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ARTÍCULO

The Role of Performance Jordanian Insurance Companies in Economic Growth: Evidence from the PMG Panel-ARDL Approach

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Abstract : The insurance sector holds significant importance within the financial landscape of Jordan, as it plays a crucial role in mitigating and managing risks. The objective of this study was to investigate the impact of the insurance sector on economic growth, analyse the enduring association between variables pertaining to the insurance sector and economic growth, and ascertain the direction of the causal relationship between insurance variables and economic growth. The analysis employed the pooled mean group estimation technique within the panel autoregressive distributed lag model (PMG/ARDL) framework to examine the variables over the period from 2008 to 2021. The findings of the study indicate a statistically significant long-term equilibrium association between insurance and economic growth variables. However, no such relationship was observed in the short term. The Dumitrescu and Hurlin causality analysis demonstrates a unidirectional causal linkage, wherein economic growth exerts an influence on both insurance companies' investments and total revenues for companies. Moreover, a reciprocal association exists between the assets of insurance companies and economic growth. Insurance companies should focus their investments on profitable sectors in order to enhance the performance of the insurance industry in Jordan and enhance its competitiveness. This will also lead to an improvement in the investment multiplier's performance within the insurance sector, thereby increasing its contribution to overall economic growth.

1. Introduction

The insurance industry holds significant prominence within the global financial landscape due to its crucial role in mitigating economic and social risks and losses arising from various hazards and incidents within societies. The insurance industry exhibits variability based on the anticipated occurrence of different types of accidents and risks. This encompasses a range of insurance categories, such as general insurance for vehicles, marine insurance, transportation insurance, medical insurance, credit insurance, life insurance, and various other forms of insurance. The insurance industry plays a crucial role in contributing to the overall economic growth and development of nations by positively impacting their national income levels. The significance of this sector is heightened by its contributions to the domains of financial intermediation, savings accumulation, employment generation, resource allocation, and risk mitigation. Moreover, the utilisation and allocation of reserves and funds in diverse investment sectors In the year 2021, the ratio of total insurance premiums to the Gross Domestic Product (GDP) at current prices in Jordan was recorded at 1.99%. We anticipate that the insurance premiums will play a significant role in bolstering economic development and enhancing the balance of payments. Furthermore, the insurance sector is closely intertwined with other financial sectors, including banks, industry, and the services sector, fostering interdependence among them. In 2021, the insurance density in Jordan was documented at 58.89%. Examining the rate at which individuals allocate funds towards insurance expenditures. This metric is regarded as a measure of the level of insurance awareness within a given community (Jordan Insurance Federation, 2022b). The objective of this study is to examine the performance of insurance companies in Jordan and their correlation with economic growth. This study aims to investigate the impact of insurance components on economic growth in the Jordanian economy, specifically by analysing the influence of total revenues and investments made by insurance companies. The rise in demand for insurance across different sectors aligns with the escalation of potential risks encountered by both institutions and individuals, consequently exerting an impact, either positive or negative, on the gross domestic product. The objective of this study was to emphasise the impact of Jordanian insurance companies' performance on economic growth. It sought to investigate the correlation between insurance activity and economic growth in both the short and long term, as well as analyse the causal relationship and determine its direction between insurance activity and economic growth.

This research investigates the influence of insurance activity on the economic growth of Jordan through the utilisation of various methodologies and dynamic statistical modelling techniques. These approaches involve the integration of time series and cross-sectional data within the context of the insurance sector in Jordan. It is anticipated and desired that we will establish the favourable correlation between insurance activity and economic growth in Jordan, a notion that has been supported by various researchers in their respective studies. For instance, Haiss and Sümegi (2008) underscored the constructive influence of life insurance on the growth of GDP in fifteen European Union nations. According to the findings of Iyodo, Samuel, Adewole, and Ola (2020), it was determined that the non-life insurance industry in Nigeria has a positive and significant impact on economic growth. However, the effects of profits and investment on economic growth were found to be positive but statistically insignificant. According to Baruti (2022), the insurance industry plays a significant role in the advancement of financial markets and exerts a favourable influence on the progress of Balkan nations. Additionally, it was demonstrated that there exists a positive correlation between gross insurance premiums and the growth of Kosovo's GDP, albeit with a relatively low strength.

The inception of the insurance industry in Jordan dates back to 1946, marked by the establishment of the first insurance agency. This agency primarily focused on providing insurance coverage for import credits, specifically for the purpose of safeguarding land and sea transportation. The insurance industry in Jordan operates under the regulatory framework established by the initial legislation known as the Insurance Business Control Law of 1984. The aforementioned legislation mandated the acquisition of a specific licence for engaging in the insurance industry. It also defined insurance business as encompassing activities such as the presentation of insurance contracts, their modification or transfer, and the resolution of various types of compensation claims. The organisational structure of the Jordanian insurance market in 2022 comprises four primary entities: the Central Bank of Jordan, responsible for overseeing insurance operations; the Jordan Insurance Federation; insurance companies; and auxiliary insurance services facilitated by licenced agents, brokers, and banks engaged in insurance activities. In Jordan, the various forms of insurance can be classified into two primary classifications: Firstly, a comprehensive range of insurance types is available, encompassing marine, medical, fire, engineering, credit, general accidents, and vehicles. Additionally, life insurance is a topic of consideration.

At the end of 2021, the aggregate written premiums within the insurance industry reached a sum of 651.1 million Jordanian dinars. In contrast, the overall remuneration disbursed by the insurance sector amounted to 486.6 million Jordanian dinars, while the total investments made by insurance companies reached 629.7 million dinars. The insurance companies demonstrated a return on assets (ROA) of 1.9% and a return on equity (ROE) of 5.8%. Additionally, the retention rate for the insurance sector in Jordan was recorded at 62.3%. By the conclusion of 2021, the insurance industry is projected to encompass a total of 848 entities providing insurance services. This figure comprises 450 insurance agents, 150 brokers, 39 reinsurance brokers, 82 loss adjusters and inspectors, 18 actuaries, and 37 insurance consultants. Furthermore, there are an additional 50 reinsurance brokers located outside of Jordan (Jordan Insurance Federation, 2022a). The present study comprises five distinct sections: Section 1 provides an overview of the study, serving as the introductory section. Section 2 offers a comprehensive review of the relevant literature. Section 3 outlines the data sources utilised in the study and describes the empirical methodology employed. Section 4 delves into the empirical findings, encompassing the panel unit root test, the panel co-integration test, and the Dumitrescu Hurlin method. The utilisation of panel causality tests and the Thiel indicator as a measure of predictive performance are two prominent methods employed in academic research. Lastly, Section 5 presents the managerial implications and provides a concluding statement.

2.Literature Review

A multitude of empirical studies conducted on a global scale have investigated the correlation between the influence of insurance activity and economic growth, ultimately establishing its direction. In this analysis, we will examine a selection of pivotal studies that have identified a clear and significant correlation between insurance activity and its consequential influence on economic growth. Neylan and Kiliç (2020) conducted a study to examine the association between insurance premiums and economic growth in European Union countries. The researchers employed various methodologies, including Johansen, Kao, Hurlin cointegration, FMOLS, and Dumitrescu causality, to analyse the data and draw conclusions. The findings of the study revealed a persistent cointegration relationship over an extended period of time, as well as a unidirectional causal relationship from the insurance sector to economic growth. Mouloudi and Benladgham (2020) elucidated the impact of insurance activity on the economic growth of Morocco by employing the Johansen co-integration method and the Granger causality test. The findings of the study indicate the presence of a sustained cointegration relationship and a statistically significant bidirectional causal association between aggregate insurance premiums and the real gross domestic product (GDP). In their research, Absalom (2022) investigated the correlation between non-life insurance premiums and economic growth within the context of the Namibian economy. A positive correlation was observed by the researcher between insurance premiums, reinsurance exemptions, and economic growth in Namibia. In their study, Pradhan et al. (2017) employed a panel vector autoregressive model to examine the presence of Granger causality across 18 middle-income countries during the period of 1980 to 2012. A robust and enduring unidirectional causal link has been discovered between insurance market activities and economic growth, specifically from insurance market activities to economic growth. Additionally, a bidirectional causal relationship has been identified between financial depth and economic growth. The authors, Mitrasević, Pjanić, and Burić (2022), examined the correlation between the insurance market and economic growth within the countries of the European Union. The findings indicate that there is a statistically significant positive relationship between the insurance premium paid by an individual and long-term economic growth. The insurance premium plays a significant role in shaping long-term economic growth. In their study, Apergis and Poufinas (2020) conducted an analysis on the impact of insurance growth on economic growth across multiple OECD countries. The researchers discovered a significant and positive correlation between gross premiums and insurance penetration, as well as economic growth. This relationship was observed alongside other factors, including gross capital formation, inflows of foreign direct investment, and financial development. The study conducted by Kalaj, Merko, and Zisi (2017) aimed to assess the influence of insurance development on the economic growth of Albania. The researchers reached the conclusion that the life and non-life insurance markets have a significant influence on economic growth. The impact of total insurance investment on economic growth in Nigeria for the period 2000-2015 was examined by Fadun and Shoyemi (2018). The findings of the study indicated a robust and positive correlation between the economic growth of Nigeria and the overall investment in the insurance sector. In their study, Ul Din, Abu-Bakar, and Regupathi (2017) conducted a comparative analysis of the association between insurance and economic growth in both developing and developed countries over the time span of 2006 to 2015. The study's findings indicate a robust and statistically significant correlation between life insurance and the economic growth of developed nations, as well as a noteworthy association between non-life insurance and the economic growth of developing nations. Additionally, the study reached the conclusion that non-life insurance plays a comparatively more significant role in the context of developing countries as opposed to developed countries. In their study, Osei-Bonsu, Abotsi, and Carsamer (2022) examined the correlation between the insurance sector and economic development in Ghana, employing the Johansen cointegration model as their analytical framework. The study unveiled a noteworthy and favourable association, both in the short-term and long-term, between insurance and economic growth in Ghana. Furthermore, it identified a reciprocal causality between insurance and growth. In his study, Ghosh (2013) underscored the enduring correlation between the life insurance sector and economic progress in India, employing the Vector Autoregression (VAR) model.

On the contrary, several studies have identified a negative correlation between the insurance sector and economic growth. This phenomenon can be attributed to a multitude of factors, one of which pertains to the allocation of insurance companies' investments beyond national borders. The phenomenon can be ascribed to the utilisation of insurance company resources in geographically distant regions for investment and commercial purposes. In their study, Oitsile, Galebotswe, and Sekwati (2018) conducted an analysis on the influence of insurance penetration on the economic growth of Botswana from 1994 to 2013. They employed the cointegration autoregressive distributed lagged (ARDL) approach for their investigation. The findings indicate that there exists a tenuous, enduring inverse correlation between insurance penetration and economic growth, as the expeditious expansion of the insurance industry may exert a detrimental impact on long-term economic growth. Moreover, the absence of empirical evidence suggests that there is no immediate impact of insurance penetration on economic growth. According to the findings of Bakytovna and Uzgenovich (2020), the influence of the insurance sector on the economic growth of the Kyrgyz Republic is deemed to be insignificant. The researchers observed a negative and statistically insignificant correlation between the insurance premium and economic growth. The study conducted by Makeleni and Sheefeni (2022) investigated the correlation between life insurance and economic growth in the context of South Africa during the time span from 1994 to 2018. The research findings indicate that the overall impact of insurance on economic growth is negative, both in the short and long run. The study conducted by Nkoro, Ikue-John, and Nwantah (2019) examined the correlation between the performance of the insurance sector and economic growth in Nigeria from 1980 to 2015. The researchers employed the cointegration method and tested the bounds using the Autoregressive Distributed Lag (ARDL) approach. The significant finding demonstrates that the premiums of the insurance industry, also known as PMI, exert a detrimental influence on economic growth, both in the short and long run.

Conversely, certain studies have determined that the correlation between insurance activity and economic growth exhibits volatility, ambiguity, and heterogeneity across different countries, levels of development, the

maturity of the insurance industry, and the magnitude of economic risks. Singhal, Goyal, and Singhal (2022) conducted a study examining the economic determinants that influence the growth of the insurance market in a sample of thirty-seven Asian countries (2002-2017). The present study employed the Generalised Method of Moments (GMM) approach to assess the causal association between insurance and economic growth. The study aimed to identify the factors influencing the expansion of the insurance market and employed the Granger causality test to evaluate the causal association between insurance and economic growth. The research findings indicate that there exists a varying association between the expansion of insurance markets and economic growth across different regions in Asia. In their study, Peleckienė, Peleckis, Dudzevičiūtė, and K Peleckis (2019) examined the correlation between insurance and economic growth within the European Insurance Union member countries. The study determined that economically affluent nations, such as the United Kingdom, Denmark, and France, exhibit greater advancements in the insurance industry. Furthermore, the study reached the conclusion that there exists a statistically significant positive correlation between insurance penetration and economic growth in Luxembourg, Denmark, the Netherlands, and Finland. The findings of this study indicate that there are variations in the Granger test of causality among different countries, particularly in relation to the presence of a unidirectional relationship. The findings indicate the presence of a reciprocal causal association among the variables in Austria, while no causal link between insurance and economic growth is observed in Slovakia. In their study, Ul Din, Abu-Bakar, and Regupathi (2017) examined the correlation between insurance and economic growth across six economies at different stages of development, namely the United States, the United Kingdom, China, India, Malaysia, and Pakistan. The time period from 1980 to 2015. The study employed the Panel (PMG/ARDL) methodology to examine the enduring and immediate correlation between insurance and economic growth. The research findings indicate a statistically significant and positive correlation between non-life insurance and economic growth in the near term across several countries, namely the United States of America, the United Kingdom, China, India, Malaysia, and Pakistan. Furthermore, the findings of the study indicate a positive and statistically significant association between life insurance and economic growth in India, Pakistan, and the United Kingdom. The results of the study revealed a statistically significant inverse correlation between life insurance and economic growth in the United States, China, and Malaysia. The study conducted by Lee (2019) investigated the correlation between insurance activities and economic growth across a sample of one hundred twenty-three countries spanning the years 1967 to 2014. The study's findings indicate that the association between the advancement of insurance and economic growth exhibits a multifaceted and volatile nature. This can be attributed to variations in income levels and geographical disparities across countries, as well as the interconnectedness between the financial sector and the insurance sector. The study additionally determined that the influence of insurance development on a country's economic growth is not direct, but rather contingent upon the investment performance of insurance companies. Prokopjeva, Kuznetsova, and Kalayda (2020) elucidated the correlation between the degree of dynamic advancement sint in insurance markets and the level of development in economic growth rates across multiple countries. Certain findings have indicated that the association between the economic development indicators of the examined countries and their respective insurance markets is inconclusive. The observed increase in insurance activity can be attributed to the high population density and significant proportion of young individuals in certain countries. The study conducted by Zulfiqar et al. (2020) examined the correlation between insurance and economic growth within the context of the Pakistani economy. The findings indicate that gross insurance has a significant and favourable impact on fostering economic growth at a collective level. When examining the intricacies of insurance, it is important to note that the level of detail can vary. In the case of life insurance, its influence on the Pakistani economy is relatively insignificant. Conversely, marine insurance has a detrimental effect on trade, consequently impeding economic growth. Simultaneously, property insurance assumes a significant and constructive function in facilitating investment and, consequently, fostering economic expansion. The findings derived from the application of Granger's causality test indicate the presence of a bidirectional association between economic growth and non-life insurance. In their study, Alzyadat and Alwahibi (2021) conducted an analysis to investigate the influence of insurance activities on the economic well-being of the Kingdom of Saudi Arabia. The authors employed the Autoregressive Distributed Lag (ARDL) approach to examine this relationship. The research conducted revealed a detrimental impact of insurance activity on short-term economic growth, whereas a favourable effect was observed in the long run. The study conducted by Bayar, Gavriletea, and Danuletiu (2021) investigated the influence of the insurance sector's contribution on economic growth within a sample of fourteen countries in Central and Eastern Europe. The study's findings indicate that life insurance does not exert a substantial impact on economic growth, whereas non-life insurance demonstrates a notable influence on growth. The findings of the study also indicated that, as per the Dumitrescu causality test, there exists a unidirectional causal relationship from economic growth to both life and non-life insurance.

A number of studies have reported a lack of significant impact of insurance activity on economic growth. For instance, Ward and Zurbruegg (2000) conducted an investigation on the correlation between the insurance industry and economic growth in several OECD countries, and their findings supported the notion that insurance activity does not have a discernible effect on economic growth. The findings indicate a lack of correlation between the expansion of the insurance sector and the economic growth of select OECD nations, such as the United Kingdom. The observed outcome can be ascribed to the impact of Zurbruegg's findings when employing the aggregate insurance variable. In order to mitigate issues related to aggregation. In their study, Kugler and Ofoghi (2005) extensively utilised insurance data pertaining to various aspects such as automobiles, properties, liabilities, and additional categories. The researchers utilised data pertaining to the economy of the United Kingdom and conducted the Johansen cointegration test. The findings indicate a significant and enduring correlation between the size of the insurance market and the economic growth of all components. The study conducted by Raji, Isiaka, and Siji (2023) examined the contribution of insurance companies to the recovery of the economic recession in Nigeria spanning from 1996 to 2020. The results of the study indicate that, despite the positive impact of

investment in insurance and the efforts made by insurance companies to mitigate the economic recession, insurance assets were found to be ineffective in reducing the recession during the examined period. The research conducted by Aigbovo and Iroh (2021) demonstrated that in Nigeria, there exists no causal association between the prevalence rate of insurance and economic growth. This finding provides support for the neutrality hypothesis. According to the findings of Dawd and Benlagha (2023), there exists an inverse relationship, specifically in the form of a U-shaped curve, between insurance premiums and economic growth. The study suggests that an increase in insurance premiums leads to a subsequent increase in economic growth up to a certain threshold. Subsequently, the escalation in insurance premiums exerts a detrimental influence on overall economic growth.

Literatures gap

The existing body of research on the insurance sector in Jordan and its influence on economic growth is limited in scope. Consequently, this study aims to address this gap in the academic literature by providing additional insights in this area. This study is unique compared to other studies as it incorporates the examination of time series and cross-sectional data. It employs a pooled mean group estimator to analyse the panel autoregressive distributed lag (ARDL) cointegration approach. Additionally, the study utilises the Dumitrescu and Hurlin causality test to determine the causal relationship between insurance variables and economic growth.

3. Data sources and empirical Methodology

3.1. Data sources

The present study conducted an analysis of sixteen insurance companies over the time span from 2008 to 2021. The insurance companies operating in Jordan include Jordan French Insurance, United Insurance, Jerusalem Insurance, Delta Insurance, Jordan Insurance, Jordan International Insurance, Euro Arab Insurance Group, Arab Jordanian Insurance Group, The Mediterranean & Gulf Insurance Company-Jordan P.L.C., Arab Life and Accident Insurance, Arab Orient Insurance Company, National Insurance, Arab Union International Insurance, AL-Nisr al-Arabi Insurance, Middle East Insurance, and Arabia Insurance Company-Jordan. At the end of 2021, the aforementioned companies constituted 70% of the overall operational entities within the Jordanian insurance sector. These companies engage in insurance operations and provide insurance services in two distinct categories: general insurance (non-life insurance) and life insurance. The selection of these companies is predicated on their ability to offer comprehensive insurance services and maintain a consistent operational presence. However, companies specialising in a single type of service were not considered. The chosen timeframe for this study, spanning from 2008 to 2021, was determined in consideration of the period that succeeded the global financial crisis. The data sources encompass a diverse range, incorporating the Annual Financial Reports of Jordanian Insurance Companies listed on the Amman Stock Exchange, the Jordan Insurance Federation, and the Central Bank of Jordan.

3.2. Variables Definition

1- The dependent variable: real gross domestic product: this variable is used to express economic growth. The data source is the Central Bank of Jordan. (RGDP)

2- The independent explanatory variables

a- Total revenues of the insurance company: the total revenues that the insurance company obtains from its operations and other revenues. (TRevenue)

b- Investments: The insurance company's investments in various fields. (Investment)

c- Total assets: to express the size of the insurance company's business. (Size)

Note: Other variables such as net profit, premiums, capital, labor, Owner Equity, and Inflation have been omitted because they insignificant statistically.

The methodology utilised in this study involves the implementation of a PMG/Panel ARDL approach, which incorporates the pooling and averaging of coefficients across the various cross-sectional units (Pesaran & Shin, 1995). The ARDL model was selected for this study due to its suitability, efficiency, and consistency in analysing datasets with limited sample sizes. In the present study, the dataset consists of 16 cross-sectional observations and a time series spanning 14 years. The PMG method allows for the inclusion of short-term coefficients with a constant to facilitate the adjustment of speed towards long-term equilibrium values and account for heterogeneous error variances across different companies, as demonstrated in this study. However, it also imposes the requirement of homogeneity in the long-run relationship for the entire sample (Zardoub, 2021).

3.3. Methodology

3.3.1. Specification of Panel ARDL model

The Pooled Mean Group (PMG) estimation method was proposed by Pesaran and Shin (1995) for the estimation of the panel autoregressive distributed lag (ARDL) model. The PMG estimator is employed as a viable alternative to the three-stage least squares (3SLS) and generalised method of moments (GMM) techniques, which involve pooling and averaging. The underlying assumption of this model is that the short-run coefficients exhibit heterogeneity, meaning they vary across different areas of the panel. However, the long-run coefficients are assumed to be homogeneous, meaning they are the same for all areas in the panel.

This study investigates the correlation between insurance activity and economic growth among a sample of 16 insurance companies. The specification of the econometric model is presented as follows:

$$\text{RGDP}_{i,t} = f(\text{TRevenue}_{i,t} + \text{Investment}_{i,t} + \text{Size}_{i,t}) \text{-----}(1)$$

$$\text{RGDP}_{i,t} = B0 + B_{1i}\text{TRevenue}_{i,t} + B_{2i}\text{Investment}_{i,t} +$$
$$B_{3i}\text{Size}_{i,t} + \varepsilon_{i,t} \text{------------------------------------}(2)$$

The utilisation of panel data in this study offers several notable advantages. Firstly, it necessitates a substantial volume of data points denoted as N and T, thereby enabling a more comprehensive analysis. Secondly, it effectively mitigates the issue of collinearity, which can distort statistical results. Additionally, panel data provides a greater number of degrees of freedom, thereby enhancing the statistical power of econometric evaluations. Lastly, it enables the differentiation between short-term and long-term relationships, facilitating a more nuanced understanding of the phenomena under investigation.

In order to investigate the relationship between insurance activity and growth, we employ the transformation of all variables into natural logarithms. The log-linear functional form is presented in the following manner:

Bo: Represent the Intercept, εt : The error Term.

t: represent the time, i indicates the cross-section (1,2,--16)

Equation in Panel data formula as below:

$Ln\ RGDP_{i,t} = B0 + B_{1i}\ Ln\ TRevenue_{i,t} +$
$B_{2i}\ Ln\ Investment_{i,t} + B_{3i} Ln\ Size_{i,t} + \varepsilon_{i,t}$ ------------------(3)
Where i=1,2----,16. Shows number of insurance company in Jordan and t = 2008 ----2021 represent the year.
The ARDL model can be written as follows:
$\Delta LnRGDP = B0 + \sum_{j=1}^{m} \varphi_{i,j} \Delta LnRGDP_{i,t-j} +$

$\sum_{j=1}^{m} \theta_{i,j} \Delta LnTRevenue_{i,t-j} + \sum_{j=1}^{m} \delta_{i,j} \Delta LnInvestment_{i,t-j}$

$+ \sum_{j=1}^{m} \omega_{i,j} \Delta Lnsize_{i,t-j} + \gamma1 LnRGDP_{i,t-1} +$

$\gamma2 LnTRevenue_{i,t-1} + \gamma3 LnInvestment_{i,t-1} + \gamma4 LnSize_{i,t-1}$
$+ E_{i,t}$
Where: φ_i, , θ_i, , δ_i, and ω_i,
are the short run coefficients,
While γ_1, to γ_4, indicate the long run coefficients

3.3.2. Cross-sectional dependence approach

The Cross-sectional dependence tests equation suggested by Pesaran (2004) is as follows:

CD = $\sqrt{\frac{2T}{N(N-1)}} \left\{ \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{P}ij \right\}$

Where N and T the cross-section size, time. $\hat{P}ij$ is the correlation of the cross-sectional residuals.

3.3.3. Dumitrescu and Hurlin non -causality estimation

The Formula of the DH Panel causality model is as follows:
$A_{it} = \theta_i + \sum_{j=1}^{K} \varphi_i^{(P)} A_{it-n} + \sum_{j=1}^{k} \omega^{(p)} B_{it-n} + \mu_{it}$
Where A,B are two variables, i and t represent the cross-section(1,2−16), and time periods, respectively , the maximum lag length (n), While $\varphi_i^{(P)}$ and
$\omega^{(p)}$ showes the estimated coefficients of the insurance companies, respectively. (Rahman & Velayutham, 2020).

4.Discuss Empirical Results

4.1. Panel unit root test

The present study has utilised multiple unit roots tests to examine the stationarity of the variables. These tests include the augmented Dickey-Fuller (ADF) test proposed by Dickey and Fuller in 1979, the Phillips-Perron test introduced by Phillips and Perron in 1988, the Hadri test developed in 2000, the Levin et al. test from 2002, and the Im et al. test from 2003. According to Barbieri (2006) and Hadri (2000), The utilisation of the panel unit root test is necessary in order to ascertain the stability of the time series and to prevent the occurrence of spurious regression. The findings of the unit root test are presented in Table 1, which displays the results for both the level and first difference. The analysis reveals that certain variables exhibit stationarity in level I (0), while other variables demonstrate non-stationarity but exhibit stationarity in the first difference, I (1). Therefore, it can be deduced that there exists a varying level of integration. The results indicate that the variables exhibit a combination of integrated orders, as determined by all employed tests. It is important to acknowledge that, in the application of the Fisher test, researchers utilise the different lags in the Augmented Dickey-Fuller (ADF) regressions. Additionally, it mitigates the influence of bias resulting from the selection of the optimal lag. Nevertheless, a notable advantage of employing the Im test lies in its consideration of the heterogeneity within the residuals and the presence of serial correlation among the groups. The LL test is predicated on the assumption of homogeneity in the autoregressive coefficient. On the other hand, the IPS test allows for heterogeneity (Zardoub, 2021).

Table 1. Panel Unit Root Test

Variables	Level		First Difference	
	Intercept	Intercept and Trend	Intercept	Intercept and Trend
Panel 1, Fisher ADF				
LnRGDP	84.46***	20.006 ***	2.490	17.459
LnTRevenue	59.115***	44.509**	99.285***	98.570***
LnInvestment	51.571***	51.927**	82.667***	59.371***
Ln Size	14.386	38.912	67.333***	38.591**
Panel 2, Fisher - PP				
LnRGDP	86.236***	32.108***	72.021***	156.930***
LnTRevenue	76.482***	38.265	125.837***	161.702***
LnInvestment	47.182**	37.492	137.907***	105.226***
Ln Size	21.809	31.484	113.566***	87.718***
Panel 3, IPS				
LnRGDP	-5.321***	23.555***	5.026	0.8809
LnTRevenue	-7.555***	-3.712***	-7.761***	-6.334***
LnInvestment	-1.445**	-1.937**	-5.059***	-3.213***
Ln Size	2.675	-0.957	-3.691***	-0.219
Panel 4, Levin,L,C				
LnRGDP	-13.273***	25.881***	7.518	3.375
LnTRevenue	-17.254***	-21.081***	-17.571***	-11.610***
LnInvestment	-4.948**	-4.982***	-7.902***	-9.636***
Ln Size	0.182	-1.618**	-3.642***	-2.312***
Panel 5, Hadri				
LnRGDP, Hadri Z-stat	10.65***	8.629***	7.178***	13.760***
Heteroscedastic Consistent Z-Stat	10.65***	8.629***	7.178***	13.760***
LnTRevenue, Hadri Z-stat	7.594***	7.430***	3.362***	6.268***
Heteroscedastic Consistent Z-Stat	6.884***	6.186***	4.157***	20.864***
LnInvestment Hadri Z-stat	8.722***	5.748***	1.606**	10.636***
Heteroscedastic Consistent Z-Stat	6.792***	5.350***	1.447**	11.812***
Ln Size, Hadri Z-stat	8.67***	4.72***	3.08***	16.57***
Heteroscedastic Consistent Z-Stat	7.73***	7.58***	2.87***	16.20***

Notes: ** and *** Statistically significant at the 5%, 1% levels respectively.

Table 2. The results of PMG Long-run and ARDL estimation (LnRGDP) is Dependent Variable.

variable	Coefficient	t-statistic	P- value
Long-run Equation			
LnInvestment	-0.092678	-7.721439	0.0000
LnTRevenue	0.172405	7.087272	0.0000
LnSize	0.091145	3.396083	0.0009
Short -run Equation			
CoinEq(-1)	-0.083870	-5.937861	0.0000
D(LnInvestment)	0.011190	1.353871	0.1779
D(LnTRevenue)	0.003933	0.576635	0.5651
D(LnSize)	-0.001754	-0.116290	0.9076
C	0.238351	6.203231	0.0000

4.2. Panel Co-integration test

Pool means group (PMG) results

The findings presented in Table 2 indicate that the investment coefficient of insurance companies exhibited a negative value, thereby deviating from the predictions made by economic theory. The data demonstrates a negative correlation between the rise in insurance companies' investments and the decline in real gross domestic product. The observed outcome can be ascribed to the characteristic feature of insurance companies, namely the diversity of their investment portfolio. Notably, certain investments within this portfolio, such as real estate, exhibit low liquidity, thereby exerting a limited influence on growth via the income multiplier. Additionally, certain investments, such as those made in the financial market, may yield negative returns. Furthermore, it is worth noting that a portion of these

investments has the potential to flow out of the country. The findings align with the research conducted by Oitsile, Galebotswe, and Sekwati (2018), which determined that insurance investments in Botswana have a detrimental effect on long-term economic growth.

Insurance companies exhibit a positive coefficient of total revenues, indicating that a 1% increase in total revenues corresponds to a 0.17% increase in economic growth. The implication can be drawn from this parameter that the long-term economic growth is influenced by the performance of the insurance sector. The findings also indicate a positive correlation between the growth of insurance companies' assets and economic growth, as evidenced by the positive coefficient of the size parameter.

The findings indicate that all of the parameters exhibited a high level of statistical significance at the 1% level over an extended period of time. Conversely, based on the short-run analysis, the study findings indicate that with the exception of the intercept coefficient, all estimated coefficients lack statistical significance. The findings suggest that the impact of the insurance industry on economic growth is limited in the immediate timeframe.

The short-term deviations from the long-term equilibrium are ultimately rectified at a rate of 8%, as determined by the speed adjustment coefficient with a value of 0.083870. Based on the obtained result, it can be deduced that the coefficient of speed of adjustment has a duration of approximately 11.9 years, indicating a relatively extended period. The coefficient exhibited a negative value and demonstrated statistical significance.

Table 3. Pedroni Cointegration test:

Tests	Statistic	Prob	Statistic	Prob
within-dimension				
Panel v- Statistic	-0.711465	0.7616	0.382628	0.3510
Panel rho-Statistic	1.915383	0.9723	1.286544	0.9009
Panel PP-Statistic	-1.575177	** 0.0576	-3.029628	*** 0.0012
Panel ADF-Statistic	-3.634898	***0.0001	-3.927984	*** 0.0000
Between -Dimension				
Panel rho-Statistic	2.239504	0.9874		
Panel PP-Statistic	-5.945844	***0.0000		
Panel ADF-Statistic	-7.611070	***0.0000		

***, ** significant at level 1%, 5% respectively.

Table 4. Kao Panel Cointegration test:

Kao Cointegration test	t-Statistics	Prob
ADF	-3.200641	***0.0007

*** significant at level 1%.

The selection of the optimal lag for Panel ARDL (1,1,1,1) is determined based on the Akaike Information Criteria (AIC) value, which has the lowest value of -7.913855 compared to other criteria such as the Schwarz Information Criteria (SIC) and the Hannan-Quinn (HQ) criteria.

Two tests are performed to examine the equilibrium of the co-integrating relationship between variables. In our study, we employ the Individual Intercept approach to conduct panel cointegration tests, as suggested by Pedroni (1999) and Kao (1999). The Pedroni test comprises seven distinct statistics, including v-statistic, P-statistic, PP-statistic, and ADF-statistic, which are categorised within dimensions. The remaining three statistics are rho-statistic, PP-statistic, and ADF-statistic, all of which pertain to between-dimensions. The Pedroni test statistics demonstrate superior performance compared to conventional time-series analysis by accommodating heterogeneity in the panel, encompassing short-run dynamics, long-run slopes, and

intercept coefficients. According to Pedroni's study conducted in 1999, it was found that...Based on the findings presented in Table 3, the Pedroni test indicates that a cointegrating relationship is supported by six out of the eleven tests conducted. Consequently, the null hypothesis, which posits the absence of cointegration, is rejected. The current study relies on the Augmented Dickey-Fuller (ADF) test, along with the Kao test, to determine the acceptance or rejection of the null hypothesis. The results of the Kao test provided evidence to reject the null hypothesis, which posits the absence of panel cointegration. Hence, it can be inferred that in both panel data sets, there exists a significant and enduring relationship between economic growth and the independent variable.

Table 5. The Cross- sectional dependence tests

variables	Breusch- Pagan LM CD- test	Pesaran scaled LM. CD-test	Pesaran CD CD-test
LnRGDP	1680.000***	100.6976***	40.98780***
LnInvestment	814.0985***	44.80387***	13.28119***
LnTRevenue	753.8861***	40.91717***	16.40404***
Ln Size	400.3939***	18.09935***	4.437397***

*** denotes significant at the 1% levels Statistically., (CD) Cross- dependency.

The cross-sectional dependency test is a crucial diagnostic tool that examines the existence of serial correlation in panel data. The study employed the use of cross-section dependence (CD) to analyse a sample consisting of 16 companies (N) over a period of 14 years (T). The examination of cross-sectional dependence encompasses three distinct tests, namely the Pesaran scaled LM, the Pesaran CD test as originally proposed by Pesaran (2004), and the Breusch-Pagan LM test (Pesaran, 2021). The cross-sectional dependence tests make the assumption that the companies within the series exhibit a lack of significant disparities in their levels of economic development. As depicted in Table 5, The null hypothesis, which posits the absence of cross-sectional dependence, was rejected at a significance level of 1% for the individual tests. The obtained result suggests that the occurrence of any shock within Jordanian insurance companies may have an indirect influence on other companies in Jordan. Based on the findings of this examination, it can be concluded that the model exhibits stability.

Table 6: Dumitrescu Hurlin Panel Causality Tests

| Null Hypothesis	Wbar-Stat	Zbar-Stat	Probability	Conclusion
LnInvestment does not homogeneously cause LnRGDP	2.83136	0.02933	0.9766	RGDP → Investment Uni-directional
LnRGDP does not homogeneously cause LnInvestment	6.95989	3.89041	0.0001	
LnTRevenue does not homogeneously cause LnRGDP	3.02058	0.20629	0.8366	RGDP → TRevenue Uni-directional
LnRGDP does not homogeneously cause LnTRevenue	6.94457	3.87608	0.0001	
LnSize does not homogeneously cause LnRGDP	6.32915	4.98284	6.E-07	Size ↔ RGDP Bi-directional
LnRGDP does not homogeneously cause LnSize	8.12799	3.55795	0.0004	
LnTRevenue does not homogeneously cause LnInvestment	6.60440	-0.15761	0.8748	TR → Investment Uni-directional
LnInvestment does not homogeneously cause LnTRevenue	2.63147	0.42203	0.6730	
LnSize does not homogeneously cause LnInvestment	3.25126	4.46033	8.E-06	Investment → Size Uni-directional
LnInvestment does not homogeneously cause LnSize	7.56929	4.46033	8.E-06	
LnSize does not homogeneously cause LnTRevenue	4.40480	1.50084	0.1334	Size ≠ TRevenue Neutrality
LnTRevenue does not homogeneously cause LnSize	3.76763	0.90495	0.3655	

4.3. Dumitrescu Hurlin Panel Causality Test

Dumitrescu and Hurlin's study were conducted to investigate the causal relationship between economic growth and the independent variables associated with insurance activity. Dumitrescu and Hurlin utilise heterogenous panels and make the assumption that all parameters exhibit variation across the cross-sections. This methodology is applicable for the analysis of panel data and encompasses two statistical measures: the Wbar statistics, the Zbar statistics, or the standard normal distribution. Table 6 provides indications of the presence of a panel causality test. There are four variables in the study that exhibit unidirectional causality, one variable that exhibits bidirectional causality, and one variable that exhibits neutrality. The current investigation revealed a unidirectional causal relationship, specifically from real gross domestic product (RGDP) to both investment and revenue, within the context of Jordanian insurance companies. The findings align with prior research conducted by Bayar, Gavriletea, and Danuletiu (2021), who utilised the Dumitrescu-Hurlin causality test on a selection of European nations. The researchers reached the conclusion that a unidirectional relationship exists, wherein economic growth influences life and non-life insurance activity. In their study, Senol, Zeren, and Canakci (2020) utilised the Dumitrescu and Hurlin causality tests as a methodological approach to investigate the correlation between insurance and economic growth across a sample of 36 countries. The findings of the causality analysis indicate the presence of a unidirectional linkage, wherein economic growth exerts an influence on the insurance industry. Tran, Huynh, and Huynh (2022) found evidence of a unidirectional causal relationship between insurance penetration and economic growth in Vietnam, thereby providing support for the growth hypothesis. According to the study conducted by Alhassan (2016), there exists a unidirectional causal relationship between the development of the insurance market and economic growth in seven African countries. However, it is worth noting that Morocco exhibits a bidirectional causal relationship in this context. Furthermore, the findings of this study indicate a one-way causal relationship, specifically from revenue to investment and from investment to size, as evidenced in Table 6. Conversely, a reciprocal causal relationship exists between real gross domestic product (RGDP) and size. Ultimately, a neutral correlation exists between the size and revenue of insurance companies in Jordan.

4.4. Thiel indicator of predictive performance according to dynamic and static prediction

The efficacy of the estimated outcomes is contingent upon the prognostic capacity of the error-corrected model. The Thiel coefficient, a metric used to assess inequality, holds significant importance as a measure of predictive performance. Based on the Thiel coefficient, it can be inferred that a coefficient value close to zero signifies a strong predictive capability of the model. On the contrary, a coefficient value of one suggests that the dependent variable remains constant over time. If the coefficient value exceeds one, it indicates a diminished predictive capacity of the model. The findings indicate that Thiel's coefficient value, as determined by the dynamic forecast model, is 0.000405. This value is below one and in proximity to zero. Nevertheless, in accordance with the static forecast model, the outcomes demonstrated an equivalent Thiel's coefficient value of 0.000417. The analysis demonstrates that the model exhibits a strong capacity for prediction.

Dynamic Forecast
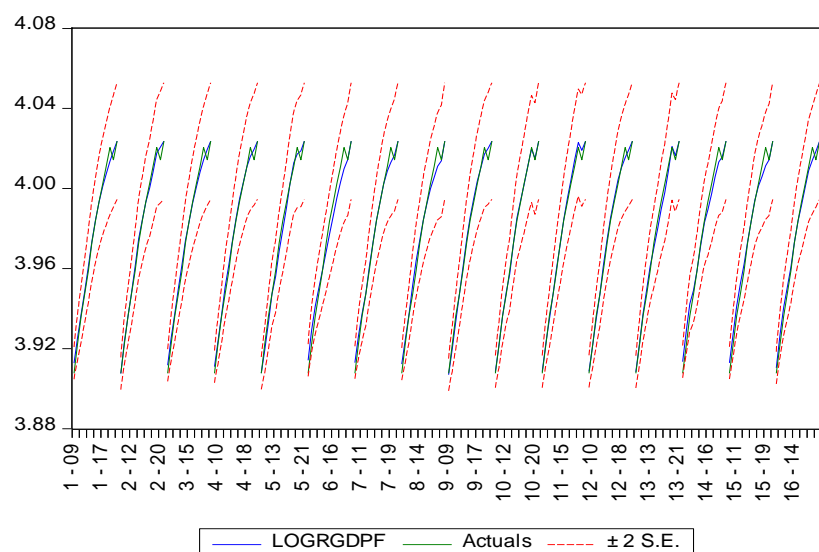
Forecast: LOGRGDPF	
Actual: LOGRGDP	
Forecast sample: 2008 2021	
Adjusted sample: 2009 2021	
Included observations: 208	
Root Mean Squared Error	0.003222
Mean Absolute Error	0.002328
Mean Abs. Percent Error	0.058551
Theil Inequality Coef. 0.000405	
Bias Proportion	0.003771
Variance Proportion	0.150592
Covariance Proportion	0.845561
Theil U2 Coefficient	0.287852
Symmetric MAPE	0.058553

Static Forecast
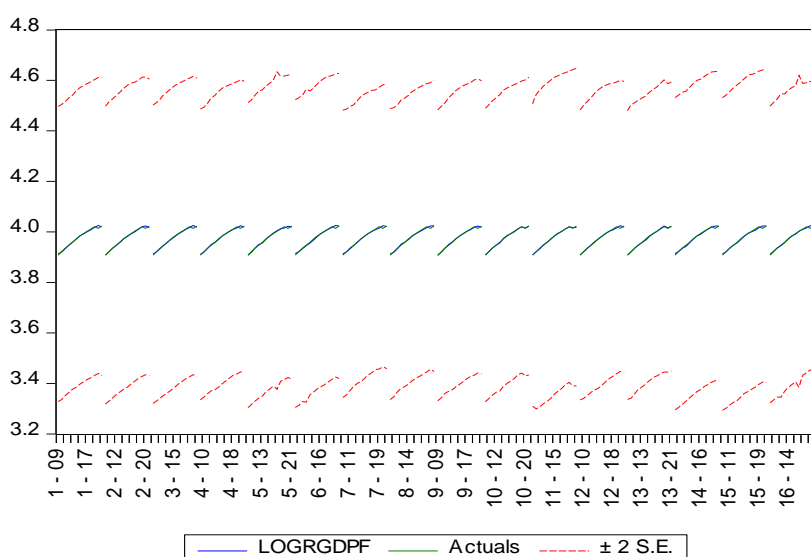
Forecast: LOGRGDPF	
Actual: LOGRGDP	
Forecast sample: 2008 2021	
Adjusted sample: 2009 2021	
Included observations: 208	
Root Mean Squared Error	0.003320
Mean Absolute Error	0.002273
Mean Abs. Percent Error	0.057015
Theil Inequality Coef. 0.000417	
Bias Proportion	0.000000
Variance Proportion	0.001789
Covariance Proportion	0.998201
Theil U2 Coefficient	0.295821
Symmetric MAPE	0.057002

5.Managerial Implications and Conclusion

5.1. Managerial Implications

This study aimed to examine the potential impact of the insurance sector on the economic growth of Jordan. Based on the findings of the study, as determined by the Dumitrescu and Hurlin causal test, a causal link was established between economic growth and the revenues and investments of insurance companies in Jordan. This implies that the rise in economic growth rates in Jordan, facilitated by the expansion of industrial and commercial activities and the establishment of companies of various sizes, will result in a corresponding surge in the demand for diverse insurance products. Consequently, this will lead to an increase in revenues within the insurance market and enhance its overall efficacy.

The performance of Jordanian insurance companies is influenced by both internal and external factors pertaining to the Jordanian economy. These factors have an impact on insurance companies' investment in their assets, necessitating the use of effective tools by policymakers to foster the development of the insurance sector and enhance its competitiveness. This, in turn, will lead to an increase in the sector's contribution to economic growth. Moreover, it is the duty of insurance company managers to enhance and cultivate insurance products in alignment with economic advancements. However, it is imperative for them to prioritise the allocation of assets and funds in the most optimal manner.

The findings of this study hold significant value for various stakeholders, including policymakers, investors, insurance company managers, and individuals with a vested interest in the insurance industry. This study holds significant policy implications pertaining to the advancement of the sector and the enhancement of insurance companies' performance. Still, it is imperative to emphasise the essential requirement for forthcoming research to encompass a broader scope, encompassing comparative analysis at both regional and global levels.

5.2. Conclusion

The insurance industry is widely recognised as a significant component of global economies due to its crucial functions in mitigating financial risks, allocating funds, and optimising their utilisation. This study aims to investigate

the influence of the Jordanian insurance sector on economic growth in Jordan. It specifically focuses on the impact of various variables associated with the sector on the country's economic growth.

The present study employed the panel autoregressive distributed lag (ARDL) approach, relying on estimates derived from the pooled mean group (PMG) method. This methodology was applied to a sample of sixteen Jordanian insurance companies, covering the time span from 2008 to 2021. The objective of this study was to investigate the existence of a sustained equilibrium connection between the performance of insurance companies and economic growth, as well as to determine the direction of causality between the performance of insurance companies and economic growth. In addition, through the utilisation of the Fisher ADF, PP, IPS, Levin, L, C, and Hadri tests, we have confirmed the absence of a unit root at the individual level. The study employed the Pedroni cointegration test, Kao residual panel cointegration analysis, the cross-sectional dependence test, and the Dumitrescu and Hurlin causality test to examine the long- and short-term association between the insurance sector and economic growth in Jordan. Furthermore, Thiel's test was employed for both dynamic and static prediction.

The empirical findings indicate a positive correlation between the revenues and asset size of the insurance sector in Jordan and the country's economic growth. Conversely, the investments made by insurance companies have a detrimental effect on economic growth. The adverse consequences arise from the allocation of investments in non-profitable sectors, some of which have been diverted overseas, and the limited multiplier effect of these investments on the expansion of the economy. The findings of the study indicate that there exists a statistically significant long-term equilibrium association between the variables pertaining to the insurance sector and economic growth. However, no statistically significant relationship was observed in the short term. Additionally, the analysis revealed that the rate at which deviations from the short-term equilibrium are corrected and converge towards the long-term equilibrium is estimated to be 11.9 years. This is supported by the statistically significant error correction coefficient value of 0.083870. In relation to the direction of the causal relationship, the Dumitrescu-Hurlin test indicates the presence of a causal relationship in one direction, specifically universal causality. This finding supports the hypothesis of rationalisation, suggesting that there is a causal link from the real GDP to the investments of insurance companies, as well as from the real GDP to the revenues of insurance companies. Moreover, a reciprocal causal connection exists between the magnitude of corporations (the assets of insurance companies) and the advancement of the economy. Thiel's coefficient demonstrated a notable level of accuracy in forecasting outcomes, as evidenced by its strong performance in both dynamic and static predictions.

The study proposes that policymakers should enhance their focus on the insurance sector in Jordan. This can be achieved by guiding insurance companies to invest in areas that are both profitable and have lower risks. Additionally, it is suggested that the multiplier investment approach for insurance companies should be activated to generate positive impacts on national income, welfare, and economic growth in Jordan.

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Appendix

Cross- Section Short run- Coefficients

1) Jordan French Insurance

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.061070	0.000593	-103.0011	0.0000
D(LOGINVESTMENT)	0.012172	0.000325	37.46513	0.0000
D(LOGTREVENUE)	-0.022999	0.001840	-12.50266	0.0011
D(LOGSIZE)	-0.019985	0.001423	-14.04840	0.0008
C	0.172658	0.004516	38.23162	0.0000

2) United Insurance

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.037997	0.001600	-23.74159	0.0002
D(LOGINVESTMENT)	-0.014370	0.000532	-27.03474	0.0001
D(LOGTREVENUE)	0.051725	0.000796	65.00565	0.0000
D(LOGSIZE)	-0.006087	0.001178	-5.167854	0.0141
C	0.111738	0.012136	9.207317	0.0027

3) Jerusalem Insurance

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.084020	0.001433	-58.62380	0.0000
D(LOGINVESTMENT)	0.016883	0.001788	9.444281	0.0025
D(LOGTREVENUE)	0.000690	0.001771	0.389461	0.7229
D(LOGSIZE)	-0.035923	0.003765	-9.542236	0.0024
C	0.238144	0.011262	21.14621	0.0002

4) Delta Insurance

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.125688	0.002379	-52.83658	0.0000
D(LOGINVESTMENT)	-0.001424	0.001432	-0.994317	0.3934
D(LOGTREVENUE)	0.005265	0.000925	5.688805	0.0108
D(LOGSIZE)	-0.059550	0.002638	-22.57115	0.0002
C	0.355206	0.019778	17.95922	0.0004

5) Jordan Insurance

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.072377	0.000858	-84.32155	0.0000
D(LOGINVESTMENT)	0.010906	0.000310	35.14802	0.0001
D(LOGTREVENUE)	0.055349	0.000771	71.75577	0.0000
D(LOGSIZE)	-0.005488	2.12E-05	-258.9477	0.0000
C	0.204590	0.006965	29.37534	0.0001

6) Jordan International Insurance

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.047610	0.000369	-128.8849	0.0000
D(LOGINVESTMENT)	-0.000957	2.54E-05	-37.63160	0.0000
D(LOGTREVENUE)	0.005089	0.000110	46.06595	0.0000
D(LOGSIZE)	-0.000736	0.001629	-0.451756	0.6821
C	0.138650	0.003008	46.09000	0.0000

7) Euro Arab insurance group

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.051946	0.000332	-156.5576	0.0000
D(LOGINVESTMENT)	0.017644	0.000299	59.01382	0.0000
D(LOGTREVENUE)	-0.003020	4.99E-05	-60.49269	0.0000
D(LOGSIZE)	-0.013526	0.000938	-14.41436	0.0007
C	0.163066	0.003268	49.89152	0.0000

8) Arab Jordanian Insurance Group

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.075457	0.000567	-133.1911	0.0000
D(LOGINVESTMENT)	0.009994	0.000150	66.73363	0.0000
D(LOGTREVENUE)	0.012162	0.000455	26.75687	0.0001
D(LOGSIZE)	0.015545	0.000156	99.69366	0.0000
C	0.214570	0.004693	45.72262	0.0000

9) The Mediterranean & Gulf Insurance Company-Jordan P.L.C

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.117200	0.001122	-104.4464	0.0000
D(LOGINVESTMENT)	0.016243	0.000138	117.7915	0.0000
D(LOGTREVENUE)	-0.009349	0.000112	-83.40530	0.0000
D(LOGSIZE)	-0.019551	0.001376	-14.20952	0.0008
C	0.326746	0.009295	35.15099	0.0001

10) Arab Life and Accident Insurance

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.271991	0.001986	-136.9229	0.0000
D(LOGINVESTMENT)	0.007507	3.50E-05	214.1928	0.0000
D(LOGTREVENUE)	-0.031715	0.000158	-201.1360	0.0000
D(LOGSIZE)	-0.102020	0.000116	-881.1398	0.0000
C	0.749307	0.020747	36.11591	0.0000

11) Arab Orient Insurance Company

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.043021	0.000143	-301.2056	0.0000
D(LOGINVESTMENT)	-0.007394	0.000255	-28.97109	0.0001
D(LOGTREVENUE)	0.008034	6.27E-05	128.1140	0.0000
D(LOGSIZE)	-0.040827	4.83E-05	-844.7607	0.0000
C	0.122206	0.001311	93.21189	0.0000

12) National Insurance

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.064623	0.000841	-76.81466	0.0000
D(LOGINVESTMENT)	0.015043	0.000739	20.36687	0.0003
D(LOGTREVENUE)	0.001693	0.000222	7.640264	0.0047
D(LOGSIZE)	-0.008874	0.000749	-11.84420	0.0013
C	0.185197	0.006960	26.60805	0.0001

13) Arab Union International Insurance

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.078343	0.000248	-315.4135	0.0000
D(LOGINVESTMENT)	-0.016010	0.000168	-95.03948	0.0000
D(LOGTREVENUE)	0.011375	7.68E-05	148.1892	0.0000
D(LOGSIZE)	0.057119	8.09E-05	706.2292	0.0000
C	0.226068	0.002503	90.30359	0.0000

14) AL-Nisr al-Arabi Insurance

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.076245	0.000655	-116.4338	0.0000
D(LOGINVESTMENT)	0.127014	0.009147	13.88584	0.0008
D(LOGTREVENUE)	-0.018254	0.001145	-15.94286	0.0005
D(LOGSIZE)	0.135805	0.010475	12.96483	0.0010
C	0.217700	0.005405	40.28017	0.0000

15) Middle East Insurance

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.097048	0.001163	-83.43915	0.0000
D(LOGINVESTMENT)	-0.015303	0.001803	-8.486581	0.0034
D(LOGTREVENUE)	-0.042220	0.000964	-43.77938	0.0000
D(LOGSIZE)	0.114884	0.005057	22.71620	0.0002
C	0.275372	0.009503	28.97661	0.0001

16) Arabia Insurance Company – Jordan.

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.037287	0.000228	-163.4081	0.0000
D(LOGINVESTMENT)	0.001089	1.38E-05	79.05613	0.0000
D(LOGTREVENUE)	0.039108	0.001021	38.31701	0.0000
D(LOGSIZE)	-0.038857	0.000771	-50.40132	0.0000
C	0.112399	0.001920	58.54408	0.0000