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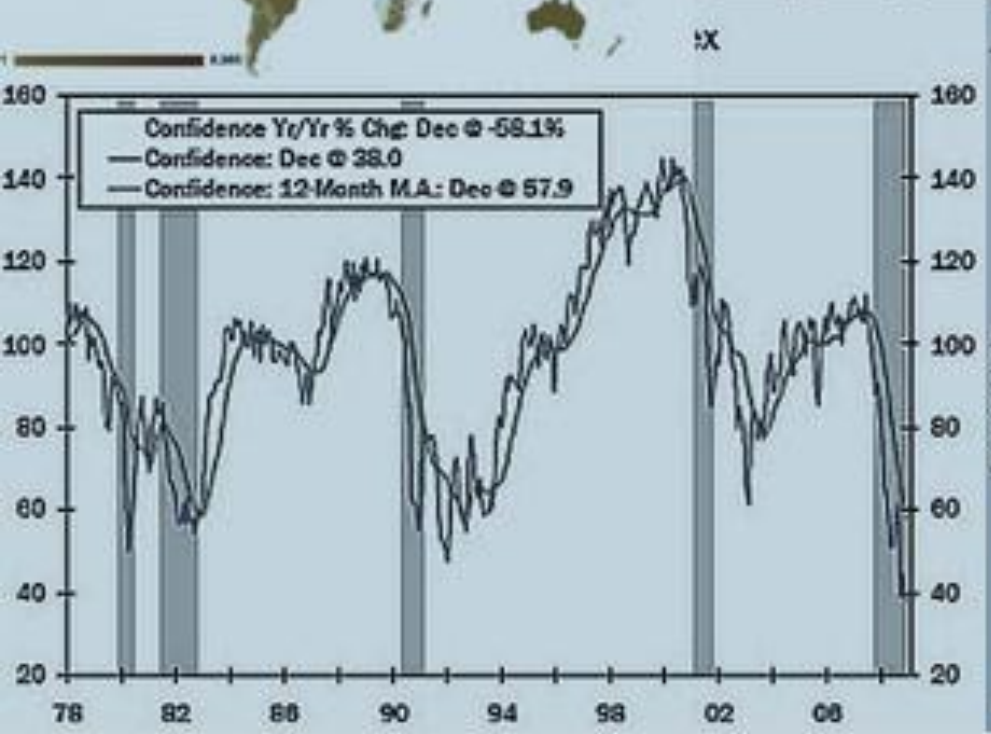

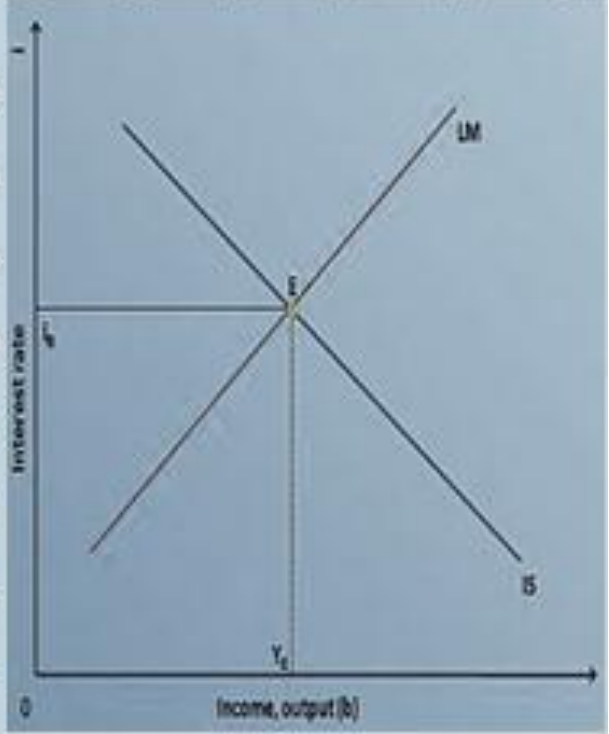

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YOUTHS CONDITION IN THE LABOUR MARKET DURING THE POST-CRISIS PERIOD

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Abstract: *Unemployment among youth in the EU had a strong increase from the outbreak of the financial crisis in 2008, and reached unprecedented levels. Nevertheless, for over a decade the youths' unemployment rate remained approximately double against the global unemployment rate in time for the whole economy. In this context, the concept of NEET has been introduced to characterize the size and structure of a vulnerable group of young people i.e. those young people who are not engaged in any form of employment, education or training.*

The year 2014 registered a slight decrease of both unemployment rate and of the NEET rate among youths. According to the Eurostat statistics, in 2014, within the EU the average unemployment rate for youths with ages between 15 and 24 years diminished by 1.4 pp., and for the age group aged between 25 to 29 years, by 1 pp. Also the NEET rate for various young population segments registered in most member countries a decreasing trend. In Romania, the NEET population rate (youths between 15 and 29 years of age) under the impact of the economic financial crisis increased from 13.2% in the year 2008 to 19.6% in the year 2014.

This paper intends to be a brief analysis of the youths' condition in the EU countries' labour markets from the beginning of the financial crisis by focusing mainly on describing the characteristics of youths that don't have a job, and are not included in the educational or vocational training system (NEET). There are large differences between the youths and the employment in the member-states, and these differences were exacerbated by the recession.

Key words: NEET youths, youth's employment, youth's unemployment rate, training level

JEL Classification: I25, J13, J21, E24

1. Introduction

The recent crisis affected most the youths with ages between 15 and 29 years of age. The number of youths employed in the European Union labour market decreased by 7.484 million in the period 2007-2014, which corresponds to an employment rate diminishment by 4.3 percentage points.

With respect to the youths' employment in the labour market, this period is characterised by an increase in the weight of those employed part-time or on a temporary basis, and by a higher frequency than for other segments of the working age individuals. The youths with lower education were the most vulnerable: they always had more difficulties in identifying a job, and had more hard times in maintaining the jobs they had gained.

Within the European Union, the number of youths with ages under 30 years that are neither employed in the labour market, nor in education or training (NEET youths) increased by almost 14 million individuals (or 15.3% from the young population). In this context, the challenge faced by the governments of the EU-28 countries is very high. The increase in the insertion degree in the labour market and their social integration turned into permanent

concerns in the policies of the member-states. These developed/develop a series of measures both for preventing youths from entering into the NEET category, and for reintegrating in the labour market and in the society those who are not in the NEET category.

The guidelines regarding labour force employment developed by the European Council[1] provide for a stable political orientation for the member-states with respect to the manner of meeting the challenges in the context of the current trends related to labour force employment and to the social trends, in view of achieving the objectives of the Europe 2020 Strategy.

The drop in permenent jobs during the crisis affected disproportionately the youths, as they are overrepresented inte category of temporary contracts. Even though temporary contracts may constitute a first step towards more stable employment forms, this fact can lead to segmented labour force markets, the youths being trapped in the inferior segments of the aforementioned, benefiting of less training on the job, lower remuneration levels and worse perspectives with respect to employment and long-term career. The difficulties on the labour market have also a negative impact on the youths with ages between 25 and 29 years of age with higher education, as they find it harder to identify a job adequate to their skills.

The issues faced by youths on labour market have significant consequences on their living standard, on their families and on the national or international communities to which they belong. The most important effects of youths' inactivity are: poverty risk, incapacity to take an active role in society's development.

2. The Labour Market Situation of Young People

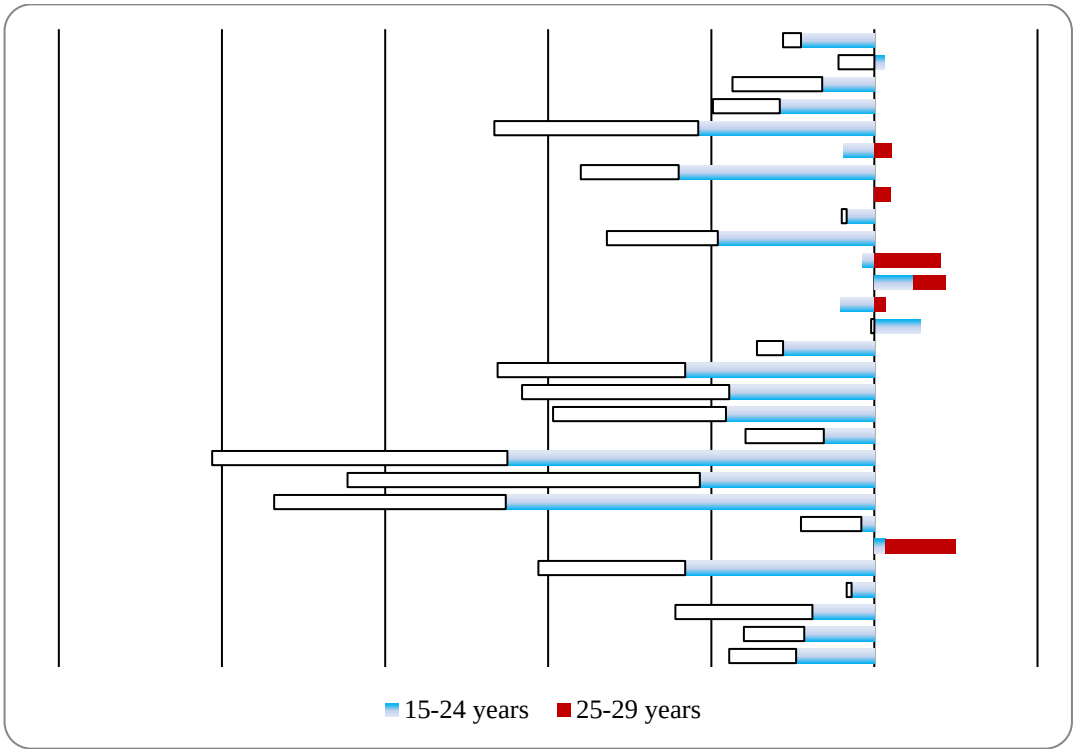
The participation of youths in the labour market is an important incentive of social outcomes, and the transition from education to the labour market is, usually, associated with an increase in incomes and in their independence. The decision of a young individual to get full-time employment or to continue studying (possibly combined with part-time work) depends on a series of social factors, on the financial situation of the youth, on the support that either parents or other family members can provide, on the availability of public funds for studies during the transition from school to job.

The employment of youths on labour market was much decreased due to the economic-financial crisis. The high unemployment rate during the crisis increased the uncertainty degree of the youths with respect to gaining a job. As result, all these led to an increase in the numbers of youths who are neither employed in the labour market, nor in education or training.

In the year 2014, youth **employment rate** for the young individuals with ages between 15-24 years at EU-28 level was of 32.4% on decrease by 4.8 pp against the year, and for the age segment 25-29 years it dropped by 4.1 percentage points (Figure 1).

[1] Council Decision 2010/707/EU of 21 October 2012 on guidelines for the employment policies of the Member States.

Figure 1. Percentage-point change in the youth employment rates, 2007-2014



Data source: Eurostat statistics ([lfsa_ergan])

In the vast majority of member-states, the youths' employment rate with ages between 15 to 24 years was higher for men, save for Ireland, Denmark, the Netherlands, Finland, Sweden, Cyprus and Malta (Figure 2). For the age group 15 to 29 years of age, only in Cyprus the employment rate for women is higher than the one for men (Figure 2).

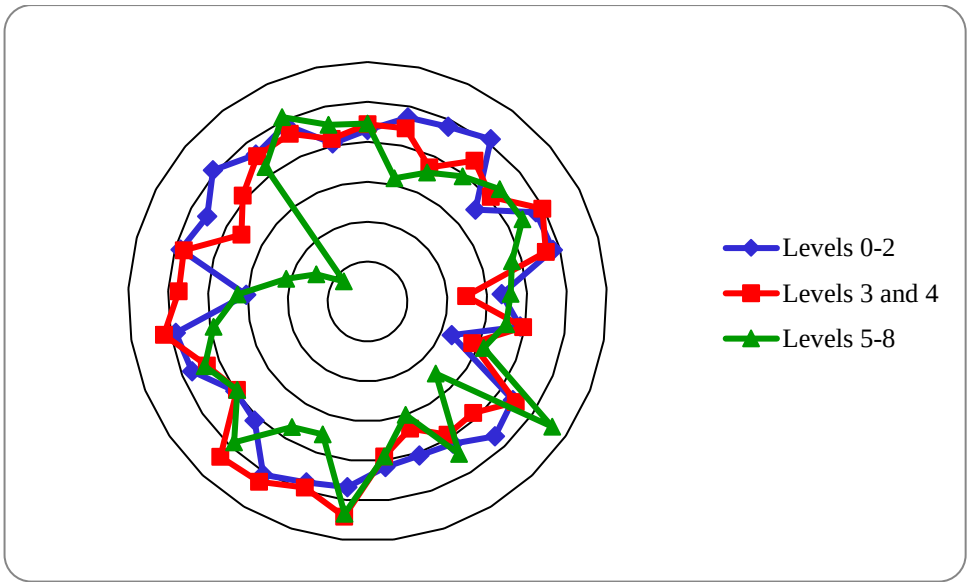
Figure 2. The gap between the employment rate of men and women in the age group 15-24 years and 25-29 years

Data source: Eurostat statistics ([lfsa_ergan])

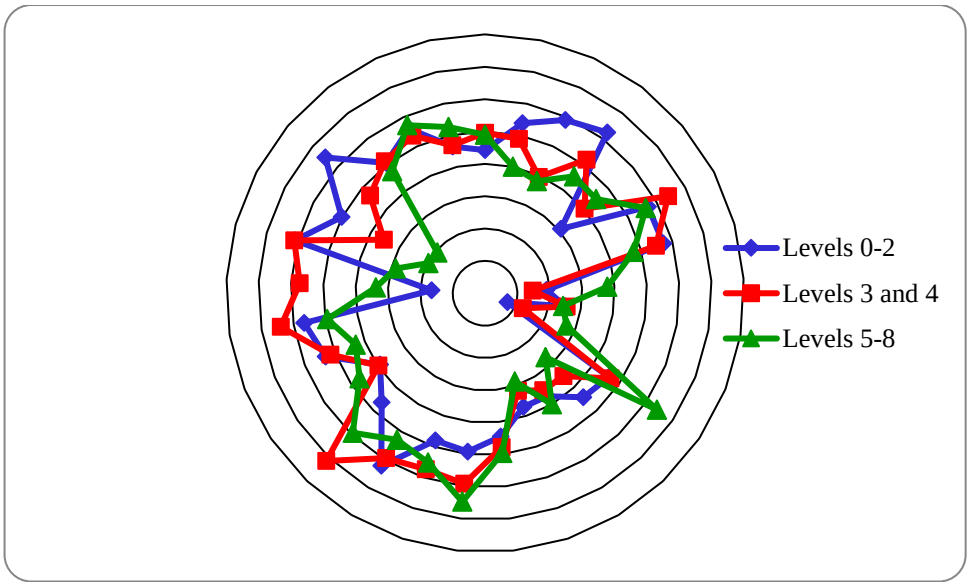
The decline of labour force employment among youths was shown both for individuals with lower education and skills' level, and for those with higher education (Figure 3). In some member-states (Denmark, Ireland, Greece, Spain and Portugal) the job losses among youths occurred almost exclusively among those with lower and medium- education, while in others (Bulgaria, the Czech Republic, Estonia, Cyprus, Romania, Slovenia and Slovakia) labour force employment for youths with higher education was more marked, and in France the employment rate of youths with higher education increased for both age groups (Figure 3).

Figure 3. % change in the number of employed youth between 2007 and 2014, by level of education

Age goup 15-24 years



Age goup 25-29 years



Data source: Eurostat statistics ([yth_empl_010])

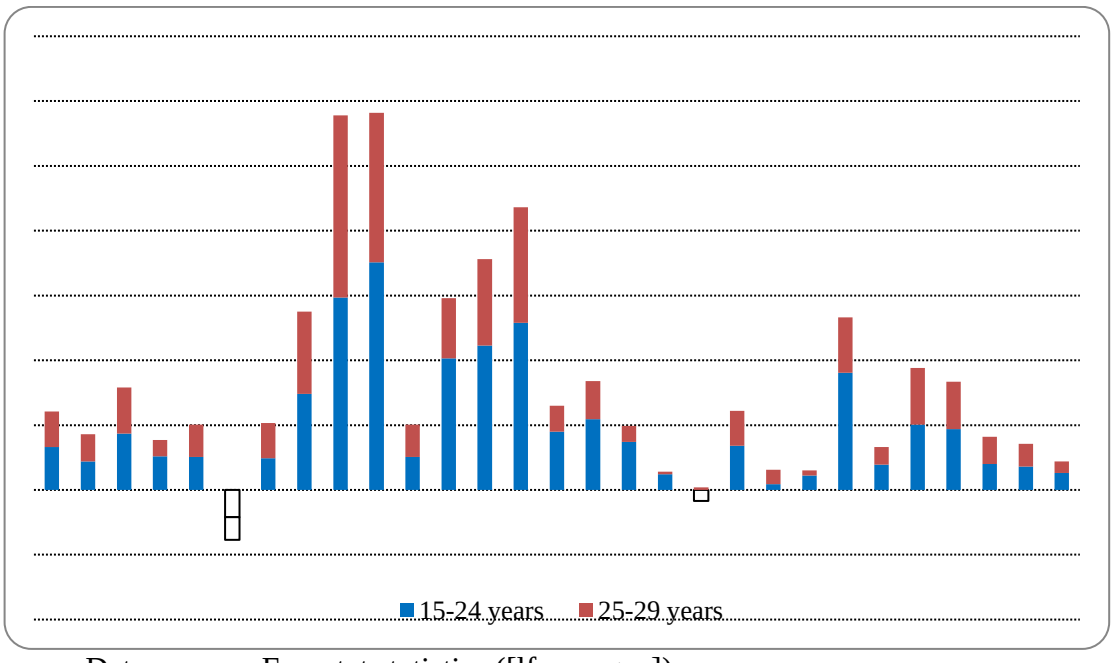
The analyses performed by the International Labour Organisation highlight the fact that the number of young unemployed will not decrease at least until 2016. An additional pressure on the unemployment rate is expected to take place at the time when those extending their period of studies because of the limited perspectives in finding a job shall, finally, enter on the labour force market.

The lack of length of service, the specifics of the human capital in the company, the experience on labour market of the youths (Eurostat statistics), the higher probability to work within the company for a determined period of time and other employment forms under precarious conditions are but a few factors that lead to the increase in the numbers of unemployed among youths.

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

The unemployment rate for the age group segment under 25 years at EU-28 level was of 22.2% in the year 2014, on increase by 6.6 pp against the year 2007 (Figure 4), but on slight decrease (-1.4 percentage points) against the year 2013 (Figure 5).

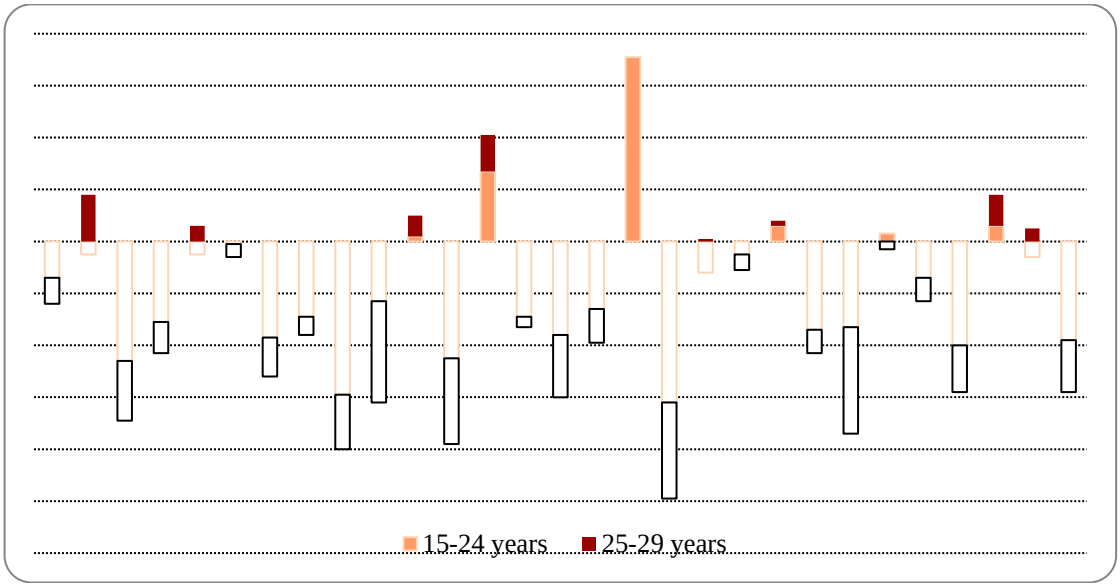
Figure 4. Percentage-point change in the unemployed rates, 2007-2014



Data source: Eurostat statistics ([lfsa_urgan])

For the age group 15-29 years, the unemployment rate increased in the period 2007-2014 by 5.5 percentage points (Figure 4), and its diminishment in the year 2014 against the preceding year was of only 1% (Figure 5).

Figure 5. Percentage-point change in the unemployed rates, 2013-2014



Data source: Eurostat statistics ([lfsa_urgan])

Also in the year 2014, the average **long-term unemployment rate** among youths (15 to 29 years of age) in the EU-28 was of 6.9% for the vast majority of the member-states, as it registered slight decreases against the preceding year. The long-term unemployment rate among youths continued to increase in Greece (29.4%), Italy (18.5%). In Romania, the long-term unemployment rate among youths was of 6%, on decrease by 0.7 pp against the preceding year.

The unemployment rate among youths is dependent also on their training level. In general, the highest unemployment is recorded among youths with pre-school, lower, and lower-secondary education (levels 0-2). An exception is Greece, where the unemployment rate among higher-educated youths (levels 5 and 8) was by approximately 6 pp higher than the one registered for youths with pre-school, lower, and lower-secondary education (levels 0-2), and Romania and Cyprus where the difference between the unemployment rate for higher-educated youths and those with 0 to 2 or 3 to 4 education level are significant.

The statistics provided by various international bodies about youths' participation in the labour market do not reflect precisely their situation, because many of them are students and, as result, they are not regarded as included in the labour force (European Employment Observatory, 2010). As result, it could be said that the traditional indicators of participation in the labour market have a limited relevance in the case of youths.

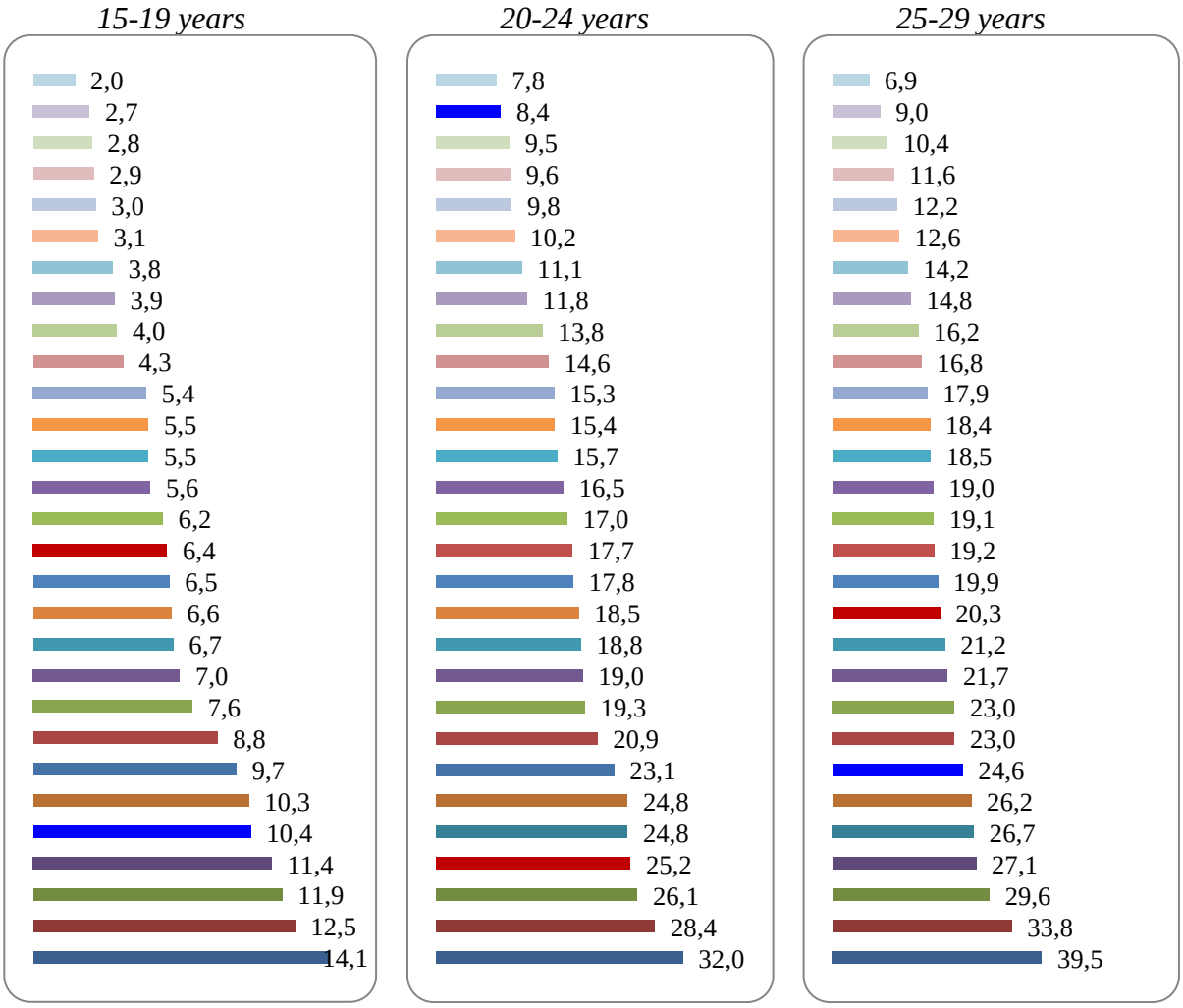
In this context, the decision factors from within the EU make use increasingly often of the NEET concept (*not in employment, education or training)*. The NEET category refers to individuals with ages between 15 and 29 years who, irrespective of their studies' level are not professionally employed and do not pursue any educational programme and, hence, are exposed to a higher risk of social and labour market exclusion (Eurofound, 2012), ("Young people and NEETs in Europe", 2013).

The high rates of the young NEET population are an important concern for each country not only because of the risk of the "scarring effects", but also because of the effects of this status on the future labour market outcomes for the individual (Gregg, 2001; Doiron & Görgens, 2008; Schmillen & Umkehrer, 2013; Möller și Umkehrer, 2014; Gregg & Tominey, 2005; Mroz & Savage, 2006).

Understanding the NEET situation and structure are both essential for developing policies aimed to approach the issues that young NEETs are facing.

According to the latest Eurostat estimates, in the year 2014, the percentage of youths that are not professionally employed nor pursuing an educational programme within the EU-28 varied from 6.4% for the age group 15-19 years to 20.3% for young individuals with ages between 25-29 years (Figure 6). This percentage varies significantly from one member-state to another for each age group. Thus, for the age group 15-19 years, the NEET rate varies from 2% in the Netherlands to14.1% in Bulgaria (Figure 6). 13 of the member-states have a NEET rate for this age group segment above the EU-28 average of 6.4%. For the age group 20-24 years, the NEET rate is higher than for the age group 15-19 years, and values under 9% are recorded only in Slovenia and Romania (7.8%, respectively 8.4%). Belgium, Cyprus and the United Kingdom are the only countries where the NEET rate exceeds the European Union average of 25.2% (Figure 6). High values of the NEET rate were registered for young individuals in the age group from 25-29 years. In the Netherlands, 7% from the young individuals in this age segment are NEET and represent the smallest value of this indicator. The vast majority of member-states have registered for the NEET rate in the case of this young individual's age group, in the year 2014, values above the EU-28 average of 20.3 pp. (Figure 6). In Romania, 24.6% from the young individuals with ages between 25 and 29 years of age were included in the NEET category (Figure 6).

Figure 6. Rata NEET on age groups for the year 2014

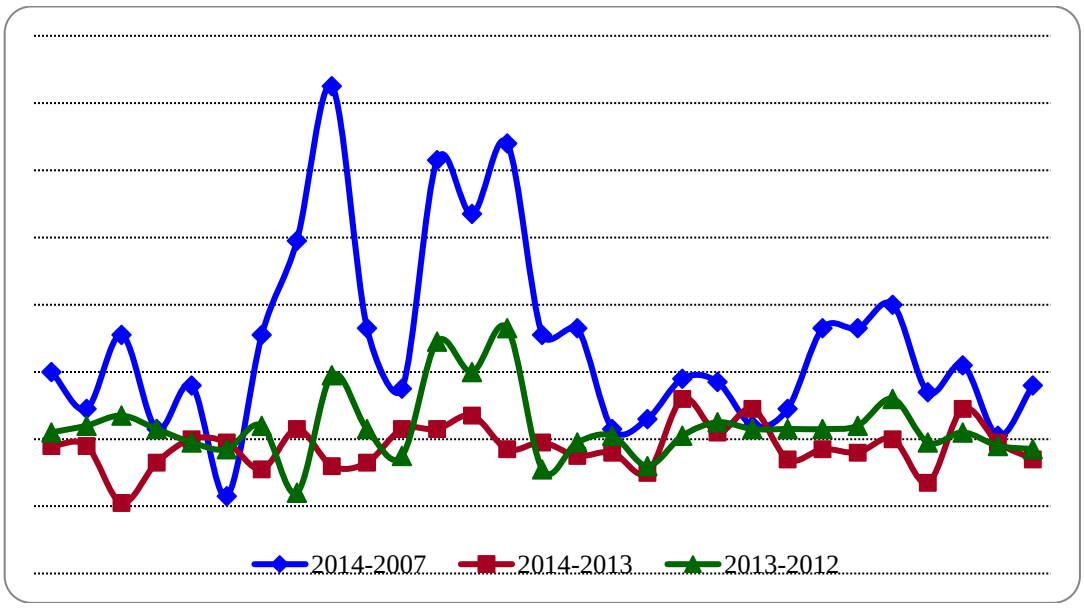


Data source: Eurostat statistics ([yth_empl_160])

Both within a country and between countries, NEET represents a heterogeneous group. In the NEET category are included youths irrespective of their educational level. The analysis of the educational level of 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 NEET population structure with ages between 15 and 29 years of age, in the year 2014, shows that in Spain and Malta the youths with a lower educational level represented approximately 63% from total NEET population. If in the year 2013, the NEET rate for young individuals in the age group 15-29 years underwent a slight increase in most member-states, in 2014 the situation changed, that is most countries registered drops in this indicator (Figure 7).

One of the effects of the economic-financial crisis is also the increase in the NEET rate among young individuals with training levels between 3 and 8. From among the member-states, Greece registered the highest increase in the weight of NEET youths with training levels between 3 and 8 in the period 2007-2014 (by 10.5 percentage points) (Figure 7). Countries like Croatia, Italy and Cyprus registered increases between 6.7 and 8.8 percentage points. Decreases in the weight of youths with educational levels 3-8 among the NEET are observed only for Germany (-1.7 percentage points). Still, from these data it does not result that the increasing trend in the weight of the NEET population with educational levels 3-8 is particularly strong in the countries which were most affected by the crisis (for instance, in Italy, Ireland, or Portugal the change in the NEET structure is relatively moderate).

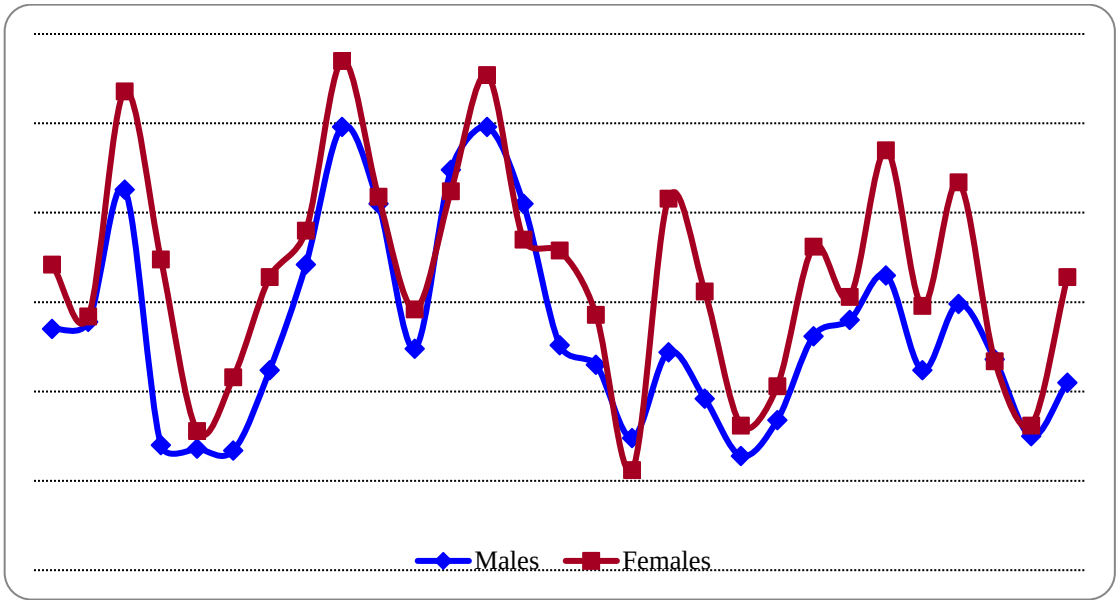
Figure 7. Percentage-point change in the share of youths with 3-8 educational levels among NEETs, 2007-2014, 2014-2013, 2013-2014



Data source: Eurostat statistics ([yth_empl_160])

The obtained outcomes within the specialised literature reveal that the NEET rates strongly differ depending on gender as they are usually much higher for women than for men (Figure 8). The male-female gap of the NEET rate is considerable in a series of member-states, reaching 10.4 percentage points in the Czech Republic and values of over 6 pp in Hungary (8.6 pp), Romania (7 pp), Slovakia (6.8 pp), and Malta (6 pp).

Figure 8. NEET rates for women and men in % of the respective population shares, 2014



Data source: Eurostat statistics ([yth_empl_160])

The emergence, dimension and structure of the NEET category are all generated by a series of social, economic, individual and family factors (Bynner, 2005; Hodkinson, 1997; Hodkinson and Sparkes, 1996, Brooks R., 2009).

The data provided by the survey regarding the European values (*European Values Survey*, EVS) from the year 2008 have highlighted the fact that a series of factors are determinant for the youths in increasing the probability of entering into the NEET category. From among these, there can be reminded[2]: emigration, low educational level; residence in isolated areas; youth with certain disabilities; low income of the household; family situation; parents who were unemployed, parents with low educational level or divorced ones.

Conclusion

The analysis of the evolution of the indicators that reveal the situation of youths in the labour market within the European Union leads to a series of **conclusions**, from among which:

- the average period of searching for a job in the period 2008-2014 increased significantly, contributing even more to discouraging youths in seeking a job;
- the discrepancies between the employment chances of a youth with education and the ones of a youth without education are also on increase and thus not only the period of searching a job for a young specialist is smaller as compared with the one of a youth without education, but also the unemployment rate shows considerable differences;
- as result of the high unemployment rate within the European Union and, implicitly, in Romania also the purchasing power of the youths diminished, so that not only the daily

[2] *Young people and NEETs in Europe: First findings*, European Foundation for the Improvement of Living and Working Conditions, TJ-32-11-956-EN-C

consumption of individuals underwent a significant decline, but also high value purchases (for instance, real estates);

- during the year 2014 was registered a much higher number of youths intending to continue their studies after a period of relaxation as they are discouraged by the useless search for a job, but encouraged to obtain a diploma that subsequently could increase their employment chances;
- the studies realised by various international bodies have highlighted that NEET youths represent a very heterogeneous group and that the composition of the NEET populations differ from one member-state to the other;
- the NEET rate among women is, in average, higher than the one of men, and also for youths with low educational levels.

Identifying and analysing the risk factors generating NEET populations is essential for adopting measures for diminishing this phenomenon.

For youths, the increase in the period of the NEET status can have severe consequences both for the individual and for the community in which they are on short-term, but also on long-term. These can be of a financial nature, but also of a social nature: isolation, involvement in risks related to unstable behaviours from a physical and psychical viewpoint.

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Effects of Trade Openness, Investment and Population on the Economic Growth: A Case Study of Syria

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Abstract: *This study attempts to investigate the role of trade openness, investment and population in the Syrian economy over the period 1980-2010. The cointegration test indicates that GDP is positively and significantly related to the trade openness, investment and population. The Granger causality test indicates bidirectional short-run causality relationships between trade openness, investment, population and GDP. There are also bidirectional long-run causality relationships between investment, population and GDP, and unidirectional long-run causality relationship running from trade openness to GDP. The study result indicates that population has the biggest effect on the GDP, thus we suggest improving the quality of the human capital in the country, as well as improving the investment and opening up the Syrian economy to foreign trade.*

Keywords: Syria, economic growth, trade openness, investment, population, VAR

JEL Classifications: O11, E20

1. Introduction

One of the most important goals of any country is to achieve a high desirable economic growth. Therefore, knowing the factors that affect economic growth is important for planners and policy makers. Trade liberalization is one of these factors that has been frequently discussed by economists for many years. Keynesian economists consider that declining import duties under a trade liberalization policy leads to an excess of imports over exports, which will lead to a deficit in foreign trade. However, the neoclassical growth model believes that there is no direct relationship between openness and economic growth. Openness can affect the long-run level of welfare and the transition to the steady state, but it cannot affect the long run economic growth. At the same time, the neoclassical growth model assumes that trade liberalization helps in increasing and improving the level of technological efficiency, which leads to a higher level of per capita income. But the endogenous growth theories assumed that trade liberalization can play an important role in improving economic growth by boosting exports, transferring technology, and increasing the scale of spillovers or available technology. However, openness and trade may raise the economic growth in some countries but it can also reduce economic growth in other countries (Utkulu and Ozdemir, 2004).

Investment can also play an important role in improving the economic growth in the country. Based on the neoclassical growth models, capital flows from rich to poor countries will increase the capital accumulation and growth in these poor countries. Hence, capital

flows have a positive effect on economic growth (McLean and Shrestha, 2002). Moreover, the endogenous growth theory supposes that a well-functioning financial system may affect positively on economic growth through investment. A well-developed financial system will improve the ability to create investment projects which can support economic performance (Chaudhry, 2007). On the other hand, population growth can be one of the important determinants of economic growth by increasing the labor force. The new growth theory, supposed that people are an important economic resource, and a larger population helps to create and improve scientific discovery and technological advance. In addition, population growth can accelerate the growth of labor productivity and raise the real GDP per capita (Parkin, 2011).

Like any other country, Syria tries to develop its economy to achieve a higher level of economic growth. Within the first decade of the 21st century, the government has worked to reform the economy, encourage the investment, liberalize foreign trade, and improve the quality of the human capital. Therefore, the government has worked to improve the investment climate, improve the infrastructure and establish industrial cities. In addition to simplifying import and export procedures, removing most tariff and non-tariff barriers and opening up new markets for Syrian products by establishing free trade zones with many countries like Turkey, Jordan, Saudi Arabia, and the UAE (NAPC, 2008). Furthermore, the state has focused on social development, and it worked to reduce poverty and upgrade the standard of living by expanding investment in infrastructure besides education and health services (Dardari, 2008).

Unfortunately, the war which started in 2011 has caused a huge damage to the social and economic development in the country and created a new situation quite different than in before 2011. By the end of 2013, total volume of GDP loss since the start of the conflict has reached USD 70.88 billion. Many factories have been destroyed, the infrastructure has been damaged and many oil wells were controlled by the terrorists (SCPR, 2014). Furthermore, the depreciation of Syrian pound has caused the exports earning to fall.

This study aims to investigate the effect of trade openness, investment and population on the economic growth of Syria over the period 1980-2010, in order to evaluate whether the government's economic policy in liberalizing foreign trade, encouraging the investment, and improving the quality of the human capital was a successful policy. This findings will allows us to suggest possible macroeconomic policies that the Syrian government could adopt after the war. The organization of this study is as follows. The next section is the literature review and Section 3 provides a brief discussion on the methodology. Section 4 reports the empirical results, and the conclusion and recommendations are presented in Section 5.

2. Previous Studies

There are many studies that have tested the effect of trade openness, investment, and population on economic growth of different countries. The findings from these studies tend to vary from one country to another.

Many researchers including Heitger (1987), Dollar (1992), Edwards (1992), Matin (1992), Harrison (1996), Greenaway (1998), Edwards (1998), Onafowora and Owoye (1998), Greenaway et al. (2001), Utkulu and Ozdemir (2004), and Buehler et al. (2011) indicated that trade liberalization has a positive effect on economic growth. Yavari and Mohseni (2012) also found that the Iranian economy is affected positively by trade liberalization, physical capital, human capital, and labor force. Goswami (2013) concluded that trade openness plays an important and significant role in economic growth for five major South Asia countries. Besides, the World Development Report (1987) showed that countries which follow outward-oriented trade strategies have outperformed in export growth, income growth, savings and employment when compared to other countries that adopted inward-oriented trade strategies.

However, Levine and Renelt (1992) did not find any positive relationship between trade openness and economic growth. Harrison and Hanson (1999) also failed to prove a robust link between open trade policies and long run growth. Yanikkaya (2003) found that trade liberalization does not have a simple and straightforward relationship with growth. Moreover, trade barriers are positively and significantly associated with growth, and the restrictions on trade can promote growth, especially for developing countries. However, Rodriguez and Rodrik (2000) found a little evidence to prove open trade policies are significantly associated with economic growth. Adhikary (2011) showed that trade openness has a negative effect on economic growth of Bangladesh.

Other researchers tested the effect of investment on economic growth. Some of these researchers such as Kormendi and Meguire (1985), Levine and Renelt (1992), Mankiw, Romer, and Weil (1992), Islam (1995), Caselli et al. (1996), Qine et al (2006), Loncan (2007), Tang et al. (2008), Merican (2009), Adams (2009), Bond et al. (2010), Adhikary (2011) and Soliu and Ibrahim (2014) found that investment has a positive effect on economic growth. However, Elboiashi et al. (2009), and Hooi and Wah (2010) concluded that increase of investment did not contribute to GDP growth.

On the other hand, the effect of population on economic growth has been tested by many researchers. A positive relationship between population and economic growth is supported by Savas (2008), Furuoka (2009) and Furuoka and Munir (2011). However, Trang and Hieu (2011) found that an increase in population growth rates causes a decline in economic growth. Afzal (2009) also found that there is a negative relationship between population growth and economic development in Pakistan, and the rapid population growth contributes to reduce in investment growth and savings rate, because resources are consumed by the population instead of using it in productive channels. In addition, some of the studies such as Dawson and Tiffin (1998) for India, Thornton (2001) for seven Latin American countries, and Mushtaq (2006) for Pakistan indicated that there is no long run cointegrating relationship between population and economic growth.

3. Methodology

The vector autoregression (VAR) model will be used in this study. Our model consists of four variables: the gross domestic product (GDP), trade openness, gross fixed capital formation, and population in Syria. GDP is the dependent variable. The model is presented as follows:

$$lnGDP = \alpha + \beta_1 OPEN + \beta_2 lnGFCF + \beta_3 lnPOP + \varepsilon_t \quad (1)$$

where α is the intercept, β_1, β_2, and β_3 are the coefficients of the model, *lnGDP* is the natural log of gross domestic product in real value (millions of SYP), *OPEN* is the trade openness (the percentage of total exports and imports to GDP), *lnGFCF* is the natural log of gross fixed capital formation in real value (millions of SYP), *lnPOP* is the natural log of population, and ε_t is the error term.

The analysis begins with the unit root test to determine whether the time series data are stationary at levels or first difference. The Augmented Dickey Fuller (ADF) unit root test is used in this study to test for the stationary of the variables. After determining the order of integration of each of the time series, and if the variables are integrated of the same order, the Johansen cointegration test will be used to determine whether there is any long-run or equilibrium relationship between the GDP and the other independent variables in the model. If the variables are cointegrated, the Granger causality test will be conducted on the vector error correcting model (VECM) to determine the causality relationships among variables. On the other hand, if there is no cointegration among the variables, the VAR model will be employed to test for short-run Granger causality between the variables. Furthermore, the VECM will be subjected to the statistical diagnostic tests, namely, normality, serial

correlation, heteroskedasticity and Ramsey RESET tests to ascertain its statistical adequacy. Lastly, impulse response functions (IRF) and variance decomposition (VD) analysis are used in this study to help in determining whether the independent variables play any important role in explaining the variation of the forecated GDP.

This study uses annual time series data of Syria during the period from 1980 to 2010. This data are collected from the World Bank. All variables in this study are in real value and expressed in the logarithmic form, except for OPEN.

4. Empirical Results and Discussion

From the results of the ADF unit root test in Table 1, we can see that all the variables are not stationary at level, but became stationary after first differencing at least at the 5 percent level of significance. This means that all the variables are integrated of order one, that is, I(1).

Table 1. ADF unit root test results

ADF	Level			First difference		
	Intercept	Trend and intercept	None	Intercept	Trend and intercept	None
lnGDP	1.117441	-1.771122	2.094763	-3.741055 ***	-4.786693 ***	-1.980987 **
OPEN	-1.286164	-2.600719	0.134984	-6.172008 ***	-6.053857 ***	-6.229452 ***
lnGFCF	-0.367683	-3.443119	0.578826	-2.195454	-3.58665 **	-3.432274 ***
lnPOP	-0.671752	-1.781639	2.934987	-1.461458	1.250879	-2.105626 **

Note: *** Denotes significance at the 1 per cent level, and ** at the 5 per cent level.

4.1. Johansen Cointegration Test Results

After determining that all the variables are stationary in the first difference, we can use the cointegration test to determine the presence of any cointegration or long-run relationship among the variables based on the Johansen cointegration test. But before running the cointegration test, we run the VAR model first to determine the optimal lag length, based on the minimum Akaike Information Criterion (AIC). Due to the limited number of observations, the maximum lag has been set to four in the lag length selection process. The optimal lag length selected is three lags based on the AIC.

After we have determined the number of lags, we proceed with the cointegration test for the model. Table 2 shows that there are four cointegration equations based on the trace and maximum eigenvalue tests. In other words, the results indicate that there is a long-run relationship between lnGDP, OPEN, lnGFCF and lnPOP.

Table 2. Johansen cointegration test results

No. of CE(s)	Trace Statistic	Probability	Max-Eigen Statistic	Probability
r = 0	92.70418 ***	0.0000	32.83965 **	0.0134
r ≤ 1	59.86453 ***	0.0000	26.99238 **	0.0103
r ≤ 2	32.87215 ***	0.0006	21.95655 ***	0.0049
r ≤ 3	10.91560 **	0.0230	10.91560 **	0.0230

Note: *** Denotes significance at the 1 per cent level, and ** at the 5 per cent level

After having found a cointegration relationships among the variables lnGDP, OPEN, lnGFCF and lnPOP, the cointegrating equation was normalized using the real GDP variable. Table 3 shows the normalized cointegrating vector.

Table 3. Cointegration equation normalized with respect to GDP

lnGDP	OPEN	lnGFCF	lnPOP	C
1.000000	-0.121499	-0.417626	-1.938281	13.38406
	(0.00427)	(0.09253)	(0.32896)	(5.62982)

From the Table 3, the long-run lnGDP equation can be written as:

$$lnGDP = -13.38406 + 0.121499\ OPEN + 0.417626\ lnGFCF + 1.93828\ lnPOP \quad (2)$$

The cointegration equation above shows that the GDP is positively related to OPEN, GFCF and POP. The coefficient of OPEN indicates that for every one unit increases in trade openness, the GDP will increase by 12.1 percent. This suggests that trade openness has an important role in improving the economic growth through boosting exports and making importing of intermediate and capital goods much easier, which promotes the production process in the country. Furthermore, trade openness creates foreign competition of local products in the domestic market, which leads producers to improve their production by using new technology and modern way of production activities. Our finding agrees with the results of Heitger (1987), Edwards (1992), Harrison (1996), Greenaway (1998), Greenaway et al (2001), Utkulu and Ozdemir (2004), and Buehler et al (2011).

The coefficient of lnGFCF indicates that for every one percent increases in investment, the GDP will increase by 0.42 percent. Investment can support the national economy by creating new job opportunities, and producing goods and services for domestic consumption and exporting which reflected positively on the local economy. In order to achieving economic development in Syria, the government has worked to improve and increase the investment process in the country through improving the investment climate, improving infrastructure, and establishing industrial cities. Our finding is in line with Loncan (2007), Tang et al. (2008), Merican (2009), Adams (2009), Bond ae al (2010), Adhikary (2011) and Soliu and Ibrahim (2014).

The coefficient of lnPOP indicates that for every one percent increases in population, the GDP will increase by 1.94 percent. Population is a main source labor for the country. In addition, with increase in population and the domestic consumption will increase too, which motivate producers to increase their production in the country. Since most of production activities in Syria are labor-intensive activities, increase in population can expand production, and this will lead to positive economic growth. Savas (2008), Furuoka (2009) and Furuoka and Munir (2011) also found that population growth affects positively economic growth.

4.2. Granger Causality Tests Results

Since the variables in the model are cointegrated, the Granger causality tests based on the VECM are used to determine the short and long run causal relationships among the variables. The Granger causality test results based on the VECM are shown in Table 4. The significance of the coefficient of the lagged error correction term shows the long run causal effect. It is clear that there are bidirectional short-run causality relationships between OPEN, lnGFCF, lnPOP and lnGDP. Besides, there are unidirectional long-run causality relationship running from OPEN to lnGDP, and bidirectional long-run causality relationships between lnGFCF, lnPOP and lnGDP.

Table 4. Granger causality test results

	Independent variables				
	$\sum \Delta$ lnGDP	$\sum \Delta$ OPEN	$\sum \Delta$ lnGFCF	$\sum \Delta$ lnPOP	ect(-1)
Δ lnGDP	-	2.428535(2)*	3.562723(3)**	4.166396(3)**	-2.844258*
Δ OPEN	2.379852(3)**	-	3.19377(1)**	0.979707(2)	-0.348907
Δ lnGFCF	5.744875(2)**	1.284282(3)	-	1.530951(2)	-4.747465**
Δ lnPOP	2.543896(3)**	1.029698(2)	2.683504(2)**	-	-3.955586*

Notes: ect(-1) represents the error correction term lagged one period. The numbers in the brackets show the optimal lag based on the AIC. D represents the first difference. Only F-statistics for the explanatory lagged variables in first differences are reported here. For the ect(-1) the t-statistic is reported instead. ** denotes significance at the 5 per cent level and * indicates significance at the 10 per cent level.

4.3. Statistical Diagnostic Tests Results

It is important to subject the VECM to a number of diagnostic tests, namely, the normality, serial correlation, heteroskedasticity (BPG and ARCH) and Ramsey RESET tests to ascertain its statistical adequacy. A 5% level of significance will be used in all these tests. The results of the diagnostic tests are reported in Table 5. The VECM with lnGDP, OPEN, lnGFCF and lnPOP as the dependent variables pass the normality, serial correlation, heteroskedasticity (BPG and ARCH) and Ramsey RESET tests.

Table 5. Results of the statistical diagnostic tests on the VECM

	Probability			
The Depended Variables	lnGDP	OPEN	lnGFCF	lnPOP
Normality tests	0.542119	0.948308	0.526623	0.83284
Serial correlation tests	0.3912	0.2487	0.436	0.6778
Heteroskedasticity (BPG) test	0.6383	0.1084	0.302	0.3031
Heteroskedasticity (ARCH) test	0.1056	0.2274	0.5018	0.3496
Ramsey RESET tests	0.7299	0.6743	0.88	0.1379

Note: ** Denotes significance at the 1 percent level, and * at the 5 per cent level

4.4. Impulse Response Functions (IRF) Test Results

Impulse response functions (IRF) allow us to study the dynamic effects of a particular variable's shock on the other variables that are included in the same model. Besides, we can examine the dynamic behavior of the times series over ten-year forecast horizon. There are many options for transforming the impulses. We will use the generalized impulse response functions. Figure 1 shows that when there is a shock in OPEN or lnPOP, lnGDP will respond positively in the following years. However, when there is a shock to lnGFCF, lnGDP will respond positively only in the first two years.

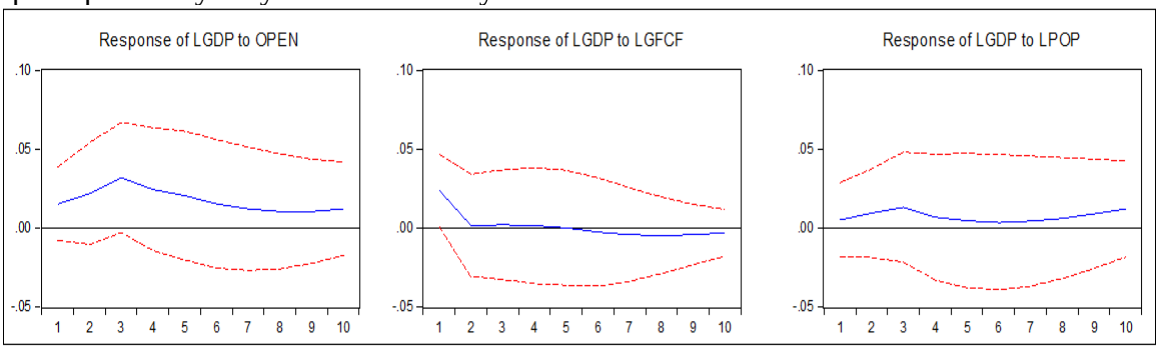

Figure 1. Generalized impulse response functions (GIRF) results

4.5. Variance Decomposition (VD) Analysis Results

The variance decomposition (VD) for 1-year to 10-year forecast horizons will be applied to explain how much of the uncertainty concerning the prediction of the dependent variable can be explained by the uncertainty surrounding the other variables in the same model during the forecast horizon.

The forecast error variance decompositions of the variables in our model are given in Table 6. In the first year, the error variance of GDP is exclusively generated by its own innovations and has been decreasing since then for the various forecast horizons. However, at the 10-year forecast horizon, its own shocks contribute about 76% of the forecast error variance. On the other hand, OPEN, lnGFCF and lnPOP shocks explain 13%, 10% and 1% of the forecast error variance of GDP respectively. Furthermore, the contributions of OPEN and lnGFCF in explaining lnGDP forecast error variance have increased during the 10-year forecast period, but there are no significant changes in the contribution of lnPOP.

Table 6. Variance decomposition (VD) analysis results

Period	S.E.	lnGDP	OPEN	lnGFCF	lnPOP
1	0.063549	100.0000	0.000000	0.000000	0.000000
2	0.082996	92.12259	3.282198	4.555380	0.039829
3	0.101043	85.30329	8.295978	6.087553	0.313177
4	0.111007	82.54914	10.55942	6.629383	0.262055
5	0.118117	80.78422	11.83672	7.140279	0.238781
6	0.122633	79.48134	12.45211	7.825622	0.240926
7	0.125572	78.50246	12.73422	8.532962	0.230359
8	0.127425	77.76435	12.85551	9.124333	0.255811
9	0.128732	77.10360	12.92590	9.512543	0.457958
10	0.129888	76.31696	12.98888	9.679758	1.014398

5. Conclusion

This study investigated the effect of trade openness, investment and population on the economic growth of Syria using annual time series data from 1980 to 2010. The model consists of the GDP, openness, investment, and population. The ADF unit root test, Johansen cointegration test, Granger causality tests, impulse response functions (IRF), and variance decomposition (VD) analysis were utilized in this study. The ADF test results indicate that all the variables are I(1). The Johansen cointegration test showed that that openness, investment and population have a positive and significant long-run relationship with GDP. Furthermore, the Granger causality tests showed that there are unidirectional long-run causality relationships running from openness to GDP, and bidirectional long-run causality relationships between investment, population and GDP. While in the short run there are bidirectional short-run causality relationships between openness, investment, population and GDP. The IRFs indicated that when there is a shock to openness or population, GDP will respond positively in the following years. However, when there is a shock to investment, GDP will only respond positively in the first two years. The VD analysis showed that over a ten-year forecasting horizon, openness, investment and population shocks explain 13%, 10% and 1% of the forecast error variance of GDP respectively.

Based on the results of this study, when the war finish, it is vital for the Syrian government to create an attractive investment climate, simplify import and export procedures, and upgrade the quality of human capital in the country by improving the quality of the education system, health services, the standard of living, and the quality of life.

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The Role of Internet of Things for a Continuous Improvement in Education

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Abstract: *This research is concentrated on the value that Internet of Things (IoT) can add to the education process, by using it in development of online virtual laboratories, which is a major requirement for any education system, in order to be qualitative and competitive. Practical experimentation is possible even with distance learning approach and today students may have access to a multitude of teaching resources, including IoT services used for various real world experiments. This is possible due to low costs and high performance of new electronic modules, on one hand, and the development of many high scalable web services, which permits data processing and communication over the Internet, on the other hand. The paper also presents an example of using IoT, by connecting an Arduino platform with the Xively web service, in order to read and display data received from a temperature sensor.*

Keywords: education, internet of things, communication, web service

JEL Codes: L63, L86

1. Introduction

Today our society becomes more and more sophisticated and demanding. On one hand, almost any business has to make some upgrades in their approaches and thinking for keeping themselves present in a vast and competitive market. On the other hand, the education institutions worldwide are forced to keep up with the industrial and technological innovations, in order that education can produce well-trained employees in any economic or industrial field. Thus, Internet of Things (IoT) is a high capable network that meets this goal for both business and education players. With a continually increasing number of Internet connected devices and robust web services available in IoT, our world today has a new great resource for changing the education process for a much better and continuous improvement for present and future generations' benefit.

Since the earlier stages of *Internet of Things (IoT)* network development many authors have attempted to define this system in many forms, including *Internet of Everything*, *Internet of Anything*, *Internet of People*, *Internet of Signs*, *Internet of Services*, *Internet of Data* or *Internet of Processes*, according to (Oriwoh & Conrad, 2015), and the study conclusions led to a definition that is currently satisfactory, i.e., IoT represents '*anything at all, depending on requirements'*.

Many market analysts worldwide are amazed indeed by the great impact of Internet of Things (IoT) in our day lives. According to statistics depicted from Internet resources, by the year of 2020, IoT network will integrate over 25 billion electronic objects. However, due to continuous development for Internet communications, the number of devices that will connect to the IoT will surpass 30 billion for the same period forecasted. Figure 1 reveals a report of Mario Morales, IDC statistics company (http://www.idc.com), showing an upward trend in people and devices connectivity over Internet.

Internet of Things (IoT) is a global network consisting of an array of objects containing electronics, software, sensors and connectivity features to allow a high level of satisfaction in providing various services worldwide. This is achieved through a continuous exchange of data between manufacturers, users and other computing devices. Each *thing* in the IoT is uniquely identifiable by its name or symbol in its embedded computing system and interoperates on the Internet infrastructure, feature that makes the IoT represent a global-scale distributed system.

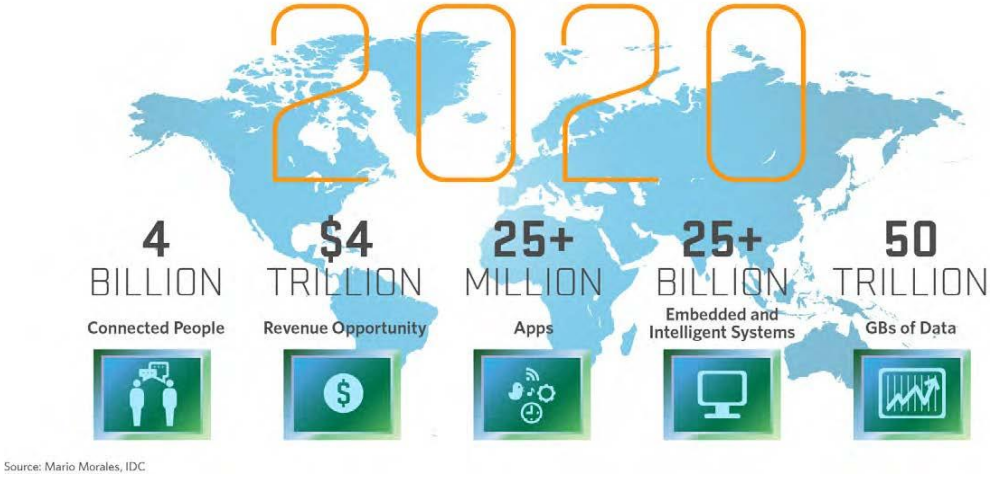


Fig. 1 - Statistics on internet users interconnection and the number of devices integrated into the IoT by 2020

(Source: Mario Morales, IDC, http://www.idc.com)

The objects of the IoT network may include a variety of devices such as:

- implants to monitor heart rate, blood pressure monitoring devices;
- monitoring biochip bracelets for farm animals or pets;
- autonomous vehicles and robots;
- devices for assisting emergency service personnel;
- automatic irrigation systems, home appliances (smart refrigerator, smart TV, air conditioning, intelligent thermostat etc.)

These devices collect useful data using multiple sensors and data acquisition technology, then transport it to other computing devices or systems for further processing and interpretation.

2. Data processing methodology in IoT for education

The IoT can be used to develop online virtual laboratories for various faculty specializations, like electronics or automatics. Examples can include electronic circuity testing and automatization process monitoring and control. Thus, education institutions can implement such virtual labs for various study fields and enable distance learning facilities even for technical specializations. Here comes the important role of IoT, which is the fact that it provides the suitable framework for developing online virtual laboratory platforms.

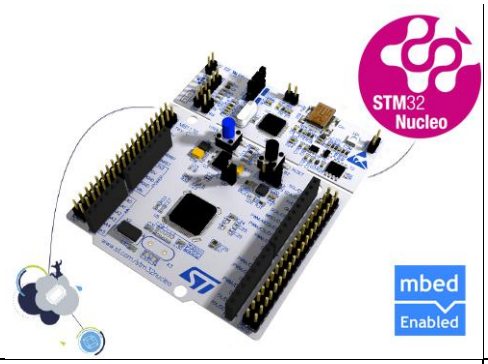
The most used approach in getting devices connected in IoT and obtaining useful information is to have an electronic module as device, which needs to have built-in Internet connectivity feature, and a web service capable to receive and send data from and to the connected devices.

Hardware requirements

Hardware technologies used to implement a virtual laboratory for automation control processes are based on AVR[3] or ARM[4] microcontroller systems, and some on PLC[5] controllers. As a common solution in universities' virtual laboratories, AVR and ARM microcontrollers systems are sufficient and more affordable than platforms using PLCs. Thus, companies like Texas Instruments or STMicroelectronics have made open development platforms with ARM microprocessors that can be acquired by anyone. At the moment (June 2015) in our country one can buy STM32 NUCLEO-F401RE platform with only 20 Euro, given that it is a complete development platform with high performance.

On the other hand, Arduino[6] platforms, having less performance, keep an increasing trend of purchasing costs. For example, an original Arduino UNO R3 platform sells with 25 Euro, although its specifications are low compared to STM32 NUCLEO-F401RE development platform. However, Arduino modules are widely spread due to its ease of programming, implementation and operation and many Chinese manufacturers produce Arduino clones at lower prices (less than half), as Arduino offers open source licenses for their architectures. ARM microcontrollers programming is more difficult, but the results are superior to working with AVR microcontrollers (see table 1 for a comparison).

Table 1. STM32 NUCLEO-F401RE vs. ARDUINO UNO R3 specifications

	
• STM32 microcontroller: Core Processor ARM® Cortex®-M4 • STM32F401RET6 in LQFP64 package • ARM®32-bit Cortex®-M4 CPU • 84 MHz max CPU frequency • VDD from 1.7 V to 3.6 V • 512 KB Flash • 96 KB SRAM • GPIO (50) with external interrupt capability • 12-bit ADC with 16 channels • RTC • Timers (8) • I2C (3) • USART (3) • SPI (3)	• Microcontroller: ATmega328 • Operating Voltage: 5V • Input Voltage (recommended): 7-12V • Input Voltage (limits): 6-20V • Digital I/O Pins: 14 (of which 6 provide PWM output) • Analog Input Pins: 6 • DC Current per I/O Pin: 40 mA • DC Current for 3.3V Pin: 50 mA • Flash Memory: 32 KB (ATmega328) of which 0.5 KB used by bootloader • SRAM: 2 KB (ATmega328) • EEPROM: 1 KB (ATmega328)

[3] 8-bit RISC AVR microcontrollers developed by Atmel (http://www.atmel.com/)

[4] 32-bit/64-bit microcontrollers, licensed by the British company ARM Holdings (http://www.arm.com/)

[5] Programmable Logic Controller - used for industrial electromechanical automation processes

[6] Arduino develops widely used digital electronic devices with open source license (http://www.arduino.cc/)

• USB OTG FS • SDIO	• Clock Speed: 16 MHz • Length 68.6 mm • Width 53.4 mm • Weight 25 g

All the information in Table 1 is depicted from STMicroelectronics, respectively, Arduino official websites.

These platforms offers a high connectivity with a variety of measurement and control devices, such as data acquisition modules, sensors, transducers or actuators. Any automation control system contains such electromechanical elements, by which a process parameters (temperature, flow, pressure, level, etc.) can be monitored and controlled.

Software requirements

Interface software applications for accessing physical lab platforms can be developed in various ways, choosing from proprietary visual programming software, like NI LabVIEW or MATLAB to free or open source available tools. The National Instruments (NI) company offers the LabVIEW design & development software, which represents a strong tool for developing complex graphical user interfaces for various applications with all the components an online virtual lab requires, including the Internet connection feature for distance monitoring and control.

Together with other tools, many authors developed a series of virtual labs, some examples include:

- Design of online v-labs for automation control engineering education with NI LabVIEW (Stefanovic et al., 2011);
- Robotics virtual labs with remote access using EJS[7], MATLAB and LabVIEW (Chaos et al., 2013);
- Design and development of distance (and mobile) access to remote reconfigurable electrical engineering laboratory platforms for e-Learning within education (Sandu et al., 2008).

In addition to proprietary applications mentioned above there are also free or open source software communication tools, mature enough to satisfy any developer of web applications for remote control laboratory experiments. For instance, tools developed with WebSocket protocol and related API's (as Socket.IO API within Node.JS web application framework) can offer full-duplex communication over a single TCP connection, required by client-server applications like online virtual labs. Such tools are developed using client-side web programming languages, such as HTML, JavaScript, CSS, and server-side languages, like PHP, Perl, Ruby or Python.

3. Case study

For the demonstration of IoT benefits, let's present an example of connecting an electronic platform to a web service and see how the data received from a temperature sensor is nicely displayed in the browser, almost in real-time. The new monitoring system achieved is based on Arduino developer platform and Xively web service and can be easily integrated in a virtual lab experiment.

The hardware platform

The chosen components of the hardware needed for the lab include:

[7] Easy Java/JavaScript Simulations - http://www.um.es/fem/EjsWiki/pmwiki.php .

- Arduino UNO R3 development platform (http://www.arduino.cc);
- ENC28J60 Ethernet shield (controller produced by Microchip, http://www.microchip.com/wwwproducts/Devices.aspx?product=ENC28J60);
- LM35 temperature sensor;
- Li-Po battery with 7.4V and 3600 mAh for power supply. It can also use a 9V battery.

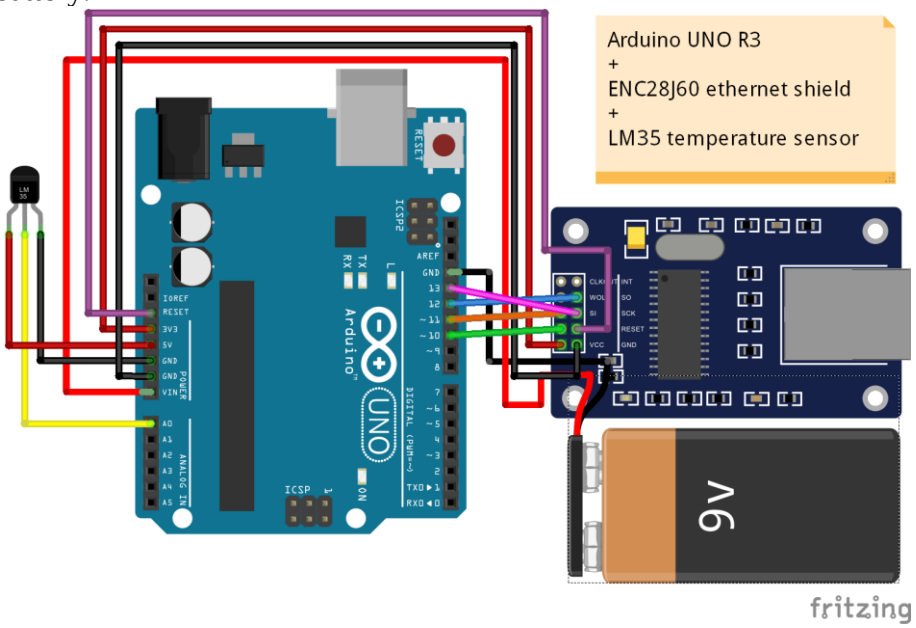


Fig. 2 – The schematic electronic representation of virtual lab platform

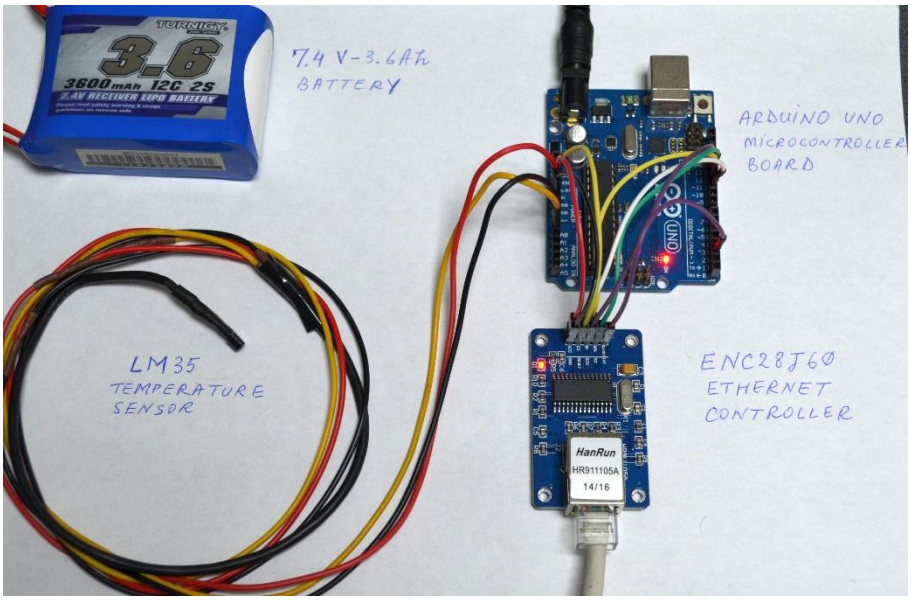


Fig. 3 – The physical platform of the virtual lab

Figure 2 shows the schematic diagram containing all the components used for the demonstration and it was designed using the Fritzing electronic prototyping software (http://fritzing.org/). All the connections were realized respecting the wiring methodology standards. In figure 3, we have the real platform in action with all the components connected in the same way as in figure 2.

The software application

In order to connect the platform with the Xively web service we need to program the Arduino microcontroller board with the corresponding source code, as the following:

```
#include <EtherCard.h>
// The FEED ID and API KEY created in Xively web platform
#define FEED "1175311349"
#define APIKEY "xuIM3MbWh0JIrmN8znZIlGiGkMwHADKyDOVbsmwIw3tBiqwy"
float tempC;
int tempPin = 0;
// ethernet interface mac address for ENC28J60
byte mymac[] = { 0x74, 0x69, 0x69, 0x2D, 0x30, 0x31 };
// Xively URL address
const char website[] PROGMEM = "api.xively.com";

byte Ethernet::buffer[700];
uint32_t timer;
Stash;
static char statusstr[10];
void setup () {
  Serial.begin(57600);
  Serial.println("\n[webClient]");
  if (ether.begin(sizeof Ethernet::buffer, mymac, 10) == 0)
    Serial.println( "Failed to access Ethernet controller");
  if (!ether.dhcpSetup())
    Serial.println("DHCP failed");
  ether.printIp("IP: ", ether.myip);
  ether.printIp("GW: ", ether.gwip);
  ether.printIp("DNS: ", ether.dnsip);
  if (!ether.dnsLookup(website))
    Serial.println("DNS failed");
  ether.printIp("SRV: ", ether.hisip);
  Serial.println("\n");
  Serial.println("... Start Reading Data and uploading to Xively  ...\n");
}
void loop () {
  word len = ether.packetReceive();
  word pos = ether.packetLoop(len);
  if (millis() > timer) {
    timer = millis() + 2000;
    // convert the analog data to temperature values
    tempC = (5.0 * analogRead(tempPin) * 100.0) / 1024.0;
    Serial.println(tempC);
    delay(1000);
    dtostrf(tempC, 3, 1, statusstr);
    // we can determine the size of the generated message ahead of time
    byte sd = stash.create();
    stash.print("LM35_sensor,");
    stash.println(statusstr);
    stash.save();
    // generate the header with payload - note that the stash size is used,
    // and that a "stash descriptor" is passed in as argument using "$H"
    Stash::prepare(PSTR("PUT http://$F/v2/feeds/$F.csv HTTP/1.0" "\r\n"
                        "Host: $F" "\r\n"
                        "X-PachubeApiKey: $F" "\r\n"
                        "Content-Length: $D" "\r\n"
                        "\r\n"
                        "$H"),
                   website, PSTR(FEED), website, PSTR(APIKEY), stash.size(), sd);
    // send the packet - this also releases all stash buffers once done
    ether.tcpSend();
  }
}
```

This code was written, compiled and uploaded using Arduino IDE, thus enabling the platform to connect to Xively web service and transmit sensor data.

4. The results

Xively web service is developed by LogMeIn and offers an Internet of Things product relationship management solution, both for personal and enterprise use (https://xively.com/). For the case study we chose the Xively personal service, being free for developers worldwide.

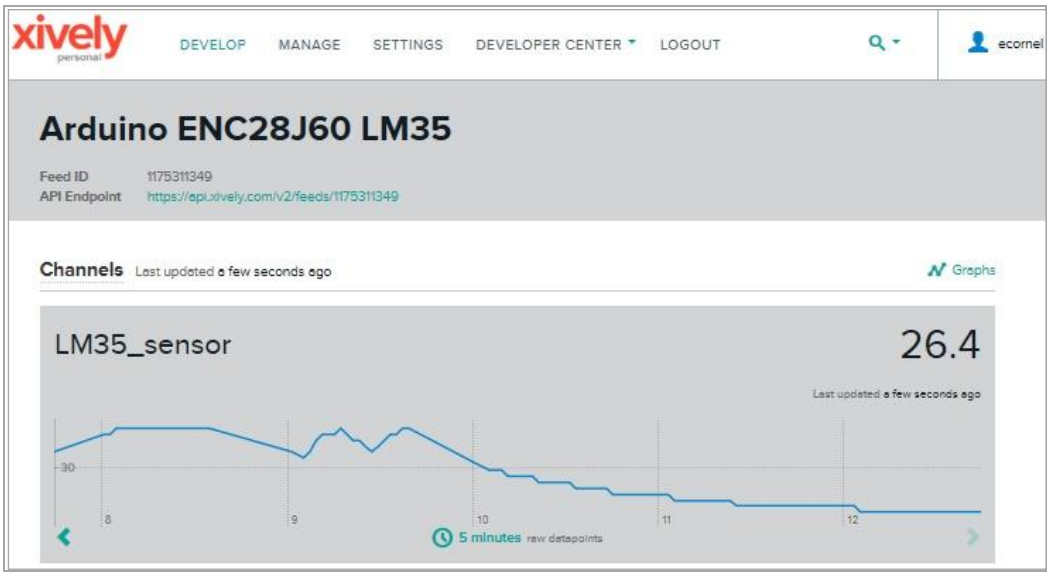


Fig. 4 – The temperature graph displayed in Xively web platform

The philosophy beyond Xively is adding Internet enabled devices inside the web platform and using the FEEDs and API keys provided to identify devices and communicate over Internet. Any communication can be either public or private, depending of the API key used and if someone uses multiple sensors Xively supports different channels of communication for each of them.

After creating the personal Xively account and adding the physical platform as the device, the web service has provided us a FEED ID and API key, necessary for communicating with our platform. Figure 4 shows how the graph with temperature values is displayed inside Xively web platform in the browser. The data is updated in real-time, the refresh interval being set in the Arduino code as needed; for the demonstration it could be observed that the Xively web service can efficiently refresh and display data even at 2 seconds update refresh interval.

As for the whole system, it is one robust enough and a very low cost solution, and it can be used by any laboratory development team in education institutions worldwide. The platform delivers sensor data as long as the battery can provide energy, or can send data continually without being turned off, when using the normal 110/220V electricity from a laboratory room.

5. Conclussions

The study presented here demonstrates that IoT is the future in many fields where Internet enabled devices are needed to communicate and transmit useful data, as in the case of online virtual laboratories. The results of the case study proves that IoT plays an important role for a continuous improvement in education systems in Romania, in order to have a competitive and high quality educational process, which can be acknowledged and accredited worldwide.

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Acknowledgements

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COMBINED FORECASTS OF INFLATION RATE IN ROMANIA USING AFTER ALGORITHM[8]

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Abstract. *The main goal of this paper is to construct some combined predictions for the inflation rate in Romania, by using only the individual forecasts of two experts. The predictions provided during 2004-2014 were used in constructing the new forecasts. Several schemes of combination were employed: equally weighted scheme, a scheme with weights that weights depend on the inverse of averages square forecast errors and the Aggregated Forecast Through Exponential Re-weighting (AFTER) algorithm. The combined predictions based on these schemes improved the degree of accuracy of the forecasts made by the second expert during 2010-2013, but only an empirical combination based on the weights from 2009 improved also the first expert predictions for inflation rate in Romania.*

Key-words: forecasts, Aggregated Forecast Through Exponential Re-weighting, inflation rate

JEL Classification: C60, E31

1. Introduction

The importance of combining predictions in order to get more accurate forecasts is well-established in literature, many researches demonstrating the utility of this approach in the last 50 years, especially the works of Granger and his colleagues (Bates and Granger(1969)).

In this paper combined predictions were proposed for the inflation rate in Romania. The individual predictions are the forecasts made by two experts. Several schemes of combination were employed: equally weighted scheme, a scheme with weights that are inversely correlated with mean square error and the Aggregated Forecast Through Exponential Re-weighting algorithm.

After a short literature review, the combination schemes are presented and the new forecasts are provided for inflation rate in Romania during 2010-2014. The ex-post evaluation was made for predictions during 2010-2013. The last section concludes.

2. Literature review

Many articles have shown that the forecasts combination performs better compared to individual predictions, among them being the papers of Timmermann(2006), Altavilla and De Grauwe (2010), Chen and Yang(2007), Clark and McCracken(2009) and Taylor(2010). However, we have to be careful in stating the conclusions, because the ex-post evaluation of

[8] This paper has been financially supported within the project entitled "*Routes of academic excellence in doctoral and post-doctoral research*, contract number *POSDRU/159/1.5/S/137926*, beneficiary: Romanian Academy, the project being co-financed by European Social Fund through Sectoral Operational Programme for Human Resources Development 2007-2013.

combined forecasts is not enough. The unstable character of individual forecasts makes us to consider the aspects regarding the selection of the model in a simulated ex-ante approach.

Individual prediction methods based on various approaches bring essential information by including different characteristics of the data and they allow the combination technique to benefit from these important characteristics, as Armstrong (2001) showed. The methods proposed by Bates and Granger(1969) supposed a linear combination of two forecasts, but Granger(1989) considered n predictions using a regression model in constructing the combined prediction. Walz and Walz(1989) proposed a Bayesian approach of combining forecasts by using a multiple regression. Goodwin(2000) made a comparison of combined predictions with two integration techniques.

De Menezes et al.(2000) employed the arithmetic mean, which is still frequently used in literature. The authors studied 3 characteristics of the prediction errors: correlation, variance and skewness. Marques(2006) also used the arithmetic mean and the weighted average based on the inverse of mean square error. Martins(2011) showed that combined forecasts perform better than the least variance. Werner and Ribeiro(2006) and Jorgensen(2007) recommended the use of subjective technique of combination based on intuition and knowledge. Werner(2005) analyzed subjective combined predictions, showing that these predictions depend on forecasting context and particular characteristics of the predictors. The combined techniques used by Shen et al.(2008) are: minimum variance method, simple average and discounted mean square forecast error method.

Romer and Romer(2008) verified if policymakers have useful information in predicting domain by using a regression model:

$$X_t = \alpha + \beta_1 S_t + \beta_2 P_t + \varepsilon_t$$

X_t- actual value of the variable
S_t- staff prediction
P_t- policymaker prediction

If β_2 is statistically different from zero and positive, conditional on staff prediction, the inflation rate is higher when the policymaker prediction is higher. This shows that policymakers add value to the staff anticipations.

Poncella et al. (2011) made a comparison of 4 techniques of combination: dynamic factor models, the most important elements, sliced inverse regression and partial least squares. Hsiao and Wan(2011) made two corrections of the combination based on simple mean, making comparison of models in scenarios. Martins and Werner(2012) identified differences in the predictions accuracy when the errors correlation was considered or not. They compared the individual predictions with the combined ones based on simple mean and minimum variance without and with correlation.

Bjørnland et al. (2012) proposed a system for proving inflation rate predictions in Norway. The weights used in making the forecasts combination are determined from the models' performance. By using a trimmed weight mean the performance of inflation rate forecasts provided by the Norges Bank was improved.

Bordignon, Bunn, Lisi and Nan (2013) considered how well the combined predictions can be used to forecast the electricity prices. The results show that the combining technique improved the accuracy from the risk management and planning perspectives.

3. Combining experts predictions of inflation rate in Romania

A forecast combination that starts from K alternative predictors ($\hat{X}_t^{(1)}, \hat{X}_t^{(2)}, \dots, \hat{X}_t^{(K)}$) of the variable X_t and it is based on the information that is available till (t-1) period is written as:

$$\hat{X}_t^C = \sum_{k=1}^{K} \omega_k \cdot \hat{X}_t^{(k)} \quad (1)$$

The vector denoted by ω optimizes a certain criterion, the weights ω_k being time-varying or constant.

Several researches, like those of Stock and Watson(2004) or Smith and Wallis(2009), concluded that the best solution is the use of an equally weighted average for determining the combining weights. This solution is recommended because of the effect of small sample error. The number of predictors decreases in this case (K') and the weight is computed as $\omega_k = \frac{1}{K'}$.

In the traditional approach of Bates and Granger(1969) the weights depend on the inverse of averages square forecast errors. This implies that the models associated with lower forecast errors receive higher weights:

$$\omega_{t,k} = \frac{(\sum_{\tau=t-l}^{t-1} e_{\tau,j}^2)^{-1}}{\sum_{j=1}^{K}(\sum_{\tau=t-l}^{t-1} e_{\tau,j}^2)^{-1}} \quad (2)$$

where $\tau - index$, $e_{\tau,k} = X_\tau - \hat{X}_\tau^{(k)}$, $\omega_{1,k} = \frac{1}{K}$, $0 \le \omega_{t,k} \le 1$ and $\sum_{k=1}^{K} \omega_{t,k} = 1$.

A recent adaptive method (Aggregated Forecast Through Exponential Re-weighting-AFTER) was employed by Yang(2004), where the weights are computed recursively:

$$\omega_{t,k} = \frac{\hat{v}_{t-1,k}^{-0.5} \cdot \exp(-\frac{e_{t-1,k}^2}{2\hat{v}_{t-1,k}})\omega_{t-1,k}}{\sum_{i=1}^{K} \hat{v}_{t-1,i}^{-0.5} \cdot \exp(-\frac{e_{t-1,i}^2}{2\hat{v}_{t-1,i}})\omega_{t-1,i}} \quad (3)$$

where $e_{t-1,k} = X_{t-1} - \hat{X}_{t-1}^{(k)}$, $\omega_{1,k} = \frac{1}{K}$, $0 \le \omega_{t,k} \le 1$, $\sum_{k=1}^{K} \omega_{t,k} = 1$ and $\hat{v}_{t-1,k} = \frac{1}{t-1}\sum_{\tau=1}^{t-1} e_{\tau,k}^2$ which is the estimator of forecast variance.

This algorithm has a modified variant called AFTER-S, that was proposed by Sanchez(2008). He adapted the combination faster to various situations by including a forgetting factor.

The dataset used in this study is represented by the forecasts of inflation rate on the horizon 2004-2014. Taking into account the historical predictions from 2004-2009, new forecasts are made by applying the combining technique for a period that covers the crisis years 2010-2014.

Table 1: Combined forecasts for inflation rate (%) in Romania based on experts anticipations (2010-2014)

Year	Equally weight scheme	Inverse scheme	AFTER algorithm	Actual values
2010	6,30	6,27	6,23	6,09
2011	4,45	4,26	4,08	5,8
2012	2,90	2,87	2,82	3,33
2013	3,68	3,33	2,83	3,98
2014	3,36	3,04	2,8	-

Source: own computations

For assessing the ex-post accuracy of the predictions several measures are used: mean error, mean absolute error, root mean square error, U1 and U2 Theil's coefficients.

Table 2: Accuracy of individual and combined forecasts for inflation rate (%) in Romania (2010-2013)

Accuracy indicator	Expert 1 predictions	Expert 2 forecasts	Equally weight scheme	Inverse scheme	AFTER algorithm
ME	-0,042	0,975	0,466	0,619	0,807
MAE	0,556	1,030	0,571	0,709	0,879
RMSE	0,608	1,273	0,731	0,874	1,066
U1	0,0761	0,1938	0,1015	0,1250	0,1577
U2	0,1510	0,3269	0,1858	0,2233	0,2734

Source: own computations

All the proposed combined forecasts outperformed the second expert forecasts on the horizon 2010-2013, according to the values of ME, MAE and RMSE. The combined predictions and of the second forecaster ones are underestimated, while those proposed by the first expert are overestimated. Equally weighted scheme performed better than all the other forecasting methods. However, all the combined predictions outperformed the naïve ones, according to the values of U2 that are less than 1. U1 values are under 0.25 indicating a reasonable degree of accuracy.

As we can see the first expert predicted better the inflation rate in Romania. Therefore, a higher weight is given to these predictions. Therefore, new weights are computed by taking into consideration the linear combination from 2009, the previous year before the forecasts origin.

$$X_{2009} = \beta_1 X_{1,2009} + (1 - \beta_1) X_{2,2009} \quad (4)$$

X1- prediction of the first expert

X2- prediction of the second expert

Table 3: Combined predictions based on the weights from 2009

Year	Weights from 2009	Actual values
2010	6,40	6,09
2011	5,09	5,8
2012	3,00	3,33
2013	4,85	3,98
2014	6,40	-

Source: own computations

Table 4: Accuracy of combined forecasts for inflation rate (%) in Romania based on weights from 2009 (2010-2013)

Accuracy indicator	Expert 1 predictions	Expert 2 forecasts	Scheme based on weights from 2009
ME	-0,042	0,975	-0,033
MAE	0,556	1,030	0,554

RMSE	0,608	1,273	0,603

Source: own computations

According to accuracy indicators, a small improvement was brought to predictions based on first expert by keeping the weights from 2009, the year when the economic crisis started in Romania. The prognoses remain overestimated, due to the high weight given to forecasts based first expert in the combination.

4. Conclusions

In this paper some combined forecasts were proposed for the inflation rate in Romania. Several schemes of combination were employed: equally weighted scheme, a scheme with weights that are inversely correlated with mean square error and the Aggregated Forecast Through Exponential Re-weighting algorithm.

The combined predictions based on these schemes improved the degree of accuracy of the anticipations of second expert during 2010-2013, but only our empirical combination based on the weights from 2009 improved also the first expert predictions. A future research could include other combination techniques.

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TOWARDS THE CAPITAL MARKET UNION

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Abstract: *This paper discusses the main characteristics of the proposed Capital Markets Union in Europe, as they are introduced by the European Commission and various authors, and emphasises some important advantages and disadvantages of this project for the developing and frontier markets in UE, especially for Romania.*

Key-words: capital markets, developing and frontier markets, convergence, access to finance, volatility

JEL Classification: F36, G15, G18

1. Introduction

The Capital Markets Union is a European Commission draft designed to facilitate the increase of the scale of capital markets and a better level of integration at the level of the entire European Union. This draft is a key component of the Investment Plan - one of the priorities of the agenda of the European Commission under the chairmanship of Mr. Jean-Claude Junker, which comes in response to the difficult economic situation in Europe also determined by the significant decrease in investments (eg. the gross formation of capital). Thus, while GDP and private consumption in the EU were in the second half of 2014 at levels close to those of 2007, the investments were approximately 15% below the level of the same year, and in some countries the decline was even stronger (source: Eurostat).

The document whereby the European Commission proposed operating principles of the Capital Markets Union ("Green Paper - Creating a union of capital markets") was published in order to initiate a debate at the EU level regarding the difficulties and possible short-term, medium and long term actions with the goal of developing capital markets (liquidity, capitalization, lower costs, higher transparency, better access to the market etc.) and especially the diversification of financing solutions for European companies, and the decrease of the cost of capital, especially for small and medium enterprises. The indirect effect of these should consist in economic growth and implicitly in creating new jobs.

During February 18 to May 13, 2015, the European Commission conducted a public consultation on this document, attended and with views expressed by 422 individuals and entities working or related to the capital market. Following the outcome of this consultation, the European Commission will adopt in the third quarter of 2015 an Action Plan on the necessary steps and timetable until 2019 for the main pillars of the Capital Markets Union.

2. Main features of the Capital Markets Union draft

The principles underlying the Markets Union draft are:

- Increasing the benefits that the capital market generates in the economy (sustainable economic growth and creating new jobs);
- Establishing a single capital market for all 28 Member States by lifting all currently existing barriers to the free movement of capital and cross-border investments in the European Union;
- Strengthening the financial stability in the European Union through effective and uniform application of a single regulatory framework for financial services;
- Investors protection;
- Enhancing the competitiveness of EU companies and facilitating the attraction of investments from outside the EU.

The objectives of the Capital Markets Union are:

- Developing and reducing fragmentation of capital markets in the EU;
- Increasing the contribution of capital market to the financing of European companies and reducing the dependence on bank lending;
- Improving the access to financing for companies, especially for small and medium enterprises (which have a significant weight in the formation of the gross domestic product and provide a significant number of jobs), and last but not least;
- Facilitating the movement of capitals and reducing financing costs.

In the short term, from an operational perspective the draft aims at:

- Smplifying and reducing the number of procedures for drafting the public offer prospectuses (amending Directive 71/2003 / EC on the prospectus)
- Stimulating the creation of high-quality securitized financial products, by setting high standards on processes, legal predictability and comparability between securitization instruments through a higher degree of standardization of products,
- Proposing uniform criteria regarding the credit risk (creditworthiness) of small and medium enterprises,
- Fcilitating long-term investments by European specialized investment funds (ELTIF)
- Facilitating private investments by clarifying the legal and supervisory regime thereof.

It is important to consider that Romania will hold the European Council Presidency during the period when it is estimated that the implementation of the main pillars of this draft is to be completed (2019).

3. Advantages and disadvantages of the Capital Markets Union Draft for frontier markets and emerging markets in the EU

After the onset of the global financial crisis (2007), European capital markets (like many markets from other geographic regions) showed a decline in terms of liquidity (eg. the average daily value traded) and have become increasingly fragmented (instruments traded simultaneously in multiple trading places, poorer operation of interconnections, increase in the number of deposit certificates, certificates of interest, etc.). A consequence is that the access to financing through the capital markets has deteriorated in general and often companies in countries at the periphery of the euro area or outside it incur funding costs higher than other companies with a similar scope, risk profile and activity operating in a developed country within the monetary union. Therefore, the fragmentation of markets slows

down the real convergence and recovery pace after an economic crisis. From this perspective, a union of capital markets would be an important asset for the economic development of Member States and for reducing disparities between countries.

Beyond this major advantage mentioned above, there are many difficulties regarding the operation of such a union, mostly coming from the differences between countries in terms of the development of the markets, the regulatory environment, economic efficiency, governance, tax system etc.

Thus, we can identify at least the following challenges at the level of all 28 member states of the European Union which would be potential candidates for inclusion in the Capital Markets Union:

- Significant differences between Members States regarding access to funding and the cost of funding
- Different rules and practices regarding the operation of markets (eg. Post-trading infrastructure) and of instruments traded (eg. private placements, securitized products, derivatives)
- Different access, sometimes difficult, of investors to financial information necessary for decisions
- Preference for investments in local assets ("home bias"), both of retail investors and of institutional ones (eg. massive share of local government securities in the portfolios of banks, insurance companies, investment and pension funds)
- Major differences (still) between the national legal systems (eg. Commercial Companies law, insolvency and bankruptcy law) and in particular regarding the degree of enforcement of law and surveillance (and control) powers of national financial authorities
- large differences regarding the degree of implementation of governance principles
- different tax systems.

Without a harmonization of tax provisions and without a single fiscal authority for all Member States, the Capital Markets Union as the Banking Union will operate with difficulty and will probably not produce the expected results.

The Capital Markets Union cannot operate effectively as long as southern European markets are underdeveloped as compared to Western markets. Its beneficial effects would manifest most clearly, both at national and European level only in the context of accession to the Monetary Union and of achievement of a higher degree of convergence. Otherwise, the economic and financial shocks will be felt more intensely than in the case of non-participation in such a union. Contrary to the objectives and expectations, the Capital Markets Union could generate advantages for investments precisely in developed countries, rather than in the countries at the periphery of the European economy.

One of the effects of Capital Markets Union Draft implementation will be likely the continuance of the trend of over-regulation in this sector of the financial market which could generate additional costs for intermediaries and issuers ("Regulatory Tsunami").

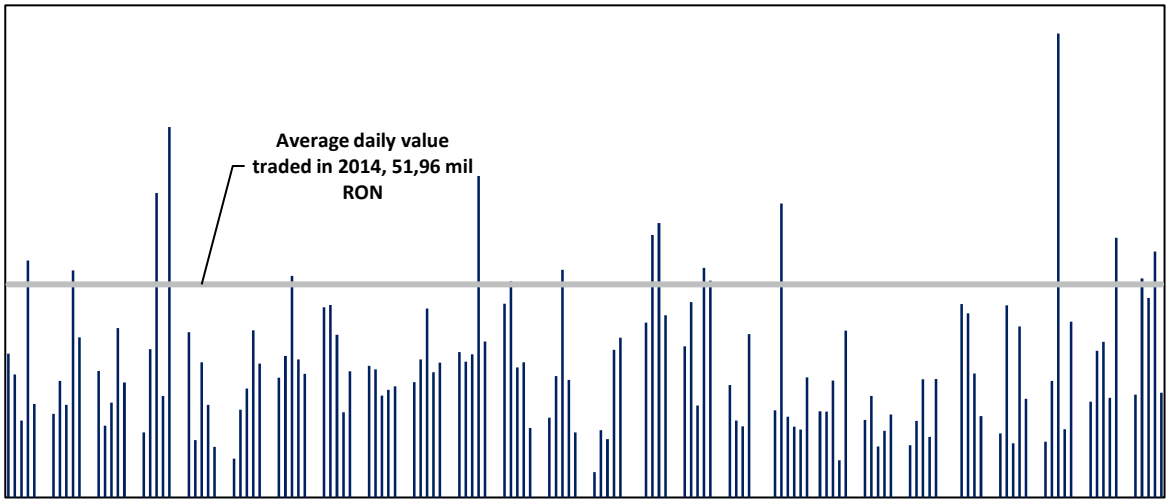
In the context of Capital Markets Union, the supervision should be carried out on two pillars: a pillar for the supervision of groups and a pillar for the supervision of national entities, with the effect of lowering the powers of authorization, supervision and control held by national authorities.

Most of the items listed above are found and are sent by respondents within the public communication.

4. The capital market in Romania and the impact it could have the Capital Markets Union draft on it

The capital market in Romania experienced a significant increase in the years 2010-2013 due to new listings of SOEs and to the positive international conjuncture. The growth manifested in almost all sections: liquidity and capitalization indexes developments. The period 2014-present, however, was one of stagnation, although the general European context remained relatively favourable. The negative developments have occurred mostly in terms of liquidity. The graph below shows that during 2015 almost in most trading sessions at BSE the transaction value was lower than the daily average for the year 2014.

Fig.1 The evolution of daily value traded in 2015 vs. the daily average for the year 2014



Source: BSE, own calculation

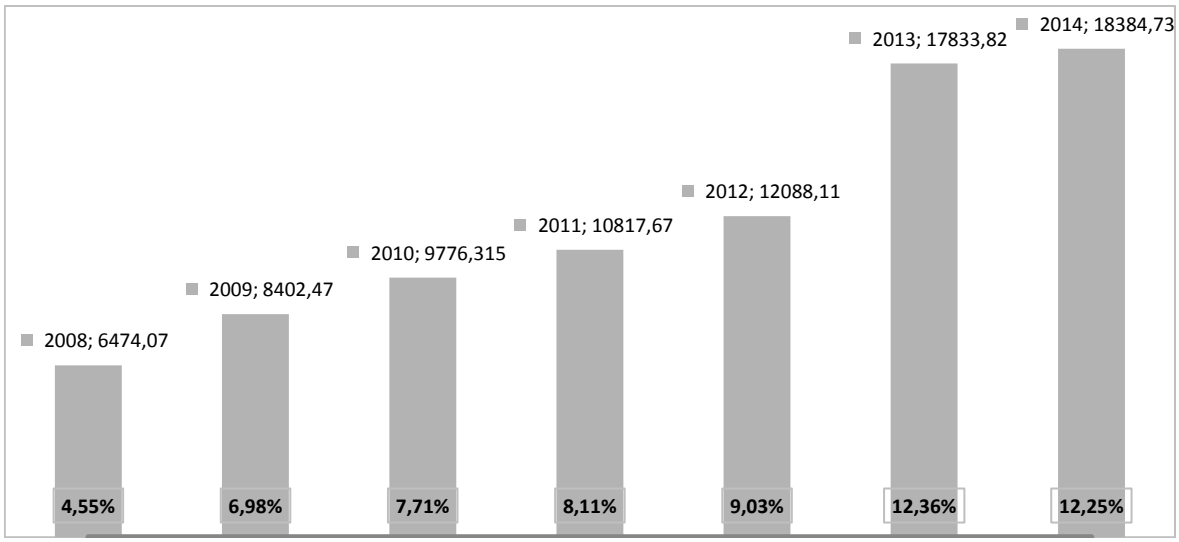
The graph below shows the significant progress made by the Romanian capital market in the period since the onset of the global financial crisis and the flattened tendency during 2014 and the first half of 2015. Even in the context of this accelerated growth, the size of the capital market related to the Romanian economy scale remained at least modest.

The accession to the Capital Markets Union of small countries in course development, which are not yet part of the eurozone, or of the Banking Union could create and exacerbate structural weaknesses. Ideally, the accession to such a market should take place after the moment when a more consistent stage of real convergence process is traversed and not very long before the time taken for joining the eurozone. If Romania joins the Capital Markets Union before achieving this, then the volatility of capital flows could be difficult to control and could be transmitted over the exchange rate volatility, it could create distortions in the financing of the economy and in maintaining external balances (eg. a low current account deficit).

As shown in the experience of countries participating in the Monetary Union, the accession to such a pan-European construction must be done when our economy / the degree of development and competitiveness / the stage of real convergence allow it. Otherwise, the economy of a State that joined the Union without being sufficiently prepared may suffer for many years. In case of Romania, a membership at a time when the economy and capital

markets are still insufficiently prepared could place it in a situation where subsequently it should seek and negotiate waivers and deferrals during the implementation of various measures of harmonization.

Fig.2 Romanian stock market capitalization (mld. RON) related to GDP(%) from 2008-2014



source: Eurostat, the European Federation of Stock Exchanges, own calculations

It is very difficult to make an economic, objective quantification of the effects of accession. Most often, the debate goes towards the strategic policy area, because the effect of integration (positive or negative) cannot be estimated in cash.

The question is whether a European authority (in this case ESMA - European Securities Market Authority) could be a more efficient supervisor than a national authority (in the case of Romania - FSA). From the experience of the Monetary Union and of the Bank Union it was proved, at least so far, that ECB has not been a more powerful a supervisor: the effects of the crisis on euro area banks were generally stronger than those Romanian banks had experienced (of course history, the level of development and sophistication and their situation before the crisis are probably much different therefore such a comparison is interpretable.

Even so, it is quite plausible that a pan-European supervisor will have to establish a unified policy starting more likely from the needs of the big markets or from European priorities and be less concerned with the specific needs of the small emerging markets. However, local economic realities are often different from general ones or from the European average. Therefore a local supervisor may take measures / specific actions more effective in tackling local problems.

For example it is unlikely for the future supervisory authority of such a Capital Markets Union (whether it will be ESMA or another) to be more interested in the specific conditions from Romania than from Germany, France etc. Therefore it will be more tempted to take measures to correct problems in large markets than have policies focused on solving the problems and vulnerabilities on the Romanian market.

So, whenever the issues of the emerging markets are going to be different from those of mature markets (and this often happens), probably they will be insufficiently addressed by the policies of the pan-European supervisory authority, so they will remain largely unresolved and will worsen.

For example, Europe is super-financialized, according to a report issued in 2014 by the European Committee for Systemic Risk and the latest statistics show an increasing trend in the parallel banking sector ("shadow banking") in Europe. Romania, on the other hand, is significantly sub-financialized. So, Europe represented by the mature markets needs policies to reduce / temper the scale of the financial system (it is about the size of the institutions, not about the amount of funding which obviously has declined in recent years and is at an insufficient level) while in Romania the situation is completely reversed. What will choose the supervisory authority of the Capital Markets Union in order to pursue its policies? Most likely these policies will be aimed at a reduction of the size of institutions and of the complexity thereof, while in Romania we need a development policy.

In case of Romania, as for all EU countries who are also members of the Monetary Union, the eventual membership in the Capital Markets Union without a firm and feasible timetable for joining the euro area is very difficult and could create internal tensions (eg. the risk geneated by cross-border transactions, by holding securities in foreign currency etc.)

As mentioned, before the establishment of the Capital Markets Union, probably at the level of the Member States of the European Union topics such as: harmonization of the charging system and harmonization of legislation on establishment and operation of companies should be clarified and addressed. This uniformity may sometimes be disadvantageous to Romania due to the current lower level of economic development: there are prerequisites in order for the tax level to rise after the harmonization process.

Another positive effect for Romania of the Capital Markets Union foundation could be the reduction of the fragmentation of financial markets and the support of the funding offer for SMEs and for long-term investment projects. The single capital market may increase investors' confidence in the economy and reduce the cost of financing of the economy.

Other possible benefits to Romania are:

- easier access of Romanian companies, including SMEs, to foreign capital, so a potential for faster growth;
- increasing investors' confidence and possibly reducing the cost of funding in the context in which BSE is still classified by MSCI and Standard & Poor's in the category of frontier markets (eg so reduced accessibility and high risk);
- decreasing the dependence on bank financing (currently about 90%) and increasing the resilience of the economy (countries where the share of financing through the capital market is significant - eg. USA – came back faster to the economic growth after the crisis);
- improving the governance and competitiveness of Romanian companies (as a result of competition with companies from other countries in order to attract capital);
- a higher level of protection for consumers of financial services specific to capital market.

5. Conclusions

To strengthen the transmission mechanism in the economies of Member States of the positive effects of setting up the Capital Markets Union, given the reluctance of investors and lack of investment opportunities connection instruments able to transfer the capitals traded on financial markets in the real economy are necessary.

These instruments may take the form of the European investment funds, issuing bonds listed on a regulated market, possibly consolidated with the guarantee of the European Central Bank. Instruments with a similar role could be the existing funds from the European

Commission, such as: transnational investment fund for strategic objectives at EU level with the objective of investment in transport infrastructure. In economics, investments in transport infrastructure have the highest multiplier. A third example of an instrument that would enhance the link between markets and the real economy may be the European Investment Fund in small and medium issuing bonds and with guarantees at European level.

The subject of a Capital Markets Union in Europe is very recent (the debate being initiated and launched only in mid-February 2015), therefore scientific research and academic publications in this field are very few, which shows the novelty of the topic addressed by this article and its contribution to the development of literature in the field.

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TERRORISM IMPACT ON INSURANCE INDUSTRY

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Abstract: *Terrorism is a more and more discussed topic. All over the world common people and experts talk about victims, casualties and physical damage. What about economic effects? Not only in terms of costs, but also regarding how terrorist acts affect different branches of the economy. Before 2001, September 11th insurance industry did not think about taking into consideration terrorist risk and assess them accordingly. In financial terms, does this industry gain or lose? In the following work a few issues regarding these questions might be answered.*

Key words: terrorism, terrorist attacks, insurance industry

JEL classification: F51, G22, H56

Introduction

Because of a concurrence of heightened potential degree of highly associated risks and crescent inconsistency, nowadays terrorism is one of the most provoking risks for insurances and reinsurances providers in the last century.

Insurability is a changing notion. A lot of risks thought as "impossible to insure" for years are these days part of the insurance industry, which has been steadily enlarging the limits of insurance coverage as a consequence of the appearance of new risks and market request. Along the years, the list of risks that may be insured has enlarged, to cover new reasons; "some have been of economic nature, such as credit insurance, and some of a political one, such as expropriation of assets by the government, public nuisance or terrorism". Though, technological and legal frameworks' development (and particularly the liability regimes), demographic variances and urbanization, climate change, the evolution of the geopolitical background and now new types of terrorism, encounter insurance providers with risks of uncommon dimension and complexity which severely put the limits of the market to test.

Criteria of insurability

Private insurance operations are based on a number of conditions, which could be summarized as follows:

- **Accessibility**: the probability and seriousness of damage must be measurable;
- **Randomness**: the moment at which the insured event might occur should be impossible to predict and the occurrence itself must be free of the insured's will;
- **Mutuality**: lot of persons exposed to a certain hazard must reunite to form a community of risk within which this is shared and diversified;
- **Economic feasibility:** for a risk to be insurable, private insurers should be able to charge a premium balanced with the risk it should cover (the "justified premium"). For the insured to be able to get the cover he needs (if insurance is

not compulsory), premia must be fair both for the insurance provider, who will determine whether it allows the insurance supplied to be profitable under certain capital limits, and for the insured, who wants to find it affordable and proportionate with his own vision on the risk.

Risks that would not meet these criteria may be treated by professional risk carriers as uninsurable and, thus, coverage may miss on the private market. It should still be kept in mind that regulatory and legal limits are other key factors figuring the goal of insurability, although this article will emphasis more the technical criteria of insurability.

Obviously, new forms of terrorism risk do not necessarily meet all of the criteria mentioned above. Given its potential dimensions, it is commonly considered that new forms of international terrorism share certain insurability issues with other extreme hazards (natural calamities and large-scale technological risks). Notwithstanding, the assessment of new forms of terrorism risk for insurance goals has supplementary difficulties which have their origins in a mix of extreme loss potential and severe risk unpredictability or ambiguity.

New loss magnitude, high risks correlation, insurability issues of hazard risks

In the context of the events of 9/11, it is now accepted that new forms of terrorism may lead to results of catastrophic dimensions. There is also a high relation between the risks insured – another characteristic that is common with other types of large-scale disasters. These characteristics show off obvious obstacles to insurability.

Increase in loss dimension

Terrorism risk was not identified as a potentially disastrous risk until 2001. Isolated menaces posed by nests of national or regional terrorists and also international terrorism acts were of *relatively* small magnitude and that is why, except in very few states, that were most exposed to terrorism, coverage was not an issue.

The 9/11 attacks have however brought out into open the **radical modification in the scale of possible losses.** To take the full dimension of these attacks, it should be emphasized that the brought about USD 31.7 billion insured losses are almost 1.5 times higher than the insured losses from Hurricane Andrew, the second most expensive event in the insurance industry. The balance between September 11 losses and those produced by former terrorist attacks shows up the gap in historical array on terrorism losses: the worst terrorist act in terms of insurance until 2001 was the explosion of a bomb near the Nat West Tower in London, which resulted in USD 907 million. The 2001 events have consequently called for a complete reevaluation of loss scenarios for possible future attacks. Models of second terrorist attacks nowadays include *Probable Maximum Loss* (PML) considered as useless in the past; scenarios in which total insured damage could get over USD 250 billion are considered presumable by experts.

This modification in dimension is originated in a **switch in the interests of terrorists**. Some terrorist organizations have stated their enemy to be, no longer just national or social actors, but the community of Occidental industrialized states and their values. Terrorist groups now look for not only to point up their cause, but also to maximize casualties, the amount of victims and collateral damage, and do not dither to sacrifice their own lives to increase to maximum the shock of attacks. **Modus operandi** of nowadays terrorists allows for exponential damage as well, at low cost for the terrorists: they bear to form loose, cross-border organizations and partnerships based on religious, ideological and political leaning, often declaring that their destructive acts are part of a large global plan of

war against a common enemy. In this way, they entail a force-multiplier effect by establishing relations with other organizations around the world.

Moreover, new technologies, the development of global networks and dependencies between nations have seriously **grown up terrorists' potential** to organize and to deal damage, including through simultaneous attacks or sudden propagation of damages.

A major step forward lies in the **exploitation of critical infrastructure** (transportation, water supply, energy, communications, etc.) by terrorists in recent acts. The increased dependence of social and economic life on the operation of networks, combined with increasing interconnectivity between them at national and international level, renders into a set of vulnerabilities associated with their potential break down, generating sever disruptions.

Networks might be aimed by terrorists: by their nature, networks interface with public activities at many meeting points and so offer relatively unlimited possible targets to attack. For instance, it is hard to guard rail lines or all rail cars. Furthermore, parts of the network may not only be considered as a target but also used as a mean of attack. The use of airplanes to destroy symbolic buildings in the 9/11 attacks is an accurate example of this strategy. The Madrid bombing in 2004 followed the same pattern. Finally, terrorists may take benefit of the diffusion capacity of large critical infrastructure. In October 2001, terrorists used the US postal services to widely spread anthrax poison. These types of small but carefully aimed attacks might cause immediate large scale economic losses. No matter the strategy adopted, the damage is all the greater that every element of infrastructure – every aircraft, train, or piece of mail – becomes a potential target or a potential mean of attack, putting the whole network at risk. This will demand for big scale security measures, which may cause major economic ruptures: for example, after the hijacking of several planes on 9/11, the unknown data about the total number of planes targeted caused the shutting down of the entire US commercial airline system one hour after the first attack on the World Trade Center, for the first time in history.

Also, the potential use in the future of **non-conventional chemical, biological, radiological and nuclear (CBRN) weapons** and weapons of mass destruction should not be forgotten. Since the mid-'90s in particular, terrorism experts have been signaling that terrorists may have got greater access to far more efficient and lethal weapons.

Aftermaths for insurability

Because of those presented above, the 9/11 attacks may reveal not to be an isolated event, and the probability of other attacks of disastrous proportions has to be taken into consideration. In this respect, it may be stated that new forms of terrorism share the characteristics of risks often called as **LPHC (low probability high consequences) events**. Policymakers and private sector actors are all aware of the basic insurability issues that come up in the general context of disaster insurance and that have been largely analyzed in relation to natural hazards in particular. First, terrorist attacks and natural disasters as well result in damage that are potentially big and very improbable. The procedure for assessing the probability that a certain level of damage will be overpassed during a given timeframe has evolved from a rather simple deterministic basis to a more complicated methodology based on damage exceedance probability (EP) curves, generated using specific catastrophe modeling software. For LPHC events yet, analysis of past events acknowledge wide fluctuations in damage distribution; this impedes insurers' ability to forecast the seriousness and frequency of future events, and so to establish premia balanced with such risks.

LPHC events also inflict a serious financial challenge: to reimburse for such events, the (re)insurance industry should be able to assemble very large financial resources in a short timeframe. The appreciable dimension of potential damage is to be evaluated against the

available extent of private insurance to cope these losses. The financial assets of the insurance market trust in three main sources: a) the capital and reserves owned by insurers and the amount of new capital that they can gather immediately; b) the capital and reserves owned by the global reinsurance network and its possibility to gain new capital; and c) part of the short-term cash flow from new activities, since after a very large damage, insurance quotas tend to grow up sharply for a period of time.

Being obliged to cover relatively rare, but seriously large losses that can have severe long-term economic and social effects, companies underwriting disaster risks must own **very large amounts of capital and reserves or have easy access to substitute financing source**. If disaster insurance is given without access to the necessary quantity of capital, then the professional risk carrier faces a serious bankruptcy risk (also known as the risk of ruin), so that frustrating the very purpose of insurance operations. Insurance companies can – and often do – bypass this risk simply by disengaging from the disaster insurance market.

The 9/11 terrorist attacks were the opportunity for market players to remember that, while the burden of insurers, backed by international reinsurance markets, was very big, it was also limited. Evaluating the industry burden and its ability to support a certain amount of damage is a difficult exercise. A study was carried out in 2002 on the capacity of the US industry to refund for losses resulting from natural calamities. It concluded that a USD 40 billion damage would probably be feasible, while a USD 100 billion loss would end up in a large number of insolvencies and seriously disturb insurance markets. On the global scale, it is enough to say at this moment that after 2001, the heavy damage suffered by the insurance and reinsurance industry (reinsurers finished up covering about 70% of insured damage), together with the very substantial capital markets plunge, resulted in an evaluated capital loss of USD 200 billion for the global property and casualty (P&C) insurance and reinsurance industry.

High risk correlation

Another common characteristic of terrorism attacks and natural catastrophes is that they usually inflict **temporally and spatially connected risks**. Risk correlation does not permit to insurers to take benefit of the law of large numbers. This deters geographical and time diversification, and makes it difficult to build an equilibrated book of business. Because insurance is affirmed on the blend of a large number of significantly independent risks susceptibilities, failing to accomplish this target, while not necessarily switching to uninsurability, will demand increased ability/higher premia to face risk concentration. A connected issue is that of **risk of accumulation:** the same disastrous event can cause damage involving many different insured properties and networks at the same time, giving birth to overcoming claims burdens in a single policy period. The serious boost in the concentration of population and economic wealth around the world has considerably raised the risk of correlation and accumulation in recent times. The insurance industry has recently signaled against the unequal exposure and vulnerability of quick growing megapoles to natural, technological and environmental calamities, as well as to terrorist attacks. It should also be emphasized that the **big differences in disaster exposure**, adding to risk correlation, makes mutuality even more difficult to acquire. For example, coastal areas and earthquake prone regions, or landmark or "trophy" risks such as, symbolic buildings, and major metropolitan areas, will be much more unprotected against natural calamities or terrorism attacks respectively than other areas, and will be more probable to be insured, generating ongoing imbalance in risk portfolio.

Furthermore, one of the lessons of 9/11 was that large-scale events may also turn into a **high level of correlation between different lines of insurance coverage**. Not only profit-making property, but also business blackout, aircraft accountability, workers' allowance, life,

health, disability and general liability insurance were simultaneously triggered. Worker allowance for example represented 5.7% of aggregated 9/11 losses, while before, extreme events damage were almost entirely treated on the basis of property losses (against which other losses were marginal). This tendency towards higher correlation between insurance lines will also severely restrain risk portfolio diversification for insurers holding hazard risks.

Last, the 2001 attacks emphasized the issue of a third type of correlation. The dimension of direct and indirect economic losses of the World Trade Center attacks caused large damage **not only on the liability side, but also on the asset side of their balance sheet**. The sharp decline in financial markets *immediately following the attacks* also affected insurance companies which saw steep drops in their stock prices. This in turn lowered their capacity to raise new capital in good conditions. Insurers were also affected by the financial market downturn in their role as major institutional investors. After such a major disaster, and depending on the financial market conditions and reactions, it may therefore become increasingly difficult to offset part of the catastrophic losses through investment policy. Insurers and reinsurers that are willing to cover terrorism risk may now have to improve correlations analysis among underwriting, investment, and credit and operational risks.

Terrorism-specific characteristics and rising unpredictability

The argument over the capacity of private insurance/reinsurance markets to cover terrorism risk has often appeared over the issue of the dimension and correlation of potential risks and following up capacity problems. However, risk connected with new types of terrorism cannot simply be compared to the well-known insurability issues associated with low probability and high consequences events. Beyond its extreme loss potential and the high risk correlation it produces, new terrorism risk is featured by a set of specific characteristics which turn into even greater uncertainty as to risk assessment and possibility of occurrence. Given insurers aversion to uncertainty, these severe conditions of generalized ambiguity affecting terrorism risk strongly deter its insurability.

The analysis of the 9/11 events and of former terrorist attacks has lead to the identification of several provocations that make terrorism essentially different from other types of extreme events:

- Limited importance of historical data: analysis of past intentions of terrorists does not make their future thoughts more predictable; more generally, available data from past events consequently reveals little about the future patterns of terrorist actions. Furthermore, the appearance of new types of terrorism, as revealed by the 9/11 events in particular, further discredit the use of statistics on past events since no former attack can be put in balance with that of 2001. This main difference between terrorism before and after 11 September 2001, as well as between intended man-made events and unintended or natural events, considerably limits insurers' activity, for which projections based on statistical series are most often a central way for the development of a market.
- "Dynamic uncertainty", results from the permanent change in the aligning and nature of risks as terrorists comply to emerging prevention strategies adopted by private bodies and governmental authorities; they may for example switch attention to weak targets: as certain targets become "harder" *(e.g.*, increased security at governmental facilities), wise terrorist organizations may switch to softer targets (*e.g.* commercial facilities), in order to maximize the chances of success of the planned attack. Terrorists may even switch at the very last minute to targets of opportunity. The literature on terrorism risks has recently

highlighted these negative externalities potentially generated by self-protection measures.

The hardening of certain targets might transfer additional risk to other locations, so diminishing or entirely neutralizing the effects of self-protection measures from a societal point of view and eluding efforts to predict, alleviate and cover terrorism risk.

- "Interdependent security" is another possible source of negative externality affecting decision making processes in terrorism prevention. Even if the insured invests in efficient security measures, it may nevertheless suffer losses due to an insufficient level of prevention taken by other economic actors whose activities are connected with that of the insured. This may deter firms from investing in prevention, making it difficult for insurers to provide incentives (such as premium reduction) for terrorism coverage, and raises significant problems for insurance companies to relevantly measure the exposure of their client to terrorism.
- "Symmetry of non-information" refers to the lack of information on risks incurred. It affects both the insurer and the insured, since most of the information available is classified, and the most informed body, the government, do not reveal it for security reasons. Historical databases on damage from natural menace in most regions are now generally at disposal. On the other side, data on terrorist activities and future possible targets are usually kept secret for security reasons. While insurance operation may often be cut off by lack of symmetry of information between the insured and the insurer, terrorism insurance is limited by what has been intelligently qualified as "symmetry of non-information".
- Last, the critical influence of governments on the risk through foreign policy and counterterrorism measures, is a very specific feature of terrorism risk, adding, among other consequences, to risk unpredictability.

Conclusions

In the past, insurers have covered risks of hardly predictable likelihood – risks related to new technologies for instance. Similarly, insurers cover various large scale (and highly correlated) risks, and managing very large exposures is one of the very *raison d'être* of the reinsurance business in particular. The specificity of new forms of terrorism risk however lies in the conjunction of both potentially catastrophe-sized losses and very high risk unpredictability. This combination of two major challenges to insurance providers may radically influence their view on insurability, and provide a plausible explanation of a global disruption in insurance markets as witnessed after the World Trade Center attacks. Terrorism therefore appears more challenging to insure than in the past, and in various respects more difficult to predict, prevent, mitigate and eventually cover than many other extreme events.

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UNIVERSITY FUNCTIONS AS A PERFORMANCE VISION

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Abstract

It can be said that the whole issue of university management is marked by the fact that the "production" of higher education is the cultivation and valorisation of human resources, not of material goods. Teaching and education are carried out in organizations and institutions based on knowledge, even producing and disseminating knowledge. In such a context it is necessary to solve the great issues of the managerial systems and models suitable for higher education. The choice of appropriate academic managerial models is one of the fundamental factors of achieving its objectives. From this point of view, the possibilities are numerous given the scientific achievements, and today there are proposed a great variety of university management models that can be considered.

Keywords: performance, university, quality, organizational management, teaching-learning-research

Introduction

The university can showcase an integrated image of its missions when it is conceived as a learning organization, an institution where learning takes place. It is known that not only students learn - teachers learn and discover as well, but also the institution itself, through its strategy and management, must be able to cope with the challenges of reality, learn from experiences and improve its performance[9]. Management has a triple significance: practical activity (process); decision maker (team or individual), and science[10]. Management is related to the efficient deployment of complex activities in a given context. Proper management gives order and consistency to key features for organizational success such as the quality and profitability of products or services provided[11].

A very highlighted feature is the link between ***teaching, learning and research***. This feature, studii de licentaspecific to university education is not articulated in precise forms. A traditional way of integration is the difference between levels: at bachelor's degree level the interaction is mostly pedagogical, the master student can receive a training towards research, and the PhD thesis is a proper research work. Involvement of Master and PhD students in teacher research activities is another significant phenomenon. A relevant fact at bachelor level is that those who teach have a research experience, and therefore they regard the field of study from an academic perspective, in a critical, synthetic way, with a focus on the new and the unknown.

University functions in achieving performance

Universities have three **fundamental functions**: ***research, teaching / learning and community service***, conducted under conditions of institutional autonomy and academic freedom

[9] Pânzaru, I.; *Asigurarea calităţii în învăţământul superior din ţările Uniunii Europene*, Editura Ars Docendi a Universităţii Bucureşti, Bucureşti, 2005, p. 19-20.

[10] Petrescu, I.; *Fundamentele managementului organizaţiei*, Editura Alma Mater, Sibiu, 2005, p. 9.

[11] Deaconu, A.; Podgoreanu, S.; Raşcă, L.; *Factorul uman şi performanţele organizaţiei*, Editura ASE, Bucureşti, 2004, p. 44.

(UNESCO, 2009). The education provided by universities must anticipate and respond to societal needs and produce that mass of communicators and receptors that define an open society. This process involves research into the development and use of new technologies and the provision of mechanisms for vocational training, entrepreneurship education and lifelong learning.

Universities have an even more important role than to produce and establish social statutes for graduates and members of the academic community, contributing to the configuration of individual personalities, strengthening qualifications and professions, improving and encoding knowledge and creating cultural artifacts. All this leads to individual empowerment and to the increased competitiveness of the society in which it operates. The University is: ***a space of learning, teaching and other processes with cognitive effects; an area of scientific, cultural, artistic and sports production; a space where the foundations of the graduate's future social status are established and redefined; a pillar of the integrative approach: the triangle comprised of university, public administration, and the community of economic and social actors.***

Under the conditions of a knowledge-based society, the creation and dissemination of knowledge become basic factors of economic growth. It becomes obvious that a better educated population generates spending minimization in other public sectors. Presently, the importance of vision and mission at the level of university strategies is considerably increasing. While the vision expresses a possible ideal state, the mission expresses a programmatic evolution towards this state. The vision focuses on internalized perception and the aspirations of academic community members, while the mission focuses on the organization's external perception and decision-making determinants. In essence, the mission of a university communicates "what the organization is and what it wants to do for this society."

A successful vision must be characterized by the following elements[12]:

- "the ideal state to be projected in the future must be rooted in the present of the organization;
- The creators of this vision need to be aware of the difficulties that will be encountered and the challenges facing the organization;
- The vision created must generate a trusting attitude in the future and in the organization's ability to develop in the way of transforming the proposed vision into facts;
- A good vision enables all members of the organization to identify their interests and thus to build the necessary motivation for transposing it into real life;
- A good vision is one that can be shared by all members of the organization, not just a part of them. This means that it is accepted and generates innovative ideas and attitudes."

These elements must be realistic and convincing both for the members of the academic community and for the external actors with which it is dynamically related. It is very difficult to formulate clear and convincing visions and missions of the university. However, reality has shown that it is imperative that the university's mission be formulated explicitly and made known to the general public, being both a product and a process. As a *product*, mission development provides the foundation for the proper formulation of strategic objectives and is a targeting of the strategic plan. At the same time, it is a valuable document for university marketing. As a *process*, the mission is formulated and refined in successive stages of consultation of teaching staff and university students, as well as of a wider segment of graduates and their employers.

The modern university must outline its vision and mission as authentic as possible, ensure maximum synergy between the function of intellectual capital formation and scientific research and artistic creation, relate adequately to other societal actors using the values of "spiral logic", become entities engaged in the processes of change and to promote the valences of modern leadership.

We believe that in order to translate the organizational benchmarks into practice, modern universities must have among their strategic priorities the following pivots of the strategic mission:

[12] Brătianu, C., Pop, N., *Managementul şi marketingul strategic universitar*, Amfiteatrul economic, Anul. IX, nr. 22, 2007.

- promoting a learning community that leads to graduates who value ongoing training, have comprehensive basic education, know how to communicate effectively and are vectors of maximizing welfare at societal level;
- the formation of a highly skilled intellectual capital devoted to education, research and creative activities whose efforts are recognized through criteria defined by their active involvement in the process of creating, disseminating and capitalizing on knowledge;
- involvement in large-scale projects at societal level;
- modernizarea continuă a programelor curriculare pentru a ţine seama de tendinţele moderne şi durabile care apar la nivel societal; Continuously modernizing curricula to take account of modern and sustainable trends at society level;
- fulfilling an active role in the process of changes taking place at regional, national and international level;
- cultivating structured partnerships with other actors in society;
- Creating an integrative and effective functional climate for all members of the academic community who value individual progress, collaborative relationships and are based on honesty, integrity, civility, enthusiasm and the pride of belonging to an organization architecture adaptable to changes;
- Valuation of the continuous improvement process by maximizing the synergy between the modern management functions
- To demonstrate and communicate a high level of quality at the level of study programs and devote excellence to professional and research training processes.

In the process of elaborating the mission of the university, the following axes must be taken into account: **its own set of values** (the university policy towards the members of the university community, the quality of the teaching and learning process, good research practices), **a fundamental goal** (the very reason for existence of the university); **an imagined future** (performance indicators, aspiration model, possible risks).

First of all, it must be mentioned that an efficient organization is the one that fulfills its mission, properly managing its resources and offering a high quality of life at the workplace. The research related to this topic (Burke, J.C., Şerban, A.M. 1999; Cave, M. 1997; Gaither, G., H. 1995; Rupper 1994) pointed out that the performance is determined by the direct relationship between the pursued aims and the results of the organization. Therefore, a correct assessment of the performance of an organization should be seen strictly in the light of its mission. "Thus, a technological research unit can not be put together with a fundamental research unit or an educational institution. They are distinguished by missions and therefore by organization, funding, and motivation. "

We have previously shown that a university has both common and divergent points from any other type of organization, so our approach must take into account both these common and specific aspects. Therefore, a high-performing university would be the institution-organization that manages to fulfill its proposed administrative, educational and research objectives, with an economic cost value comparable to the results achieved.

Logical reasoning requires us, within this framework, to define the mission of the university and, as such, its goals, its objectives in all three directions (administrative, educational-educational and research) in order to be able to speak in the most correct terms of performance of the university organization. As anticipated several times earlier in the pages of this paper, the vision of the university mission is at present a major dilemma for the academic framework. "Contemporary conception of university seems to oscillate between its three meanings: the university for students, the university for science and the university for society."

Personally, we are convinced that the mission of the university is to create pure science in all areas of knowledge as well as to transmit it to the students according to the psychoindividual and age specificities and the natural requirements of the university education level in which they are integrated, the active social insertion of its clients. Therefore, a university must at the same time be a research institute and a teaching institution, and the university professor must be both a researcher and a teacher. You can not be a university professor doing research alone and neglecting didactic activity, then going to work in a research institute. Similarly, you can not be a university professor and you only have to do teaching, neglecting research, then going and supporting teaching activities in pre-

university education. Of course, it's hard to be a teacher and researcher at the same time, but if we want to be worthy of university status, we have to be.

Thus, in order to truly determine the performance of a university and place it in a general and complete ranking, it would be necessary to analyze its performance on the three elements of performance (effectiveness, efficiency and quality of life at work) from three perspectives: administrative , instructive-educational and research. Any analysis made only from one of these points of view would not present the overall performance capacity of that organization, but only the performance achieved in one of the three areas.

The outlined picture of the concept of organizational performance takes us to think of a performance quantification model. The specialized literature presents many such models, more or less compatible with the idea of university organizational performance outlined above. For an overview, we recall some of the most used models: The Shanghai Methodology proposed by Jiao Tong University in Shanghai, US News, Times Higher Education Supplement in Great Britain, or the Ad-Astra Ranking in our country.

Our investigative approach does not propose to develop a system for measuring the organizational performance of the university, but to identify the culture of performance in the Romanian university. We are following this approach because, however difficult it is to develop a system for measuring organizational and organizational performance, it is even more difficult to implement this system, especially if we do not know how university actors perceive the notion of a high performance university.

In order to observe how the Romanian universitary refers to the concept of university performance, we applied on the above mentioned sample an Asertion Test adapted to the psychological version of the instrument and asking the subjects to complete statements such as: a high-performing university is. Collected data was processed based on content analysis. Thus, we distributed each statement in one of the three perspectives of organizational university performance, then grouped the statements in representative categories and calculated the percentage in which the same category of affirmations appeared in the sample. After these procedures, we determined the weight that every perspective of organizational university performance has in the answers of our subjects. Under these conditions, as can be seen from the table below: the Romanian university environment defines a university performing firstly through managerial-administrative aspects (62%), then with instructive-educational aspects (23%) and lastly those related to research (15%).

Table 1. ***Performance culture in the university environment - weight of assertions / performance outlook***

Managerial - Administrative Perspective		Instructive - Educational Perspective		Research Perspective	
Weight	***62%***	***Weight***	***23%***	***Weight***	***15%***
Infrastructure	20%	Didactic process focused on the student	18%	National and international recognition of staff	31%
Relations with the economic environment of the local community	16%	Scientific training of teachers	18%	Grants won by national and / or international competition	28%
National and international recognition of the institution	10%	Psycho-pedagogical training of teachers	16%	ISI quoted publications	10%
Collaboration with other universities in the country and abroad	9%	Standards and ways of performing student assessment (initial, continuous and final)	10%	Value of research results	7%
Employee motivation and selection system	8%	International compatibility of specializations and curricula	9%	Organizing national and / or international conferences	7%

Financial Potential	7%	Students' competencies and results	8%	Doctoral students and master students involved in research	4%
Organizational climate	6%	Teaching aids	7%	Students involved in research	4%
Organizational development strategy and its application	5%	Teacher-student communication	6%	Awards received	3%
Prestige in the community	5%	Extracurricular programs	5%	Accredited CNCSIS or BDI journals	3%
Managerial leadership training	4%	Ethics of the teachers	3%	Centers of Excellence	3%
The insertion on the labor market of the graduates	4%				
Addressing student problems	2%				
The ability to attract students from outside the country or the geographical area where the university is located	2%				
Scholarships	1%				
Relationship with graduates	1%				

Source: author's synthesis

If we look at Table 1, we could have a way to understand why civil society reproached the Romanian university that it transformed education into a business, that it had poorly trained teachers from psycho-pedagogical point of view, and that it is doing research of poor quality and visibility and its true quality is reflected in some oases of excellence. In our opinion, it can not be any other way as long as the culture of university performance shows, as we could see from the study, that is, speaking in figures: "the university is 62% company, 23% school and 15% research".

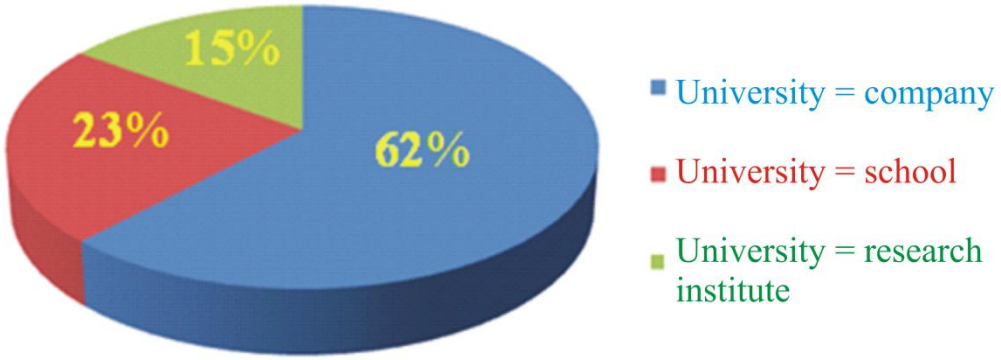

Figure 1. ***Cultural profile of the performance of the contemporary Romanian university***
Source: author's perspective

Probably we can find a positive aspect in this cultural profile of the performance of the contemporary Romanian university. It is possible that we have an "entrepreneurial university", which would be excellent if entrepreneurship was not an end in itself but a way to support education, research and innovation.

The university can not afford to be "a company in the first place" because it responds to a major social need, the education of the younger generation, so that it is in the first place obliged to

form the consumer, to qualify his requirements and only then to leave formed by the market. Otherwise, the university endangers the social mission to which it is called to answer.

From another point of view it seems that performance and performance culture is a valid criterion for differentiating universities and detaching some of the related categories. In empirical studies, the group of 11 universities in five cluster membership shows that "the five cultural groups results do not seem to be influenced by the factors such as the type of university (in the second group we have medical, polytechnics and classic universities as well) or geographic area (in the first group we have three universities, each one of the three historic provinces of the country: Moldova, Romanian country and Transylvania). A greater impact on cultural grouping seems to have a place in the ranking. Universities in the top ten with the exception of the Technical University of Cluj-Napoca, which are grouped with other organizations present in the first half of the league, but not in the top ten are either in the same category (fourth group) or by themselves in the same category as is the case of the third group where only the West University of Timisoara appears. The placement exception of the Technical University of Cluj-Napoca can be justified by drafting the cultural profile on a number of valid questionnaires lower than in other universities, only 43, especially since qualitative analysis of organizational culture of the university shows special concern for building of the university brand in this organization, which can not be said about the other universities of the second cluster. "

Conclusions

The university is a crucial institution in generating new knowledge and evaluating possible alternatives. The importance of the university is also relevant in counteracting the concentration of power in the state administration or business circles, especially if it is accepted that the most important factor in the development and economic and social growth is knowledge. If companies such as *Microsoft*, *Apple* and *Google* have changed the world and the way to think millions of people, why would not universities become the vector of change through innovation, on a regional and global scale?

The university contributes to the process of building democratic character, but the fundamental purpose of the university is to protect against the democratic tyranny of ideas. Control of ideas - even if it is exercised by a majority or a minority - undermines democracy. Instead, universities can prevent, by virtue of their autonomy, such attempts by offering a space in which new and unconventional ideas are judged strictly on the basis of their intellectual quality.

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