

# The Romanian Insurance Market Under the Impact of the Covid-19 Pandemic

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## Abstract

*The research work, through its structure, aims to achieve several objectives: following the evolution of the insurance market in Romania during the period 2015 - 2022, a period in which the pandemic generated by Covid-19 left its mark on several sectors of activity, the analysis the correlation between the indicators that define the insurance market and GDP/capita, and finally, with the help of the statistical program Eviews, we will create a multiple linear regression model.*

**Key words:** insurance market, economic growth, correlation, regression, Covid-19

**J.E.L. classification:** F65, G22, C30

## 1. Introduction

The pandemic generated by Covid-19 has left its mark on many sectors of activity in our country. If for some sectors such as the pharmaceutical industry (Hada, 2023, pp.8-9) the pandemic has had a favorable impact, for sectors such as (Doboreanu, 2020, pp. 4-5) hospitality, transport, culture, the pandemic has generated negative effects consisting of: decrease in sales, temporary suspension of activity, restriction of activity, abolition of certain jobs, technical unemployment and even the closing of some companies (Nuta et al, 2024, pp. 8).

The Romanian insurance market represented the main sector analyzed under the aspect of the covid-19 pandemic. The trend of consolidation of the insurance market was maintained in 2019, with car insurance still holding the largest share in total general insurance, but we cannot help but notice the increase in the share of health insurance from one year to another (ASF, 2019, pp. 11).

Were the effects generated by the pandemic a reason for the increase in health insurance in Romania? This is the question we asked ourselves at the time of correlating the increase in health insurance with the pandemic generated by covid-19. In 2020, health insurance registered, according to the reports of the Financial Supervisory Authority (ASF), an increase in gross premiums subscribed by approximately 18% compared to 2019. Also, the economic context from that time, as well as the effects of the pandemic have increased attention to guarantee insurance, which in 2020 compared to 2019 recorded a 68% increase in gross written premiums (ASF, 2020, pp. 12).

Although the tendency of Romanians is to take out insurance policies only for compulsory insurances such as motor civil liability (RCA) and housing liability (PAD), and for some professional activities there are also professional insurances, we observe a growing concern starting in 2020 for health insurance. The trend of increasing the share of these insurances in general insurances is also maintained in 2021, with a 10% increase in gross premiums subscribed compared to 2020 (ASF, 2021, pp. 36).

In 2022, the share of health insurance in general insurance increased significantly, with 35% more gross premiums subscribed than in 2021 (ASF, 2022, pp. 48).

We can therefore say that the pandemic has changed the perception of Romanians towards health insurance, they are increasingly concerned about these types of insurance. If until the time of the pandemic these types of insurance were conditioned by a series of factors: income obtained, lack of trust in insurance companies in our country, lack of financial education, after the pandemic the attitude of Romanians towards health insurance, according to statistics, is different.

## 2. Literature review

The insurance market in Romania has been and is the subject of numerous specialized researches, this being followed both as an evolution in different economic phases and in correlation with a series of macroeconomic indicators. With the emergence of the pandemic generated by covid-19, more and more researchers have analyzed both at the Romanian level, but especially at the international level, the effects generated by it on different sectors of activity, implicitly on the insurance market.

At the international level, the Global Monitoring Exercises (GME) commission that is part of the International Association of Insurance Supervisors (IAIS) met to assess the impact of the pandemic generated by covid-19 on the global insurance market. The most important 60 international insurers from 18 countries, as well as insurance supervisory institutions from 39 countries participated in this assessment (European Parliament and European Council, 2009).

Industry research has shown that "the virus has caused significant disruption to the economy and global supply chains, affecting the full range from small businesses to large corporations, with the insurance industry also affected."(PUŁAWSKA, 2021, p. 266) Analyzes of the insurance industry concluded that "for insurance companies, these disruptions were not only felt in normal business operations, but also in the form of increased claims volume."(BABUNA et al, 2020, p. 5766)

Another international analysis demonstrates that "the pandemic has affected almost every aspect of the human experience, it should come as no surprise to anyone that the pandemic is having a major impact on the insurance industry, and the full extent of the financial consequences are still unfolding. Thus, the pandemic has weakened insurers' balance sheets, strengthened the insurance market and stressed the claims environment."(Jerry, 2021, pp. 36-43)

At the level of Romania, numerous researches have been carried out on the effects of the pandemic brought to the insurance market, such an analysis can also be found by the author Năstase A. This, by presenting the evolution of specific indicators, surprises the insurance market before and during the pandemic. Thus, a continuous evolution of the insurance market in Romania can be noted, both the density indicator and the gross premiums subscribed demonstrating and confirming the aforementioned (Năstase, 2022, pp. 46-47).

Another analysis on the impact of the pandemic on the insurance market in Romania can be found by the author Gheordunescu M.E. It analyzes the specific indicators of the insurance market and comes to the conclusion that "in 2020, the insurance market ended the year with a gross volume of written premiums, increasing compared to 2019, even though 2020 was marked by the uncertainty due to the COVID-19 pandemic . The same trend can be observed in the first 6 months of 2021, in the general insurance segment"(Gheordunescu, 2021, pp. 58).

## 3. Research methodology

The analysis of the insurance market in Romania was possible thanks to the information reported by the Financial Supervisory Authority (ASF). Thus, the specific indicators of the insurance market were extracted from the annual reports published by the ASF: gross premiums subscribed, gross indemnities paid, density and degree of insurance penetration.

Over time, more and more researchers have analyzed the evolution of the insurance market in different countries of the world, at the same time correlating them with a series of macroeconomic indicators: GDP/capita, poverty rate, population income, etc. Such an analysis can be found in the authors Peter Haiss and Kjell Sűmegi, demonstrating with several EU countries as a reference the direct correlation between real GDP and the indicators of gross premiums subscribed, density and insurance penetration (Haiss, 2008, pp. 405-431).

Analysis of the insurance market and the correlation between it and macroeconomic indicators that reflect the well-being of an economy is also found in Huishan Lee, Zhen-Jiang YONG, Qiao-Ming LIM. They carried out a study using as a reference the indicators of the insurance market and GDP/capita from the level of 123 countries, reaching the conclusion that the link between these indicators differs from one country to another, the heterogeneity of the insurance market having a decisive role in establishing the intensity of these links (Huishan et al, 2022, pp. 10 - 11). This risk is excluded in our analysis as we follow the correlation between the insurance market and economic well-being indicators strictly at the level of Romania.

In the research paper, we propose to carry out an analysis of the correlation between the indicators that describe the insurance market: first underwritten general insurance policies (PBSAG); first underwritten life insurance policies (PBSAV); gross indemnities paid general insurance (IBPAG); life insurance gross benefits paid (IBPAV); the degree of insurance penetration (Gp) and the density of insurance per inhabitant (D/L) and the indicator reflecting the economic well-being GDP/inhabitant (GDP/capita), the analyzed period being 2015 – 2022, a period that can be divided as follows: 2015 – 2018 the period before the pandemic generated by covid-19, 2019 – 2021 the period of the pandemic, and 2022 the year of relaxation immediately after the pandemic.

Starting from the description of the insurance market presented in the ASF reports in correlation with the economic environment throughout this period, we consider the following research hypotheses:

H1: There is a close correlation between the gross premiums subscribed in the case of general insurance and GDP/capita, general insurance being the insurance with the largest share in total sales on the insurance market in Romania;

H2: Even though life insurance has a relatively low share in the total insurance sold in our country, there is also a significant correlation between GDP/capita and gross premiums written;

H3: there is also a close connection between gross indemnities paid and GDP/capita, the payment of these indemnities being part of the functioning mechanism of the insurance market;

H4: an inverse, significant correlation exists between insurance penetration and GDP/capita. Insurance penetration rate calculated as the ratio between gross premiums subscribed and GDP;

H5: the last research hypothesis refers to the link between insurance density and GDP/capita. There is a direct and significant correlation between the two, the higher the insurance density, the more significant the contribution of insurance to economic growth;

H6: the period of the pandemic generated by Covid-19 had a negative impact on the insurance market in Romania, the data from this period confirming the aforementioned.

The verification of these hypotheses was carried out with the help of the statistical program Eviews. We started with descriptive statistics where we performed a series of checks with the mean and standard deviation as well as with Skewness and Kurtosis. After validating the model with descriptive statistics, we moved on to check the correlations between the variables. This was possible with the Pearson correlation coefficient.

The analysis of the correlations between the variables then allowed us to decide on the variables taken into account in order to create the linear multiple regression model of the form:

$$\text{GDP/capita} = \alpha + \beta_1\text{PBSAg} + \beta_2\text{PBSAv} + \beta_3\text{IBPAg} + \beta_4\text{IBPAv} - \beta_5\text{Gp} + \beta_6\text{D/L} + \varepsilon$$

where:  $\alpha$  – constant;  $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$  the coefficients of the independent variables and  $\varepsilon$  the error.

At the end of the research, the validation of the regression model was carried out through the heteroscedasticity and homoscedasticity test.

#### 4. Findings

The beginning of the empirical study of our research is given by the descriptive statistics where we will put special emphasis on the level between the mean and the standard deviation as well as on the level of the coefficients of Skewness and Kurtosis for each variable used separately.

Descriptive statistics are illustrated in the following table:

Table no. 1 Analysis with descriptive statistics

Date:  
02/26/24  
Time: 09:40  
Sample: 2015 2022

	GDP/capita	PBSAV	PBSAG	IBPAV	IBPAG	GP	D/L
Mean	41800.45	2.233750	9.236250	1.046250	5.083750	1.212500	625.0000
Median	42689.97	2.180000	8.380000	1.045000	5.350000	1.225000	572.0000
Maximum	49671.90	2.990000	13.860000	1.560000	6.400000	1.300000	959.0000
Minimum	33571.79	1.580000	6.960000	0.710000	3.600000	1.100000	446.0000
Std. Dev.	5724.490	0.492891	2.351601	0.274795	1.139611	0.080667	170.1000
Skewness	-0.172930	0.109359	1.076576	0.482999	0.192139	0.243740	1.019053
Kurtosis	1.810939	1.835798	2.829564	2.759644	1.369153	1.465158	2.843802
Jarque-Bera	0.511161	0.467734	1.555037	0.330307	0.935777	0.864459	1.392757
Probability	0.774467	0.791467	0.459545	0.847764	0.626323	0.649060	0.498387
Sum	334403.6	17.87000	73.89000	8.370000	40.67000	9.700000	5000.000
Sum Sq. Dev.	2.29E+08	1.700588	38.71019	0.528588	9.090988	0.045550	202538.0
Observations	8	8	8	8	8	8	8

Source: Table obtained in Eviews

Descriptive statistics data analysis validates all the variables for the multiple linear regression model we propose to build. Thus, for all variables the average is above the standard deviation and the coefficients of Skewness and Kurtosis are within the limits of the specific intervals.

After performing the descriptive statistics, we performed an analysis on the type of correlations existing between the variables. The analysis of the resulting correlations is reflected in the following table:

Table no. 2 Correlation analysis with Pearson correlation coefficient

	GDP/capita	PBSAV	PBSAG	IBPAV	IBPAG	GP	D/L
GDP/capita	1.000000	0.859439	0.878231	0.949528	0.961556	-0.054088	0.899059
PBSAV	0.859439	1.000000	0.702442	0.773132	0.896021	-0.155127	0.719102
PBSAG	0.878231	0.702442	1.000000	0.927318	0.807347	0.389777	0.998064
IBPAV	0.949528	0.773132	0.927318	1.000000	0.852195	0.086197	0.946947
IBPAG	0.961556	0.896021	0.807347	0.852195	1.000000	-0.130031	0.820998
GP	-0.054088	-0.155127	0.389777	0.086197	-0.130031	1.000000	0.348464
D/L	0.899059	0.719102	0.998064	0.946947	0.820998	0.348464	1.000000

Source: Table obtained in Eviews

The analysis of the data in the table leads us to the validation of the hypotheses from which we started the research. Thus, a direct and significant correlation was established between GDP/capita and gross premiums subscribed to both types of insurance, general and life, thus validating hypotheses 1 and 2.

A similarly direct and strong correlation resulted between GDP/capita and gross benefits paid, thus validating hypothesis 3 of the research.

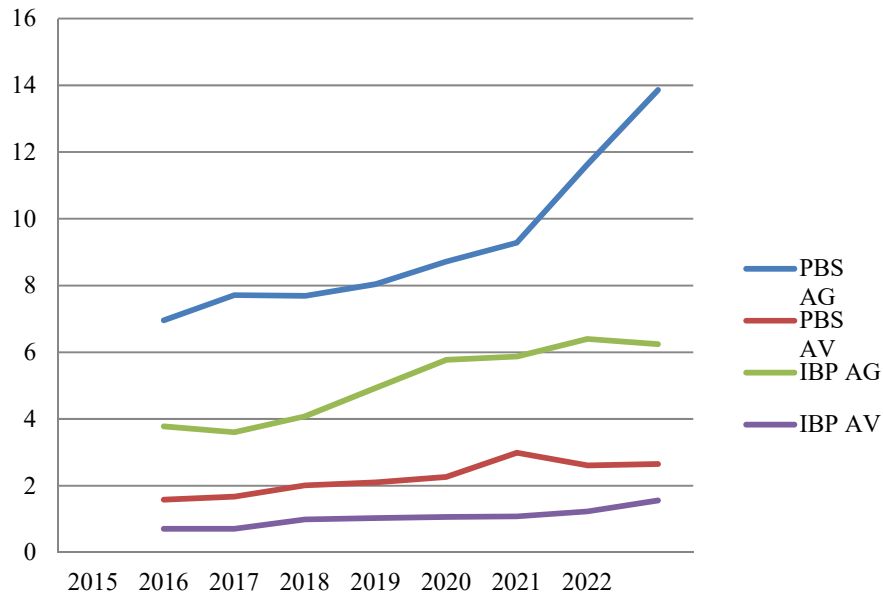
Partial validation of hypothesis 4 as there is an inverse relationship between GDP/capita and the degree of penetration (Gp) but it turned out to be insignificant.

In the case of the correlation between GDP/capita and insurance density, a strong direct link resulted.

We can thus say that there is a strong connection between the insurance market in Romania and GDP/capita, even if the insurance market in our country is not as developed as the other markets in the EU member countries, however it has proven to have a significant contribution in economy.

The analysis of the data regarding the gross written premiums and the other specific indicators of the insurance market selected in our study invalidate hypothesis 6 of the research, the gross written premiums as well as the density/inhabitant being on a continuous increase, these aspects being reflected in the following graph.

Figure no. 1 The general and life insurance market in Romania in the period 2015 - 2022



Source: Created by processing data from the ASF Reports 2015 – 2022

The analysis of the correlations between the indicators that describe the insurance market in Romania and the GDP/capita level allowed us to go further towards obtaining the linear multiple regression model.

Even if there was no significant correlation between the degree of penetration and GDP/capita, we kept this variable in the regression model, testing the probability of each variable being the decisive factor for this.

The coefficients of the multiple linear regression model are reflected in the following table:

Table no. 3 The resulting values in the definition of the regression model

Dependent Variable: GDP/capita

Method: Generalized Linear Model (Newton-Raphson / Marquardt steps)

Date: 02/26/24 Time: 09:40

Sample: 2015 2022

Included observations: 8

Family: Normal

Link: Identity

Dispersion computed using deviance

Convergence achieved after 0 iterations

Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
PBSAV	577.3316	1674.157	0.344849	0.7302
PBSAG	8081.524	5358.094	1.508283	0.1315
IBPAV	376.8815	11459.50	0.032888	0.9738
IBPAG	3187.706	1349.646	2.361883	0.0182
GP	1641.772	14784.01	0.111051	0.9116
D/L	124.5874	86.73061	1.436487	0.1509
C	21275.46	18675.79	1.139200	0.2546
Mean dependent var	41800.45	S.D. dependent var		5724.490
Sum squared resid	881962.6	Root MSE		332.0321
Log likelihood	62.61113	Akaike info criterion		17.40278
Schwarz criterion	17.47229	Hannan-Quinn criter.		16.93396
Deviance	881962.6	Deviance statistic		881962.6
Restr. deviance	2.29E+08	LR statistic		259.0887
Prob(LR statistic)	0.000000	Pearson SSR		881962.6
Pearson statistic	881962.6	Dispersion		881962.6

Source: Table obtained in Eviews

By applying the Generalized Linear Model method (Newton-Raphson / Marquardt steps) we obtain the coefficients of the regression model with GDP/capita as the dependent variable and the specific indicators of the insurance market as independent variables.

The highest level of probability was obtained for gross indemnities paid in the case of life insurance (IBPAV) of 97.38%, followed by the degree of penetration with 91.16%, at the opposite pole being the gross indemnities paid in insurance general with a probability of 1.82%.

The obtained regression model is of the form:

$$\text{GDP/capita} = 21275,46 + 577,3316 \cdot \text{PBSAV} + 8081,524 \cdot \text{PBSAG} + 376,8815 \cdot \text{IBPAV} + 3187,706 \cdot \text{IBPAG} + 1641,772 \cdot \text{Gp} + 124,5874 \cdot \text{D/L} + \varepsilon$$

Validation of the regression model with the heteroscedasticity test is the last step carried out in our study, the results obtained being reflected in the following table:

Table no. 4 Heteroscedasticity test

Dependent Variable: PIB\_REAL\_LOCUITOR\_LEI\_LOCUITOR  
 Method: Generalized Linear Model (Newton-Raphson / Marquardt steps)  
 Date: 02/26/24 Time: 09:43  
 Sample: 2015 2022  
 Included observations: 8  
 Family: Normal  
 Link: Identity  
 Dispersion computed using Pearson Chi-Square  
 Convergence achieved after 0 iterations  
 Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
PBSAV	848.1128	1776.287	0.477464	0.6330

PBSAG	7305.277	5696.507	1.282414	0.1997
IBPAV	9946.692	8354.494	1.190580	0.2338
IBPAG	4338.868	958.9610	4.524552	0.0000
GP	18035.67	3630.777	4.967441	0.0000
D/L	90.92619	87.40182	1.040324	0.2982
Mean dependent var	41800.45	S.D. dependent var	5724.490	
Sum squared resid	2026552.	Root MSE	503.3081	
Log likelihood	63.66631	Akaike info criterion	17.41658	
Schwarz criterion	17.47616	Hannan-Quinn criter.	17.01473	
Deviance	2026552.	Deviance statistic	1013276.	
Pearson SSR	2026552.	Pearson statistic	1013276.	
Dispersion	1013276.			

*Source:* Table obtained in Eviews

The heteroscedasticity test leads to the validation of the obtained regression model, except for IBPAG and Gp where the probability level is almost impossible to identify. However, given the fact that all other tests were successfully passed by the variables, we can consider the obtained multiple linear regression model valid.

## 5. Conclusions

The study carried out on the insurance market in Romania for the period 2015 – 2022 in correlation with the indicator that reflects the economic growth in our country GDP/capita led us to conclude the following:

- the insurance market maintained its upward trend even during the pandemic, at the same time noting that the pandemic led to an increase in the gross underwritten premiums of life insurance in the period 2019-2020;
- although it is still insignificant as a contribution to economic growth in our country, strong, direct links have resulted between the insurance market and GDP/capita. This resulted in strong direct correlations between gross premiums subscribed, gross indemnities paid, insurance density/inhabitant and GDP/capita;
- an insignificant and inverse correlation resulted between the degree of insurance penetration and GDP/capita, this aspect also being explained in terms of the lack of logarithm between the two variables, having different measurement units;
- general insurances are the ones that still dominate the insurance market in our country, including compulsory insurances;
- in the steps taken to obtain the regression model, all the independent variables were validated, variables that define the insurance market in Romania, the regression model being validated through the heteroscedasticity test.

We can finally conclude that the insurance market in our country as an evolution is still under the impact of certain decisive factors such as: lack of education, financial power, distrust in insurance companies, etc. However, the insurance market continues to develop and increase its contribution to economic growth in our country.

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