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The Relationship Between Insurance and Economic Growth

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ABSTRACT

Insurance business has several important functions within the economic structure such as providing insurance through the premiums collected by the insurance companies against the risks for the economic structure, managing these premiums collected through using the financial institutional role, risk management and transfer of the premiums into productive areas. While continuing on its activities, insurance business also enhances the economic development. In this study, a research on the relationship between insurance business and economic growth was conducted by using the data from 36 countries from the period between the years 1985-2018. Results of the panel causality test introduced by Dumitrescu and Hurlin (2012) indicated that there is a mutual causality between life insurance business and economic growth & a one-way causality from economic growth to the non-life insurance business. These results bring the conclusions that rather than the non-life insurance business, life insurance business brings contributes more to the economic growth with the long term and regular resources that it provides.

INTRODUCTION

Insurance business; is the business where people, institutions and corporations transfer various risks to a corporation which has acquired this as a proficiency in exchange with premiums and a defined time period, and in cases where a damage happens, these insurance corporations undertaking the responsibility to reimburse the damages and losses (Kirkbesoğlu, 2014). In the literature, regarding the relationship between the economic development and financial sector, banking sector and stock markets are mostly used, and on behalf of the financial development, the relationship between financial devel-

opment and economic development by using the banking sector and stock markets. Even if it was defined by the United Nations Conference on Trade and Development (UNCTAD) in 1964 that the main elements of economic development are strong national insurance business and reassurance markets (United Nations Conference on Trade and Development (UNCTAD), 1964), insurance business which is a part of the financial sector did not take place as much in these studies.

According to H. Skipper (1997), the role of insurance business in the economic growth can be examined under a number of topics: (1) increasing financial stability and decreasing concerns, (2) benefits provided by the governments, especially life insurances, being in place, (3) making trading life easier, (4) increasing financial savings through life insurance policies, (5) contributing to the financial intermediation's development, (6) providing a more efficient risk management, (7) decreasing losses and enabling them to be prevented, (8) enabling a more efficient capital distribution. D. Ward and R. Zurbruegg, (2000) on the other hand, divided the contributions of the insurance business to the economic structure under two main topics which are (1) risk transfer and benefits from the insurance reimbursement and (2) benefits from the insurance business as a financial intermediator.

Insurance business is about promoting the economic development by enabling a more efficient risk management by using the business itself as a financial intermediator as well as a risk transferring and reimbursing tool. Insurance business encourages the capital accumulations and enabling savings being channeled into productive investments (Arena, 2008). Insurance business exercises risk transfer. Risks that appear as a result of the activities of people, entrepreneurs, investors and firms on the economic platform are transferred to the insurance company through underwriting. By this way, concerns about the possible losses and damages to the companies that could occur because of the risks are eliminated and companies focusing on their main activities, their jobs and staying motivated can be made possible. Insurance companies collect insurance premiums through the policies they operate, and these capitals accumulated can be transferred into investments through markets.

Capitals collected from premiums firstly are directed to financial tools and stock markets, they cause the increase of the market volume, and then they are directed into the real investments in the financial markets. Insurance business is important in terms of the development of the banking sector. Insurance business will increase the trade between countries and makes it possible for them to provide more income from the international trade (Chang et al., 2014). Compared to the national trade, international trade brings more risks to the parties. Insurance business, through transferring the international trade's risks to itself, becomes a trust element for the exporters and importers and works for the international trade to be conducted on healthier and safer conditions.

Insurance business enables the savings to increase. Especially related to the development of the life insurance business, creation of more life insurance premiums end up at the increase of savings. Life insurances, when compared to the non-life insurances, are more useful while transferring the long-term capitals to the financial markets. This is why life insurances have a greater importance for the economic development when compared to the non-life insurances (Chang and Lee, 2012). Life insurances decrease the requests for liquidities in forms of money and durable goods, and makes it possible to transfer savings into more productive assets. Life insurances make it possible to transfer relatively non-productive assets such as hard cash and jewelry into more productive assets. Property/responsibility insurances decrease the possibility of financial depression, bankruptcy and liquidation in cases of losses that could occur because of disasters. In addition to that, if insurance brokers decrease the risk financing costs, their expected profits from investment projects increase (Webb et al., 2017).

Insurance business is a requirement of a stable and sustainable economy. Types and sizes of risks around the world are increasing. All of the financial, operational, strategic risks that companies face increase. Insurance business makes it possible to manage the risks that occur, to take the responsibility for them and transferring them, making economies more stable by taking responsibilities and letting the business world continue its activities in a more sustainable way. Insurance business is a complementary sector for the business world. While the dynamic business world keeps conducting its activities, it needs the help of several sectors. Banking, accounting, law (attorneyship) and such services help the business world to keep conducting its activities. Insurance business is a complementary sector just like the ones

mentioned. This is why changes in the economic activities' sizes and volumes might cause the business volume of the insurance business change as well.

Development of the insurance markets has an important role for the economic growth just like the banking sector and stock markets (Chang and Lee, 2012).This is why insurance companies act as financial intermediators and provide services for transferring the savings into the real economy. About this, (Boon, 2005) has studied on the benefits of the insurance business on the economic growth along with the banking and stock markets. Insurance sector increases the efficiency of the financial system through decreasing the transaction costs, providing liquidity and scale economy for investments. Life insurances and individual annuity insurances, especially for the developing economies and unlike the banks that provide short-term credits, makes significant contributions to the economy of the country with its long-term capitals (Kirkbesoğlu, 2014). In this study, the relationship between the economic growth and insurance business which plays a role on the transfer of the financial resources that it collects as a financial intermediator to the real economy are tried to be examined.

1. RELATED LITERATURE REVIEW

There are a variety of views regarding the relationship between economic development and insurance business. These can be grouped generally as; (1) insurance business causes economic growth, (2) economic development affects the development of the insurance business and (3) developments in the insurance business and economic development are mutually influential. As most of the studies in the literature which are generally examining the relationship between insurance business and economic development, some other studies expanded the relationships with economic development and insurance business by including several different elements (Han et al., 2010), (Chang and Lee, 2012) and (Lee et al., 2013), in their studies, divided their studying variables into two as developing and developed countries (Chang ana Lee, 2012) and (Lee, 2016) in their studies, examined the institutional development levels and relationships between insurance business and economic growth. While (Chang and Lee, 2012) studies the non-linear relationship between the insurance business and economic growth (Olayungbo, 2015) conducted a research by including the asymmetrical causality within the relationship between insurance business and economic growth. In the literature, insurance premiums, life and non-life insurance premiums are taken as representing the insurance business and the rate of these values to the GNP are used as variables. Among the methods that are used in research, causality tests and co-integration tests stand out.

In the study conducted by (Beenstock, 1988), the cross-section data obtained from 12 industrialized country samples from 1970-1981 period and data from 45 countries from the year 1981 were used and they examined the relationship between incomes and liability insurance expenses. The results indicate that liability insurances as outstanding products are represented in the economic growth. J. Outreville (1990 and 1996), C. Lee et al. (2013) and R. Sawadogo et al. (2018), in their studies, examined the relationship between economic growth and insurance business by dividing country samples in accordance with their development levels. Outreville (1990) has studied the relationship between economic and financial development and the liability-wealth insurances on the basis of 55 country samples. At the end of the study, it was found that there is a very significant and positive relationship between insurance requests and financial development, and it was found out that growth rate and financial development level are explained by the liability insurance development level. About the same subject, in another study which was conducted by Outreville in 1996, the relationship between the life insurance sector development and financial development on the basis of samples of 48 developing countries, a significant degree of relationship between the life insurance development and country's financial development level and additionally, it was found out that monopolistic markets affect life insurance sector in a negative way.

Lee et al. (2013) with the panel data they obtained from 41 countries in three different income groups, studied the relationship between life insurance activities and economic growth. Co-integration analysis results indicated that development of life insurance and economic development have both short and long term relationships, panel causality results indicated that life insurance premiums and economic growth have a mutual causality relationship, and regression analysis results indicated that life insurance

premiums have a significantly positive impact on the economic growth (Sawadogo, 2018) studied the impacts of the life insurance business on the economic growth by using the samples from 86 developing countries in years between 1996-2011, and they found out that life insurance business contributes to the economic growth. M. Kugler and R. Ofoghi (2005), H. Nejad and Kermani (2012), M. Cristea et al. (2014), and T. Akinlo (2013) in their studies, studied the relationship between the economic growth and insurance business by using samples from a single country. Kugler and Ofoghi (2005) used the sample of England between years 1966 - 2003, used the Granger causality and Johansen co-integration tests and found out long term relationships between the developments in the insurance market size and the economic growth (Nejad, 2012) studied the existence of the causal relationship between the insurance sector development and economic growth in Iran for years between 1960-2010. While there was no co-integration relationship between the variables, one-way Granger causality relationship was found from the insurance development to the economic growth.

M. Cristea et al. (2014) used the data from the period of 1997-2012 and studied the relationship between the economic growth and insurance in Romania. As a result, it was found out that there is a high correlation from the causal relationship between the insurance sector and economic growth. T. Akinlo (2013) studied the causal relationship between the insurance business and economic growth in the period between 1986 - 2010. Co-integration test results indicate that there is a relationship in the long-term between the economic growth, insurance premiums, inflation and interest rates, however, Granger causality test results found no causal relationship between the insurance premiums and economic growth. In a number of studies related to the subject, groups of countries such as OECD and European Union countries are taken as the basis and the relationship between two variables are studied (Ward and Zurbruegg, 2000) examined the relationship between the economic growth and the growth in the insurance business for short and long terms for 9 OECD countries in the time period between 1961-1996. It was seen that there is a long-term relationship between the insurance business industry and the economic growth, and in some countries, it was found that insurance industry is the Granger cause of the economic growth.

T. Chang et al. (2014), with the data obtained from 10 OECD member countries in the time period between 1979-2006, examined that whether the insurance business encourages the economic growth or not by using the Granger causality test. The findings obtained indicate that there is one-way Granger causality from all insurance activities to the economic growth in France, Japan, the Netherlands, Switzerland and England; and the economic growth is the Granger cause of the insurance business in the USA, Canada and Italy (for total and non-life insurances). When the two-way Granger causality was found in the USA for life insurance and the economic growth, in Belgium (for all insurances), in Canada (for total and non-life insurances), in Italy (for non-life insurances) and in Sweden (for life insurances) no causality was found between the insurance business and the economic growth (Demirci and Zeren, 2017) with the data obtained from 13 OECD countries in the time period between 1983-2011, studied the insurance premiums per person and GNP per person by using the Emirmahmutoglu-Kose panel causality. In France, Spain, Iceland and Italy, panel causality from insurance premiums to the GNP was found.

S. Dash et al. (2018) in the study they conducted for 19 Eurozone samples from the years between 1980-2014, found out that there is both one-way and mutual causality relationship between the economic growth and insurance business. V. Peleckiene et al. (2019) on the other hand, by using the data from years between 2004-2015 for the European Union member states, studied the causality relationship. As a result of the causality tests, the Netherlands, Malta and Estonia had from insurance business to the economic growth; Luxembourg and Finland had from economic growth to the insurance business and Austria had mutual causality. K. Safitri (2019) had studied the impacts of the insurance business on the economic growth by taking samples from 6 ASEAN member countries within the years between 2005-2015. Results indicate that life and non-life insurance premium volumes affect the economic growth positively and also life insurance penetration and density effects on economic growth while non-life insurance penetration and density are not for economic growth. In some studies, besides the insurance business, banking sector is also taken into consideration and the relationship between financial sector and growth are studied. T. Boon (2005) examined the impacts of the trade banking, stock markets and insurance markets on the economic growth by using the Singapore sample. Trade banking credits, stock markets capitalization, total insurance capitals and growth have co-integration; there is both short term

and long-term causality from banking to the growth, and there is a long-term causality from the insurance business to the growth. M. Adams and J. Andersson (2019) explained the relationship between trade banking credits, insurance and economic growth by using the data obtained from Sweden form the years between 1830-1998 by using series and Granger causality test. Results indicate that insurance business is the Granger cause of the economic growth and the banking credits, and this is why insurance business is an important factor while encouraging the economic growth. Kaushal (2018), by using the yearly data from India between the years 1950-2016, found out that there is a long-term relationship between variables of relationships between the banking, insurance business and economic growth, while seeing a causality from economic growth to the insurance business, which is demand-pursuant, and it was seen that there is a mutual causality relationship in the period after liberalization.

M. Arena (2008) and Han et al. (2010) in their studies, examined the subject with dynamic panel data method (GMM). Arena (2008) with the data obtained from 55 countries within the period between 1976-2004, conducted a dynamic panel data analysis and studied whether there is a causality relationship between life and non-life insurance market activities and the economic growth. Results indicated that both life and non-life insurance business have significant and positive causal impacts on the economic growth. Han et al. (2010) with the panel data set obtained from 77 countries within the period between 1994-2005, conducted a dynamic panel data analysis and studied the relationship between the economic growth and the development of the insurance business. Results indicate that the development of insurance business and the economic growth have a positively interrelated relationship. Also, it was indicated that insurance business that include the life and non-life insurance businesses is more important for the developing countries than for the developed countries, and non-life insurance business has a great importance for developing economies. Chang and Lee (2012) and D. Olayungbo (2015) studied the non-linear relationship between the insurance business and economic growth. (Chang and Lee, 2012), by using the data obtained from 92 countries within the period between 1996-20018, conducted analyses and studied the non-linear relationship between the life insurance and the economic growth. Results indicated that there is a positive correlation between the national income and life insurance policies, and this relationship is more often seen in countries with high income rather than the ones with low income, and legal and political conditions affect life insurance activities in low income countries. Olayungbo (2015) stated that studies on the relationship between insurance business and the economic growth indicate different results, and they explain the linear causality between the insurance business and the economic growth. This is why Olayungbo (2015) tried to contribute to the literature by trying to explain the asymmetrical causality between the insurance business and the economic growth by using their own study. As a result of the study conducted with the data obtained from Nigeria from the years between 1976-2010, it was seen that in the long-term, there is a strong relationship between high growth and low insurance business.

P. Haiss and K. Sümegi, K (2008) studied the impact of insurance premiums and insurance investments on the economic growth with the panel data obtained from 29 European Union member countries from the period between 1992-2005. In 15 member countries, the positive impact of life insurance on the economic growth is observed. In new member countries from the Central and Eastern Europe, a higher impact was seen for the liability insurances. Results indicated that in the insurance business-growth relationship, the interest rate and the economic growth rate impact is important.

C. Lee (2016) by applying the dynamic panel threshold model, studied how the institutional environment shapes the relationship between the insurance and economic growth. After the assessment of the institutional, political, economic and legal environment, in the rather unhealthy institutional environment, a negative relationship was found between the life insurance and the economic growth. It was seen that after a certain level or a threshold is achieved in the institutional quality, this negative impact becomes unimportant. The results that come out of the study are moral danger, reverse selections, risk taking behavior and macroeconomic fluctuation.

2. ECONOMETRICAL METHOD AND EMPIRICAL RESULTS

In this study, the relationship between insurance business and economic growth is examined. Growth rate in the life insurance premiums (GLIFE) and non-life insurance premiums (GNONLIFE) are used to represent the insurance business. While representing the economic growth, GDP increase rate (GGDP) is used (Table 1). Study variables consist the period between 1985-2018 and 36[11] countries. Data are obtained from Swiss Re Institute Sigma.

Table 1: Variables

Variables	*Explanation*
GLIFE	Real Growth of Direct Premiums Life
GNONLIFE	Real Growth of Direct Premiums None-Life
GGDP	Annual Percentage Growth Rate of GDP

In order to examine the relationship between the economic growth and insurance premiums, causality test introduced by Hurlin and Dumitrescu (2012, 2011) was used. This method is developed on the need of all variables' integrated levels being I (0). Orders of stationarity of the variables are examined with the Lagrange Multiplier (LM) panel unit root test introduced by Im, Lee and Tieslau (2010). For the cases where cross-section units getting influenced by the same kind of shock, independence of cross sections will not be realistic. This is why the unit root tests at the panel data are divided into two groups: first generation tests that ignore the dependency between the units and second generation tests that include this dependency within the test process. This differentiation must be also exercised in the context of causality. Before beginning the unit root test, the cross-section dependency of the series must be studied. Firstly, the existing cross section tests in the literature are explained.

2.1 Cross Section Dependency Tests

The increasing integration between the countries and the financial assets cause a correlation between the cross-section units. This is why these units react to the common shocks and common unobservable factors in similar ways. Before applying unit root test, cross-section dependence must be examined. The first test introduced in the literature is the LM test introduced by (Breusch and Pagan, 1980) and the test statistics are as below.

$$LM = T\left(\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\hat{\rho}_{i,j}\right)$$

Here $\hat{\rho}_{i,j}$, shows the double correlation between the units. In cases under the absence hypothesis where there is no cross-section dependency, N is constant and T→ goes, LM statistics, with the degree of freedom N(N-1)/2, has the chi-square distribution. If N is high and T is finite, this test indicated the size skewness at a great extent. When T is finite and N is getting higher, this test's skewness also increases. The test where this problem is solved has been proposed by M. Peseran (2004) as the CD test and it is as provided below.

$$LM_{CD} = \sqrt{\frac{2T}{N(N-1)}}\left(\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\hat{\rho}_{i,j}\right)$$

This test statistic has normal dispersion. In cases where N and T are constant, in the panel models that are heterogeneous, non-constant and dynamic model classes, the average of this test is zero. However, this test, is not strong when the average double correlations are zero for the universe. Pesaran et al. (2008) proposed a LM test that deviation is corrected by using the exact average and variant of the

[11] These countries are Canada, United States, Argentina, Brazil, Chile, Colombia, Panama, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Spain, Sweden, Switzerland, Turkey, United Kingdom, Japan, Israel, China, India, Indonesia, Malaysia, Pakistan, Philippines, Singapore, South Korea, Egypt, Nigeria, South Africa, Australia, New Zealand.

LM test statistics. In cases where LM test is inconsistent, it was showed that the test which the deviation was corrected shows the consistent results. The test statistics are as below.

$$LM_{adj} = \sqrt{\frac{2}{N(N-1)}} \sum_{i=1}^{N} \quad \sum_{j=i+1}^{N} \quad \rho_{ij}^2 \frac{(T-K-1)(\hat{\rho}_{ij}-\hat{\mu}_{Tij})}{v_{Tij}}$$

μ_{Tij} and v_{Tij}^2 , in the same order, show the exact average and variant of $(T-k)\hat{\rho}_{ij}^2$. Under the zero hypothesis, $T \to \infty$ and $N \to \infty$, LM_{adj} test has asymptotically standard normal dispersion.
Cross-section dependence test results are explained in the Table 2.

Table 2: The Results of Cross-Section Dependence Test for Variables

	GLIFE	*GNONLIFE*	*GGDP*
LM	1301.7 (0.000)	1132.3 (0.000)	2733 (0.000)
LM_{CD}	-18.5 (0.000)	14.29 (0.000)	34.13 (0.000)
LM_{adj}	17.36 (0.000)	12.59 (0.000)	57.70 (0.000)

As it can be seen, there is a cross-section dependency problem in every variable related to the whole country group. This is why, the existence of the root must be studied by using the second generation root test.

2.2 Panel Unit Root Test

In this study, Lagrange multiplier (LM) based unit root test for panel data introduced by Im, Lee and Tieslau (2010) was used. For each cross-section unit slope and every intercept term, heterogeneous structural fractions are possible (for heterogeneous structural breaks in both the intercept *and* slope of each cross-section unit in the panel). At the same time, this test considers the cross-section dependency problem. This test was developed by using the regression equation below.

$$\Delta y_{i,t} = \delta_t' \Delta Z_{i,t} + \phi_i \tilde{S}_{i,t-1}^* + \sum_{j=1}^{k} d_{ij} \Delta \tilde{S}_{,it-J} + e_{it} \, , i = 1,..,N \qquad (1)$$

Z_t are the variables which include deterministic terms.It is as provided below for each i. unit for the shapes that include fractions both at the level and at the trend.

$$Z_t = [1, t, D_t, DT_t^*]$$

For multifractionstatus, it is defined as below.

$$Z_t = [1, t, D_{1t}, .., D_{Rt}, DT_{1t}^*, .., DT_{Rt}^*] \, ,$$

Here, $D_{jt} = 1$ for $t \geq T_{Bj+1}, j = 1$ and $DT_{jt}^* = t - T_{Bj}$ for $t \geq T_{Bj+1}$.

Other terms in the Equation (1) are, for every i.unit,$\tilde{S}_t = y_t - \tilde{\psi} - Z_t\tilde{\delta}$. $\tilde{\delta}$ is the coefficient in the regression of Δy_t on ΔZ_t, and $\tilde{\psi}$ is the restricted MLE of ψ. In addition,$\Delta \tilde{S}_{,it-J}$term is the correct term for serial correlation problem. Error term (1) for the problem of cross-section dependence (1) has a single – factor structure, just as below.

$$e_{it} = \gamma_i f_i + u_i \qquad (2)$$

Where f_i is the unobserved common effect. Pesaran's (2007) CADF procedurewas applied,as for the factor, cross-section averages of lagged levels and first-differences of the individual series were used.

For unit root test, zero and alternative hypothesis is as provided below, according to the Equation (1):

$H_0: \phi_i = 0$ for all i

$H_1: \phi_i < 0$, for some i.

In order to show the t test statistics for $\widetilde{\tau_i^*}$, zero hypothesis, complete statistics for whole panel is as provided below.

$$\underline{t} = \frac{1}{N}\sum_{i=1}^{N} \quad \tilde{\tau}_i^*$$

This test statistic is not related to the location of the friction. This is why for different fraction locations variance values are not necessary. The panel LM statistic below has standard normal dispersion.

$$LM(\tilde{\tau}^*) = \frac{\sqrt{N}[\underline{t} - \tilde{E}(\underline{t})]}{\sqrt{\tilde{V}(\underline{t})}}$$

where $\tilde{E}(\underline{t})$ and $\tilde{V}(\underline{t})$ are the estimated values of the avarage of means and variances of $\underline{t}$, say E$(\underline{t})$ and Var$(\underline{t})$. Breaks and truncation lags in diffrent cross-section units.

Results for all series are given below in the Table 3.

Table 3: The Results of Panel Unit Root Test

Variables	*GLIFE*	*GNONLIFE*	*GGDP*
Test Statistics and p-value	-3.387 (0.000)	-4.455 (0.000)	-4.662 (0.000)

Note: In-parenthesis values are p-values.

According to the results in the Table 3, the hypotheses of not being constant under the zero hypothesis is rejected. It is seen that all series are constant at the level. After this stage, the causality test introduced by Dumitrescu and Hurlin (2012) which finds the causality relationship between the constant series was used.

2.3 Causality Test

In this paper, we study the panel causality test introduced by (Dumitrescu and Hurlin, 2012). This test is a simple version of the Granger (1969) non-causality test for heterogeneous panel data models with fixed coefficients. *x* and *y* are two covariance stationary variables observed for *N* individuals in *T* periods.

For$i = 1, .., N,$ at time $t = 1, .., T,$ the linear model below was used.

$$y_{i,t} = a_{i,t} + \sum_{k=1}^{K} \quad Y_i^{(k)} y_{i,t-k} + \sum_{k-1}^{K} \quad \beta_i^{(k)} x_{i,t-k} + e_{i,t}$$

Here,$\beta_i = \left(\beta_i^{(1)}, \ldots, \beta_i^{(K)}\right)'$Individual impacts'$\alpha_i$ is considered as constant. $\gamma_i^{(k)}$ ve $\beta_i^{(k)}$ coefficients are considered as changing through countries.So, the constant unit as the constant coefficients model as Number (1) equation can be identified. Error term is$e_{i,t}$ are $i.i.d.(0, \sigma_{e,i}^2)$.

In this heterogeneous panel model, we propose to test the Homogenous Non-Causality (HNC) hypothesis as follows:

$H_0: \beta_i = 0 \quad \forall i = 1, .. N$

Under the alternative hypothesis, there is a causality relationship from x to y for at least one unit.

$H_1: \quad \beta_i = 0 \quad \forall_i = 1, .., N_1$

$\beta_i \neq 0 \quad \forall_i = N_1 + 1, N_1 + 2, \ldots, N$

Also, $N_1 < N$, it is assumed that there is no causality for the individual process. Here, since N_1 is unknown it is assumed that $0 < N_1/N <$1 condition is ensured. Test statistics is the average of the individual Wald statistics.

$$W_{N,T}^{Hnc} = \frac{1}{N}\sum_{i=1}^{N} W_{i,T}$$

$W_{i,T}$, $H_0: \beta_i = 0$ is the individual Wald statistics for the i. country under the zero hypothesis. Under the null hypothesis of non-causality, each individual Wald statistic converges to a chi-squared distribution. With K degrees of freedom for $T \to \infty$.

N and T tends to infinity, standardized statistic is here

$$Z_{N,T}^{Hnc} = \sqrt{\frac{N}{2K}}\left(W_{N,T}^{Hnc} - K\right) \to N(0,1)$$

When T is small, average Wald statistics' $W_{N,T}^{Hnc}$ formula's nearly standardized statistics are as provided below.

$$\tilde{Z}_{N,T}^{Hnc} = \frac{\left[Z_{N,T}^{Hnc} - N^{-1}\sum_{i=1}^{N} E(W_{i,T})\right]}{\sqrt{N^{-1}\sum_{i=1}^{N} Var(W_{i,T})}} \to N(0,1)$$

Results of the causality relationship between the variables is given in the Table 4.

Table 4: The Results of Causality Test

	GLIFE to GDP	*GGDP to LIFE*	*GNONLIFE to GGDP*	*GGDP to GNONLIFE*
W_{HNC}	2.553	1.979	15.006	2.386
Z_{HNC}	6.589 (0.000)	4.154 (0.017)	8.494 (0.194)	5.881 (0.001)
$\tilde{Z}_{HNC}$	5.555 (0.000)	3.403 (0.017)	0.557 (0.548)	4.930 (0.001)
K	1	1	1	1

NOT: Where K is optimal lags determined by AIC. In-parenthesis values show the p-values.

According to the empirical findings in the Table 3, there is a mutual causality relationship found between the GLIFE and GGDP. Between GNONLIFE and GGDP, there is a one-way causality relationship is found. The direction of this relationship is from GGDP to GNONLIFE.

According to these results, it is observed that economic growth develops both life and non-life insurances, the long term and regular capitals that life insurance business collects contribute to the economic growth. Life insurance enables a longer term and more regular capital accumulation, thus, increase of savings when compared to the non-life insurances. As a natural result of this, it is expected from life insurance business to contribute to the economic growth more than the non-life insurance business. This is why the results found are in accordance with the theory. Additionally, results of the study are also similar to the results in the studies of Outreville (1990), Lee et al. (2013), Dash et al. (2018) and Kaushal et al. (2018).

CONCLUSION

In today's economic world; types, impetus and impacts of risks such as danger, strategical, operational, financial and such have all increased. Insurance business is preparing a ground for the establishment of a more reliable economic structure by enabling risk transfers with the premiums that it collects under the pressure of increasing risks. In addition to that, it enables the usage of the collected premiums in a more efficient way. With the functions it has, insurance business contributes to the economic growth.

In this study, a research on the relationship between economic growth and insurance business was conducted by using the data from 36 countries from the period between 1985 and 2018. The results indicate that there is a mutual causality relationship between the life insurance business and economic growth whereas there is a one-way causality relationship from the economic growth to the non-life insurance business. It is seen that life insurance business transfers resources to the economic growth by enabling a long-term and more stable capital accumulation when compared to the non-life insurance business. Additionally, it is also understood from the study that the increase of the assets caused by the economic growth also contribute to the development of the insurance business sector.

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