel and similar (the personnel of the Ministry of Defence, Ministry of Administration and Interior, Romanian Intelligence

Office, conscripts), convicts and political and community organisations employees.

The starting point in analyzing employed population data is statistical abstract published in "Romania in Figures 2015", publication of the National Institute of Statistics. In this publication, we collected data on employed population in the period 2011-2014, in the main activities of the national economy.

These data are presented in Table 1.

Table1. Employed population by main activities of national economy

(thousands of persons)

Main activities of national economy	Years			
	2011	**2012**	**2013**	**2014**
Agriculture, forestry and fishing	2495	2557	2501	2442
Industry	1806	1790	1788	1852
Construction	631	638	630	640
Wholesale and retail trade; repair of motor vehicles and motorcycles	1066	1094	1085	1112
Transportation and storage	405	405	429	432
Accommodation and food service activities	169	172	175	181
Information and communication	120	147	144	148
Financial and insurance activities	134	127	118	112
Real estate activities	17	15	18	21
Professional, scientific and technical activities	158	158	166	193
Administrative and support service activities	147	150	172	184
Public administration and defense; compulsory social security	437	437	425	392
Education	363	346	323	311
Human health and social care	374	357	354	368
Arts, entertainment and recreation	52	55	54	55
Other activities of social economy	154	157	167	171
TOTAL	8528	8605	8549	8614

Source : http://www.insse.ro/cms/files/publicatii/Romania_in_Cifre_2015.pdf

In the analyzed period employed population has fluctuated, but the trend is increasing, despite the fact that the differences recorded are significant. In 2011, the employed population was that of 8528 thousand people, increasing the following year to 8605 thousand persons. In 2013 there was a decrease of this indicator compared to the previous year, reaching to 8549 thousand employed people, and in the last analyzed year to increase to 8614 thousand people. Between 2011 - 2014, the first three activities of the national economy by number of employed persons are:

- Agriculture, forestry and fishing. The number of people employed in this activity has increased in 2012 compared to the previous year, reaching to 2557 thousand persons, then it systematically decreased within the next two years, so that in the year 2014 there were 2442 thousand employed persons;
- Industry. In the first three years, employed population in industry declined, reaching to 1788 thousand persons in 2013 from 1806 thousand in 2011. This decrease was stopped in 2014, when it recorded a total of 1852 thousand employed persons.

➢ Wholesale and retail trade; repair of motor vehicles and motorcycles. The oscillatory evolution of the total employed population is reflected in the activity of the national economy. Wholesale and retail trade grew in the first two years, followed by a reduction in employment in 2013, when it recorded 1085 thousand employed persons. In 2014, there were 1112 thousand persons, increasing from the previous year.

Table 2. Share of employed population by main activities of national economy

(%)

Main activities of national economy	Years			
	2011	**2012**	**2013**	**2014**
G1. Agriculture, forestry and fishing	29.25657	29.71528	29.25488	28.34920
G2. Industry	21.17730	20.80186	20.91473	21.49988
G3. Construction	7.39916	7.41429	7.36928	7.42977
G4. Wholesale and retail trade; repair of motor vehicles and motorcycles	12.50000	12.71354	12.69154	12.90922
G5. Transportation and storage	4.74906	4.70657	5.01813	5.01509
G6. Accommodation and food service activities	1.98171	1.99884	2.04702	2.10123
G7. Information and communication	1.40713	1.70831	1.68441	1.71813
G8. Financial and insurance activities	1.57129	1.47589	1.38028	1.30021
G9. Real estate activities	0.19934	0.17432	0.21055	0.24379
G10. Professional, scientific and technical activities	1.85272	1.83614	1.94175	2.24054
G11. Administrative and support service activities	1.72373	1.74317	2.01193	2.13606
G12. Public administration and defense; compulsory social security	5.12430	5.07844	4.97134	4.55073
G13. Education	4.25657	4.02092	3.77822	3.61040
G14. Human health and social care	4.38555	4.14875	4.14084	4.27212
G15. Arts, entertainment and recreation	0.60976	0.63916	0.63165	0.63850
G16. Other activities of social economy	1.80582	1.82452	1.95344	1.98514
TOTAL	100.000	100.00000	100.00000	100.00000

Source : Made by the authors

Data presented in Table 1 were converted into relative values in Table 2 for the next aspect of our approach - to predict the percentage of employed population in the year 2015. It was noted each activity of the national economy with G1, G2,..., G16 to facilitate future analysis.

Clearly, what was seen as evolution of the employed population in absolute size, it is reflected in the employed population expressed in relative size. The three activities of the national economy situated on top according to the number of employed persons are found in the same places depending on the share. For the last year analyzed, we see that Agriculture, forestry and fishing (G1) holds 28.34% of total employed population, Industry (G2) holds 21.49% and Wholesale and retail trade; repair of motor vehicles and motorcycles (G4) holds 12.9%.

3. Economic Study on forecasting employed population percentage

In the literature for modeling time-dependent random phenomena are used stochastic processes, the term "process" referring to the evolution in time of the phenomenon, while the term "stochastic" has the meaning of random. (Privault 2013, p. 7)

Essentially, a stochastic process with state space S is a collection of random variables $\{X_t, t \in T\}$ defined on the field of probability (Ω, K, P). The index t represents time and the set T has the name of set of parameters and can be either $\mathbb{N}$ or $\mathbb{R}_+$ or [a, b] $\subset$ R.

One of the most useful types of stochastic processes, supported by a multitude of elegant theoretical results, is the Markov chains.

According to Wolfram Mathworld, a Markov chain is a collection of random variables $\{X_t, t = 0, 1, 2 ...\}$ with the property that, considering the present, the future is independent of the past (4). In other words, a Markov chain models and predicts the behavior of a system that moves from one state to another state in a manner that depends only on the current state (5).

The use of Markov chains is encountered in a variety of areas: economy and finance, physics, chemistry, genetics, social sciences, etc.

With the help of Markov chains, we aim to achieve a forecast for 2015 of the proportion of employed population by main activities of national economy.

For each pair of consecutive periods of time (t-1/t) = (2011/2012, 2012/2013, 2013/2014), there are calculated the partial matrices of transition.

$$G^{t-1/t} = (g_{ij}^{t-1/t})_{i,j=\overline{1,16}}$$

They are square matrix (16x16) denoted by .

Table 3. Partial matrix of transition from 2011 to 2012

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16	2011	Abateri negative
G1.	29.25657	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	29.25657	
G2.	0.16047	20.80186	0.00529	0.07470	0.00000	0.00599	0.10536	0.00000	0.00000	0.00000	0.00680	0.00000	0.00000	0.00000	0.01029	0.00654	21.1773	0.37544
G3.	0.00000	0.00000	7.39916	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.39916	
G4.	0.00000	0.00000	0.00000	12.50000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.5	
G5.	0.01816	0.00000	0.00060	0.00845	4.70657	0.00068	0.01192	0.00000	0.00000	0.00000	0.00077	0.00000	0.00000	0.00000	0.00116	0.00074	4.74906	0.04249
G6.	0.00000	0.00000	0.00000	0.00000	0.00000	1.98171	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.98171	
G7.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.40713	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.40713	
G8.	0.04078	0.00000	0.00135	0.01898	0.00000	0.00152	0.02677	1.47589	0.00000	0.00000	0.00173	0.00000	0.00000	0.00000	0.00261	0.00166	1.57129	0.09540
G9.	0.01069	0.00000	0.00035	0.00498	0.00000	0.00040	0.00702	0.00000	0.17432	0.00000	0.00045	0.00000	0.00000	0.00000	0.00069	0.00044	0.19934	0.02502
G10.	0.00709	0.00000	0.00023	0.00330	0.00000	0.00026	0.00465	0.00000	0.00000	1.83614	0.00030	0.00000	0.00000	0.00000	0.00045	0.00029	1.85272	0.01658
G11.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.72373	0.00000	0.00000	0.00000	0.00000	0.00000	1.72373	
G12.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00083	5.07844	0.00000	0.00000	0.00126	0.00080	5.1243	0.04586
G13.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00427	0.00000	4.02092	0.00000	0.00646	0.00411	4.25657	0.23565
G14.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00429	0.00000	0.00000	4.14875	0.00649	0.00413	4.38555	0.23680
G15.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.60976	0.00000	0.60976	
G16.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.80582	1.80582	
2012	29.71528	20.80186	7.41429	12.71354	4.70657	1.99884	1.70831	1.47589	0.17432	1.83614	1.74317	5.07844	4.02092	4.14875	0.63916	1.82452	100.00000	
Abateri pozitive	0.45871		0.01513	0.21354		0.01713	0.30118				0.01944				0.02940	0.01870		1.07325

Source : Made by the authors

$\Rightarrow G^{2011/2012}$ is the matrix whose elements are the values in Table 3.

As can be seen from the above table, the first three groups, which have won the percentages, are:

- group G1 (Agriculture, forestry and fishing, +0.45871 percent obtained by transfer from groups G2, G5, G8-G10)
- group G7 (Information and communication, +0.30118 percent obtained by transfer from groups G2, G5, G8-G10) and
- group G4 (Wholesale and retail trade; repair of motor vehicles and motorcycles, +0.21354 percent obtained by transfer from the same groups).

The other groups have lost percent, the first being the G2 group (Industry, -0.37544 percent transferred to G1, G3, G4, G6, G7, G11, G15 and G16).

Matrix of transition $G^{2012/2013}$ has elements the values in Table 4.

Table 4. Partial matrix of transition from 2012 to 2013

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16	2012	Abateri negative
G1.	29.25488	0.05134	0.00000	0.00000	0.14172	0.02192	0.00000	0.00000	0.01648	0.04804	0.12225	0.00000	0.00000	0.00000	0.00000	0.05864	29.71528	0.46040
G2.	0.00000	20.80186	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	20.80186	
G3.	0.00000	0.00502	7.36928	0.00000	0.01385	0.00214	0.00000	0.00000	0.00161	0.00470	0.01195	0.00000	0.00000	0.00000	0.00000	0.00573	7.41429	0.04501
G4.	0.00000	0.00245	0.00000	12.69154	0.00677	0.00105	0.00000	0.00000	0.00079	0.00230	0.00584	0.00000	0.00000	0.00000	0.00000	0.00280	12.71354	0.02200
G5.	0.00000	0.00000	0.00000	0.00000	4.70657	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	4.70657	
G6.	0.00000	0.00000	0.00000	0.00000	0.00000	1.99884	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.99884	
G7.	0.00000	0.00267	0.00000	0.00000	0.00736	0.00114	1.68441	0.00000	0.00086	0.00249	0.00635	0.00000	0.00000	0.00000	0.00000	0.00304	1.70831	0.02390
G8.	0.00000	0.01066	0.00000	0.00000	0.02943	0.00455	0.00000	1.38028	0.00342	0.00998	0.02539	0.00000	0.00000	0.00000	0.00000	0.01218	1.47589	0.09561
G9.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.17432	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.17432	
G10.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.83614	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.83614	
G11.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.74317	0.00000	0.00000	0.00000	0.00000	0.00000	1.74317	
G12.	0.00000	0.01194	0.00000	0.00000	0.03297	0.00510	0.00000	0.00000	0.00383	0.01117	0.02844	4.97134	0.00000	0.00000	0.00000	0.01364	5.07844	0.10710
G13.	0.00000	0.02707	0.00000	0.00000	0.07471	0.01155	0.00000	0.00000	0.00869	0.02532	0.06445	0.00000	3.77822	0.00000	0.00000	0.03091	4.02092	0.24270
G14.	0.00000	0.00088	0.00000	0.00000	0.00244	0.00038	0.00000	0.00000	0.00028	0.00083	0.00210	0.00000	0.00000	4.14084	0.00000	0.00101	4.14875	0.00791
G15.	0.00000	0.00084	0.00000	0.00000	0.00231	0.00036	0.00000	0.00000	0.00027	0.00078	0.00199	0.00000	0.00000	0.00000	0.63165	0.00096	0.63916	0.00751
G16.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.82452	1.82452	
2013	29.25488	20.91473	7.36928	12.69154	5.01813	2.04702	1.68441	1.38028	0.21055	1.94175	2.01193	4.97134	3.77822	4.14084	0.63165	1.95344	100.00000	
Abateri pozitive		0.11287			0.31156	0.04818			0.03623	0.10561	0.26876					0.12892		1.01214

Source : Made by the authors

The significance of this result is that in the year 2013 compared to 2012, group G5 (Transportation and Storage) has won most percentage (+0.31156 percent obtained by transfer from groups G1, G3, G4, G7, G8, G12-G15).

On the second position is group G11 (Administrative and support service activities) with 0.26876 percent obtained by transfer from the same groups as group G5.

Group G1 (Agriculture, forestry and fishing) lost the most percentage (-0.46040 percent transferred to G2, G5, G6, G9-G11 and G16).

Matrix of transition $G^{2013/2014}$ has as elements the values in Table 5.

Table 5. Partial matrix of transition from 2013 to 2014

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16	2013	Abateri negative
G1.	28.34920	0.45851	0.04740	0.17057	0.00000	0.04248	0.02642	0.00000	0.02605	0.23413	0.09726	0.00000	0.00000	0.10287	0.00537	0.02484	29.2549	0.90568
G2.	0.00000	20.91473	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	20.9147	
G3.	0.00000	0.00000	7.36928	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.36928	
G4.	0.00000	0.00000	0.00000	12.69154	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.6915	
G5.	0.00000	0.00154	0.00016	0.00057	5.01509	0.00014	0.00009	0.00000	0.00009	0.00079	0.00033	0.00000	0.00000	0.00035	0.00002	0.00008	5.01813	0.00304
G6.	0.00000	0.00000	0.00000	0.00000	0.00000	2.04702	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	2.04702	
G7.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.68441	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.68441	
G8.	0.00000	0.04054	0.00419	0.01508	0.00000	0.00376	0.00234	1.30021	0.00230	0.02070	0.00860	0.00000	0.00000	0.00909	0.00047	0.00220	1.38028	0.08007
G9.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.21055	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.21055	
G10.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.94175	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.94175	
G11.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	2.01193	0.00000	0.00000	0.00000	0.00000	0.00000	2.01193	
G12.	0.00000	0.21294	0.02201	0.07921	0.00000	0.01973	0.01227	0.00000	0.01210	0.10873	0.04517	4.55073	0.00000	0.04777	0.00249	0.01153	4.97134	0.42061
G13.	0.00000	0.08496	0.00878	0.03161	0.00000	0.00787	0.00490	0.00000	0.00483	0.04338	0.01802	0.00000	3.61040	0.01906	0.00099	0.00460	3.77822	0.16782
G14.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	4.14084	0.00000	0.00000	4.14084	
G15.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.63165	0.00000	0.63165	
G16.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.95344	1.95344	
2014	28.34920	21.49988	7.42977	12.90922	5.01509	2.10123	1.71813	1.30021	0.24379	2.24054	2.13606	4.55073	3.61040	4.27212	0.63850	1.98514	100.0000	
Abateri pozitive		0.58515	0.06049	0.21768		0.05421	0.03372		0.03324	0.29879	0.12413			0.13128	0.00685	0.03170		1.15583

Source : Made by the authors

Therefore, in 2014 compared to 2013, the group G1 (Agriculture, forestry and fishing) continued to lose percentages (-0.90568 percent), being followed in the second position by Group G12 (Public administration and defense; compulsory social security, -0.42061).

The most percentage was won by the group G2 (Industry, +0.58515 percentages obtained by transfer mostly from group G1 (0.45851 percent)).

In the second place as number of won percentage is Group G10 (Professional, scientific and technical activities +0.29879 percentage achieved by transfer mostly from the group G1 (0.23413 percent)).

It is calculated the total matrix of transition for the period 2011-2014, by summing three partial matrices previously obtained.

Thus, $G^{2011-2014}$ is the matrix whose elements are the values in Table 6.

Table 6. Total matrix of transition for the period 2011-2014

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16	TOTAL
G1.	86.86065	0.50985	0.04740	0.17057	0.14172	0.06439	0.02642	0.00000	0.04253	0.28217	0.21952	0.00000	0.00000	0.10287	0.00537	0.08348	88.55693
G2.	0.16047	62.51845	0.00529	0.07470	0.00000	0.00599	0.10536	0.00000	0.00000	0.00000	0.00680	0.00000	0.00000	0.00000	0.01029	0.00654	62.89389
G3.	0.00000	0.00502	22.13772	0.00000	0.01385	0.00214	0.00000	0.00000	0.00161	0.00470	0.01195	0.00000	0.00000	0.00000	0.00000	0.00573	22.18273
G4.	0.00000	0.00245	0.00000	37.88309	0.00677	0.00105	0.00000	0.00000	0.00079	0.00230	0.00584	0.00000	0.00000	0.00000	0.00000	0.00280	37.90508
G5.	0.01816	0.00154	0.00076	0.00903	14.42822	0.00082	0.01201	0.00000	0.00009	0.00079	0.00110	0.00000	0.00000	0.00035	0.00118	0.00082	14.47486
G6.	0.00000	0.00000	0.00000	0.00000	0.00000	6.02757	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	6.02757
G7.	0.00000	0.00267	0.00000	0.00000	0.00736	0.00114	4.77594	0.00000	0.00086	0.00249	0.00635	0.00000	0.00000	0.00000	0.00000	0.00304	4.79985
G8.	0.04078	0.05120	0.00554	0.03406	0.02943	0.00983	0.02911	4.15637	0.00573	0.03068	0.03572	0.00000	0.00000	0.00909	0.00309	0.01604	4.45665
G9.	0.01069	0.00000	0.00035	0.00498	0.00000	0.00040	0.00702	0.00000	0.55919	0.00000	0.00045	0.00000	0.00000	0.00000	0.00069	0.00044	0.58421
G10.	0.00709	0.00000	0.00023	0.00330	0.00000	0.00026	0.00465	0.00000	0.00000	5.61403	0.00030	0.00000	0.00000	0.00000	0.00045	0.00029	5.63061
G11.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	5.47884	0.00000	0.00000	0.00000	0.00000	0.00000	5.47884
G12.	0.00000	0.22488	0.02201	0.07921	0.03297	0.02482	0.01227	0.00000	0.01593	0.11991	0.07444	14.60052	0.00000	0.04777	0.00375	0.02597	15.28446
G13.	0.00000	0.11203	0.00878	0.03161	0.07471	0.01942	0.00490	0.00000	0.01351	0.06871	0.08674	0.00000	11.40954	0.01906	0.00745	0.03962	11.89607
G14.	0.00000	0.00088	0.00000	0.00000	0.00244	0.00038	0.00000	0.00000	0.00028	0.00083	0.00639	0.00000	0.00000	12.43042	0.00649	0.00513	12.45324
G15.	0.00000	0.00084	0.00000	0.00000	0.00231	0.00036	0.00000	0.00000	0.00027	0.00078	0.00199	0.00000	0.00000	0.00000	1.87306	0.00096	1.88057
G16.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	5.58378	5.58378
TOTAL	87.09783	63.42980	22.22809	38.29054	14.73979	6.15858	4.97769	4.15637	0.64078	6.12736	5.93641	14.60052	11.40954	12.60957	1.91181	5.77466	300

Source : Made by the authors

On the basis of the matrix $G^{2011-2014}$ it is calculated the matrix of probabilities of transition, denoted by $GP^{2011-2014} = (gp_{ij}^{2011-2014})_{i,j=\overline{1,16}}$, whose elements are the values in Table 7.

Table 7. Matrix of transition probabilities

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16
G1.	0.98085	0.00576	0.00054	0.00193	0.00160	0.00073	0.00030	0.00000	0.00048	0.00319	0.00248	0.00000	0.00000	0.00116	0.00006	0.00094
G2.	0.00255	0.99403	0.00008	0.00119	0.00000	0.00010	0.00168	0.00000	0.00000	0.00000	0.00011	0.00000	0.00000	0.00000	0.00016	0.00010
G3.	0.00000	0.00023	0.99797	0.00000	0.00062	0.00010	0.00000	0.00000	0.00007	0.00021	0.00054	0.00000	0.00000	0.00000	0.00000	0.00026
G4.	0.00000	0.00006	0.00000	0.99942	0.00018	0.00003	0.00000	0.00000	0.00002	0.00006	0.00015	0.00000	0.00000	0.00000	0.00000	0.00007
G5.	0.00125	0.00011	0.00005	0.00062	0.99678	0.00006	0.00083	0.00000	0.00001	0.00005	0.00008	0.00000	0.00000	0.00002	0.00008	0.00006
G6.	0.00000	0.00000	0.00000	0.00000	0.00000	1.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
G7.	0.00000	0.00056	0.00000	0.00000	0.00153	0.00024	0.99502	0.00000	0.00018	0.00052	0.00132	0.00000	0.00000	0.00000	0.00000	0.00063
G8.	0.00915	0.01149	0.00124	0.00764	0.00660	0.00221	0.00653	0.93262	0.00128	0.00688	0.00801	0.00000	0.00000	0.00204	0.00069	0.00360
G9.	0.01831	0.00000	0.00060	0.00852	0.00000	0.00068	0.01202	0.00000	0.95717	0.00000	0.00078	0.00000	0.00000	0.00000	0.00117	0.00075
G10.	0.00126	0.00000	0.00004	0.00059	0.00000	0.00005	0.00083	0.00000	0.00000	0.99706	0.00005	0.00000	0.00000	0.00000	0.00008	0.00005
G11.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.00000	0.00000	0.00000	0.00000	0.00000	0.00000
G12.	0.00000	0.01471	0.00144	0.00518	0.00216	0.00162	0.00080	0.00000	0.00104	0.00784	0.00487	0.95525	0.00000	0.00313	0.00025	0.00170
G13.	0.00000	0.00942	0.00074	0.00266	0.00628	0.00163	0.00041	0.00000	0.00114	0.00578	0.00729	0.00000	0.95910	0.00160	0.00063	0.00333
G14.	0.00000	0.00007	0.00000	0.00000	0.00020	0.00003	0.00000	0.00000	0.00002	0.00007	0.00051	0.00000	0.00000	0.99817	0.00052	0.00041
G15.	0.00000	0.00045	0.00000	0.00000	0.00123	0.00019	0.00000	0.00000	0.00014	0.00042	0.00106	0.00000	0.00000	0.00000	0.99601	0.00051
G16.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.00000

Source : Made by the authors

The projected structure for the year 2015 of the employed population percentage by main activities of national economy is highlighted in Table 8.

Therefore, for 2015, we anticipate a decline in the employed population percentage for the activity groups G1 (Agriculture, forestry and fishing, -0.46261 percent), G8 (Financial and insurance activities, -0.08761 percent), G12 (Public administration and defense; compulsory social security, -0.20365 percent) and G13 (Education, -0.14767 percent). Other groups have won percent.

Table 8. Forecast structure of employed population percentage, in the main activities of the national economy for the year 2015

(%)

Main activities of national economy	2015
G1. Agriculture, forestry and fishing	27.88659
G2. Industry	21.65529
G3. Construction	7.44304
G4. Wholesale and retail trade; repair of motor vehicles and motorcycles	13.03165
G5. Transportation and storage	5.09658
G6. Accommodation and food service activities	2.14258
G7. Information and communication	1.77676
G8. Financial and insurance activities	1.2126
G9. Real estate activities	0.25878
G10. Professional, scientific and technical activities	2.39392
G11. Administrative and support service activities	2.2794
G12. Public administration and defense; compulsory social security	4.34708
G13. Education	3.46273
G14. Human health and social care	4.31996
G15. Arts, entertainment and recreation	0.64849
G16. Other activities of social economy	2.04497

Source : Made by the authors

On the first place in terms of increasing employment percentage is group G2 (Industry, +0.15541 percent), followed by the group G10 (Professional, scientific and technical activities, + 0.15338 percent) and group G11 (Administrative and support service activities, 0.14334 percent).

4. Conclusions

The economic crisis has hit the European labor market resulting in a decrease in employment rates and rising unemployment in almost all EU countries. (Pelinescu et al. 2012, p.12) The Romanian economy was within the European trend, so that the labor market is one example where the crisis was felt. Between 2011 – 2014, the employed population in Romania has fluctuated, stopping the decline caused by the economic crisis.

After using Markov chain theory, we have predicted the employed population percentage by activities of the national economy for the year 2015. In this way, one can find out the activities where there will be an increase in employment, so that they are sustained in order to continue the upward trend. The activity that will achieve the highest growth is the industry that even if it fails to overcome the agriculture, forestry and fisheries as a percentage of total employment, is one of the long-range fields. In the second place are found professional, scientific and technical activities followed by administrative services. Increases in percentages are also recorded for the activities: wholesale and retail trade, transportation and storage, health and social care etc.

These increases will be achieved at the expense of reductions occurring in the following activities: agriculture, forestry and fishing, public administration and defense, education and financial and insurance activities.

Notes

(1) http://ec.europa.eu/europe2020/index_ro.htm

(2)http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=t2020_10&plugin=1

(3)http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=t2020_10&language=en

(4)http://mathworld.wolfram.com/MarkovChain.html

(5) http://www.math.bas.bg/~jeni/Rebecca_Atherton.pdf

Bibliography:

Ciucur, D., Scurtu, M. (coord.), (2010). *Macroeconomie*, Editura Independenţa Economică, Piteşti

Costea, C. (coord.), (2010). *Criza este în Noi*, Editura ASE, Bucureşti

Dobrotă, N., Aceleanu, M. (2007). *Ocuparea resurselor de muncă*, Editura Economică, Bucureşti

Pelinescu, E. (coord.), (2012). *Contribuţia politicii veniturilor la dezvoltarea economico-socială şi susţinerea integrării în zona euro*, Editura Universitară, Bucureşti

Privault, N. (2013). **Understanding Markov Chains. Examples and Applications,** ***Publisher Springer-Verlag Singapore***

http://quant-econ.net/jl/finite_markov.html

https://www.whitman.edu/Documents/Academics/Mathematics/marrinan.pdf

https://www.math.ku.edu/~nualart/StochasticCalculus.pdf

http://ec.europa.eu/europe2020/index_ro.htm

http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=t2020_10&plugin=1

http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=t2020_10&language=en

http://mathworld.wolfram.com/MarkovChain.html

http://www.math.bas.bg/~jeni/Rebecca_Atherton.pdf

THE DIESELGATE SCANDAL AND ITS IMPLICATIONS ON THE LABOR MARKET

Vlad CÂRSTEA

Abstract

ICCT (a small American NGO) after conducting some scientific tests on a variety of cars sold on the American market accused Volkswagen of forging the emissions tests. The cars in question were equipped with diesel engines, which are known for being more pollutant than their equivalents running on gasoline, but strangely enough, more eonomical. As a result, an investigation began to establish whether the allegations were true or not and if they were true, who were the culprits and which are the possible effects.

Keywords: Dieselgate, Volkswagen, emissions test, EPA

JEL Codes: F12, F16, F23, J41, J42

This is probably the biggest scandal in the recent automotive history involving one of the biggest car manufacturers in the world – Volkswagen, but this was not the only circulated name. As such, other manufacturers had to explain themselves also whether they share this type of practice or not.

In 2013, International Council on Clean Transportation (ICCT), located in San Francisco – USA, in partnership with the University of West Virginia made some emissions tests on a number of cars. Among the tested cars there were a couple made by Volkswagen and one made by BMW. All the tested cars were equipped with the diesel engines. The results of those tests were quite surprising, as the more economical cars from VW exceeded 35 times the normal value of NOx (nitrous oxides), while BMW had successfully passed the test, apparently.

At first, it was considered to be only a minor technical problem, but further tests proved that there was a much bigger issue as the cars produced by Volkswagen were built to cheat the emissions tests. How was that possible? The cars were equipped with a smart engine management unit that could detect when a test was being done. The control unit would reduce the car's performances in order to pass the test.

On September 18th 2015, EPA, (the United States Environmental Protection Agency) accused VW of manipulating the outcome of the emissions tests, offering all the necessary proofs for the cars sold only in the US. Three days later VW's shares plummet with 20% in one, recording the biggest drop in the history, despite the fact that the Group CEO apologized and announced that he would cooperate with the American authorities.

On September 22nd 2015, the scandal received its name of Dieselgate, since the cars in question had diesel engines and as a reminder one of the biggest scandals to hit the White House. Four days after the first official accusations were made, the German

Government, as well as the White House demanded an investigation for the entire range of cars sold in the US. Now, Alfa Romeo's bosses' suspicions were confirmed, as they all had been saying since 2010 that the results for Volkswagen's emissions' tests were "miraculous, magical or extraterrestrial".

The preliminary results from this investigation showed that an alarming 11 million cars with the cheating software were sold across the world, which according to statistics these cars pollute in one year just as much as the United Kingdom, in the same period of time.

In a scandal of such proportions, the CEO usually resigns, but this was not the case here. Moreover, the CEO, Martin Winterkorn announced that he was not going to resign and asked the public to keep the faith in his company and that all problems will be fixed. But, a few days later, he resigned in total appreciation from his board of directors who supported him till the end, stating that he never knew about this situation. The newly instated CEO was Matthis Mueller that came from the Porsche division and had the difficult task of reorganizing the entire group and its global activity in order to offer a better response to the crisis it was in.

In order to maintain their market share, Porsche quickly announced that their cars equipped with diesel engines were not the subject of this scandal as they tune and test the engines in a different manner than VW does, although they are part of the same automotive group.

Although Volkswagen was under this major investigation and the problem was becoming a global one not only a local or regional one, three European states (France, Germany and United Kingdom) demanded more relaxed environmental regulations for cars, but in the same time they wanted a thorough investigation in the Dieselgate scandal. As a result these states were accused of hypocrisy by the international community.

After this, Germany began in November 2015 an investigation on its own on a number of 51 cars sold on the domestic market, all equipped with diesel engines. The result of this inquiry revealed the fact that a number of 15 car manufacturers, apart from VW, cheat on the emissions tests as well. These companies are Alfa Romeo, Chevrolet, Dacia, Fiat, Hyundai, Jaguar, Jeep, Landrover, Nissan, Renault and Suzuki, not forgetting the German brands Opel, Volkswagen, Porsche, Audi and Mercedes. Although they tend to have the same faulty practice, the difference between the declared emissions and the real ones is not as big as Volkswagen's.

France took a stand as well and after a detailed examination concluded that Volkswagen's cars have emissions' levels way higher than normal. Following the same direction the French automotive group PSA (composed of Peugeot and Citroën) recently announced that they will publish the real life emissions and fuel consumption for some of their models. Of course, one could argue on the fairness of this statement and action as it does not comprise the entire range of cars produced by the French group.

During this crisis, another German car manufacturer was accused of forging the emissions tests, this time, not by an environmental agency but by a German car magazine. The company in question, BMW, was for a small period of time in the spotlights, close to VW, as emissions cheaters. Although the charges were dropped by the German magazine, their shares dropped with 10%.

Not many know the fact that Volkswagen is not involved in such a scandal for the first time, as the group had been accused of cheating the emissions tests 40 years ago,

when they equipped their petrol cars with thermo-sensitive devices in order to pass those tests. But back then, the scandal's proportion was way smaller than the current one.

During this crisis, the countries' governments where Volkswagen sold its diesel cars took different measures in order to reduce the negative impact on the environment. Starting from United States, where the VW dealers were forbidden to sell any of the cars they had on their lots (which meant a tremendous loss since dealers have to pay finance for all the VW cars they have, from the moment they are delivered by the manufacturer until they are sold by those dealers), continuing with Germany, where in Wolfsburg, VW's hometown, the City Hall had frozen their budget in waiting on the investigation's results and continuing with Romania, where RAR (Romanian Automotive Authority) had announced that all the Euro 5 VW compliant cars are forbidden to be sold.

Regarding the Dieselgate's implications on the labor market one can say that is a slap in the face for the entire automotive industry as the consumers' confidence (especially the American ones) in the car manufacturers and in the traditional ways of propulsion could be diminished. Moreover, the consumers were confident that their diesel car offered them lower operating costs found out that they were not so cheap to run after all. The statistics had shown that Volkswagen's sales plummeted with 25% during the last two months of 2015. It is quite possible for us to witness a dramatical change in the consumers' behavior.

For Volkswagen, the consequences will be probably the most important in history and basically its sole existence may be threatened. So, the company has to come up with a set of measures that would redeem it. These measures include buy-back options, cancelling leases, fixing cars and different ways of compensations for all the customers. As a result, the company announced that they had saved 6.7 billion euros, during the last quarter of 2015 just for the financial support of this scandal, naming it "Make This Go Away" fund. Apparently, this initial estimate was no way near the real value of expenditures as the most recent estimate is 16.2 billion euros. Although in the US, Volkswagen sold only approximately 500.000 cars, EPA will charge VW with fines far greater than the value of their sales.

Another consequence of this scandal is the fact that the German company will have to do some significant restructuring during the next months which means the merger of the American, Canadian and the Mexican markets into a single one. Furthermore, they said that they cancelled all the unnecessary future investments. This means that the future launch of some important models, like the Porsche Mission E, Audi e-tron quattro, which are both electric cars, and even more "exotic" models (Bugatti Veyron's successor) will be either cancelled or delayed. Another change of plans was dropping the release of the 2.0 liter diesel engines in 2016 on the American market. As a result, in all the countries where VW has plants, an increase in unemployment should be expected.

In the same time, as mentioned earlier, other manufacturers will bear some consequences as the investigations regarding the emissions are extended.

The latest victim of the Dieselgate scandal is the Japanese car manufacturer Mitsubishi. Although there were no related investigations regarding the Japanese market, the company's president Tetsuro Aikawa admitted in a press conference that they falsified the fuel economy data for more than 600.000 cars sold domestically. Although Mr. Aikawa didn't know about this conduct, during the press conference he stated that it was his responsibility. Unlike VW,

that used a clever engine management unit, Mitsubishi Motors resorted to a much easier method. The company's workers tampered with the tire pressure during their emissions tests in order to improve the fuel economy. It must be said that from all the cars affected only 157.000 were Mitsubishi cars, while 468.000 were made for Nissan.

The consequences of this scandal for the Japanese manufacturer will be quite important since the company's recent history recorded another scandal. During the 2000s there were some quality issues on critical car systems (transmission, brakes and fuel delivery system). Although in Japan their market share is relatively reassuring as they are the sixth car manufacturer, at the global level Mitsubishi struggles at the bottom of sales charts and this scandal will make the fight even harder.

Conclusions. This is the biggest scandal in the automotive industry during the recent years with implications that exceeded the borders of one country or one continent. The fact that more and more manufacturers are caught using different techniques that allow them to cheat the emissions tests leads to decreasing level of trust from the public. In the same time it must be said, that the end consumer has his fault as well, since the demand for cars that are more powerful, more comfortable, more luxurious, more versatile and cheaper in the same time is rapidly increasing. This has led to battle between all the manufacturers that will do almost anything in order to sell more than their rivals.

Just as the global economic crisis, reshaped the world, this automotive crisis will reshape the consumers, in terms of their behavior by emphasizing on the environmental impact of cars. And speaking of environmental impact, the future may offer us the surprise of tighter and tighter emissions standards in United States, in Europe as well as throughout the world, despite the latest statements from the European Union that the cars may be allowed to pollute twice as much, but the tests must be done in real-life scenarios.

Regarding Volkswagen's situation, the company started to promote cars with smaller environmental impact like electric cars and cars that run on gasoline instead of diesel, for the American market. For the other markets, VW will offer diesel engines but only if they truly obey the regulations without the help of any devices. It definitely can be said that this scandal reshaped the company as they reported a 5.5 billion euros loss for the last year and a 5% loss for this year is expected. Although the German company was considered for years a top company at the global level, the current strategy is to focus on the quality of their cars, not quantity while the objective of becoming the biggest car manufacturer was put aside until 2025.

The implications on the labor market are small on the short run and will be present inside the Volkswagen Group as well as different suppliers that work with the company. Other car manufacturers that were involved in the scandal of falsifying emissions tests will be also affected. All the employees that were suspected of creating and using the clever gadget got to keep their jobs as part of a deal made during the investigation. Only the VW's CEO lost his job as he resigned at the beginning of this scandal. On the medium and long term it is very possible to see some negative effects within the Volkswagen Group as well as in other automotive companies. The fact that a restructuring will be made in the German company will result in a number of closing down the branches that are considered inefficient.

Resources:

1. Automarket.ro – "Criza Volkswagen: tot ce trebuie să ştii despre scandalul "Dieselgate", 2015, available at http://www.automarket.ro/stiri/criza-volkswagen-tot-ce-trebuie-sa-stii-despre-dieselgate-66229.html

2. Balaban, A. – "Volkswagen a înregistrat pierderi de 1,58 miliarde de euro în 2015 din cauza scandalului "Dieselgate", 2016, available at:

http://www.agerpres.ro/economie/2016/04/22/volkswagen-a-inregistrat-pierderi-de-1-58-miliarde-de-euro-in-2015-din-cauza-scandalului-dieselgate--16-58-29

3. Balaban, A. – "Autoritățile germane au descoperit nereguli la 16 mărci auto, inclusiv la Dacia", 2016, available at:

http://www.agerpres.ro/economie/2016/04/22/autoritatile-germane-au-descoperit-nereguli-la-16-marci-auto-inclusiv-la-dacia-19-01-15

4. BBC News – "Mitsubishi Motors admits falsifying fuel economy tests", 2016, available at: http://www.bbc.com/news/business-36089558

5. Davies, A. – "Volkswagen's US sales plummet 25 percent as Dieselgate rolls on", 2015, available at: http://www.wired.com/2015/12/volkswagen-us-sales-plummet-25-as-dieselgate-rolls-on/

6. Digi 24 – "Volkswagen pierde primul loc în topul celor mai mari constructori auto din lume", 2015, available at: http://www.digi24.ro/Stiri/Digi24/Sci-tech/Masini/Volkswagen+pierde+primul+loc+in+topul+celor+mai+mari+constructor

7. Digi 24 – "Opel respinge acuzațiile unei organizații de mediu germane privind manipularea emisiilor poluante", 2015, available at: http://www.digi24.ro/Stiri/Digi24/Sci-tech/Masini/Opel+respinge+acuzatiile+unei+organizatii+de+mediu+germane+privi

8. Dogaru, I – "Poliția italiană percheziționează sediile Lamborghini si Volkswagen, în scandalul Dieselgate", 2015 available at: http://www.bursa.ro/volkswagen-politia-italiana-perchezitioneaza-sediile-lamborghini-si-vw-in-scandalul-dieselgate-280847&s=companii_afaceri&articol=280847.html

9. George, P. – "Can the Volkswagen Group Survive Dieselgate As A 12-Brand Behemoth?", 2015, available at: http://jalopnik.com/can-the-volkswagen-group-survive-dieselgate-as-a-12-bra-1737542539

10. Hard, A. – "VW to postpone projects that aren't 'absolutely necessary,' cancels 2016 diesels", 2015, available at: http://www.digitaltrends.com/cars/volkswagen-will-cancel-projects-to-pay-dieselgate-bill/

11. Kofmann, M. – "Revisiting History: Dieselgate is Not Volkswagen's First Major Corporate Hurdle", 2015, available at: https://www.linkedin.com/pulse/revisiting-history-dieselgate-volkswagens-first-major-koffman

12. Siu, J. – "Volkswagen Sales Remain Steady Despite Dieselgate Scandal", 2015 availble at: http://www.autoguide.com/auto-news/2015/10/volkswagen-sales-remains-steady-despite-dieselgate-scandal.html

13. Știrbu, A. – "Dieselgate: iată cum se comportă un Volkswagen Jetta TDI urcat pe dyno", 2015, available at: http://www.promotor.ro/masini-noi/news/dieselgate-iata-cum-se-comporta-un-volkswagen-jetta-tdi-urcat-pe-dyno-14790925

14. Tracy, D. – "Volkswagen's 'Make This Go Away' Dieselgate Fund Just Rose To

Over $18 Billion", 2016, available at: http://jalopnik.com/volkswagens-make-this-go-away-dieselgate-fund-just-rose-1772517646

15. Ziegler, C. – "Volkswagen agrees with US regulators to offer 'substantial compensation' to Dieselgate owners", 2016, available at: http://www.theverge.com/2016/4/21/11478594/volkswagen-us-dieselgate-agreement-compensation