INTERNAL AUDITING & RISK MANAGEMENT

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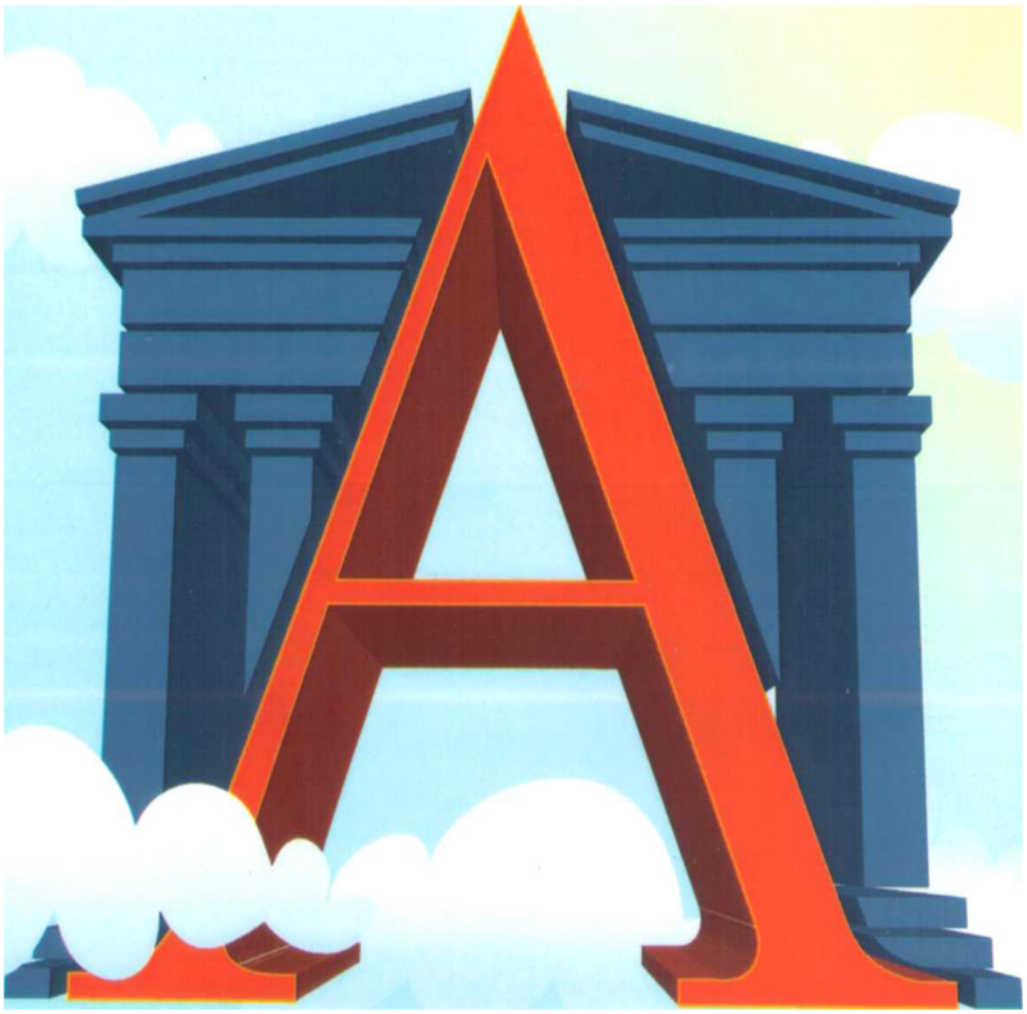

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C O N T E N T S

DEVELOPMENTS' OF YOUTHS LABOUR MARKET IN ROMANIA AND EGYPT DURING THE POST-CRISIS PERIOD

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Abstract

In the current conjecture, youths are faced with the emergence of a feeling of uncertainty regarding their own chances of entering 'well' on the labour market.

Both in developing societies and in some developed societies the impact of the financial and economic crisis on the youths is felt mainly as unemployment and as social 'risk' associated with short-term inactivity. The issue of youths' inactivity for a longer period of time is regarded as major risk of removal from the labour market, several studies indicating that the transition from school to work in a period of economic recession might put its fingerprint on the young generation affected by this economic decline.

Even if several countries registered economic growth after the year 2011/2012, still, they are faced with issues that might trigger worrying pressures on the labour market.

The present paper presents a brief analysis of the main characteristics and particularities of the youths' labour market in Romania and Egypt in the post-crisis period.

Key words: *youths' employment rate, youths' unemployment, education level*

JEL Classification*: E24, I20, J13, J21*

Introduction

At world level are currently about 1.2 billion youths (with ages between 15 and 24 years) on increased by over 17 pp against the year 1995. They represent about 24.7% from the working age population of the world and about 87% from them live in developing economies[1].

[1] International Youth Day 2016 - Population Matters, *https://www.populationmatters.org*

The issue of youths' inclusion on the labour market was always present on the political agendas, but only during the last two decades, it gained a particular upswing on these agenda. The jobs' crisis at world level exacerbated the vulnerability of youths also as result of the following factors: a high unemployment rate (13.1% in 2015), the low quality of jobs for those finding a job, the inequalities on the labour market between various categories of youths', the extended transition period from school to the labour market, etc.

At the same time, the difficulties on the labour market existing also before the economic crisis intensified during the crisis and post-crisis period, with negative impact also on the youths with ages between 25 and 29 years, with higher education and who find it more difficult to find a job adequate to their skills.

In this context, various international bodies have suggested that measures and actions adopted for fighting the crisis of youths' employment should be directed towards increasing pro-employment measures and creating decent jobs.

The Resolution "The youth employment crisis: A call for action" adopted at the International Labour Conference[1] (June 2012) organized by the International Labour Office comprises a series of conclusions representing a model for developing national strategies of youths' employment on the labour market.

At the level of the United Nations, young individuals are regarded as one of the main priorities of the contemporary world in need of being approached by mobilising all human, financial and policy resources available to the UN.

In Romania, on 1 July 2015, the young resident population was of 4183,636 thousand persons, from whom 2405,174 thousand persons had ages between 15 and 24 years, and 1778,462 thousand persons had ages between 25-29 years.

The low insertion of youths on the labour market is owned to some factors, from among which, we mention the following: i) the transition from school to labour is more difficult in countries having as dominant transition model "study first, then work" (4) against those where studying and employment in the labour market are combined (for instance working stages in various companies, apprenticeship on the job, internships, seasonal activities or part-time jobs, etc.); ii) specific hindrances on entering the labour market, which are often the outcome of lacking experience; iii) higher risk of being fired during times of economic decline; iv) "the

[1]The resolution "The youth employment crisis: A call for action", http://www.ilo.org

dependency path": entering into unemployment at young ages, increases the probability of future unemployment.

The political instability which continues as result of the revolution from January 2011 and the slowdown of economic growth, because of the recent economic and financial crisis, are the main factors with negative impact on the creation of new jobs in Egypt and of the resulting severe constraints faced by the young Egyptians entering the labour force market. The pressures on the Egyptian labour force market are generated by the high number of youths representing about one fifth of the population, and by the approximately 600000 new entrants on the labour market each year.

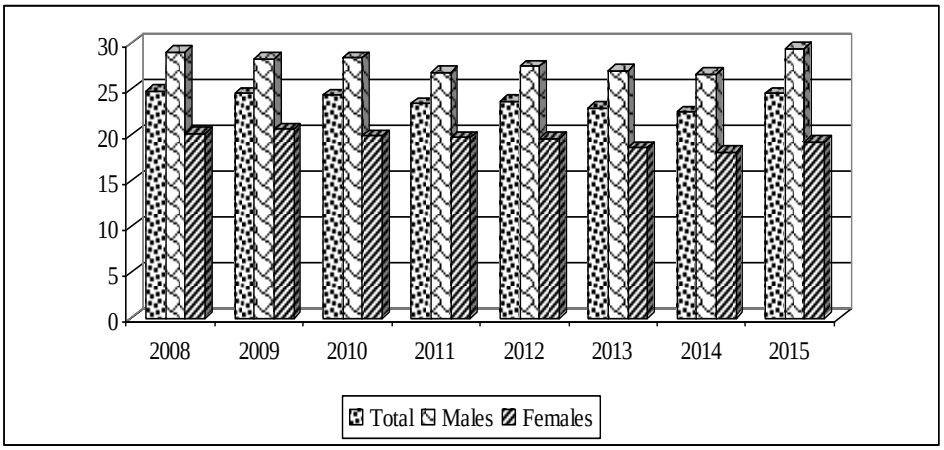
The paper presents a brief analysis of the labour market indicators for the youths' labour market in Romania and Egypt during the post-crisis period, and of their particularities.

1. Youths' employment and unemployment on the Romanian labour market during the post-crisis period

Due to the economic and financial crisis, the employment rate of the youths on the labour market decreased from one year to the other, until 2014. Even if in 2015 the employment rate registered a slight increase, reaching 24.5%, still, it did not equal the level attained in the year of the crisis' outbreak (24.8%).

In Romania, the same phenomenon as in Egypt was registered, the employment rate of the youths with ages between 15 and 24 years of age was higher for men, than for young women (29.4% for men and 19.3% for women in the year 2015) (Figure 1).

Figure 1 Evolution of the employment rate for the age group 15 to 24 years of age in Romania (%)



Source: Eurostat Statistics, (online data code: [yth_empl_020], [yth_empl_140])

For many youths, with temporary or part-time jobs, this period might be seen as an important stage towards full employment. Nevertheless, temporary contracts limit the financial and personal autonomy of young individuals. Moreover, under the conditions in which the period of the temporary contract repeatedly does not have as consequence full employment and permanent working relationships on contractual basis, this contributes to a certain extent to the discouragement phenomenon shared by the youths, who might abandon searching for a stable job, the implications being significant at individual, family and community level.

In Romania, the share of youths with temporary jobs in total youth employment did not exceed 7% during the considered period. Part-time system labour force employment is more attractive for the age segment 15 to 24 years of age in Romania, 19.2% from the youths employed being active within this system in the year 2015.

The lacking length of service, the specifics of the company human capital, the experience on the labour force market of the youths, the higher probability of working within the company for a determined period of time, and under forms of precarious employment are some of the factors leading to increased unemployment among youths.

Under these circumstances, the transition from school to labour tends to become a chain of temporary episodes of training, education, compulsory military, civil or voluntary service, other temporary activities, very often in an institutional framework characterised by fixed entry dates, outside the market and which do not take into account the requirements of the labour force market. Under these circumstances, the youths gather less experience in searching for a job and cannot develop a clear image about the job and/or incomes that would satisfy them.

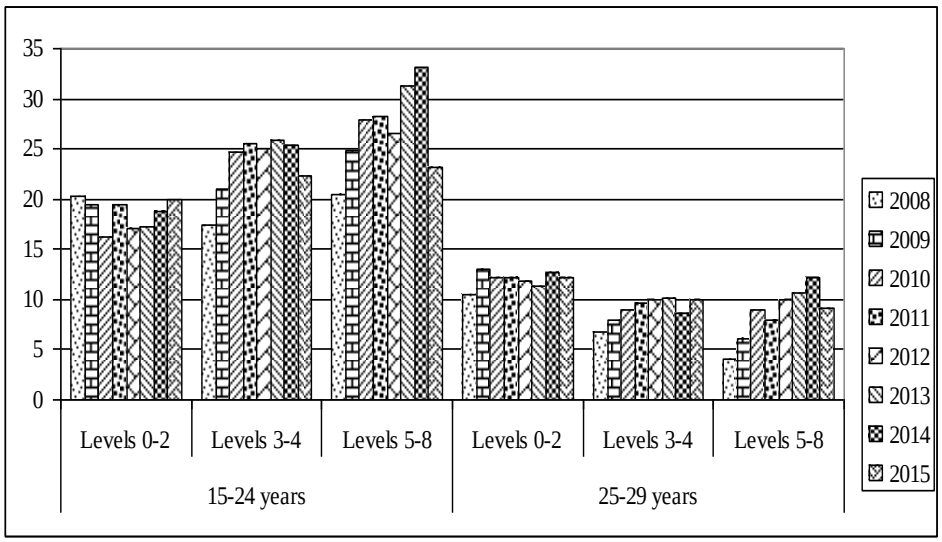
The unemployment rate for the age segment under 25 years of age, in Romania, was of 24% in the year 2014, on increase by 6.7 pp against the year 2008. Even if in 2015, the unemployment rate among young individuals decreased by 2.3 pp against the year 2014, this rate continued to be by 4.1 pp above the average recorded in the year 2008 and almost four times higher than the unemployment rate for adults. For the age group 25-29 years, the unemployment rate in the year 2015 was of 10/2% on increase by 3.5 pp against the year 2008. On age groups for the age group 15 to 24 years, the unemployment among young women was by 2.8 pp higher in 2015, while for the age segment 25 to 29 years, the unemployment among young women both during the period of crisis, and in the post-crisis period under the unemployment rate for men (for instance, 8.6% against 11.3%) in 2015.

The persistence of uncertain and fragile economic conditions including the labour market triggered increases in the unemployment duration. According to the statistics of the National Agency for Labour

Force Employment, on 31 January 2015, 34.69% from the unemployed under 25 years of age were in unemployment for more than 6 months.

Unemployment among youths is dependent also on their training level. For the age group 15 to 24 years of age, in general, in the post-crisis period the highest unemployment rate was recorded among youths with higher education. For the age group 25 to 29 years of age, during the same period, the weight of unemployed with higher education is smaller than the one of unemployed with training levels 0-2 or 3-4 (Figure 2).

Figure 2 Evolution of the unemployment rate on educational levels in Romania for the period 2008-2014, (%)

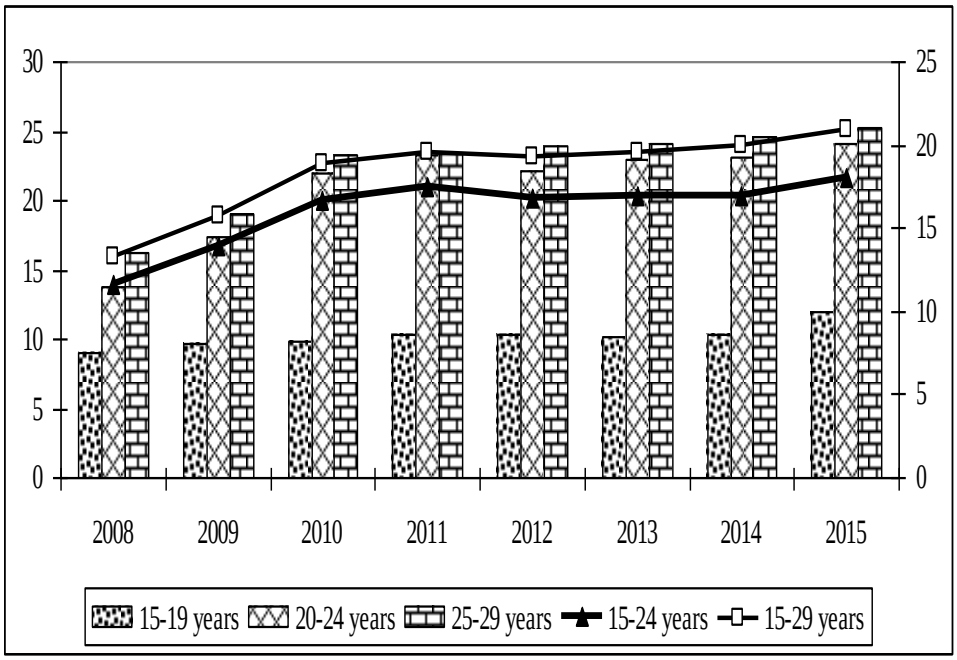


Source: Statistics Eurostat, (online data code: [lfsa_urgaed])

According to the statistics of the National Agency for Labour Force Employment, on 31 January 2015, were registered 71678 youths with ages under 25 years from among which 39.1% were young women and 41209 youths with ages between 25 and 29 years of age (the weight of young unemployed women was of 38.3%).For the age segment from 15 to 24 years of age, 35615 individuals had ISCED 0-2 training levels, 30515 youths had the ISCED 3-4 training levels, and 5548 were individuals with higher education. For the age group 25 to 29 years of age, were registered 28545 individuals with primary, secondary and professional training levels, 7105 young individuals with the training levels 3-4 and 5559 young individuals with higher education.

According to the latest Eurostat estimates, in 2014, the share of youths who are neither employed, nor in education or training in Romania varied from 12% for the age group 15 to 19 years of age, to 25.3% for the youths in the age group 25 to 29 years of age (Figure 3).

Figure 3 Evolution of the NEET rate on age groups in Romania for the period 2008-2015, (%)



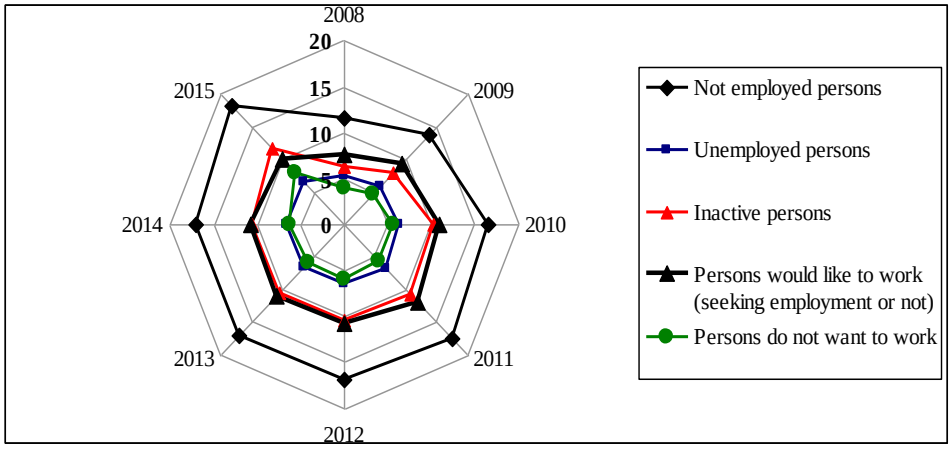
Source: Statistics Eurostat, (online data code: [yth_empl_160])

The NEET group is heterogeneous. In the NEET category are included young individuals irrespective of their educational level. The analysis of the educational level of the youths in the NEET category reveals that those with an inferior educational level are overrepresented in the NEET group.

One effect of the financial-economic crisis is also the one of an increase in the NEET rate among youths with ISCED 3-4 training levels, irrespective of the age groups considered for young individuals. At the same time, the NEET rates differ strongly depending on gender, being usually much higher for women than for men. The gap between the NEET rate of women and the one of men varies depending on age, but also on training level, and is the higher, the lower the educational level.

Since the beginning of the crisis, the increase in the NEET rate corresponding to the age group 15 to 24 years was triggered by the increase of the NEET youths weight not in the labour market, while the unemployed NEET youths' weight remained relatively stable (Figure 4).

Figure 4 Evolution of the NEET rate in Romania depending on occupational status



Source: Statistics Eurostat, (online data code: [yth_empl_150])

To the increase in the NEET rate of youths in Romania contributed also the weight of inactive youths, or of individuals not intending to work.

2. Characteristics and particularities of the youths' labour market in Egypt

With a population of 87.96 million inhabitants on 1 January 2015**,** Egypt is among the most populated countries of the world and, at the same time, is one of the most populated African and Arab states. About 61% of the population (53.65 million persons) is under 30 years of age, from among which 29.74% from the population (26.16 millions) are between 15 and 29 years of age.

The employment rate among youths decreased by 14.3 pp in the period 2012-2014 (from 45.6% to 31.3%), and the gap between the employment rate among young women and men was in 2014 of 40.2 pp (50.6% employment rate for men, against 10.4% the one for women). The inactivity rate of the young women increased against 2012 by 11.7 pp, and reached 80.4% in the year 2014.

The structure of employed population, according to the professional status of the youths, comprised 77% employees (from among which 78.8% without written contracts), 5.75 self-employed and 13.3% family workers.

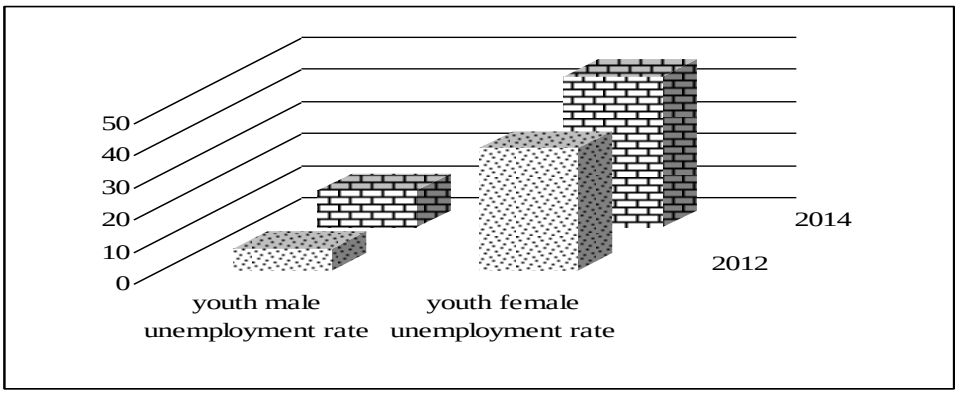
The services' sector absorbed most of the young workers from Egypt (42.7%), and the employment rate of young women in this reached 62.4%, on increase by 7.4 pp against the year 2012. In industry, the employment rate of the youths was 35.3% in the year 2014, with a rate of 39.2% for young men, and 14.5% for the young women. Youths' employment in agriculture registered a slight decrease, by only 1 pp in the period 2012-

2014, registering 22% in 2014, the weight for women being of 23.1%, and the one of men of 21.8%.

Even if the informal employment rate among young individuals decreased slightly between 2012 and 2014 (from 91.1% to 87.3%) still this factor continues to affect the majority of young individuals employed in Egypt.

In the period 2012-2014 the unemployment rate among youths increased from 15.7% to 19.9% with significant differences between women and men (Figure 5), but remained below the regional average for North Africa, that is 29.4% in 2014.

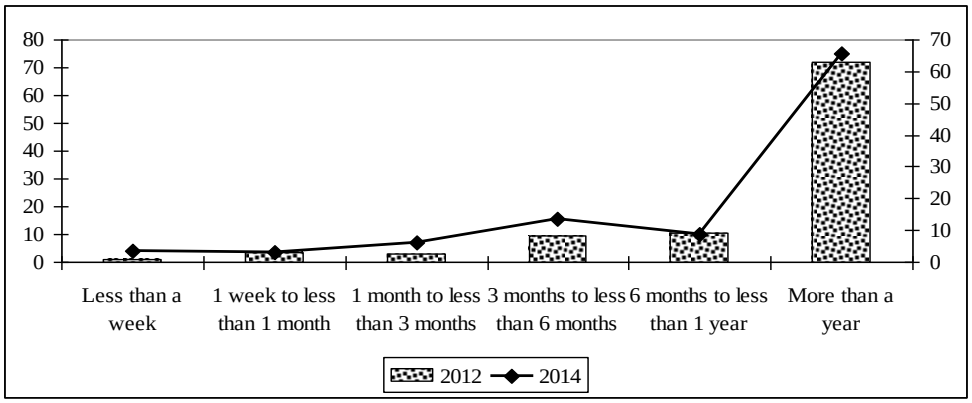
Figure 5 Evolution of youth male and female unemployment rate



Source: Work4Youth Publication Series No. 44 (Geneva, ILO), www.ilo.org

The duration of unemployment is often very long (Figure 6). Two thirds (65%) from the young unemployed were seeking a job for more than one year in 2014, on decrease from 72% in 2012.

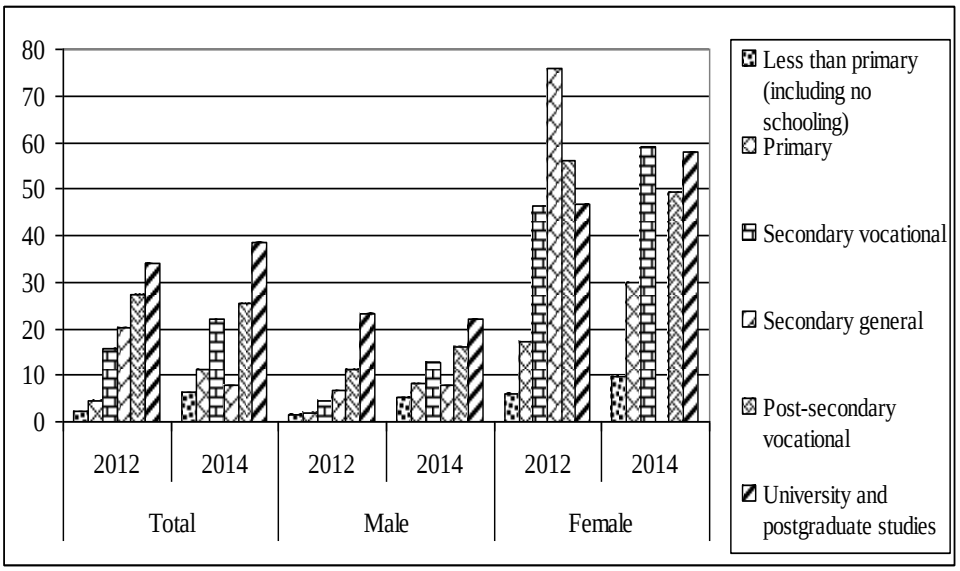
Figure 6 Unemployed youth by duration of job search, 2014 (%)



Source: Work4Youth Publication Series No. 44 (Geneva, ILO), www.ilo.org

The unemployment rate among young Egyptians increases with the educational level Egypt is a country with one of the most developed educational and vocational training systems from the 22 countries of the Middle East and North Africa (MENA). In 2014, the unemployment rate for tertiary education graduates was 4.9 times higher than the one of a young individual with secondary general education (38.4% against 7.8%) and only 1.51 times smaller than the one for the graduates of post-secondary vocational studies (Figure 7).

Figure 7 Youth unemployment rates by level of completed educational attainment, 2014 (%)



Source: Work4Youth Publication Series No. 44 (Geneva, ILO), www.ilo.org

Large part of the young individuals, especially young women are found neither in education, employment or training (NEET). According to the statistics of the International Labour Organisation, in Egypt the NEET rate increased from 29% in 2012 to 33.9% in 2014. The share among young women was much higher than the one of young men in 2014 (54.5% against 14.8%), one explanation first of all being the obligation of many young women to stay outside the labour market in order to dedicate themselves to family duties.

The high NEET rates are of particular concern because the lack of activity in an early life stage has negative impact on the professional insertion capacity, on future earnings and access to quality jobs.

Conclusions

Youths were very affected by the recent financial-economic crisis, their employment perspectives diminished and the unemployment rate reached alarming high shares.

In Romania and Egypt as well, during the crisis period the employment rate among youths diminished and 2015 was the first post-world crisis year when this indicator registered slight increases.

In 2014, the unemployment rate among youths reached 11.4% for men and 46.7% for women in Egypt. In Romania, the gender differences regarding the unemployment rate among youths are slightly less pregnant, as in 2013 the young men unemployment rate with ages between 15 and 24 years was of 24%, and the one of women 23.6%.

Unemployment among youths in Romania depends also on their training level. For the age group 15 to 24 years of age, in general, in the post-crisis period, the highest unemployment was recorded among youths with higher education, and for the age group 25-29 years, the youths with educational levels 0-2 and 3-4 were the most affected.

The unemployment rate among young Egyptians increases together with the educational level, in 2014 the unemployment rate for university graduates being 4.9 times higher than for a young individual with general secondary education, and only 1.5 times lower for post-secondary vocational education graduates.

The duration of unemployment is often very long in Egypt, over two-thirds of the young unemployed seeking a job for more than one year, in 2014. In Romania, the weight of long-term unemployment in total unemployed was of about 40%.

As result of the inaccuracies of traditional indicators regarding the labour market for young individuals, a series of studies and reports of the academic environment, of the national authorities and of international organisations in the field used an additional indicator for better analysing the situation of youths who are neither employed, nor in education or training, respectively the NEET indicator. This indicator describes and analyses better the vulnerabilities of youths on the labour market.

In the year 2014, the share of youths who were neither in employment or training in Romania varied from 6.4% for the age group 15 to 19 years to 20.3% for the youths with ages between 25 and 29 years of age.

In Egypt, 33.9% of the youth were included in the NEET category.

The emergence, size and structure of the NEET youths are generated by a series of social, economic, personal and family factors.

The earlier youths enter into this social category, the more severe consequences might occur on long-term. The ‘scarring’ effects of this status

might have negative effects on future employment outcomes and wage earnings, as well as negative consequences on the physical and mental health. Also these conditions might lead to drug abuse, involvement in criminal activities, disengagement from life and society. As result of this status for a longer period, wide variations might emerge regarding social conditions: isolation, employment in uncertain working conditions and for low wages, criminality, physical and mental health conditions, failure to set-up a family, or divorce, etc.

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LABOUR MARKET VULNERABILITIES IN ROMANIA DURING THE POST- CRISIS PERIOD

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Abstract
After eight or nine years since the outbreak of the financial and economic crisis, the world economy entered into a stage of slight economic growth which continues to be much under the values recorded in the pre-crisis period and is much too slow for solving the issues created by it on the labour market. These developments have intensified existing vulnerabilities on the labour market, and making harder the efforts to diminish unemployment and under-employment of the labour force, at least up to the level preceding the crisis in the majority of countries.
The vulnerable groups on the labour market have as dominant characteristics the heterogeneity of the group and the fact that its members share, perhaps, just the involuntary character of their current statute (Atkinson, 2000). Labour market vulnerabilities may be associated with regional factors, or economic ones, with the particularities of the local labour market, or with the specifics of economic agents' management and, last but not least, with individual or social traits (gender, ethnicity, disability, age, area or residence, etc.).
The paper presents a brief comparative analysis of the labour market vulnerabilities from Romania.

Keywords*: labour market, vulnerabilities, employment rate, unemployment, migration, inequalities, informal labour market*

JEL Classification: *E24, J21, J23, J61, J62, J81*

Introduction

Often, in legislative documents, or in research reports, the term of vulnerable group is used similarly to the one of disadvantaged, marginalised, excluded group or risk group, and all these concepts are related to the wider-spread phenomenon of poverty.

More often, by vulnerability is understood 'weakness', 'defenceless', 'lack of means'. The vulnerable groups are groups lacking support and these are often in a chronic state of poverty being incapable of taking advantage of opportunities, or of defending themselves against issues that might emerge.

There are various approaches for identifying and characterising vulnerable, excluded and discriminated groups. The concept of vulnerability is not a shared common concept, as it has connections to the notions of social exclusion, poverty, discrimination and marginalisation. Another meaning of the vulnerability refers to exposure to risks that might lead to a welfare level placed under the threshold of what is considered by society as acceptable/desirable [Hoogeveen et al., 2004].

The labour market from Romania changed dramatically during the economic transition. One of the main features was and still is the diminishment in the numbers of employed population. The restructuring of enterprises led to losses of jobs that were not compensated by the creation of new jobs. The marked population ageing process and significant migration (including here temporary migration) led to labour force deficits. These, together with the increases in the number of NEETs, in early school-leaving, gender differences and informal work are but few of the major *vulnerabilities* of the Romanian labour force market.

Population ageing, the migration processes from Romania led to an essential change in the age structure in the labour market both in the urban and rural area, but also to increased vulnerabilities on the labour market.

1. Vulnerabilities on the labour market. Conceptual approaches

Frequently, the specialised literature regarding labour force vulnerability in less developed countries makes reference to the uncertainty of the workplace as major concern for the poor. In developed countries, most times, labour force employment vulnerabilities refer to the unfavourable treatment at the job, to inadequate working conditions, or to the "risk of not having a decent job" [Sparreboom and de Gier 2008].

In defining labour force employment vulnerabilities, three main approaches can be identified:

i) the approach developed by the International Labour Office [ILO, 2010] according to which for quantifying the vulnerability on the

labour market an indicator is proposed for this phenomenon defined as the sum of self-employed and unpaid family workers;

ii) the one taking into account the low level of incomes. For instance, the vulnerable worker is defined as a worker earning under one third of the median hourly wage and who does not benefit from terms and conditions negotiated by a trade union [Hudson, 2006], or as the one who obtain under the median hourly earnings and does not have trade union support [Pollert and Charlwood, 2009];

iii) the multidimensional approach where employment vulnerability is defined by means of some employment characteristics/ indicators related to the risk of not being able to develop a decent activity [Bewley and Forth, 2010].

The most vulnerable individuals in the labour market are considered by Hudson (2006) as being those low-paid, atypical workers, workers not represented by unions, those excluded from collective negotiations regarding employment protection rights and from the national insurance system. For full-time employed persons the probability of being vulnerable on the labour force market is relatively low as compared with the situation of those working part-time, self-employed, or workers without contract [Elliott & Freeman, 2003], [Chaykowski, 2005].

Authors, such as Bardhan and Tong (2010) are focused on the employment vulnerability defined as job vulnerability as result of negative economic shocks, and focus on occupations and less on employees.

2. Vulnerable groups on the Romanian labour force market

Because there is no formal definition of the vulnerable groups included in the official documents at European level or at national level, the term is often used in relation to the concept of social inclusion which presupposes the access of individuals to the necessary opportunities and resources for participating fully to the economic, social, and cultural life and to enjoy a living standard regarded as normal/desirable in the society where they live: "promoting equality and social inclusion presupposes making efforts in order for all individual, including all vulnerable groups to be able to play an active role in the labour market and in society and to benefit of equal chances in this respect"[1].

The situation of employing individuals in the labour market represents one of the most important criteria in defining vulnerable groups.

[1] European Comission, Employment, Social Affairs and Inclusion, 2010. *What Social Policy Can Do for You,* http://ec.europa.eu/social/

In Table no. 1 is presented a synthesis of the vulnerable groups in the labour market from Romania.

Table no. 1 Defining vulnerable groups

Denomination	**Characteristics**
Disadvantaged groups from the viewpoint of occupational opportunities	- persons with handicap - women - youths without work experience - unemployed over the age of 45 years - Rroma
Individuals disadvantaged in the labour market	- Rroma - persons with handicap - women - post-institutionalised youths - persons over 45 years of age single mono-parental family supporter - long-term unemployed - persons released from detention - sentenced persons with measures that do not restrict liberty
Vulnerable persons at risk of social exclusion, vulnerable groups	- Rroma ethnicity population - youths over 18 years of age leaving the state's child's protection system - disabled persons - single family supporters - persons from the rural area searching for jobs - persons released from detention - elderly searching for jobs
Special categories of unemployed from the viewpoint of exemptions granted for employers	- unemployed over the age of 45 years - unemployed who are single mono-parental family supporters - persons with handicap - unemployed who in 3 years as of the date of employment will fulfil according to the law the conditions for requesting partial anticipated pension, or pensions for age limit
Women at risk of social marginalisation from the viewpoint	- women from the rural area - women aged over 45 years - women victims of family violence - women victims of human trafficking

Denomination	**Characteristics**
of insertion on the labour market	- women with HIV/AIDS - drug dependent women - women released from the detention system

Source: Synthesis based on the data presented in the *Research Report regarding the social economy in Romania in compared European perspective,* Ministry of Labour, 2010, annex 9 – Statistical analysis of vulnerable groups from Romania, completed by data from the *National Development Plan* 2007-2013

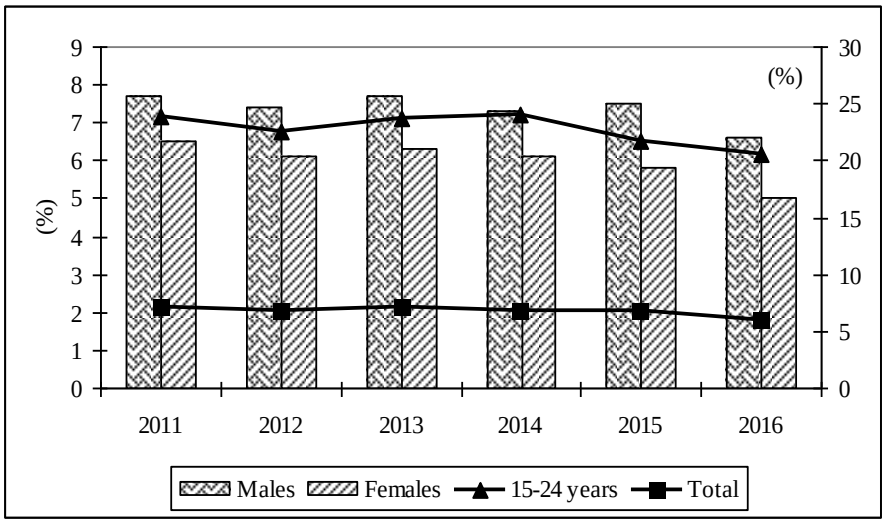
The most frequent issues of the labour force market are the imbalances between demand and supply, informal work, labour force migration, and labour force deficit in some sectors, the demographic situation, weight of employment, the unemployment rate, and the NEET rate.

In the absence of an official definition of vulnerable groups at European Union level and the level of legislative documents from Romania, very often, vulnerable groups are described with the help of some indicators. Thus, in determining their structure and size was used a wide variety of indicators, from those regarding incomes/living standard/poverty/labour market, access to labour market, education, housing, health state, type of household or community, and social participation to indicators delineating the social issues, such as institutionalisation, exploitation, human trafficking, domestic violence or drug consumption.

- **Unemployment rate**

The unemployment rate according to the methodology of the International Labour Office (ILO) might be regarded as an indicator of labour market vulnerability. In Romania, the unemployment rate registered constant decrease for the last six years and was of just 4.8% in the year 2016 (Figure 1).

Figure 1 Evolution of the unemployment rate in Romania for the period 2011 – 2016



Data source: Tempo online databank, Romania's National Institute of Statistics, www.insse.ro

By analysing the profile of unemployed, ILO notices that the highest unemployment risk have young individuals with ages between 15 and 24 years of age (20.6% in the year 2016), and this risk decreased constantly as individuals grow in age. The unemployment rate is higher for men than for women: this fact is not necessarily due to a better situation for women but to a higher percentage of homemakers among them (this might represent hidden forms of unemployment). In the rural area the situation is relatively similar – unemployment may be hidden as individuals identify themselves as farmers (more often it is in fact subsistence agriculture, with high risk of being actual poverty).

The unemployment level is determined to a large extent also by the work experience of the individuals. As a rule, it is considered that specifically individuals who have never worked are faced with the issue of unemployment to a larger extent. At the same time, the statistical data show that more affected by unemployment are certain individuals with work experience. Thus, in the year 2016, almost 75% of the unemployed have work experience. The same trend is noticed for both genders. Nevertheless, unemployed men are more affected by unemployment than unemployed women with work experience, this also due to the fact that persons with work experience are looking for more attractive and better paid jobs.

- **Vulnerabilities among youths: NEET population**

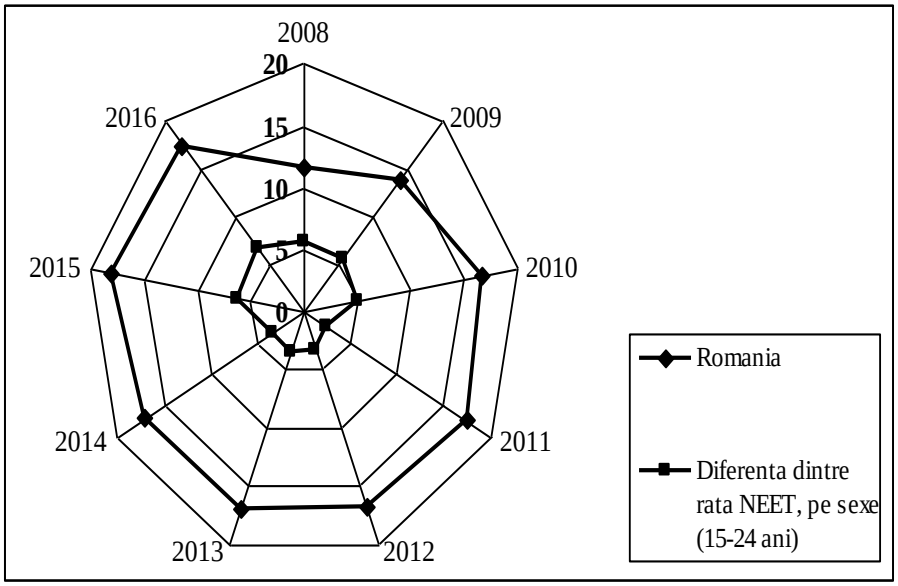
Another vulnerable group on the labour market is represented by the NEET youths. Even though since adopting the Lisbon Strategy the number of opportunities for accessing education and labour market increased,

unemployment among youths continued to be much higher than among adults, and with the outbreak of the present global economic crisis their numbers continued to grow at a worrying rate.

According to the latest Eurostat estimates, in the year 2016, the share of youths who are not gainfully employed nor follow an education or training programme increased to 11.5% for the population aged between 15 and 24 years of age in EU-27. This share varies significantly from one member-state to another: from 4.6% in the Netherlands, to 19.9% in Italy. Save for Germany, Austria, Cyprus, Latvia and Lithuania, in all other member-states the NEET rate registered slight decreases in the year 2016.

The analysis of the development of the NEET youths' rate in Romania, compared with the one registered at EU-27 level shows that between 2002 and the outbreak of the crisis, it had a more marked decreasing trend. If the gap between the NEET youths rate in Romania and the one of EU-27 was of just 8.6 p.p. in 2002, this rate diminished to 0.7 p.p. in 2008, and in 2016 it reached the value of 5.9. In Romania, the NEET youths rate decreased from 21.6% in the year 2002 to 11.6% in the year 2008, and increased to 18.1% in the year 2016 (Figure 2).

Figure 2 Evolution of the NEET rate for individuals with ages between 15 and 24 years of age and the gap between the NEET rates on genders

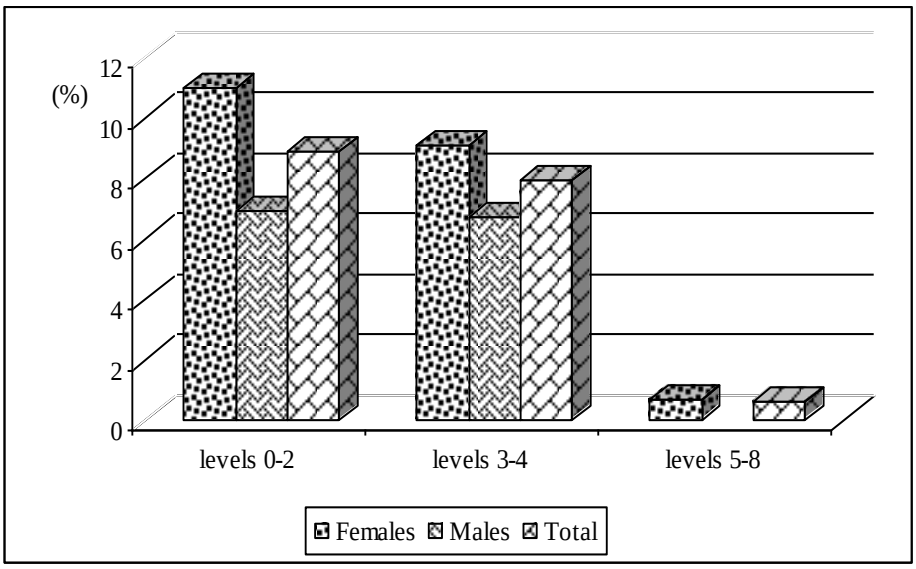


Data source: Eurostat statistics (online data code: [yth_empl_160])

In the NEET category are included young individuals, irrespective of their educational level. The analysis of the education level of the youths in the NEET category reveals that those with lower educational levels are overrepresented in the NEET group.

The analysis of the data regarding the structure of the NEET population with ages between 15 and 24 years of age, in the year 2016, shows that in Romania young individuals with a lower education level had the highest weight in total NEET population (Figure 3).

Figure 3 NEET rate in Romania, on genders and education level, in the year 2016



Data source: Eurostat statistics (online data code: [yth_empl_160])

Determinant factors of classifying youths in the NEET category

The emergence, size and structure of the NEET category is determined by a series of social, economic, personal and family factors.

The situation results from a complex interaction of institutional, structural and individual factors [Bynner, 2005], [Hodkinson, 1996], [Hodkinson and Sparkes, 1997]. In general, among the NEET generating factors might be reminded:

- emigration: youth *from among the immigrants* are by 70% more exposed to the risk of becoming NEETs than young individuals from other social categories;
- education level: young individuals with a *low educational level* are three times more exposed to the risk of becoming NEET than those with higher education;
- residence in *isolated areas* increases by up to 1.5 times the probability of becoming NEET;

- youths that have a *certain handicap* are by 40% more exposed to the risk of becoming NEET than the others;
- youths with *low household incomes* are more exposed to the risk of becoming NEET than those with average incomes;
- in the case of young individuals whose *parents were unemployed* the probability of becoming NEET is by 17% higher than for other categories of young individuals;
- in the case of young individuals whose *parents have a low education level* the probability of becoming NEET doubles;
- young individuals with *divorced parents* are by 30% more exposed to the risk of becoming NEET.

The data provided by various studies and analyses regarding the vulnerabilities among young NEETs from Romania have highlighted that a series of factors are determinant in increasing the probability of these youths entering into the NEET category, respectively:

- the diminishment of the activity rate of young individuals on the background of discouragement, emigration, or lacking work willingness;
- low level of youths' participation and representation;
- low information about market opportunities;
- surplus of graduates of higher education institutions in some economic or legal specialties, and their absence from technical higher education or training, and from the services' delivery education or training;
- insufficient instruments for the enrolment and inclusion of youths returning from abroad;
- insufficient training of youths for meeting the demands of the labour market;
- low attractiveness of jobs and lower wages for youths;
- stereotypes regarding the lacking experience and the professionalism of youths;
- weak competitiveness of youths on the labour market;
- mismatch between labour force supply and demand;
- insufficient opportunities of part-time employment during the study period;
- youths' migration from rural to urban areas;
- lacking capacities for supporting the youths;
- lack of provisions and norms that might protect youths at the level of collective labour contracts and conventions;
- lack of an efficient system of quality internship and practice stages;

- the component 'professional guidance' has minimum impact on the youths' situation;
- lacking financial-fiscal instruments that might support employers in hiring youths.

Despite the higher probability of accumulating more disadvantages, the NEET category is heterogeneous including a variety of sub-categories. Within this category on one hand are found individuals who have no control over the situation they find themselves in: young ill unemployed or unemployed with a handicap, and the young individuals caring for family members. On the other hand, other sub-categories of youths have full control of the situation they are in: those who are not actively searching a job, or do not continue their studies while there are no constraints for them in pursuing this because of other obligations or situations of incapacity.

As result of this statute for a longer period, a wide variety of the unfavourable social conditions might emerge: isolation, employment in precarious working conditions and low wages, criminality, mental and physical health issues, and failure to set up a family or divorce, etc. Each of these consequences brings with it a certain cost and, as result, the NEET status does not represent an issue only for the person concerned but also for the society and economy as a whole.

- ***Gender differences – a lasting vulnerability of the labour market***

Even though the legislation from Romania discourage gender discrimination, the economic practice favours it still, which leads to significant differences between the main indicators of the labour market for the two genders. An essential reason for the emergence of gender differences is represented by the difficulties encountered in managing the double status of the woman as mother and employed person in the labour market. At the same time, women are often met in informal activities.

- ***Demographic ageing and emigration – factors of labour market imbalance***

The demographic ageing process becomes more marked both in Romania.

On January 1st 2017, Romania's resident population was of over 19.63 million persons, on decrease by 122000 persons against January 1st 2016. The main reason for this decrease is the negative natural increase. At the same time, the weight of elderly increased (65 years of age and over), the demographic ageing index increasing from 112.1 (on January 1st 2016) to 114.4 elderly per 100 young individuals (on January 1st 2017).

The emigration phenomenon represents the second main reason for the country's population decrease. The balance of international migration was negative in the year 2016, the number of emigrants exceeding the number of immigrants by over 76000 individuals. During the year 2016, men emigrated in a higher share than women (55.4%).

This demographic ageing phenomenon risks to have effects of particular significance on the future cohorts and structure of labour force with consequences for the sustainability of economic growth and for the social system in the event that no policies will be adopted in the future for improving or even eliminating the negative effects of this process, on one hand, and for hindering its increase on the other hand.

Another dimension of the migration effect on the labour market is that it stimulates economic inactivity for those receiving money from abroad. The migrants' families that live from remittances opt rather not to work, than work in bad paid jobs. As result, the money remittances trigger increases in the reserve wages, respectively the lowest wage accepted for delivered work.

- ***Education as vulnerability and risk factor on the labour market***

Another element leading to an increased vulnerability degree of some individuals on the labour market is *school abandon*. At national level, the early school-leaving rate was of 1.8% for primary and secondary education, and of 3.6% for upper secondary education (high-school and vocational) and of 9.7% for post-upper-secondary education and foremen vocational training. In Romania's regions of development, this indicator for primary and secondary education exceeds the value at national level in the regions Centre (2.5%), West (2.3%) and South-East (2.1%).

The early school-leavers represent 3.6% from the young Romanians and 18.5% from them declare that they abandoned school for economic reasons. (Here are included the fact that they are too poor to afford the costs, or that they need to earn money to support their families, etc.). Taking into account that compulsory education is free of charge, these motivations might be an indicator of the informal expenditures born by the families with children at school for covering the costs of basic services such as heating and health infrastructure which the state budget attempts to ensure for all schools. The absent interest in schooling and the intention to start working are the most common reasons for leaving school early, followed by the learning difficulties.

By stimulating lifelong learning and by providing support in vocational reorientation, individuals with lower educational levels would be less vulnerable.

- ***Informal work – the greatest vulnerability of Romania's labour market***

Informal economy represents a persistent phenomenon at world level. The presence of unregistered activities known as hidden, grey, underground or informal economy is a common phenomenon shared by the world's countries, irrespective of their development level.

The increase of employment in informal work is not a unique characteristic of the labour market in Romania, but a shared feature of several countries and is usually widespread in transition countries. Subsistence agriculture, 'envelope payments', false self-employment of labour work and unregistered work are the most common forms of informal work in Romania.

The Country Report published by the European Commission[1] draws attention to the disaster on Romania's labour market: at national level is estimated that the number of individuals involved in the informal economy is of about 1.2 million which represents 0.6% from total population and about 15%-20% from GDP.

The non-agricultural sector and the constructions' sector are best represented in the informal economy, and individuals included in the grey economy are the lowest-skilled ones or those with a low education level.

The largest part of informal jobs is in the field of basic occupations. The most important part of informal employment is represented by self-employed in informal sector enterprises.

Informal employment of labour force is more widespread among youths (15 to 24 years of age) and among unskilled workers as consequence of the mismatch between the needs of the labour market and the educational system.

Conclusions

By and large (from the economic, social and cultural viewpoint), vulnerability associated to various forms of work is a reality of the labour market as it exists both in developed and developing countries.

The recent economic crisis highlighted the fact that individuals with the highest labour market vulnerability are the low-skilled from developing countries, as the unemployment rate and the one of young individuals in particular are high for this type of individuals.

[1] Romania's Country Report for 2017 accompanying the paper Communication of the Commission to the European Parliament, the European Council, the European Central Bank, and the Euro-group: the European Semester 2017: Assessment on progress regarding structural reforms, prevention and correction of macroeconomic imbalances, and results of in-depth reviews under Regulation (EU) no. 1176/2011

The transition periods of the youths from education to job became significantly longer and more complex as in previous periods, and the various obstacles and risks that youths are faced with during this transition contribute to increasing numbers in the NEET category.

The negative consequences of the NEET statutes are numerous and affect not only the individual and his/her family, but also the society as a whole. The exclusion of youths both from the labour market and from the educational or vocational training systems increases the risk of social exclusion of the individual and diminishes the reemployment probability.

The employment vulnerability in the countries of origin may be a factor triggering the emigration especially for low-skilled individuals. In the case of high-skilled individuals, the decrease in employment vulnerability might be seen as an explanation for emigration. The main issue of the high-skilled individuals in some developing countries, including here Romania, is the relatively low number of high-skilled jobs, and they will emigrate in order to find jobs closely linked to their skills, even if they know that employment vulnerability increases in the countries of destination.

Informal work, in absolute terms, generates 'incomes' segmentation' more for the skilled than for the unskilled individuals even if on long-term this trend levels in relative values. Undeclared employment vulnerability for the high-skilled individuals has higher impact on the real economy, in particular on the state budget than for the unskilled individuals.

In general, the vulnerability of those working without labour contract is associated with poverty, but on short-term it diminishes relative poverty and increases long-term vulnerability in particular the social one. On long-term, employment vulnerability without labour contract decreases the education level, and threatens economic development and promoting active policies of social protection.

Regarding the push factors for gender equality it was noticed that the change in attitudes and behaviour of the population, promoting equality of chances for all and combating stereotypes might be achieved first by education. The education system must foster equality of chances and reducing early school-leaving.

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CRISIS MANAGEMENT VERSUS RISK MANAGEMENT - A PRACTICAL APPROACH

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Abstract
When it occurs, a crisis can have a devastating effect on a company, can even put to risk its own existence. Without proper preparation and precise focus, a company won't be able to deal effectively with the effects of a crisis and recover to its previous state. Based on the principle "Better prevent than treat", the best way to cope with crises is to avoid them.
Business practice showed that crises can really be prevented and avoided. With the right prevention actions and a proper organizational structure, any company can identify and manage in due time any possible risks that can generate a crisis. The ***biggest challenge*** *for the management is to correctly assess the exposure to risk of the company and identify the key points to focus on in order to avoid any possible crisis. My own experience showed me that there is a pattern which appears every time a company faces a crisis. Based on this finding, I decided to create a* ***practical tool*** *that would make a bridge between the risk management and crisis management practices with the purpose of simplifying the job of the managers in assessing risks and, thus, preventing crises.*

Key words: *Risk management, crisis management, risk assessing, crisis prevention*

JEL Classification: *M21, O21*

Crisis management vs. Risk management

Both, crisis management and risk management are part of the general domain of organizational management and they both deal with threats that impact the well running of the organization's systems and the wellbeing of its individuals.

Crisis Management approaches the threats mostly from a **reactive** perspective; it describes actions that need to be put in place in order to

reduce as much as possible the negative effects of an event, which is, in general, unexpected.

Risk management approaches the threats from a **proactive** perspective; it is concerned with identifying and correctly assessing of a possible threat.

While **risk management** is treating risks individually, organizational **crisis management** is concerned also with identifying the connections between different individual threats, from different organizational areas and levels that, existing together, might add up to become a an increased threat and generate a crisis. From this perspective, crisis management has a more integrative approach.

On the other hand, **risk management** involves **identifying and assessing potential threats and finding the best ways to avoid those threats to materialize**, while **crisis management involves dealing with threats before, during, and after** they have occurred. In an extended version of the pre-crisis stage of crisis management, the actions are similar to the ones engaged by risk management, as shown in the table below.

Risk management actions	**Crisis management actions**
	1. Prevention of crisis
1. Identification of risks 2. Evaluation of risks 3. Mitigation of risks	a. Identification of risks b. Evaluation of risks c. Mitigation of risks
	2. Solving the crisis 3. Recovering after the crisis 4. Implementing changes for a better crisis prevention in the future

The process of identifying, assessing and mitigating potential threats as part of the larger crisis management process is called **crisis prevention**. Implemented within an organization as a continuous process, crisis prevention or risk management will diminish considerably the probability for the organization to face a crisis. The exposure to crises will not decrease to zero, as there is always a certain percentage of risks that can never be completely eliminated, but the chances of avoiding a crisis and recovering after a crisis will be much higher when the organization is adopting a crisis prevention/risk management approach.

Therefore, we can say that risk management and crisis management are not competing with each other as practices within an organization, rather, they are working together for the same outcome, which is increasing the capacity of an organization to cope in the most efficient way with any possible threat that might put in danger its functionality or even its existence.

A more practical approach

Following the COSO ERM (Enterprise Risk Management Integrated Framework) theoretical model, I have developed an algorithm based on a matrix which helps assess the level of exposure to risk of a company and prevent crises by identifying the stressing points existing in the organization that can generate possible crises. Based on the cube designed by the COSO ERM model, which is measuring the level of operational risk, I developed another two cubes that help draw a more complete image of the company by assessing its business and financial situation.

The assessment process is using the three cubes matrixes to collect information from three relevant perspectives:

1) **Business**
2) **Financial**
3) **Operational**

The overall assessment of the company, consisting of the three assessment processes made through the three-dimensional cubes – Business Cube, Financial Cube and Operational Cube, will be done as follows:

- ➢ Three sets of questions will be applied, each for every assessment process/cube
- ➢ The answers for the first two cubes, Business and Financial, will help assess the situation of the company in terms of business and finance and will depict the broader context in which the operational risk exposure will be placed
- ➢ The answers to the questions of the operational cube will create the data base for the mathematical algorithm that will calculate the operational risk exposure

a) Assessment of the business situation - Business Results Cube (BRC)

Business Results Cube is a matrix which helps the analysis of **the evolution** of the most important six **business indicators,** as identified below, both at **Entity Level** and **Business units' level (a – n)**, categorized in pre-defined stages (Figure 1).

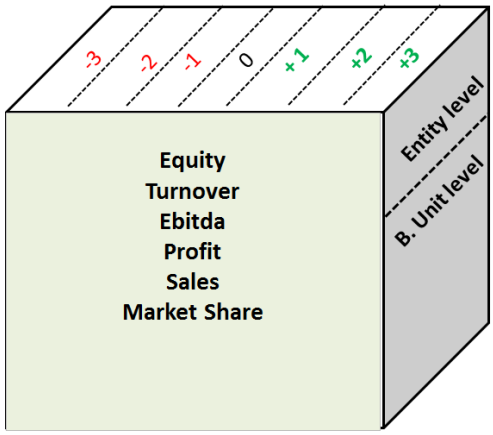

Fig. 1 - Business Results Cube (BRC)

The results of this cube will give the auditors an idea about the business aspects of the company that is under assessment and will help them put in the broader context the operational risk exposure.

b) Assessment of the financial situation - Financial Status Results Cube (FRC)

Financial Status Results Cube is a matrix which helps analyzing the evolution of the most important financial ratios at Entity Level and Business units' level (a – n), categorized in pre-defined stages (Figure 2).

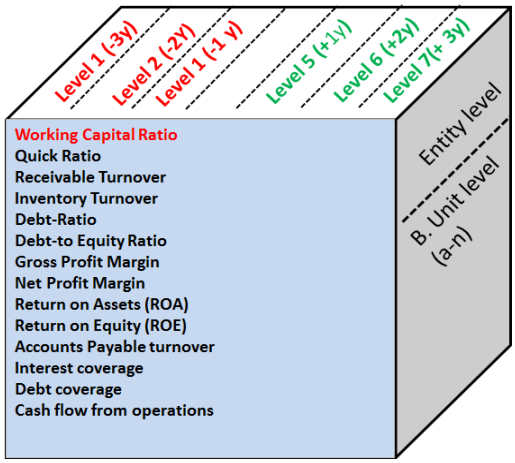

Fig. 2 - Financial Status Results Cube (FRC)

The results of this cube will give the auditors an idea about the financial stability of the company that is under assessment and will help them put in the broader context the operational risk exposure.

The financial indicators used in the financial matrix are the ones that are usually used in the financial analysis by bankers, investors, and business analysts to assess a company's financial status. They are used to identify company's strengths and weaknesses, analyze trends and show its competitive position, or more important to predict future financial crises.

c) Assessment of operational risks exposure - Operational Key Points Cube (OKPC)

Operational Key Points Cube is a matrix which helps assessing the level of exposure to operational risk of a company, taking into consideration the three dimensional vectors presented on the cube (Figure 3).

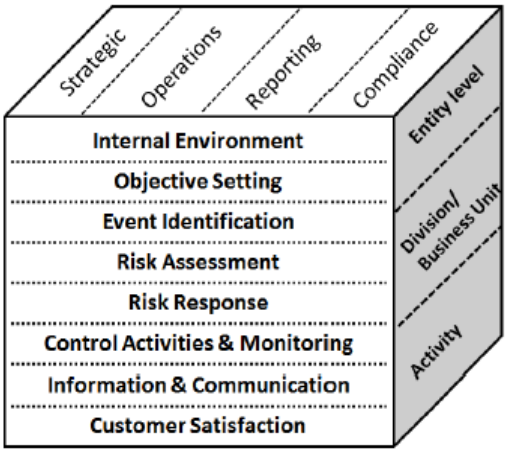

Fig. 3 - Operational Key Points Cube (OKPC)

The components of the cube can be explained as follows: there are four objectives (the top side of the cube), eight perspectives (the front side of the cube) and three organizational levels (the right side of the cube) that interact together in order to make the assessment.

Within the context of a business entity's established mission or vision, management establishes strategic objectives, selects the strategy, and sets aligned objectives. The entity's objectives can be set in four categories:

- **Strategic** – high-level goals, aligned with and supporting the company's mission and strategic guidelines
- **Operations** – effective and efficient use of the resources
- **Reporting** – accuracy and reliability of reporting process and tools
- **Compliance** – compliance with applicable laws and regulations (internal and external) and company's procedures

Every type of objective must be reflected at every level of the organization – entity level, division level or activity level, from the following perspectives:

- **Internal Environment** – it refers to the values of the company, how these values are viewed and addressed by the employees, the integrity and ethical values of the environment in which they operate; also, the tone of an organization, how risk is viewed and addressed by the entity's people, including risk management philosophy and risk appetite.
- **Objective Setting** - management must set objectives and then, chosen objectives must support and be aligned with the entity's mission and are consistent with its risk appetite. Should be analyzed how the objectives are set in order to support the company's strategy.
- **Event Identification** - Internal and external events affecting achievement of an entity's objectives must be identified, distinguishing between risks and opportunities. The ability of the company to identify the positive and negative events, which can affect or bring benefits to the company, must be analyzed.
- **Risk Assessment** - Risks are analyzed, considering likelihood and impact, as a basis for determining how they should be managed. The ability of the company to analyze risks, to understand the impact and to establish how these should be managed.
- **Risk Response** – avoiding, accepting, reducing, or sharing risk – developing a set of actions to align risks with the entity's risk tolerances and risk appetite. Should be analyzed if the risk response is according to the company's strategy in relation to risk and the attitude towards this.
- **Control Activities & Monitoring** - policies and procedures are established and implemented to help ensure the risk responses are effectively carried out. The activities engaged and tools used by the company to make sure that overall, the company is following the strategies set, objectives, targets and decisions taken.
- **Information and Communication** - Relevant information is identified, captured, and communicated in a form and timeframe that enable people to carry out their responsibilities. Effective communication also occurs in a broader sense, flowing down, across, and up the entity. From accuracy point of view and time wise, the ways of transmitting information across the company is a crucial point to be analyzed.
- **Customer satisfaction** – it shows the degree of satisfaction provided to internal or external clients. The external clients' attitude towards the services received represents a very important indicator for the image and the trust in the company. Also, the relationship with the internal clients is very important; the way they are served by their colleagues is a major

factor for determining the effectiveness of the cooperation between departments.

The mathematical algorithm

Based on the elements of the **Operational Key Points Cube**, I created a mathematical algorithm that is measuring and grading the importance of every element and the interconnections between them, is calculating the level of exposure of the company to operational risks and also is identifying the points of interconnection where the exposure is mostly present and tell us how high it is.

The applicable algorithm is based on:

1) Yes/no key questions project

Relevant questions (based on OKRC) are addressed regarding the existing situation of the company. Each and every question represents a point of potential risk (if the answer is "no").

2) Weighting the significance of the questions

Although the questions are relevant to the majority of business fields and companies, the significance of each and every one of them is different from one company to another and can be changed over time in certain companies. Also, the significance of the questions is measured differently by different persons within the same company, who are operating at different levels and areas (departments). Their assessment of the weight is subjective, reflecting their own view and managerial approach from every different perspective each of them represent.

The average of their evaluation creates the weight.

The mathematical algorithm calculates **the company's exposure to operational risk and maps this exposure in certain activities and levels.**

The algorithm presents the company's exposure to risk as a map. Based on the result obtained through the algorithm, the company receives a percentage of exposure to risk, which will be illustrated in colored alerts, as follow:

- **Red alerts** – high exposure, immediate actions required
- **Yellow alerts** – medium exposure, actions for improvement required
- **Green alerts** – no exposure

The practical result

The practical impact of using the algorithm is illustrated in the table below.

Risk management actions	Crisis management actions	Algorithm actions
	1. Prevention of crisis:	
1. Identification of risks 2. Evaluation of risks 3. Mitigation of risks	a. Identification of risks b. Evaluation of risks c. Mitigation of risks	1. Identification of risks 2. Evaluation of risks
	2. Solving the crisis 3. Recovering after the crisis	
	4. Implementing changes for a better crisis prevention	3. Implementing changes for mitigating the risks and a better crisis prevention

The algorithm is improving the process of risk management and crisis prevention, so that the actions of crisis management are simplified. Due to the measures taken based on the results of the evaluation through the algorithm, the crisis is avoided. Thus, the company will no longer use resources and time to repair the damages caused by the crisis and recover after such an event, but focus on its main business goals and targets. In the same time, it will be more protected in the future from possible dangers.

Author's background

The author has a long experience in assessing risks and managing crisis.
He is a retired Major from the Israeli Navy (served in combat and intelligence positions).
He has almost 20 years of experience of CEO in Insurance and Automotive industry.

CORPORATE GOVERNANCE: THE IMPACTS ON THE FIRM VALUE

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Abstract:
Corporate governance is the most discussed topic by academicians and researchers to prove its importance in the business world through highlighting the advantages of employing corporate governance in firms. One of the essential advantages is the firm's value, since it is considered as an important sign for the sustainable growth and summarizes the positive efforts achieved through best practices of corporate governance. In the Eastern Europe and Eastern Asia countries, the firms' values are increased positively and even the macro-economy has achieved growth since firms assure certain practices of corporate governance such as disclosure to investors and monitors mechanisms besides others such as ethic codes.

Key Words: E-Government, E-Governance, E-citizens, E-Business, Triangle Relationship.

JEL Classification: *M4, M2, M11*

1. Introduction:

The main issue in the financial markets is determined as a taxing problem and that influences the impediment capital allocation, which is named as an urgent problem to be solved in the financial markets. In accordance with that, to solve those issues there is a need for control mechanisms carefully designed to meet the interests of stakeholders. In their turn, these mechanisms enforce financial intermediaries and corporate governance to act as corporate monitors and in the meantime, these mechanisms summarize the information requested in financial markets. That is highly requested in emerging financial markets otherwise the issues in the financial markets keep affect the global investors negatively.

The researchers on this problem of information in financial markets propose that prevalence of it crate a conductive environment for adapting debt markets rather than public equity markets and in somehow that assures privatization in emerging economy countries. Basically, equity investors own the residual on the company and in the light of that investors should fully recognize risks and opportunities in firms, but that requests unfortunately a comprehensive assessment over the activities of the firm. Here, the role of other institutions such as brokers and investment institutions; is requested, since they should provide certain information in the favor of investors. Therefore, the quality of information financial markets has a role in developing the financial market itself through facilitate making investors' decisions and attract global investors in the long term. In accordance with that, disclosure standards are spotted for a higher quality and foreign firms are suggested to disclose about operating performance and other activities related to corporate governance besides publishing governance structure, which are important to increase the firms' value (Klapper & Love; 2002).

The growing spot of new researchers provides evidence on the linkage among illegal activities, corporate governance and firm's value and performance. Investors' rights, protecting and the minority interests quarter the corporate governance structure; and they are related negatively to illegal activities and positively support the firms' value (Doige et.al; 2002). Definitely, inefficient governance structure associated with poor legal base increase investing risk in emerging markets through basically reducing firm's value (Klapper & Love; 2002). Besides these suggestions, Black, Jan and Kim (2003) measure the effects of governance structure over the firms' value of South Korea and they suggest corporate governance is a dynamic motivation that explains the growth of firm's value. Many authors propose that the impacts of agency cost engender by lack of transparency and reduce investing opportunities of firms. Thus, corporate governance and firm's value is examined through analyzing transparency issues due to investors' prospective.

Evidentially, the broad measures of corporate governance in a firm predict higher share prices in emerging financial markets, that fact is found in single-country such as Russia (Black; 2001) and in the United States of America (Gompers, Ishii & Metrick; 2003). Accordingly, an economically correlation between corporate governance and firm's value is determined. In Russia; firms were state owned and the labor market was stable till 1990s, and then privatization and poor governance made the firms' values at the minimum level until 2000, when new codes of corporate governance was issued to assure good governance practices and these codes are sustainability adapted. The result is; many Russian firms look for external

investors since their values are increased due to good practices of corporate governance.

2. International evidence: corporate governance and firm's value

Corporate governance is related to the problems of agency theory: the separation of management and fiance, and it proposes a fundamental question is that how investors assure that they get revenue on their investment. In the thesis of Berle and Means in 1932; The Modern Corporation and Private Property; describes clearly the issues of agency theory due to the modern business environment assuring the need for qualified managers in order to make good decisions that serve investors' interests. In the light of agency theory, good practices of corporate governance help to the firm's value to overcome in two possibilities; throughout increasing the shares' prices, less cash flow and more dividends (Jensen & Meckling; 1976). Besides that, the firm's value can be increased by good governance practices through reducing the cost of shareholders' monitoring and reducing the capital cost (Shleifer & Vishny; 1997), accordingly, the mechanisms of corporate governances that solve agency's conflicts; increase the firm's value (Bruno & Claessens; 2010). In order to know how corporate governance affects firm's value, the channels that connect corporate governance and firm's value must be determined and then a certain firm's behavior will be defined to explain this relationship. That work has done by Klapper and Love (2004) through an association between the credit Lyonnais Securities Asia (CLSA) governance index and firm profitability, and relates this index to the market value of a firm.

In accordance with that, corporate governance affects the firm's value through ownership structure, managerial group, and board of directors. The ownership structure is a core element in defining firm value; where managers and executives hold a small part of firm's equity and in the mean time shareholders are too dispersed to enstrenght value maximization, besides that, firm's assets may be employed to benefit the interests of managers and executives rather than shareholders (Berle & Means; 1932). In other hand, more concentrated equity by managers and executives reduces the problems of agency theory but more likely reduce the firm value (Jensen & Meckling; 1976), in the light of that, market value has a positive relationship with management ownership.

Investors and related institutions mostly use agency theory to understand the relation between board of directors and firm value since the board of directors is an important control mechanism over the performance of managers and executives, therefore, the board is a framework of the agency theory to resolve agency problems (Fama & Jensen; 1983). The

board size is in a positive relationship with firm value, as it is big and firm value will be better in the financial market since the size of the board of directors affect positively the quality of firm decisions. But the size should not increase a limit that affect negatively on making decisions through extending procedures and allow chief of executive officer to enforce his power in the company to serve individual interests and that reduces the firm value (Jensen; 1993). Also due to Demsetz (1983), the diversity and outside of board are so important to empower the investors trust and increase the firm value in the financial market. The separation of responsibilities between chief executive officer and chairman is considered as an effective monitoring mechanism, otherwise, CEO will serve the interests of the chairman creating "CEO duality" which negatively affects on the firm value.

Table 1 The Relationship Between Corporate Governance Variables and Firm Value

Category	Variable	Relationship
Ownership Structure	Insider Share Ownership	+
Board Characteristics	Board Size	+ or —
	Board Diversity	+ or —
	Outside Directors Percentage	+ or —
	Board Meeting Frequency	+ or —
Managerial Group	CEO Duality	—
	Executive Compensation	+

Resource: Weiying, Baofeng (2009)

The governance effectiveness bases on the application of corporate governance principles that serve stakeholders' interests and assure transparency. The firm resources are used efficiently when good practice of corporate governance is applied. These practices help firms to attract low cost investment through enstrength the confident of investors and creditors (Gregory & Simms; 1999). Overall, that addes value on the firm and leads to serve the firm value in the financial market.

3. Governance evidence on firms:

To prove the relationship between corporate governance and firm value; two firms are selected to highlight this relationship. Gazprom and Petrom since two companies were public owned during the communist period and become private companies during privatization period. Both companies adopt corporate governance and international accounting standards to enstrength the financial situation and take a part in the domestic and international petroleum market. Besides that, the ethic codes and local culture value is reflected in the board of directors; the below table explains the important points of Gazprom and Petrom governance models.

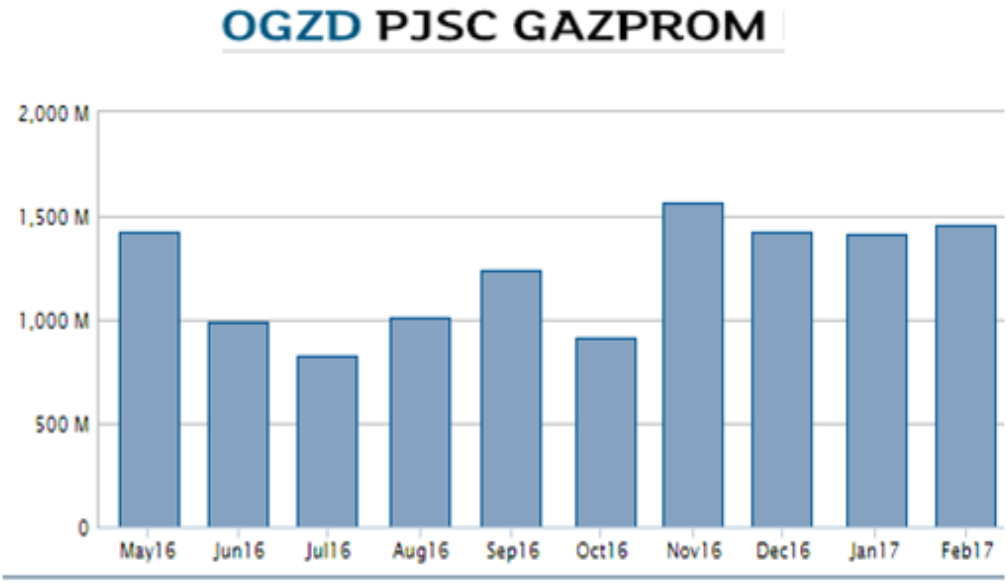
The Russian governance model characterized by an ownership structure with allowing to the state to play an important part in the management but the lack of shareholders protection leads to assure the importance of independent directors and to review the governance model in 2013. Gazprom takes the advantages of all these processes to become one of the leaders in the gaz market in Europe. On other hand , the Romanian governance model has been issued and adapted during the last two decades based on capitalism approach (Feleaga et al; 2011), European codes are mixed with local legitimated codes to formulate Petrom governance model.

	Gazprom	Petrom
OECD principles	Adopted	Adopted
Governance model	Single tier model	Double tier model
BOD Members' citizens	Russia, Former USSR (that returns to fact that Gazprom were presented as a national company, recently foreign capital takes a place in order to be listed in American Stock market)	European including Romania (that returns to fact that Petrom is a member of OMV group; majority of member of OMV are from Austria, and executive board's chief is Romanian)
Education level	Majority of members of board and committees carry PhD degree in economy and law, Aviation Institute	Majority of members of board and committees carry bachelor degree in economy and law, and MBA, Mechanical Engineering.
Experiences	Professors in universities, banks, Russian government, and related companies and institutions.	Banks, consultant, and related companies and institutions, Romanian government.
Women's advancement	5 members	1 member the CEO
Ethics codes	More reflect Russian values.	More reflect European-Austrian values and U.N
State sharing percentage	55.002% (other reason; codes reflects Russian value)	20.64% hold by Romanian Ministry of Economy
Foreign sharing percentage	26.955% (American Depositary Receipt: ADR)	51.01% (OMV group)
Accounting Standards	IFRS	IFRS
Remuneration	Based on members' contracts and other health and social benefits based on members' performance.	Based on members' contracts, market and giving shares.
Independence directors	Acceptable level (state influence)	High level

Source: SALTAJI (2014)

Due to the stock market date, the following diagrams are issued

Source: Romanian Stock Market
http://www.bvb.ro/FinancialInstruments/Details/FinancialInstrumentsDetails.aspx?s=SNP



Resource: London Stock Marekt
http://www.londonstockexchange.com/exchange/prices-and-markets/stocks/exchange-insight/trade-data.html?fourWayKey=US3682872078USUSDIOBE

The above data decalcifies the fact that employing corporate governance in both companies serves firms value in the stock market with taking in our consideration that share price may decrease and increases due to certain issues such as political and market demand issues. The professional performance of executives and managers reflect the high education of them

and that returns positively on the firms' performance, besides that, the independence of BOD grants an efficient controlling over managers' activities and in the meantime it empowers the trust of foreign investors. In addition, the positive relationship between sustainability and corporate governance will be reflected on the firm value since investors are looking for stable companies that run activities in the long term.

Conclusion:

The article supports a positive correlation between firm value and corporate governance. Besides that, in the dynamic environment, corporate governance is significant for sustainability aiming firms to improve the financial operations and enjoy low capital cost besides new investors and clients. Stakeholder theory of corporate governance presents corporate social responsibilities, which are so important to protect and serve the public interest. The corporate responsibilities will reduce the conflicts between the internal and the external stakeholders, also, in the long term it will support the firm value in the stock market.

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THE IMPACT OF HUMAN CAPITAL ON INNOVATION AND ECONOMIC GROWTH IN ROMANIA

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Abstract
The goal of the Europe 2020 strategy: smart, sustainable and inclusive growth would be achieved by using human capital and its abilities to innovate, to diffuse knowledge in manufacturing services, to develop creative industries and by making a great effort to create a research-intensive economy. The present paper highlights the impact of human capital on innovation and economic growth based on an econometric model. In our paper using annual data during 2000-2015, from UNESCO and Eurostat we prove a positive influence of human capital (expressed as gross enrolment in secondary school and the average personnel costs per employee in the Knowledge-intensive high-technology services) and innovation (expressed by patent application) on economic growth and productivity.

Key words: *human capital, innovation, economic growth, econometric methods*

JEL Classification: *C1, O1, O3, O4*

Introduction

Human capital is defined as "the knowledge, skills, competence and other attributes embodied in individuals that are relevant to economic activity" (Hartog, 1999, p. 1). It has an significant impact on innovation and on economic growth, based on the human abilities to create new products, technologies, services.

There is a large body of literature dedicated to human capital and its interaction with other economic variables like economic growth, competitiveness and productivities. Some of them refer to economic growth (Barro, 1999, Mankiw et al., 1992, De la Fuente and Doménech, 2000); other to labor productivity (Romer, 1990, Mankiw, Romer and Weil, 1992); and many to innovation and technological diffusion (Pistorius, 2004 Siggel,

2000, 2001, Horwitz, 2005, Bontis et all, 2000, Fuente and Ciccone, 2003, Diebolt and Hippe, 2016). The key values of human capital are knowledge as the result of formal and informal learning, experience and native abilities.

We investigate the relation between human capital, innovation and growth in Romania based on regression analysis. The Human development report for 2016 shows that Romania has an overall index of 74.99, ranked 38th from 130 countries included in report, close to Eastern Europe and Central Asia (75.02), that is third in the world after North America and Western Europe. Very important is the fact that the index has a strong performance (rank 25th) in the "65 and over age group" pillar, which reveals that Romania benefits from formally well-educated older population. The Report also highlights large diversity skills in the work force based on LinkedIn's membership profiles, but the perceptions of quality of member states' education system, staff training and the ease of finding skilled employment are still in deficit. Considering the future, the digital skill will dominate the demand for labor, and Romania must be prepared for these developments.

The paper is divided into four parts: first, a short introduction, second part deals with presenting literature review, the third focuses on the data and the model, and the last part presents the results of the model and conclusions.

1. Literature review

Bontis (1999, cited by Bontis et all, 2000, p. 89) argues that "human capital is important because it is a source of innovation" and could be considered an important factor of economic growth.

De la Fuente and Ciccone (2003) consider that human capital has a key role in increasing technological change and diffusion and is an important growth factor.

Kuznetsova and all (2016, p. 516) argued that "innovation is one of the mechanisms to ensure the country's economic growth" and that "the progress in the field of innovation can only be achieved by a person, his abilities, and opportunities" with other words, by human capital.

Mattalia (2012) used a model based on endogenous growth theory which reproduces the aspects of digital economy that focus on human capital accumulation, and proved that human capital accumulation is the engine of growth and that the productivity of schooling affects the economic growth in the long run.

Baldacci and other (2004, p. 15) using panel data with fixed-effect (LSDV) model for 120 developing countries from 1975-2000, argued that "GDP per capita is robustly and positively correlated with both education and health capital. This indicates that higher income levels and greater

human capital reinforce each other and contribute to a virtuous circle of growth and higher human capital". They also proved that "an increase in education spending of 1 percentage point of GDP is associated with 3 more years of schooling on average and a total increase in growth of 1.4 percentage points in 15 years" (Baldacci and other, 2004, p. 27).

Diebolt and Hippe (2016,) using literacy and numeracy for human capital, patent applications per million inhabitants for innovation and GDP per capita (in PPS) for economic development, found a significant and positive impact of human capital on the innovation and economic development.

Pelinescu, Elisei (2014) using a panel data for 28 European countries that cover 2000-2012 period, showed a positive and significant correlation between innovation expressed as number of patents and human capital expressed as graduate per 1000 of population aged 20-29, with a 4 year lags, that could be explained by the experience build-up within this period.

2. The data and the model

According to Lynch (1991), human capital can be accumulated by formal education, by experience in the working place and by informal education. However, measuring human capital is a difficult task.

One challenge in our model was to choose the right indicator that could be a good proxy for human capital, taking into consideration that there are a lot of indicators used as proxy, such as: education expenditure as percent of GDP (Nonnemen, Vanhoudt,1996), the average years of schooling of people under 25 year (Barro, Lee,1993; María Serén, 2001), the number of R&D personnel from private sector (Izushi and Huggins, 2004); the number of graduates of tertiary level in the labor force (Baldwin, 1971; Outreville; 1999), „the share of the population that has attained qualification at the tertiary level" (Mattalia, 2012, p..602)

There are many indicators used as proxy for human capital and to choose the best for our study we investigated the Pearson correlation coefficient between the most used indicator (expected years of schooling) and others. The Pearson correlation coefficient between the expected years of schooling (years) usually used as measure for human capital in many studies, and gross enrolment rate as percent of population in secondary school was 0.9060 and the average personnel costs per employee in the Knowledge-intensive high-technology services was 0.843091. Also, we evaluated the power of these human capital indicators in relation with economic growth expressed as GDP per capita and found a high positive coefficient of correlation between GDP per capita and gross enrolment rate as percent of population in secondary school (0.87455) and the personnel costs in the Knowledge-intensive high-technology services (0.993492).

Consequently, we decided to use in our study two indicators as proxy for human capital: the gross enrolment rate as percent of population in secondary school and the personnel costs in the Knowledge-intensive high-technology services. In order to highlight the relation between economic growth and innovation we used the patents application that it is a good proxy for innovation, because it reveals the impact of innovation in production and many other studies use it.

In our paper we used annual data during 2000-2015, from UNESCO Institute for Statistics, World Development Indicators, gross enrolment rate as percent of population in secondary school noted (gross_enrol_sec), and data from Eurostat: GDP per capita in euro (noted GDP_cap); average personnel costs per employee in Knowledge-intensive high-technology services (I64, K72 and K73, from table [htec_emp_sbs], noted pers_cost_kis) and patent applications to the EPO by priority year at the national level (from table [pat_ep_ntot], noted pat).

The data stationary in first difference are GDP_cap, pers_cost_kis and pat and the rest of variable are stationary in logarithm in second difference (the gross_enrol _sec).

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

Table 1 Descriptive statistic of variable

	GDP_CAP	**L_GROSS_ ENROL_SEC**	**PAT**	**PERS_COST_ KIS**
Mean	5075	4.50	41.81	1287.19
Median	5950	4.51	31.85	1457.00
Maximum	8100	4.61	102.10	1920.00
Minimum	1800	4.37	6.00	540.00
Std. Dev.	2198.03	0.09	32.16	490.25
Skewness	-0.29	-0.05	0.84	-0.27
Kurtosis	1.54	1.38	2.33	1.46
Jarque-Bera	1.65	1.76	2.19	1.77
Probability	0.44	0.41	0.33	0.41
Sum	81200.00	71.98	668.99	20595.00
Sum Sq. Dev.	72470000.0	0.11	15515.19	3605248.0
Observations	16	16	16	16

Source: the authors computation

The statistical analysis of the model reveals significant differences with a relative large standard deviation. Also, there is an asymmetry on the left side for the data series except for Pat, while Kurtosis increases from 1.38 (L_GROSS_ENROL_SEC) to a maximum of 2.33% (PAT).

The model is a multiple linear regression expressed as:

D(GDP_CAP) = C(1)*D(L_GROSS_ENROL_SEC,2) + C(2)*D(PAT(-3)) + C(3)*D(PERS_COST_KIS) + C(4)

The model is valid, the errors are non-correlated, homoscedastic and with normal distribution, according to the tests made.

3. The results and conclusion

The coefficients, probabilities and the T statistic of the model are presented in table 2

Table 2 The results of the model

Variable	Coefficient	Std Error	T Statistic	Prob
D(L_GROSS_ENROL_SEC,2)	13309.80	3463.158	3.843255	0.0049
D(PAT(-3))	12.67298	4.213519	3.007695	0.0169
D(PERS_COST_KIS)	1.697806	0.367444	4.620583	0.0017
C	259.1342	60.52794	4.281232	0.0027

Source: the authors computation

The R squares was 0.970913, the Adjusted R squared 0.9600 and the DW 2.45. The econometric model shows a clear positive relation between human capital, innovation and economic growth, that is aligned with existing economic theory. The limit of the model is linked with the small number of series. These results are also in compliance with the results of other studies. Sianesi and Reen (2003) concluded that the education has important effects on growth. Diebolt and Hippe (2016, p.7) cited a large literature on the impact of human capital and innovation on economic development and concluded that "both the relative patent application and higher education variable are shown to have a significant impact". Their study show that "human capital is the most significant historical factor to explain current patent applications per capita and current GDP per capita" (Diebolt and Hippe, 2016, p.25)

Aghion and Howit (2007) proved that the growth of output per worker is caused by technological progress in the sense of Schumpeterian theory in the long run.

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THE INFLUENCE OF MACROECONOMIC FACTORS ON THE DEVELOPMENT AND COMPETITIVENESS OF ROMANIAN COMPANIES

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Abstract:
Competitiveness is a complex concept which, at a general level, expresses the ability of individuals, businesses, economies, regions remain in the competition conducted at a national level and/or international and economic benefit in terms of a specific business environment. The competitive advantage of firms in the vanguard of technical progress is leading industries in which technological advances allow for price and not as branches standardized technology. Otherwise defined, is competitiveness: the ability of products and services to stand the test of favorable market conditions, resulting in constant increases in productivity and living standards.

Keywords: Macroeconomic Analyses of Economic Development; Cooperative Enterprises; Performance and Prospects.

JEL Classification: O11; P13; P17.

Competitiveness is a complex concept which, at a general level, expresses the ability of individuals, businesses, economies; regions remain in the competition conducted at a national level and / or international and economic benefit in terms of a specific business environment. Washington University Professor Carbaugh defines a company as competitive if it produces goods and services of superior quality or lower price than its competitors, internal or external.

From the standpoint of a nation, however, competitiveness and ability to express the country's ability to effectively use the global market opportunities. In the design classics of political economy, the emergence of demand and supply based upon free enterprise, private property caused by, neglect factors of time and place. By the very fact that the economic balance and to ensure only through market mechanism, businesses are doomed to

passivity, they are assured with absolute comparative advantage or on the relative.

The modern theory of "monopolistic competition coexist with elements, it is so multiform, for it occurs only on price, but also by how to produce, the quality of the product by the sales policy and poly / competition (competition) is imperfect, and this character, it is dynamic and effective".

This optical contemporary period specified on the competitiveness, the concept could be considered a competitive advantage. Competitive advantage lies in: multifactorial nature and procedural nature, the interference between the internal and external, productive use of available factors of production in the economy and efficiency with reference to trade between countries takes place.

The competitive advantage of firms in the vanguard of technical progress is leading industries in which technological advances allow for price and not as branches standardized technology.

Otherwise defined, is competitiveness: the ability of products and services to stand the test of favorable market conditions, resulting in constant increases in productivity and living standards.

There are three categories of factors that influence the developement:

1. Factors elementary (basic) for development include: climate and natural conditions, fertile soil, proximity of geographic location, the basic inputs in the process, health and environmental conditions, qualifications and work force structure, etc..

2. Advanced factors of development, between the comparative and competitive ones, are:

knowledge and evaluation resources (know-how, information, impact studies, cost-benefit analysis, etc..), Access to investment capital (financial and banking market, market capital), professional services, specialized approaches that allow global market (ITC, logistics, communication and distribution networks).

3. Integrating factors: competitiveness and quality, conditions of supply, financial and credit sector, business services, strong business associations and close links with research institutions, industrial cooperation, the domestic competition, attracted capital and resources, business strategies and sectoral.

Performance evaluation of national competitiveness to the world economy is based on elements: quantity (disparity between the country and global level) and qualitative. The competitiveness of Romanian economy resulting from the analysis of the balance sheets and enable to highlight correlations between key indicators and factors that have contributed

directly or indirectly to changes in economic phenomena. The analysis should be as broad, taking into account economic indicators such as size and profit growth, profit volume, rate of return, degree of indebtedness.

We can say that profitability is a picture of economic activity, both at micro and macro as well as the extent to which companies are competitive and are competitive in both domestic market and on the internal.

Participation of Romania to the EU market through competitive and quality requirements has affected economic performance in the sense of decreasing the percentage of businesses that have a profit (56.2%) and the corresponding increase in the percentage of agents who have incurred losses (43, 8%).

Analysis by type of activity shows a profitability rate structure consistent with a developing economy, which gives the sustainability of growth process. Although the highest rate of profitability is found in other services (hotels, education, social activities, insurance, rental cars) respectively 18.9%, however, transport (6.7%), construction (8.6 %) and manufacturing (5.8%) remain important sectors contributing to sustainable economic growth, create jobs, increase economic competitiveness and development of the middle class.

Indebtedness is expressed by the debt turnover. Romanian firms have been performing in this area. Decrease in indebtedness is a good thing, considering that, although many were hired investment spending as a necessity of modernization, however, firms were not obliged, but have pledged their own funds (as evidenced by the mobilization of significant balance sheet proportion of tangible assets increased from the previous year). This was accompanied by reduction in the outstanding share of turnover.

The main factors of competitiveness at the national level are:

I. National economic factors:

- local resources (natural resource endowment, labor, existing infrastructure, technology and financial resources, etc..)
- size and structure of domestic demand;
- technological level and efficiency of the parts industry and subfurnizorilor;
- industrial structure and competition.

These four factors create an economic environment of national economic, national context in which firms are born, compete and gain competitive advantage using it internationally. In the local resources are taken into consideration human resources, physical resources, technological ştiinţificeşi resources, financial resources and national infrastructure.

Competitive advantage occurs if the national firms can use a combination of factors required at low cost or whether the factors used are of a qualitatively higher level. Also firms gain competitive advantage if

domestic demand creates enough pressure to influence innovation accelerated. Also high standard of domestic customers can contribute to competitive advantage sporirrea it obliges companies to use high standards in quality, facilities, services and more.

The presence of effective and sub-suppliers of industrial sub-sectors related to potentiate the activity is very important in gaining competitive advantage. The final component of national economic factors relate to the existing industrial structure. Oligopolistic competition structures facilitate the conquest of new markets for the following reasons:

- national rivalries innovation creates pressure which increases the competitive advantage;
- oligopolistic structure creates competitive advantages for all industries with competitive prices, high quality, and serious long-term relationship;
- this structure creates a competitive environment that is difficult to recreate the competition with foreign rivals.

II. Action by government authorities is crucial for creating competitive advantage outside the company. The role of government is to influence and enhance the national economic factors referred to above. This influence can be performed directly through subsidies, industrial policy and other domestic demand or indirectly by shaping the standards and regulations. A crucial role of the government market is the fact that it represents a major buyer of goods and advanced technologies such as telecommunications equipment, armamament, computers, vehicles etc..

III. Mondo economics factors are made up of three main elements:

- U.S. deregulation has had four important consequences:
  - ● eradication strong inflation (lowering inflation below 4%);
  - ● loss of state control over interest rates and exchange rate term by strengthening financial markets;
  - ● directing the market economy at the expense of government;
  - ● Consolidation globalization of economies, which lead to face increased competition.
- The collapse of communist economic management systems - a phenomenon with many economic and political implications.
- Internet explosion - so soon the whole world will be "a global network" and everyone will be able to receive and deliver messages for any purpose, including to buy or sell.

Globalization of markets has led to globalization of marketing. Global marketing refers to encourage research initiatives to find new market segments or niches across the globe, harnessing the opportunity of buying

and selling of products and services internationally. Globalization of markets has triggered a phenomenon that at first glance seems paradoxical, namely the individualization of customer needs. Gradually trade policy of the company go from a segmentation of national markets to absorb a transnational consumer segmentation with identical behavior in several countries. Product-market couple move from the national dimension to the European dimension even international. Production is also not standardized, but flexible and the company is no longer considered an isolated entity, it întereţine with suppliers, distributors an ensemble of relations which gives a high degree of flexibility in operation.

IV. Other factors affecting competitiveness are:

- Structure favoring foreign investment and domestic demand helps to modernize the economy.

On very large scale foreign investment may have adverse effects located mainly at the level of industrial specialization (in many areas of indigenous firms are unable to defend their market positions in the foreign firms).

-Demands increasingly higher that imposes environmental protection.

-Development of phenomena and processes in the global economy.

According to Michael Porter, the key profitability of a firm is given by the industrial sector for economic attractiveness. In any industry, there are five forces that determine the profitability of its structure: the entry of new competitors, the existence of substitutes, bargaining power of buyers, bargaining power of producers and economic rivalry. The importance of the five forces varies from one industry to another depending on economic and technical characteristics change over time (M. Porter, 1980). Michael Porter distinguishes three types of strategies that can be applied by companies to create competitive advantages: cost leadership through, differentiation and focus. Appropriate strategy allows the company to capitalize on strengths and to protect themselves from adverse effects of the five forces. Each strategy includes a choice of three different pathways to ensure competitive advantage.

Porter defines four stages of national competitive development:

- Stage of development due to factors of production;
- Investment driven stage of development;
- Innovation driven stage of development;
- Stage of development determined by wealth.

The transition from one stage to another requires a transformation industrriale infrastructure, financial system, technological standards and mentalities. Also a very important cultural values that have forces behind creating and distributing wealth. To explain the success of similar schemes

adopted by different countries is necessary to understand the deep cultural ethics and social values of those nations.

In the first three stages of economic development, national competitiveness is growing steadily, and in the fourth economy may decline. Following the four stages of developing the competitiveness of a nation defined by Porter, Romania could be between the first and second stage, and between that determined by factors that determine production and investment.

Competitiviate notion has uses in various ways at various levels. The term is used in national competitiveness, but also sequentially for narrow areas such as international trade, market and other consumer goods. The level at which it generates is the microeconomic competitiveness. A country becomes competitive when you manage to build that environment that allows each company to become effective added value, to be able to survive or develop in any national economic environment, especially internationally. The level at which it maintains and strengthens the competitiveness of the macro. The country maintains or improves its profitability internationally when it decides to apply the set of economic policies necessary to stimulate the achieving optimum expansion at the micro level.

A significant factor driving the foreign trade was the opening of markets through free trade agreements, ensuring that economic development increases in trade, especially with developed countries. Despite progress, the competitiveness of Romanian industry is still modest, as shown by significant differences recorded by Romania to the most developed countries in the European Union in terms of indicator Gross Value Added (GVA) per capita, whose level is close to 10 times lower, smaller differences, but still important, is recorded with the rest of the Community. It should also be noted that after 1995, GVA in the evolution of the industry was permanently placed in the industrial production, which highlights the disturbing reality of the existence of a higher resource consumption value newly created, ie an inefficient productive activities due to competitiveness low industrial products.

The contribution of manufacturing industries in this state was different, however. Analysis of the potential industrial sectors GVA generation after 1996, when it appeared that the gap in GVA over, indicate that, in manufacturing, some sectors have proven performance, recorded above average rates of GVA (Tobacco, Leather and footwear, wood processing, publishing, printing and reproduction of recorded media, other non-metallic materials, metal buildings and metal products, machinery and equipment, equipment and radios, TV and communications, medical devices and equipment, precision optics and movements), others were located, with variations about the mean, and some were below average, requiring

intensive efforts to modernize and streamline their upper (oil processing, coal coking and nuclear fuel, chemicals and synthetic yarn artificial Metallurgy).

In light of these figures and concrete situations relevant to the competitiveness of industrial activity in Romania, the total manufacturing sector and its requirements is evident that significant improvement in the level, boosted by the integration of Romania into the European Union, the confrontation default Romanian producers with competitive pressures in the European Single Market. The required increase industrial competitiveness requires appropriate measures undertaken at different levels, derived from a unitary, shaped according to the results of a detailed and comprehensive analysis of the real competitive advantages, existing and potential posed by products / services and industrial sectors, coordinates economic and social development ahead of Romania, and affirmed trends worldwide, particularly in the European Union.

Possible lines of future action to increase economic competitiveness, industry and industrial firms. Increasing industrial specialization and complementarity with the European industry.

Excessive diversification of the Romanian industry during the regime pursued a centralized economy, which led to a more pronounced economic autarhizare country was painfully punished after 1989, when lack of competitiveness of products / services and industrial firms Romanian international markets due just excessive diversification, has led, among other factors, strong contraction of demand for such products / services and thus their production.

Creating and strengthening competitive advantages - cost, technology, quality, brand image, etc.. The economy, its sectors, industrial sectors and firms, which became the strongest weapon in dealing with strategic international markets, is based precisely on the progressive specialization of economic entities listed, the essential idea that the acquisition of higher level competitiveness is conditioned by the deepening of specialization in areas that have competitive advantages in relation to actual or potential competitors.

After 1989 the lack of an industrial policy focused on creating and Romania's superior capitalization of existing or potential competitive avantejelor has shown negative effects in several major ways: i) insufficient restructuring of manufacturing as a whole and its sectors, due to both absence of clear signals about the goals of the Executive of "forging" a new industrial structure progressively better and more competitive, but also the inability of many companies to implement appropriate strategies (outsourcing of support activities, the economy range, economy of scale), ii) inadequate capitalization of the advantages of location available or you can

Romania iii) attracting foreign investors modest, low foreign direct investment compared to the levels in other countries of Central and Eastern iv) innovation potential instability, poor connection of research & development, technological innovation and diffusion of productive work requirements, etc..

Identifying the optimal level of specialization / diversification of the Romanian manufacturing industry is about finding - the specialists in industrial development, decision-makers from government bodies and productive units, the Chambers of Commerce and Industry, the scientific community members, employers, unions, professional associations - their appropriate responses and solutions to some simple but essential questions: What happens? (Correlation between the classification of products / services offered by the companies producing the range of effective demand for products / services on domestic and international markets) and how to produce and sell? (The best routes, techniques and methods of production and marketing to ensure significant growth in value added products / services Romanian).

Reasonable answers to these questions can indicate major structural changes must occur in manufacturing so as to ensure:

- Exploiting the competitive advantages conferred by superior tradition of industrial activity in some sectors, the existence of a production and marketing know-how provided by foreign companies or acquired through the acquisition of licenses favorable endowment of production factors (raw materials from domestic production suitably qualified workforce and low costs);

- dissemination of favorable results obtained by numerous companies in terms of competitiveness and gain advantageous positions on domestic and international markets;

- increasing the contribution of manufacturing to the recovery and modernization of other sectors of national economy - primarily agriculture and transport and telecommunications infrastructures;

- Sustained development of industrial medium and high technology, high capital intensity and high skill labor with significant added value, their share is a relevant measure of the degree of modernity and competitiveness of the industry.

In relation to these requirements, structural changes envisioned in the medium term are as follows (expressed in their respective industries share in total manufacturing production)

- Possible development of industries: apparel, footwear, furniture and wood processingCrude oil, machinery and equipment, metals, glass, ceramics and building materials, tractors, agricultural machinery, vehicles, computer and electronics, food and beverage;

- Keeping a relatively constant share of industries: chemical, pulp, paper and cardboard, rubber and plastics, machinery and electrical equipment.

It is clear that those industries decisive word regarding their future will be undoubtedly the market. Efficient use of the opportunities and avoid potential threats in the market depends ultimately on the ability of firms to develop distinctive competencies and competitive advantages, to be able to face intensifying competition in the domestic market and continued international markets. Through appropriate measures of industrial policy, the state can increase this capacity in industries where there is clear competitive advantages and potential, as well as those who have a strategic interest deosebit.Principalii factors that will influence future developments in industrial sectors, along with the role determinant of the market will be:

- the pace of restructuring to achieve technological, financial, organizational and management, designed to significantly improve total factor productivity and competitiveness of products / services;
- production capacity to adapt effectively to the dynamic requirements of domestic and international markets, the rules and standards governing the operation of acetic markets;
- the endowment with factors of the availability of tangible and intangible factors (R & D capability, innovation and technological diffusion, the qualifications of the workforce);
- the ability to find sources of funding for the modernization of productive activities;
- exploiting location advantages to attract foreign direct investment more intense;
- development of industrial services, especially the training (financial consulting, marketing, IT, environmental, legal).

In light of these considerations we can conclude that the deepening of specialization and complementarity in terms of manufacturing industry sectors with the Romanian counterparts at the European Union, Romania's industrial policy and, therefore, changes in industry and industrial sectors should be included on the following main coordinates.

Forging progressive-industrial production structure by harmonizing the requirement that the deepening of specialization to ensure complementarity of EU countries, both within the industry as a whole and that of industrial sectors to increase their competitiveness and higher recovery existing and potential competitive advantages;

Intra-structures compatible with existing and future European Union countries, that deepening complementary sectors, firms and production in Romania with the corresponding EU countries;

-Stimulation of the processes of economic agents to increase their capacity to cover domestic demand and improve the structure and efficiency of goods and services exported;

-Ensure the sustainable development of the Romanian industry base by encouraging fair and effective competition between firms and develop a favorable environment for business and entrepreneurial, which means intensive development of small and medium enterprises sector as a strong economy, exposure to the rigors of big business market, significantly reducing state aid and better targeting them to the horizontal measures, improving and simplifying the regulatory system, particularly the system of taxes for businesses;

-Promotion of strategic alliances, the holding companies and groups to increase ability of traders to successfully face the pressures of international competition, in the context of globalization, their potential to exploit the benefits of economy of scale and economies of scope;

The strong growth potential, national R & D, technological innovation and dissemination, including that at the microeconomic level, capitalizing on the benefits of specialization and complementarity of production;

More fine-tuning the supply of education and vocational training to the growing demands of industry specialization and its complementarity with Community countries industries;

- Significant improvement of business environment by ensuring proper conduct of market competition, establishing a coherent and stable legal framework, capable of ensuring a clear and strict adherence to property rights, strengthen financial discipline, strict compliance with contractual obligations;

- Linking judicious policies closely linked to industrial policy - competition policy, trade policy, R & D policy and innovation policy, SMEs development, regional development policy, environmental policy, education policy; increasing cohesion objectives on economic plans, social and environmental impact and coherence of policies pursued generally on these plans are measured against targets set in the long term.

The approach and commitment to these areas should be a preponderant major horizontal neutral on the measures and actions to stimulate entrepreneurial spirit and intangible investments in order to intensify the process of structural adjustment and modernization of industrial activity.

Prevalence of horizontal approach does not exclude recourse to vertical or sectoral policies, but must appeal to them greatly restricted to specific cases where national interest or business prospects of certain industrial sectors or serious social issues play a very special role.

Ways that can ensure greater participation of Romanian researchers at the Community Framework Programmes are multiple:

- Closely matching national R & D programs with the EU and the financing of collaborative projects;
- Ensure effective functioning of the National Authority for Scientific Research, implicitly interim management body for the field of Structural Research & Development;
- Support mobility of researchers, including the access of Romanian researchers at major research facilities that exist within the Union;
- The establishment of programs for youth researchers, taking into account the requirements of the European dimension of scientific careers;
- Implementing a system of incentives for scientific & research institutes and researchers involved in technology development projects funded by the EU;
- Stimulating the formation of national research networks, particularly in areas relevant to the European Research Area, and their connection to existing networks in the EU;
- To enhance information dissemination and support activities for project participants, using the network of National Contact Points established for that purpose;
- Increased promotional activities, training and consulting on the priorities of the Framework Programmes for Research and Technological Development at the regional, institutional and national programs of R & D and Innovation.

Conclusions

Actual historical process of transition from industrial civilization to the post-industrial type, intensive in terms of information and knowledge, which is currently undergoing a major part of the world countries, mainly developed ones, highlights the role of human capital in social development, human resource quality, assessed in terms of their level of training to become decisive. Currently, the country's economic strength is measured not only in terms of the amount of virgin values (GDP), but also in the national innovation potential, the national labor quality intellectual and human terms, finally, the ability to generate new ideas and to innovate.

An important component of the national education system is the training and professional development and retraining. Structural adjustments occurring in the pattern of productive activities and units of the economy must be preceded by a period long enough for appropriate restructuring of knowledge to make them suitable new requirements arising from changes in products. Meeting this requirement is achieved through training, process modeling labor supply over demand and aspirations of the productive

members of society, as well as retraining process that seeks to maintain or reintegrate the labor force restructuring.

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EVALUATION OF THE ECONOMIC ACTIVITY THROUGH EXPERTS SYSTEMS

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Abstract:
The paper presents the complex process that represents the evaluation of the economic activity through experts systems. The evaluation of the economic activity of a company is based on how the assests are used in the process of businesses and how the combination of different factors are emerging in different results. An asset is by definition a resource controlled by an entity, the result of past events, and which is expected to generate future economic benefits. Certain economical assets are long-term assets used in the production of goods and services and are distinguished from fixed or tangible assets by lack of physical properties. They embody certain long-term legal rights or competitive advantages created or acquired by an enterprise. To evaluate these assets may be used expert systems that had a numerous instruments such as a knowledge database, rules, a programming language and other tools that permit to store different scenarious with a combination of data which conducts to various results. Every scenario may evaluate a certain asset that can be use in a combination with other assets and with an inference engine it can be choose the alternative that will provide competitive benefits.

Key words*: Economical assests, business rules, knowledge database, programing language, expert systems.*

Coduri JEL: C23, C26, C38, C55, C81, C87

1. Introduction

Intangible assets are long-term assets used in the production of goods and services and are distinguished from fixed or tangible assets by lack of physical properties. They embody certain long-term legal rights or competitive advantages created or acquired by an enterprise.

Intangible assets generally arise as a result of past events and have three main attributes:

- have no material substance,
- can contribute to obtaining net economic benefits from the holder;
- are legally protected or through a de facto right.

An intangible asset also includes the requirement for that asset to be identifiable, controllable, separable from the business in question. Given that the asset may be alienated only as part of the profit-making activity in which it participates, it is considered that it can not be dissociated from the goodwill associated with that asset

Activities, being accounted for in this way. From the economic perspective of the assessment, there are two key issues that need to be clarified about intangible assets, namely:

a) Which economic phenomenon is qualified as intangible asset?

b) What economic phenomenon is an indicator of the value of an intangible asset?

The distinction between the economic existence and the economic value of an intangible asset is essential for its assessment.

Just economic existence does not give intangibles and economic value. A registered trademark which is not exploited for the purpose of producing an income has economic existence. Over the protection period but not economic value and, as a consequence, can not be registered as intangible asset [1], [4]. In order to acquire an economic value, it should generate effects. A registered trademark that does not contribute to earning any income, but which is used as an entry barrier could have both economic existence and economic value. Thus, a definition of intangible assets should state that they are intangible, business-specific, have both economic existence and economic value, even if it is indirect.

2. The atributes of economic assets and the economic value of those

For an intangible asset to have a measurable value from the perspective of the economic analysis, it needs to have some additional attributes:

- generate a measurable amount of economical benefit to the owner. These may result either from an increase in revenue or as a result of cost reductions; such benefits are sometimes measured by comparison to size. The results available in the absence of the intangible asset and can be measured in several ways: net profit, net operating profit, and net cash flow;
- be able to increase the value of other assets with which he is associated; such assets could include all assets within the enterprise.

Economic phenomena that do not meet the specific attributes described above may not be qualified as distinct intangible assets. It is the case of descriptive phenomena such as:

- High market share of the owner / user;
- High profitability of the owner / user;
- Positive general reputation of the owner / user;
- Monopoly of the owner / user;
- Other economic phenomena.

Although these "descriptive" terms are not qualified as intangible assets, they may indicate the existence of distinct intangible assets that have economic value. Control, in the context of the definition of intangible assets, means the ability of an enterprise to obtain economic benefits through the holding and operation of that asset and to restrict access to these benefits.

In the case of intangible assets, control is normally provided by law: a franchise or license entitles the enterprise to access benefits over a fixed period; A patent or brand restricts the access of others to those benefits.

In the absence of legal rights, control is, however, more difficult to prove. However, control could also be achieved through physical custody. This would be the case where, for example, technical or other knowledge obtained from a research activity is kept not public.

If an enterprise is expected to be able to obtain economic benefits in the future but is not controlled by legal rights or physical custody, it is considered that it does not have sufficient control over those results in order to recognize the intangible asset. An enterprise could benefit from a portfolio of clients or a qualified team of staff. While it may be appreciated that there is a high probability that clients in the portfolio continue to seek professional services from the respective enterprise or that the group of specialists continue to offer its services in the absence of legal or physical custody of clients or staff, The enterprise has insufficient control over the estimated future benefits determined by their presence, and the conditions for recognizing them as assets are not met [2], [3].

A product may be associated with one or more intangible assets. For example, a certain drug can be associated with some legal rights:

- The only production right guaranteed by the existence of a patent;
- The right to trade under a given brand, secured by ownership of the trademark;
- The right to protection on the packaging used in the distribution of the product.

Every legal right does not necessarily represent a separate intangible asset. In order to be considered as separate intangible assets, the legal rights involved in selling the product and obtaining income must be independent of each other, which means that they must meet the following conditions:

- Their values can be measured separately;
- The cash-flows associated with each of them can be evaluated separately;

- There is the possibility of their separate alienation.

If it is possible for the production and distribution rights to be valued and negotiated separately, then they can be recorded as separate intangible assets.

However, it may be unlikely that the distribution process can be further divided. Brand names and packaging protection could be parts of the same intangible asset.

Generally, analysts classify intangible assets in a few categories. Assets in each category are similar in nature and function.

A common group of intangible assets is as follows:

- Intangible related to technology (proprietary technologies, know-how, systems and procedures, manuals and technical documentation, etc.).
- Intangible customer-related (customer lists, customer contracts, etc.).
- Intangible related to contracts (contracts with suppliers, license agreements, etc.).
- Intangible data-processing (computer programs, databases, etc.).
- Intangible related to human capital.
- Intangible related to marketing (business brand, product brand, etc.).
- Intangible location.
- Intangible assets in the form of goodwill.

Goodwill is a broad concept, and targets the company's ability to make additional profits. It groups all the elements indispensable to it:

a) Customer-related items:
- Number and quality of customers;
- Customer loyalty and attitude towards the enterprise;
- Opportunities for customer development;
- Good customer relations.

b) Suppliers:
- The choice of suppliers;
- Quality of service provided by suppliers;
- The opportunity to compete after discussing the supply conditions.

c) Staff related items:
- Competence of the staff;
- Relationship between staff and management.

d) Relations with banks:
- The quality and stability of the relationship with the bank;
- Credit lines;
- Long-term borrowing capacity.

e) Relationships with third parties:
- Payment of obligations to various social, tax bodies.

f) Business patrimony elements:

- The quality of productive assets;
- The quality of the premises (public catering establishments, commercial units);
- Quantity and quality of IT equipment.

g) Factors related to the production of the enterprise:

- The quality of the manufactured products or services rendered,
- The reputation of products and services;
- Competitive prices.

h) Business management elements:

- The quality of the people in management;
- The quality of the driving methods (the driving methods used).

There are classical approaches used to assess intangible assets. The cost-based approach includes several related valuation methods, differentiated by the type of cost used.

There are two fundamental cost categories that can be considered in the evaluation:

- Reproduction cost;
- Replacement cost.

There are subtle but important differences in the definitions of these types of costs.

The reproduction cost considers the recreation of an intangible asset identical to the one evaluated. It represents the estimated cost of constructing, at current prices at the date of valuation, an intangible asset identical to the one valued, using the same materials, production standards, design and quality of labor as for the intangible asset under review.The replacement cost considers the cost to recreate the functionality or utility the intangible asset in question, but in a form or appearance that may be different from that of the intangible asset evaluated. It represents the cost of recreating, at current prices, an asset having the same utility as the intangible asset of the valuation. However, the intangible asset with which the replacement would be created would have been created with modern methods, in line with current standards, by resorting to modern design and a highly skilled workforce. Consequently, the intangible substitute asset may have a greater utility with respect to the intangible asset [2], [4].

Another cost category that can be used is the historical cost that involves identifying the costs incurred over time with the development of the intangible asset concerned and updating them at the valuation date by means of an update factor calculated by taking into account a The corresponding inflation index. These cost categories provide a reasonable measure of the value of intangibles when two conditions are met. The first is to include all the components of the intangible costs and the second to the

correction of their value according to all forms of wear. Regardless of the type of cost to be estimated (breeding cost, replacement cost, historical cost), the analysis generally includes the following four cost components:

a) the material costs that include the expenses related to the tangible elements of the intangible development process; They are usually insignificant in relation to the global cost of developing an intangible asset.

b) labor costs typically have a significant share of the cost involved in the development of a intangible asset; They typically include the wages and bonuses of employees and all those engaged in the development of intangible assets; Even if historical records can be used as a basis for estimating labor costs, they need to be updated to reflect current costs at the time of valuation.

c) Fixed costs include utilities expenses, secretarial costs, costs involved in managing the respective activity by management, etc.

d) The profit that the creator of the intangible asset would have required to pay for his work; this cost element reflects the value in the sense that, if an intangible asset had externally developed to the enterprise, its creator would amplify the costs to include the profit element.

For the purpose of evaluation, the evaluator should consider the concepts of defunctionality and utility. Functionality is an engineering concept that designates the intangible asset's ability to perform its function for which it was originally designed.

Utility is an economic concept that designates the intangible asset's ability to provide an equivalent amount of satisfaction. Although the intangible asset considered as the basis of valuation performs the same task as the valued intangible asset, it may be more performing than the asset in question, thus providing greater satisfaction. The replacement cost determines the maximum amount a prudent investor would pay for an intangible asset. Insofar as it is considered that the intangible asset evaluated is less useful than an ideal replacement asset, its value should be adjusted accordingly [3], [5].

The evaluator must be careful to adjust according to this factor in the estimation of wear. Cost and value are not the same. Reproduction or replacement costs, almost always, will exceed the value because, in order to obtain the latter, the degree of wear is also taken into account. In order to determine the value, the cost of an intangible asset (replacement, breeding, historical) must be adjusted according to the degree of wear.

Because the intangible asset being evaluated is not completely new, it is theoretically inferior to a new asset that is the basis of valuation for cost-based approaches.

The forms of wear and tear that are generally considered in the cost-based valuation of intangible assets are as follows:

- functional wear and tear, reduction in value due to the inability of the intangible asset to perform the tasks or to ensure the economic utility for which it was initially conceived;

- Technological wear (form of functional wear), the decrease in the value of the intangible asset due to improvements in technology that make an intangible asset inferior to its replacement ideal; This form of wear and tear occurs if, due to improvements in design or production technology, another intangible asset is deemed to be more performing than the intangible asset evaluated; Often technological wear is considered a specific form of functional wear.

- External or economic wear is the reduction in value due to the effects, events and conditions outside the intangible asset that are not controlled by the current use or condition of an intangible asset; The impact of economic depreciation is usually out of control of the intangible asset holder and is generally considered to be irrecoverable.

Regarding the measurement of wear and tear, special care must be taken to differentiate the wear and tear of intangibles from that associated with the tangible assets involved in the activity. Qualitative methods such as Life Cycle Analysis and Remaining Life Analysis may be useful in assessing the degree of wear and tear of an intangible asset. In estimating the size of the functional, technological and economic wear of an intangible asset, considering its current age and estimated life expectancy, it is essential to properly apply cost-based methods.

The essence of these methods is to determine the value of intangible assets based on the additional profits expected to be obtained by the enterprise as a result of the holding and operation of the asset.

Applying this method involves a sequence of steps:

- Determining the additional cash flows that are expected to be obtained with credibility of the enterprise following the exploitation of the respective asset;

- Determining the explicit forecasting period (the estimated probability of the expected economic lifetime, the duration of which is expected to generate the additional cash flows);

- Determining the rate used to update (capitalize) the estimated additional cash-flows.

It should be noted that higher valuation rates (capitalization) are used for the valuation of intangible assets, due to the higher risks of not realizing the forecasts for obtaining estimated cash-flows.

Updating involves a limited (finite) time period. Capitalization involves an infinite period. These effects will be generated infinitely.

Additional net profits estimated to be generated by intangible assets may arise from the impact of their operation on either the enterprise's revenue or costs.

From the point of view of revenue growth, an intangible can lead to:

- increase sales volume;
- obtaining a higher price;
- winning new markets;
- obtaining a dominant (monopolistic) position on the market;
- providing future business sources;
- developing new products and new markets;

From the point of view of reducing costs, an intangible can lead to reducing wage costs, reducing utility consumption, reducing scrap and losses, reduction of commercial (promotion) costs, ensuring cheap and safe sources of funding (reducing financing costs).

3. The characteristics of expert systems that are used in the economic evaluation

An Expert System (ES) is a complex application (a software program) that explores a multitude of knowledge to get new findings about difficult activities to examine using methods similar to human experts. An expert system can succeed in problems without a deterministic algorithmic solution. The main features of expert systems are:

- A database (knowledge base), together with
- A deduction algorithm specific to the reasoning method.

Expert systems are a field of artificial intelligence, the branch of information technology that aims to develop intelligent programs and applications. What is remarkable for expert systems is the wide range of applicability, which has already covered many areas of activity.

An expert system consists of the following main components:

- The Knowledge Base - serves to store all knowledge elements (facts, rules, methods, solvers, heuristics) specific to the application domain, taken from human or other sources.

- Inference engine - is a program in which the knowledge of control, procedural or operative is implemented, which exploits the knowledge base for making judgments in order to obtain solutions, recommendations or conclusions.

- User Interface - allows user dialogue during consultation sessions as well as their access to basic facts and knowledge for adding or updating the database.

- Knowledge Enrichment Module - Helps the expert user to introduce new knowledge in a form that is supported by the system or to update the knowledge base.

- The explanatory module - has the role of explaining to users both the knowledge of the system and its rationale for obtaining solutions in the consultation sessions.

Explanations in such a system, when properly designed, also improve the way the user perceives and supports the system (feedback).

The knowledge base is made up of two parts: the basis of rules that contains general knowledge in the field of expertise and the basis of facts formed in particular from the knowledge specific to the problem being solved. The rule-based elements are enunciation of the form:

If condition then action.

The rules were taken over in the SE from mathematical grammar structures, where they are called production rules; hence the initial designation of SEs of production rules systems or production systems. The conditional part of a rule is also called antecedent, or left hand (LHS), and the action is also called the consequence, or part of the conclusion, or the right part of the rule "Right Hand Side" (RHS). The conditional part of a rule may contain one or more elements, which are called patterns. Syntactically, they will be of the same form as facts in the facts base and between all the patterns in the conditional part of a rule is understood the conjunctive operation. The elements on the right of a rule will be called actions, and, as for the left, between actions there is implicitly the conjunction operation [5], [6].

The basis of facts is also called work memory and contains statements that are considered true at that time, that is, facts; they must be syntactically identical to the rule patterns.

The inference engine is the one to determine all the rules that are activated, thus making the correlation between the facts base and the rule base, and then it also selects one of the rules that are activated at a given time, which it puts into execution. Execution of a rule means the implementation of the right part of the rule, which may have one or more effects such as modifying the facts base, transmitting messages to the operator, or transmitting signals to the outside, depending on the actions provided for in part To conclude the rule.

At the beginning of the operation, the baseline must contain the situation that is initially valid for the problem at work and is loaded by the user through an appropriate interface. This interface, which provides the way of communication between the user and SE, can also be used during SE work. Thus, once the working memory has been loaded, the user starts the SE consultation. The inference engine initiates a search in the knowledge base trying to solve the problem proposed by matching the left parts of the rules with the facts in the working memory and executing the rules that are being activated. SE may ask questions to the user when working, when he gets stuck (he did not solve the proposed problem and can not activate any rule) by using this dialog in the same interface. This also illustrates the difference of principle

from conventional programming: the path that the inference engine will follow to reach the solution is not determined in advance. It depends on the user's problem (the baseline state of the facts) and the responses the SE receives during work. It is also worth mentioning that the above explanation refers to SE using forward search.

The user interface is also related to two other components: the explanation subsystem and the knowledge acquisition subsystem. If the inference engine, the knowledge base, and the user interface are always present in an SE, the other two subsystems are optional in an SE, and are often present in an SBC.

The explanation subsystem is the one that, guided by the inference engine, ensures that the user tracks the solution path. This is easy to accomplish in an SE by memorizing the order in which the rules were executed. The explanation subsystem may allow the user to ask SE questions (such as: why? how? but if?) And in such a case he may himself be an SE who, having access to the knowledge base of the main SE and keeping track of its evolution, resolves these questions.

The Knowledge Subsystem allows the user to introduce new knowledge, mainly on a rule basis, by creating new rules or updating existing rules. Unlike the factual basis, which has a dynamic character, evolving during the work of the SE from the initial state, the one corresponding to the formulation of the problem, to the final state in which the problem is solved, the evolution produced by the action (run) SE, the basis of rules has a static character. It stores knowledge that is generally valid for the field of expertise and its modification is done off-line, ie outside of the SE; this is the most common case. In addition, the knowledge acquisition subsystem and the user interface must ensure that the user is updating the knowledge base, which requires an automatic encoding of the information provided by the user without the presence of the programmer [1], [5].

If knowledge acquisition is required even during SE run, or if an SE adaptation is required according to the information gathered from the environment, as may be the case for some knowledge-based control systems, then the rule base may also become The knowledge acquisition subsystem and the user interface (or process interface) must be modified, in which case the SE may improve its behavior over time by making appropriate, on- If the first rule-based programming environments did not allow for a dynamic character for the rule base, the current ones have such facilities, leaving it to the SBC builder to develop an appropriate interface for acquiring knowledge.

Developing a system involves acquiring the knowledge base by acquiring knowledge from experts or from other sources. Knowledge is separated in declarative knowledge (the basis of facts) and procedural knowledge (the basis of rules). Development also includes the construction or acquisition of an inference engine as well as other component modules.

SE consultation:

Once the system is developed and validated, it goes into user exploitation. If users want a tip, a recommendation, or another result from the system, it is launched in the chat session that takes place through a dialog, namely:

- The user can ask questions in order to obtain facts about the specific situation in which he is;

- The system accepts the questions and answers. This effort carries out the inference engine, the only one who decides which altogether to use to look for the most appropriate answer to the question. Expert systems can also ask questions and can expect user responses. Improving expert systems - is possible in many ways and is done through a prototyping process.

An important aspect in PROLOG is the satisfaction of the purpose of a program. By convention, it is called the set of facts in a baseline program, and the set of rule-based rules. In the first step it is considered that the program contains only facts. Assume that the goal has the form p1, p2... pn. If the goal does not contain variables then the clauses are satisfied in the order in which they are listed. If the base of facts can satisfy the whole purpose, PROLOG responds with "yes" and otherwise responds with "no". If the goal contains variables, then the goal is to find all the possible links for variables that satisfy the purpose.

Consider the following program:

```
/* Program 1 */
domains
  nume_pers = symbol
predicates
  debitor(name, forename)
  creditor(name, forename)
clauses
  debitor(name1, forename1).
  debitor(name2, forename2).
  creditor(name3, forename3).
  creditor(name4, forename4).
```

Here's how PROLOG responds to the following queries:

```
Goal : debitor(X, forename1)
  X = forename2
  X = forename3
2 Solutions
Goal : debitor(name1, X), creditor(name2, X)
  X = name1
1 Solution
Goal : debitor(name1, X), creditor(name3, X)
```

No Solution

In the case of the first query, the two solutions correspond to the two facts associated with the debtor predicate that have the second argument identical to the ionescu object. In order to satisfy this purpose, at the meeting of the debtor (popescu, ionescu) occurs the binding of the variable X to the name1 object.

The following basic programming principle in PROLOG is applied:

The knowledge base is inspected to meet the goal. After each goal fulfillment, if the purpose contains variable names, it is attempted to resolve it in order to find all solutions that satisfy the purpose. As facts are used to meet the goal, they are "marked". Before resolving the goal, the variables are unbound from the values obtained, after which the knowledge base is inspected from the last mark of the mark in order to obtain another possible link [4], [6].

The presence of the anonymous variable on the place of an argument states that it does not concern the value of the argument but only the existence of such a value.

4. Conclusions

If an enterprise is expected to be able to obtain economic benefits in the future but is not controlled by legal rights or physical custody, it is considered that it does not have sufficient control over those results in order to recognize the intangible asset. An enterprise could benefit from a portfolio of clients or a qualified team of staff. While it may be appreciated that there is a high probability that clients in the portfolio continue to seek professional services from the respective enterprise or that the group of specialists continue to offer its services in the absence of legal or physical custody of clients or staff, The enterprise has insufficient control over the estimated future benefits determined by their presence, and the conditions for recognizing them as assets are not met [1], [3]. The expert systems may help to evaluate the assets of a company by using a number of scenarious and the results of these simulations are stored in a knowledge database. The usage of such database may increase the number of scenarious and the changes of values and parameters inside the PROLOG programing language helps to obtain various results that can help the management of a company to take the right decision in the current economic environment.

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THE EFFICIENCY OF FERTILIZERS AND MINIMUM TIILAGE METHOD IN THE AGRICULTURAL PRODUCTION IN ROMANIA

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Abstract
Considering that vegetal production is related to the use of fertilizers or land works, this paper investigates the correlation between plant production in Romania and fertilizers in 1990-2015, but also checks on the efficiency of minimum tillage system. At macroeconomic level, there was a long and short bidirectional relationship between cereals' production in Romania and the quantity of natural fertilizers in the period 1990-2015. The statistical results on experimental data indicated that there are not significant differences between conventional systems and minimum tillage systems for the three plants in terms of production, power balance efficiency and energy utilization at 5% level of significance.

Key words: *agricultural production, minimum tillage, cereals, vector error correction model*

JEL Classification: *Q15, Q24, C53*

Introduction

Minimum tillage supposes shallow tillage based on a tine cultivator (Rasmussen, 1999), and it has the potential to preserve the organic matter, to promote aggregate stability, to stimulate a better infiltration and to diminish losses of sediment, but also to decrease the losses of sediment-bound pollutants (Quinton and Catt, 2004; Silgram and Shepherd, 1999).

The objective of this paper is to analyze the correlation between plant production and quantity of fertilizers in Romania during 1990-2015, taking into account that minimum tillage system uses fertilizers. Some vector error correction models were estimated to check the relationships on short and long-run between plants' production and quantity of fertilizers (natural and chemical fertilizers).

On the other hand, we use experimental data to check the efficiency of minimum tillage on a soil in Romania for 3 plants. The comparative analysis between minimum tillage and the other conventional methods are based on data that was obtained in a period of 3 years at the Didactical Department of the University of Agricultural Sciences and Veterinary Medicine. Wilcoxon signed-rank test was applied to test for the differences in the two groups of methods starting from three variables: production, power balance efficiency and energy utilization.

After this short introduction, some advantages and limits of minimum tillage system are presented. Most of the paper is dedicated to the statistical analysis on macroeconomic data and experimental ones. The last part concludes.

1. Advantages of minimum tillage

Water and wind erosion of agricultural soils are known as global environmental problems (Zuazo and Pleguezuelo, 2008; Chambers et al, 2000). Land in fall and winter cereal crops are not so much affected by soil erosion compared to other crops (e.g. potatoes and maize) (Evans, 2002) but, if they have low crop or bare ground during the winter and autumn they can still can be affected by large erosion losses (Chambers and Garwood, 2000).

Minimum tillage supposes shallow tillage based on a tine cultivator (Rasmussen, 1999), and it has the potential to preserve the organic matter, to promote aggregate stability, to stimulate a better infiltration and to diminish losses of sediment, but also to decrease the losses of sediment-bound pollutants (Quinton and Catt, 2004; Silgram and Shepherd, 1999).

The literature review noted the advantages and the disadvantages of minimum tillage and of the other methods, presenting the results of applying these methods in the United Kingdom and other (Stevens et al., 2009). Based on studies in literature, some economic advantages presented in a monetary form for minimum tillage on a loamy soil are described by Nix (2008).

In a review of studies assessing the minimum tillage, Strauss et al. (2003) proposed a median effectiveness of 74% for decreasing soil erosion. Even if the advantages for soil erosion are recognized, the potential for decreasing the nutrient pollution is not clear.

The economic agents with agricultural profile are interested in modern technologies for getting an efficient economic activity that supposes the non-conventional working system like minimum tillage. Some measures are necessary to have a viable minimum tillage:

- The agricultural exploatation should have the suitable machine system;

- The previous plants should not let vegetal rests;
- The soil should not have a high procent of argil;
- The fertilizers should be applied on seeded rows.

The climate and the soil conditions, the type of plant, the fertilization system and the system for weed determined more types of minimum tillage methods. Direct tillage system consists in the execution in a single pass, with an aggregate of minimum preparatory work for soil and sowing.

Tillage in two passes consists in the execution of two passes, the first of which provides for the mobilization of soil deep furrow and return without fertilizer application. On the second pass it attaches a cultivator or disc harrow and drill followed by a disposal for applying herbicides.

The technical advantages are the following:

- better consumption and storage of the water in soil;
- lower subsidence of soil;
- destruction of the soil structure is avoided by reducing the number of works;
- higher quantity of organic material and a better conservation of humus;
- less erosion of the soil caused by wind or water;
- less losses of water by evaporation.

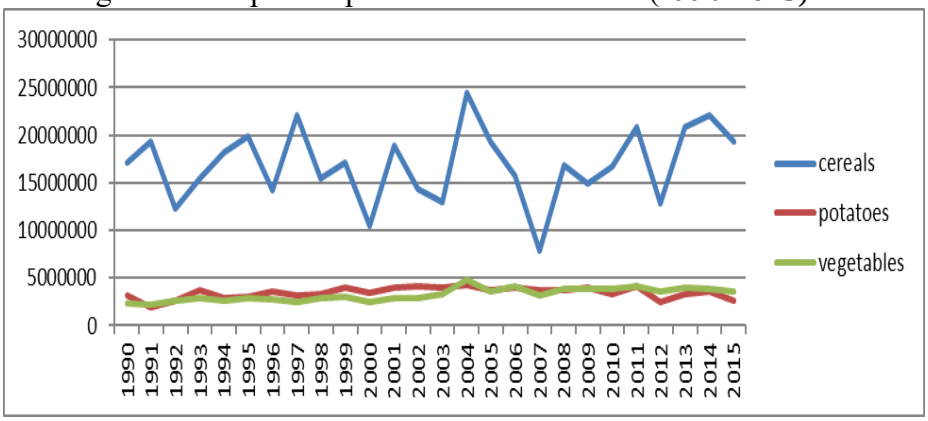
The economic benefits of minimum tillage are:

- Lower costs by eliminating plowing, disking, harrowing;
- Economies for fuel and lubricant;
- Less utilization of tractors and agricultural machines;
- Better labur productivity.

2. Statistical analysis

As specified, two tasks of the empirical analysis are considered: the correlation between plant production and fertilizers and the efficiency of minimum tillage method compared to conventional methods with respect to plant production, energy utilization and power balance efficiency. We will use data provided by the National Institute of Statistics from Romania for plant production (cereals, potatoes and vegetables) and fertilizers in the period 1990-2015.

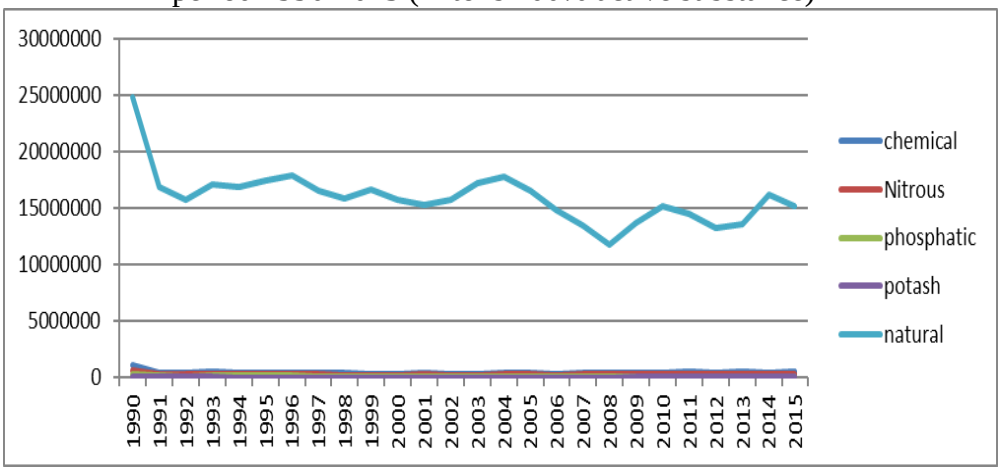
Figure 1. The plants' production in Romania (1990-2015)



Source: author's graph

As statistical data provided by the National institute of statistics shows, Romania produced mostly cereals with high fluctuations of plant production in the period 1990-2015. The maxim plant production in tons was registered in 2004. The quantity of cereals increased in Romania by 12.3% in 2015 compared to 1990. The fluctuations in the production of potatoes and vegetables were much lower than in the case of cereals.

Figure 2. Quantity of chemical and natural fertilizers used in Romania in the period 1990-2015 (in tons 100% active substance)



Source: author's graph

As Figure 2 shows, in Romania mostly natural fertilizers are used in agriculture, which is beneficial for the food quality, but the impact of these fertilizers on production should be checked.

The data for all variables were stationary only in first level of 5% level of significance, according to ADF test. Therefore, we will test the existence of cointegration relationships between variables.

Table 1. The selection of optimal lag

Variables	Optimal lag
Cereals-natural fertilizers	1
Cereals- chemical fertilizers	1
Potatoes- natural fertilizers	2
Potatoes- chemical fertilizers	2
Vegetables- natural fertilizers	2
Vegetables- chemical fertilizers	1

Source: own computations

According to lag length criteria, we have an optimal lag of 1 for cereals- natural fertilizers, cereal-chemical fertilizers and vegetables-chemical fertilizers and a lag equaling 2 for the rest of the paired variables.

The Johansen cointegration test will be applied in each case.

Table 2. The results of Johansen cointegration test

Variables	Rank or No. of CEs	No Intercept No Trend No data trend	Intercept No Trend No data trend	Intercept No Trend Linear data trend	Intercept Trend Linear data trend	Intercept Trend Quadratic data trend
Cereals-natural fertilizers	0	0	2	2	2	0
Cereals-chemical fertilizers	1	0	1	0	2	1
Potatoes-natural fertilizers	0	0	0	2	0	0
Potatoes-chemical fertilizers	0	0	1	1	0	0
Vegetables-natural fertilizers	0	0	0	0	0	0
Vegetables-chemical fertilizers	0	0	0	0	0	0

Source: own computations

The trace test and the maximum eigenvalue test indicated the same result. According to Johansen test, there is not any cointegration relationship between vegetable production and fertilizers (natural or chemical fertilizers). Indeed, fewer fertilizers are used in Romania in the case of vegetables.

D(CEREALS) = C(1)*(CEREALS(-1) - 0.1002772384*NATURAL_FETILIZERS(-1) - 15218815.63) + C(2)*D(CEREALS(-1)) + C(3)*D(NATURAL_FETILIZERS(-1)) + C(4)

D(NATURAL_FETILIZERS) = C(5)*(CEREALS(-1) - 0.1002772384*NATURAL_FETILIZERS(-1) - 15218815.63) + C(6)*D(CEREALS(-1)) + C(7)*D(NATURAL_FETILIZERS(-1)) + C(8)

D(CEREALS) = - 1.252988645*(CEREALS(-1) - 0.1002772384*NATURAL_FETILIZERS(-1) - 15218815.63) + 0.09533003081*D(CEREALS(-1)) + 0.8144998193*D(NATURAL_FETILIZERS(-1)) + 269157.1868

D(NATURAL_FETILIZERS) = - 0.1403258416*(CEREALS(-1) - 0.1002772384*NATURAL_FETILIZERS(-1) - 15218815.63) + 0.1021647974*D(CEREALS(-1)) + 0.1007857511*D(NATURAL_FETILIZERS(-1)) - 55774.59726

There is a long-run relationship from cereals production to natural fertilizers and from natural fertilizers to cereals production. If more natural fertilizers are used, we will get more cereals. On the other hand, if the production of cereals increases, the quantity of natural fertilizers also increases.

D(CEREALS) = - 1.239305612*(CEREALS(-1) - 23.80747212*CHEMICAL_FERTILIZERS(-1) - 6781680.282) + 0.03613411116*D(CEREALS(-1)) + 9.319426811*D(CHEMICAL_FERTILIZERS(-1)) + 244503.2336

D(CHEMICAL_FERTILIZERS) = 0.0002726300367*(CEREALS(-1) - 23.80747212*CHEMICAL_FERTILIZERS(-1) - 6781680.282) - 0.001345012706*D(CEREALS(-1)) + 0.01054001757*D(CHEMICAL_FERTILIZERS(-1)) + 3435.192294

There is only a long-run relationship from chemical fertilizers to cereals production. When the quantity of chemical fertilizers grew, the production of cereals also increased.

D(POTATOES) = - 0.01572670705*(POTATOES(-1) - 8.375386713*NATURAL_FETILIZERS(-1) + 127328519) - 1.081943855*D(POTATOES(-1)) - 0.5161027406*D(POTATOES(-2)) + 0.0257777157*D(NATURAL_FETILIZERS(-1)) - 0.1670509629*D(NATURAL_FETILIZERS(-2)) + 111.1596918

D(NATURAL_FETILIZERS) = 0.02842099925*(POTATOES(-1) - 8.375386713*NATURAL_FETILIZERS(-1) + 127328519) - 0.5325107101*D(POTATOES(-1)) - 0.6729932388*D(POTATOES(-2)) + 0.4056573641*D(NATURAL_FETILIZERS(-1)) - 0.2299796175*D(NATURAL_FETILIZERS(-2)) - 84672.44507

There is only a long-run relationship from natural fertilizers to potatoes production. When the quantity of natural fertilizers grew, the production of potatoes also increased.

D(POTATOES) = - 1.236959618*(POTATOES(-1) + 6.080000128*CHEMICAL_FERTILIZERS(-1) - 6102537.855) - 0.3015417932*D(POTATOES(-1)) - 0.2983932619*D(POTATOES(-2)) + 6.260799314*D(CHEMICAL_FERTILIZERS(-1)) + 0.1574480294*D(CHEMICAL_FERTILIZERS(-2)) + 31259.02728

D(CHEMICAL_FERTILIZERS) = 0.04082634757*(POTATOES(-1) + 6.080000128*CHEMICAL_FERTILIZERS(-1) - 6102537.855) - 0.02213506992*D(POTATOES(-1)) + 0.01435849105*D(POTATOES(-2)) - 0.5822614296*D(CHEMICAL_FERTILIZERS(-1)) - 0.2463135534*D(CHEMICAL_FERTILIZERS(-2)) - 479.6188759

There is only a long-run relationship from chemical fertilizers to potatoes production. When the quantity of chemical fertilizers grew, the production of potatoes also increased.

Table 3. Results of Wald test

Variables	Chi-square statistics	p-value
Cereals-natural fertilizers	6.401296	0.040736
Cereals- chemical fertilizers	2.859060	0.239421
Potatoes- natural fertilizers	9.963901	0.006861
Potatoes- chemical fertilizers	7.514319	0.023350

Source: author's calculations

On short-run, there was a significant association between cereals production and natural fertilizers, potatoes production and natural fertilizers, and potatoes production and chemical fertilizers in the period 1990-2015.

The data for plants' production, power balance efficiency and energy utilization are experimental and are taken from the study of Rusu (2016). We considered two types of methods:

- conventional methods (reversible plough + rotary harrow and classic plough + disc –2x);
- minimum tillage techniques (chisel + rotary harrow and paraplow + rotary harrow).

The production was measured for three plants: winter-wheat, soya-bean and maize.

Wilcoxon signed-rank test was applied to test for the differences in the two groups of methods starting from three variables: production, power balance efficiency and energy utilization.

Table 4. Wilcoxon signed-rank test for checking the differences between methods regarding the production of plants (kg/ha), power balance efficiency (%) and energy utilization (MJ)

Variable	Computed statistics	p-value
Production of plants (kg/ha)	1.572	0.1159
Power balance efficiency	0.632	0.5271
Energy utilization	0.946	0.3441

Source: author's calculations

The statistical results indicated that there are not significant differences between conventional systems and minimum tillage systems for the three plants in terms of production, power balance efficiency and energy utilization at 5% level of significance. If the theoretical approaches show the superiority of minimum tillage techniques, the experimental data in the laboratory for Romanian soil did not indicate significant increases in the production.

Conclusions

The personal contribution of this paper is given by the empirical findings based on statistical analysis on macroeconomic data and experimental data. At macroeconomic level, there was a long and short bidirectional relationship between cereals' production in Romania and the quantity of natural fertilizers in the period 1990-2015. The production of potatoes was influenced on short-term also by the quantity of chemical

fertilizers. The production of vegetables was not affected by the fertilizers quantity in Romania.

The statistical results on experimental data indicated that there are not significant differences between conventional systems and minimum tillage systems for the three plants in terms of production, power balance efficiency and energy utilization at 5% level of significance. So, minimum tillage did not provided the expected results in Romania. The research is limited by the fact that a small sample of values is used and n a certain type of soil. On other type of soil from Romania, the results might be better.

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