

Analysis of the correlation between commercial insurance and EU economic growth

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Abstract:

The research aims to analyze the correlation between economic growth and the insurance market in EU countries. The research is based on three hypotheses: H1 - there is a strong, significant correlation between economic growth and insurance indicators; H2 - there is a direct, significant correlation between insurance and the level of education; H3 - the more developed the insurance market, the higher the employment rate and the lower the risk of poverty.

To conduct the study, we took from the Eurostat and OECD websites the data specific to economic growth: GDP/capita, risk of poverty (Rs), employment rate (Ra) and level of education of the population (E), and specific indicators of the insurance market : insurance penetration rate (Gp), insurance density (Da) and gross written premiums (PBS). The analysis of the correlation between the variables was performed using the SPSS statistical program, the established correlation coefficients being Pearson and Spearman. The analyzed period is 2012 - 2019, the countries included in the sample being: Czech Republic, Germany, France, Hungary, Austria, Poland and Romania.

Keywords: trade insurance, growth, correlation

JEL Classification: G21, G29

1. Introduction

In addition to the challenges posed by trade tensions between the US and China, as well as uncertainties over the Brexit negotiations, the macroeconomic environment is also affected by the emergence of the plague caused by the SARS-Cov-2 pandemic.

Given these aspects, the economic growth of the EU Member States has tended to slow down in terms of growth rate. If we make a comparative analysis of the economic growth of the EU and the eurozone from 2013 to the end of 2019, we see that in the last quarter of 2019 the economy grew by only 0.1%, the lowest level in this period.

According to Eurostat data, the countries with the lowest economic growth were France and Austria (0.9% both), Sweden (0.8%), Finland (0.6%), Germany (0.5%) and Italy (0.1%), at the opposite end were the economies of Ireland (6.3%), Hungary (4.6%), Malta (4.3%) and Romania (4.2%) which recorded annual growth rates (seasonally adjusted) higher.

An analysis of macroeconomic indicators shows a decrease in GDP in 2019 compared to 2018 in the EU by about 25%.

The public debt is heterogeneous at EU level, its share in GDP ranging from 9.2% in the case of Estonia to 178.2% in the case of Greece, Romania being among the EU member states with a low level of indebtedness, below an average of 86.1% of GDP, but increasing in 2019 compared to 2018.

The unemployment rate for both the EU and the euro area has been declining. Thus, in terms of the unemployment rate in the EU, it reached 7.4% at the end of 2019 compared to 7.8% in 2018.

The EU insurance market also had a declining trend in 2019. The first indicator specific to the insurance market is the degree of penetration, calculated as a ratio between gross written premiums (PBS) and GDP, which recorded a value of 1.1% in 2019, slightly lower than the previous year.

A trend similar to the one at the EU level was also in Romania, since 2016 the degree of penetration registering continuous decreases.

Another specific indicator of the insurance market is the density of insurance (Da), it is calculated as a ratio between the gross written premiums and the number of inhabitants, it shows how much an inhabitant spends on average for insurance products.

Unlike the degree of penetration, the insurance density in Romania was at a value of 598 lei / inhabitant, increasing by about 10 percent compared to the previous year, but the penultimate place in the EU, after it being Bulgaria. This last indicator is very much influenced by the purchasing power and the level of financial education of the population of a country.

In this research paper we aim to analyze the correlation between the insurance market, reflected by the indicators penetration rate, insurance density and gross written premiums, and indicators that reflect the economic situation of a country: GDP/capita, employment rate, risk-of-poverty, and an indicator that reflects the level of education of the population.

2. Concepts and terms used

Studies examining the relationship between insurance and growth have become increasingly common in recent times.

One such study is that of the authors Ward and Zurbruegg (2000), the study is considered to be the first to explore the relationship between insurance and growth for OECD countries. The authors found an insignificant relationship between insurance and growth for two OECD countries, namely the United Kingdom and the United States.

Kugler and Ofoghi (2005) also investigated the relationship between insurance and growth using disaggregated data. They found a significant and positive relationship between insurance and growth for the UK. They argued that an insignificant result of Ward and Zurbruegg (2000) was due to the use of aggregate data (life insurance premiums plus non-life insurance).

We also find such a concern in the authors Chien-Chiang Lee, Chi-Hung Chang, Mohamed Arouri, Chi-Chuan Lee (2016), who demonstrated from their research that the insurance market has a positive effect on economic growth in the case of countries with a developed economy, where the standard of living is high, the level of education high, in this case there are direct, strong links between the insurance market and economic growth indicators, and in the case of underdeveloped or developing economies between the market insurance and economic growth with weak links (Chien-Chiang Lee, Chi-Hung Chang, Mohamed Arouri, Chi-Chuan Lee, Elsevier, 2016, pp. 361 - 369).

A significant, direct correlation resulted between the indicator of economic growth GDP/capita and the gross premiums subscribed in the study conducted on the situation in Romania (Cristea M, Marcu N, Carstina S, 2013, pp. 226 - 235).

The analysis of the correlation between economic growth and the insurance market can also be found in the author Tan Khay Boon (2004), who conducted a study

on the Singapore economy. The results of the study carried out by the author showed that in general insurance has the role of covering certain risks in the market or mitigating the effects of these risks, and that depending on the investments made by insurance companies, especially in the case of life insurance, the market can significantly contribute to the country's economic growth. In general, insurance investments have medium and long-term effects (Tan Khay Boon, 2004, pp. 1-15).

Oke author Michael Ojo (2012) demonstrated in a study on the economy of Nigeria, the existence in the medium and long term of a direct, strong relationship between insurance and economic growth. At a significant level of 5%, the hypothesis of a lack of a co-integration relationship is rejected in favor of accepting the assumptions of the presence of co-integration between Nigeria's economic growth and the development of the insurance sector (Oke Michael Ojo, 2012, pp. 7016-7023).

A study closer to our research can be found in the authors Valentina Peleckiene, Kestutis Peleckis, Gitana Dudzeviciutea and Kestutis K. Peleckis (2019). They demonstrated the relationship between insurance and economic growth with reference to EU countries, the period analyzed being 2004 - 2015. The analysis had as variables for insurance: insurance density, gross premiums written and the level of penetration and for economic growth were reported to GDP/capita. The authors divided the countries according to economic growth and the level of development of insurance, as follows: at a very high level is Luxembourg, at a high level Denmark, Ireland, Sweden, the Netherlands, at a medium level: Austria, Finland, Belgium, Great Britain, Germany, France, the rest of the countries being considered at a low and very low level, Romania being at a very low level. This resulted in strong correlations, significant in the case of countries up to medium level and weak correlations, insignificant in the case of other countries, below average level (Valentina Peleckiene, Kestutis Peleckis, Gitana Dudzeviciutea, Kestutis K. Peleckis, 2019, pg. 1138 - 1151).

3. Research methodology

An analysis similar to the authors presented above, we will also perform in the research paper, the period to which we will refer being 2012 - 2019.

In order to carry out the research, we selected from the EU countries specific to all levels of growth and development of the insurance sector, these being: Czech Republic, Germany, France, Hungary, Austria, Poland and Romania.

Unlike the other authors, we took into account a number of indicators specific to economic growth: GDP/capita, employment rate, poverty risk and level of education, and indicators specific to the insurance market: penetration, density and gross written premiums.

The hypotheses of our research are the following:

H1 - there is a strong, significant correlation between economic growth and insurance indicators;

H2 - there is a direct, significant correlation between insurance and the level of education

H3 - the more developed the insurance market, the higher the employment rate and the lower the risk of poverty.

The data needed to conduct the research were taken from Eurostat and the OECD, and are panel data. Statistical processing was performed using the SPSS program. The correlation was established using the Pearson and Spearman correlation coefficients.

4. Case Study

4.1 Statistical data processing

The data specific to economic growth and the insurance market were processed using the SPSS statistical program, the correlation being followed in the first phase with the help of the Pearson correlation coefficient. The first analysis performed with SPSS is descriptive statistics, this being reflected in the following table:

Vary	Mean	Std. Deviation	N
GDP/capita	21460.18	11686.600	56
Ra	72.52	4.729	56
E	8.56	5.586	56
Rs	-819.52	1278.025	56
Gp	4.444	2.7519	56
Da	1553.29	1460.553	56
PBS	95498.282	136838.6922	56

Tabel 1 - Descriptive Statistics

Source: Table resulting in SPSS by statistical data processing

The analysis of the data from the descriptive statistics shows us the size of the sample based on which we conducted the research, which is composed of 56 observations. At the same time, we notice the considerable difference between the value of the average and the value of the standard deviation for most variables, with the exception of the risk of poverty and the total gross written premiums (PBS).

The analysis of the correlation between the variables is reflected in the following table:

Vary	correlation/ sig/ sample N	GDP/capita	Ra	E	Rs	Gp	Da	PBS
GDP/capita	Pearson Correlation	1	.586(**)	.787(**)	.426(**)	.778(**)	.889(**)	.672(**)
	Sig. (2-tailed)		.000	.000	.001	.000	.000	.000
	N	56	56	56	56	56	56	56
Ra	Pearson Correlation	.586(**)	1	.365(**)	.162	.244	.340(*)	.321(*)
	Sig. (2-tailed)	.000		.006	.234	.070	.010	.016
	N	56	56	56	56	56	56	56
E	Pearson Correlation	.787(**)	.365(**)	1	.488(**)	.797(**)	.803(**)	.475(**)
	Sig. (2-tailed)	.000	.006		.000	.000	.000	.000
	N	56	56	56	56	56	56	56
Rs	Pearson Correlation	.426(**)	.162	.488(**)	1	.392(**)	.421(**)	.256
	Sig. (2-tailed)	.001	.234	.000		.003	.001	.057
	N	56	56	56	56	56	56	56
Gp	Pearson Correlation	.778(**)	.244	.797(**)	.392(**)	1	.964(**)	.865(**)
	Sig. (2-tailed)	.000	.070	.000	.003		.000	.000
	N	56	56	56	56	56	56	56

Da	Pearson Correlation	.889(**)	.340(*)	.803(**)	.421(**)	.964(**)	1	.862(**)
	Sig. (2-tailed)	.000	.010	.000	.001	.000		.000
	N	56	56	56	56	56	56	56
PBS	Pearson Correlation	.672(**)	.321(*)	.475(**)	.256	.865(**)	.862(**)	1
	Sig. (2-tailed)	.000	.016	.000	.057	.000	.000	
	N	56	56	56	56	56	56	56

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 2 - Correlations

Source: Table resulting in SPSS by statistical data processing

The resulting data show us direct, significant correlations between GDP/capita and the specific indicators of the insurance market.

Direct correlations were also established between the employment rate and the insurance market indicators, but correlations with a significant threshold, sig value below 0.05, were established only in the case of insurance density and gross written premiums (PBS).

In the case of the poverty-insurance risk correlation, we observe direct correlations, but the sig significance threshold is kept below 0.05 only at the degree of insurance penetration and the insurance density.

Regarding the level of correlation established between population education and insurance, we notice that direct, significant correlations have been established, in the case of all sig variables being below 0.05.

The correlation analysis is continued by using the Spearman correlation coefficient, the results obtained being reflected in the following table:

		GDP/capita	Ra	E	Rs	Gp	Da	PBS
GDP/capita	Correlation Coefficient	1.000	.720(**)	.820(**)	.375(**)	.773(**)	.824(**)	.795(**)
	Sig. (2-tailed)	.	.000	.000	.004	.000	.000	.000
	N	56	56	56	56	56	56	56
Ra	Correlation Coefficient	.720(**)	1.000	.478(**)	.034	.333(*)	.460(**)	.444(**)
	Sig. (2-tailed)	.000	.	.000	.806	.012	.000	.001
	N	56	56	56	56	56	56	56
E	Correlation Coefficient	.820(**)	.478(**)	1.000	.544(**)	.784(**)	.825(**)	.678(**)
	Sig. (2-tailed)	.000	.000	.	.000	.000	.000	.000
	N	56	56	56	56	56	56	56
Rs	Correlation Coefficient	.375(**)	.034	.544(**)	1.000	.455(**)	.470(**)	.259
	Sig. (2-tailed)	.004	.806	.000	.	.000	.000	.054
	N	56	56	56	56	56	56	56
Gp	Correlation Coefficient	.773(**)	.333(*)	.784(**)	.455(**)	1.000	.973(**)	.950(**)
	Sig. (2-tailed)	.000	.012	.000	.000	.	.000	.000
	N	56	56	56	56	56	56	56
D	Correlation	.824(**)	.460(**)	.825(**)	.470(**)	.973(**)	1.000	.940(**)

	Coefficient							
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.	.000
	N	56	56	56	56	56	56	56
PBS	Correlation Coefficient	.795(**)	.444(**)	.678(**)	.259	.950(**)	.940(**)	1.000
	Sig. (2-tailed)	.000	.001	.000	.054	.000	.000	.
	N	56	56	56	56	56	56	56

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 3 - Spearman correlation coefficient

Source: Table resulting in SPSS by statistical data processing

At the level of the Spearman correlation coefficient, there were also significant direct correlations between the insurance market and economic growth. Thus, we obtained direct correlations, significant between the indicators GDP / inhabitant, education and the insurance market reflected through the three indicators, and direct correlations, weaker in intensity, between the employment rate, the risk of poverty and the insurance market.

As a final conclusion as a result of the statistical processing of variables we can say that there are significant direct correlations between the insurance market and economic growth, insurance having a major contribution in the economic development of a country. Also, the level of education of the population has a major impact on the insurance market and implicitly on economic growth.

4.2. Hypothesis testing

As we mentioned in the methodology part of the research, the paper is based on three hypotheses: H1 - between the indicators of economic growth and insurance there is a strong, significant correlation.

This hypothesis was validated following the statistical analyzes performed, where we demonstrated that there are significant direct correlations between GDP/capita indicators, employment rate, risk-of-poverty rate and insurance.

H2 - there is a direct, significant correlation between insurance and the level of education

This hypothesis was also validated as a result of the statistical analysis where we demonstrated that there are significant, direct correlations between the level of education of the population and the insurance market. In other words, the more educated a country's population is, the more the insurance market tends to grow.

H3 - the more developed the insurance market, the higher the employment rate and the lower the risk of poverty.

The validation of this hypothesis was partially done, between the poverty risk indicators and the employment rate being established direct correlations but lower in intensity and significance. Commercial insurance certainly leads to job creation in the market and lowers the risk of poverty, but the impact is not the same as for the other variables.

5. Conclusions

Research on the correlation between economic growth and the insurance market has led us to draw the following conclusions:

- direct, significant correlations were established between GDP/capita and the specific indicators of the insurance market;
- direct correlations were also established between the employment rate and the insurance market indicators, its sig value below 0.05, was established only in the case of the density of insurance and gross written premiums (PBS);
- in the case of the poverty risk-insurance correlation, direct correlations have been established but the sig significance threshold remains below 0.05 only at the degree of insurance penetration and insurance density.
- direct and significant correlations were established between population education and insurance;
- the general conclusion is that there are significant direct correlations between the insurance market and economic growth, insurance having a major contribution in the economic development of a country, along with this conclusion validating hypothesis 1 (H1) of research;
- the level of education of the population has a major impact on the insurance market and implicitly on economic growth, there are significant direct correlations between the two, validating with this conclusion and hypothesis 2 (H2) of research.

We can therefore mention that the insurance market occupies an important position in the economy where the standard of education and living of the population tends towards maximum levels. The more educated the population of a country, the greater the degree of confidence in insurance, thus helping the development of this sector. With the development of the sector, there is an increase in the contribution to the economy of that country.

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