THE INCIDENCE OF INSURANCE ON ECONOMIC GROWTH IN ITALY, FRANCE, UNITED KINGDOM AND ROMANIA

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Abstract

This research paper is focused on an important topic in the economic literature, more precisely how the insurance sector impacts the overall economic growth. The objective of the study is to identify, analyse and evaluate the effects of the insurance sector on economic growth for three countries: France, United Kingdom and Italy, with data collected for the period 1984-2016 and also for Romania with data for 2008 - 2017. The results of the study proved to be important as they indicate the variation in the effects of insurance instruments due to the peculiarity of each economy and the way in which each economy responds to a positive impact from the insurance sector.

Keywords: DP; gross written premiums; cointegration; causality

JEL Classification: C32, G220, O410

1. Introduction

Insurance has an significant economic potential in the process of macroeconomic expanding of countries that represents an opportunity and this requires capitalization by the regulatory authorities. This study aims to identify and assess the effects of the insurance sector on economic growth. This approach will be achieved through an econometric model, which aims to assess the intensity and direction of influence of this economic branch.

In view of this analysis, the following countries are considered: France, United Kingdom, and Italy. State selection has as a starting point an article in the form of a Note issued by EIOPA (2018), which presents the ranking of countries in terms of gross non-life-to-GDP written premiums in the European Union for the second quarter of 2017, thus providing a homogeneous study group. In parallel with

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these emerging insurance countries, we will analyze Romania economy's situation, for which the data set is composed of quarterly data for the 2009-2015 period. In order to conduct the analysis, we used different econometric tests and methods to quantify the impact of the insurance industry on the entire economy. The results of the study are important, as they allow the formulation of proposals for guidance of insurance instruments in the direction of stimulating economic growth.

2. Literature Review

This research analyses the relationship between the activity of the insurance sector and the economic growth. Given that no consensus has so far been reached on this issue, as Sen (2007) developed in his research, it is important to continue analysing this correlation. In fact, so far this relationship has been analysed in many specialized studies in the economy, but this causal relationship is not clearly defined. On the one hand, researchers show that the development of the insurance sector is driving economic growth, and on the other hand, they indicate that the macroeconomic change of a state determines the expansion of the insurance market. So, despite the wide range of studies in the literature that tried to clarify the issues regarding the relationship between these two factors, this issue remains an opportunity that needs clarification.

Thus, Outreville (1990) and Outreville (1996) has shown that the rate of economic growth is characterized by the contribution of the insurance market in that economy. Further, he illustrated the importance of civil liability insurance and life insurance in the development of economies and their growth. In addition, Skipper (1997) concluded that insurance contributes to the economy through the following aspects: (i) promotes financial stability and reduces people's mistrust in the economy; (ii) has the capability to replace government security programs; (iii) facilitates economic exchanges; (iv) mobilizes economies; (v) leads to more efficient risk management; (vi) encourages the reduction of losses and (vii) facilitates the allocation of capital.

In the following period, Webb et al. (2002) illustrated how life and civil liability insurers can contribute to economic growth due to the following: (i) life insurance may increase productivity by reducing demand for liquidity and by making more efficient use of available

resources; (ii) civil liability insurers present an additional risk financing option, with the potential to reduce the likelihood of firm financial constraints and firm bankruptcy costs; this positively affects investment decisions in an economy; (iii) insurers have the potential to stimulate investment profits, reducing the costs of risk financing.

In addition, the factors that influence the development of the insurance sector vary according to each economy in particular in which this causality is studied. According to Zietz (2003), among the main factors that have been identified as determinants of insurance demand are: demographic, macroeconomic, social and psychological, institutional, as well as those derived from insurance companies.

3. Data and Methodology

The study approaches a way of analysing the causality between different types of insurance (gross written premiums for life, non-life and total insurance, noted gwp_life, gwp_non_life and gwp_total) and economic growth (noted gdp) at national level, through the VAR model, respectively the VECM model, as well as the impulse-response function.

The four data series were taken over for 32 years (1984-2016) from the official OECD database (life / non-life and total insurance) and Eurostat (GDP growth rate) for three states: France, Italy, United Kingdom and Romania. To model the four variables and to get the relationship of influence between each insurance instrument and economic growth, we will use the Eviews 7 program. The use of cointegration as a case study methodology is motivated by the need to represent long-term causal relationships between insurance instruments and economic growth.

4. Results

In order to analyse the cointegration of data series, we need to study the stationarity of the variables as well as the integration order. Using the Augmented Dickey Fuller test meets both conditions. Further, we will use the ADF test to determine the data series integration order used in the model, and the results of running this test indicate that all four time series are 1st order integrated. The next step is to check the cointegration of each of pairs surveyed, namely: growth rate of GDP and the growth rate of life / general and total life insurance.

Running the VAR model involves selecting the appropriate number of lags for each model, and this was done by considering the Likelihood Ratio, Final Prediction Error, Akaike information criterion, Schwarz information criterion and Hannan-Quinn information criterion.

The next step is to analyze the results of the Johansen Test to illustrate the long-term relationship between each pair of variables analysed, and for this it is necessary that the data series be non-static but also integrated by the same order, as evidenced by the results of the ADF test.

Johansen's test results indicate that there is a long-term relationship between growth of insurance and economic growth for all analysed countries: France, Italy and the UK. After lag selection, the patterns are run by using VAR for data series pairs where we have not observed cointegration relationships, respectively rewriting them as VECM for cointegration.

Table 1

VAR / VECM equations

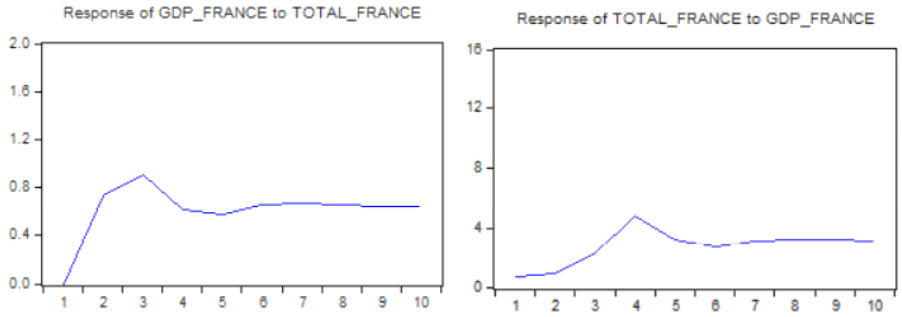
	gdp_gwp_life	**gdp_gwp_non_life**	**gdp_gwp_total**
France	D(GDP) = C(1)*(GDP(-1) + 1.41322393835*LIFE(-1) - 28.5794317956) + C(2)*D(GDP(-1)) + C(3)*D(GDP(-2)) + C(4)*D(LIFE(-1)) + C(5)*D(LIFE\(-2)) + C(6)	D(GDP) = C(1)*(GDP(-1) - 21.0413866862*NON_LIFE(-1) + 126.325873193) + C(2)*D(GDP(-1)) + C(3)*D(GDP(-2)) + C(4)*D(NON_LIFE(-1)) + C(5)*D(NON_LIFE(-2)) + C(6)	D(GDP) = C(1)*(GDP(-1) - 0.184491870117*TOTAL(-1) - 2.0644111883) + C(2)*D(GDP(-1)) + C(3)*D(GDP(-2)) + C(4)*D(TOTAL(-1)) + C(5)*D(TOTAL(-2)) + C(6)
Italy	D(GDP) = C(1)*(GDP(-1) - 0.282112720018*LIFE(-1) + 0.275915048397) + C(2)*D(GDP(-1)) + C(3)*D(GDP-2)) + C(4)*D(GDP(-3)) + C(5)*D(LIFE(-1)) + C(6)*D(LIFE(-2)) + C(7)*D(LIFE(-3)) + C(8)	D(GDP) = C(1)*(GDP(-1) - 0.472710361959*NON_LIFE(-1) - 1.70986559566) + C(2)*D(GDP(-1)) + C(3)*D(GDP(-2)) + C(4)*D(GDP(-3)) + C(5)*D(NON_LIFE(-1)) + C(6)*D(NON_LIFE(-2)) + C(7)*D(NON_LIFE-3)) + C(8)	D(TOTAL) = C(1)*(TOTAL(-1) - 2.28998848265*GDP(-1) - 0.453527355766) + C(2)*D(TOTAL(-1)) + C(3)*D(TOTAL(-2)) + C(4)*D(TOTAL(-3)) + C(5)*D(GDP(-1)) + C(6)*D(GDP(-2)) + C(7)*D(GDP(-3)) + C(8)
United Kingdom	D(GDP) = C(1)*(GDP(-1) - 0.240211592908*LIFE(-1) - 2.11951284532) + C(2)*D(GDP(-1)) + C(3)*D(LIFE(-1)) + C(4)	D(GDP) = C(1)*(GDP(-1) - 0.418725079175*NON_LIFE(-1) - 3.72587805956) + C(2)*D(GDP(-1)) + C(3)*D(NON_LIFE(-1)) + C(4)	D(TOTAL) = C(1)*(TOTAL(-1) - 2.52061152216*GDP(-1) - 10.5768996808) + C(2)*D(TOTAL(-1)) + C(3)*D(GDP(-1)) + C(4)

Source: Authors' work

For France, the first C(1) negative coefficient (-0.4930) with a significant probability (0.0242), indicates the existence of a causal relationship between the insurance sector and economic growth.. The coefficients obtained for the models ran for Italy determine that we can state the presence of causality from insurance to macroeconomic growth in the long run. With respect to UK models, we have obtained the causality of insurance on long-term economic growth.

Figure 1

Impulse – response function for France

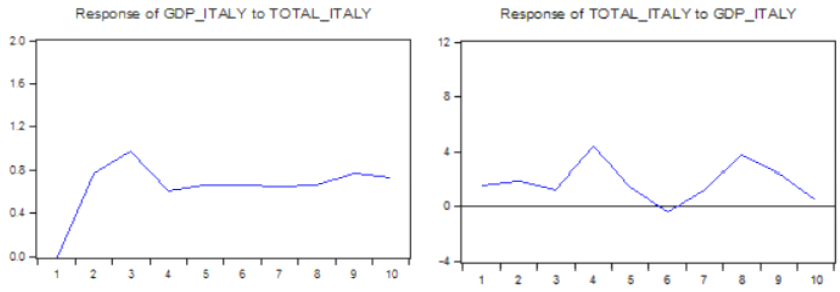


Source: Authors' work

For France, the graphs are similar; in the first case, the positive impact of insurance on the growth rate of GDP determines an accelerated increase in macroeconomic progress in the first periods so that the trend is kept constant and also an impulse given by total insurance leads to a positive influence of economic growth.

Figure 2

Impulse – response function for Italy

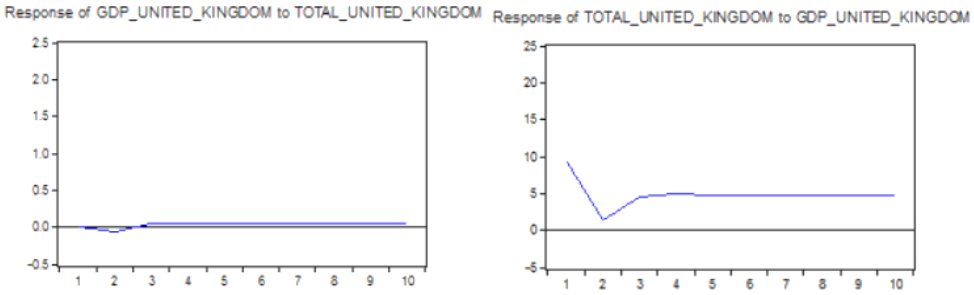


Source: Authors' work

In the case of the model drawn up for Italy, the similarity of the economic growth reaction in response to a positive influence of insurance is observed as in the case of France. Instead, we can observe the fluctuations in the growth rate of insurance as a response to the positive contribution of economic growth.

Figure 3

Impulse – response function for United Kingdom



Source: Authors' work

The impulse - response functions show that the growth rate is most strongly influenced by the growth of the insurance sector in the case of the French and Italian economies. The analysis of Granger test indicates the highest causality between economic growth and the growth of insurance instruments for the Italian economy.

Table 2

Selection of statistically significant results of the Granger test

	Null hypothesis	Prob
France	GDP does not Granger Cause LIFE	**0.0285**
Italy	GDP does not Granger Cause NON_LIFE	**0.0009**
	LIFE does not Granger Cause GDP	**0.0221**
	DGDP does not Granger Cause LIFE	**0.0007**
	DGDP does not Granger Cause TOTAL	**0.0006**

Source: Authors' work

We note the lack of favourable outcomes for the UK, for which we have not identified causal relationships between the growth rate of GDP and that of insurance. In order to achieve the econometric study for Romania, we considered time series with quarterly data for the period between Q1 2008 and Q3 2017,

denominated in national currency. Thus, we analysed the causal relationship between the growth rate of GDP and the growth rate of life, non-life and total life insurance using the VAR and VECM model, impulse response and Granger, Johansen, and Wald tests in Eviews.

Therefore, the results of the Johansen test indicate cointegration in all three models considered. This indicates the economic growth response to the use of insurance as an instrument in the development process of Romania. We will further use VECM models for all models considering the long-term relationship between growth and the growth of overall and total life insurance.

Table 3

VECM equations

	gdp_gwp_life	**gdp_gwp_non_life**	**gdp_gwp_total**
Romania	D(GDP) = C(9)*(LIFE(-1) + 9.0581695627*GDP(-1) - 10.8060604241) + C(10)*D(LIFE(-1)) + C(11)*D(GDP(-1)) + C(12)*D(LIFE(-2)) + C(13)*D(GDP(-2)) + C(14)*D(LIFE(-3)) + C(15)*D(GDP(-3)) + C(16)	D(GDP) = C(1)*(GDP(-1) - 0.944460466777*NON_LIFE(-1) + 27.0653145117) + C(2)*D(GDP(-1)) + C(3)*D(NON_LIFE(-1)) + C(4)*D(GDP(-2)) + C(5)*D(NON_LIFE(-2)) + C(6)*D(GDP(-3)) + C(7)*D(NON_LIFE(-3)) + C(8)	D(GDP) = C(9)*(TOTAL(-1) - 0.229255173643*GDP(-1) - 23.4499765191) + C(10)*D(TOTAL(-1)) + C(11)*D(GDP(-1)) + C(12)*D(TOTAL(-2)) + C(13)*D(GDP(-2)) + C(14)*D(TOTAL(-3)) + C(15)*D(GDP(-3)) + C(16)

Source: Authors' work

After compiling the VECM equations, we analyse the coefficients C(1) - the correction term for each of the three models to determine the nature of the causality between the variables.

Table 4

Coefficients values

		gdp_gwp_life		**gdp_gwp_non_life**		**gdp_gwp_total**	
		Coef	**Prob**	**Coef**	**Prob**	**Coef**	**Prob**
Romania	**C(1)**	-0.3710	0.3689	0.0281	0.4491	**-2.0022**	**0.0011**

Source: Authors' work

From the observation of the results of Table 4 for the estimated models, we can confirm the presence of long-term causality given by total insurance on economic growth. The results of applying the Wald test for the three estimated models indicate the presence of short - term causality only in the gdp – gwp life model.

Table 5

Results of Wald test for gdp_gwp_life model

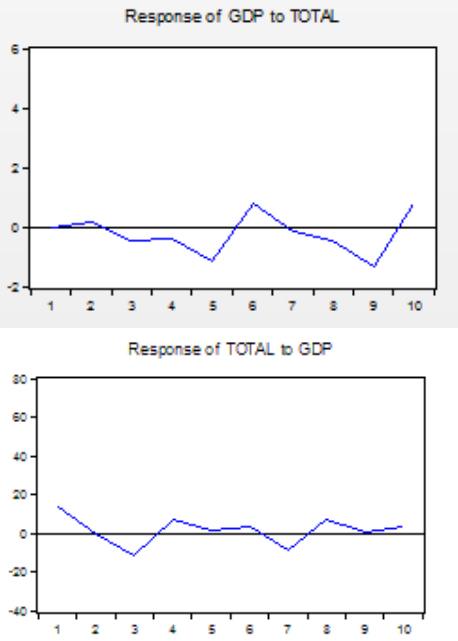
gdp_gwp_life	Prob
Chi-square	**0.0000**
Null Hypothesis: **C(5)=C(6)=C(7)=0**	

Source: Authors' work

In order to identify the model in which each variable is manifested by the influences of the opposite variable, we use the impulse-response functions.

Figure 4

Impulse – response function for Romania



Source: Authors' work

According to Figure 4, a positive impact of total insurance is reflected in low growth rates, and total insurance responds similarly to the first chart in the case of a positive influence of insurance, but the fluctuations are of low intensity.

Table 6

Results of Granger test for Romania

	Null hypothesis	Prob
Romania	NON_LIFE does not Granger Cause GDP	0.0006
	GDP does not Granger Cause NON_LIFE	0.0038
	TOTAL does not Granger Cause GDP	0.0004
	GDP does not Granger Cause TOTAL	0.0019

Source: Authors' work

Thus, we observe the bidirectional causal relations between general insurance and economic growth, respectively between total insurances and economic growth in case of Romania.

5. Conclusions

The analysis of the entire set of results for all four states included in the study indicates the causal relationship between insurance and economic growth. Thus, in France we have causal relations from economic growth to insurance, we have not achieved a relationship of cointegration in the UK, and in Italy and Romania we have achieved bidirectional causality.

The bidirectional causal relationship between insurance and economic growth in Romania is also confirmed by the results of the study by 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 the culture.

In the case of Romania, although the bidirectional causal relationship between insurance and economic growth is supported by the results of the Johansen test which demonstrated long-term causality and the Wald test confirming short-term causality, the results of impulse-response functions indicate low fluctuations in growth of GDP from the impacts of insurance.

It is further recommended to support strategies that are designed to strengthen the regulatory framework for insurance operations. It is also recommended to promote educational programs aimed at dispersing the benefits of insurance and focusing consumer

interest on insurance should be in the attention of both the government and the regulatory bodies.

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