ANALYSIS OF THE IMPACT OF INSURANCE SECTOR ON TOTAL INVESTMENTS IN ROMANIA

COSTACHE BIANCA
POSTGRADUATE, ACADEMY OF ECONOMIC STUDIES OF BUCHAREST,
e-mail: bianca.costache95@yahoo.com

Abstract

This paper is mainly focused on a key topic of economic literature, respectively the link between insurance instruments and total investments at macroeconomic level. Thus, the study includes the analysis and evaluation of the effects of insurance instruments on the real growth rate of investments in the economic context of Romania. The analysis was made by approaching different models and econometric tests, respectively by using the auto-regressive vector / auto-regressive vector with correction, which surprised the effect of the three selected indicators: gross written premiums related to life / general and total insurance, on the real growth rate of the total amount of investments. The research hypothesis for starting the analysis is that the insurance instruments have a significant economic potential in the Romanian economy, with a high impact on the investment environment, depending on the instrument used in the promotion process of the entrepreneurship. Following the analysis of the econometric model’ results and tests, the initial formulated hypothesis was validated by generally obtaining a positive effect given by the insurance instruments on investment real growth. Also, the econometric cointegration and causality tests supported the results obtained from the run of the autoregressive vector models. The results of the study are important as it forms a concrete basis for developing recommendations for the use of these instruments in stimulating investments as well as for the economic potential that this sector has on the financial market in Romania.

Keywords: investments; insurance; gross written premiums; cointegration; causality.

JEL Codes : C32.

1. Introduction and context of the study

The correlation between insurance and the investment environment is still a matter of high importance, approached in many economic specialty studies, precisely in terms of the share of these two indicators in the process of economic growth. Among the activities of insurance companies a dominant role holds the investment function of funds attracted in the form of premiums earned from potential insured. By this goal, insurance companies are actively participating in the financial sector through the significant contribution of the funds they hold and which are invested in terms of bonds, investment funds, the real estate market, equity, etc.

Thus, starting from reference studies from economic literature, such as the economists’ study Haiss et al. (2008), consistent with the work of author Ward et al. (2000), I used the analysis of the well-known correlation between the insurance sector and the total investments, with reference to its role in economic growth, to illustrate the actual relationship in the real economic environment, using data that are reported under statistical indicators.

The correlation between the insurance sector and economic growth has gained an increasing importance due to the share of this sector in the aggregate level of the financial environment in most developed or developing economies. According to economist Haiss et al. (2006), insurance companies, together with mutual and pension funds, represent the predominant class of investors in the financial, bond and real estate markets and their possible impact on economic development will continue to rise taking into consideration the aging population, increasing disparity wages and globalization.

Thus, the economist illustrates the major importance of the investment environment in the process of economic development, especially in the context of emerging economies, a process which starts from the expansion of the insurance sector. Author Rule (2001) reveals in his paper the
close link between the insurance sector and other financial sectors, a correlation that reflects the role of insurance companies in economic growth, with an emphasis on the investment character of these economies. Cross-participations and bank-assurance products, viewed as a major form of financial conglomerates, also have an impacting role. Through financial products, such as credit-default swaps (CDS) and other hedging vehicles, insurance companies increasingly facilitate their access to the credit risk market, which until recently has been defined as the area defined only for credit institutions and capital markets.

In his paper, researcher Watchel (2001) highlights the main role of the financial sector as the intermediary of transferring resources from those who save to investment projects. Thus, the financial sector: (1) improves identification by fund seekers and monitoring beneficiaries of funds, thus improving the allocation of resources; (2) mobilize economies; (3) reduce capital costs through economies of scale and specialization; (4) provides the process of risk-management and liquidity. Insurance companies play a major role in these functions of the financial environment and should therefore have the same impact on economic growth.

By referring to other financial sectors, economist Blum et. (2002) states that the link between insurance and the real economic environment can be explained in terms of causality through five possible assumptions: (1) no causal relationship; (2) demand-tracking, e.g. economic growth then leads to an increase in demand for insurance products; (3) supply leader, e.g. increased insurance reduces short-term economic volatility and hence induces long-term economic growth, and increased investment by insurance companies leads to macroeconomic growth; (4) the negative causal link from insurance to growth (e.g. rising insurance causes more unreasonable behavior ("moral hazard"), resulting in a less efficient and volatile economy, and (5) the interdependence of the insurance sector and the possible link with economic growth.

According to economist Das et al. (2003), the financial breakdown has led to the engagement of strong banking products by insurance companies, and this has conducted a high liquidity character in their liabilities. The need to obtain competitive revenue has prompted insurers to invest in risky assets such as retail mortgages and low stability bonds. As a result, insurers have become more vulnerable to economic downturns. Against this background, it is advisable to adjust strongly and to the extent necessary the legal framework, which needs to be updated to new insurance products and the setting up of conglomerates which can bring uncertain risks to customers and the financial system.

The study of author Haiss et al. (2008), demonstrates the importance of the insurance industry to economic growth as it can be used as an intermediary for risk transfer, savings, and last but not least investments. Thus, the author analyzes 29 European economies and illustrates that aggregate investment by insurance companies increased by 20% as a share of gross domestic product over the period 1993-2008. The authors then observed that an essential part of the companies' insurance contribution in the economic environment results from the expansion of the investment horizon, the increase of the market volume and the improvement of the financial market efficiency.

The purpose of this study is to identify and evaluate the effects of insurance instruments in the expansion of the investment sector. The proposed objective will be achieved by developing various models and econometric tests, precisely to analyze this correlation in detail and to capture the economic significance of the models.

In order to achieve this purpose, we considered Romania's macroeconomic situation to analyze the actual potential of the insurance sector and then to formulate recommendations that emphasize the exuberance of the investment environment by using the insurance instruments in the process of increasing the total investments.

The research method involves both the analysis of the relevant reference studies in the economy literature on the well-known relationship between insurance and investment, as well as
the elaboration of econometric models that support the results identified in the first stage of the analysis.

The importance of the study’s results is given by the opportunity of formulating recommendations addressed to regulators regarding the use of insurance instruments in order to boost the investment.

2. Methodology of research

The approach of the case study is based on the analysis of the main relevant studies found in the literature referring to the relationship between the insurance and the real growth rate of the total investment. Thus, we considered to continue the analysis, by examining the impact of the insurance sector on total investments at macroeconomic level, a predominant indicator in the economic growth process.

The extensive number of specialized studies in the literature designed to end the debate on the influence of insurance in the economic growth process has determined the positive contribution made by the insurance sector at macroeconomic level (Cristea et al. (2014)). Another important aspect highlighted in the literature is the significant influence given by the economic development of the economy in determining the degree of development and diversification of the insurance sector.

While inside other developed countries insurance is a part of education, tradition or even life, there is a considerable discrepancy in Romania, the education of insurance being a difficult topic to integrate. Financial factors are another consideration that joins the unfavorable circumstances of the Romanian economy, as the supply is limited, reduced to the needs of the market and poor flexibility.

By using the same methodology as the one identified in the economists’ studies of Ul Din et al. (2017) and Sibindi (2014), we analyzed the causality between the four variables (see table no. 1), approaching the VAR and VECM model, along with the impulse-response function. The four data series were taken over for a period of 10 years (2008-2018) from Quarterly Market Reports published by the Romanian Financial Supervisory Authority (Life / Non-Life Insurance and Total Insurance) and Eurostat (growth rate of investments).

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gross written premiums - Life</td>
</tr>
<tr>
<td>2</td>
<td>Gross written premiums – Non - Life</td>
</tr>
<tr>
<td>3</td>
<td>Gross written premiums - Total</td>
</tr>
<tr>
<td>4</td>
<td>Total Investments</td>
</tr>
</tbody>
</table>

Source: Eurostat online database.

In order to model the four variables and to obtain the influence relationships between each insurance instrument and total investments, we will use the Eviews 7 program.

According to the reference study of the economist Sims (1980), VAR (vector - autoregressive) requires the author's intervention only by selecting the necessary variables to enter the model. Thus, we used a VAR model, but also VECs that allow VAR models to be rewritten as error correction models that allow separation of long-term relationships from short-term relationships in the data generation process. The long-term relationship, also referred to as a “cointegration relationship”, is associated with the economic dependence of variables, and short-term dynamics is the adjustment of the model to the long-term relationship.

The use of cointegration as a case study methodology is motivated by the need to represent the long-term causal relationships between insurance instruments and those in the investment
environment. Thus, the VAR and VEC models have the ability to highlight the dynamic structure of the four variables simultaneously (life insurance, general insurance, total insurance and real growth rate of total investments) and the effect it has on the shock system that acts on one of the variables.

Further, we will use the impulse-response functions to complete the analysis model, respectively by observing a synthetic image of the VAR model results. Thus, we propose to analyze how each variable reacts to its own shock or shock in the other variables.

3. The research results

In order to develop the econometric models, we considered time series with quarterly data for the period between Q1 2008 and Q1 2018, expressed in national currency. Thus, we analyzed the causal relationship between the growth rate of total investments and the growth rate of life, non-life and total insurance using the VAR and VECM model, impulse response and Granger, Johansen and Wald tests in Eviews.

To initiate the econometric analysis, we need to identify the orderly integration of the data series, and for this we will use the Augmented Dickey Fuller (ADF) test in order to obtain for all variables probability inferior to the significance statistical threshold of 5% for the first integration order, which means we accept this order for the entire set of variables. The fulfillment of this criterion allowed us to continue using the Johansen test to identify long-term relationships between the real growth rate of investments and that of each insurance instrument.

In order to develop the VAR / VECM models, as the case may be, it is necessary to determine the optimal number of lags for each analyzed model (investment - insurance instrument). Thus, we analyzed the number of lags and according to the specific criteria, respectively Likelihood Ratio (LR), Final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC) and Hannan-Quinn information criterion (HQ) and according to (table no 4.5) we chose lag 3.

<table>
<thead>
<tr>
<th>Source: own processing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table no. 2 – Final lag selection</td>
</tr>
<tr>
<td>LR</td>
</tr>
<tr>
<td>Romania</td>
</tr>
</tbody>
</table>

The next step was to run the Johansen test to identify the cointegration relationships between the selected variables. Thus, if we detect a linear stationary combination between the selected non-static variables, we can confine the co-integration of the so-grouped variables.

<table>
<thead>
<tr>
<th>Source: own processing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table no. 3 – Johansen Test results</td>
</tr>
<tr>
<td>GWP_Total</td>
</tr>
<tr>
<td>Romania</td>
</tr>
</tbody>
</table>

Therefore, (Table no. 3) indicates the results of the Johansen test, ie cointegration in all three models considered. This indicates the facility to respond to investments in the use of insurance as an instrument in the investment environment inside the economy of Romania.

The next step after the lag selection is to run the models by using VAR for data series pairs where we have not observed cointegration relationships, respectively rewriting them as VECM for cointegration, which also allow the verification of short-term relationships between variables.
After compiling the VECM econometric relations, we analyze the coefficients C(1) - the correction term for each of the three models to determine the nature of the causality between the variables.

Table no. 5 – Coefficients value

<table>
<thead>
<tr>
<th>Invest_GWP_Total</th>
<th>Invest_GWP_Life</th>
<th>Invest_GWP_Non_Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Romania</td>
<td>C(1)</td>
<td>-2.0893</td>
</tr>
<tr>
<td></td>
<td>Coef</td>
<td>0.0006</td>
</tr>
<tr>
<td></td>
<td>Prob</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-2.6970</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Source: own processing.

After the analysis of the results (table no. 5) for the estimated models, we can state that all three models drawn between the total investments in the economy and the insurance instruments have statistically significant negative coefficients and probabilities. Thus, we can confirm the presence of the long-term causality of each class of insurance over total investment.

Further, the results of applying the Wald test come in confirming and increasing the economic value of the econometric models’ results, by the presence of short-term causality in all investment - insurance instrument models. This conclusion is given by the probability of 0% which is valid, considering the statistical significance threshold of 5% which leads to the rejection of the null hypothesis, respectively C(5) = C(6) = C(7) = 0 ie accepting the short-term causality between insurance and investment instruments.

Table no. 6 – The results of the Wald test applied to investment – insurance models

<table>
<thead>
<tr>
<th>Invest_GWP_Total</th>
<th>Wald Test: System: Untitled</th>
<th>Test Statistic</th>
<th>Null Hypothesis: C(5)=C(6)=C(7)=0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prob</td>
<td>0.002</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Invest_GWP_Life</th>
<th>Wald Test: System: Untitled</th>
<th>Test Statistic</th>
<th>Null Hypothesis: C(5)=C(6)=C(7)=0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prob</td>
<td>0.0048</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Invest_GWP_Non_Life</th>
<th>Wald Test: System: Untitled</th>
<th>Test Statistic</th>
<th>Null Hypothesis: C(5)=C(6)=C(7)=0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prob</td>
<td>Prob</td>
<td>0.0025</td>
</tr>
</tbody>
</table>

Source: own processing.

In order to identify the way in which each variable manifests itself on the influences given by the opposite variable, we use the impulse-response functions. Thus, we propose to analyze how each variable reacts to its own shock or shock in the other variables.
According to (Figure no. 1), a positive impact of total insurance is manifested in total investments fluctuations, and total insurance responds similarly to the first figure in the case of a positive influence from the insurance sector but in this case the fluctuations are relatively smoother. This indicates the immediate but average response to investment growth as a result of the insurance environment progress, as compared to the even weaker insurance response to the development of the investment environment.

Further, we used the Granger test in order to explain the causal relationships between variables. In this respect, we have staged the series of data, ie the increase in investments and differentiated insurance instruments. Thus, we observe the unidirectional causal relations from non-life insurance to the expansion of the investment environment, ie from total investments to life insurance.

These results indicate both the major share of gross domestic product insurance and the preference of potential insured to contract non-life class insurance products. Thus, the positive impact of this class of insurance on the investment environment in Romania is explained, as opposed to the absence of statistically significant results for life insurance.

This hypothesis is also confirmed by the results of Patrick (1996), according to which in Romania there are both types of processes, respectively the "follow-up" and "demand-tracking".

An highly relevant aspect of the analysis of the results of the Granger causality test is given by the influence of investment on life insurance. This points to the beneficial impact that the expansion of entrepreneurship has on boosting the demand for life insurance, and later on the extension of this class of insurance in Romania, which may respond to the need to increase life insurance at a macroeconomic level.
In the case of Romania, we can conclude the causal reactions between investment growth and insurance, but the reaction response has proved to be of medium intensity, due to the reduced weight of this sector in GDP, the low degree of integration of this subject among the citizens, but also considering their financial capacity.

4. Conclusions

The unidirectional causal relationship between insurance and the increase of the total investments in Romania is also confirmed by the results of the study by author Cristea et al. (2014). However, the author asserts that the profile of a Romanian insured potential is defined and outlined by the Romanian society, by the factors that are directly related to the disposable income, the way of life, the level of knowledge, the civilization and also the culture.

An analysis of the results as a whole indicates the existence of causal relationships from non-life insurance to the expansion of the investment environment, ie from total investments to life insurance. Thus, the results of the Granger test recommend the use of non-life insurance in expanding the investment environment and, last but not least, the use of investments to boost life insurance.

In the case of Romania, although the unidirectional causal relationships between insurance and investment growth are supported by Johansen test results demonstrating long-term causality, coefficient values and the Wald test confirming short-term causality, the results of impulse-response indicates average fluctuations in investment growth driven by the impetus of insurance. Thus, we note the average response rate of growth of investments to the increase of gross written premiums and hence there is potentional of growth for the insurance sector to be developed in order to improve the expansion of the investment environment.

In addition, the significant number of unidirectional causal relationships between the increase in investments and the insurance instruments indicates the possibility of using them in order to increase the growth rate of the investment environment, but also the development opportunity that this sector presents in the macroeconomic context of a state.

By comparing the results obtained within this study with the reference papers identified in the economic literature, we obtained both the causal relationships from insurance to the increase in investments, such as the study by Ćurak et al. (2009). Besides, among the results of this study, there are also inverse causality relations from the growth rate of total investments to the insurance sector, which coincides with the results obtained within the research paper of author Ward et al. (2000).
Also, the unidirectional causal relationships from non-life insurances to investment growth confirm the "demand-follow-up" hypothesis, as demonstrated by the authors’ paper Abdul et al. (2014).
5. Bibliography