## INTERNAL AUDITING & RISK MANAGEMENT

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# INTERNAL AUDITING & RISK MANAGEMENT

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#### **INTERNAL AUDITING & RISK MANAGEMENT**

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**PRESENT FINANCIAL CRISIS** 

Gabriela Preda Petronel Chiriac

#### **MODELLING THE RISK OF MORTALITY**

#### IN ROMANIA<sup>1</sup>

Tiberiu DIACONESCU

Institutul de Prognoză Economică, Academia Română, diaconescutiberiu@gmail.com

#### Abstract

In the last 3 centuries, researchers from different area of expertise, such as, demographers, medical doctors and actuarial mathematicians, have been struggling to develop a better model to estimate biometric functions. Such a model is long due in order to improve the present methodology regarding certain statistic-demographic rates. The issue of missing data (for older ages), the issue of computing correctly the average expected life and last but not least the forecast of mortality, could be solved through the use of better models that can determine the components of life tables. A life table represents a means of determining the probabilities of an individual living to or dving at a certain age. A better image of the ageing process for human population is shown by determining the probability of death occurring at specific ages over specified periods of time. Parametric models for the projection of mortality rates were first introduced by Lee and Carter (1992) in the US, representing an important development in demography. The model was followed by several others models which were developed over the years [Gompertz, 1825; Makeham, 1860; Weibull, 1951; Beard, 1959; Vaupel et al, 1979, Kannisto, 1992]. The present study is trying to provide certain information over the best use of these types of models under specific hypothesis. We will focus on the methodology of estimating the parameters for Gompertz' law of mortality and how well it can be fitted using data from Romania in 2012.

**Keywords:** *mortality risk, probability of death, mortality rate, laws of mortality, modeling risk of death* 

<sup>&</sup>lt;sup>1</sup> This paper represents a selected fraction from the doctoral thesis entitled: "Economic impact of the ageing population in the European Union", coordinator Acad. Lucian Liviu Albu., National Institute of Economic Research "Costin C. Kiritescu", Romanian Academy, Bucharest.

#### Introduction

Since the first half of the 18<sup>th</sup> century, laws of mortality (parametric functions) that can be used to model empirical mortality curves, have developed into one of the most important work for demographers and actuarial mathematicians, but also to all others interested in the statistical study of human mortality.

One of the most well-known model, which can be interpreted as a parametric mathematical law, was proposed by Gompertz (1825), where the risk of mortality could be estimated by:  $\mu(\mathbf{x})=\mathbf{B}\mathbf{c}^{\mathbf{x}}$ , which in fact represents an exponential function. Both B and c are considered non negative and x represents the age of an individual, which most commonly is in an interval between 0 and 100. Most modern data are available only until the age of 84, but further complex studies use data well over the age of 100 years (according to the age of the elderly individuals) [Kannisto, 1994, Jeune and Vaupel, 1995, Kannisto, 1996].

In literature we can find also three laws of mortality that apply to all ages. Two of them were developed by Thiele and Wittstein in the late 19<sup>th</sup> century, the third, developed by Heligman and Pollard, more recently.

Gompertz modeled his law by studying the survival curves from life tables which were available at that time. He described it as a hypothesis and considered the consequences of its use at larger age intervals, though not including infancy or very old age mortality.

Later on, Brillinger (1961), said that if the human body was to be considered as a series system of independent components, then the force of mortality may follow Gompertz's law.

In the past, analytical approaches (such as the Gompertz'or Makeham's law) managed to satisfy this hypothesis approximately over a broad range of ages. However, as modern data have become more available and reliable, the uses of approximate have become less acceptable.

Nowadays, mortality is most commonly represented in the form of a life table, which gives probabilities of death or survival, within one year, at exact integral age. These probabilities are generally based on tabulations of deaths in a given population and estimates of the size of that population. Functions in the life table can be generated from  $q_{x}$  where  $q_{x}$  is the probability of death within a year of a person aged x.

Although a life table does not give mortality at non-integral ages or for non-integral durations, as can be obtained from a mathematical formula, acceptable methods for estimating such values are well known.

In fact, laws of mortality (parameter functions) provide a better way determine mortality, being able to give a good fit to empirical mortality curves, mostly because they represent a better means of graduation than discrete mortality representations.

Because we need to focus on mortality representations by differentiable parametric functions, traditional model life tables (tabular representations) of the age pattern is not of interest in this paper.

The results presented in this paper suggest that Gompertz' laws is an appropriate model of mortality to be used for the modern population of Romania.

The paper begins with a presentation of necessary statisticdemographic notions, along with the model that we took into consideration. Within the  $2^{nd}$  section, I focus on the estimation of the parameters, while in the  $3^{rd}$  section we present an application of the model for the population of Romania.

#### 1. Standard statistic-demographic notions

a) Survival probability. Take  $P(T_x > t)$  which we will call it the probability of survival for a specific individual of age x after a number of t years, denoted by  $_t p_x$ .

Obviously we say that  $_0 p_x = 1$ .

In general, common laws of mortality use as upper range the age of 100 years, denoted by  $\dot{\omega}$ . Thus we can say:  $_{t} p_{x} = 0$  if  $t > \dot{\omega} - x$ .

b) Probability of death. Let  $_{t|t'}q_x$  represent the probability that a specific individual of age x, to die at the age between x + t and x + t + t', meaning:

$$t \mid t' q_x = P(t < T_x \le t + t') = \frac{P(x + t < T_x < x + t + t')}{P(T_x > x)}$$
(1.1)

Thus, we can say:

$${}_{t}p_{x} = {}_{t|t'}q_{x} + {}_{t+t'}p_{x} \tag{1.2}$$

from where we can establish a connection between the survival probability and the probability of death:

$$t \mid t' q_x = t p_x - t t' p_x$$
(1.3)

For easier understanding we take:  $_{t}q_{x}=_{0|t}q_{x}$ 

The next relations are a natural evolution from the above relations:

$${}_{t}q_{x} = {}_{0}p_{x} - {}_{0+t}p_{x} = 1 - {}_{t}p_{x}$$
(1.4)

 $(1 \ 1)$ 

$$q_x = {}_1 q_x = 1 - p_x \tag{1.5}$$

$$_{t+t'}p_x = {}_t p_x \cdot {}_{t'}p_{x+t} \tag{1.6}$$

The probability of death  $q_x$  is also known under the name of annual rate of mortality or annual coefficient of mortality.

The following are the additional definitions of standard life table functions:

- The entry  $l_{\infty}$ , i.e. number of survivals (in the life tables), shows the number of survivors of that birth cohort at each succeeding exact integral age.
- The entry d<sub>x</sub>, shows the number of deaths that would occur between succeeding exact integral ages among members of the cohort.
- The entry denoted  $L_x$  gives the number of person-years lived between consecutive exact integral ages x and x+ 1 and  $T_x$  gives the total number of person-years lived beyond each exact integral age x by all members of the cohort.
- The final entry in the life table,  $\bar{e}_{x}$  represents the average number of years of life remaining for members of the cohort still alive at exact integral age x, and is called the life expectancy.

The  $l_x$  entry in the life table is also useful for determining the age corresponding to a specified survival rate from birth, which is defined as the age at which the ratio of  $l_x$  to 100000 is equal to a specified value between 0 and 1.

The life table functions  $l_x$ ,  $d_x$ ,  $L_x$ ,  $T_x$ , and  $\bar{e}_x$  are being calculated as follows:

le	= 100000	
d <sub>x</sub>	$= l_x * 1 q_x$	$x = 1, 2, 3, \dots$
$l_x$	$= l_{x-1} * (1 - q_{x-1})$	$x = 1, 2, 3, \dots$
L <sub>0</sub>	$= l_01 f_0 * d_0$	
L <sub>x</sub>	$= l_x - 1/2 * d_x$	$x = 1, 2, 3, \dots$
$T_{\infty}$	$= L_{\infty} + L_{\omega+1} + L_{\omega+2} + \cdots + L_{84}$	$x = 0, 1, 2, 3, \dots$
ē,	$= \frac{T_x}{l_x}$	$x = 0, 1, 2, 3, \dots$

The model we considered in this paper is an improved version of the Gompertz' law of mortality:  $\mu_{b,c}(x) = \frac{\sigma}{b} e^{cx}$ ,  $x \ge 0$ , b > 0,  $c \in \mathbb{R}^*$ 

### 2. Estimating the parameters from the laws of mortality2.1 Improved Gompertz' law of mortality

$$\mu_{b,c}(x) = \frac{c}{b} e^{cx}, \ x \ge 0, \ b > 0, \ c \in \mathbb{R}^*$$
(2.1)

If c > 0 we say that Gompertz repartition is of increasing failure rate type (theory of reliability), if c < 0 is of decreasing failure rate. From (2.1) we can deduce the corresponding survival function, which looks like:

$$\underline{F}_{b,c}(x) = e^{-\int_0^x \mu(t)dt} \Leftrightarrow \underline{F}_{b,c}(x) = e^{-\frac{e^{ix}-1}{b}}, \ x \ge 0$$
(2.2)

along with its density

$$f_{b,\sigma}(x) = -\left(\underline{F}_{b,\sigma}\right)'(x) = \left(\frac{c}{b}\right)e^{cx - \frac{e^{cX-1}}{b}}$$
(2.3)

We can drop the constant term  $\frac{c}{b}$ , by multiplying  $f_{b,c}(x)$  with  $\frac{b}{c}$ . By doing this, we just simplify future computations with the density function, and then dropping it altogether as it is not of interest.

$$f_{b,c}(x) = -\frac{b}{c} \left(\underline{F}_{b,c}\right)'(x) = e^{cx - \frac{e^{cx} - 1}{b}}$$
(2.4)

The derivative of the density function will look like:

$$\left(f_{b,c}\right)'(x) = \left(c - \frac{c}{b}e^{cx}\right)e^{cx - \frac{e^{vx} - 4}{b}}$$
(2.5)

In order to establish the solution of this function, we must take into consideration the initial conditions of the model, namely  $x \ge 0$ , b > 0,  $c \in \mathbb{R}$ .

We can drop the exponential function after the parenthesis because it is obviously positive, as it will not influence the final sign of our function nor will it help providing a solution. After that we extract the common term c, to look like:

$$\left(f_{b,c}\right)'(x) = c\left(1 - \frac{e^{cx}}{b}\right) \tag{2.6}$$

If we can find a solution for this function, we will fix it as the mode for our survival data. Thus we reach the following equation:

$$1 - \frac{e^{-x}}{b} = 0 \iff e^{cx} = b \tag{2.7}$$

this is so far in line with the initial condition as the left term of the (2.7) is an exponential function and the right term is b, which we already know it to be positive. Further we solve this with the help of natural logarithm:

$$cx = lnb, \ b > 0 \ \Leftrightarrow x = \frac{lnb}{c}$$
 (2.8)

This leads to the conclusion that the final value of the mode is:  $Mode(\Gamma_{b,c}) = \frac{lmb}{c}$ (2.9)

The reason for determining Mode, and further on the Median, is because we lack a methodology to compute the expected value of the Gompertz repartition.

Instead, we can compute its quantile, which will benefit us in the process of determining b and c parameters.

Let  $m_{\alpha}$  represent a solution for the next equation:

$$\underline{F}_{b,c}(\mathbf{x}) = e^{-\alpha} \tag{2.10}$$

Thus

$$m_{ln2} = Median(\Gamma_{b,c}) \tag{2.11}$$

If we apply natural logarithm in the (2.10) equation, we can find the value of  $m_{\alpha}$ :

$$-\frac{e^{cx}-1}{b} = -\alpha \iff e^{cx} = 1 + b\alpha \iff m_{\alpha} = \frac{\ln(1+b\alpha)}{c}$$
(2.12)

$$Median(\Gamma_{b,c}) = \frac{m(1+b\alpha)}{c}$$
(2.13)

What is of interest here is that the relation between Median and Mode, depends solely on one parameter, that is b:

$$Medtan(\Gamma_{b,\sigma})/Mode(\Gamma_{b,\sigma}) = \frac{ln(1+b\alpha)}{lnb}$$
 (2.14)

If we want, we can generalize the method for determining the parameters, as I present it next. We start by taking 2 values for x, that are significant to us, let's say  $x_1$  and  $x_2$ :

$$\begin{cases} \underline{F}_{b,c}(x_1) = \underline{F}_1\\ \underline{F}_{b,c}(x_2) = \underline{F}_2 \end{cases}$$
(2.15)

where b and c represent the solutions. We replace with  $\underline{F}_1 = e^{-lnm}$  $F_2 = e^{-lnm'}$  and rewrite the (2.15) system to get the following:

$$\begin{cases} e^{\frac{e^{cx_{1-1}}}{b}} = e^{-lnm} \\ e^{\frac{e^{cx_{2-1}}}{b}} = e^{-lnm'} \end{cases} \Leftrightarrow \begin{cases} -\frac{e^{cx_{2-1}}}{b} = -lnm \\ -\frac{e^{cx_{2-1}}}{b} = -lnm' \end{cases}$$
(2.16)

Choosing *lnm* and *lnm*<sup>i</sup> was preferable to *m* and *m*<sup>i</sup> for easier computation over the generalized method. Moving forward, if we try to eliminate c from each equation of the (2.16) system, we get the following:

$$\begin{cases} e^{cx_1} = blnm + 1\\ e^{cx_2} = blnm' + 1 \end{cases} \Leftrightarrow \begin{cases} cx_1 = \ln(1 + blnm)\\ cx_2 = \ln(1 + blnm') \end{cases}$$
(2.17)

Now, if we divide the equations from the final form of (2.17) system, we get the following relationship:

$$\frac{x_{\pm}}{x_{2}} = \frac{\ln(1+blnm)}{\ln(1+blnm)^{n}}$$
(2.18)

where, values of  $x_{ji}$ , j = 1,2 as well as values of *m* and *m'* are known; thus the parameter to be determined remains b.

Let's say that  $x_1 < x_2$ ; one can choose  $x_1$  to correspond to the empirical median, which is about age 78, and  $x_2 = 100$  (or any last recorded age, in the series, available).

The value of 78 is taken from the life tables, for Romania in the year 2012. (Source: Eurostat database, life tables: national data, demo\_mlifetable)

As we want to set a generalized method, one can look in the life tables and extract this value at the age where we have half of the cohort of 100000. Also remember that m = ln2 and m' = -lnF(100).

#### 3. Application on Romania using Gompertz' law of mortality

Continuing the work from  $2^{nd}$  section of this paper, we can test the methods using data for Romania, extracted from life tables, in 2012 (Annex 1)

Gompertz's law: In (2.15) equation, we replace m with ln2 and m'with the specific value for  $l_{84}$  extracted from the life tables (see Annex 1). Taking into consideration the method described in section 2, and replacing  $x_1 = 78$ ,  $x_2 = 84$ ,  $l_{84} = 30,314$  in (2.18) and (2.16) we determine the parameters: b = 1678.86, respectively c = 0.0905

After determining the values of both parameters for both laws, we can estimate the survival function and compare it with the empirical one. The most important aspect, here, is to determine the distance between them. The smaller this distance is the better for our model.

In figure 3.1 we can see the representation of both curves, and the fact that Gompertz' curve is very well fitted to the empirical one. We set empirical ux to represent the empirical data extracted form life tables and gompertz ux as fitted curve according to Gompertz' law of mortality.



Figure 3.1 – Mortality risk curves, Empirical vs Gompertz'law

Source: Eurostat, demo mlifetable (author's representation)

#### 4. Conclusions

According to the data determined in section 3 of this paper (see figure 3.1), we can say that Gompertz's has found a way to evaluate the trend of mortality, for a specific population. With this in mind, we can continue and compute the risk of mortality  $\mu(x)$ . As we already know, Gompertz'law of mortality doesn't fully model certain aspects of mortality trends (infancy and advanced ages risks of mortality), neither did he take into account that not all people die of old age. Putting that aside, the model is still surprisingly well fitted to data available from the last 100 years. Section 2 provided us with the means to calculate certain statistic-demographic indicators, specified usually in life tables, but without relying simply on empirical data. Moreover, due to the lack of data for more advanced ages (over 84 years, and even scarce for over 100 years), we can determine our on data based on the models presented in this study. The same methodology can be also applied in the case of Makeham's curve.

We can confirm the initial hypothesis of Gompertz that the risk of mortality is dependent only on age and location (data in life tables are specific to a country or region). With this we can search for specific patterns or disparities between regions (Diaconescu, 2013, 2014), highlighting possible mortality dominance between population of different sexes, regions or both. We can than start to make a demographic profile related to the probability of death correlated with the average life expectancy and other economic indicators.

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#### ANNEX 1

Age	Survivors	empirical_ux	gompertz_ux	Age	Survivors	empirical_ux	gompertz_ux
0	100000	0.00920	0.00005	42	96092	0.00254	0.00241
1	99080	0.00070	0.00006	43	95848	0.00289	0.00264
2	99011	0.00041	0.00006	44	95571	0.00315	0.00289
3	98970	0.00026	0.00007	45	95270	0.00308	0.00316
4	98944	0.00018	0.00008	46	94977	0.00422	0.00346
5	98926	0.00028	0.00008	47	94576	0.00426	0.00379
6	98898	0.00018	0.00009	48	94173	0.00464	0.00415
7	98880	0.00024	0.00010	49	93736	0.00537	0.00454
8	98856	0.00020	0.00011	50	93233	0.00611	0.00498
9	98836	0.00017	0.00012	51	92663	0.00690	0.00545
10	98819	0.00028	0.00013	52	92024	0.00719	0.00596
11	98791	0.00021	0.00015	53	91362	0.00798	0.00653
12	98770	0.00027	0.00016	54	90633	0.00900	0.00715
13	98743	0.00027	0.00017	55	89817	0.00996	0.00782
14	98716	0.00041	0.00019	56	88922	0.01026	0.00856
15	98676	0.00033	0.00021	57	88010	0.01135	0.00937
16	98643	0.00045	0.00023	58	87011	0.01145	0.01026
17	98599	0.00047	0.00025	59	86015	0.01278	0.01123
18	98553	0.00062	0.00027	60	84916	0.01324	0.01230
19	98492	0.00062	0.00030	61	83792	0.01425	0.01346
20	98431	0.00068	0.00033	62	82598	0.01593	0.01474
21	98364	0.00057	0.00036	63	81282	0.01733	0.01613
22	98308	0.00079	0.00039	64	79873	0.01714	0.01766
23	98230	0.00086	0.00043	65	78504	0.01903	0.01934
24	98146	0.00088	0.00047	66	77010	0.02046	0.02117
25	98060	0.00068	0.00052	67	75434	0.02193	0.02317
26	97993	0.00082	0.00057	68	73780	0.02460	0.02537
27	97913	0.00068	0.00062	69	71965	0.02594	0.02777
28	97846	0.00069	0.00068	70	70098	0.02899	0.03040
29	97778	0.00077	0.00074	71	68066	0.02937	0.03328
30	97703	0.00088	0.00081	72	66067	0.03474	0.03643
31	97617	0.00085	0.00089	73	63772	0.03754	0.03988
32	97534	0.00097	0.00098	74	61378	0.04098	0.04366

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Age	Survivors	empirical_ux	gompertz_ux	Age	Survivors	empirical_ux	gompertz_ux
33	97439	0.00106	0.00107	75	58863	0.04604	0.04780
34	97336	0.00111	0.00117	76	56153	0.04958	0.05233
35	97228	0.00131	0.00128	77	53369	0.05681	0.05728
36	97101	0.00133	0.00140	78	50337	0.06178	0.06271
37	96972	0.00153	0.00153	79	47227	0.06752	0.06865
38	96824	0.00163	0.00168	80	44038	0.07444	0.07515
39	96666	0.00178	0.00184	81	40760	0.08425	0.08227
40	96494	0.00201	0.00201	82	37326	0.09323	0.09006
41	96300	0.00216	0.00220	83	33846	0.10436	0.09859
				84	30314		

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#### **CHOICES OF A SUSTAINABLE GROWTH**

Andrei Mihai CRISTEA

Hyperion University, Bucharest, Romania, cristeaandm@yahoo.com

#### **Miron DUMITRESCU**

National Institute of Economic Research - Romanian Academy, Bucharest, Romania, miron\_hyp@yahoo.com

#### **Dan Gabriel CRISTEA**

Hyperion University, Bucharest, Romania, dancristea2@yahoo.com

#### Eduardt Petrică SAMOILĂ

Hyperion University, Bucharest, Romania, eduardt.samoila@yahoo.com

#### Abstract:

The article refers to the main pros and cons of the optimal currency area membership. Each country has the right to choose if it wants to be part of an economic Union, but this implies taking over certain specific costs but also gaining some benefits. On its way to the euro currency, our country must fulfil real convergence criteria, which create problems although they are not mentioned in any treaty. The article presents the current situation in Romania, but also some benefits of adoption, focusing on the risks of adopting the euro in a very short time.

**Keywords:** real convergence; economic growth; economic benefits. **JEL Classification: O47; F43; J32.** 

#### 1. Introduction

Real convergence criteria are not mentioned as well as the nominal convergence criteria in the Maastricht Treaty. In terms of real convergence, it takes into account the level of life of the inhabitants depending on income and productivity, reducing structural disparities between social classes, degree of development<sup>1</sup> as approaching the economic performance of all the member countries of the Euro area.

The Maastricht Treaty designates real convergence as a long process during which the extinction of disparities in terms of the levels of social and economic development is wanted, this being one of the fundamental objectives of the European Community. On the long term GDP per inhabitant in the Member States can be observed getting very close to each other, and countries that are at the stage of accession to the Euro area, but have not joined yet, have a higher percentage of living standards approaching towards those of the Member countries, while after joining the Euro, this level no longer increases so much as in the period before adhesion.

The main and most often encountered criteria used to analyze the real convergence will refer to: labor productivity; external competitiveness; economic well-being; the structure of the branches of the national economy; labor costs; the level of GDP per capita; the degree of openness of the economy.<sup>2</sup>

#### 2. Current level of development

We will analyze a very important indicator in order to determine the level of real convergence in Romania, GDP/capita indicator in purchasing power parity of each country in the European Union. We compare the GDP index per inhabitant of Romania with the index the most important countries in the European Union to see how close we are in terms of real convergence for adoption of the euro in our country. It can be seen that in the year 2007, GDP per capita was less than half the average in the EU, reaching a rate of 41%, well below countries such as Hungary, Poland, Italy etc. With the integration of Romania into the European Union, in the next three years 2008-2010, respectively, our country has maintained a rate of 47%, stalled for three years, while countries like Poland, Germany managed to increase the level of GDP per capita. In 2011, Romania managed to acquire two percentage points, reaching 49%, considering the fact that the United Kingdom, Italy and Poland have fallen as a percentage. In 2012, the country which registered the highest growth of GDP/inhabitant was Luxembourg, and Greece was the country with the steepest drop in per capita GDP.

It is hard to believe that in 2013, the GDP per capita in Romania had a considerable increase considering that in the year 2012, Romania, along

<sup>2</sup> Burghelea, C. (2011) "Economic Crisis perspective between current and forecast",

<sup>&</sup>lt;sup>1</sup> Aceleanu, M., I., (2011) "Europe 2020" Strategy - Support for the Development of the Employment Strategy in Romania", published in the journal "Review of Applied Socio-Economic Research" Nr.2/2011, pp. 14-22

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with Bulgaria it has recorded the lowest GDP/inhabitant in the European Union (see table 1).

<b>Countries / Years</b>	2007	2008	2009	2010	2011
EU 27	100	100	100	100	100
Euro 17	111	111	110	110	110
Romania	41	47	47	47	49
Germany	115	116	115	119	121
United Kingdom	117	113	111	111	109
Italy	104	104	104	101	100
Hungary	61	64	65	65	66
Poland	54	56	61	63	64
Cyprus	94	99	100	97	94
France	108	107	109	108	108

Table 1.GDP/capita in purchasing power parity

Source: www.eurostat.ro

The following analyzed indicator is *investments in the business*. In Romania, the opportunities for new business have a wider vision than in other countries. Romania has a real potential in this area and this can be helped by an increase in foreign direct investment with the help of European funds raise as big as they can get. Romania has an advantage for attracting foreign direct investment in the following areas: the size of the internal market, taxation, the importance of privatization of State-controlled enterprises, labor costs, etc.

Due to political instability, but also because of the current crisis, Romania no longer manages to draw as much foreign capital investors being slightly scared of the situation in our country.<sup>1</sup> This can be seen in the following table, the investments being at a high level in 2008, reaching 24.43%, and during the next three years there were sweeping changes, affecting the level of investment in Romania that reached in 2011 at a value less than half than in 2008, 13.34% (see table 2). Given the fact that 2008 has managed to be a very good year in terms of attracting investment in Romania, especially due to the fact that Romania was the newest member of the European Union, together with Bulgaria, we can say that this has helped a lot to attract more and more investors in our country.

<sup>&</sup>lt;sup>1</sup> Gheorghiu, A., Gheorghiu, A., Spânulescu, I., (2009) "<u>Target market risk evaluation</u>", *Proceedings of the International Conference on Econophysics, New Economics & Complexity - ENEC-2009*, Editura Victor, Bucureşti, ISSN 2065-2550, p.113

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<b>Countries / Years</b>	2007	2008	2009	2010	2011
EU 27	12.34	12.34	10.73	10.58	10.91
Romania	22.49	24.43	17.11	13.80	13.34
Germany	10.91	11.13	9.67	9.87	10.27
United Kingdom	13.12	13.67	11.54	11.42	11.85
Italy	11.45	11.34	9.81	10.48	10.48
Hungary	13.09	13.60	12.38	10.92	11.85
Poland	12.32	12.32	10.93	9.58	-
Cyprus	8.51	8.68	7.76	8.08	6.85
France	10.85	11.23	9.98	10.33	10.81

Table 2. Investments in business

Source: www.eurostat.ro

The last criterion of real convergence is *labor productivity per person employed*. Macroeconomic theory often links real convergence success to developments in labor productivity. In fact, many studies show that the index of structural convergence with the European Union can increase mainly by *raising labor productivity*. Thus, salaries can be grown, the pace of economic development can be increased, the standard of living can rise, etc. Labor productivity growth should be consistent with the increase in business investment (as share in GDP). In fact, the indicator reveals the share of GDP that the private sector uses for investment (it is about increasing the share of gross fixed-capital formation in the GDP in the private sector).<sup>1</sup>

In the following table we present the labor productivity per person employed in the major countries of the European Union (see table 3).

<b>Countries / Years</b>	2007	2008	2009	2010	2011	2012			
EU 27	100.0	100.0	100.0	100.0	100.0	100.0			
Euro 17	108.9	109.1	109.2	108.7	108.6	108.2			
Romania	43.4	49.2	49.4	48.5	49.4	50.2			
Germany	108.4	108.0	104.3	106.1	106.6	105.5			
United Kingdom	110.7	107.5	105.9	106.0	104.1	103.6			
Italy	111.6	113.0	112.6	110.1	109	107.3			
Hungary	66.6	70.4	72.4	70.9	71.2	70.5			
Poland	62.3	62.4	65.5	67.4	69.1	72.3			
Cyprus	85.5	91.1	92.3	91.1	91.0	93.0			
France	115.7	115.4	117.3	116.4	116.6	115.4			

Table 3.Labor productivity per person employed

Source: <u>www.eurostat.ro</u>

<sup>&</sup>lt;sup>1</sup> Socol, A., (2009), *Macroeconomia integrării monetare europene. Cazul României*, Economic Publishing House, Bucharest

In case we can see that with the integration in the European Union, labor productivity per employee has increased considerably, thus in the year 2007 the percentage was 27.0%, reaching out in 2012 to more than half of the average of all the 27 EU member countries, 31.2% respectively. For Romania this is very important, but referring to the average labor productivity per person employed in more developed countries, we realize that in Romania the situation is quite critical. Reviewing the table we can notice that France has a percentage more than twice Romania's, reaching 115.4 in November 2012, while all other major powers in Western Europe are not badly ranked, Germany having a percentage of 105.5, United Kingdom103.6 and Italy 107.6.

At this time, Romania is very far from the adoption of the euro currency. Although originally the term for the adoption of the euro in 2014, it was subsequently decided to be extended until 2015, but currently the target for 2015 seems to be out of discussion. We might ask: should Romania join the Euro after previous failures of the countries that have adopted the euro? A big problem that can put in difficulty the Romanian economy is the very large structural differences between the economies of the Member States of the Union. Also, Romania should make a thorough analysis on the transition to the euro. Countries like Greece, Italy, Spain and Portugal have far bigger economic problems, and if Romania would adhere to the Optimum Monetary Area it would suffer, certainly in all economic fields.

#### **3.** Conclusions

The benefits of adopting the euro in Romania will progressively feed through over more than 10 years after its adoption, the priority being given to the costs and risks. The most important benefit of adoption and best known by citizens is the elimination of transaction costs for individuals and businesses, this contributing to increase productivity of factors of production. This benefit involves two main costs: financial costs in the case of foreign exchange, including costs associated with the volatility of the exchange rate, and the second is the administrative cost for enterprises in the case of foreign exchange transactions, such as trading or selling/buying products that are based on foreign exchange operation. With regard to the exchange rate, we can mention another benefit of the adoption of the euro by Romania, benefit tied to the removal cost in case of exchange rate risk. In this situation, it would be necessary that interest rates in Romania to drop and to reduce the cost of capital, which would lead to an increase in domestic investment. Consistent with the above benefits there is the expansion of foreign trade area between the member countries of the monetary area and Romania. If Romania would adopt the euro and trade with other Member

countries of the euro area there would be a considerably large investment increase in Romania, productivity would improve and the technology flow could be expanded.

The risks of adopting the euro by Romania at a faster pace are linked to rising prices, maintaining wages at a low level and increasing unemployment. In terms of rising prices, it is clear that the transition from the national currency, the Leu, to the single currency, the Euro, will cause a massive increase in prices. A good example would be the situation in Spain, Greece, Portugal, where, although the inflation rate stood at a very advantageous level when these countries have adopted the euro, in the next few years inflation had to stabilize at a level similar to that of the powerful countries in the euro area and the prices have skyrocketed. As in the case of Romania, where inflation is reduced as a result of favorable situation policies and not reduced on structural basis, raising prices will be inevitable. In principle, the loss of competitiveness will have most to suffer from rising prices, having a negative effect on the macroeconomic imbalance.

Keeping prices lower than those in the rest of the Member countries of the Euro area represents the second major risk if Romania will adopt the euro because of the large differences in productivity between countries. Romania is likely to have a problem in this regard because the country's productivity is much lower than the euro area average, being forced to restrict wage increases in the future.

Rising unemployment is an old problem for Romania, which will also have major consequences after the adoption of the euro. Rising unemployment is closely related to the alternative exchange rate adjusting mechanisms. If Romania will no longer be able to take advantage of these mechanisms, the domestic economy will no longer be able to be adjusted when required, with the main consequence being the rising of unemployment. This can be seen in countries such as Greece, Italy, Spain, where unemployment has increased considerably, people having big financial problems because of this.

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#### PUBLIC PRIVATE PARTNERSHIP RISKS IN THE CONTEXT OF EMPLOYMENT

#### PhD Student Andreea – Monica PREDONU

Bucharest University of Economic Studies Institute for Doctoral Studies monica.predonu@yahoo.com

PhD Student Monica – Gabriela GHERMAN Bucharest University of Economic Studies Institute for Doctoral Studies monicagherman24@yahoo.com

#### Abstract:

The process of globalization has a direct impact on the rule of law, being accepted the idea that the state institutions can not solve social problems alone and that the private sector has an important role in solving the.

According to the legal regime of the European Union in the field of Public Private Partnerships, contracting authorities must respect the principles of non-discrimination and equal treatment, transparency, mutual recognition and proportionality.

European society is changing, being influenced by factors such as technological advances, globalization of trade and population ageing. European policies on labour employment, social affairs and equal opportunities contribute to improving the living conditions of citizens aiming sustainable growth and greater social cohesion.

This paper presents partial results obtained in the research of PhD thesis: "Regional Implications of the future of the single European labour ", author : Predonu Andreea - Monica and " Economic effects of the co-financing strategies for investment partnerships. Case of Romania ", author: Gherman Monica -Gabriela.

*Keywords: public private partnership, labour market, employment, risk development.* 

JEL Classification: J01, J08, J18

#### 1. Introduction

PPP is one of the main sources of economic development, job creation or maintenance of a low rate of unemployment, creating constant budgetary resources.

A Public Private Partnership properly administered and supported by a clear, consistent and transparent legislation can generate economically and socially positive results. Reality has shown that in all activities that are included partners from the private sector, they contribute to achieving results through highly qualified personnel and among the most efficient types of partnerships in the context of employment, we can mention the creation of training centers and retraining to supply the labour market with skilled labour force, coupled with the existing supply and demand.

Next, it will be presented the general issues required by law on Public Private Partnership projects. Then it will be analyzed the risks involved in these investment projects and it will be described the influence of Public Private Partnership on employment labour in the Member States of the European Union, analyzing the employment rates of labour force by age groups and sex for each state.

#### 2. General and legal framework on PPP projects

PPP is a complex mix of tools for structural development in the medium and long term, is an association based on complementary business interest, which engages various resources. This is seen as an effective solution to implement public projects, whose development and modernization would not be possible without the contribution of the private partner in this way the pressure on the state budget is relieved, to the extent that risks are managed appropriately and transparent, and in addition, these risks should be fairly shared between the public and the private investors, according to the criterion of cost-effectiveness. However, the types of PPP projects are quite difficult to achieve if there is not a legal framework anchored in the development and operation realities of such investment projects. PPP is an important tool used in all European countries. The experience of other countries such as Poland, UK, Germany, Portugal, Italy demonstrate that PPP formula is a successful solution with benefits for all operators involved: population - through access to efficient public services, a network of modern infrastructure, and other facilities; state or local authorities - through the successful implementation of development projects for the society; investors - by optimizing the profitability.

The huge potential of using PPP projects in Romania is widely considered to be worthy, especially in the use of EU funds related to European multiannual framework 2014-2020 as structural and cohesion

funds will be allocatted may help catching large infrastructure, education, health etc. Regional Development . In this context, it will have a key role and initiatives of local and regional authorities in order to promote such projects of modernization. Their assistance will improve local infrastructure and employment in the regions concerned because it will be necessary for staff personnel for the successful implementation of these types of projects. But to materialize implementation in Romania of such investment partnership models it must be provided a clear legal framework in accordance with European standards that allow flexibility and economic efficiency, eliminate duplication of public procurement legislation and mechanisms to base operational risk, bankability and transparency. Representatives of the European Commission estimated that Romania must adopt a very cautious approach in identifying the private partner and the models of PPP partnership, the payback assessments have low accuracy, especially for road infrastructure . In Romania, the partnerships of PPP are assimilated to concession contracts and in other countries such as Japan, Croatia, Philippines, China, USA, India, a large number of PPP projects were leased in a specific form that is called Build -Operate -Transfer (BOT : Build-Operate-Transfer) that means a system of financing public projects in which the private partner invests its own resources and in which the cost and profit recovery is on a long-term, based on a credit in connection with the viability of the project, not the entity loans, and credit insurance is done even with the assets of the project and not the ones of borrowed party. The object of the contract is transferred to the public authorities at the end of the concession period. From the legal perspective, Public Private Partnership differs from public procurement in that both private investors and public authorities assume all or part of the economic risk of exploitation afererent to a good or service.

PPP projects originate from the financial needs of public authorities to provide public goods or services at a high quality level. PPP is used at central and local level mainly in the UK, Poland, Czech Republic, France, Germany, Ireland, Italy, Spain, Portugal etc. and most of them have specialized units coordinating the PPP. According to Prof. Erastus Tarangul Diti, *"the state is a bad contractor and administrative bodies lack the personal interest to analyze the needs of citizens and civil employees who receive their regular salaries regardless of performance and they will not make efforts that the public service to have the best conditions, but an individual has a personal interest in the proper functioning of the enterprise.*" Public Private Partnership system currently in place has been shaped since 1980 and took the form of a cooperation between local authorities and the private sector to rehabilitate industrial zones and was supported by legal regulations so as to encourage initiative. In Europe, PPP appeared in 1992 in the UK, the PFI (Private Finance Initiative), which supported complex and diverse projects, and this has increased the partnership initiatives, innovation and financial engineering. This type of cooperation between public and private has greatly expanded in the health system and currently over 15 % of public investment in the UK is completed with PFI contracts.

In Romania, the first forms of PPP have occurred after 1989, due to public administration reform and from the theoretical point of view is supported by public choice theory, both at central and local level, but the developing this funding mechanism has been slow and must be encouraged through effective fiscal policy. Currently, PPP is very little practiced, although the current financial problems faced by local authorities should open the appetite for using PPP, which gave very good results in other countries.

The term "public-private partnership" is not defined in EU legislation on public procurement. In general, it refers to forms of cooperation between public authorities and the private sector aimed at ensuring the financing, construction, renovation, management and maintenance of the infrastructure associated with the provision of a service. A legal and regulatory framework that supports PPP aims to facilitate investments in complex arrangements and long-PPP reduce transaction costs, ensure appropriate regulatory controls and ensure legal and economic mechanisms to allow contractual disputes.

The legal framework adopted at EU level that applies to Public Private Partnership projects is:

1. Directive no.2004/17/EC of the European Parliament and of the Council coordinating the procurement procedures of entities operating in the water, energy, transport and postal services;

2. Directive no.2004/18/EC of the European Parliament and of the Council on the coordination of procedures for the award of public contracts for works, supplies and services.

3. Directive no.2007/66/EC of the European Parliament and of the Council amending Council Directives 89/665/EEC and 92/13/EEC with regard to improving the effectiveness of review procedures concerning the award of public contracts in the selection of the private partner;

4.Regulation no. 1177/2009 of the European Commission of 30 November 2009 amending Directives 2004/17/EC, 2004/18/EC and 2009/81/EC of the European Parliament and of the Council in respect of their application thresholds for the procedures the award of procurement contracts in the field of public-private partnerships;

The types of PPP regulated at European level include the following approaches:

- contractual PPP, conducted solely on the basis of contractual relations;
- institutional PPP, involving joint participation in a joint venture legal entity;

Principles to be observed in all forms of public-private partnership in EU aims: transparency, equal treatment, proportionality and mutual recognition.

Most countries in Europe have a legal tradition based on civil law. Their legislation stems from a set of written rules or civil code. By contrast, in common law jurisdictions such as England, Ireland and Gibraltar, the common law (case law and precedents that rather than a civil code), which is the fundamental basis of all commercial transactions and which developed principles underlying the allocation of risk. Some countries have specific legislation for PPP projects and in other countries it is incorporated into other laws, such as the public procurement law.

Commission focuses on optimal distribution of risks between the private partner and Public, which is an important step for the success of PPP projects.

#### 3. Risk management in PPP investment projects

Project finance theory reveals that the risks should be supported by the party from the contract that has the skills to manage them, but many PPP projects fail because the parties can not agree on the allocation of project risks and this happens because each side is trying to transfer risk to the other party.

Also, it is difficult to calculate the risks, especially in the transition economies, where growth rate is sometimes less predictable, which makes forecasting demand especially in transport sector become a difficult exercise to fulfill. The main benefit of PPP projects comes from the transfer of risk to the private sector. But such a transfer and the extent to which the private sector is ready to take it sometimes affect project feasibility.

Lenders tend to have a strong aversion to risk if they perceive more risk and will refuse even those projects that are socially desirable, which disappoints and frustrates the public sector. In this case, the governments must identify the risks at the beginning of starting this type of investment projects. A good starting point would be to use a checklist of risks that are usually applied in projects of infrastructure services.

Establishing a matrix of risk can be a useful tool for both government and the private sector, which should be used for each phase of the project, setting the preferred position of the government allocation. During the prior phases of tendering process, this can help state authorities to identify all relevant risks of the project and their allocation. During negotiations it can act as a checklist to ensure that all risks are addressed, and after signing the contract can be a useful tool to compile a summary of the allocation of risk undertaken by contract.

Governments can use various tools such as a type of insurance to reduce the risk of force and major events that could destroy network components essential for the private state of the project. Such systems can be ensured by conducting research before issuing tenders and specifying the desired project results (taking into account government policy).

Given that the project is in the public interest, it is also essential to ensure the existence of a transparent regulatory framework. Once the project starts, the government will have to establish a risk monitoring system to ensure that services are delivered by contracted performance specifications. Consequently, this will allow payment for services provided to be checked properly while continuing surveillance will monitor whether the project is progressing according to the plan. Governments must tackle the political risk, including concerns that governments will come and will unilaterally change the rules (transition from a positive to a negative PPP approach and the cancellation of thee PPP projects is a commonplace in some countries).

Another challenge to the private sector face problems in obtaining necessary planning difficulties and other approvals necessary to start projects as unnecessary bureaucracy and other interference may delay the project. Regarding the "bureaucracy", governments can interfere to solve such problems in order to facilitate starting on time of the project. Governments may change the terms of the contract because of the long duration of the project.

However, it is important before their changing that private partners are fully consulted. Similarly, a government may interfere or terminate the contract if the project does not perceive that takes place in optimal conditions. Private sector sector concerns can be addressed through contractual clauses that make interventions or cancellation of the contract during the development of contractual agreements to be measures of last resort. Attention should be also paid to the potential effects of the long periods, while it will also take into account the government's ability to provide basic services and ability to provide or procure ancillary services that the private sector is able to provide .

In some cases, however, PPPs can survive. For example, A1 road project in Poland survived eight changes of government during the negotiation. In case of interfering in the contract during its development, this refers only to emergency access and in the event of termination it is to ensure that "*periods are correct and that, if possible, under a termination, clearly specified and limited to defaults, so as to avoid triggering events terminating the contractual relationship.*"

Many projects, particularly in transport require massive investments in the private sector and the private sector starting here can not accept one of several commercial risks for these projects.

The public sector should provide support for a project to reduce the risk enough to stimulate private sector investment to desired levels. There are various forms of support that the government can give to a project, in order to reduce the risk to the private sector, and one such example is the collateral which may be an appropriate form of government intervention, especially to protect private sector risks can not be predicted or controled. Indeed, many PPP contracts provide minimum guarantees of private sector income to limit exposure to demand risk.

The most common risks arising in the start-up and performance of PPP projects can be summarized in the following: risk management and operational risk, demand/income risk, political risk, currency risk, bankruptcy risk of a failure to project risk related to land etc<sup>1</sup>.

Therefore, public-private partnerships contribute certainly to economic recovery and growth and sustainable development of the European Union. The benefits of public-private partnerships can remember the following :

- facilitating public projects, especially for infrastructure;
- sharing financial risks and reduce costs for infrastructure;
- promote sustainable development, innovation, research and development, due to competition commitments and private enterprises;
- increasing market shares of European companies in public procurement in third countries;

## 4. The influence of Public Private Partnership on employment labour rate

As we know, even if one of the objectives of the Europe 2020 strategy is to increase the employment rate of labour by 75%, achieving this objective in the current conjuncture is unlikely. This is due to a lack of employment and skills needing to redefine the purpose of the labour market. The same is true for Greece and Spain. Therefore, the relevant dimensions to analyze the labour market are:

- occupation;
- sectors which are hiring people;
- geographical area, for example the regional, national or European level.

<sup>&</sup>lt;sup>1</sup> Public Private Partnerships: Risks to the public and private sector, Najja Bracey, Sonia Moldovan, The Loius Berger Group, Inc.

The rising of unemployment rate in the European Union Member States and developing countries in Eastern Europe, along with technological changes lead to continuously changing requirements of the labour market. In this context, the education must be appropriate in accordance with the required jobs on the labour market.

Research bodies authorized in the Member States of the European Union have developed various methods and techniques to identify employment forecasting future labour needs that take into account sectoral, occupational, educational and training factors that influence supply and demand for jobs. In the new global circumstances have emerged a number of observations including the fact that employment rates tends to follow GDP. Thus, it appears that, from 1997, employment in the European Union has increased significantly, being more significant for women than for men. International statistical analysis reveals that the gap between employment in 2012 (the difference between the employment rate for men and women employment rate) is positive and as shown in the Chart no.1.





Source: Eurostat online database [t2020\_10]

The chart above shows that, in 2012, male employment rates were consistently higher than those of female employment in all EU Member States. However, there were disparities, whereas the biggest difference between the employment rates between men and women was in 2012, in Malta, 32.2, which showed the lowest rate of employment of women (46, 8%) and the one among men was 79%. The smallest gap is in Lithuania by only 1.2 percentage points. In Romania, the gap was 15.1, close to the EU average, which was 12.2. Italy and Greece have reported a difference of 21.1, respectively 20.1 percentage points.

Across the European Union, it is clear that male employment rate peaked in 2012, the level of 74.5 %, while the employment rate for women was 62.3 %.

However, the chart no. 2 shows the employment rate by age. We felt the need to analyze trends in employment of the elderly people, because due to the ageing population, their share in the total population is a growing share, the young population is becoming less and birth rates almost halved compared to the years 1980s. For this reason, people aged between 55 and 64 years are still reflected in employment, as the pensions are very small. Employment rate of older was in 2012 the highest in Sweden, which recorded a rate of 73 %, followed by Germany with 61.5 % and the lowest was in Malta 33.6 %. In 2012, in Romania this indicator was 41.4 %.





Source: Eurostat online database [lfsi emp a]

At the same time, it can be seen that the employment rate among young people in 2012, was the largest in the Netherlands, 63.3 %, and the lowest in Greece, 13.1 %. Regarding the rate of employment aged between

25 and 54 years, in Romania was 74.9 %, relatively well, especially that the European Union average of this indicator was 77.2%.

Eurostat statistical data analysis indicates that the overall EU employment rate has risen and seeks to increase by 2020 to 75%. However, there are countries that have experienced a decline in this indicator, as for example, Britain, which until 2012 had recoverved and had a rate of 74.2%.

In the 2002-2014 period, employment in Europe increased by 5.8 percentage points.

Forecasts for 2020 are not exaggerated and are available for each Member State. The harder is for Greece, which has a rate of 53.8 % and expects to reach 70% in 2020.

Therefore, we believe that public - private partnership has a major impact on employment of labour in the European Union, which increases considerably the development of the whole society.

#### **Conclusions**

In conclusion, we believe that if the Public Private Partnership would have significant increases, they should be translated into more jobs, and these, in turn, would reduce unemployment and increase the employment rate.

Presentation of the employment by age groups and sexes, aimed to identify the general features of the labour market in order to determine areas where they can take action to improve the quality of labour resources, to increase the skills of the workforce work in the context of Public Private Partnership.

We consider this important because the Public Private Partnership has serious risks if labour resources are unqualified or incompetent.

Currently, more than five million young people are unemployed in the European Union, which means that one of five young people available in the labour market can not find a job. And the Public Private Partnership has various ways to provide young people ( and not only) adequate training to enable them to have better career opportunities.

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# LABOR ISSUES DURING THE ECONOMIC CRISIS

#### **Burghelea** Cristina

Hyperion University, Bucharest, Romania crystachy@yahoo.com

# Gheorghiu Anda

Hyperion University, Bucharest, Romania andagheorghiu@yahoo.com

#### Aceleanu Mirela Ionela

The Bucharest Academy of Economic Studies, Romania aceleanu\_mirela@yahoo.com

#### **Gheorghiu Anca**

Hyperion University, Bucharest, Romania ancagheorghiu@gmail.com

# Abstract:

The labor market is a special type of market, whose object of transaction is the labor. In modern economies, workers sell their labor services to holders of capital on the labor market.

This article aims to show occupancy in the active population in the period following the economic crisis, as well as the share of youth unemployment.

The most notable negative effects of the transition towards a market economy are the massive increase in unemployment and a sharp decrease of income under inflation. The main objective pursued is to avoid damage to the stock of human capital by focusing all energies to sustainable human development.

**Keywords:** labor market, economic crisis, unemployment, occupancy.

JEL Classification: F14; J44; E24.

# 1. Introduction

The labor market in the European Union describes the demographic profile of the workforce, as well as the settlement systems, focused primarily on the free movement of workers and other forms of regulation of the market. Since the formation of the European Economic Community in 1957, the aim of providing workers' freedom of movement helped shape guidelines regarding employment.

The demographic profile of the EU labor market has changed significantly in recent years. The proportion of women employed increased in the past decade, leading to a drop in difference between women and men in the labor market from 11.9% in 2011 to 17.1% in 2000.<sup>1</sup> Migration is a factor influencing this market and the ascension of new Member States, which used the free movement of people to encourage changes in ethnic and national profile on the European labor market. Demographic changes associated with aging workforce have led to the need to introduce new incentives to encourage older employees to continue working for a longer period of time.<sup>2</sup>

Since 1989, the European Union continued to deliver policies for the development of the labor market and hence of labor itself. It can be seen that many targets have remained unchanged over the years: increasing employment, equal opportunities between women and men and eliminating social exclusion measures to promote entrepreneurship, improve quality and productivity, increasing adaptability of workers.

Since 2005, more emphasis began to be put on: the correlation between supply and demand in the labor market and adjusting the education system to the new requirements, work in stages throughout life, active aging and longer periods of work (in terms of the number of years worked by a person), education and training at all levels, improving adaptability of workers and enterprises and the flexibility of labor, lifelong learning and creating diversified training programs, and reducing number of early school leavers, promoting innovative forms of work organizations and the unemployment rate among young people.

# 2. The evolution of real economy

The evolution of the real economy in the first three quarters of  $2009^3$  was strongly affected by the economic and financial crisis, given the fact that we are a relatively small economy with a high degree of openness.

Thus, after the fourth quarter of 2008 the GDP growth was only 2.9 % compared to the fourth quarter of 2007, during Q1 2009 gross

<sup>&</sup>lt;sup>1</sup> www.eurostat.ro

<sup>&</sup>lt;sup>2</sup> www.eurofound.europa.eu

<sup>&</sup>lt;sup>3</sup> www.insse.ro

domestic product - in real terms, gross series - decreased by 6.2 % compared to Q1 2008, the downward trend emphasized during Q2 and Q3 2009 when the economy contracted by 8.7 % and 7.1%, respectively.

Considering the comparability of seasonality, statistical data on the evolution of the GDP from the previous quarter highlights the downward trend even since the third quarter of 2008, when it dropped by 0.1 % when compared to the second quarter, followed by a 2.8% reduction in the fourth quarter of 2008. In the first quarter of 2009, decreasing GDP emphasized, reaching 4.6 % compared to the fourth quarter of 2008. In the second quarter the economic downturn began to reduce its magnitude, the gross domestic product falling by 1.1% compared to the first quarter and 0.6% comparing Q3 2009 to Q2 2009.

Over the first nine months of 2009, the negative impact of the crisis was reflected in GDP reduced by 7.1%. The reduction was driven by lower domestic and external demand - 13.7% and 10.1%, respectively. The final domestic demand fell by 11.1%, due to deteriorating credit dynamics and adverse developments and uncertainties associated with the labor market, while gross fixed capital formation decreased by 22.6% due to reducing foreign direct investment inflows and uncertainties related to demand for goods and services.

The only major component that has made a positive contribution to real GDP growth was net exports, i.e. by 8.3 percent due to the decline in exports of goods and services in the first nine months by 10.1%, while imports decreased by 24, 3% (see Figure 1).



Figure 1. Evolution of GDP and its main components between 2007-2009

Source: www.eurostat.ro

In 2009 industrial production declined in real terms by 5.5% (gross series), due to lower mining industry by 12.0% and manufacturing by 6.5%. However, monthly developments show some recovery. As a result, in December 2009 industrial production was 11.6% higher than that of December 2008, being the second month of 2009 when industrial output reported growth (in November growth was 5.3 % compared to November 2008).

Active population of working age increased by 0.3 % in the first nine months of 2009 compared to the corresponding period in 2008, and the activity rate increased from 63.1% to 63.4%. The working age employment decreased by 0.6% resulting in a decrease in the employment rate of the working age population from 59.3% to 59%, while the average number of employees (according to ILO methodology) reduced by 0.9%.

The employment rate of working age population was higher for men (65.6% versus 52.4% for women) and for people in rural areas (61.4% versus 57.3% in urban areas). The employment rate among young people (15-24 years) was 24.9%, down 0.3 percentage points compared to the corresponding period in 2008. The number of ILO unemployed increased from 578 000 people in Q3 2008 to 664 000 people in Q3 2009, the unemployment rate raising from 5.8% to 6.7%.

The exchange rate was an inflationary factor, recording a nominal devaluation at the beginning of the year, followed by relative stability, while during the last month of the year it has recorded an appreciation. Under these conditions, prices of imported goods have been negatively affected, especially in the first half of the year, as well as the price of administered products tied to the euro or the U.S. dollar.

A positive effect in lowering inflation is to reduce excess demand, caused by the financial crisis and global economic events. Simultaneously, the restrictive wage and budgetary policy promoted by the government contributed to disinflation.

#### 3. Workforce during the economic crisis

The economic crisis of 2008 had a negative impact on the employment rate of employment in our country. Employed population decreased from 9 369 000 in 2008 to 9 139 thousand people in 2011. The employment rate of labor force dropped by about 2 percent in this period.

The unemployment rate in our country has increased significantly in recent years. This growth came gradually to 7.4 percent in 2011, compared to 5.8 percent in 2008, representing a difference of 1.6 percent (see figure 2).



Figure 2. Changes in unemployment rate in Romania during 2005-2011

A significant increase in unemployment occurred for young people<sup>1</sup>, with a difference of 4.1 percentage points from 18.6% in 2008 to 22.7% in 2011 (see figure 3).



Figure 3. Youth unemployment rate between 2006-2011

<sup>&</sup>lt;sup>1</sup> Mariana Bălan - coordonator-, (2013), "Forța de muncă tânară: oportunități și provocări ale integrării europene", Editura Mustang

The labor market is characterized by carrying out complex operations regarding transactions having work as object. When transactions are made at the level of an economic entity, like national economy, economic branch/sub-branch or business, labor demand, represented by the number of jobs available at any given time meets the job offer, made up of those willing to provide a qualified labor in exchange for money.

Vacancy rate changes in Romania in the period 2005-2012 led to a drastic decrease of these.

Unemployment rate is closely related to vacancies. As can be seen, vacancy rate decreased drastically since the beginning of the crisis to the end of last year (see Figure 4). The percentage of vacancies ranged between 1.6% and 2% in 2005-2008, to around 0.6 percent in 2011.



Figure 4. Vacancy percentage in Romania during 2005-2012

Amid all fluctuations in the labor market in terms of gross income, its continuous growth throughout the period 2005-2010 can be easily noticed: it reached 1 903 lei in 2010, up from 968 in 2005 (see Figure 5)



Figure 5. Average gross wage developments in Romania between 2005-2011

Source: www.insse.ro

## Conclusions

In the years between 2005 and 2008, employment in the active population was higher than in the immediate aftermath of the crisis, when the number of employees has experienced a rather drastic reduction. Also, many companies have closed their doors and many public institutions laid off large numbers of employees. This has resulted in not only an increase in unemployment, but also in a decrease in quantity of available jobs.

Regarding the unemployment rate among young people, our country has never recorded a very low level of this indicator. There is of course a drastic increase in the number of young unemployed from 2008 to 2011, by 4.1 percent. It seems that the labor market in Romania is hard to be penetrated by those aged between 16 and 25 years old.

One reasonable explanation could reside in the fact that, in our country, only since 2011 a rather signifiant importance was given to the correlation between studies and labor market. There are not many companies that offer internship programs and then be willing to hire young graduates. Romanian state should start researching market needs and provide schools the necessary data in order for them to be able to offer new employers or employees that are able to meet existing requirements.

This economic crisis still had a beneficial effect: it made us realize how important and necessary are speciality studies to us. If we really want to deal with the European and global economy, we must prepare ourselves so that we can demonstrate that we are able to provide adequately trained persons for such labor markets.

It is as well important to promote the phenomenon of "active aging" and provide opportunities for all those who want to work and build a better life .

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# ROMANIA'S MACROECONOMIC POSITION IN THE UNION EUROPE

#### **Oana Camelia IACOB**

Ph. D. Student, Valahia University, Târgoviște, Romania ioanabaghi@yahoo.com

# Ana-Maria VOLINTIRU

Ph. D. Student, Valahia University, Târgoviște, Romania anavolintiru@gmail.com

#### Abstract:

The five criteria of nominal convergence practically constitute the essential pillar for adoption of the euro currency. If Romania fails to meet all five criteria, it can not adopt the single currency. Since 2007, the year of integration in the Union, Romania attempts to solve problems of inflation, the nominal long-term interest rate and exchange rate fluctuations. This article examines all five criteria between 2007-2012, focusing on the major issues of Romania.

**Keywords:** economic convergence, inflation, interest rate, exchange rate.

#### JEL Classification: O47; E31; G12; F31.

#### 1. Introduction

For most countries in Europe, the adoption of the common currency is a crucial step toward a new stage for them. With the advent of the euro on 1 January 1999, the currency that replaced the former European Currency Unit (ECU), the euro was put into circulation on 1 January 2002. All European Union member states had to pass first the system introduced by the European Community in 1979, called ERM II, then meet the criteria specified in the Treaty of Maastricht, real and nominal convergence criteria, each having specific boundaries. Currently, 17 of the 27 member states of the European Union use euro as their official currency, and Romania is a potential candidate for the adoption of the euro in the future.

Romania's accession to the European Union assumes adopting the single currency requires a time horizon that depends on the degree of economic integration with the euro area. According to the fifth edition of the Convergence Programme (2011-2014), 2015 is maintained by the authorities the aim to adopt the euro, this commitment representing an important milestone for providing both budget and structural reforms required for enhancing economic competitiveness. In this respect, Romania joined the Euro Plus Pact providing measures aimed at increasing competitiveness and avoiding macroeconomic imbalances.<sup>1</sup>

# 2. Analysis of the phenomenon

**Inflation rate** is a problem for Romania<sup>2</sup> because it can not fit within the limits imposed by the Treaty of Maastricht requiring an inflation rate that should not exceed 1.5 percentage points above the average of the first three Member States with the best performance to price stability. In the year of EU integration, Romania managed to achieve a rate of 3.9% inflation rate, but, with the outbreak of the economic crisis<sup>3</sup>, the percentage increased significantly, thhhe National Bank of Romania managing in 2012 to reduce inflation rate in 2011 compared to 2012 is 2.4%, with great sacrifices made by the National Bank to reach this percentage, Romania has still failed to meet the inflation criterion established within the nominal convergence criteria.

States / Years	2007	2008	2009	2010	2011	2012
EU 27	2.3	3.7	1	2.1	3.1	2.6
Euro 17	2.1	3.3	0.3	1.6	2.7	2.5
Romania	3.9	7.9	5.6	6.1	5.8	3.4
Germany	2.3	2.8	0.2	1.2	2.5	2.1
Great Britain	2.3	3.6	2.2	3.3	4.5	2.8
Italy	2	3.5	0.8	1.6	2.9	3.3
Hungary	7.9	6	4	4.7	3.9	5.7
Poland	2.6	4.2	4	2.7	3.9	3.7
Cyprus	2.2	4.4	0.2	2.6	3.5	3.1
France	1.6	3.2	0.1	1.7	2.3	2.2
Slovenia	3.8	5.5	0.9	2.1	2.1	2.8

Table no. 1.Inflation rate in the EU between 2007-2012

Source: www.eurostat.ro

<sup>&</sup>lt;sup>1</sup> www.bnr.ro

<sup>&</sup>lt;sup>2</sup> Nicolae, M., (2007), "Use of the Almon Model to Determine the Dalay in the Propagation of Shocks in the Consumer Price Index", Review "Internal Auditing & Risk Management", nr. 5-6/2007, pp.79-85;

<sup>&</sup>lt;sup>3</sup> Aceleanu, M., I., (2011) "Europe 2020" Strategy - Support for the Development of the Employment Strategy in Romania", publicată în Revista "Review of Applied Socio-Economic Research" Nr.2/2011, pag. 14-22

NBR has proposed to target an inflation rate of 2.5% for 2013 with a variation interval of  $\pm$  1 percentage point. The current value of the inflation rate is 5.29% in the period April 2012 - April 2013. Between February and March 2013 there was a decrease in inflation by about 0.1%, but the rise of prices that Romania will face this year will make it unable to achieve the target set by the central bank.

On 31 March 2013, Romania had an inflation rate of 4.1% according to data from the European Union, while the maximum reference value was 2.5%, a difference of 1.6 percentage points that Romania hardly may recover.

**Long-term nominal interest rate** is the second important criterion established by the Treaty of Maastricht regarding nominal convergence. This criterion states that the nominal interest rate in Romania shall not exceed by more than 2 percentage points the average rate of the first three Member States with the best performance in terms of price stability.

In the six years analyzed in the following table, Romania has maintained an average rate of about 7 percentage points, except for 2009, when Romania has achieved a rate of 9.69% in the context of increased volatility, but also due to financial crisis and economic difficulties faced by Romania. It can be seen that in 2010, Romania has managed to stabilize long-term interest rates, falling by 2.35 percentage points compared to 2009 (see table no. 2).

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In the six years analyzed in the following table, Romania has maintained an average rate of about 7 percentage points, except for 2009, when Romania has achieved a rate of 9.69% in the context of increased volatility and cause of financial crisis and economic difficulties faced by Romania. It can be seen that in 2010, Romania has managed to stabilize long-term interest rates falling by 2.35 percentage points compared to 2009 (see table no. 2).

States / Years	2007	2008	2009	2010	2011	2012
EU 27	4.56	4.53	4.13	3.82	4.31	3.74
Euro 17	4.32	4.31	3.82	3.61	4.41	4.01
Romania	7.13	7.70	9.69	7.34	7.29	6.68
Germany	4.22	3.98	3.22	2.74	2.61	1.50
Great Britain	5.06	4.50	3.36	3.36	2.87	1.74
Italy	4.49	4.68	4.31	4.04	5.42	5.49
Hungary	6.74	8.24	9.12	7.28	7.64	7.89

Table no. 2. Evolution of Long-term interest in the EU between 2007-2012

States / Years	2007	2008	2009	2010	2011	2012
Poland	5.48	6.03	6.12	5.78	5.96	5
Cyprus	4.48	4.60	4.60	4.60	5.79	7
France	4.30	4.23	3.65	3.12	3.32	2.54
Slovenia	4.53	4.61	4.38	3.83	4.97	5.81

Source: www.eurostat.ro

Romania has also failed in 2012 to meet this criterion, and it still fails to manage to comply with it, so at 31 March 2013 Romania reached a long-term interest rate of 6.36%, Romania exceeding by 1.55 percentage points the accepted limit of 4.81%.

The budget deficit criterion requires that this indicator should not exceed 3% of Romania's GDP. Although in 2007, Romania managed to keep the budget deficit within the ceiling of 3% of GDP, once with the coming economic crisis<sup>1</sup> issues started to occur, so that in 2009 our country was able to achieve the unfortunate performance of reaching 9% in terms budget deficit, Romania facing serious economic problems in all areas in that period of time. With great sacrifice, the budget deficit was considerably diminished, so that in 2012 the budget deficit was equal to that of 2007, with the value of 2.9% of GDP. The economic crisis has not only affected Romania in 2009-2011, Britain also facing serious budget deficit problems. Even Slovenia, that has adopted the euro in 2007 had difficulties in that period, its budget deficit undergone major changes (see table no. 3.).

<b>Countries / Years</b>	2007	2008	2009	2010	2011	2012
EU 27	-0.9	-2.4	-6.9	-6.6	-4	-4.4
Euro 17	-0.7	-2.1	-6.4	-6.2	-4.2	-3.7
Romania	-2.9	-5.7	-9	-6.8	-5.6	-2.9
Germany	0.2	-0.1	-3.1	-4.1	-0.8	0.2
Great Britain	-2.8	-5.1	-11.5	-10.2	-7.8	-6.3
Italy	-1.6	-2.7	-5.5	-4.5	-3.8	-3
Hungary	-5.1	-3.7	-4.6	-4.3	4.3	-1.9
Poland	-1.9	-3.7	-7.4	-7.9	-5	-3.9
Cyprus	3.5	0.9	-6.1	-5.3	-6.3	-6.3
France	-2.7	-3.3	-7.5	-7.1	-5.3	-4.8
Slovenia	0	-1.9	-6.2	-5.9	-6.4	-4

Table no. 3. Evolution of budgetary deficit between 2007-2012

Source: www.eurostat.ro

In 2013, Romania has met the budget deficit criteria with a close call percentage of 2.9%. Given the fact that this percentage was constant by the

<sup>&</sup>lt;sup>1</sup> Burghelea, C. (2011) "Economic Crisis perspective between current and forecast", *Theoretical and Applied Economics*, Vol. XVIII, No. 8, pp. 137-147

end of 2013, Romania will have no problems and has managed to meet this criterion for two consecutive years.

**Public debt** is limited to 60% of GDP of the country aiming to adopt the euro. Romania successfully meets this criterion because for many years its share of public debt is very low. At the end of the first quarter of 2012, Romania was ranked fourth in the European Union in terms of the lowest share of public debt to GDP, with only 36.3%. We observe (see Table 4) that between 2007-2008, Romania has kept a very low percentage of public debt, and since 2009, the percentage of debt almost doubled in 2010 to 30.5% of GDP. In 2011-2012, the share of public debt to GDP was between 34.7% and 37.8%, so Romania meets this criterion without any problem.

Countries / Years	2007	2008	2009	2010	2011	2012
EU 27	59	62.3	74.6	80	82.5	85.3
Euro 17	66.4	70.2	80	85.4	87.3	90.6
Romania	12.8	13.4	23.6	30.5	34.7	37.8
Germany	65.2	66.8	74.5	82.4	80.4	81.9
Great Britain	44.2	52.7	67.8	79.4	85.5	90
Italy	103.3	106.1	116.4	119.3	120.8	127
Hungary	67	73	79.8	81.8	81.4	79.2
Poland	45	47.1	50.9	54.8	56.2	55.6
Cyprus	58.8	48.9	58.5	61.3	71.1	85.8
France	64.2	68.2	79.2	82.4	85.8	90.2
Slovenia	23.1	22	35	38.6	46.9	54.1

Tabelul nr.4. Evoluția datoriei publice în PIB în UE între anii 2007-2012

Source: www.eurostat.ro

In late March 2013, the share of public debt was down from 2012, reaching 36.8% of GDP. It is estimated that Romania has accumulated a public debt amounting to 229 billion lei in March 2013, up from December 2012 when the public debt stood at 222 billion, but this decrease in the percentage of public debt is due to a higher rated GDP reaching 623 billion lei, compared to 2012 when nominal GDP was worth 587 billion lei.

Although Romania does not have problems in terms of public debt criterion, many economists believe that higher debt can cause more problems, so it is preferable for Romania to maintain a constant rate, taking into account a lower percentage of debt compared to the 60% provided for in the Treaty of Maastricht.

**The exchange rate** is one of the most difficult to reach criterion by Romania since the fluctuation margins must match the ones set by the European Monetary System - within  $\pm 15$  % in the two years preceding the examination (in fact the technical negotiations fluctuation accepted by the Commission is  $\pm 15$  %/-2.25%). The Romanian currency – leu - is not

participating in ERM II. Romania uses a system of floating exchange rate. Nominal exchange rate of the leu against the euro has fluctuated in a wide range of economic crisis in previous years. In autumn of 2008, the leu faced strong destabilizing pressure in the context of the intensification of the global financial crisis and emphasizing domestic macroeconomic imbalances. Short-term interest rate differentials against the euro area began to grow as lack of liquidity has increased the interest rates in the short term. Following an agreement in early 2009, from which Romania benefited of a coordinated package of international financial assistance, financial market pressures eased and the leu broadly stabilized against the euro to levels that were largely maintained in 2009-2011. The exchange rate of the leu against the euro has depreciated at temporary intervals of global risk aversion. including the second half of 2011. In early 2012, it remained moderately lower than the average of 2009-2011. In the two years preceding that assessment, our currency depreciated by 6.4 % against the euro.<sup>1</sup> This last criterion of nominal convergence is hardly fulfilled by Romania, NBR making sacrifices to reach a  $\pm$  15 % fluctuation of the exchange rate.

#### **3.** Conclusions

Since the advent of the single currency - euro, most of European Union member states have targeted the adoption of the euro, which implies that the central banks of each country to become an underlying member of the European Central Bank, aimed mainly at controlling inflation in all Member countries.

As regards the situation of Romania, great efforts are being made for the adoption of the euro. Unfortunately, the deadline for adoption of the currency set for 2015 has been delayed because Romania failed to meet two of the five criteria of nominal convergence. More specifically, Romania currently meets the criterion of public debt, which in 2012 was at 37.8% of GDP, compared with the 60% referred to in the Maastricht Treaty, the budget deficit will be strengthened in 2012 at -2.8%, compared to less than 3% of GDP and the exchange rate against the euro has remained in 2012 between +2/-10.4%, which fits the required +/-15 percent. Romania is experiencing problems with regard to the rate of inflation and long-term interest rates. Regarding inflation, our country goes about 1.4 percentage points over the ceiling provided for in the criteria set out in March 2013, reaching a percentage of approximately 3.9, while for meeting the second criterion, namely the long-term interest rate, Romania exceeds by about 1.6 percentage points the imposed limit, recording in March 2013 a percentage of 6.4 percentage points.

<sup>&</sup>lt;sup>1</sup> European Union Convergence Report, 2012

Currently Romania is not ready for adoption of the euro, this being quite costly for our country, especially because of the fact that even after six years when it joined the European Union, Romania has not managed to keep the mentioned indicators below the limits laid down in the Maastricht Treaty in order to adopt the euro as soon as possible.

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# EUROPEAN ACCOUNTING HARMONIZATION BEFORE&AFTER 1978

# **IBRAHIM MERT, Phd. Student** ibrahimm1508@yahoo.com

# HUSEYIN MERT,Phd., Assistant Professor huseyin.mert@okan.edu.tr

#### Abstract

**Objectives:** The purpose of this study has been to (a) measure the growth of exports for five of the six core EU founders (Belgium, France, Italy, Luxembourg, and the Netherlands) and (b) relate the adoption of accounting harmonization standards to this growth.

**Prior Work:** This paper is trying to extant a research to observe the historical development of European Accounting Harmonization practices. During the analyses around 2 authors' books were related to this paper.

**Approach:** During the study it was focused to collect information observation through published academic books and articles. The analysis presented in this paper, supported by independent samples t-tests, seemed to rule out the idea that accounting harmonization was constantly designed as a response to stagnation in intra-European trade; the opposite effect was observed.

**Results:** The empirical studies, evidence or experiences presented in the part of conclusion that the European Accounting Harmonization process have had a considerable development since 1978.

**Implications:** What is not yet clear, and what requires further investigation, is whether and to what extent the EC decided to adopt accounting harmonization measures as a trade-related necessity—for example, because the increasing tempo of intra-European trade had bound together the community in a manner that required harmonization for further trade expansion. The analysis of this topic could add significantly to the accounting history of the EU.

Value: The comparative overview thus provides an illustrative discussion of how European Accounting Harmonization has evolved over the year of 1978.

**Keywords:** European Union, accounting harmonization, accounting **JEL code:** M41

#### Introduction

There are two ways of thinking about accounting harmonization in the European Union (EU) as it has taken place from 1978 onwards: Accounting harmonization can be understood as a form of top-down political pressure or as a form of bottom-up enablement of cross-border trade. The first move towards European accounting harmonization, via the Code Napoleon (Frank, 1979), can be understood as a form of top-down pressure. Similarly, political considerations have been described as the prime motivation for the development of post-EU accounting harmonization principles (Haller, 2002). It is, however, possible to think of European accounting harmonization in more economic than political terms. For example, if it can be demonstrated that the pace of intra-European trade accelerated significantly before the passage of the harmonization-relevant European Community (EC) Directives in 1978, then there is some empirical basis for thinking of the evolution of accounting harmonization in Europe as more of an economic than a political result. Or, rather, the politics of accounting harmonization can be re-conceptualized as the necessary outcomes of trade realities.

#### Methodology

The World Bank (2013) provides data on export statistics for all European countries from 1961-2012. The case of France provides an interesting example of the kinds of trading forces that might have been primarily responsible for the adoption of accounting harmonization in the EC Directives of 1978.

## Findings

#### The Historical Context of European Trade Liberalization

Analysis of data from European countries will demonstrate that there was a rapid annual growth in the export of goods and services leading up to the adoption of harmonization-related EC directives in 1978. However, turning the clock back further, it is clear that nearly every country in what would be the EU experienced an even more remarkable upsurge in exports in the postwar period (data obtained from United Nations, 2012):

Country	Dra War (1027 1028)	Bast Way (1048 10(0)	Democrat	Statistically
Country	Fre-war (1927-1938)	Function (1948-1960)	Change	Statistically
	of 1053 USD)	1053 USD)	Change	Change?
	011)35 ((3D)	1035 (05D)		Change.
Denmark	323.67	1011.75	312%	Yes
Finland	135.08	724.92	536%	Yes
France	1687.83	4732.42	280%	Yes
Germany/	2166.67	5574.92	257%	Yes
West				
Gerrmany				
Italy	735.25	2749.58	374%	Yes
Netherlands	824.50	3088.00	374%	Yes
Norway	234.75	1064.33	453%	Yes
Sweden	401.83	1975.83	492%	Yes
Switzerland	430.33	1530.17	355%	Yes
United	4139.33	9891.00	239%	No
Kingdom				

Table 1 Expansion of Exports in Europe from the Prewar to Postwar Era

Only one country in this sample, the United Kingdom, did not obtain a statistically significant rise in exports from the 1927-1938 to the 1948-1960 period.

Intra-European trade rose for a number of reasons, among them (a) the intensified need for trade following the devastation of the Second World War and (b) the adoption of neoliberal policies favoring trade. In terms of neoliberalism, American Secretary of State Cordell Hull (1948) had noted that "...if we could get a freer flow of trade...freer in the sense of fewer discriminations and obstructions...so that one country would not be deadly jealous of another and the living standards of all countries might rise, thereby eliminating the economic dissatisfaction that breeds war, we might have a reasonable chance of lasting peace" (p. 81). There was, in this sense, a tight coupling of political and economic outcomes; neoliberal politics led to institutions such as the General Agreement on Tariffs and Trade (GATT), which in turn had salutary economic effects on trade volume.

However, had politics been primarily responsible for the push towards accounting harmonization that accelerated in the early 1970s with the formation of the International Accounting Standards Committee (IASC), one would expect to see early, top-down efforts to impose a single accounting system across Western Europe and North America. Such a topdown approach was evident in other forms of political interventions in liberal-democratic economic institutions, particularly in the form of the Bretton Woods institutions (Best, 2003). As Best suggested, Bretton Woods did not emerge from the bottom up considerations of trade but rather constituted a top-down political effort to structure trade in a particular way.

In other words, the Bretton Woods institutions were not retroactively derived from the way in which the global market had been working over the past several years, but rather represented an attempt to dictate the direction of the global market based on the kind of neoliberal guesswork about free trade evidence in Hull's (1948) memoir.

The data in Table 2 indicate that Europe experienced immense trading success long before there was a move towards the convergence of accounting standards. However, the historical U.N. trade data stop in 1960, and it was not until 1978 that the EC directives herded the members of the future European Union in the direction of accounting harmonization. The question thus becomes: Was there a slowdown in the pace of intra-European trade that the new accounting harmonization directives were intended to remediate or did the ongoing acceleration of trade present the need to institutionalize existing best practices in harmonization, thus making future growth more likely? The answer to such a question can be more readily provided after surveying some of the empirical data pertaining to intra-European trade liberalization in the period from 1961 to 2011, using 1978 as a breakpoint.

Such an empirical analysis is important for a number of reasons. First, it is necessary to determine whether the period from the early 1960s to 1978 was truly a time of accelerating trade liberalization. If trade was stagnating, then there would be some reason to think of the accounting harmonization-related EC directives as being designed to spark trade (and thereby economic prosperity). On the other hand, if trade were:

# A. France

Figure 1 bifurcates France's export performance, in terms of % annual growth in goods and service exports, before and after 1978. Figure 2 complements Figure 1 by showing the same data in the form of a boxplot, making it easier to see the difference in France's annual rates of growth in goods and services exports before and after 1978. Finally, the significance of the difference in goods and services export growth rates before and after 1978 was measured by an independent samples t-test.



Figure 1. Annual % Growth in Exports of French Goods and Services, 1961-2011.

Note that growth was more rapid before 1978 than after 1978.

Figure 2. Boxplot, Annual % Growth in Exports of French Goods and Services, Before 1978 and After 1978.



The outliers are as follows: 15 = 1975; 49 = 2009.

An independent samples t-test was conducted in order to determine whether the differences before and after 1978 were significant:

Table 2 Independent Samples T-Test: French Exports Before & After 19/8								
Group Statistics								
	Year	Ν	Mean	Std. Deviation	Std. Error Mean			
	<u> </u>	T						

Yearly growth (%) in exports of	>= 1978	35	4.2	86966	4.5	590039	.77	/06123
goods and services	< 1978	17	8.5	83393	4.7	504415	1.1	521513
Independent Samples 1	est		Тет	vene's T	'eet	for Faual	itut_test	t for Fauality of
			of V	Variance	2 <u>5</u>	101 Lyuu	Mea	ns
			F			Sig.	t	
Yearly growth (%)Equal variances in assumed			.05	1		.822	-3.14	45
exports of Equal variances goods and services Not assumed						-3.10	)0	
independent Samples Test								
				test for	Equa	ality of M	eans	
			D	of	Sig.	(2-tailed)	Mean D	Difference
Yearly growth (%)Equa in assu	il variance med	es	5	50 .003			-4.2964	276
exports of Equa goods and services Not	ıl variance assumed	es	3	0.633	.004		-4.2964	276
Independent Samples To	est							
				t-test fo	r Eq	uality of N	Means	
				Std. Err Differer	or	95% Con the Differ	fidence rence	Interval of
						Lower		Upper
I I   Yearly growth (%) in I	Equal vari issumed	ances	;	1.36612	270	-7.040374	45	-1.5524807
exports of goods and services	Equal vari Not assum	ances ied	3	1.38610	)82	-7.124789	91	-1.4680661

The mean % growth in French exports of goods and services in 1978 and afterwards was 4.29% (s = 4.56), as compared to a mean of 8.58% (s = 4.75) before 1978. At an  $\alpha$  of .05, variances were equal (p = .051) and the difference between pre- and post-1978 means was statistically significant (p = .004). In the subsequent analyses, the same tests were applied to the remainder of the EU's original members, namely Belgium, Italy, Luxembourg, and the Netherlands; Germany was excluded because of the confounding effect of West-East German unification.

# **B.** Belgium

Figure 3 bifurcates Belgium's export performance, in terms of % annual growth in goods and service exports, before and after 1978. Figure 4 complements Figure 3 by showing the same data in the form of a boxplot, making it easier to see the difference in Belgium's annual rates of growth in goods and services exports before and after 1978. Lastly, the significance of the difference in goods and services export growth rates before and after 1978 was measured by an independent samples t-test.

Figure 3. Annual % Growth in Exports of Belgian Goods and Services, 1961-2011



Note that growth was, at an  $\alpha$  of .05 not more rapid before 1978 than after 1978.





The mean % growth in Belgian exports of goods and services in 1978 and afterwards was 4.02% (s = 4.02), as compared to a mean of 7% (s = 6.12) before 1978. At an  $\alpha$  of .05, variances were unequal (p = .046) and the difference between pre- and post-1978 means was not statistically significant (p = .083).

Table 3 Independent Samples T-Test: Belgian Exports Before & After 1978

	Year	N	Mean		Std. Deviation	Std. Error Mean
Yearly growth (%) in exports of goods and services	>= 1978 < 1978	35 17	4.0169 7.0055	26 90	4.0216547 6.1933565	.6797837 1.5021096
Independent Samples T	ſest					
				Leve Equa Varia F	ne's Test lity of ances Sig.	fort-test for Equality of Means t
Yearly growth (%) in exports of goods and services	Equal var assumed Equal var Not assun	iance iance ned	s	4.198	3.046	-2.096 -1.813

**Group Statistics** 

			t-test f	òr Equali	ty of Means
			df	Sig. (2-	Mean Difference
				taneu)	
Yearly growth (%) in	Equal variances a	issumed	50	.041	-2.9886640
exports of goods and services	Equal variances N	Equal variances Not assumed			-2.9886640
Independent Samples	ſest				
		t-test for Eq	uality o	of Means	
		Std. Error Difference	95% the I	Confider Differenc	nce Interval of e
			Low	er	Upper
Yearly growth (%) in a exports of goods and	equal variances ssumed	1.4261506	-5.85	31718	1241562

Equal variances

Not assumed

Independent Samples Test

#### C. Italy

services

Figure 5 bifurcates Italy's export performance, in terms of % annual growth in goods and service exports, before and after 1978. Figure 6 complements Figure 5 by showing the same data in the form of a boxplot, making it easier to see the difference in Italy's annual rates of growth in goods and services exports before and after 1978. Lastly, the significance of the difference in goods and services export growth rates before and after 1978 was measured by an independent samples t-test.

1.6487690

-6.4012655

4239376

Figure 5. Annual % Growth in Exports of Italian Goods and Services, 1961-2011.



Note that growth was more rapid before 1978 than after 1978.

Figure 6. Boxplot, Annual % Growth in Exports of Belgian Goods and Services, Before 1978 and After 1978.

The outliers are as follows: 15 = 1975; 40 = 2000; 49 = 2009.



The mean % growth in Italian exports of goods and services in 1978 and afterwards was 3.86% (s = 6), as compared to a mean of 9.73% (s = 4.22) before 1978. At an  $\alpha$  of .05, variances were equal (p = .281) and the difference between pre- and post-1978 means was statistically significant (p = .001).

Table 4 Independent Samples T-Test: Italian Exports Before and After 1978

#### **Group Statistics**

	Year	Ν	Mean	Std. Deviation	Std. Error Mean
Yearly growth (%) in	>= 1978	35	3.857114	6.0502626	1.0226810
exports of goods and services	< 1978	17	9.735577	4.2248666	1.0246807
Independent Samples Test					

	Lever Equal Varia	ne's Test fo ity of nces	rt-test for Equality of Means
	F	Sig.	t
Yearly growth (%) in Equal variances assumed exports of goods and services Equal variances Not assum	1.185 ned	.281	-3.594 -4.061
Independent Samples Test			
	t-test for 1	Equality of Me	eans
	Df	Sig. (2-tailed	)Mean Difference

Yearly growth (%) in	Equal variances assumed	50 .	001	-5.8784638	
exports of goods and services	Equal variances Not assumed	43.459	000	-5.8784638	
Independent Samples	Test				
		t-test for Equality of Means			
	Std. Error	95% Confidence Interval of the Difference			
		Difference	Lower	Upper	
Yearly growth (%) in	Equal variances assumed	1.6354232	-9.1633080	-2.5936196	
exports of goods and services	Equal variances Not assumed	1.4477040	-8.7971463	-2.9597813	

#### **D.** Luxembourg

Figure 7 bifurcates Luxembourg's export performance, in terms of % annual growth in goods and service exports, before and after 1978. Figure 8 complements Figure 7 by showing the same data in the form of a boxplot, making it easier to see the difference in Luxembourg's annual rates of growth in goods and services exports before and after 1978. Lastly, the significance of the difference in goods and services export growth rates before and after 1978 was measured by an independent samples t-test.

Figure 7. Annual % Growth in Exports of Luxembourgian Goods and Services, 1961-2011.



Note that, at an  $\alpha$  of .05, growth was not more rapid before 1978 than after 1978.

Figure 8. Boxplot, Annual % Growth in Exports of Luxembourgian Goods and Services, Before 1978 and After 1978. The outliers are as follows: 15 = 1975; 49 = 2009.



The mean % growth in Luxembourgian exports of goods and services in 1978 and afterwards was 5.96% (s = 5.85), as compared to a mean of 4.77% (s = 7.23) before 1978. At an  $\alpha$  of .05, variances were equal (p = .623) and the difference between pre- and post-1978 means was not statistically significant (p = .529).

Table 5 Independent Samples T-Test: Luxembourgian Exports Before and After 1978

Group Statistics							
	Year	N	Mean	D	Std. eviation	Std. E Mea	Error an
Yearly growth (%) in exports of goods services	>= 1978 and < 1978	35 17	5.955813 4.769589	5.84 7.23	488211 .9886312 317797 1.753964		2 42
Independent Samples '	Test						
					Levene's Equali Varian	Test for ty of nces	t-test for Equality of Means
					F	Sig.	t
Yearly growth (%) in exports of goods services	Equal vari and Equal vari	ances a ances r	assumed not assume	d	.245	.623	.634 .589

**Group Statistics** 

		t-test for Equality of Means				
		df	Sig. (2-tailed)	Mean Difference		
Yearly growth (%) in	Equal variances assumed	50	.529	1.1862238		
exports of goods and services	dEqual variances not assumed	26.522	.561	1.1862238		
<b>Independent Samples Tes</b>	t					
		t-t	test for Equalit	y of Means		
		Std. Error	95% Confide	ence Interval of the		
		Differenc	Di	fference		
		e	Lower	Upper		
Yearly growth (%) in	Equal variances assumed	1.869646 6	-2.5690720	4.9415196		
exports of goods and services	dEqual variances not	2.013400	-2.9484209	5.3208684		

**Independent Samples Test** 

#### E. The Netherlands

Figure 9 bifurcates the Netherlands' export performance, in terms of % annual growth in goods and service exports, before and after 1978. Figure 10 complements Figure 9 by showing the same data in the form of a boxplot, making it easier to see the difference in the Netherlands' annual rates of growth in goods and services exports before and after 1978. Lastly, the significance of the difference in goods and services export growth rates before and after 1978 was measured by an independent samples t-test.

Figure 9. Annual % Growth in Exports of Dutch Goods and Services, 1961-2011



Note that, at an  $\alpha$  of .05, growth was not more rapid before 1978 than after 1978.





The mean % growth in Dutch exports of goods and services in 1978 and afterwards was 5.14% (s = 3.98), as compared to a mean of 7.35% (s = 5) before 1978. At an  $\alpha$  of .05, variances were equal (p = .250) and the difference between pre- and post-1978 means was not statistically significant (p = .091).

	Year	N	Mean	St Devi	ation	Std. Error Mean
Yearly growth (%) in exports of goods and ser	>= 1978 vices < 1978	35 17	5.144401 7.353513	3.9834 4.9888	301 . 919 1	6733226 2099840
Independent Samples T	est					
			I 	evene's Equali Varia F	Test for ity of nces Sig.	t-test for Equality of Means t
Yearly growth (%) in exports of goods and services	Equal variances Equal variances	s assum	ned 1. sumed	354	.250	-1.726 -1.595

Table 6 Independent Samples T-Test: Dutch Exports Before and After 1978 Group Statistics

				t-test for Equality of Mea				f Means
				df		Sig. (2- tailed)	D	Mean ifference
Yearly growth (%) in	Equal varian	ces assumed		50	.(	091	-2.2	2091118
exports of goods and services Equal variances not assumed					.1	123	-2.2	2091118
Independent Samples <b>T</b>	ſest							
				t-test fo	or l	Equality c	of M	leans
		S1 L	td. I Diffe	Error erence	959 of	% Confic the Differ	lenc renc	e Interval
					Lo	wer		Upper
Yearly growth (%) in	Equal van equal van equal van equal base of the equation of the equation of the equation of the equal base of the equal	riances 1.	.280	02547	-4.	7805791		.3623556
exports of goods services	Equal variances		.384	7110	-5.	0540629		.6358394

Independent Samples Test

# Aggregate Analysis

Finally, analyses were performed on all countries in the sample (Belgium, France, Italy, Luxembourg, and the Netherlands) in order to compare pre- and post-1978 export levels. The results were as follows:





Note that growth was not more rapid before 1978 than after 1978.





Table 7 Independent Samples T-Test: Sample-Wide Exports Before and After 1978

<u> </u>	Year	Ν	Mean	St	td. Deviati	on Std. Error	Mean	
	>= 1978	35	3.8290	3.	74397	.63285		
V6_Average	< 1978	17	6.3129	3.	64648	.88440		
Independen	t Samples Te	est						
					Leven Ec of V	e's Test for quality Variances	t-test for of N	: Equality Ieans
					F	Sig.	t	df
V6_Average	Equal var Equal	iances a varianc	ssumed es n	ot	.178	.675	-2.263	50 32 562
Independen	assumed t Samples Te	st					2.201	52.502
Independen	t Sumples IV	.50			t-t	est for Equalit	y of Mea	15
					Sig. (2-tailed)	Mean Difference	Std. Diff	Error erence
V6 Averag	Equal variand	ces assui	ned		.028	-2.48391	1.09768	3
e	Equal variand	ces not a	ssumed		.029	-2.48391	1.08750	)

Group	Statistics
Group	Statistics

		t-test for Equali	uality of Means		
		95% Confidence Differe	Interval of the nce		
		Lower	Upper		
V6 Average	Equal variances assumed	-4.68866	27916		
vo_Avelage	Equal variances not assumed	-4.69758	27024		

#### Independent Samples Test

The mean % growth in sample-wide exports of goods and services in 1978 and afterwards was 3.83% (s = 3.74), as compared to a mean of 6.31% (s = 3.65) before 1978. At an  $\alpha$  of .05, variances were equal (p = .675) and the difference between pre- and post-1978 means was not statistically significant (p = .028).

# **Discussion and Conclusion**

The purpose of this study has been to (a) measure the growth of exports for five of the six core EU founders (Belgium, France, Italy, Luxembourg, and the Netherlands) and (b) relate the adoption of accounting harmonization standards to this growth. The analysis of export expansion presented in this study is not novel; it has long been known that Europe has undergone a significant expansion in trading volumes. However, it is important to keep this long history of trade expansion in mind when understanding the motivation of EU (then EC) to move towards accounting harmonization.

The analysis presented in this paper seems to rule out the idea that accounting harmonization was constantly designed as a response to stagnation in intra-European trade; the opposite effect was observed. What is not yet clear, and what requires further investigation, is whether and to what extent the EC decided to adopt accounting harmonization measures as intra-European trade had bound together the community in a manner that required harmonization for further trade expansion). The analysis of this topic could add significantly to the accounting history of the EU.

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# CONSIDERATIONS REGARDING UNCONVENTIONAL MONETARY POLICIES OF CENTRAL BANKS DURING THE PRESENT FINANCIAL CRISIS

# Gabriela PREDA,

PHD student, Romanian Academy, National Institute of Economic Research 'Costin C. Kiritescu', Department of Economic, Social and Legal Studies, gabi.preda@bnro.ro

# **Petronel CHIRIAC**, PHD, petronelchiriac@gmail.com

#### Abstract

The paper deals with the unconventional monetary policy of the Central Banks with regard to their fundamental role in ensuring the stability of the financial systems affected by systemic financial crises. Are unconventional monetary measures determined by either an increasing critical role of the Central Banks in the world economies or by a short-term lack of effectiveness of the classic monetary measures – this is the question we try to answer. The present financial crisis has a special feature if compared to the previous ones, it differs not only in size but also (mostly) in its effects on the world economies. Assuming that the Central Banks intervention during a financial crisis when markets are distorted is of major importance, we intend to briefly analyze the measures taken by the Central Banks such as Federal Reserve or European Central Bank for a proper operation of the markets during the financial crisis as well as their purpose and the context.

**Keywords:** *unconventional monetary policies, central bank,* 

# **1. A point of view on changing the role of the Central Banks in** the world economies during the present financial crisis

The paper aims to present the new role of the Central Banks they subtly played during the financial crisis triggered in 2007-2008 and afterward, which made people believe that the Central Banks were the only savers from economic collapse or credible institutions able to revive the economic cycle.

In this respect, the Central Banks took both classic unconventional, for managing some collapsing banking systems and preventing the blocking of the financial-banking system. We analyze some of these measures taken by Central Banks, including National Bank of Romania. The impact of the NBR's actions is discussed in the economic context of our country. Our conclusion is that the unconventional measures taken by Central Banks for managing the effects of financial crises and resuming the economic cycle are effective tools to attain such objectives.

Central Banks have acquired importance and played a higher role in world economy especially by gaining independence from the political power. This began in late 1970's, when the demand stimulation policy (a cause of inflation) failed. Inflation reached alarming levels and no longer followed the Philips's curve; besides, unemployment was mounting up. Inflation is basically a monetary policy aims at price stability. According to Cerna (2013) Central Banks should be protected against the governments 'involvement in formulating and implementing a monetary policy. Central Banks were obliged by law to pursue a monetary policy aiming at ensuring price stability. This independence was defined in different ways: for FED, their independence was defined not "in relation to the Administration" but "within the Administration"; for the Bank of England, the right to establish what "price stability" means is the Governments's task; for the Central European independence from Community institutions Bank. the and member countries' governments was defined in "Treaty establishing a Constitution for Europe"; for Romania, article 2 under the Law 312/2004 on the statutes of National Bank stipulates that "the fundamental objective of the NBR is providing and maintaining price stability. National Bank of Romania supports the general economic policy of the State, without hindering the fulfilment of its fundamental objective".

Before the crisis, inflation was the main cause of financial instability. According to Isarescu (2012)<sup>ii</sup> "price stability is a (almost) sufficient condition to promote the financial stability". By setting low levels of inflation, the Central Banks decisively contribute to financial stability and economic growth sustainability. At least this paradigm was promoted at the conceptual level. Isarescu added that the present crisis began in 2007 in an economic environment characterized by low levels of inflation (the great moderation), and thus the price stability axiom could not ensure financial stability. Moreover, according to Croitoru (2012), in countries with very low inflation and higher effectiveness of the monetary policy for correcting the crisis effects, it was lower<sup>iii</sup>.

In our opinion, the increasing critical role of the Central Bank in economy cannot be replaced for fulfilling the Government's fundamental role in managing the public development strategies, which means both their working out and application and the collection and administration of public resources. Translated to an objective as clear as that of the Central Bank, the role of the Government should be general economic growth, finally aiming at raising the people's welfare. The price stability policy and the long-term financial stability policies (as shown above, they are not identical and simultaneous) often contradict the consumption stimulation policies which Governments adopt to meet the voters 'expectation,
generally on short term. Especially during the election cycles, these policies are mostly contradictory. Thus, the Governments 'need to increase budget deficits may cause a price rise because of the expanding demand.

Isarescu (2013)<sup>iv</sup> reminds that Central Banks are blamed for excessive focus on price stability and less stimulation of economic growth and full employment. But there is no long-term contradiction between price stability and economic growth, as monetary policies, which keep inflation low and stable, are compatible with relatively high and sustainable economic growth and *de facto* conduct of the Central Banks was flexible and far from neglecting the real macroeconomic variables.

Although the National Bank cannot be responsible for the Governments 'ineffectiveness, the stability measures are essential for fulfilling the above objective, i.e. promoting public welfare. According to Cerna (2013), increasing the role of the Central Banks made us believe that these institutions were able to resolve all economic problems. Therefore, the Governments, which had not been too enthusiastic about the progressive strengthening of the Central Banks roles, gradually accepted that Central Banks should offset the wrong economic policies – even if some legislators and some representatives of the public concerned themselves about the deficit in democracy caused by transferring the task of setting economic policies to an institution the management of which was not elected by universal vote. Thus, while other organizations in charge of setting and implementing economic policies were blocked by unprecedented political polarization – both at national and at regional level, the Central Banks of the developed countries had to resort to their relative political independence and their broad operational autonomy to gain time and allow other authorities to take action<sup>v</sup>.

The necessity that Central Banks make use of unconventional methods was determined by the Governments 'inability to cope with economic problems. But many Central Banks warned several times that their capacity to compensate for the lack of action of other authorities or to correct their actions are not quite effective and risk-free. This compensation was based on tools and practices known in literature as "unconventional" (to be discussed below). Such insufficiently tested or risky procedures may obstruct the fulfilment of the price stability objective, with unforeseeable effects on the financial stability of the economy.

## **2.** Unconventional measures taken by Central Banks to eliminate the effects of the economic crisis

Here we intend to analyze synthetically the interventions of the Central Banks for improving the market operation and the effectiveness of these interventions. While during earlier crises Central Banks restrained their role to lender of last resort, during the present crisis they have also taken **unconventional** measures to stop any disturbances in the financial markets. While the crisis was expanding, the Central Banks worldwide diminished continuously the interest rate *(conventional measure of monetary policy)*: by the end of 2008 and 2009, Bank of England, Bank of Japan, Bank of Israel, Central Banks of Canada and even European Central Banks

had diminished the interest rate to almost zero. What is unconventional in this measure is *the aggressiveness of the velocity for diminishing the interest rate of monetary policy as well as the almost zero levels* of the set rates (except for Japan, which adopted such a rate in the early 1990's). National Bank of Romania pursued a more prudential policy, and only in 2014 it diminished the interest rate of monetary policy to the historical minimum of 3.75%. The figure below shows the evolution of the interest rate of monetary policy in leading economies; moreover, we may see the aggressive policy of Central Banks to diminish the interest rate of monetary policy.

But the diminution in the collective interest of monetary policy could not stimulate borrowing and, further, consumption and investments, because, at the market level, the negotiated interest remained high because of the lack of safety and certainty that affected banks, households and companies alike.



Irrespective of the methods used (classic or unconventional), according to Fisher and even Friedman and Minsky, as cited by Roubini (2010), to prevent a new Great Depression, a central bank has to intervene and become a *lender of last resort* able to finance banks and even corporations and individuals. In extreme cases, Fisher supports the idea *"reflation"*, i.e. reviving the economy by pouring easy money.<sup>vi</sup>

Another measure of unconventional monetary policy was a **raise in the deposit guarantee ceiling.** To prevent generalized withdrawals of liquidities that might erode the financial system and the economic system, Central Banks worldwide expanded the financial security system protecting the depositors against losses in investment value; the maximum guarantee ceiling varies across countries, The first EU country that raises the deposit guarantee ceiling is Ireland, followed by Greece and soon by Germany, even if initially European Commission said that this measure *hinders the free movement of capital*. In less than one month, European Commission raises the deposit guarantee ceiling from 20,000 euro to 50,000 euro.

Country	Maximum limits		Remarks
	Pre-crisis	Post-crisis	
Ireland	20,000	unlimited	For deposits of customers, either corporate or retail
Greece	20,000	100,000	
Germany	20,000	unlimited	Only retail customers
United Kingdom	45,000	54,000	
Switzerland	20,000	66,000	
France	70,000		
Austria	20,000	unlimited	Only corporate customers
Romania	20,000	100,000	

Evolution of the deposit guarantee ceiling

Source: Own Processing

European Union intends to apply uniformly some deposit guarantee schemes – a harmonized level of 100,000 euro per depositar/credit institution in order to ensure equal opportunities for EU depositors and implicitly and more confidence in the banking system. US Department of the Treasury announced an increase in the deposit guarantee amount from 100,000 to 250,000 US dollars. According to empirical analyses made by Angkinand (2009), the countries taking measures for increasing the deposit guarantee in crisis period face, on average, lighter losses in economic growth<sup>vii</sup>.

Even if the Central Banks and the Governments took measures for *diminishing the refinancing interest and raising the guarantee ceiling the* markets remained non-transparent, there was almost no confidence in financial and monetary markets which brought on disturbances in the real sector of the economy. After the aggressive diminution in the monetary policy interest, the Central Banks tried to correct the financial market distortions through unconventional monetary policies, thus expanding the fundamental objective set by regulation and creating the erroneous impression that they were able to resolve the economic problems both in developed economics and developing ones.

According to Ricardo (2010), the unconventional measures taken by the Federal Reserve are classified into three categories: *interest policy, credit policy* and *quantitative easing*. Quantitative easing policy essentially causes a change in the balance sheet size and the structure of liabilities of the Central Banks<sup>viii</sup>. **Quantitative easing** is an unconventional policy used by Central Banks to stimulate the economy when the classic measures are ineffective. By this method, Central banks buy a pre-determined amount of financial assets from commercial banks and other private institutions, thus increasing the money supply and diminishing the return on those assets. Unlike the standard policy, buying assets by quantitative easing concerns long-term assets (on short-term, it is no longer effective since the monetary policy interest is close to zero).

Bernanke and Reinhart (2004), cited by Isarescu (2012), classify unconventional tools of monetary policy into three basic categories: policy commitment, quantitative easing and qualitative easing (or credit easing). Isarescu says that after the crisis occurrence Central Banks used a mix of these three categories of instruments, and the term **quantitative easing** gained recognition and described the whole set of unconventional measures<sup>ix</sup>. Quantitative easing aims mainly at increasing available amounts of the banks in current accounts with the Central Bank beyond the level required to approximate the overnight interest to zero, and the channels of quantitative easing are the following: portfolio balance sheet – increasing liquidity determines the investors to orientate towards other financial assets, thus increasing assets value and stimulating final demand (Goodfriend, 2000)<sup>x</sup> and diminishing the expected value of costs related to public debt service and, further, the expected value of taxes, due to permanent increase in money supply (Auerbach and Obstfeld, 2003)<sup>xi</sup>.

Also, Isarescu says that **quantitative easing** usually implies an expansion of the Central Bank balance sheet, similarly to quantitative easing, but the stress is laid on the assets structure and not on the monetary base level. **Qualitative easing** pursues to change the structure of the assets portfolio held by the private sector and, implicitly, changes in the level of the relative price, having consequences for economic activity, so that – if the flattening of the term structure of interest rate and the diminution in the risk/liquidity premiums are able to stimulate aggregated demand – the monetary policy is not ineffective even if the short-term risk-free interest rate is zero. The basic measures for qualitative easing are related to the traditional role of the Central Bank as supplier in the interbanking monetary market, by direct interventions in other sectors of the financial market as well as direct purchase of long-term bonds.

The increasing role of Central Banks in the world economies is also revealed by the increasing weight of the assets of these banks in the Domestic Product (GDP). According to Pattipeilohya et al. (2013) – in a study published under the aegis of Central Bank of Netherland – the assets in the balance sheet of the Central Banks exceeded 20% of GDP, as a direct consequence of unconventional measures adopted by these banks during the financial crisis<sup>xii</sup>.



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The structure of balance sheets of the FED and Eurosystem, 2007-2013

According to Apostoaie and Matei (2012), the new unconventional measures taken by Central Banks were taken to make substantial changes in balance sheets. These radical changes were made at several levels in relation to size, structure of risk categories and balance sheet composition<sup>xiv</sup>.

#### 3. Measures taken by the FEDERAL RESERVE

In the year the financial crisis started, the leading Central Banks introduced significant amounts into the system to ensure liquidities on the interbanking market. In August 2007, the Federal Reserve injected liquidities amounting to 43 billion dollars and another 43 billion in November; ECB introduced an amount equivalent to 215 billion dollars, and Bank of Japan an amount equivalent to 8 billion dollars.

In December 2007, FED increased the liquidity available to financial institutions through the **Discount window lending**<sup>xv</sup> to calm financial markets and investors. When the crisis began, Bernanke took several measures to reduce the difference between short-term interests and later long-term interests established by the market and short-term interests established by the Central Bank. To achieve it, FED set several new facilities for "liquidity" in order to ensure low cost loans for all who needed them. In fact, the Government involved directly in the market, beyond the usual tools for injecting liquidities – by diminishing the one-day interest on federal funds – and directly lent money to financial institutions in need. FED became the main lender of last resort and offered credits and liquidities to a wide range of players within the financial system. Initially, FED considered institutions (deposit organizations or banks) that already had some rights to receive one-day loans directly from FED by means of the discount

Source: Pattipeilohya et al. (2013)<sup>xiii</sup>

window. In March 2008, banks could borrow through discount window for up to 90 days, with almost no penalty.

Specific measures taken by the Federal Reserve

August 2007	It introduces 43 billion dollars into the system for liquidities easing in the
	interbanking market.
September	FED diminishes the reference interest rate from 5.25% to 1% in a single
2007	year.
December	By means of TAF Term Auction Facility (TAF), FED offers long-term
2007	funds to financial institutions. TAF is adopted also by Bank of Canada,
	Bank of England and SNB which began to supply long-term funds.
<b>March 2008</b>	The start of Term Securities Lending Facility (TSLF) by which FED's
	counterparts in operations on the free market may change less liquid
	bonds for government bonds.
April 2008	The start of the <b>Primary Dealer Credit Facility (PDCF)</b> by which all
	primary dealers, either investment banks, commercial banks or brokers,
	may receive loans from FED.
September	Widening the range of securities accepted as guarantees
2008	
September	FED concludes swap agreements with ECB, Bank of England, Bank of
2008	Canada, Bank of Japan, Bank of Denmark, Bank of Sweden and SNB for
	amounts available up to 620 billion dollars.
September	Increasing the amount for deposit guarantees from 100,000 to 250,000
2008	dollars.
September	The allocation of 700 billion dollars to recapitalize the banks for buying
2008	assets guaranteed by mortgage receivables within the TARP for
	protecting the banking system against bad assets.
October	FED increases the amounts destined to Central Banks by swap
2008	agreements up to the amount necessary to any of them, i.e. an unlimited
	amount
November	The start of the Money Market Investor Funding Facility (MMIFF) by
2008	which the monetary funds in the market can separate the bad assets using
	a specially structured investment tool guaranteed by Federal Reserve
A	Ballk of New York.
August 2009	Extension of the TALF by one triffion donars, for commercial securities
	guaranteed by moltgages the TALT provides June 2010 as a milar
Fobruary	EED starts the <b>ABCP</b> for ansuring liquidities for Monstery Market
7010	Mutual Funds (MMME) the CDEE the DDCE and the TSLE and
2010	concludes new temporary swan agreements for liquidities from the
	Federal Reserve and other Central Banks
May 2010	Reactivation of the emergency currency swap tool for lending any
1/1ay 2010	amount required by ECB Bank of England and SNB without a ceiling in
	dollars
	uonuis.

Source: own processing

As we notice, FED's endeavor to ensure liquidities for the American economy and world economy was huge on short term. FED has maintained the monetary policy interest close to zero since December 2008. The purchase of FED bonds contributed significantly to economic growth and brighter economic prospects, but this program cannot last for long.

#### 4. Measures taken by the EUROPEAN CENTRAL BANK

At the beginning of the financial crisis, the European Central Bank did not diminish the monetary policy interest rate. But after the collapse of the Lehman Brothers, the ECB reduced the key interest rate to a historical minimum. The main refinancing rate was diminished by a cumulated total of 325 base points, to 1% between October 2008 and May 2009. Moreover, the Board of Governors took several temporary unconventional measures, called Enhanced Credit Support (ECS), and focused further on banks. As there was some uncertainty about the reliability of other banks (not European ones), actually the interbanking market could not function properly. After the fail of the Lehman Brothers in September 2008, the interbanking market was actually blocked. Because of a severely affected market and major credit concerns of the counterparty, the demand for liquidity grew abruptly, while the interbanking credit market diminished at a rapid pace.

# Specific measures taken by the European Central Bank since the start of the present financial crisis

August	ECB introduces 215 billion dollars into the system to ease liquidities in the
2007	interbanking market.
2007	ECB concludes a swap agreement with the FED for maintaining a balance
	on the European USD financing markets.
October	ECB decides to grant an unlimited amount at the refinancing rate of
2008	interest (the main lending rate of ECB).
Oct. –Dec.	ECB reduces the monetary policy interest rate to 3.75%, 3.25% and
2008	2.50%, respectively.
March 2009	ECB extends for an undetermined period the possibility to borrow
	unlimited amounts at the refinancing interest rate.
May 2009	ECB provides 60 billion euro for buying bonds, especially mortgage
	bonds.
July 2009	ECB is the first bank to buy mortgage bonds amounting to 60 billion euro.
May 2010	ECB buys Eurozone bonds amounting to 16 billion euro.
May 2010	Reactivation of swap lines for supplying liquidities, established with the
	Federal Reserve.
May 2010	ECB launches a program for securities markets; by the end of 2010 the
	Eurosystem made a purchase of 73.5 billion euro from the Government
	bond market.
2011	At the end of 2011, the interest rate for the main financing operations was
	1%, the interest rate for the deposit facility was 0,25%, and for the
	marginal credit facility it was 1.75%.
2012	In the second half of 2012, the representative interest rates were
	maintained at historical levels: 0.75% for the interest rate on the main
	financing operations, 0.00% the interest rate for the deposit facility of
	0.25%, and for the marginal credit facility 1.5%.

Source: own processing

Pattipeilohya et al. (2013)<sup>xvi</sup> try to provide evidence concerning the performance of unconventional measures taken by the ECB. The authors refer to the **Extended Liquidity Provision (LTRO)** and **Securities Market Program (SMP).** The study reveals that the LTRO had beneficial effects (on short term) on government bonds. But the changes in the SMP caused a diminution in interests in the summer of 2011, when the program was reactivated for Italy and Spain, but the effect vanished in a few weeks.

In December 2013, the ECB Board of Governors decided that the interest rate for the main refinancing operations and the interest rate for the marginal credit facility and the deposit facility should not be modified for 0.25%, 0.75% and 0.00%, respectively, and confirmed that the intend to keep the rates at the same or lower levels for a longer period.

One of the frequent questions asked from the beginning of 2009 to date, especially during political debates in the USA and Europe, was and still is how to stimulate the economy in an environment where the monetary policy interest rate was reduced to zero. The main justification found by the Central Banks for unconventional monetary policy measures consisted in the fact that they continued the relaxation of the monetary policy "by other means" only when the lower limit of short-term interest rates was reached and supported the transmission of the monetary policy to stimulate the economy, taking into account the financial market distortions. The purpose of these unconventional measures was to avoid turning the immediate liquidity problems into more pressing solvency problems that could cause major bankruptcies, assets sales and collapse of financial markets.

### Conclusions

The unconventional measures taken by the Central Banks increased their role in world economies, strengthened by quantitative elements - a considerable expansion of the Central Banks 'balance sheet as well as an increase in their weight in GDP – and also by qualitative elements, i.e. assuming a leading role and using such elements by means of unconventional monetary policy measures effective on short term. The Central Banks tried "to keep their balance on a string" and had to compensate for restarting the engine of the economy by means of massive liquidity as well as by assuming the final objective, i.e. price stability.

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<sup>&</sup>lt;sup>v</sup> Cerna, Silviu, idem

<sup>&</sup>lt;sup>ix</sup> Isărescu, Mugur, idem

<sup>&</sup>lt;sup>xiii</sup> Christiaan Pattipeilohya , et al. idem

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