THE IMPACT OF THE UNEMPLOYMENT RATE ON THE INSURANCE DEVELOPMENT IN ROMANIA. STATISTICAL APPROACHES

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Abstract

   A significant component of a developed economy, insurance holds a prominent role in European countries, its own contribution being noticed in the GDP of every country. The involvements of unemployment on the insurance market size have been reviewed in numerous specialized papers internationally. Based on these results, but also on the fact that in Romania there have not been measured such statistical correlations showing to what extent the unemployment rate influences the main indicators in the insurance field, in this research we analyze the statistical correlation between results which reveal the dimension of the insurance market - the penetration degree and the insurance density - and the unemployment rate. To perform the analysis, we apply statistical methods, for the period 1997-2015. The results are analysed in the context of the relevant international statistics, as well as reported to the Romanian general economic framework.

Keywords: insurance density, penetration degree of insurance, unemployment, statistical correlations.

1.Introduction

   The direct connection between the insurance evolution and the economic degree of progress of a country was investigated and demonstrated in numerous specialty papers [1, 2], arguing that the more developed the State is, the higher the contribution of insurance to GDP is. This link has also been studied for Romania, being demonstrated that "there is a high correlation, based on the causal link between the insurance market, measured by the degree of insurance penetration, and the degree of density and the economic growth, measured by GDP per capita" [3].
   However, although inssurance appeared in Romania more than 300 years ago, Romanians relate with skepticism to the insurance companies, they having not the basic knowledge for understanding the insurance importance. The Romanians' unwillingness to choice an insurance product is not only a consequence of the lack of information, but it is also caused by the reduced flexibility of the insurance market in Romania as well as the lack of adaptation of the insurance products to the needs of citizens, the economic status of each citizen (employed or unemployed person) and the reduced incomes of the population. Given that a substantial number of Romanians are facing the problem of finding a job or obtaining low incomes, no matter how much they would like to insure their property or life, they do not have the financial possibility of doing it.
   In this circumstance, in this paper, we investigate the extent to which the unemployment rate has an effect on the insurance development in Romania. For our analysis, through determining the simple linear regression, we test 4 sets of hypotheses, having the same independent variable, the unemployment rate. The dependent variable for each hypothesis is represented by each of the two indicators which show the insurance dimension: the insurance penetration and the insurance density. For the insurance penetration, we will analize both globally, on the total market, and on each of the two classes of insurance: life insurance and non-life insurance. We expect that the results obtained in our research to reflect the evolution of the independent variable, justifying to some extent the evolution of the dependent variable. To realize the research, the statistical tools to apply will be the selected variables for the period 1997-2015.
   The paper is structured as follows: a section with the presentation of the literature in the field, then a description of the data and the methodology used, after that, a separate section with results and discussion. In the last part of the thesis, we present the main conclusions.

2.Literature review

The relationship between the unemployment rate and the insurance business has not been sufficiently exploited, neither in theory nor in practice, although insurance premiums are determined on the basis of several economic indicators, such as the size and population density, the distribution of income, the income per person, the demographic structures, state-owned insurance companies, the size of the public system of pensions etc.

High unemployment rate affects visibly the insurance market, due to the overwhelming pressure on insurance premiums, considered too high for those who do not have sufficient income, being demonstrated that overall profitability of insurance is affected by the high unemployment figures [4]. The analysis of Christophersen & Jakubik [5] referring to the relation between insurance and the principal macroeconomic indicators shows that nominal GDP is an important factor for non-life insurance, while the growth of premiums, for life insurance is affected largely by the unemployment rate.

Bhatia & Jain [6], analyzing the causal connection between insurance and the major macroeconomic indicators in India, found that the level of GDP significantly influences the life insurance insurance premium, obtaining a deep relationship between the insurance density, insurance penetration, and the absolute value of the insurance premium, on the one hand, and GDP per capita, on the other hand. They have demonstrated that the demand of insurance increases with the increase in GDP.

In Romania, the drawing the relation between insurance and the macroeconomic results is still at the beginning, the causal relationship between insurance and unemployment leaving out.

To increase the number of contracts of life and non-life insurance, the population of Romania needs more information on the benefits of insurance [7]. At the same time, in Romania, there is a need for the creation of jobs, which, through educational outreach to the potential insurance policy holders, would contribute to the development of the insurance market.

3.Data and methodology

The data considered in our research are those which measure the insurance size in Romania and the rate of unemployment, as the major macroeconomic indicator, impacting all branch of activity. The **major macroeconomic indicators which reflect the insurance market dimension**, used in the international statistics are: **the insurance penetration degree** in the GDP, determined as the proportion between Gross Written Premiums (GWP) and GDP; and the **density degree**, calculated as the ratio between GWP and the number of the population, which expresses how much the average resident pays over a year to purchase insurance.

On the insurance market in Romania, at the end of 2015, there were 35 insurance companies, of which 20 companies for general insurance (non-life); 8 companies for carrying out only of life insurance; 7 companies for carrying out the two categories of insurance. As such, in the field of life assurance 15 companies were registered, and in general insurance (non-life), 27 insurance companies.

In Romania, **the insurance penetration on the total market,** on the period of 1997-2015, had an increasing trend during the period 1997-2009, from 0.52% to 1.8%, after which it began to decline, with a trend slightly oscilating, reaching the level of 1.24% in 2015, changing the descending trend which has characterized the period from 2012 to 2014 (Figure 1). As regards the life insurance segment, the insurance penetration has recorded very low results, from 0.04% in GDP in 1997, to 0.26%, in 2015. The non-life insurance penetration followed the trend of the total market penetration degree, growing from 0.48% in 1997, to 0.98% in 2015.
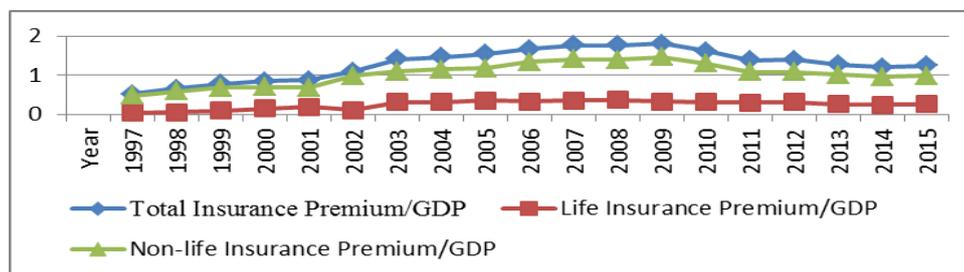

Figure 1. **The evolution of insurance penetration degree for total insurance, life insurance and non-life insurance classes (%)**
Source: Selected and processed data from Annual Reports of SOIRAR, ISC and FSA [8; 9]
Note: SOIRAR represents the Supervisory Office of Insurance and Reinsurance Activities from Romania, the first supervisory organism on insurance market after 1990. ISC represents the Insurance Supervisory Commission, which replaced the SOIRAR, in 2001. FSA represents the Financial Supervisory Authority, the current supervisory body of insurance market in Romania, which replaced the ISC in 2013.

Insurance density in Romania during the period 1997-2015, has also registered an upward trend during the period from 1997 to 2009, from 5.78 RON per capita, to 435.49 RON per capita, after which it began to decline, reaching 440.41 RON/per capita at the end of 2015 (Figure 2).
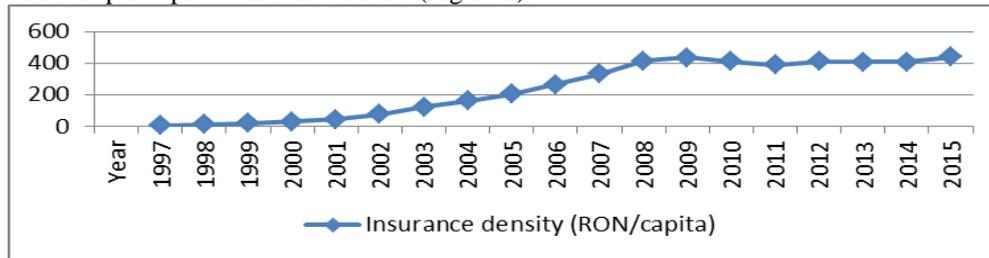

Figure 2. **The evolution of insurance density in Romania, period 1997-2015 (RON/capita)**
Source: Selected and processed data from Annual Reports of SOIRAR, ISC and FSA [8; 9]

The year 2009 is the year after which the most pregnant effects of the economic crisis started to be felt. The life insurance sector was affected by the economic crisis more than non-life insurance, the population being faced with decreasing living standards, increased unemployment and, last but not least, with decreasing confidence in insurance products.

During the reference period, 1997-2015, the low-ranking **unemployment rate** in Romania was of 4% in the year 2007, and the highest of 11.8% in the year 1999, three times higher than of 2007. In the period 1999-2007, the unemployment rate has known a downward trend (Figure 3). The economic crisis has led to an increase in the unemployment rate as a result of the disappearance from the labour market of a significant number of Romanian The year 2009 is the year after that he began to experience the most pregnant effects of the economic crisis. Life insurance sector was the most affected by the economic crisis than non-life insurance, the population faced with decreasing living standards, increased unemployment and, last but not least, with decreasing confidence in insurance products.

Figure 3. **The evolution of unemployment rate in Romania, period 1997-2015 (%)**
Source: Selected and processed data from National Institute of Statistics from Romania – Tempo Online data base [10]

To verify the measure to which the unemployment affects insurance in Romania, we analyze 4 sets of statistical correlations, using simple linear regression. Relying on theoretical dependencies of variables analyzed, and the results obtained in the research literature, we formulate the following **hypotheses**:

H1: a significant negative relation there is between the total insurance penetration and the unemployment rate in Romania;

H2: a significant negative relation there is between the life insurance penetration and the unemployment in Romania;

H3: a significant negative relation is establised between the non-life insurance penetration and the unemployment in Romania;

H4: a strong negative correlation there is between the total insurance density and the unemployment in Romania.

For our research, we use the described variables for the period 1997-2015 (19 observations):

– the total insurance penetration, the life insurance penetration, the non-life insurance penetration (Figure 1), respectively the total insurance density (Figure 2), for each of the four hypotheses set out, as dependent variables, the data extracted from annual reports of the Supervisory Office of Insurance and Reinsurance Activities from Romania (SOIRAR), Insurance Supervisory Commission (ISC) and Financial Supervisory Authority (FSA). The insurance penetration is measured as a percentage. The degree of density is expressed in lei/capita, thus we used decimal logarythms for the values of this indicator so that they will not be distorted;

- the unemployment rate as independent variable for each of the four hypotheses, data extracted from Statistical Yearbooks of National Institute of Statistics from Romania (Figure 3).

The research of the relationship between the variables can be measured through the Pearson correlation coefficient, giving the intensity and correlation sense, as well as globally, applying the equation of simple linear regression, using the SPSS software. For our research, we have a set of 19 annual observations, for the period 1997-2015.

4.Results and discussions

To verify **the first hypothesis, H1**, the main results of the connection between the dependent and the independent variables are synthesized in Table 1.

Table 1. **Model correlation between the total insurance penetration degree and the unemployment rate - Model Summary[b]**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.756[a]	0.572	0.547	0.26448	0.754

a. Predictors: (Constant), the unemployment rate
b. Dependent variable: the total insurance penetration degree

The interpretation of the model of linear correlation is: the independent variable entered into the model, with the correlation coefficient (R) of 0.756 and a determination report (R Square) of 0.572. The Durbin-Watson coefficient (0.754) is below the threshold of 1.5, which means that the model is confirmed. As a result of these, the fluctuation of 57.2% of the total insurance degree is enlightened by the fluctuation of the unemployment rate.

Linear regression coefficients for H1 are shown in Table 2.

Table 2. **The regression coefficients of the correlation between the total insurance penetration degree and the unemployment rate[a]**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.206	0.204		10.821	
	Unemployment rate	-0.132	0.028	-0.756	-4.765	0.000

Analyzing the results in Table 2, we allow acceptance of the hypothesis that there is a significant correlation between the variables analyzed, because Sig has the value 0 (under the threshold of 0.05).

Based on the calculated coefficients in column B of Table 2, the equation of linear regression is presented in equation 1.

$$Y = -0.132 \times X_1 + 2.206 \tag{1}$$

where:

Y – the total insurance penetration degree;

X_1 – the unemployment rate.

The interpretation of the linear regression equation (equation 1) reveals that, based on the data analyzed for the period 1997-2015, for a short period of time, there is the following correlation: if the unemployment rate increases by one percentage point, the level of insurance penetration drops by 0.132%.

Therefore, hypothesis H1 is verified in its entirety, meaning that significant negative relationship exists between the total insurance penetration and the unemployment in Romania, however, given the small size of the sample (19 observations), the result must be regarded with caution.

In the same manner, we proceed to the verification of the H2, H3 and H4 for which we obtain the following results:

- for H2 (Table 3 and Table 4 from Apendices): correlation coefficient (R) is 0.809; R Square is 0.655, whence the higher effect of the unemployment on life insurance, compared to the total insurance market. Sig has the value 0, the coefficient B of the linear regression equation is - 0.039. If the unemployment rate increases by one percentage point, the life penetration degree decreases by 0.039%. Confronting with the influence of the unemployment over the total insurance market penetration, we observe that the unemployment influences to a lower degree the life insurance penetration. Consequently, the H2 is accepted, since a significant negative relationship is established between the life insurance penetration and the unemployment in Romania, under the same caution regarding the small size of the sample;

- for H3 (Table 5 and Table 6 from Apendices): the correlation coefficient (R) is 0.716, R Square is 0.513, resulting in a medium influence of the unemployment over the non-life insurance, but less intense compared to the total insurance market and the life insurance penetration. Sig has the value of 0.01 (below the threshold of 0.05), the coefficient B from the linear regression equation is 0.093, meaning that if the unemployment rate increases by one percent, the non-life penetration degree drops with 0.093%. Confronting with the influence of the unemployment over the total insurance penetration, we also observe that the unemployment influences to a lower degree the non-life insurance penetration, and to a greater measure than the life insurance penetration. Consequently, H3 is also accepted, since a significant negative relation is established between the non-life insurance penetration and the unemployment in Romania;

- for the last hypothesis, H4 (Table 7 and Table 8 from Apendices): the correlation coefficient (R) is 0.840, R Square is 0.706, which show the large influence of the unemployment on the life insurance density, with a quota of 70.6% in changes of insurance density, on the account of the unemployment rate. Sig is 0 (zero), the coefficient B from the linear regression equation is -0.228, which means if the unemployment increases by one percent, the insurance density drops with 0.228%. Confronting with the influence of the unemployment on the total insirance penetration, we notice that the unemployment influences to a higher extent the insurance density, indicator that is linked to the purchasing power of the population. Therefore H4 is also accepted, as there is a strong negative connection between the density insurance and the unemployment in Romania.

5.Conclusions

Correlating the variables which express the insurance market dimension and the unemployment, applying statistical method, on a 19-year period, namely 1997-2015, we summarize that, a significant negative relationship is establised between the indicators which show the dimension of the insurance market (the insurance penetration for total market, life and non-life classes, and the insurance density) and the unemployment rate provided that, taking into account the small size of the sample (19 observations), the result must be regarded with caution.

The conclusion is that **when the unemployment increases, the insurance contribution to the GDP and insurance density decrease**. The conclusion is similar to those obtained at international level. Out of the four dependent variable analyzed, **the unemployment influences the insurance density the most** (with 70.6% in changes of insurance density). Considering the peneration insurance, the unemployment has a greater influence on the non-life insurance as the life insurance. The result is contrary to those obtained in the literature of other countries, which shows the higher influence of unemployment over life insurance.

Assessment and knowledge of these connections which are established between the dimension of the insurance market and the unemployment supports the relaxation of insurance in Romania, according to the income and financial possibilities of Romanian citizens, while the labour market of Romania "is very vell described by the employment-unemployment dynamics over the time period". [11]

Even if the incomes increase, the mentality of the Romanians regarding the benefits of life and non-life insurance will not change without insurance promotion campaigns and awareness of their usefulness among citizens, since "an advertising reaching a potential buyer while the buyer is seeking information will have greater impact" [12]. Re-evaluation of the distribution channels of insurance and improvement of the promotion and efficiency system and will cause an increase in insurance contracts. On the same time, to avoid a high unemployment rate, especially for the young people, there are a lot of ways to provide them knowledge for new business opportunities [13; 14], avoiding the risk of bunkruptcy [15, 16], and conducting market research for marketing analysis [17; 18; 19]. "The development of the financial system and the economy as a whole has led to powerful expansion of the market of credit derivates" [20], thus all the implications from the unemployment and insurance size have a high impact on the public debt [21] and on the avoidance of financial crisis [22].

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Apendices

Table 3. **Model correlation between the life insurance penetration degree and the unemployment rate - Model Summary[b]**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.809[a]	0.655	0.635	0.06529	1.120

a. Predictors: (Constant), the unemployment rate
b. Dependent variable: the life insurance penetration degree

Table 4. **The regression coefficients of the correlation between the life insurance penetration degree and the unemployment rate[a]**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.521	0.050		10.360	0.000
	Unemployment rate	-0.039	0.007	-0.809	-5.681	0.000

Table 5. **Model correlation between the non-life insurance penetration degree and the unemployment rate - Model Summary[b]**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.716[a]	0.513	0.484	0.21030	0.812

a. Predictors: (Constant), the unemployment rate
b. Dependent variable: the non-life insurance penetration degree

Table 6. **The regression coefficients of the correlation between the non-life insurance penetration degree and the unemployment rate[a]**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.684	0.162		10.392	0.000
	Unemployment rate	-0.093	0.022	-0.716	-4.229	0.001

Table 7. **Model correlation between the insurance density and the unemployment rate - Model Summary[b]**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.840[a]	0.706	0.689	0.34036	0.882

a. Predictors: (Constant), the unemployment rate
b. Dependent variable: the insurance density

Table 8. **The regression coefficients of the correlation between the insurance density and the unemployment rate[a]**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.735	0.262		14.240	0.000
	Unemployment rate	-0.228	0.,036	-0.840	-6.390	0.000